



2019 Annual Monitoring Report

Clean Harbors Lambton Facility Landfill

Clean Harbors Canada Inc.

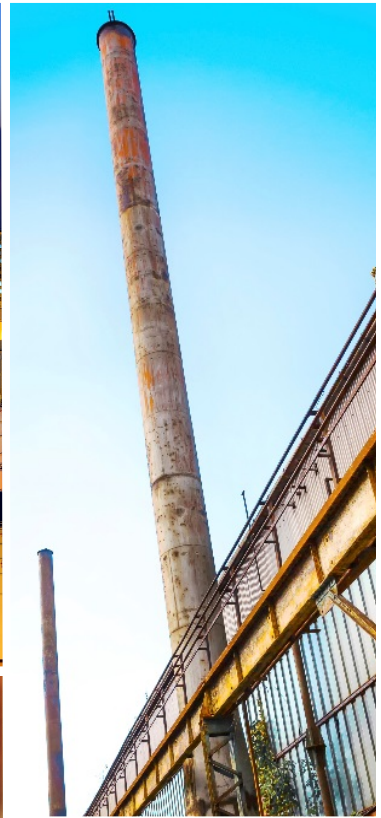




Table of Contents

1.	Introduction.....	1
1.1	Site Background.....	1
1.2	Site Setting.....	2
1.2.1	Facility Location and Plan.....	2
1.2.2	Site Topography and Drainage.....	2
1.2.3	Site Geology	3
1.2.4	Site Hydrogeology	3
1.3	Regulatory Setting	4
2.	Groundwater Monitoring Program.....	5
2.1	Groundwater Monitoring Program along the Perimeter of the Facility	5
2.2	Sub-Cell 3 Remedial Performance Monitoring Program	6
2.3	Performance Monitoring Program for Engineered Landfill Systems	7
2.4	Quality Assurance/Quality Control Program.....	8
3.	Groundwater Monitoring Program along the Perimeter of the Facility.....	9
3.1	Perimeter Water Level Data	9
3.1.1	Active Aquitard Water Levels	9
3.1.2	Interface Aquifer Water Levels	10
3.1.3	Shale Aquitard Water Levels	10
3.1.4	Vertical Gradients	10
3.1.4.1	Active Aquitard and Interface Aquifer Vertical Gradient.....	10
3.1.4.2	Interface Aquifer and Shale Aquitard Vertical Gradient.....	12
3.2	Perimeter Groundwater Quality	12
3.2.1	Active Aquitard Groundwater Quality	14
3.2.1.1	Inorganic Chemistry.....	14
3.2.1.2	Organic Chemistry.....	18
3.2.2	Interface Aquifer Groundwater Quality	19
3.2.2.1	Inorganic Chemistry.....	19
3.2.2.2	Organic Chemistry.....	21
3.2.3	Shale Aquitard	22
3.3	Compliance	23
3.3.1	Reasonable Use Criteria Exceedances.....	24
3.3.1.1	Active Aquitard RUC Exceedances.....	24
3.3.1.2	Interface Aquifer RUC Exceedances.....	24
4.	Sub-Cell 3 Remedial Performance Monitoring Program.....	25
4.1	Sub-Cell 3 Water Level Data	26
4.2	Sub-Cell 3 Groundwater Quality	27
4.3	Compliance Summary.....	28
5.	Performance of Engineered Landfill System.....	28
5.1	Transect across the Southwest Corner of the Landfill.....	30



Table of Contents

5.2	Southern Berm.....	30
5.2.1	Water Level Mounding.....	31
5.2.2	Leachate Collection System Influence on Southern Property Boundary	31
5.2.3	Water Quality	32
5.3	Compliance Summary.....	32
6.	Conclusions.....	33
7.	Recommendations	34
8.	References	35

Figure Index

Figure 1	Site Location Map
Figure 2	Site Plan
Figure 3	Monitoring Well Network
Figure 4	Perimeter Active Aquitard Monitoring Well Network
Figure 5	Perimeter Interface Aquifer and Kettle Point Shale Monitoring Well Network
Figure 6	Sub-Cell 3 Monitoring Well Network
Figure 7	Performance Monitoring of Engineered Landfill Systems Monitoring Well Network
Figure 8	Groundwater Elevations Active Aquitard, April 2019
Figure 9	Groundwater Elevations Active Aquitard, October 2019
Figure 10	Groundwater Elevations Interface Aquifer, June 2019
Figure 11	Groundwater Elevations Interface Aquifer, December 2019
Figure 12	Distribution of Vertical Gradients between Active Aquitard and Interface Aquifer
Figure 13	Distribution of Vertical Gradients between Interface Aquifer and Kettle Point Formation
Figure 14	Trichloroethene and Degradation Product Concentrations versus Time at TW22-99D
Figure 15	Sub-Cell 3 Group Hydrograph
Figure 16	Performance of Engineered Landfill System Transect
Figure 17	Transect Group Hydrograph and Site Hourly Precipitation
Figure 18	Performance of Engineered Landfill System Southern Berm Transect



Table Index

Table 1.1	Description of Site Geology	3
Table 1.2	Environmental Compliance Approvals	4
Table 2.1	Monitoring Well Locations included in the Perimeter Monitoring Program	5
Table 2.2	Perimeter Groundwater Sampling Details	6
Table 2.3	Sub-Cell 3 Groundwater Sampling Details.....	7
Table 3.1	Active Aquitard and Interface Aquifer Vertical Gradients	11
Table 3.2	Average Concentration of Leachate Indicator Parameters at Wells prior to Landfill Disturbance (Baseline)	13
Table 3.3	Concentrations of Leachate Indicator Parameters in Leachate Sources	14
Table 3.4	Active Aquitard Wells with ODWS Exceedances	14
Table 3.5	Active Aquitard Locations Exceeding the Historical Range	17
Table 3.6	Active Aquitard Locations with Increasing Trends.....	17
Table 3.7	Interface Aquifer Wells with ODWS Exceedances	19
Table 3.8	Interface Aquifer Locations with Increasing Trends	21
Table 3.9	Interface Aquifer Wells with VOC Detections	22
Table 3.10	Active Aquitard RUC Exceedances and Indicator Parameters with Increasing Trends..	24
Table 3.11	Interface Aquifer RUC Exceedances.....	25
Table 4.1	Summary of Vertical Gradients and Groundwater Elevations.....	26
Table 4.2	HCL Leachate Indicator Parameter Trends.....	28
Table 5.1	Southern Berm and LCS Water Elevations	32

Tables Following Text

Table 1	Well Completion Details
Table 2	Monitoring Methodology for Perimeter Monitoring Wells at Lambton Property
Table 3	Groundwater Elevations
Table 4	Groundwater Chemistry – Shallow Wells Located Off the Facility Property (Active Aquitard)
Table 5	Groundwater Chemistry - Shallow Wells Installed in the North Berm (Active Aquitard)
Table 6	Groundwater Chemistry - Shallow Wells along Perimeter of Facility Property, Downgradient of North Berm (Active Aquitard)
Table 7	Groundwater Chemistry - Shallow Wells along Perimeter of Facility Property, Removed from North Berm (Active Aquitard)
Table 8	Groundwater Chemistry - Shallow Wells Internal to Facility Property Southern Berm (Active Aquitard)
Table 9	Groundwater Chemistry - Shallow Wells Internal to Facility Property Influenced by Waste Handling/Disposal (Active Aquitard)



Tables Following Text

Table 10	Groundwater Chemistry - Deep Wells Located Off the Facility Property (Interface Aquifer)
Table 11	Groundwater Chemistry - Deep Wells Internal to the Facility Property (Interface Aquifer)
Table 12	Groundwater Chemistry - Deep Wells along the Perimeter of the Facility Property (Interface Aquifer)
Table 13	Groundwater Chemistry - Wells Located in Sub-Cell 3 and Cell 18
Table 14	Upper Confidence Limits Summary Table
Table 15	Linear Regression Results
Table 16	Shallow Wells along Perimeter of Facility Property, Downgradient of North Berm - Reasonable Use Concept Derived Criteria
Table 17	Shallow Wells along Perimeter of Facility Property, Removed from North Berm – Reasonable Use Concept Derived Criteria
Table 18	Deep Wells along the Perimeter of the Facility Property (Interface Aquifer) - Reasonable Use Concept Derived Criteria

Appendix Index

Appendix A	Quality Assurance/Quality Control Data Validation Memoranda
Appendix B	Transducer Hydrographs
Appendix C	Historical Manual Hydrographs
Appendix D	Concentration Versus Time Plots
Appendix E	Laboratory Analytical Reports
Appendix F	Piper Plots



1. Introduction

GHD has prepared this Annual Monitoring Report (Report) on behalf of Clean Harbors Canada Inc. (Clean Harbors) to present the results of the 2019 Groundwater Monitoring Program for the Landfill at the Lambton Facility, located on Lot 9 and part of Lot 8 in the Township of St. Clair, Lambton Ontario (Landfill, Site, or Facility).

The address for the Site is 4090 Telfer Road and the Site entrance is on Telfer Road. Figure 1 provides the Site location with respect to the surrounding area. This Report presents the groundwater monitoring data and data interpretations, in relation to the current environmental performance and regulatory compliance of the Landfill. This Report covers the groundwater monitoring activities conducted from January 1 through December 31, 2019 (reporting period).

1.1 Site Background

Waste disposal operations at the Facility commenced in the early 1960s by Goodfellows Enterprises (Sarnia) Limited as an integrated waste management facility, accepting both industrial and municipal solid waste. Waste disposal at the Site occurred through landfilling in shallow (5.5 to 9 m) deep excavations, deep well disposal (starting in 1961), liquid waste incineration (starting in 1968), and pit/lagoon storage.

In 1973, the Facility was acquired by Tricil Ltd. Tricil restricted the waste disposal operations to hazardous wastes, decommissioned the pits/lagoons (with the exception of the S-Pit), discontinued the deep well disposal in 1976, and constructed a new liquid incinerator in 1983. From 1976 to 1986, Cells 1 through 15 were constructed, with cell depths of 18.3 metres (m). In 1986, the Ontario Ministry of the Environment (MOE) approved Cells 16 and 17 and the shallow entombment method for waste placement. Cells 16 and 17 were constructed with a cell depth of 18.3 m, although the top of waste was 6.1 m below grade and a low permeability clay cap was installed to ground surface. Cell 16 operated from 1986 to 1990 and Cell 17 operated from 1990 to 1997.

In 1990, Laidlaw Inc. (later changed to Laidlaw Environmental Services and then to Safety-Kleen Ltd) acquired the Facility. In 1997, Cell 18 was approved with the maximum cell depth of 24.4 m and a waste cap thickness of 5.1 m. Cell 18 was constructed in sub-cells, with Sub-Cells 1 and 2 excavated and filled in 1997 and 1998. In 1999 during the construction of Sub-Cell 3, basal instability was observed. Landfill operations in Sub-Cell 3 were discontinued and remedial measures were installed (further discussed in Section 2.2). Subsequent sub-cells (Sub-cells 4 to 12) had a reduced maximum depth of 18.3 m.

Clean Harbors acquired Safety-Kleen's Chemical Services Division in September 2002. Since 2002, several waste treatment facilities were installed, including the Land Disposal Regulation (LDR) Facility in 2007 for treatment of inorganic waste streams, and the Thermal Desorption Unit (TDU) in 2010. In 2003, a site design amendment was obtained to recover waste capacity that was lost due to changes from Sub-Cell 3.

Currently, the Facility operates as a hazardous waste landfill and waste processing facility. Hazardous solid waste, select non-hazardous waste, liquid waste, and untreated and pre-treated hazardous waste is accepted at the Facility. Waste is accepted from Ontario, other Canadian



provinces, and the United States. Most waste classes under *Ontario Regulation (O. Reg.) 347* are accepted, with the exception of polychlorinated biphenyl (PCB) waste, radioactive waste, or pathological waste. The two waste disposal operations at the Facility are landfilling and high temperature incineration.

In 2015, the Site received approval for a vertical expansion of the landfill over existing waste cells. The vertical expansion will provide an additional disposal capacity of 3.87 million cubic metres (m³). The height of the vertical expansion will be limited to the maximum height of the perimeter berms. Engineered components were designed for the landfill expansion, including the addition of a hydraulic control layer, a perimeter leachate collection system, and improved surface water management. The groundwater monitoring programs were enhanced to evaluate the performance of the engineered components on achieving hydraulic containment and on maintaining inward hydraulic gradients.

1.2 Site Setting

1.2.1 Facility Location and Plan

The Facility is located on Lots 8 and 9 of Concession 10, in St. Clair Township, Lambton County (Figure 2). The Site has a total property area of 140 hectares (ha). The property boundary, as set out in the Environmental Compliance Approval (ECA) A031806, is identified in Figure 2. Figure 2 also depicts the existing surface elevation contours, limit of waste, and existing site features. The landfill has a waste disposal footprint of 61 ha (including historical fill areas for Cell 18 Sub-Cells 1, 2 and 3).

The Facility has a buffer area around the waste disposal areas. The buffer areas contains the perimeter screening berms, access roads, surface water ditches and ponds, process water ponds, the administration offices and facilities, the Site entrance, and Site monitoring locations. In accordance with Township of St. Clair Comprehensive Zoning By-Law¹, the setback distance from the property boundary to the waste disposal limit is set at 153 m for non-industrial adjacent lands and 15 m for industrial lands.

1.2.2 Site Topography and Drainage

The topography of St. Clair Township is generally flat, with an overall western slope towards the St. Clair River. The land surrounding the Facility also has limited topography. The Facility is primarily surrounded by agricultural land, with woodlots located to the south, east, and west. The Site topography has been altered through the Facility operations and waste disposal operations. The perimeter berms are currently the highest ground elevation on-Site and range from 211 to 212 m above mean sea level (mAMSL). A section of the eastern perimeter berm has been increased to 219.5 mAMSL to provide temporary storage of soils excavated from the Site. The final elevation of the waste mound following completion of the vertical expansion will be approximately 212 mAMSL.

Surface water is generated from non-operational areas at the Facility. Non-impacted surface water runoff from undeveloped portions of the Site, perimeter berms, and capped and closed landfill cells,

¹ Township of St. Clair Comprehensive Zoning By-Law, By-Law 17 of 2003, Section 10.4 – Waste Disposal Industrial (M4) Zone



and waste disposal cells with interim cover is directed through a series of on-Site drainage ditches and ponds to the two on-Site surface water storage ponds (West Pond and East Pond). The surface water is processed by the surface water treatment plant (SWTP). Treated surface water from of the Site eventually drain into Bear Creek to the south. Surface water generated from the exterior of the perimeter northern and eastern berm drains into the Perch Creek.

Runoff from operational areas, including haul roads and uncapped areas of waste, is classified as process water and is collected and stored in four process water ponds. Process water is directed to process water ponds by ditches, culverts, and storm sewers that have been constructed in the process water catchment area. Process water is used as quench water in the incinerator.

1.2.3 Site Geology

A detailed description of the geologic and hydrogeologic setting is provided in the *Geology and Hydrogeology Existing Conditions Report* prepared by RWDI (October 2014).

The Facility is located on the physiographic region of the St. Clair Clay Plain, characterized by thick clay sediments overlying Paleozoic shale bedrock from the Kettle Point Formation. The overburden at the Site is between 37 and 42 m thick and is characterized by five overburden units, as shown in Table 1.1.

Table 1.1 Description of Site Geology

Classification	Unit	Description	Thickness/ Depth
Overburden	Beach Strand	Medium to silty fine to coarse sand	Less than 1 m thick
	St. Joseph Till	Massive to laminated clay/silt with thin, discontinuous layers of silty sand and isolated lenses of sand. Upper portion shows signs of weathering and fractures between 3.5 to 5 m.	14 m thick; observed between 1 and 15 mbgs
	Mackinaw Interstadial Silt and Sand	Discontinuous black medium sand and silt containing shale fragments	Less than 0.5 m thick; observed between 10 and 14 mbgs
	Black Shale Till	Massive to laminated clayey silt, with shale clasts	27 m thick; observed to between 15 and 45 mbgs
	Basal Till	Dense to hard cobbly, sandy clayey silt till with shale fragments and occasional lenses of fine gravel and coarse sand.	1 to 2.6 m thick
Bedrock	Kettle Point Formation	Brown to black, bituminous shale with occasional interbeds of grey-green shale	Observed to at approximately 40 mbgs

Notes:
mbgs – Metres below ground surface

1.2.4 Site Hydrogeology

The geology described above has been extensively examined based on its ability to conduct groundwater movement. Hydrostratigraphic units at the Site are described below:

- **Active Aquitard:** The weathered and fractured upper portion of the St. Joseph Till unit is referred to as the Active Aquitard. The Active Aquitard has a relatively high hydraulic conductivity due to fracturing. Groundwater flow is primarily within the fractures of the upper weathered portion of the clay. The groundwater flow direction is influenced by local surface topography and the water table is found at approximately 1.5 mbgs. Water levels within the Active Aquitard show seasonal variability.



- **Inactive Aquitard:** The lower portion of the St. Joseph Till and Black Shale Till conduct groundwater flow at extremely slow rates. Groundwater movement through the discontinuous layers of sand within these units is controlled by the surrounding low hydraulic conductivity.
- **Interface Aquifer:** The Basal Till is considered the Interface Aquifer. This till is found between the overlying aquitard and underlying shale bedrock. Groundwater flow within the Interface Aquifer is generally towards the east to southeast direction, although is influenced by the extraction wells operating in Sub-Cell 3. The Interface Aquifer has been used as a water source throughout Lambton County.
- **Shale Aquitard:** The hydraulic conductivity of the shale of the Kettle Point Formation is low, with little fracturing.

Regional groundwater chemistry has been characterized historically through several studies. Generally, the regional groundwater chemistry was identified to have high concentrations of chloride and sodium (exceeding the Ontario Drinking Water Standards [ODWS]), with groundwater approaching brackish conditions near the St. Clair River. Additionally, iron, sulfate, and fluoride concentrations often exceeded the ODWS regionally. These conditions have been attributed to the Kettle Point Formation shale, which was deposited in a marine environment and has readily soluble salts in the shale matrix. Bitumen is also found within the Kettle Point Formation shale and been described as the source of detections of petroleum hydrocarbon constituents in groundwater samples from the Interface Aquifer.

1.3 Regulatory Setting

The Site is operated in accordance with 13 Environmental Compliance Approvals (ECA). Table 1.2 provides a list of the ECAs for the Site. Copies of the ECAs for the Site are provided in the 2019 Clean Harbors Lambton Facility Annual Landfill Report. The groundwater monitor program is regulated under ECA A031806 Condition 9(a)(i).

Table 1.2 Environmental Compliance Approvals

Approval Type	Approval Number	Operation/ Process
Waste Disposal Site	A031806	Landfill, TDU and LDR
Waste Disposal Site	A031831	Household Hazardous Waste
Waste Disposal Site	A031813	Liquid Waste Incinerator and Transfer Station and Financial Assurance
Industrial Sewage Works	2985-B9kkP2	Surface Water and Process Water Treatment Unit
Waste/Air	6547-5G5MSP	Incinerator
Air	7384-AR6PV2	TDU
Air	8-1184-89-937	Laboratory
Air	5688-74BJFW	LDR facility
Air	8-1030-94-006	Incinerator
Air	9845-B6QR3D	SPL
Waste/Air	2005-8RMJL6	Leachate Pond Vents
Waste Management System	A8581	PCB
Waste Management System	A860228	Collection, Handling and Transportation



2. Groundwater Monitoring Program

The 2019 groundwater monitoring program was undertaken in accordance with the program defined in the document entitled “Final Draft – Groundwater and Landfill Performance Monitoring Programs” (RWDI, December 2015). There are three groundwater monitoring components, including:

- Groundwater Monitoring Program along the Perimeter of Facility Property
- Sub-Cell 3 Remedial Performance Monitoring Program
- Performance Monitoring Program for Engineered Landfill Systems

The groundwater monitoring network is shown on Figure 3. Groundwater monitoring well (well) completion details are attached in Table 1. The activities included in each of the groundwater monitoring components are described below.

2.1 Groundwater Monitoring Program along the Perimeter of the Facility

The groundwater monitoring program along the perimeter of the facility (perimeter monitoring program) was developed in 1986 and provides an assessment of groundwater flow and quality. The perimeter monitoring program is conducted semi-annually (spring and fall) and consists of hydraulic monitoring (water level) and groundwater sample collection. These activities are undertaken in accordance with standard operating procedures (SOPs). The perimeter groundwater monitoring wells are presented on Figures 4 and 5.

Water level measurements are collected to determine groundwater flow direction in each hydrostratigraphic unit, and to determine horizontal and vertical hydraulic gradients. Calculating vertical hydraulic gradients between hydrostratigraphic units aids in assessing the potential for vertical groundwater flow and possible contaminant migration. Water levels are either collected manually using a water level meter or measured continuously through dedicated pressure transducers and data loggers (transducer). The transducer water level data is downloaded quarterly. A manual water level measurement is collected when downloading transducer data in order to verify and calibrate the transducer data. Table 2 attached provides a description of the water level measurement methodology for each monitoring location.

Table 2.1 provides a summary of well locations included in the perimeter monitoring program.

Table 2.1 Monitoring Well Locations included in the Perimeter Monitoring Program

Hydrostratigraphic Unit	Well Network	Area of Site	Wells
Active Aquitard	<ul style="list-style-type: none"> • 26 shallow wells <ul style="list-style-type: none"> – 21 located on Site property – 5 located on neighbouring property 	Located off the Facility Property	TW55-09S, TW56-11S, TW57-11S, TW58-11S, TW59-13S
		Northern Berm	TW39-99I, TW39-99S, TW46-99I, TW46-99S, TW61-13I, TW61-13S
		Downgradient of Northern Berm	OW32-90S, OW35-90S, TW21-94-II, TW22-94, TW32-94-IV, TW40-99S, TW53-03S
		Along Property Boundary	TW30-94, TW41-99S, TW42-99S, TW43-99S, TW45-99S, TW48-16S, TW62-13S
		Internal to Property	TW63-13S



Table 2.1 Monitoring Well Locations included in the Perimeter Monitoring Program

Hydrostratigraphic Unit	Well Network	Area of Site	Wells
Interface Aquifer	<ul style="list-style-type: none"> 22 deep wells <ul style="list-style-type: none"> 18 located on Site property 4 located on neighbouring property 	Located off the Facility Property	TW55-09D, TW56-11D, TW57-11D, TW59-13D
		Internal to Property	TW39-99D, TW46-99D, TW54-09D, TW61-13D
		Along Property Boundary (Compliance)	OW32-90D, OW35-05D, TW22-99D, TW30-99D, TW32-94-II, TW40-99D, TW41-99D, TW43-99D, TW45-99D, TW47-00D, TW48-00D, TW49-00D, TW53-03D, TW60-13D
Shale Aquitard	<ul style="list-style-type: none"> 2 deep wells 	On and Off-Site	TW32-94-I, TW42-99D

Groundwater is sampled using one of three sampling methodologies depending on the location. Wells screened in the Active Aquitard and the Shale Aquitard are sampled using the continuous volume (CV) sampling methodology. These wells are equipped with dedicated tubing and inertial pumps. Water level measurements and CV purging of Active Aquitard wells are conducted by Clean Harbors for five weeks prior to sampling activities. Wells screened in the Interface Aquifer are sampled using the low flow purging method. Table 2, attached, shows the sampling methodology used at each monitoring location. Groundwater samples are collected for the following parameters and at sampling frequencies, as shown in Table 2.2.

Table 2.2 Perimeter Groundwater Sampling Details

Aquifer	Parameter for Analysis	Sampling and Analysis Frequency	Sampling Methodology
Active Aquitard	General Indicators ¹ , Major ² and Minor ³ Ions	Semi-annually	CV
	Metals ⁴	Annually	
	Volatile organic compounds (VOCs)	Biennially (sampled odd years)	
Interface Aquifer	General Indicators, Major and Minor Ions	Semi-annually	Low Flow Purging
	Metals	Annually	
	VOCs	Annually	
Shale Aquitard	General Indicators, Major and Minor Ions	Biennially (sampled odd years)	CV
	Metals		
	VOCs		

Notes:

- (1) General Indicators include: pH, Conductivity, Total Dissolved Solids (TDS)
- (2) Major ions include: Alkalinity, Chloride, Sulfate, Calcium, Magnesium, Potassium, and Sodium
- (3) Minor ions include: Ammonia (active aquitard only), Nitrite, Nitrate, Bromide, Cyanide, and Fluoride
- (4) Metals include: Arsenic, Barium, Boron, Cadmium, Chromium, Iron, Lead, Nickel, Mercury, Zinc

2.2 Sub-Cell 3 Remedial Performance Monitoring Program

Sub-Cell 3 is located within Cell 18 in the northwest corner of the Site, as shown on Figure 6. In 1999 during a routine inspection of the excavation base of Sub-Cell 3, gas/water was found to be seeping from fractures in the base of the landfill excavation. The cause of the seeps was attributed to a number of factors, including: elevated bedrock elevations, high hydrostratigraphic head in the Interface Aquifer, the depth of the excavation, and heterogeneity in the underlying soil. With the removal of clay soils for the cell excavation, the remaining thickness of clay soil at the base of the



excavation was insufficient to counteract the hydrostratigraphic head pressures. The remedial measures put in place ensured the clay base of the landfill was not compromised and consisted of:

- Installing a hydraulic control layer (HCL) in Sub-Cell 3 to allow long-term control of hydraulic pressures. The HCL consists of a gravel blanket placed over the area surrounded by a gravel-filled perimeter trench.
- Placing a clay layer above and around the HCL to provide a barrier to leachate movement from the adjacent sub-cells. The clay liner is at a minimum 5 m thick.
- Installing extraction wells into the HCL to allow the long term control of hydraulic pressure. Operation of the extraction wells maintain water levels in the HCL below the level in the Interface Aquifer and the leachate level in adjacent landfill cells containing waste. The purpose of this action is to create an inward pressure gradient while maintaining an upward pressure/flow from the Interface Aquifer into the HCL. The intention is to reduce the potential for water/leachate to move downward through the fractures to the bedrock.

The Sub-Cell 3 monitoring program was developed to assess the performance of Sub-Cell 3 remedial measures, through hydraulic and quality monitoring. A summary of the Sub-Cell 3 monitoring network and program is summarized in Table 2.3. Hydraulic monitoring is completed to evaluate the head difference between the HCL and the Interface Aquifer. Groundwater samples are collected for specific parameters at a frequency consistent with the perimeter monitoring program.

Table 2.3 Sub-Cell 3 Groundwater Sampling Details

Unit	Well Network	Water Level Measurements		Groundwater Sampling	
		Methodology	Frequency	Methodology	Frequency
HCL	<ul style="list-style-type: none"> • 2 extraction wells (EW1a-01 and EW2a-01) 	Transducers	Quarterly Download	Collected from Pump Discharge Line	Semi-annual
	<ul style="list-style-type: none"> • 4 monitoring wells (EW1b-13, EW1c-13, EW2b-13, EW2c-13) 			CV	
Nearby Interface Aquifer	<ul style="list-style-type: none"> • 2 monitoring wells (PW1-N, PW2-S[R11]) 				

2.3 Performance Monitoring Program for Engineered Landfill Systems

The perimeter leachate collection system (LCS) will be progressively installed around landfill perimeter with the vertical expansion of the landfill. The LCS was designed to operate as a hydraulic trap, such that the operating level of the LCS is less than the landfill leachate level, the adjacent groundwater elevations, and the surface water ponds. The intention is the Active Aquitard water level is greater (higher) than the leachate level in the LCS system in order to create an inward gradient for groundwater towards the LCS. The LCS is intended to operate at a maximum level of 197 mAMSLL in order to maintain this inward gradient.

The performance of the engineered landfill system is assessed by evaluating hydraulic gradients from the LCS to surrounding areas, to assess whether an inward gradient is being maintained by the LCS. The monitoring program to assess the performance of the engineered landfill systems (performance monitoring program) includes collecting water levels at LCS standpipes (located



midway between the LCS sumps) and nearby groundwater wells. Water levels are collected from the LCS standpipes with transducers that record the water level every twelve hours (downloaded quarterly). The LCS sumps have high-head low-flow groundwater pumps connected to the Programmable Logic Controller (PLC) and leachate levels within the sumps are recorded on the PLC.

The inward gradient and water levels of the LCS are evaluated along two transects at the south portion of the landfill, where the LCS has been installed with the vertical expansion. The two transects are across the southwest landfill corner and the southern berm.

Transect across the Southwest Corner of the Landfill

Water level data from the LCS and perimeter monitoring program are compared to determine the status of the inward gradient to the LCS at the southwest corner of the landfill. Water levels are compared between six perimeter wells (TW64-16-I through TW64-16IV, TW48-16S, and TW48-00D) and the LCS standpipe (LCSOW02-15), located on the southwest corner of Cell 19. Well locations are shown on Figure 7.

Performance Monitoring along the Southern Berm

The LCS performance is also assessed near the southern berm through hydraulic and groundwater quality monitoring. The southern berm was constructed in 2002 in an eastern orientation to the south of the southern property boundary. It was constructed to induce groundwater mounding and promote an inward hydraulic gradient within the Active Aquitard towards Sub-Cell 19. The top of the berm is convex shaped to facilitate downward percolation and recharge.

The Active Aquitard is monitored beneath the southern berm at wells TW50-02B, TW51-02B, and TW52-02B. The area north of the southern berm, near the surface water ditch for Sub-Cell 19, is monitored through wells TW50-02A, TW51-02S, and TW52-02A. Groundwater mounding induced by the southern berm is assessed by comparing water levels at the berm to leachate elevations within the LCS at LCSOW04-15 and PTS-04. Groundwater samples are collected for specific parameters at a frequency consistent with the Active Aquitard perimeter monitoring program, as presented in Table 2.1.

In the spring of 2019, a leachate seep was detected to be entering the southern ditch. Clean Harbors immediately installed containment berms along the south ditch as an initial remedial measure. The blocked water flow in the southern ditch and contained the seepage area. Based on investigation results, a remedial program was developed and approved by MECP through Provincial Officer's Order No. 2681-BCPKUJ. The remedial measures consisted of containment, water treatment and disposal, and infilling of the south ditch. The remedial work program required the southern berm to be removed both to provide construction access for removal of ditch sediment, and the source of clay for the infill. The southern berm was scheduled for removal in 2020 as part of the surface water management plan amendment. The monitoring wells in the southern berm were removed as part of the remedial construction work.

2.4 Quality Assurance/Quality Control Program

A Quality Assurance/Quality Control (QA/QC) program was performed for each monitoring event to ensure the reliability and the validity of the analytical results. The QA/QC program involved both field



and laboratory measures to identify any form of sample contamination that might have occurred, or if any lack in precision of the analytical methods employed was evident. In addition, the QA/QC program addresses the potential source and degree of contamination or analytical imprecision.

The field QA/QC program consisted of the collection of field duplicate samples and the preparation of field blank samples. Three field blanks were collected per sampling event. Duplicate samples were collected from TW56-11S, TW59-13D, and PW2-S(R11) in spring 2019 and TW43-99S, TW43-99D, and EW2a-01 in fall 2019.

The laboratory QA/QC program consisted of the analysis of method blank samples, laboratory spike samples, and surrogate recovery samples. Analyses of these samples were conducted in conjunction with the analyses of each batch or run of investigative samples.

All analytical data received were validated by a review of the standard quality control criteria including blind duplicate sample analysis and blind field blank analysis. As well, the laboratory QA/QC data were reviewed. The complete analytical data assessment and validation report for the 2019 reporting period is included in Appendix A. Based on the assessment, the dataset is acceptable with the qualifications noted in Appendix A.

3. Groundwater Monitoring Program along the Perimeter of the Facility

The objective of the perimeter monitoring program is to assess the vertical and horizontal hydraulic gradients and assess groundwater quality on and near the Site boundary. On January 25, June 11 to 12, August 20 to 21, and December 2 to 4, 2019, GHD conducted quarterly transducer downloads and/or semi-annual groundwater monitoring activities. The following sections detail the results of the water level data, groundwater quality, and compliance for each hydrostratigraphic unit monitored.

3.1 Perimeter Water Level Data

The following presents interpretations from the water level data collected during the reporting period for each hydrostratigraphic unit. Manual water levels collected by GHD and Clean Harbors are provided in Table 3.

3.1.1 Active Aquitard Water Levels

The interpreted groundwater contours for the Active Aquitard for the spring and fall monitoring events are presented as Figures 8 and 9, respectively. Groundwater contours were generated using data collected by Clean Harbors prior to CV purging.

Groundwater contours of the Active Aquitard illustrate a potentiometric high in the northwest portion of the property, creating outward flow. This potentiometric high is caused by groundwater mounding induced within the Active Aquitard by the northern berms. Groundwater mounding in the northern berm is an intentional design feature to induce an inward gradient towards the landfill. Mounded water levels were recorded in wells within and beneath the northern berm (TW39-99S, TW39-99I, TW46-99S, and TW46-99I) compared to water levels outside the northern berm. The observed groundwater mounding is consistent with historical water level observations. It is interpreted that



mounding from the northern berm will induce an inward hydraulic gradient from the berm towards the landfill, therefore limiting lateral migration of potential groundwater impacts from the landfill.

Hydrographs generated using transducer and manual water level data are presented in Appendix B. Hydrographs of historical groundwater measurements are presented in Appendix C.

3.1.2 Interface Aquifer Water Levels

The interpreted groundwater contours for the Interface Aquifer for spring and fall monitoring events are presented as Figures 10 and 11, respectively. Interface Aquifer groundwater contours illustrate a potentiometric high in the northwest portion of the property, which is consistent with historical groundwater patterns.

Water levels at TW45-99D (located along the west side of the Site) were inconsistent with water levels within the Interface Aquifer. This is attributed to slow recharge, and was observed in previous reporting periods. Water levels from TW45-99D were excluded from the Interface Aquifer groundwater contours. It is recommended TW45-99D is redeveloped to assess if the screen and sandpack can be rehabilitated to improve well recharge.

Hydrographs generated using transducer and manual water level data are presented in Appendix B. Hydrographs of historical groundwater measurements are presented in Appendix C. Hydrographs of the Interface Aquifer demonstrates the potentiometric head continues to rise at wells located off-Site and along the northern property boundary, as presented in Appendix C as Figures C-7 through C-13.

Well TW22-99D was identified to be artesian in fall 2019. Water levels were above ground surface, but lower than the top of casing of the well.

3.1.3 Shale Aquitard Water Levels

The two wells screened in the Shale Aquitard are located on the northeast corner (TW32-94-I) and to the south of the property (TW42-99D). Groundwater flow directions could not be determined within the Shale Aquitard as there are insufficient monitoring locations to determine flow direction.

3.1.4 Vertical Gradients

Vertical gradients between hydrostratigraphic units were assessed at nested wells. Vertical gradients indicate the direction of the vertical component of groundwater flow. Vertical gradients can indicate the potential for landfill impacts to migrate into underlying hydrostratigraphic units.

The following sections compare the vertical gradients between the Active Aquitard and the Interface Aquifer, and between the Interface Aquifer and the Shale Aquitard.

3.1.4.1 Active Aquitard and Interface Aquifer Vertical Gradient

Vertical hydraulic gradients between the Active Aquitard and Interface Aquifer for spring and fall monitoring events are presented on Figure 12. Calculated vertical gradients are presented in Table 3.1. Note that Active Aquitard wells were pre-purged by Clean Harbors prior to the June and December 2019 monitoring events. The respective water levels may not be representative of static conditions, if groundwater did not recharge fully following pre-purging.



Table 3.1 Active Aquitard and Interface Aquifer Vertical Gradients

Nested Pair Well Locations		Vertical Gradient			
Active Aquitard	Interface Aquifer	Pre-Purge April	Sampling June	Pre-Purge October	Sampling December
Wells Located Off the Facility Property					
TW55-09S	TW55-09D	0.05	0.03	0.03	0.00
TW56-11S	TW56-11D	0.03	0.03	0.03	0.00
TW57-11S	TW57-11D	0.08	0.07	0.01	0.06
TW58-11S	TW56-11D	0.03	0.02	0.02	-0.03
TW59-13S	TW59-13D	0.09	0.08	0.07	0.09
Wells Installed in the North Berm					
TW39-99I	TW39-99D	-0.01 ⁽¹⁾	-0.05	-0.02	-0.07
TW39-99S	TW39-99D	0.08 ⁽¹⁾	0.01	0.08	-0.01
TW46-99I	TW46-99D	0.10 ⁽¹⁾	0.10	0.09	0.09
TW46-99S	TW46-99D	0.32 ⁽¹⁾	0.11	0.33	0.11
TW61-13I	TW61-13D	-0.04 ⁽¹⁾	-0.04	-0.03	-0.03
TW61-13S	TW61-13D	0.03 ⁽¹⁾	0.02	0.04	0.00
Wells along Perimeter of Facility Property, Downgradient of North Berm					
OW32-90S	OW32-90D	0.04	0.04	0.00	-
OW35-90S	OW35-05D	0.06 ⁽¹⁾	0.05	0.05	0.06
TW21-94-II	TW47-00D	0.00	-0.01	-0.02	0.01
TW22-94	TW22-99D	-	0.04	-	-0.02
TW22-94	TW60-13D	-	-0.01	-	0.08
TW32-94-IV	TW32-94-II	0.06 ⁽¹⁾	0.05	0.05	0.06
TW40-99S	TW40-99D	0.01 ⁽¹⁾	-0.03	-0.01	-0.03
TW53-03S	TW53-03D	0.07 ⁽¹⁾	0.05	0.05	0.07
Wells along Perimeter of Facility Property, Removed from North Berm					
TW30-94	TW30-99D	0.04 ⁽¹⁾	0.04	-0.03	0.02
TW41-99S	TW41-99D	0.05	0.04	0.04	0.04
TW42-99S	TW49-00D	0.06 ⁽¹⁾	0.04	0.02	0.04
TW43-99S	TW43-99D	-0.01	-0.01	-0.05	-0.02
TW45-99S	TW45-99D	1.05	1.02	1.03	1.03
TW48-16S	TW48-00D	0.04 ⁽¹⁾	0.03	0.03	0.03

Notes:

Positive vertical gradient value reflects a downward gradient.

Negative vertical gradient value reflects an upward gradient.

(1) Calculated using transducer data for Interface Aquifer well as manual water levels were not collected

The calculated vertical gradients are generally very low. Considering the low vertical gradients and the low hydraulic conductivity of the aquitard separating the Active Aquitard from the Interface Aquifer, movement of groundwater between these units is expected to be very slow.

Downward gradients were generally observed across the Site. A stronger downward gradient at TW45-99S and TW45-99D was calculated based on the field measurements, however the gradient is suspected to be unrepresentative since TW45-99D is slow to recharge.

Slight upward gradients were observed between wells TW39-99I/D, TW61-13I/D, TW21-94-II/TW47-99D, TW40-99S/D, and TW43-99S/D. These wells are generally located near the north property boundary or northwest corner of Site, with the exception of wells TW43-99S/D. The potentiometric head of the Interface Aquifer was identified to be highest in the northwest corner of the property which is driving the upward gradient.



3.1.4.2 Interface Aquifer and Shale Aquitard Vertical Gradient

The vertical gradients between the Interface Aquifer and the Shale Aquitard were assessed for nested pair wells TW32-94-II/TW32-94-I and TW49-00D/TW42-99D. During the October pre-purge monitoring event, the vertical gradients were calculated at 0.03 (downwards gradient) at TW32-94-II/TW32-94-I and -0.35 (upwards gradient) at TW49-00D/TW42-99D. The gradients are presented on Figure 13.

3.2 Perimeter Groundwater Quality

The following sections discuss the groundwater quality results from the perimeter monitoring program. The long-term goal of the perimeter monitoring program is to monitor and identify potential landfill-related groundwater impacts migrating off Site. This was evaluated with the following:

- An initial review of analytical data for completeness and accuracy, including a review of laboratory QA/QC samples and protocols.
- Statistically assessing analytical data in comparison to historical data, with assistance from:
 - The comparison to the historical range
 - Shewhart's upper confidence limit (UCL) statistical analysis
 - Linear regression statistical analysis
- Identifying increasing trends in the data using concentration versus time plots.
- Comparing the analytical data to the ODWS and Provincial Water Quality Objectives (PWQO)
- Piper plots were prepared to identify the geochemical characteristics of groundwater within the Active Aquitard and Interface Aquifer

Historically, eight leachate indicator parameters were selected to evaluate the effects of the landfill on surrounding water quality, including: chloride, sodium, sulfate, potassium, fluoride, barium, bromide, and boron. These leachate indicator parameters were used to aid in determining potential leachate impacts to groundwater. The concentrations of other analytical parameters can change in leachate impacted water, but not generally at the levels of change noted in the above-listed parameters. The selection of specific leachate indicator parameters may be refined for future reporting periods. For consistency, the same leachate indicator parameters were selected for review of the 2019 analytical data. It is recommended the leachate indicator parameters are re-evaluated using samples collected from the leachate collection system in 2020.

Groundwater quality data collected from the Active Aquitard and Interface Aquifer are presented in Tables 4 through 12, showing the historical range and exceedances of ODWS and PWQO. Statistical analysis using UCLs and linear regression (trend analysis) is displayed for leachate indicator parameters in Tables 14 and 15, respectively. Concentration versus time plots for leachate indicator parameters at all monitoring locations are presented in Appendix D. Electronic copies of all laboratory data reports for the monitoring period are included in Appendix E. Piper plots for the Active Aquitard and Interface Aquifer are provided in Appendix F.



Baseline Water Quality

The following table shows groundwater analytical results from Jagger Hims Limited (1996), which was collected from wells that were installed in an undisturbed area of the Facility when sampled. The analytical results show an increase in chloride and sodium concentrations with depth, and a decrease in sulfate concentrations with depth. The relatively high concentrations of sodium and chloride with depth and within the Interface Aquifer and Shale Aquitard are attributed to naturally occurring readily soluble salts in the shale matrix of the Kettle Point Formation. The concentrations of other leachate indicator parameters remain relatively consistent in different hydrostratigraphic units.

Table 3.2 Average Concentration of Leachate Indicator Parameters at Wells prior to Landfill Disturbance (Baseline)

Leachate Indicator Parameter	Average Concentration (mg/L)			
	Active Aquitard	Inactive Aquitard	Interface Aquifer	Shale Aquitard
Chloride	16	84	260.2	12,925
Sodium	58.9	127.8	254.1	8,163
Sulfate	389	53	3.7	4.8
Potassium	3.5	4.2	2.35	17.68
Fluoride	0.9	1.22	1.16	0.645
Barium	0.047	0.61	0.2	4.0
Bromide	<0.5	<0.5	<0.5	<5
Boron	0.022	19.5	1.42	5.19

Notes:

<0.5 = Not detected at the associated reporting limit

Leachate Quality

The following table shows the concentrations of leachate indicator parameters in leachate (RWDI, 2013). Samples were collected in 2012 from wells installed within the limit of waste. This work was completed in support of the Environmental Assessment (EA) for vertical expansion. Concentrations of chloride, sodium, sulfate, potassium, fluoride, and bromide are elevated in comparison to baseline concentrations shown in Table 3.2, above.

Samples from the leachate collection system (LCS) for select leachate indicator parameters were not collected by Clean Harbors in 2019 due to abnormal operation of the LCS. Samples collected from the LCS were not considered representative in 2019. The sample results from 2018 were included for comparison purposes.

Table 3.3 shows the concentrations of leachate indicator parameters from previous sampling events, including the sample collected during the 2018 reporting period. The leachate indicator parameters from the LCS in 2018 show elevated concentrations compared to the pre-1986 landfill area concentrations, with the exception of barium. Sulfate, fluoride, and bromide were not analyzed as part of the sample collection.



Table 3.3 Concentrations of Leachate Indicator Parameters in Leachate Sources

Leachate Indicator Parameter	Average Concentration (mg/L)				
	Pre-1986 Landfill Area	Cell 16 Landfill Area (2012)	Cell 17 Landfill Area (2012)	Cell 18 Landfill Area (2012)	Cell 19 Landfill Area (2018)
Chloride	11,497	38,710	27,150	33,700	14,447
Sodium	8,290	17,275	22,875	28,540	12,033
Sulfate	779	5,508	6,433	10,708	-
Potassium	252	4,867	6,398	6,206	3,730
Fluoride	17.9	9.0	10.1	31.1	-
Barium	0.14	0.4	<0.5	2.3	0.17
Bromide	73.2	462	587	1,243	-
Boron	0.39	11.3	16.8	31	40.2

To properly assess the potential changes to leachate conditions over time, the leachate quality from the LCS, and the seasonal fluctuations, the collection and submission of leachate samples during the spring and fall is recommended. GHD recommends the submissions of leachate samples consisting of general indicators, major and minor ions semi-annually, total metals annually, and VOC biennial (sampled in odd years), starting in the spring of 2020. The recommend sampling and analysis plan for leachate samples from Cell 19 is based on the parameters and frequency of the Active Aquitard sampling and analysis plan and will provide insight into the evolution of leachate quality within the active landfill cell.

3.2.1 Active Aquitard Groundwater Quality

3.2.1.1 Inorganic Chemistry

Inorganic chemistry samples are analyzed for general indicators, major and minor ions, and metals. Inorganic results, with respect to the ODWS and PWQO, are described in the following sections.

Comparison to ODWS

Active Aquitard wells with concentrations reported exceeding the ODWS in 2019 are shown in Table 3.4.

Table 3.4 Active Aquitard Wells with ODWS Exceedances

Monitoring Location		Exceeding ODWS										
		TDS (AO)		Alkalinity (OG)		Chloride (AO)		Iron (MAC)	Sulfate (AO)		Sodium (AO)	
Location	Well ID	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Spring	Fall	Spring	Fall
ODWS (mg/L)		500		30-500		250		0.30	500		20/200	
Located off the Facility Property	TW55-09S	x	x								x	x
	TW56-11S	x	x						x	x	x	x
	TW57-11S	x	x		x						x	x
	TW58-11S	x	x			x	x		x	x	x	x
	TW59-13S	x	x								x	x
Northern Berm	TW39-99I	x	x		x						x	x
	TW39-99S	x	x								x	x
	TW46-99I	x	x								x	x
	TW46-99S	x	x						x	x	x	x



Table 3.4 Active Aquitard Wells with ODWS Exceedances

Monitoring Location		Exceeding ODWS										
		TDS (AO)		Alkalinity (OG)		Chloride (AO)		Iron (MAC)	Sulfate (AO)		Sodium (AO)	
Location	Well ID	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Spring	Fall	Spring	Fall
	TW61-13I	⌘	⌘								⌘	⌘
	TW61-13S	x	x								⌘	x
Downgradient of Northern Berm	OW32-90S	x	x								x	x
	OW35-90S	⌘	x					x	x	x	x	x
	TW21-94-II	x	x									
	TW22-94	x	x						x	x	x	x
	TW32-94-IV	x	⌘								x	x
	TW40-99S	x	x								x	x
	TW53-03S	x	x									
Along Property Boundary (Removed from Northern Berm)	TW30-94	x	x								x	x
	TW41-99S	x	x								x	x
	TW42-99S	x	x						x	x	x	x
	TW43-99S										x	x
	TW45-99S	x	x								x	x
	TW62-13S	x	x								x	x
Internal to Property	TW48-16S	x	x								x	x
	TW63-13S	x	x			x	x				x	x

Notes:

- (1) Aesthetic objectives (AO) were developed based for parameters affecting the aesthetic quality of drinking water sources. They are not based on risks to human health.
- (2) Operational guidelines (OG) were developed based for parameters that may cause operational issues in water distribution infrastructure. They are not based on risks to human health.
- (3) Maximum allowable concentration (MAC) guidelines were developed based on risk to human health
- x Identifies exceedances for the applicable well, parameter and sampling event
- ⌘ Exceeding associated standard and the historical range

Samples from Active Aquitard monitoring locations had exceedances of the ODWS for TDS, alkalinity, chloride, iron, sulfate, and sodium. It should be noted the ODWS for these parameters were developed based on aesthetic objectives (AO) or operational guidelines (OG) and are not based on risk to human health (with the exception of iron). AOs and OGs were developed for parameters affecting the aesthetic or operational quality of drinking water sources (such as appearance, taste, or hardness). Of the parameters with exceedances, chloride, sodium, and sulfate are considered leachate indicator parameters. The majority of ODWS exceedances were within or below historical ranges.

The exceedances above the ODWS for TDS are fairly consistent across the well network, including exceedances at locations located off the Facility property. TDS was detected within or below the historical range, with the exception of monitoring locations TW61-13I, TW35-90S, and TW32-94-IV. TDS has historically been elevated across the well network due to screened intervals within the clay-based stratigraphy. These detections are likely attributed to characteristics of the local geology and are not likely the result of landfill impacts.

There are two ODWS AOs for sodium, 20 mg/L and 200 mg/L, with the most commonly used AO being 200 mg/L. The lower AO (20 mg/L) was developed for people on sodium restricted diets and thus is inappropriate for comparison purposes in this case. All of the exceedances for sodium in the Active Aquitard were in exceedance of the lower standard (20 mg/L) but were detected at concentrations less than the upper standard (200 mg/L). Exceedances of the lower standard are



considered to be insignificant as concentrations of sodium in baseline groundwater samples (Table 3.2) also exceeded the lower ODWS standard of 20 mg/L.

Monitoring locations in the Active Aquitard also had exceedances of sulfate above the ODWS. In 2015, an investigation was conducted at TW42-99S due to the detection of atypical sulfate concentrations. Sulfate was detected at comparable concentrations in 2019 (1,720 and 1,790 mg/L in the spring and fall 2019, respectively) to historical results. The sulfate UCL at TW42-99S was calculated to be 923 mg/L in 2019, which is lower than the concentrations detected in 2019. The linear regression statistical analysis identified no trend in sulfate concentrations at TW42-99S in 2019. In 2019, statistically significant increasing trends in sulfate concentrations were observed at TW22-94 and OW35-90S. Other leachate indicator parameters at TW22-94 and OW35-90S show decreasing or no trends, as observed in the concentration versus time plots (Appendix D). Historical and recent sulfate concentrations are lower at TW22-94 and OW35-90S compared to TW42-99S, although sulfate concentrations are still elevated compared to baseline samples (as shown in Table 3.2). The 2015 investigation at TW42-99S identified previous studies (Abbott, 1987) that acknowledged the presence of sulfate is common in the Lambton County groundwater. The studies concluded sulfate is resultant from the dissolution of sulfate minerals and oxidation of sulfur in the clay till. In the absence of elevated concentrations of other leachate indicator parameters (such as alkalinity, chloride, bromide), it is interpreted the sulfate detections are not related to the landfill.

Iron exceeded the ODWS and the historical range at OW35-90S in spring 2019, with a concentration of 1.83 mg/L. Historically, iron concentrations for OW35-90S have been low, with a historical range between ND(0.005) and 0.17 mg/L. Statistical analysis and concentration versus time plots were not developed for iron, as iron is not a leachate indicator parameter. However, leachate indicator parameters, except sulfate, show decreasing or no trends at OW35-90S. Subsequent sampling at OW35-90S is scheduled for 2020.

Comparison to PWQO

PWQO exceedances were noted for boron, chromium, iron, nickel, and zinc in the Active Aquitard. The PWQO criteria for these parameters are lower than the respective ODWS criteria (with the exception of iron), as the PWQOs were developed for the protection of freshwater aquatic life. The PWQOs are being applied to groundwater chemistry because shallow groundwater discharges to surface water ditches.

Of the parameters exceeding the PWQO, boron is considered a leachate indicator parameter. Wells across the monitoring network had boron exceedances for PWQO, which is consistent with previous results. Concentrations of boron were within historical ranges.

In 2018, chromium consistently exceeded the PWQO across the well network, including at 25 wells. The majority of chromium exceedances in 2018 were above the historical range. However in 2019, chromium was not detected at most wells with a reporting limit of 0.003 mg/L. Chromium was only detected above the PWQO at TW58-11S in the spring sample. It should be noted that the reporting limit used in 2019 was higher than the PWQO standard of 0.001 mg/L. The reporting limit for chromium was lower in 2018, which resulted in multiple exceedances of the PWQO. The difference in the chromium reporting limit between 2018 and 2019 is suspected to be the source of difference in number of PWQO exceedances.



Iron, zinc, and nickel concentrations each exceeded the PWQO at one well, respectively. The detections of iron (at OW35-90S) and zinc (at TW32-94-IV) were above historical ranges. Concentrations of nickel at TW63-13S were within the historical range.

Monitoring Locations Exceeding the Historical Range

In the Active Aquitard, locations with laboratory detections of parameters exceeding their historical ranges, but below the respective ODWS and PWQO standards (if applicable) are summarized in Table 3.5. Most locations showed only slight exceedances of the historical range.

Table 3.5 Active Aquitard Locations Exceeding the Historical Range

Monitoring Location	Well ID	Parameters Exceeding Historical Range
Located off the Facility Property	TW56-11S	Alkalinity
	TW59-13S	Alkalinity
Northern Berm	TW61-13I	TDS, Sulfate, Potassium, Sodium
	TW61-13S	Bromide, Ammonia-N, Sodium
Downgradient of Northern Berm	OW35-90S	Ammonia-N, Magnesium, Calcium, Alkalinity
	TW40-99S	Magnesium, Calcium,
Along Property Boundary (Removed from Northern Berm)	TW41-99S	Bromide
	TW48-16S	Iron

Monitoring Locations with Increasing Trends

Statistical analysis was performed on leachate indicator parameter concentrations to determine if detections exhibited statistically significant trends. The majority of wells showed no trend or decreasing trends for leachate indicator parameters. Concentration versus time plots and statistical UCL and linear regression are summarized in Appendix D and Tables 14 and 15, respectively. Increasing trends were observed at the following locations:

Table 3.6 Active Aquitard Locations with Increasing Trends

Monitoring Location	Well ID	Parameter with Increasing Trend	Notes
Downgradient of Northern Berm	OW35-90S	Sulfate	<ul style="list-style-type: none"> Spring and fall samples above ODWS but within historical range
	TW22-94	Sulfate	<ul style="list-style-type: none"> Spring and fall samples above ODWS but within historical range
	TW40-99S	Sulfate	<ul style="list-style-type: none"> Spring and fall sample below ODWS and within historical range
Northern Berm	TW39-99I	Sulfate	<ul style="list-style-type: none"> Spring and fall sample below ODWS and within historical range
	TW46-99I	Sulfate	<ul style="list-style-type: none"> Spring and fall sample below ODWS and within historical range
	TW61-13I	Sulfate	<ul style="list-style-type: none"> Spring and fall samples below ODWS Fall sample above historical range
		Potassium	<ul style="list-style-type: none"> Spring and fall sample above historical range
Along Property Boundary	TW41-99S	Sulfate	<ul style="list-style-type: none"> Spring and fall sample below ODWS and within historical range
	TW45-99S	Boron	<ul style="list-style-type: none"> Spring sample below ODWS and within historical range
	TW62-13S	Chloride	<ul style="list-style-type: none"> Spring and fall samples below ODWS and within historical range



Table 3.6 Active Aquitard Locations with Increasing Trends

Monitoring Location	Well ID	Parameter with Increasing Trend	Notes
Located off the Facility Property	TW59-13S	Chloride	<ul style="list-style-type: none">Spring and fall sample below ODWS and within historical range

The majority of monitoring locations with increasing trends had concentrations below the ODWS and within historical ranges. It is anticipated that elevated concentrations and/or increasing trends of multiple leachate indicator parameters would be evident if groundwater quality was impacted by the landfill. TW61-13I showed increasing trends and concentrations above the historical range for sulfate, potassium, and chloride. However, concentrations at TW61-13I show low concentrations, similar to or lower than baseline concentrations for the Active Aquitard. Based on the groundwater quality patterns observed, it is unlikely increasing trends are the result of landfill impacts.

Active Aquitard Geochemical Fingerprint

In order to corroborate interpretations of groundwater quality within the Active Aquitard, Piper plots were prepared. A Piper plot presents the major ions as percentages and is used to determine patterns in the geochemical character of water samples. Cations and anions are plotted in two triangles at the base of the plot. The compositions from the base triangles are then projected up to the central diamond. This central diamond therefore presents the data from all of the major ions in one plot. On a Piper plot, samples with similar geochemical character (similar sources) will plot relatively close to one another. Because the major ions are used, a Piper plot is useful for detecting differences in the geochemical character between water samples. A Piper plot for wells in the Active Aquitard are provided in Appendix F.

Generally, the Piper plot shows similar geochemical patterns between all wells in the Active Aquitard. This supports the interpretation that leachate-impacts are generally not observed within the Active Aquitard. Active Aquitard geochemistry shows low proportions of sodium and chloride, and high concentrations of calcium and sulfate. Well TW42-99S is plotted with higher proportions of sulfate, which is consistent with the high sulfate concentrations detected at this location.

Samples from the LCS for select leachate indicator parameters were not collected by Clean Harbors in 2019 due to abnormal operation of the LCS. Samples collected from the LCS were not considered representative in 2019. Leachate data will be plotted with the Active Aquitard groundwater data for future reports to compare leachate and Active Aquitard geochemistry.

3.2.1.2 Organic Chemistry

Biennial organic chemistry samples are analyzed for VOCs. VOC samples were collected in spring 2019. There were no organic compounds detected in Active Aquitard samples, with the exception of toluene detected at OW35-90S and TW45-99S. Toluene was detected at concentrations below the ODWS and the PWQO. The next organic sampling event is in spring 2021.



3.2.2 Interface Aquifer Groundwater Quality

3.2.2.1 Inorganic Chemistry

Inorganic chemistry samples are analyzed for general indicators, major and minor ions, and metals. Inorganic results, with respect to the ODWS, are described in the following sections. Interface Aquifer groundwater quality is not compared to the PWQO, as it is located approximately 40 mbgs and it is unlikely groundwater from the Interface Aquifer discharges to surface water.

Comparison to ODWS

Interface Aquifer wells exceeding the ODWS are shown in Table 3.7.

Table 3.7 Interface Aquifer Wells with ODWS Exceedances

Monitoring Location		Exceeding ODWS									
		TDS (AO)		Alkalinity (OG)		Chloride (AO)		Sodium (AO)		Iron (AO)	Barium (MAC)
Location	Well ID	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Spring
ODWS (mg/L)		500		30-500		250		20/200		0.3	1.0
Located off the Facility Property	TW55-09D	x	x			x	x	x	x		
	TW56-11D	x	x			x	x	x	x	x	
	TW57-11D	x	x			x	x	x	x	x	
	TW59-13D							x	x	x	
Along Property Boundary	OW32-90D	x	x			x	x	x	x	x	
	OW35-05D	x	x			x	x	x	x	x	
	TW22-99D	x	x	x	x	x	x	x	x	x	
	TW30-99D	x	x					x	x		
	TW32-94-II	x				x		x			
	TW40-99D	x	x			x	x	x	x	x	
	TW41-99D	x	x					x	x		
	TW43-99D	x	x					x	x	x	
	TW45-99D	x	x	x	x	x	x	x	x		
	TW47-00D	x	x	x	x	x	x	x	x	x	x
	TW48-00D	x	x			x	x				
	TW49-00D							x	x		
TW53-03D	x	x			x	x	x	x	x		
TW60-13D	x	x	x	x	x	x	x	x			
Internal to Property	TW39-99D	x	x			x		x	x	x	
	TW46-99D	x	x					x	x	x	
	TW54-09D	x	x					x	x		
	TW61-13D	x	x					x	x		

Notes:

- (1) Aesthetic objectives (AO) were developed based for parameters affecting the aesthetic quality of drinking water sources. They are not based on risks to human health.
 - (2) Operational guidelines (OG) were developed based for parameters that may cause operational issues in water distribution infrastructure. They are not based on risks to human health.
 - (3) Maximum allowable concentrations (MAC) were developed based on effects to human health.
 - (4) Interim maximum allowable concentrations (IMAC) were developed based on effects to human health.
- x Identifies exceedances for the applicable well, parameter and sampling event
 x Exceeding associated standard and the historical range

Interface Aquifer samples had ODWS exceedances for TDS, alkalinity, barium, chloride, iron, and sodium. It should be noted the ODWS for these parameters were developed based on AO or OG,



with the exception of barium which has a standard based on risks to human health. Of these exceedances, chloride, sodium, and barium are considered leachate indicator parameters.

TDS, sodium and chloride were detected above the ODWS consistently across the Site. As shown in Table 3.2, sodium and chloride were detected at high concentrations (above ODWS) in baseline samples collected prior to landfilling disturbance, and were detected at higher concentrations with depth. This was attributed to naturally occurring soluble salts within the Kettle Point Formation shale. Sodium was detected above the ODWS at all Interface Aquifer monitoring locations, except for at TW48-00D. Sodium and chloride were detected within historical ranges, except for chloride at TW57-11D (fall, chloride only) and TW45-99D. No statistically significant increasing trends were identified at TW57-11D. At TW45-09D, chloride and sodium showed a statistically significant increasing trend, with other leachate indicator parameters showing decreasing or no trends.

TDS has historically been detected in exceedance of the ODWS across the Site. TDS was detected within historical ranges in 2019. Detections of TDS are likely attributed to natural conditions, based on a comparison to baseline groundwater quality.

Barium was detected at concentrations above the ODWS at TW47-00D but within the historical range. No statistically significant trends were identified in barium or other leachate indicator parameter concentrations at TW47-00D. Elevated barium has historically been identified in groundwater samples collected from wells instrumented in the Kettle Point Shale formations. The borehole log for TW47-00D indicates a very thin basal till and that the majority of the screen is instrumented in the Kettle Point Shale. The elevated barium is likely caused by the background barium within the Kettle Point Shale.

Iron was detected above the ODWS at monitoring locations located on and off-Site. As described in Section 1.2.4, iron has been regionally detected above the ODWS. The detection of iron on and off-Site indicates the elevated iron concentrations may be the result of regional groundwater quality. Concentrations were above the historical range at TW56-11D, TW59-13D, OW32-90D, TW40-99D, and TW39-99D. Since iron is not a leachate indicator parameter, statistical analysis and concentration versus time plots were not developed. Other leachate indicator parameters at these locations were not found to be significantly increasing. It is expected that statistically significant trends or elevated concentrations of other leachate indicator parameters would be apparent if iron was resultant from landfill impacts. Continued monitoring of at these locations will provide additional insight into long-term trends in groundwater quality.

Monitoring Locations Exceeding the Historical Range

TW61-13D had detections of magnesium and bromide slightly exceeding the historical range. There are no applicable ODWS or PWQO standards for magnesium or bromide. Other parameters at TW61-13D show low concentrations, except for ODWS exceedances for TDS and sodium.

Monitoring Locations with Increasing Trends

Statistical analysis was performed on leachate indicator parameters concentrations to determine if detections exhibited statistically significant trends. The majority of wells showed no trend or decreasing trends for leachate indicator parameters. Concentration versus time plots and statistical UCL and linear regression are summarized in Appendix D and Tables 14 and 15, respectively. Increasing trends were observed at the following locations:



Table 3.8 Interface Aquifer Locations with Increasing Trends

Monitoring Location	Leachate Indicator Parameter with Increasing Trend	Notes
OW35-09D	Chloride	- Spring and fall samples above the ODWS but below the historical range
TW43-99D	Chloride	- Spring and fall samples were below the ODWS and within historical range
TW45-99D	Chloride	- Spring and fall samples above the ODWS and above historical range
	Sodium	- Spring and fall samples above the upper ODWS (200 mg/L) and above historical range
TW54-09D	Chloride	- Spring and fall samples were below the ODWS and within historical range
TW55-09D	Chloride	- Spring and fall samples above ODWS but within historical range
TW61-13D	Sulfate	- Spring and fall samples below ODWS and below the historical range

The majority of monitoring locations with increasing trends had concentrations within historical ranges. It is anticipated elevated concentrations and/or increasing trends of multiple leachate indicator parameters would be evident if groundwater quality was impacted from the landfill. TW45-99D had increasing trends for chloride and sodium, with concentrations above the ODWS and the historical range. Other leachate indicator parameters showed decreasing or no statistically significant trends. TW45-99D historically had elevated concentrations of TDS, alkalinity, chloride, sodium compared to baseline conditions. This may be attributed to the slow groundwater recharge at this well. It is unlikely increasing trends presented in Table 3.8 are resultant of landfill impacts.

Interface Aquifer Geochemical Fingerprint

Piper plots were prepared in order to corroborate interpretations of groundwater quality within the Interface Aquifer. Section 3.2.1 provides more information on the background and purpose of Piper plots.

Generally, the Piper plot shows similar geochemical patterns between all wells in the Interface Aquifer. This supports the interpretation that leachate-impacts are generally not observed within the Interface Aquifer. Interface Aquifer geochemistry shows low proportions of sulfate and calcium, with high proportions of sodium and chloride.

Samples from the LCS for select leachate indicator parameters were not collected by Clean Harbors in 2019 due to abnormal operation of the LCS. Samples collected from the LCS were not considered representative in 2019. Leachate data will be plotted with the Interface Aquifer groundwater data for future reports to compare leachate and Interface Aquifer geochemistry.

3.2.2.2 Organic Chemistry

VOC samples are collected annually from the Interface Aquifer. Table 3.9 shows the organic compounds detected in Interface Aquifer.



Table 3.9 Interface Aquifer Wells with VOC Detections

Monitoring Location		VOCs Detected			
Location	Well ID	Benzene	Cis-1,2-dichloro ethene	Trichloroethene	Methyl Ethyl Ketone (MEK)
Located off the Facility Property	TW57-11D	x ⁽¹⁾			
	TW59-13D	x ⁽¹⁾			
Internal to Property	TW54-09D	x			
Along Property Boundary	TW22-99D	x ⁽¹⁾	x	x	
	TW60-13D	x			x

Notes:

- (1) Benzene detection exceeded ODWS of 1 µg/L
- x Concentrations identified above laboratory analytical reporting limit
- x Exceeding associated standard and the historical range

Samples from the Interface Aquifer have historically had detections of VOCs, including detections of benzene above the ODWS. VOCs from naturally-occurring petroleum hydrocarbons (benzene, toluene, ethylbenzene, and xylenes) are found regionally due to bitumen with the Kettle Point Formation shale. In 2019, benzene was detected in the Interface Aquifer both on and off-Site. The benzene detections are not interpreted to be landfill related. Cis-1,2-dichloroethene, trichloroethene (TCE), and methyl ethyl ketone (MEK) were also detected at TW22-99D.

TCE and cis-1,2-dichloroethene were detected at TW22-99D, below the ODWS and at the lower end of the historical range. TCE, trans-1,2-dichloroethene, and cis-1,2-dichloroethene have historically been detected at TW22-99D, at concentrations below applicable ODWS. TW22-99D is the only monitoring location where these parameters have been detected. Historical analytical results for groundwater samples collected from TW22-99D are presented on Figure 14. The TCE concentrations from TW22-99D are sporadic and are not increasing, which is consistent with an event-based contamination source. The TCE at TW22-99D does not appear to be landfill-related as TCE was not detected upgradient, at TW61-13D, or nearby, at TW60-13D. Based on the investigations conducted on this matter and the analytical data, TCE was most likely induced into the well. GHD recommends continuing VOC sampling annually and monitoring concentrations of TCE, trans-1,2-dichloroethene, and cis-1,2-dichloroethene at TW22-99D. No further investigation is proposed at this time.

In 2019, MEK was detected at TW60-13D. MEK was previously detected at TW48-00D and TW49-00D in 2017, although it has not previously been detected at TW60-13D. These parameters were detected at relatively high concentrations in 2017 and were thought to be from cross contamination or external sources (likely within the analytical laboratory). MEK was not detected at TW48-00D or TW49-00D in 2018 or 2019. The MEK detection at TW60-13D in 2019 may also be the result of cross contamination from external sources. It is recommended TW60-13D is re-sampled for VOCs in 2020 to investigate the source of the MEK detection.

3.2.3 Shale Aquitard

There are two wells screened with the Shale Aquitard, TW32-91-I and TW42-99D. The Shale Aquitard wells are sampled biennially, with previous sampling occurring in 2017. In 2019, Shale Aquitard wells were not sampled due to a scheduling error. Sampling is scheduled to occur in 2020.



3.3 Compliance

MECP Guideline B-7, entitled *Incorporation of the Reasonable Use Concept into the MOEE Groundwater Management Activities*, regulates the allowable effects, which a landfill site can have on groundwater in the surrounding environment (MOEE, 1994). The Reasonable Use Concept (RUC) maximum concentration of a particular contaminant that is acceptable in the groundwater beneath the adjacent property (to the Site) is calculated in accordance with the following relationship as outlined in related Guideline B-7-1 (*Determination of Contaminant Limits and Attenuation Zones*):

$$\text{MABC} = C_b + x(C_r - C_b)$$

Where:

- MABC = Maximum Acceptable Boundary Concentration acceptable in groundwater on adjacent property (the term C_m , maximum acceptable concentration, is used in Guideline B-7-1)
- C_b = background concentration of a particular groundwater contaminant before it has been affected by human activity
- C_r = maximum allowable concentration in groundwater as per Ontario's water management guideline deemed appropriate for reasonable use at the site in question; this is the ODWS of the particular contaminant
- X = 0.25 for health related parameters, 0.5 for non-health related and other parameters

Allowable concentrations for groundwater leaving a site determined through the MABC calculation are site-specific. Guideline B-7 also states that if background water quality is higher than ODWS guidelines where the water may be used for consumption, the landowner or user is responsible to ensure water quality is not impacted beyond what is already present.

MABC values have not been determined for OG parameters (alkalinity, hardness, and pH), as well as temperature, as the ODWS limits apply more specifically to water treatment facilities and not groundwater sampled from wells. Applicable MABC values have been included in Table 16 through 18 for wells to which these criteria apply.

As previously mentioned because of their upgradient position and the historic analytical results, Active Aquitard wells TW55-09S, TW56-11S, TW57-11S, and TW59-13S and Interface Aquifer wells TW55-09D, TW56-11D, TW57-11D, and TW59-13D are considered representative of background water quality for the groundwater in the vicinity of the Facility. The mean background concentration for the Active Aquitard and Interface Aquifer groundwater parameters from the 2010 to 2015 historical analytical data were obtained from tables H-4.7-1 through H-4.7-5 enclosed in the report entitled "2016 Groundwater and Landfill Performance Monitoring Program, Clean Harbors Lambton Facility Landfill"² completed by RWDI. MABC values were re-calculated for parameters to incorporate changes to the ODWS standards. The MABC for all AO, MAC, and Interim Maximum Acceptable Concentrations (IMAC) parameters should be updated every 5 years to account for

² 2016 Groundwater and Landfill Performance Monitoring Report, Clean Harbors Lambton Facility Landfill. March 8, 2017



natural fluctuations in the background groundwater conditions. It is recommended that the MABC be recalculated for the 2020 Annual Report.

3.3.1 Reasonable Use Criteria Exceedances

The calculated RUC values were compared to the laboratory analytical groundwater results from wells located along the property boundary for the spring and fall samplings. Results are shown on Tables 16 through 18.

3.3.1.1 Active Aquitard RUC Exceedances

RUC exceedances identified in the Active Aquitard wells are presented in Table 3.10. Fourteen Active Aquitard wells were compared to the RUC standards.

RUC exceedances for TDS are fairly consistent across the well network, as are TDS ODWS exceedances on and off the property. TDS has historically been detected across the well network due to the natural background groundwater quality. These detections are likely attributed to characteristics of the local geology and are not likely resultant of landfill impacts. RUC exceedances for TDS are not shown in Table 3.10.

Table 3.10 Active Aquitard RUC Exceedances and Indicator Parameters with Increasing Trends

Wells		RUC Exceedances										Statistical Significant Increasing Trend Parameters
		Alkalinity		Iron		Sulfate		Fluoride		Arsenic		
Location	Well ID	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	
RUC (mg/L)		438		0.16		466		0.81		0.0029		
Downgradient of Northern Berm	OW35-90S			x		x	x			x		Sulfate
	TW21-94-II		x									-
	TW22-94		x			x	x					Sulfate
Along Property Boundary	TW30-94							x				-
	TW41-99S	x	x				x					Sulfate
	TW42-99S					x	x					-

Notes:

- x Identifies exceedances for the applicable well, parameter and sampling event
- TDS has been excluded from the RUC as it has been identified to occur naturally above the ODWS standard

Based on the water quality observed, the RUC exceedances for alkalinity, iron, arsenic and sulfate are not interpreted to be landfill-related as statistically significant increasing trends of multiple leachate indicator parameters would be present if the source of the impacts was the landfill. In the absence of other elevated indicator parameters, the RUC exceedance for fluoride at TW30-94 is not considered to be landfill-related.

3.3.1.2 Interface Aquifer RUC Exceedances

RUC exceedances identified in the Interface Aquifer wells are presented in Table 3.11. Fourteen Interface Aquifer wells were compared to the RUC standards.

The mean background groundwater concentrations of off-Site Interface Aquifer wells identified elevated concentrations of TDS, chloride, iron, sodium and benzene above the OWDS. RUC standards were not calculated for these parameters. The elevated background concentrations occur



from naturally occurring minerals within the Kettle Point Formation shale underlying the Interface Aquifer. These parameters have been excluded from the RUC summary of exceedance Table 3.11.

Table 3.11 Interface Aquifer RUC Exceedances

Monitoring Location		Exceeding RUC							Statistical Significant Increasing Trend Parameters
Location	Well ID	Fluoride		Alkalinity		Arsenic	Barium	Boron	
		Spring	Fall	Spring	Fall	Spring	Spring	Spring	
RUC (mg/L)		1.14		416		0.0032	0.35	2.68	
Along property boundary	OW32-90D	x							
	TW22-99D			x	x		x	x	
	TW30-99D	x					x		
	TW41-99D	x							
	TW45-99D			x	x	x		x	Chloride, Sodium
	TW47-00D			x	x		x	x	
	TW49-00		x						
	TW53-03D	x							
	TW60-13D			x	x			x	

Notes:

- x Identifies exceedances for the applicable well, parameter and sampling event
- Exceedances of benzene, chloride and sodium have been excluded as the background concentration exceeds the ODWS

In 2019, there were multiple RUC exceedances for fluoride, which were not present in 2018. In 2018, the fluoride reporting limit was raised above RUC in some samples. Regional concentrations of fluoride often exceed the ODWS due to soluble salts in the Kettle Point Formation shale. RUC exceedances for fluoride in 2019 are not interpreted to be landfill-related as there were no statistically significant increasing trends for fluoride, or other leachate indicator parameters.

Based on the water quality observed, RUC exceedances for alkalinity, arsenic, barium, and boron are not interpreted to be landfill-related as statistically significant increasing trends of multiple leachate indicator parameters would be present if the source of the impacts was the landfill.

4. Sub-Cell 3 Remedial Performance Monitoring Program

The Sub-Cell 3 monitoring program was developed to assess the performance of remedial measures in Sub-Cell 3. The monitoring program conducted in Sub-Cell 3 includes collecting water levels and groundwater samples at two HCL extraction wells (EW1a-01 and EW2a-01) and six monitoring wells, either screened in the HCL (EW1b-13, EW1c-13, EW2b-13, EW2c-13) or the Interface Aquifer (PW1-N, and PW2-S[R11]).

The purpose of hydraulic monitoring in Sub-Cell 3 is to confirm an appropriate head difference between the HCL and Interface Aquifer is maintained by the HCL extraction wells. Discharge from the HCL extraction wells is treated as surface water at the Site and is sampled semi-annually.



4.1 Sub-Cell 3 Water Level Data

Hydrographs generated for one HCL extraction well (EW2a-01) and four of the monitoring wells are presented in Appendix B as Figures B-1 through B-5 and B-28 through B-32. Hydrographs were not created for EW1a-01 during the reporting period as transducer data is not available.

The hydrographs from extraction well EW2a-01 and the four HCL monitoring wells (EW1b-13, EW1c-13, EW2b-13, EW2c-13) show gradual water level increases over 2019. Extraction well EW2a-01 typically has a water level of approximately 188 mAMSL, when the pump is operating as intended. The water levels at the four HCL monitoring wells are intended to monitor the extraction well pumping influence and also typically have water levels at approximately 188 mAMSL. Water levels at HCL wells started increasing in December 2018 from approximately 188 mAMSL and steadily increased throughout 2019. Water levels from EW1 wells (EW1b-13, EW1c-13; screened within the HCL) increased to a water level of approximately 196 mAMSL at the end of 2019. Water levels from EW2 wells (EW2a-01, EW2b-13, EW2c-13; screened within the hydraulic control drain) increased to a water level of approximately 200 mAMSL by the end of 2019. The manual water level measurements corroborate transducer data from HCL wells.

Throughout 2019, Interface Aquifer wells, PW1-N and PW2-S[R11], showed consistent groundwater elevations at approximately 198.5 and 198.8 mAMSL, respectively. Groundwater elevations at PW1-N and PW2-S[R11] were consistent with elevations from 2018.

Vertical gradients were calculated using the groundwater elevations from HCL wells (EW1b-13, EW1c-13, EW2a-01, EW2b-13 and EW2c-13) and Interface Aquifer well, PW1-N. Vertical gradients between the HCL and Interface Aquifer are presented on Figure 14, with the Sub-Cell 3 hydrographs. Minimum and maximum vertical gradients and groundwater elevations are presented on Table 4.1.

Table 4.1 Summary of Vertical Gradients and Groundwater Elevations

Interface Aquifer Well	Vertical Gradient		Groundwater Elevation (mAMSL)	
	Minimum	Maximum	Minimum	Maximum
Wells within the HCL of Sub-Cell 3				
EW1a-03	-	-	190.92	196.18
EW1b-13	-0.52	-0.16	190.05	196.25
EW1c-13	-0.50	-0.16	190.03	196.22
EW2a-01	-0.34	0.02	192.64	199.03
EW2b-01	-0.32	0.05	192.62	199.83
EW2c-13	-0.91	0.06	192.60	199.85
Wells within the Interface Aquifer Adjacent to Sub-Cell 3				
PW1-N	N/A	N/A	198.07	198.91
PW2-S(R11)	N/A	N/A	197.77	199.02

Notes:

Transducer data not available for EW1a-03

Negative vertical gradient value reflects an upward gradient

Groundwater extraction from HCL extraction well EW1a-01 maintained a head pressure that was lower than Interface Aquifer water levels throughout 2019 (as measured at EW1b-13, EW1c-13, PW1-N, and PW2-S[R11]). An upward vertical gradient from the Interface Aquifer to the HCL was maintained at extraction well EW1a-01; however, water levels within EW1b-13 and EW1c-13



continue to show an increasing trend. With increasing water levels within the HCL, the upward vertical gradient from the Interface Aquifer is decreasing and it will likely become a downward vertical gradient if EW1 water levels continue to increase.

Water levels at EW2a-01 (screened within the hydraulic control drain) showed that an upward vertical gradient was not maintained from the Interface Aquifer. Water levels at EW2a-01, EW2b-13, and EW2c-13 also gradually increased throughout the reporting period. In July 2019, the water levels were approximately the same between the EW2 wells and the Interface Aquifer wells (PW1-N and PW2-S[R11]). The water levels continued to rise throughout the remainder of 2019, such that EW2 water levels were higher than Interface Aquifer well water levels. Based on these observations, an upward vertical gradient from the Interface Aquifer to the HCL was not maintained during 2019 at extraction well EW2a-01.

With the approval of the surface water management amendments, work will occur in the Sub-Cell 3 area in 2020 and 2021. The proposed changes are that the current surface of Cell 18, Sub-Cell 1, 2, and 3 will be elevated by 2 to 4 metres. The increase in elevation will promote better surface water drainage. The elevation of the surface contours will require the various monitoring and extraction wells to be adjusted to reflect the addition of the additional clay soils. In 2020, the area will be designed and the Sub-Cell 3 area will be re-designed. The intent is to assess the complete system and upgrade the system based on current technology. As such, it is recommended Clean Harbors assess the functionality of the Sub-Cell 3 groundwater extraction system extraction wells as part of the assessment. Groundwater elevation trigger levels and response actions should be developed to help ensure that the Sub-Cell 3 groundwater extraction system performs as intended throughout the year. To ensure the performance and longevity of the Sub-Cell 3 groundwater extraction system, it is recommended an operational and maintenance procedure and an inspection checklist be assessed.

4.2 Sub-Cell 3 Groundwater Quality

Groundwater quality from Sub-Cell 3 is assessed with respect to the ODWS and the PWQO, as groundwater extracted from the HCL extraction wells discharges to surface water. Analytical results for the Sub-Cell 3 monitoring program are presented in Table 13.

Groundwater quality from the HCL and the Sub-Cell 3 Interface Aquifer wells (PW1-N, and PW2-S[R11]) had detections of TDS, chloride, iron, and sodium above the ODWS. Groundwater concentrations from the HCL and the Sub-Cell 3 Interface Aquifer wells were identified above the PWQO for boron and iron. These results are consistent with historical groundwater quality. TDS, chloride and sodium concentrations are generally elevated in Active Aquitard and Interface Aquifer off-Site wells. Additionally, elevated boron and iron concentrations are observed in off-Site Interface Aquifer wells. The Sub-Cell 3 remedial system is designed to create an upward vertical gradient from the Interface Aquifer to the HCL and the groundwater quality is likely reflective of contributions to groundwater quality from both the Active Aquitard and Interface Aquifer.

The groundwater quality at Sub-Cell 3 Interface Aquifer wells, PW1-N and PW2-S(R11), was consistent with historical results during the reporting period. Concentrations were within or below the historical range. Statistically significant increasing trends for sulfate were detected at PW1-N and PW2-S(R11); however, sulfate concentrations remained below the ODWS and within the historical range. Other leachate indicator parameters show no or decreasing trends at PW1-N and PW2-S(R11).



The groundwater quality at HCL wells and the Sub-Cell 3 Interface Aquifer wells was consistent between spring and fall monitoring events. Note that since July 2019, the water level was approximately the same between the HCL and the Interface Aquifer, and therefore an upward gradient was not maintained. Based on the groundwater quality data, the increasing water levels within the HCL in 2019 did not impact groundwater quality within the Interface Aquifer or the HCL.

Leachate from the surrounding cells does not appear to be infiltrating the HCL. In 2019, leachate indicator parameters generally showed decreasing trends for chloride, sulfate, potassium, sodium, and fluoride, as summarized in Table 4.2.

Table 4.2 HCL Leachate Indicator Parameter Trends

Well	Chloride	Sulfate	Potassium	Sodium	Bromide	Fluoride	Barium	Boron
EW1a-01	Decreasing	Decreasing	Decreasing	Decreasing	No Trend	Decreasing	No Trend	No Trend
EW1b-13	No Trend	Decreasing	Decreasing	Decreasing	No Trend	Decreasing	No Trend	No Trend
EW1c-13	No Trend	No Trend	Decreasing	Decreasing	No Trend	No Trend	No Trend	No Trend
EW2a-01	No Trend	No Trend	Decreasing	No Trend	No Trend	No Trend	No Trend	No Trend
EW2b-13	No Trend	Decreasing	Decreasing	Decreasing	No Trend	No Trend	Decreasing	No Trend
EW2c-13	No Trend	Decreasing	Decreasing	Decreasing	No Trend	No Trend	No Trend	No Trend

4.3 Compliance Summary

The vertical gradient calculated between the Interface Aquifer and the HCL indicates that an upwards gradient was generally maintained at EW1a-01, although an upward gradient was not maintained throughout all of 2019 at EW2a-01. Water levels at HCL wells gradually increased throughout 2019 and approached or exceeded water levels within the Interface Aquifer. Water levels at nearby Interface Aquifer wells PW1-N and PW2-S(R11) were consistent with historical results in 2019. The water levels and hydraulic gradients measured in the HCL in 2019 indicate that the remedial system is not operating as intended to maintain an upward gradient.

The groundwater quality results from HCL wells and Sub-Cell 3 Interface Aquifer wells were consistent with historical results and did not show changes in water quality throughout the year. Based on the groundwater quality data, the increasing water levels within the HCL in 2019 did not impact groundwater quality within the Interface Aquifer or the HCL.

Leachate from the surrounding Cells does not appear to be infiltrating the HCL as analysis of leachate indicator parameters identified decreasing trends for chloride, sulfate, potassium, sodium, and fluoride.

5. Performance of Engineered Landfill System

The performance of the engineered landfill system is evaluated by assessing the inward gradient and water levels of the LCS compared to two areas: the southwest corner of the landfill, and the southern berm. The performance monitoring programs were developed to assess the effectiveness of the LCS at maintaining inward hydraulic gradients and preventing leachate migration.

During 2018, Clean Harbors was in discussions with MECP staff regarding the limits on leachate disposal and potential methods to increase leachate disposal at the facility. The concern was that the leachate generation rate was higher than projected, that operational changes were required, and



that leachate disposal was required to handle the increased generation rate and the existing backlog of leachate in storage. At the end of 2018, leachate storage facilities at the Site were at capacity and the LCS system was switched from automatic mode to manual operations. The leachate disposal in the incinerator was assessed to ascertain if additional changes could be made to increase leachate disposal rates. Minor changes increased the leachate disposal rate to an average of 35,000 to 45,000 Lpd. With the LCS in manual mode, the leachate levels in the LCS increased. In April of 2019, routine testing of the surface water quality indicated that volatile organics were present in the surface water ponds. Inspection of the perimeter of the landfill with the LCS was conducted and a seepage zone was noted in the south-west corner of the landfill. Clean Harbors implemented emergency measures to contain the release through blocking of the perimeter ditch and the seepage area. MECP was informed and response planning commenced. The remedial response program for the seep was approved by MECP through Provincial Officers Order No.2681-BCPKUJ.

The remedial response program addressed the management of the seep, the cleaning and infilling of the southern perimeter surface water ditch, the implementation of the amendments to the active landfill cells to reduce generation (previously requested), the increase in leachate disposal, and temporary storage of excess leachate. The remedial response program was successful in limiting the release of leachate to the on-site surface water management system. The southern ditch cleaning and filling was completed by the end of August. The changes to the active landfill cells and the increase/ monthly target for leachate disposal has allowed the LCS system to be stabilized and that the level in the LCS is slowly returning to normal operating levels (slight reductions on a month over month basis). Currently it is projected that the LCS will reach normal operating levels in summer of 2020.

Due to the remedial work program, the southern berm and the associated monitoring program was disrupted initially by the flooding of the area with impacted leachate, and later by the removal of monitoring locations and the removal of sections of the berm. The southern berm was proposed to be removed as part of the surface water management plan amendments which were approved in September of 2019.

Transducer water level data from LSC standpipes was limited in 2019. The 2018 water level data indicated that transducers at LCSOW01-15, LCSOW03-15, and LCSOW04-15 were no longer submerged in leachate within the standpipe, and the transducer direct read cables no longer transmitted transducer data. The standpipe for LCSOW04-15 was subsequently removed during remedial work along the south property boundary in spring 2019. The LCS levels are monitored by the LCS pumping system and with limited pumping, the standpipe leachate levels are not required. It is recommended Clean Harbors investigate the condition of the LCS standpipes in the spring of 2020 and assess potential causes for the failure of transducer direct read cables. Rehabilitation and maintenance of the LCS standpipes, and/or replacement of direct read cables is recommended, depending on the findings of the investigation.

The transducer water level data from the LCS standpipes is critical assessment of the performance of the engineered landfill system when the LCS is operating in automatic mode since it allows comparison of the pumping system and the point between pumps to be assessed. The performance of the engineered landfill system was assessed differently for 2019 monitoring data, as further described in the following sections.

The results of the two performance monitoring programs are described in the following sections.



5.1 Transect across the Southwest Corner of the Landfill

The hydraulic gradient between the LCS and the southwest property boundary is assessed by comparing water levels between the LCS and perimeter wells. A horizontal transect was used in previous reporting periods to illustrate the hydraulic gradient along the southwest side of the LCS. The transect typically consisted of one LCS standpipe (LCSOW02-15), five perimeter wells instrumented in the Active Aquitard (TW64-16-I through TW64-16IV, and TW48-16S), and one perimeter well instrumented in the Interface Aquifer (TW48-00D). The well network and transect previously used to assess the performance of the engineered landfill system is shown on Figure 7.

As described above, transducer data from LCS standpipes, including LCSOW02-15, was not available in 2019. Therefore the hydraulic gradient cannot be assessed using the same transect as in previous years. Water level data is available from 2019 for LCS sumps, PT-01 to PTS-04. The LCS sumps have high-head low-flow groundwater pumps connected to the PLC, which record water levels at the sump locations. Based on the 2017 and 2018 data, the LCS standpipes and sumps had similar water levels.

Hydrographs for the six perimeter wells within the transect are presented in Appendix B as Figure B-21 and B-29 to B-32. Hydrographs for the LCS sumps, PT-01 to PT-04, are presented in Appendix B, Figures B-33 to B36. The individual hydrographs are presented as a group with a transect cross-section on Figure 16. Hydrographs from wells TW64-16-II, TW64-16-III and TW64-16-IV are also presented along with hourly precipitation in millimetres (mm) collected from an on-Site weather station on Figure 17.

Starting in early 2019, leachate levels within the LCS sumps PTS-02 and PTS-03 (located north and south of the LCS standpipe LCSOW02-15, respectively) were above water levels at shallow well TW64-16-IV, located near the toe of slope. Leachate elevations at PTS-02 and PTS-03 were also higher than water levels at Active Aquitard well TW48-16S, located near the west property boundary. Throughout most of 2019, leachate elevations at PTS-02 and PTS-3 fluctuated above 201 mAMSL, whereas water levels at TW-64-16-IV and TW48-16S were at approximately 200 mAMSL. In December 2019, leachate levels at PTS-02 and PTS-03 dropped to levels of approximately 197 mAMSL. However, during most of 2019 an inward gradient was not maintained from the property boundary to the LCS. Clean Harbors is working to re-establish the LCS to normal operations.

Therefore, based on the leachate and water levels measured along the southwestern LCS transect, the hydraulic gradient was outward from the LCS for a portion of 2019. The wells located at the landfill toe (TW-64-16-I to IV) are not sampled as part of the monitoring program. In 2019, the groundwater quality at TW48-16S was consistent with historical results, with low concentrations of leachate indicator parameters. Leachate indicator parameters showed no or decreasing trends and sample results were consistent between spring and fall 2019. Groundwater flow in this area is to the southeast. Based on this, there is no evidence of leachate impacts migrating to the western property boundary.

5.2 Southern Berm

The performance of the engineered landfill system is also monitoring around the southern berm. The southern berm was constructed with the intention to create mounding of the water table in the absence of an LCS, thus creating an inward gradient towards the landfill. Three pairs of wells,



TW50-02A/B, TW51-02A/B, and TW52-02A/B, are instrumented in the Active Aquitard under and north of the southern berm (Figure 3). Performance monitoring was previously evaluated at the southern berm through assessing mounding within water level data, the horizontal gradient from the LCS, and the groundwater quality. The horizontal gradient to the LCS was previously assessed by comparing transducer data along a horizontal transect, which included LCS sump PTS-04, LCS standpipe LCSOW04-15, and wells TW52-02A/B.

Monitoring wells TW50-02A/B, TW51-02A/B, and TW52-02A/B were removed in the summer of 2019 as part of remedial work along the southern property boundary. Monitoring data is available from the June monitoring event but does not exist from the December monitoring event. Additionally, as described above, 2019 water level data was not available for LCS standpipe LCSOW04-15. As such, the performance of the engineered landfill system around the southern berm was assessed differently for 2019 monitoring data.

Clean Harbors is planning to complete construction in this area in 2020 to reconfigure the surface water system. New surface water pond was approved to be constructed to the south of the landfill. The new surface water pond will be constructed where the southern berm is and will inherently create an inward gradient towards the LCS, thus eliminating requirements for the southern berm monitoring program.

The hydrographs generated for the southern berm wells TW52-02A/B are presented in Appendix B as Figures A-23 and A-24, respectively. Transducer data is not available after January 2019 for TW52-02A and after August 2019 for TW52-02B. Hydrographs of historical groundwater measurements for the southern berm wells are presented in Appendix C as Figures C-4 to C-6. The hydrographs from PTS-04 are presented in Appendix B as Figure B-36 and on Figure 17.

5.2.1 Water Level Mounding

In 2019, there was insufficient water level data available at TW50-02A/B and TW51-02A/B to assess groundwater mounding within the southern berm. Groundwater elevations within the southern berm at shallow Active Aquitard monitoring well TW52-02B were between 0.21 and 0.37 m lower than the groundwater elevations at deeper Active Aquitard monitoring well TW52-02A, located to the north.

The remedial work required the southern berm to be removed to infill the southern ditch. The construction of the surface water management ponds in 2020 will require the monitoring program to be adjusted. The surface water approval requires monitoring of the pond level and comparison to the LCS levels.

5.2.2 Leachate Collection System Influence on Southern Property Boundary

Water elevations at TW52-02A/B and LCS sumps PTS-03 and PTS-04, located along the southern portion of the Site, are presented in Table 5.1. As previously discussed, water level data at TW50-02A/B and TW-51-02A/B, and transducer data for LCS standpipes LCSOW03-15 and LCSOW04-15, were not available in 2019. The LCS sumps were used for this analysis in 2019.



Table 5.1 Southern Berm and LCS Water Elevations

Monitoring Location	Groundwater/Leachate Elevation (mAMSL)	
	April	October
Southern Berm Active Aquitard Groundwater Elevations		
TW52-02A	200.30	200.74
TW52-02B	200.05	200.36
Southern LCS Sump Elevations		
PTS-03	200.74 – 201.73	199.20 – 201.30
PTS-04	201.09 – 201.92	199.70 – 201.28

In 2019, groundwater elevations at TW52-02A were generally above 200 mAMSL, except following the groundwater purging activities conducted for groundwater sampling in April 2019. Groundwater at TW52-02A/B was lower than the LCS sump levels at PTS-04 in April 2019, indicating an inward gradient was not maintained. Throughout 2019, the LCS levels have varied widely since the LCS has limited contingency for dealing with precipitation events. It is estimated that the system will return to normal operations in the summer of 2020.

5.2.3 Water Quality

Groundwater samples were collected from the southern berm wells during the June 2019 monitoring event. Laboratory analytical results for the southern berm wells are presented in Table 8. Groundwater quality is assessed with respect to the ODWS and the PWQO, as shallow groundwater has the potential to infiltrate into surface water.

Groundwater concentrations from the southern berm wells were above the ODWS for TDS and sodium, and above the PWQO for boron. TDS, sodium, and boron concentrations are elevated in Active Aquitard wells that are representative of background conditions. Additionally, in 2019, no organic compounds were detected in southern berm wells and all compounds were within the historical range, with the exception of a slight exceedance of barium. Leachate from nearby cells does not appear to be migrating to the southern berm, despite an inward hydraulic gradient not being maintained.

5.3 Compliance Summary

Water levels collected as part of the performance monitoring program indicate that an inward gradient towards the LCS was not maintained in 2019. Along the southwestern side of the landfill, water levels at LCS sumps PTS-02 and PTS-03 were higher than Active Aquitard wells TW64-16-IV and TW48-16S. Additionally, water levels at LCS sump PTS-04 were generally higher than water levels at the southern berm wells. The groundwater quality at Active Aquifer wells appeared to be unaffected by the high water levels within the LCS.

The LCS is operating as described in the remedial work program approved by MECP through the Provincial Officers Order. The primary focus at this time is to return the LCS to normal operations.

The surface water management amendments approved in 2019 require the South Berm and the LCS monitoring program to be assessed and amended. The removal of the South Berm and



associated monitoring systems was not planned to occur in 2019, but were required to address a remedial response. The installation of the surface water management amendments in 2020 will require other changes to the groundwater monitoring program and assessment associated with the LCS. The stormwater management ponds will be the primary method of maintaining an inward gradient at the facility through pond level water management and the transect concept developed in 2015 will need to be amended.

6. Conclusions

Based on the 2019 groundwater monitoring and sampling events completed, the following conclusions are presented:

Perimeter Monitoring Program

- Groundwater is mounded in the Active Aquitard within and beneath the northern berm. This groundwater mounding induces an inward hydraulic gradient from the berm to the landfill footprint. Groundwater along the outside of the northern berm remains stable compared to historical measurements.
- Groundwater contours of the Interface Aquifer illustrate a potentiometric high in the northwest portion of the property consistent with historical groundwater patterns.
- Samples from the Active Aquitard and Interface Aquifer had exceedances of the ODWS for TDS, alkalinity, barium, chloride, iron, sulfate, and/or sodium. These exceedances are likely attributed to characteristics of the local geology and are not likely resultant of landfill impacts.
- Active Aquitard samples exceeded the PWQO for boron, chromium, iron, nickel, and zinc. Concentrations were generally consistent with historical results.
- Statistical analysis was performed on indicator parameters for all wells in the Active Aquitard and Interface Aquifer to determine if detections exhibited statistically significant trends. The majority of monitoring locations showed no trend or decreasing trends for indicator parameters. The majority of monitoring locations with increasing trends had concentrations below the ODWS and within historical ranges. It is anticipated that elevated concentrations and/or increasing trends of multiple indicator parameters would be evident if groundwater quality was impacted from the landfill. It is unlikely increasing trends are the result of landfill impacts.

Sub-Cell 3 Remedial Performance Monitoring Program

- Water levels within the HCL gradually increased throughout 2019, such that upward gradients were not maintained from the Interface Aquifer to the HCL within Sub-Cell 3. The Sub-Cell 3 groundwater extraction system was not operating as intended in 2019.
- Groundwater quality within the HCL and the Interface Aquifer was consistent with previous years and did not show leachate impact. The increasing water levels within the HCL did not have an impact on groundwater quality.
- Leachate from the surrounding landfill cells do not appear to be infiltrating the HCL.



Performance of Engineered Landfill System

- Water levels indicated that an inward gradient towards the LCS was not maintained throughout 2019. Water levels at LCS sumps were higher than wells along the southwest property boundary and at the southern berm.
- Groundwater quality within the Active Aquifer appeared to be unaffected by the high water levels within the LCS.
- By December 2019, the inward gradient towards the LCS was restored, as observed with lower water levels within the LCS compared to the Active Aquifer.

7. Recommendations

Based on the 2019 groundwater monitoring and sampling events completed on Site, the following conclusions are presented:

Perimeter Monitoring Program

- Rationalize the perimeter monitoring program in 2020 to ensure that the Site's environmental performance is properly monitored and reported
- Redevelop TW45-99D to assess if the screen and sandpack can be rehabilitated in 2019
- Re-calculate the MABC to update RUC in 2020

Sub-Cell 3 Remedial Performance Monitoring Program

- Perform an investigation on the Sub-Cell 3 groundwater extraction system to assess the functionality of the HCL extraction wells.
- Establish groundwater elevation trigger levels and response actions to help assess the performance of the Sub-Cell 3 groundwater extraction system as monitoring data is collected throughout the year.
- Develop an operational and maintenance procedure and an inspection checklist to be completed in tandem with groundwater monitoring events.
- Re-design the Sub-Cell 3 components to allow the placement of 2 to 4 metres of clay fill in the area during 2020 and 2021.

Performance of Engineered Landfill System

- Investigate the condition of the LCS standpipes and assess potential causes for the failure of transducer direct read cables. Rehabilitation and maintenance of the LCS standpipes, and/or replacement of direct read cables is recommended, depending on the findings of the investigation.
- As part of groundwater program rationalize, adjust the groundwater program to incorporate revisions required by the amendment to the surface water management components and the removal of the South Berm.



8. References

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All of Which is Respectfully Submitted,

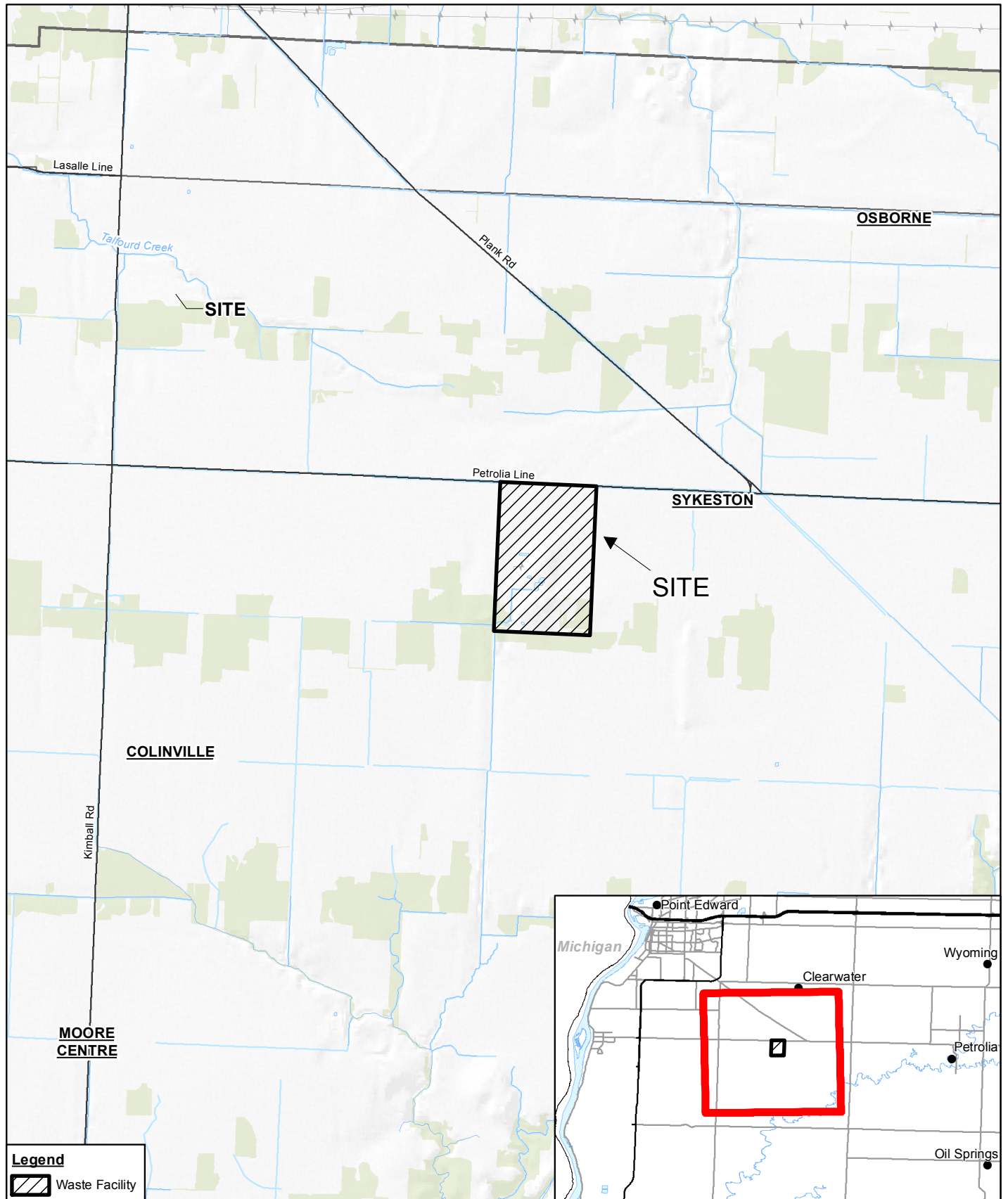
GHD

Meghan O'Brien, B.Sc., G.I.T.

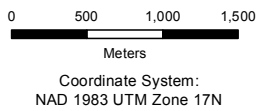


Ben Kempel, P.Geo. (Limited)

James R. Yardley, P. Eng.



Source: MNRF NRVIS, 2015. Produced by GHD under licence from Ontario Ministry of Natural Resources and Forestry, © Queen's Printer 2018;

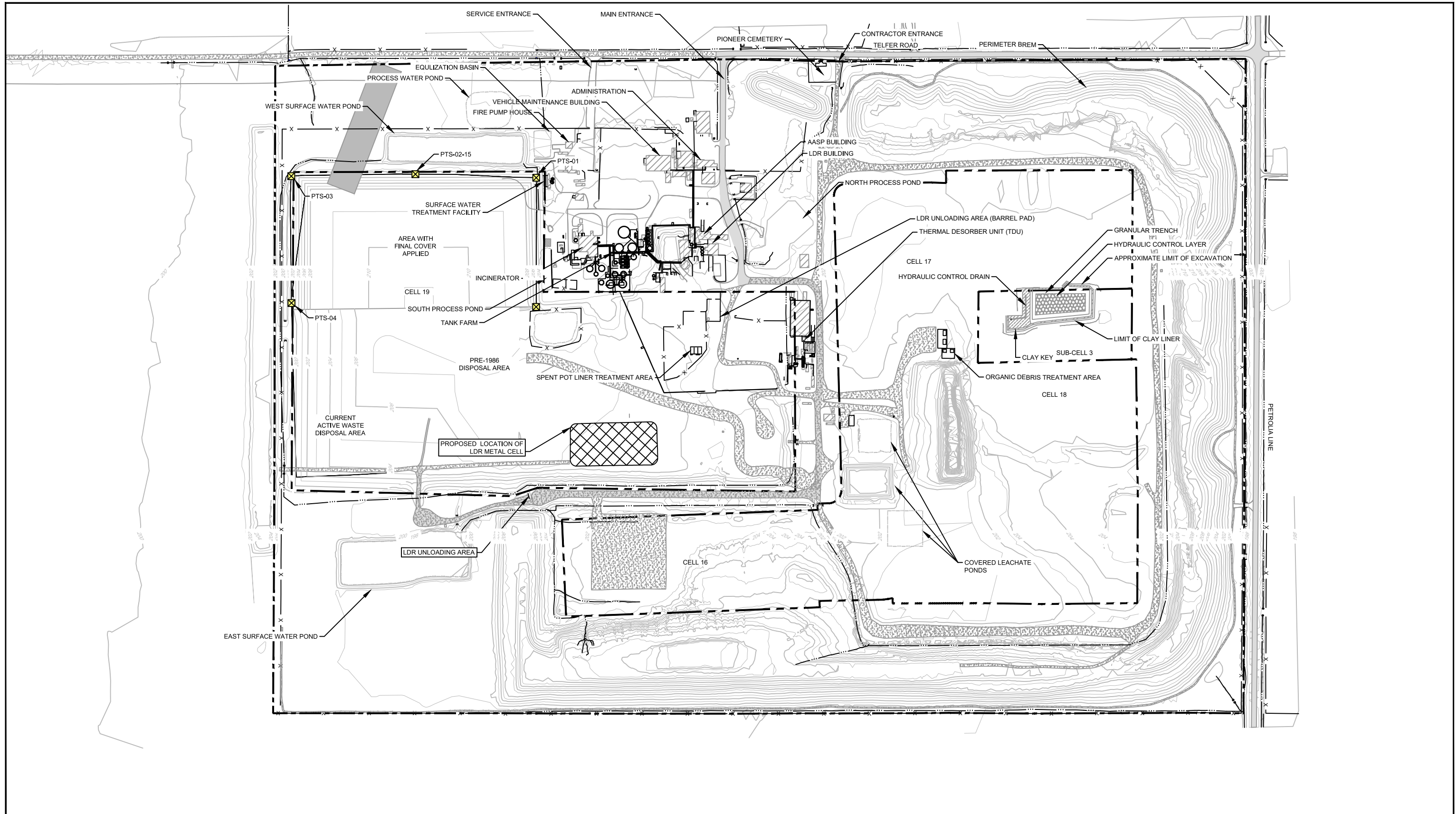


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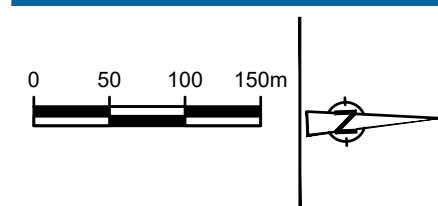
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 Feb 6, 2020

SITE LOCATION MAP

FIGURE 1



Source: EXISTING TOPOGRAPHIC FEATURES FROM TETRA TECH, DRAWING 5 STORMWATER MANAGEMENT DATED FEBRUARY 23, 2015. EXISTING TOPOGRAPHIC SURVEY COMPLETED IN 2012



LEGEND:	
	EXISTING GROUND CONTOUR
	PROPERTY BOUNDARY
	LIMIT OF WASTE
	DRAINAGE SWALE
	FENCELINE
	PAVED ROADWAY
	GRAVEL ROADWAY
	BUILDING / STRUCTURE
	CLEAN INTERNAL HAUL ROAD
	TRANSECT CELL 19-1

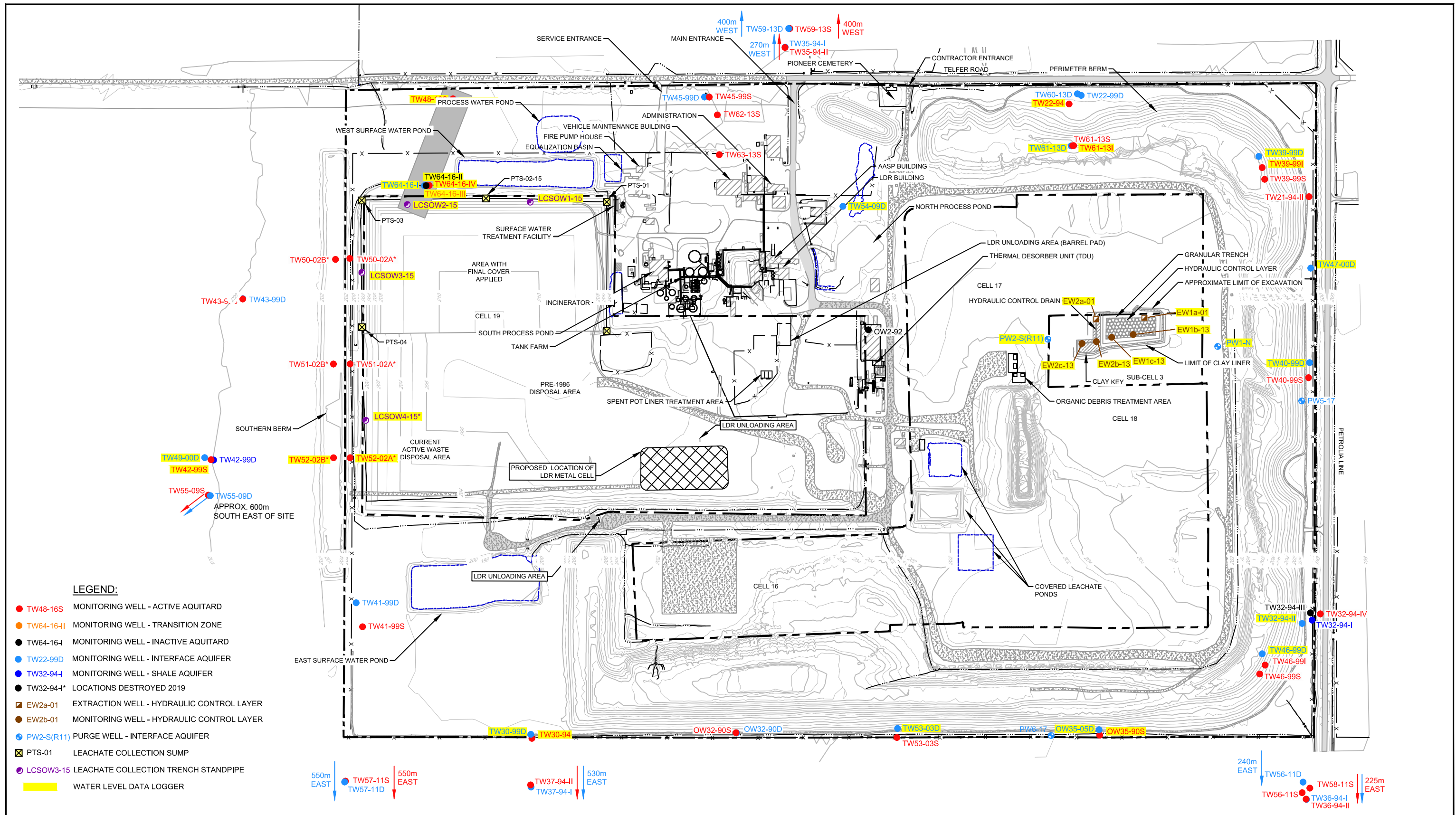


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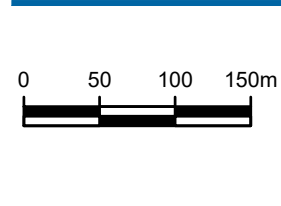
SITE PLAN

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FIGURE 2



Source: EXISTING TOPOGRAPHIC FEATURES FROM TETRA TECH, DRAWING 5 STORMWATER MANAGEMENT DATED FEBRUARY 23, 2015. EXISTING TOPOGRAPHIC SURVEY COMPLETED IN 2012

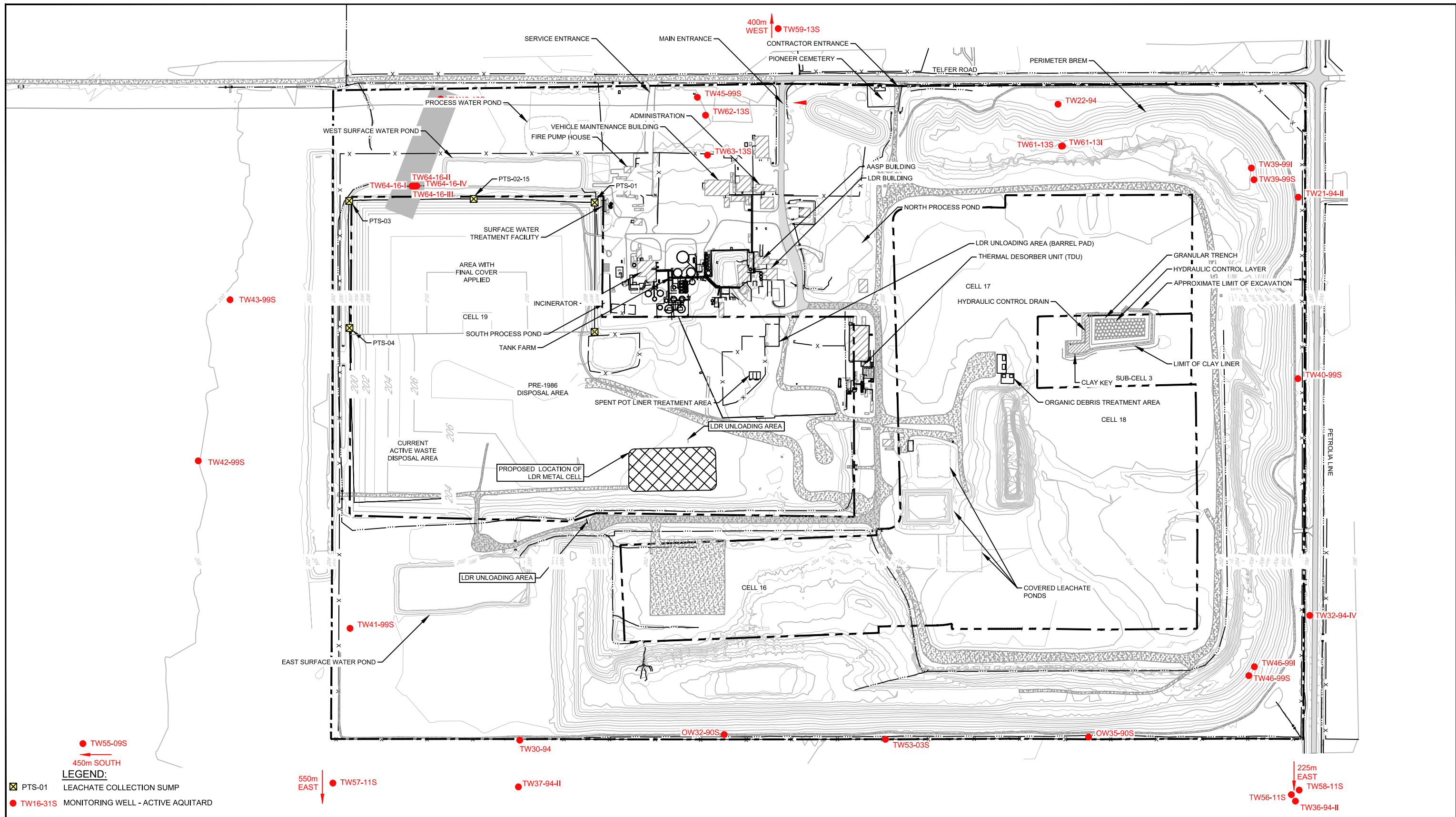


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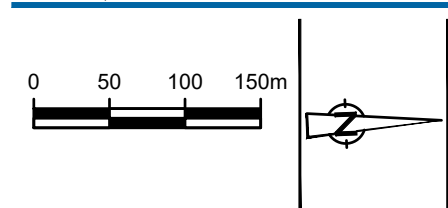
MONITORING WELL NETWORK

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FIGURE 3



Source: EXISTING TOPOGRAPHIC FEATURES FROM TETRA TECH, DRAWING 5 STORMWATER MANAGEMENT DATED FEBRUARY 23, 2015. EXISTING TOPOGRAPHIC SURVEY COMPLETED IN 2012

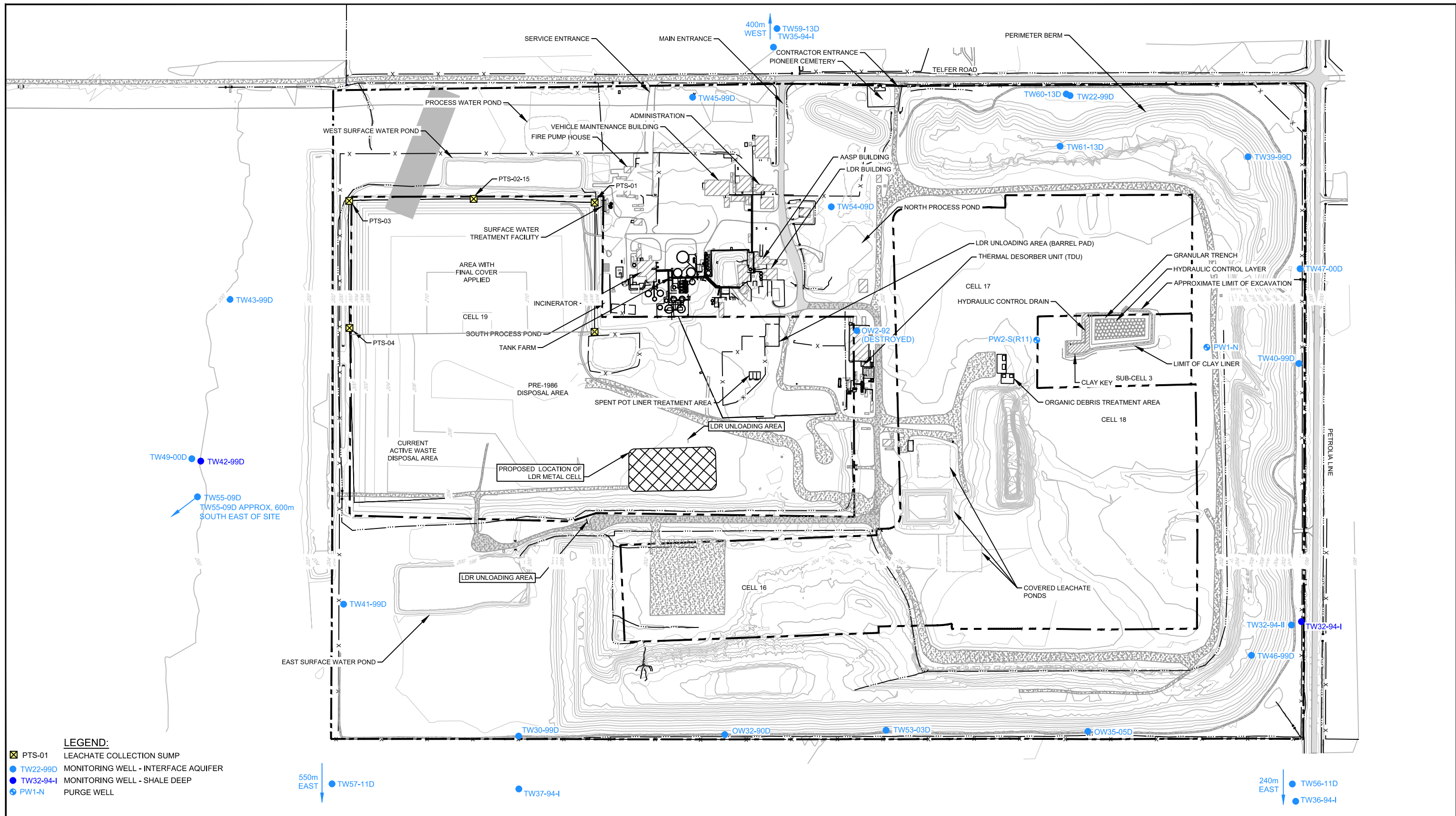


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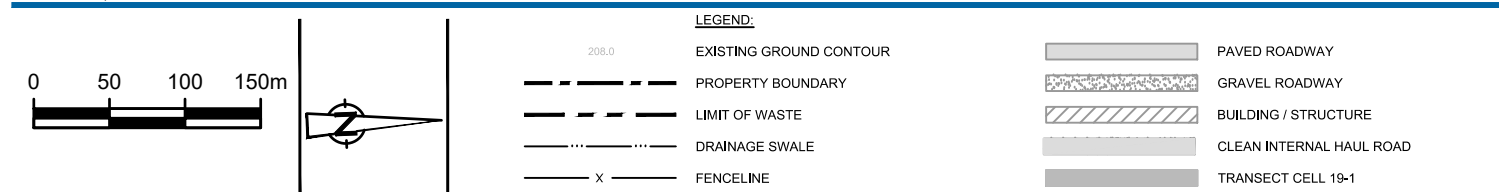
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PERIMETER ACTIVE AQUITARD MONITORING WELL NETWORK FIGURE 4



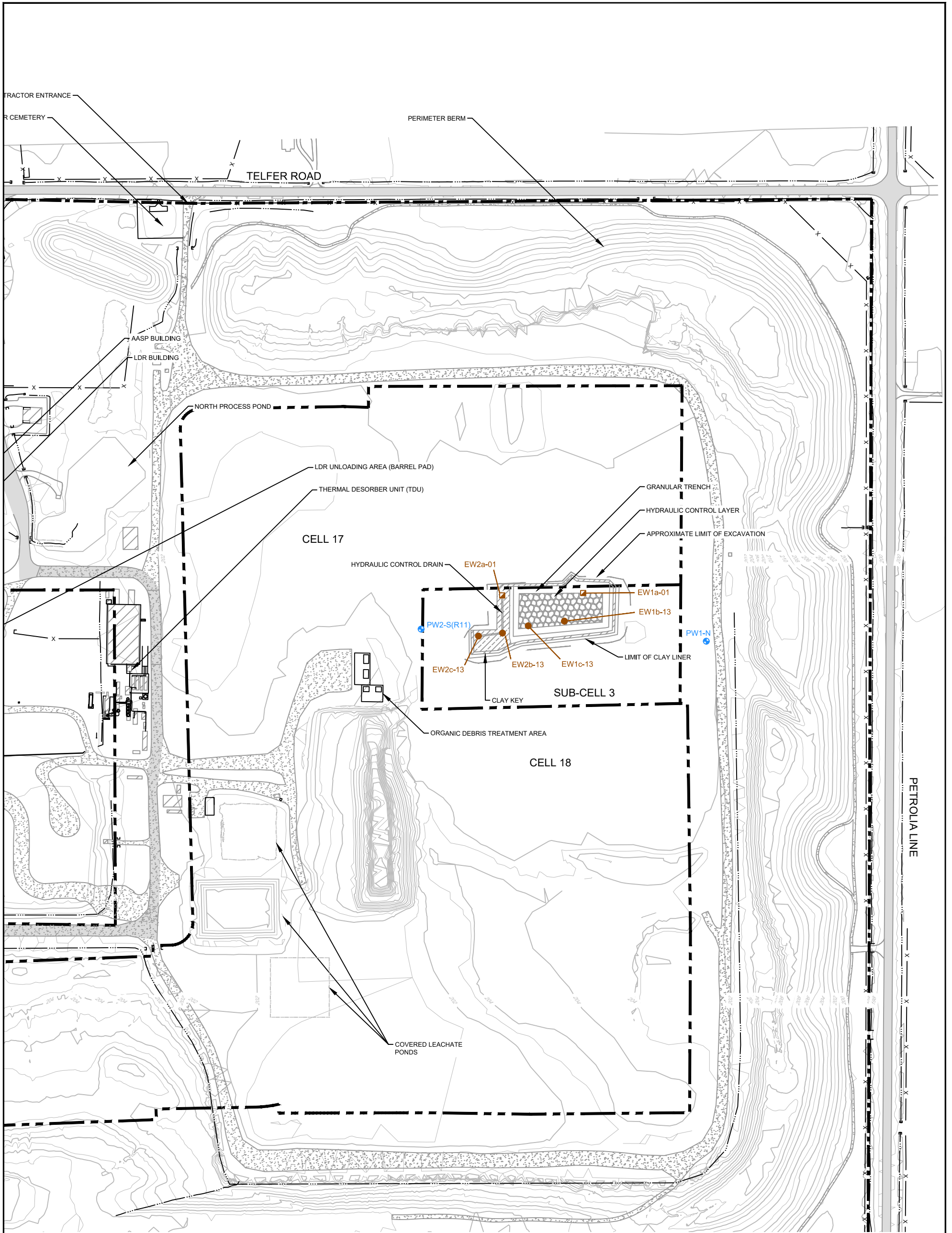
Source: EXISTING TOPOGRAPHIC FEATURES FROM TETRA TECH, DRAWING 5 STORMWATER MANAGEMENT DATED FEBRUARY 23, 2015. EXISTING TOPOGRAPHIC SURVEY COMPLETED IN 2012



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 PERIMETER INTERFACE AQUIFER AND
 KETTLE POINT SHALE MONITORING WELL NETWORK

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FIGURE 5



LEGEND:

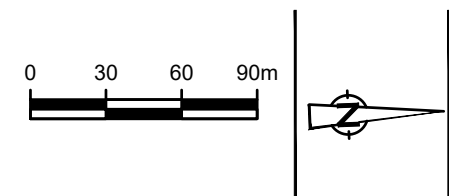
- EW2a-01 EXTRACTION WELL - HYDRAULIC CONTROL LAYER
- EW1b-01 MONITORING WELL - HYDRAULIC CONTROL LAYER
- PW2-S(R11) PURGE WELL - INTERFACE AQUIFER

LEGEND:

- EXISTING GROUND CONTOUR
- PROPERTY BOUNDARY
- LIMIT OF WASTE
- DRAINAGE SWALE
- FENCELINE

- PAVED ROADWAY
- GRAVEL ROADWAY
- BUILDING / STRUCTURE
- CLEAN INTERNAL HAUL ROAD

Source: EXISTING TOPOGRAPHIC FEATURES FROM TETRA TECH, DRAWING 5 STORMWATER MANAGEMENT DATED FEBRUARY 23, 2015. EXISTING TOPOGRAPHIC SURVEY COMPLETED IN 2012

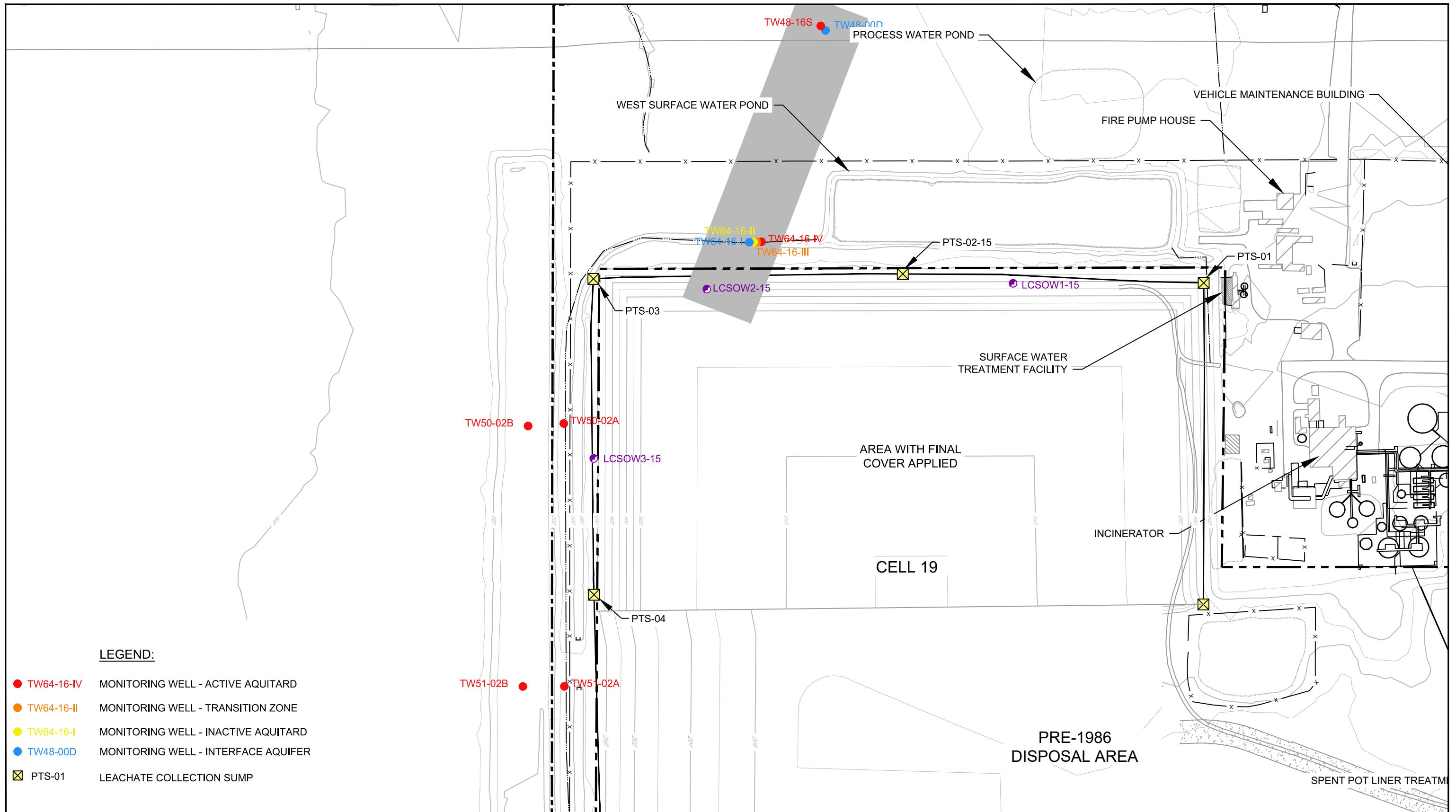


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SUB-CELL 3 MONITORING WELL NETWORK

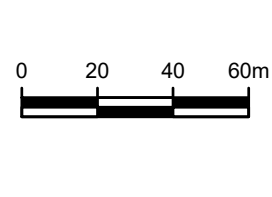
FIGURE 6



LEGEND:

- TW64-16-IV MONITORING WELL - ACTIVE AQUITARD
- TW64-16-II MONITORING WELL - TRANSITION ZONE
- TW64-16-I MONITORING WELL - INACTIVE AQUITARD
- TW48-00D MONITORING WELL - INTERFACE AQUIFER
- ⊠ PTS-01 LEACHATE COLLECTION SUMP

Source: EXISTING TOPOGRAPHIC FEATURES FROM TETRA TECH, DRAWING 5 STORMWATER MANAGEMENT DATED FEBRUARY 23, 2015. EXISTING TOPOGRAPHIC SURVEY COMPLETED IN 2012



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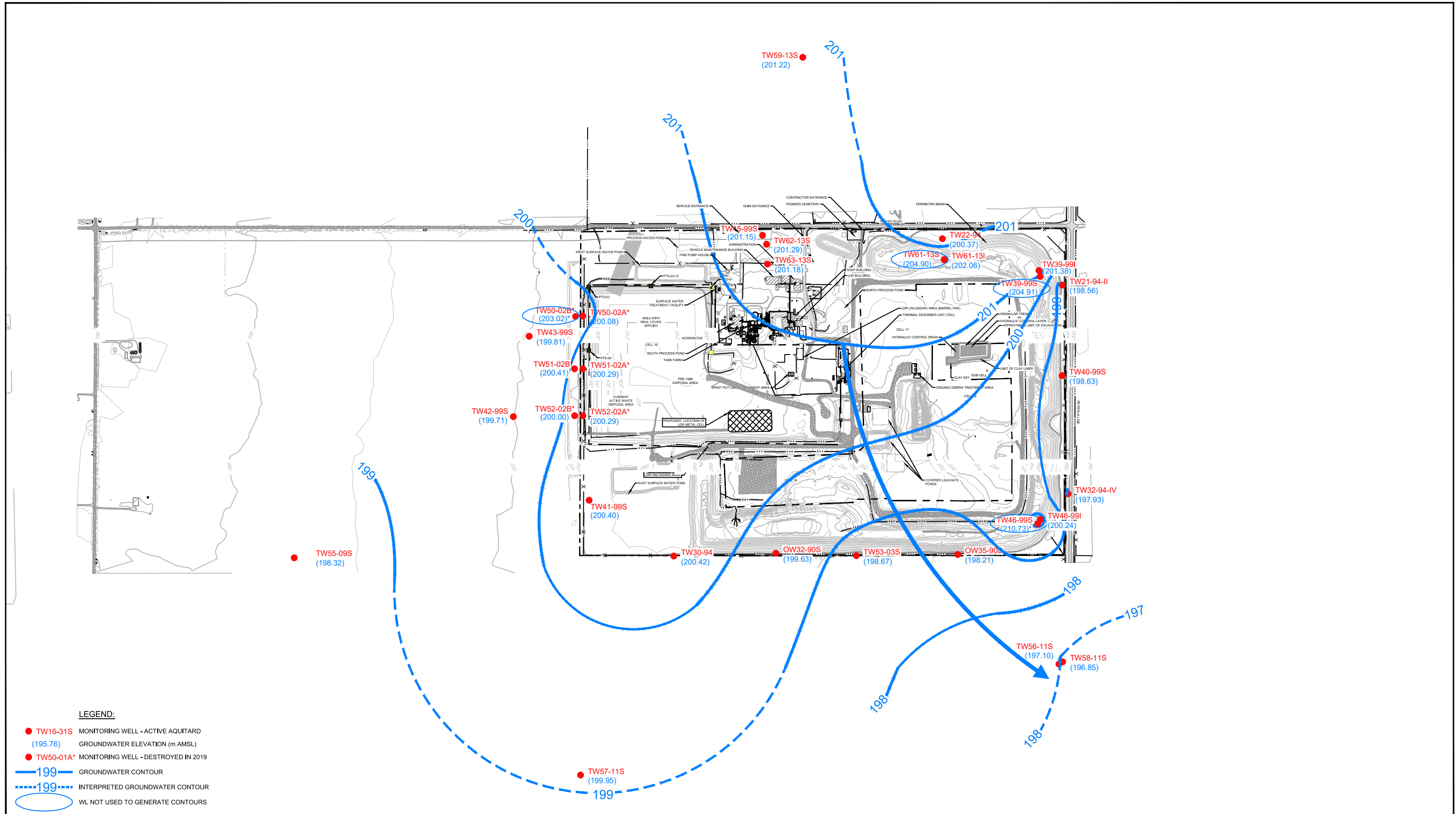
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|---|--|
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|---|--|



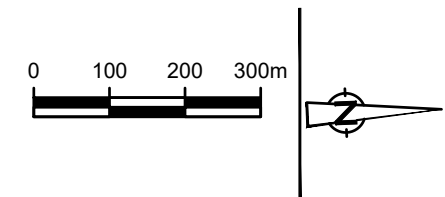
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 PERFORMANCE MONITORING OF ENGINEERED
 LANDFILL SYSTEMS MONITORING WELL NETWORK

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FIGURE 7



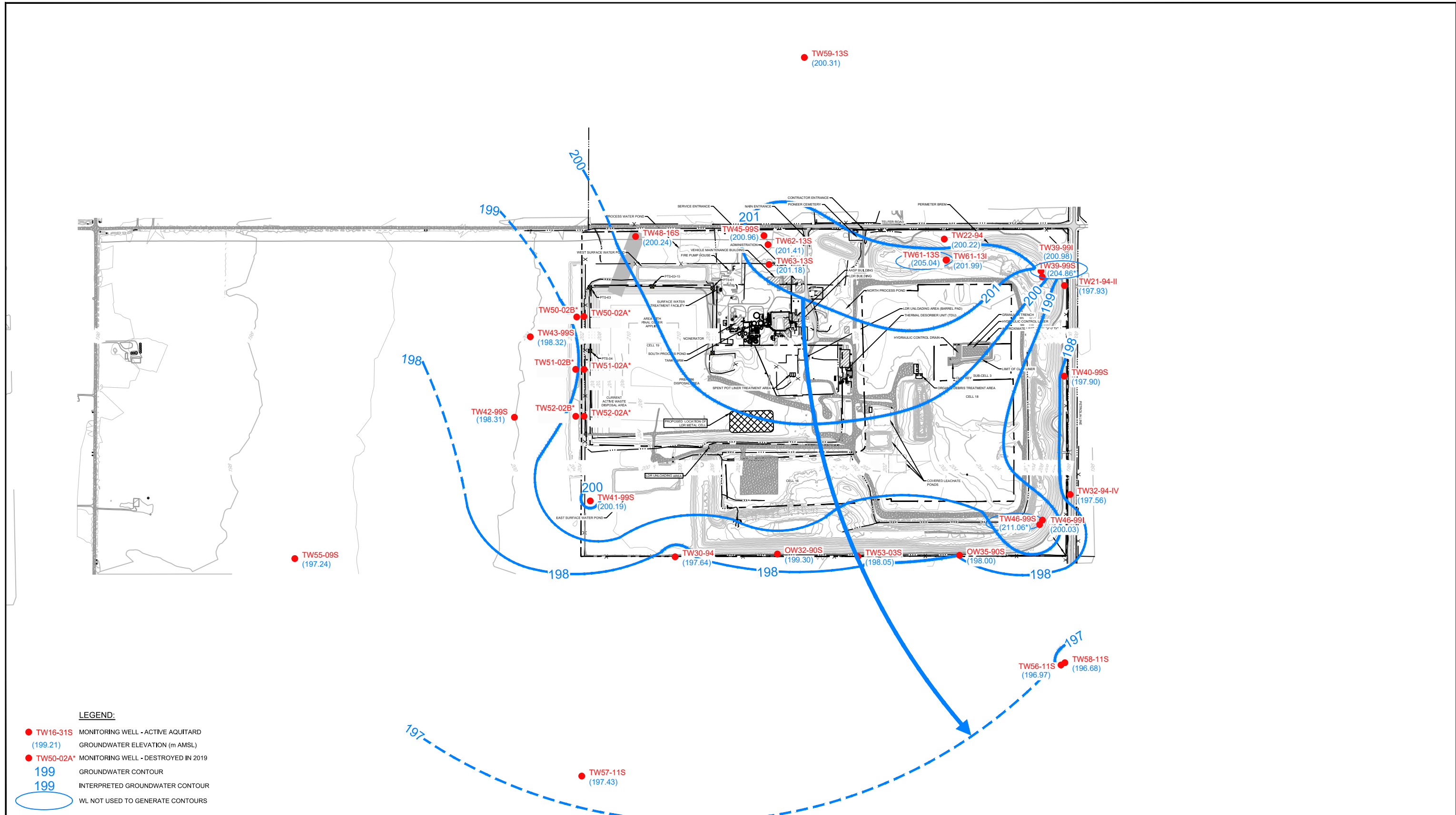
Source: EXISTING TOPOGRAPHIC FEATURES FROM TETRA TECH, DRAWING 5 STORMWATER MANAGEMENT DATED FEBRUARY 23, 2015. EXISTING TOPOGRAPHIC SURVEY COMPLETED IN 2012



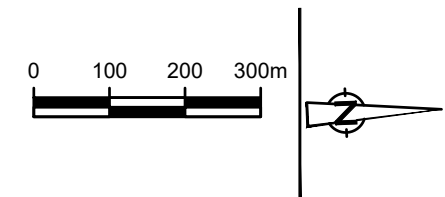
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 GROUNDWATER ELEVATIONS ACTIVE AQUITARD
 APRIL 2019

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FIGURE 8



Source: EXISTING TOPOGRAPHIC FEATURES FROM TETRA TECH, DRAWING 5 STORMWATER MANAGEMENT DATED FEBRUARY 23, 2015. EXISTING TOPOGRAPHIC SURVEY COMPLETED IN 2012



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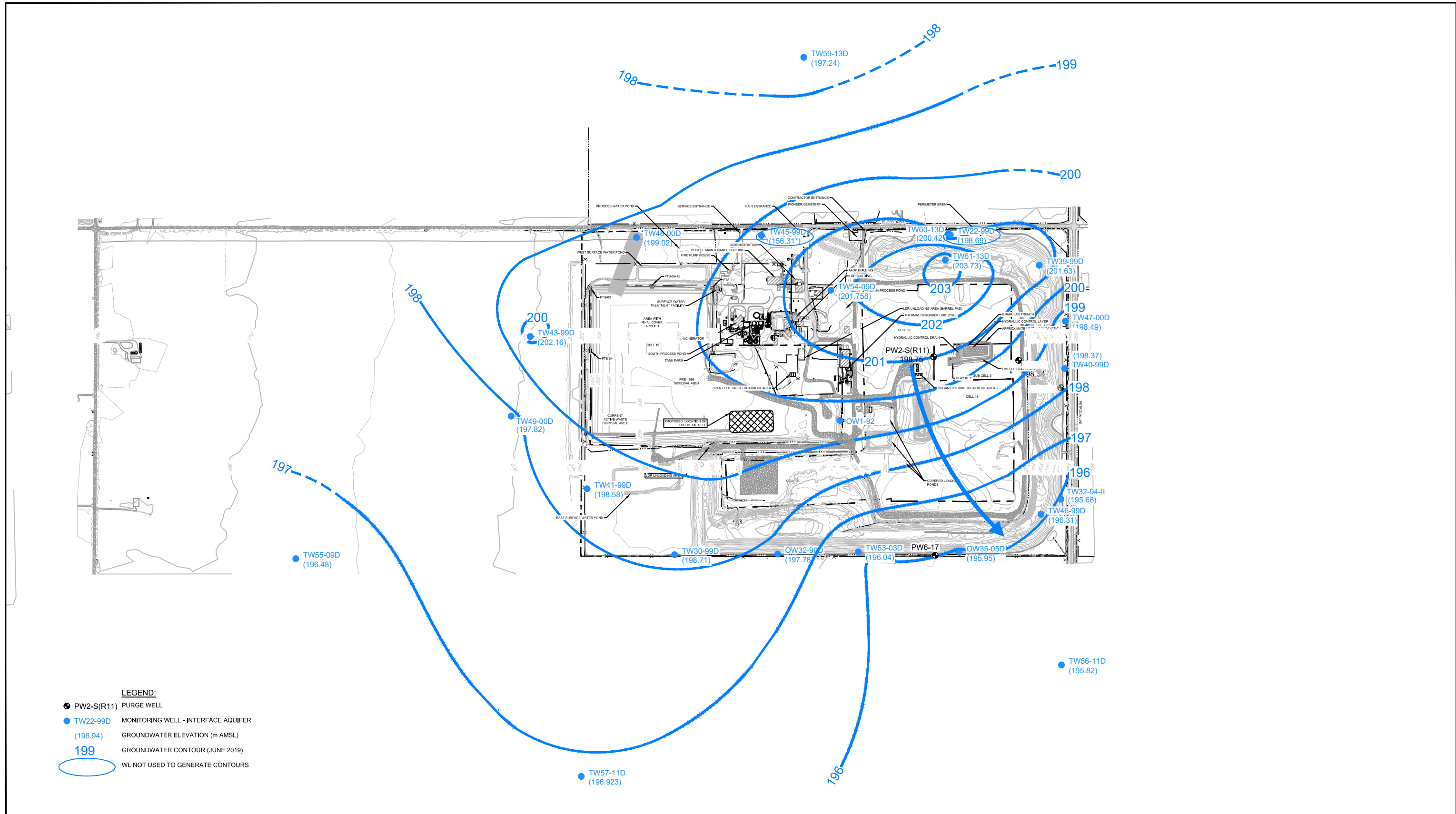
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---	PROPERTY BOUNDARY	▬	GRAVEL ROADWAY
---	LIMIT OF WASTE	▬	BUILDING / STRUCTURE
---	DRAINAGE SWALE	▬	CLEAN INTERNAL HAUL ROAD
---	FENCELINE	▬	TRANSECT CELL 19-1



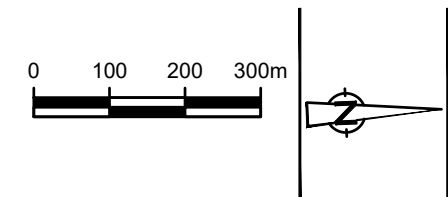
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FIGURE 9



Source: EXISTING TOPOGRAPHIC FEATURES FROM TETRA TECH, DRAWING 5 STORMWATER MANAGEMENT DATED FEBRUARY 23, 2015. EXISTING TOPOGRAPHIC SURVEY COMPLETED IN 2012



LEGEND:

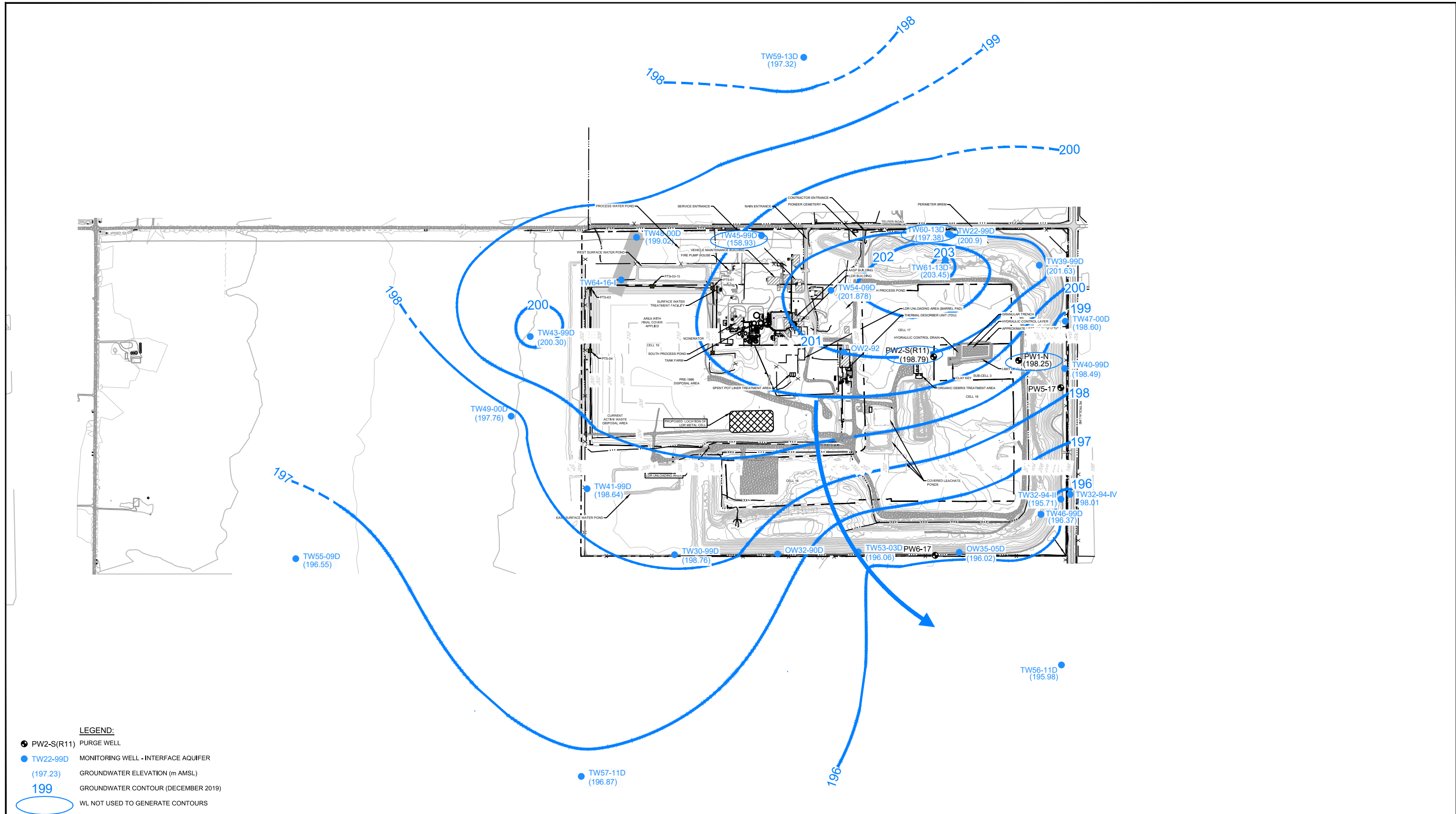
---	EXISTING GROUND CONTOUR	▬	PAVED ROADWAY
---	PROPERTY BOUNDARY	▬	GRAVEL ROADWAY
---	LIMIT OF WASTE	▬	BUILDING / STRUCTURE
---	DRAINAGE SWALE	▬	CLEAN INTERNAL HAUL ROAD
---	FENCELINE	▬	TRANSECT CELL 19-1



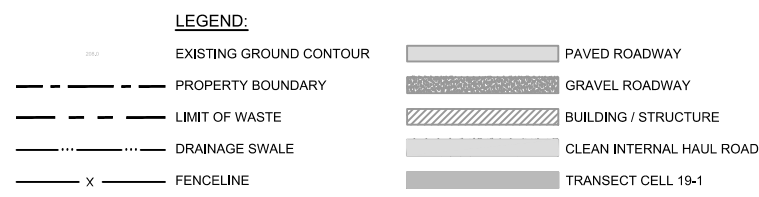
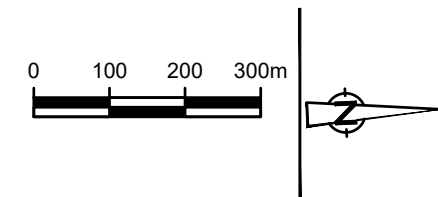
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FIGURE 10



Source: EXISTING TOPOGRAPHIC FEATURES FROM TETRA TECH, DRAWING 5 STORMWATER MANAGEMENT DATED FEBRUARY 23, 2015. EXISTING TOPOGRAPHIC SURVEY COMPLETED IN 2012

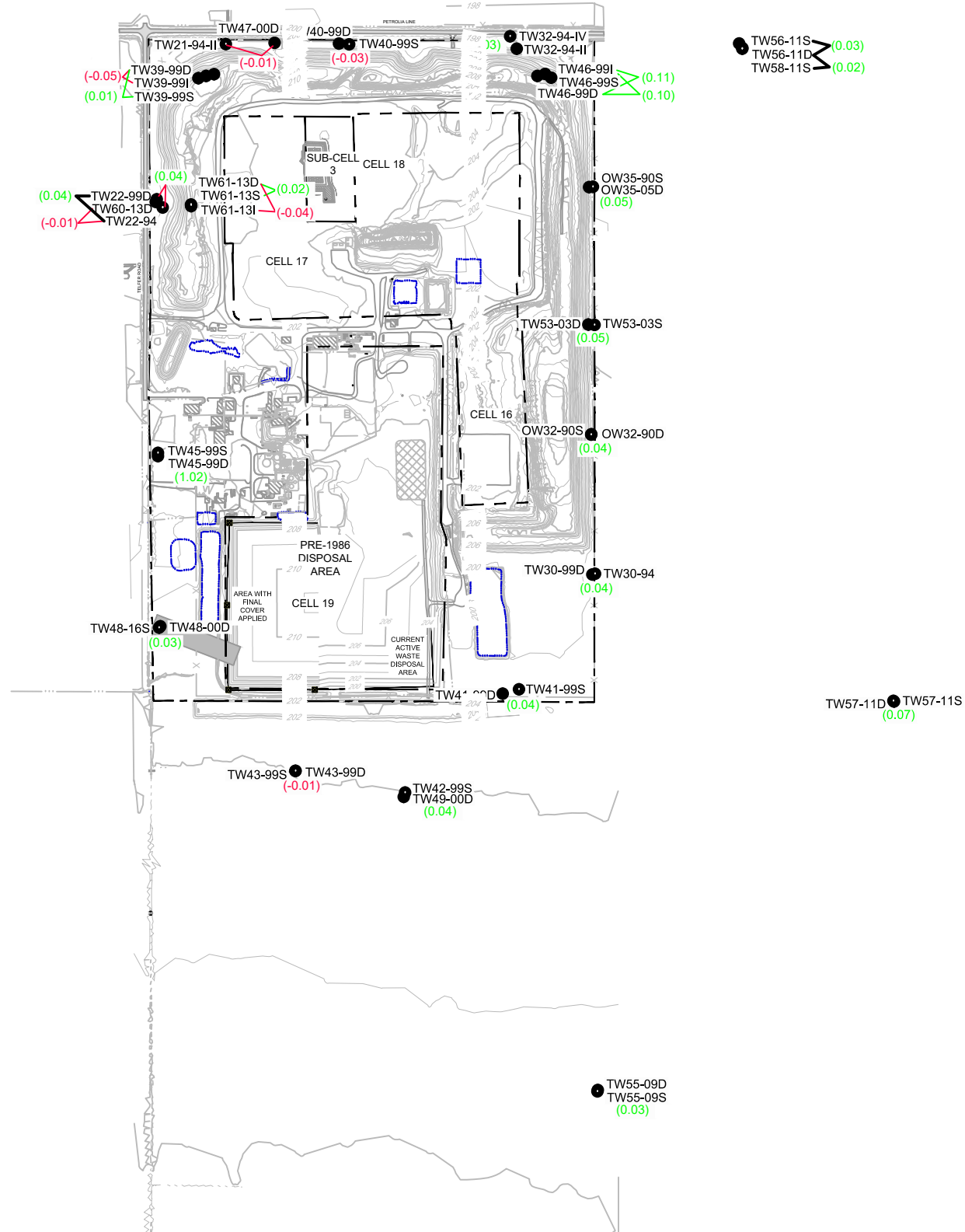


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 GROUNDWATER ELEVATION INTERFACE AQUIFER
 DECEMBER 2019

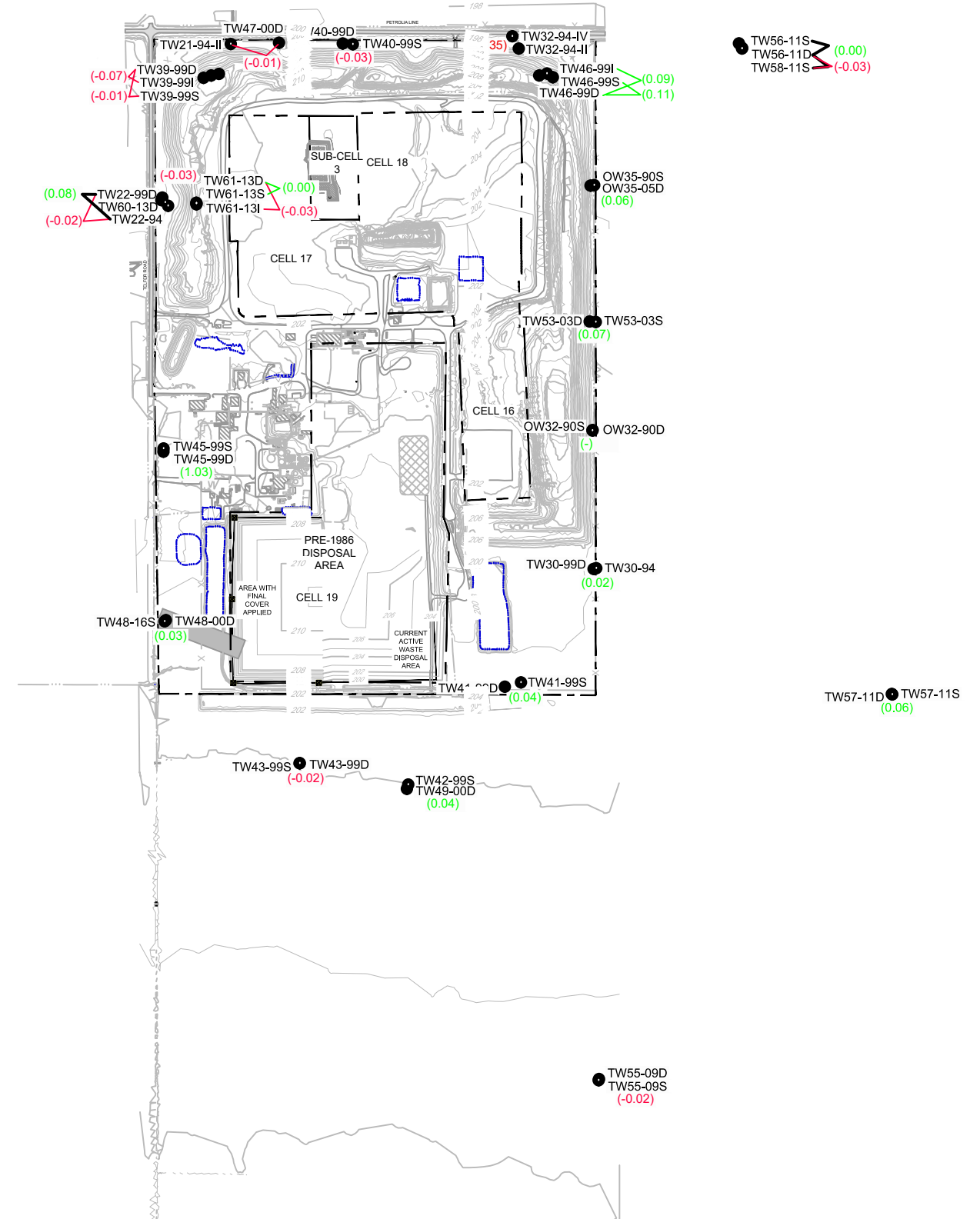
44985-43
 Mar 20, 2020

FIGURE 11

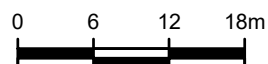
SPRING 2019



FALL 2019



Source: EXISTING TOPOGRAPHIC FEATURES FROM TETRA TECH, DRAWING 5 STORMWATER MANAGEMENT DATED FEBRUARY 23, 2015. EXISTING TOPOGRAPHIC SURVEY COMPLETED IN 2012



LEGEND

- TW45-99S MONITORING WELL LOCATION
- (0.03) DOWNWARD HYDRAULIC GRADIENT
- (0.00) NO VERTICAL GRADIENT
- (-0.08) UPWARD HYDRAULIC GRADIENT

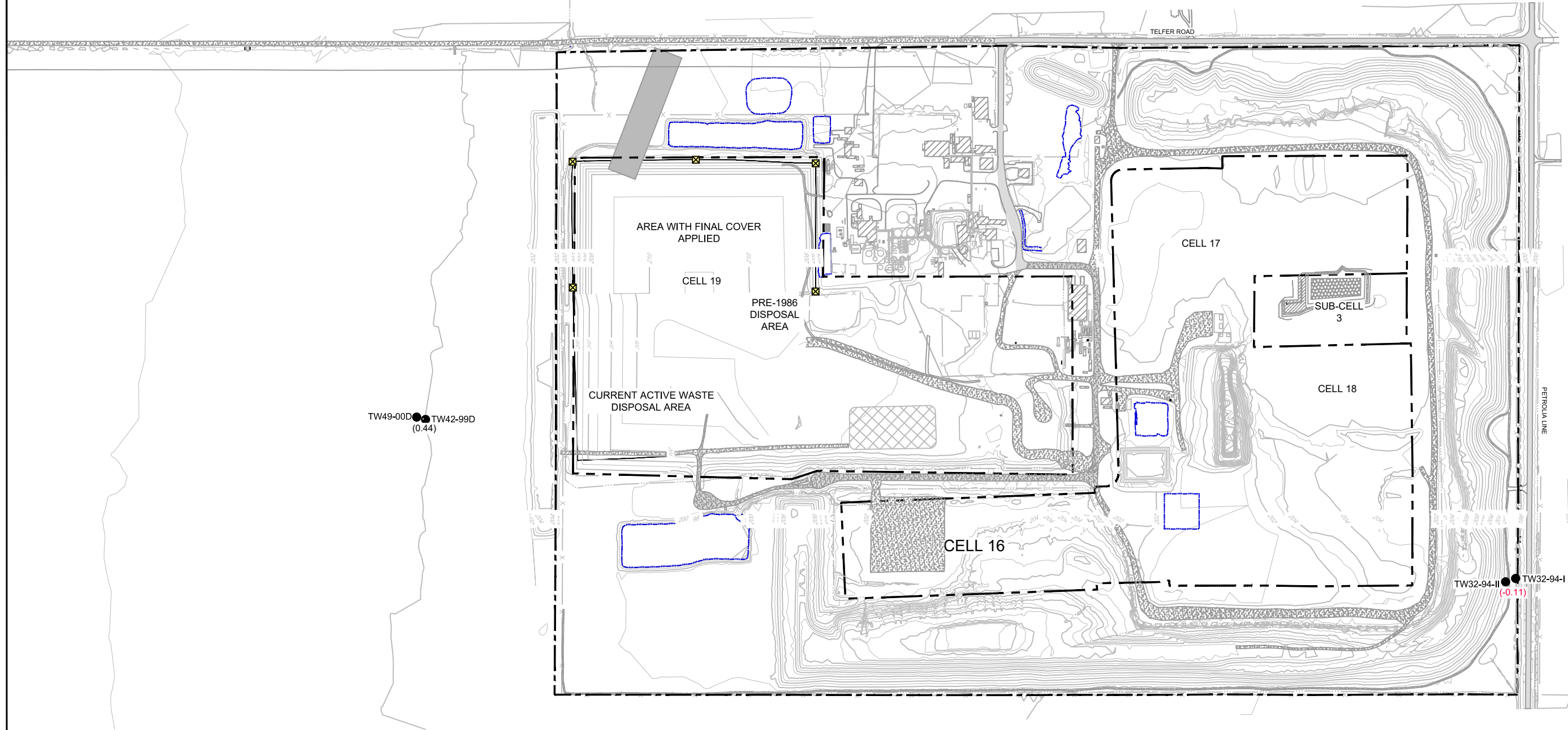


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 DISTRIBUTION OF VERTICAL GRADIENTS BETWEEN
 ACTIVE AQUITARD AND INTERFACE AQUIFER

44985-43
 Feb 6, 2020

FIGURE 12

SPRING 2019



Source: EXISTING TOPOGRAPHIC FEATURES FROM TETRA TECH, DRAWING 5 STORMWATER MANAGEMENT DATED FEBRUARY 23, 2015. EXISTING TOPOGRAPHIC SURVEY COMPLETED IN 2012

0 60 120 180m



LEGEND

- TW42-99D MONITORING WELL LOCATION
- (0.44) DOWNWARD HYDRAULIC GRADIENT
- (-0.11) UPWARD HYDRAULIC GRADIENT



LAMBTON FACILITY
 CLEAN HARBORS CANADA INC.
 2019 ANNUAL GROUNDWATER MONITORING REPORT
 DISTRIBUTION OF VERTICAL GRADIENTS BETWEEN
 INTERFACE AQUIFER AND KETTLE POINT FORMATION

44985-43
 Feb 6, 2020

FIGURE 13

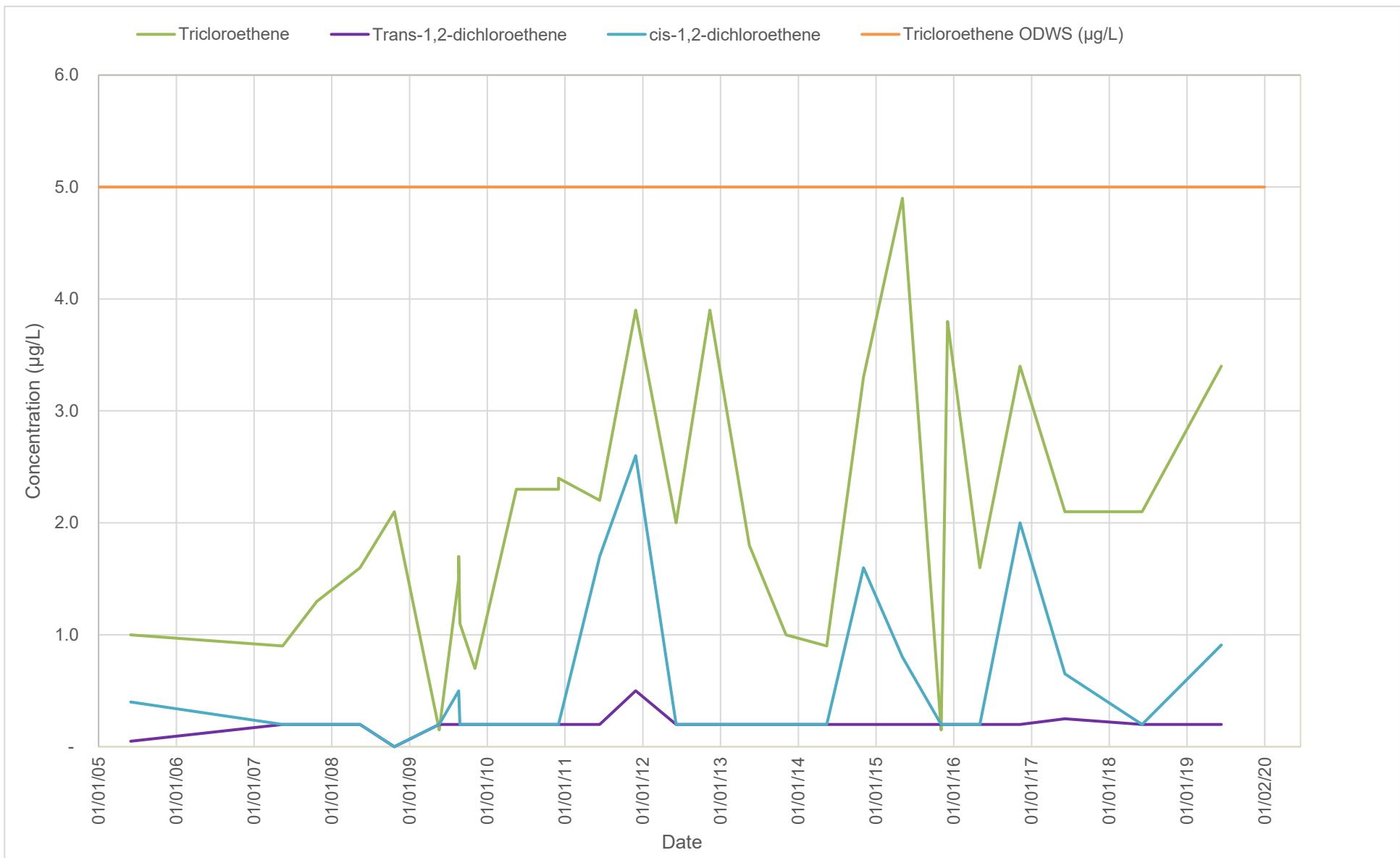


Figure 14

**TRICHLOROETHENE AND DEGRADATION PRODUCTS CONCENTRATION VERSES TIME AT TW22-99D
2019 ANNUAL GROUNDWATER MONITORING REPORT**

CLEAN HARBORS CANADA INC.

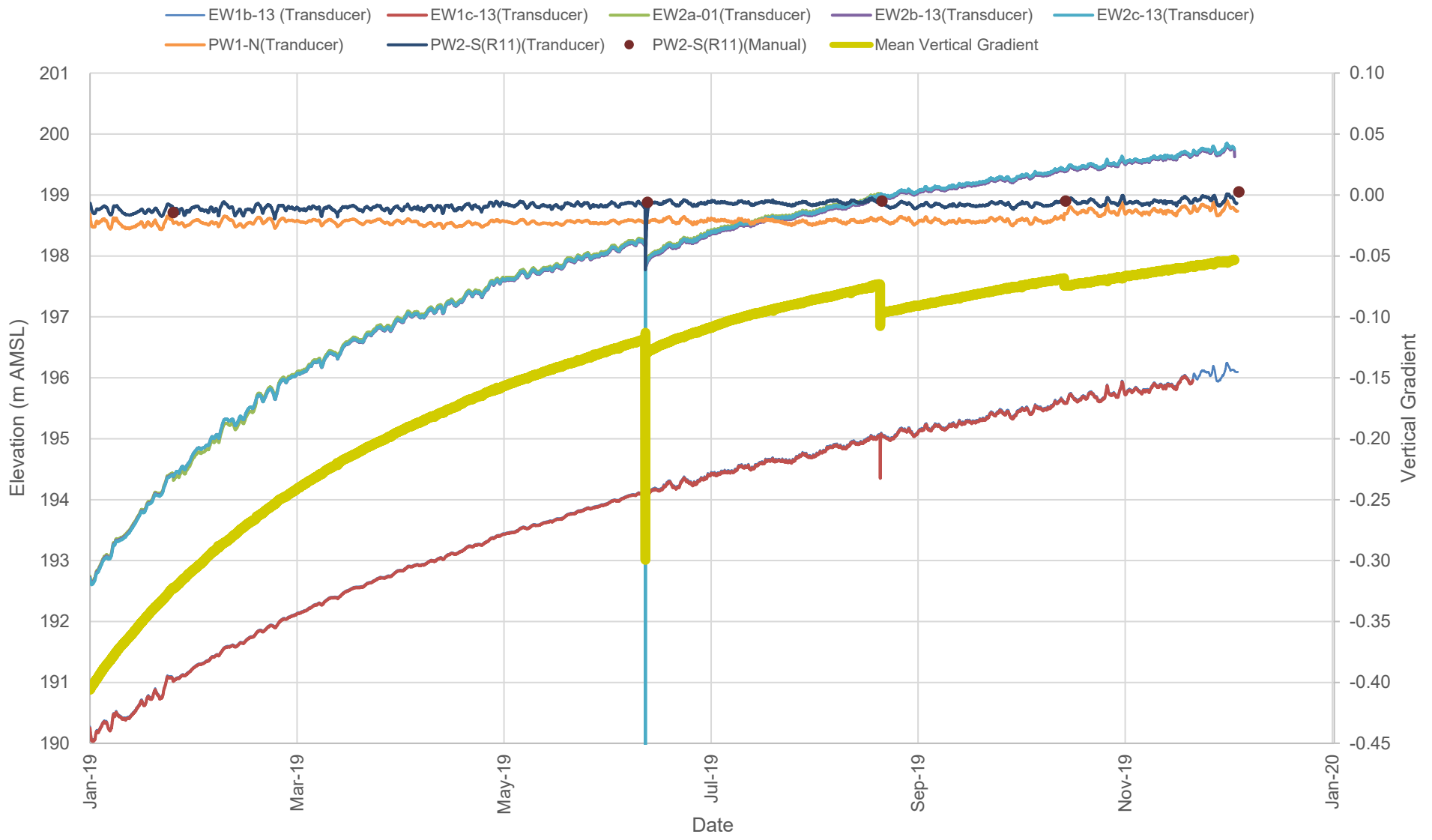
Lambton Facility



Notes: 0.3 µg/L Trichloroethene Laboratory Detection

Concentration of half the detection limit used for non-detect laboratory analytical results

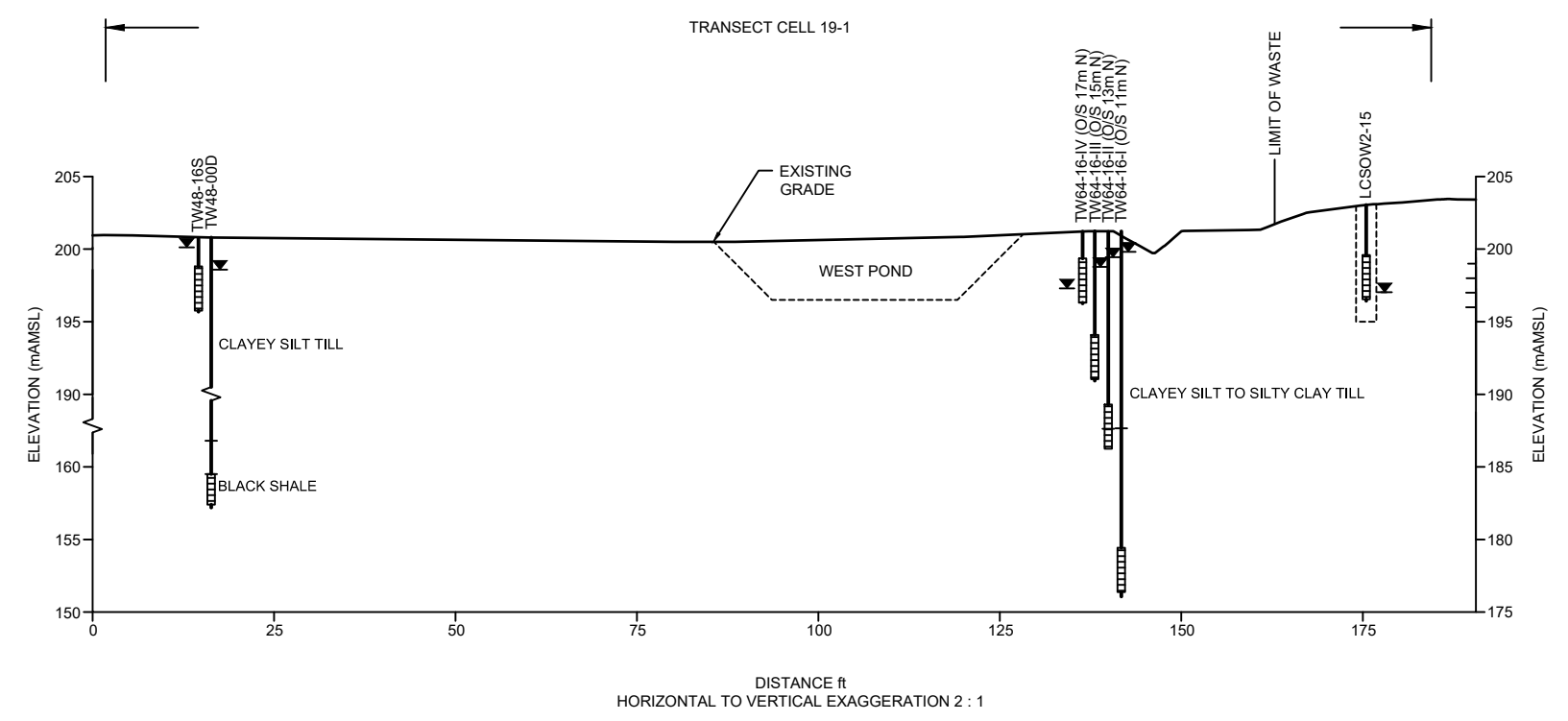
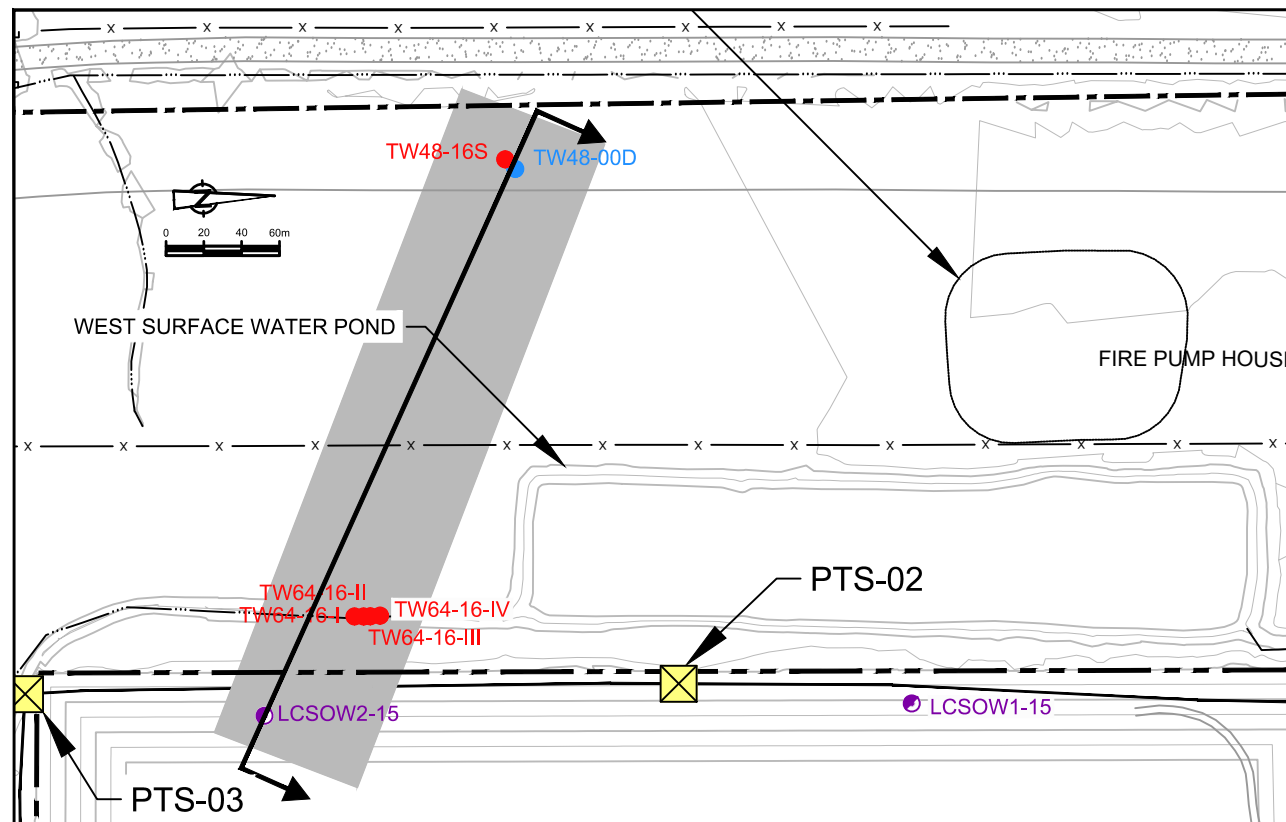
Trans,1,2 Dichloroethene and Cis 1,2 Dichloroethene Laboratory Detection Limits have ranged from 0.2 to 0.4 µg/L



Notes: Mean vertical gradient calculated from hydraulic control layer wells EW1b-13, EW1c-13, EW2a-13, EW2b-13, EW2c-13 and Interface Aquifer Well PW1-N

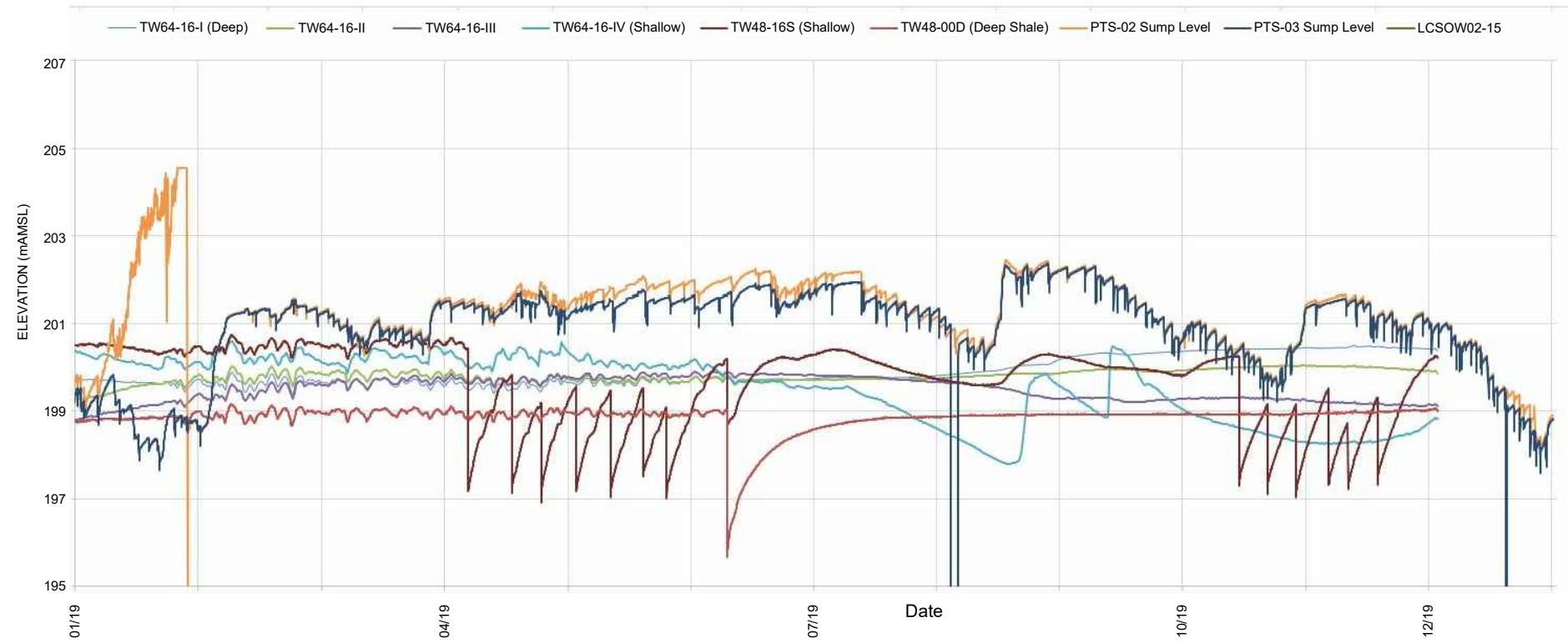
Figure 15
SUB-CELL 3 GROUP HYDROGRAPH
GROUNDWATER MONITORING PROGRAM
2019 ANNUAL GROUNDWATER MONITORING REPORT
Lambton Facility, Clean Harbors





PLAN VIEW

CROSS SECTION



TRANSECT GROUP HYDROGRAPH AND LEACHATE PUMPING RATES

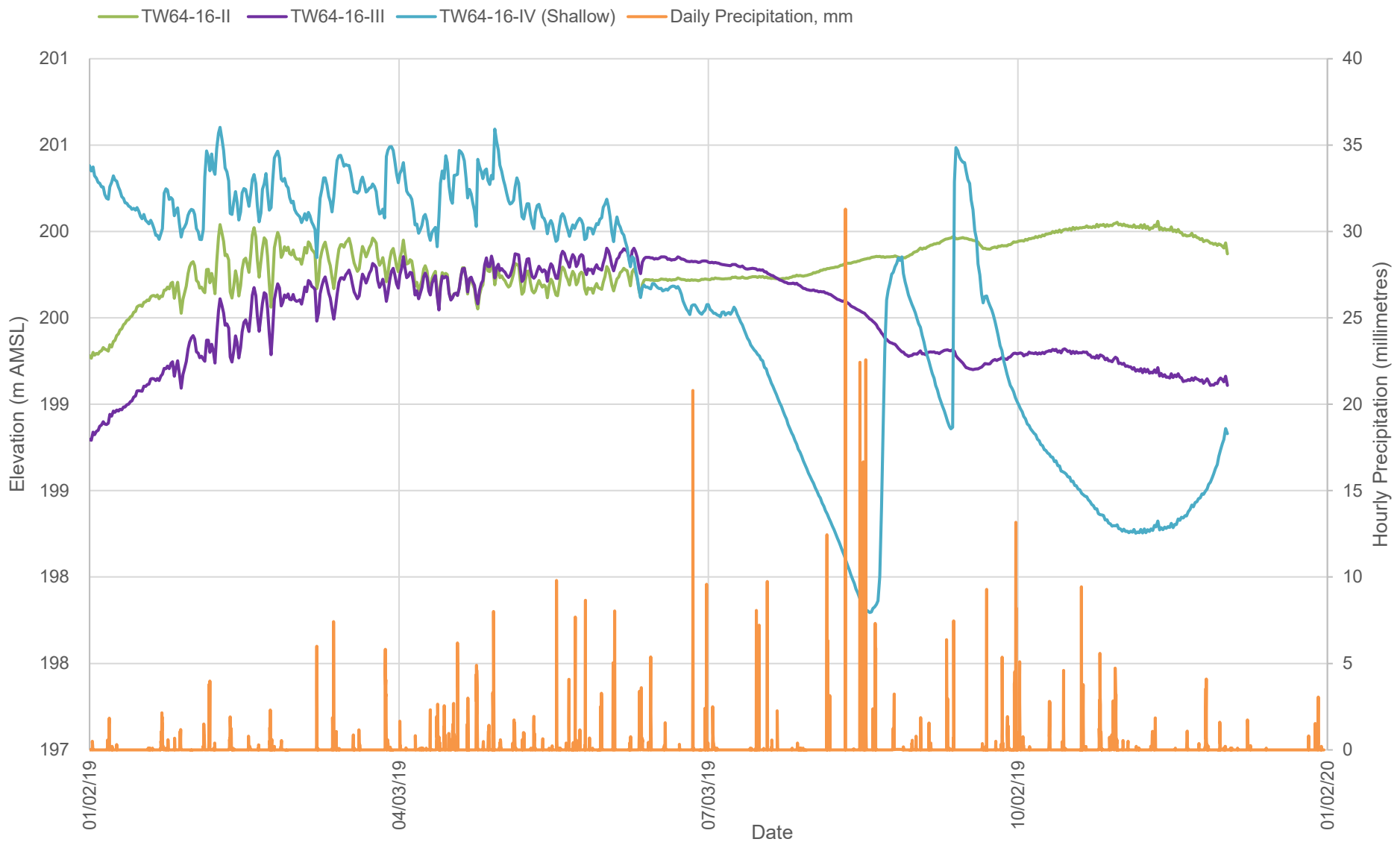
LEGEND:

- ☒ PTS-01 LEACHATE COLLECTION SUMP
- TW22-99D MONITORING WELL - INTERFACE AQUIFER
- TW16-31S MONITORING WELL - ACTIVE AQUITARD
- LCSOW3-15 LEACHATE COLLECTION TRENCH

NOTE: GROUNDWATER/LEACHATE ELEVATION FROM AUGUST 22, 2018

Source: EXISTING TOPOGRAPHIC FEATURES FROM TETRA TECH, DRAWING 5 STORMWATER MANAGEMENT DATED FEBRUARY 23, 2015. EXISTING TOPOGRAPHIC SURVEY COMPLETED IN 2012

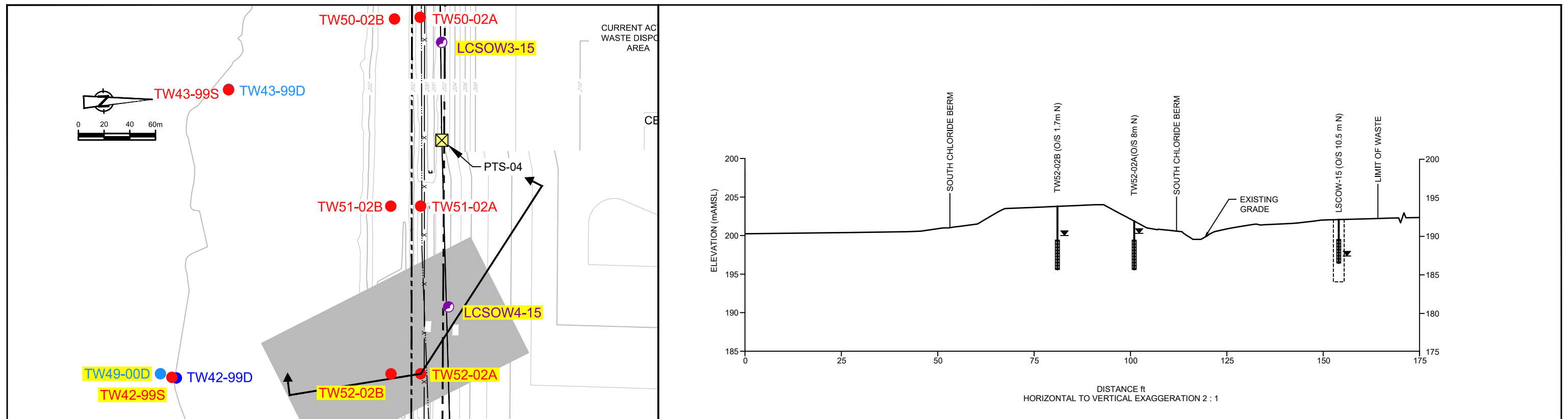




Notes: Precipitation data collected from an on-Site weather station

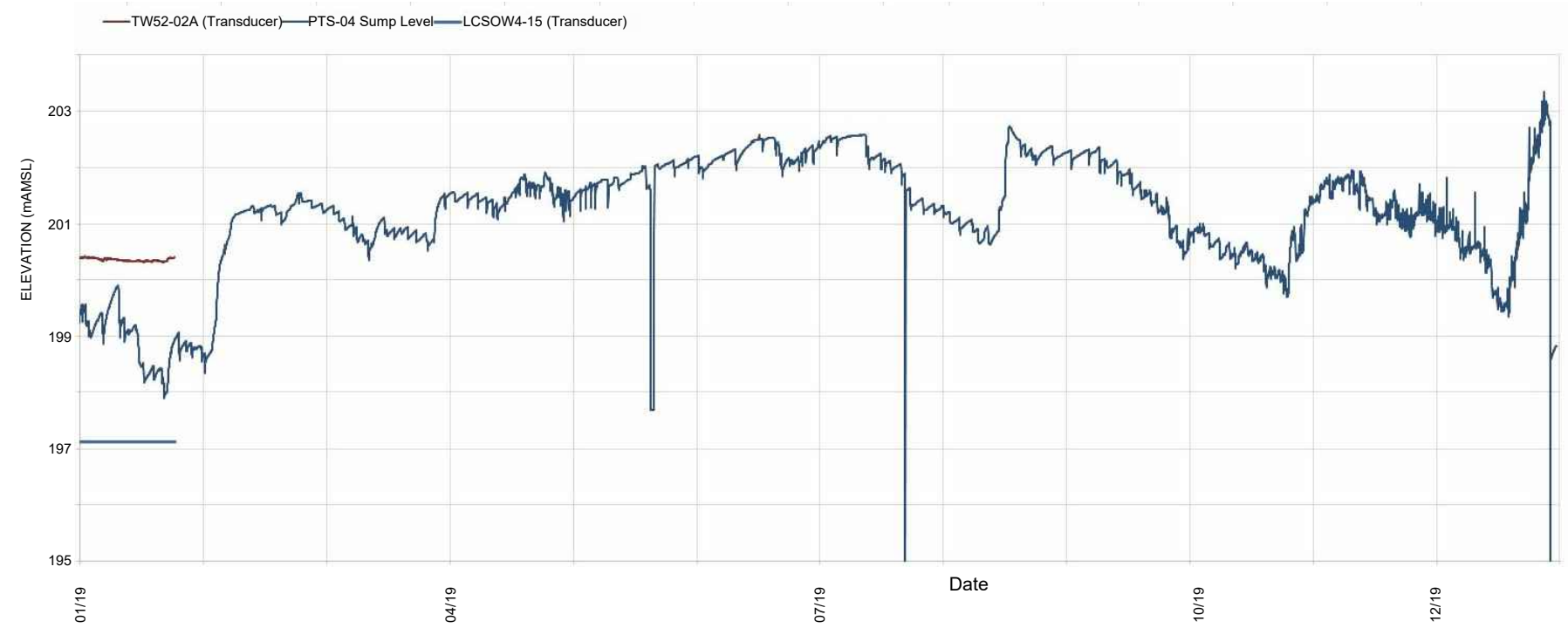
Figure 17
TRANSECT GROUP HYDROGRAPH AND SITE HOURLY PRECIPITATION
2019 ANNUAL GROUNDWATER MONITORING REPORT
CLEAN HARBORS CANADA INC.
Lambton Facility





PLAN VIEW

CROSS SECTION



SOUTHERN BERM HYDROGRAPH AND LEACHATE ELEVATIONS

LEGEND:
 ☒ PTS-01 LEACHATE COLLECTION SUMP
 ● TW16-31S MONITORING WELL - ACTIVE AQUITARD
 ● LCSOW3-15 LEACHATE COLLECTION TRENCH
 Note: GROUNDWATER/LEACHATE ELEVATION FROM AUGUST 22, 2018

Source: EXISTING TOPOGRAPHIC FEATURES FROM TETRA TECH, DRAWING 5 STORMWATER MANAGEMENT DATED FEBRUARY 23, 2015. EXISTING TOPOGRAPHIC SURVEY COMPLETED IN 2012



Table 1
Well Completion Details
2019 Annual Groundwater Monitoring Report
Clean Harbors Canada Inc.
Lambton Facility

Well ID	Easting	Northing	Survey Date	Ground Elevation (m AMSL)	Reference Elevation (m AMSL)	Hydraulic Conductivity (K m/s)	Top of Screen Elevation	Bottom of Screen Elevation
Active Aquitard								
OW32-90S	394484.28	4748064.15	13-Dec-90	200.25	201.28	-	198.72	194.12
OW35-90S	394507.41	4748570.04	13-Dec-90	198.42	199.26	-	196.90	192.30
TW21-94-II	393769.34	4748890.36	05-Apr-94	199.30	200.08	-	197.85	194.88
TW22-94	393627.30	4748561.65	06-Oct-94	200.51	201.31	-	198.73	195.76
TW30-94	394481.04	4747779.85	29-Jun-94	200.51	201.35	6.80E-05	158.18	157.26
TW32-94-IV	394350.52	4748883.71	26-Jul-94	198.04	198.80	-	195.61	192.64
TW39-99I	393726.35	4748826.82	24-Feb-99	211.89	212.65	1.00E-10	199.52	196.78
TW39-99S	393742.71	4748829.70	25-Feb-99	211.84	212.58	3.20E-10	203.10	200.36
TW40-99S	394021.18	4748880.00	03-Feb-99	198.77	199.49	1.20E-09	196.97	194.22
TW41-99S	394316.59	4747550.26	03-Oct-99	200.34	201.01	4.10E-10	198.46	195.72
TW42-99S	394075.87	4747348.61	10-Nov-14	199.76	200.64	1.00E-10	198.08	195.33
TW43-99S	393853.94	4747401.36	16-Mar-99	200.03	200.73	2.20E-10	198.07	195.33
TW45-99S	393598.22	4748061.38	03-Dec-99	201.38	202.25	7.10E-09	199.09	196.36
TW46-99I	394418.85	4748804.01	08-Sep-99	211.95	212.84	8.40E-07	196.76	194.02
TW46-99S	394430.91	4748795.86	08-Sep-99	212.04	212.85	7.70E-10	201.45	198.71
TW48-16S	393586.74	4747704.73	12-Jan-16	200.71	201.56	-	198.81	195.76
TW50-02A	393803.30	4747552.56	20-Mar-13	200.47	201.15	1.40E-09	199.40	195.60
TW50-02B	393803.89	4747532.57	20-Mar-13	203.17	203.92	3.44E-09	199.40	195.60
TW51-02A	393950.17	4747547.19	20-Mar-13	200.53	201.26	6.35E-10	199.40	195.60
TW51-02B	393949.32	4747523.98	20-Mar-13	203.17	203.81	2.00E-09	199.40	195.60
TW52-02A	394080.64	4747542.20	20-Mar-13	200.43	201.16	1.43E-09	199.40	195.60
TW52-02B	394079.82	4747519.09	20-Mar-13	203.30	204.25	1.89E-09	199.40	195.60
TW53-03S	394499.68	4748287.76	19-Aug-03	198.94	199.74	1.20E-09	198.24	195.15
TW55-09S	394444.74	4746723.41	01-Dec-09	198.57	199.36	1.42E-08	195.83	192.79
TW56-11S	394823.27	4748839.80	11-Dec-11	197.53	198.54	2.60E-10	195.27	191.31
TW57-11S	395080.12	4747496.72	11-Dec-11	200.29	201.20	2.60E-08	198.21	195.16
TW58-11S	394817.26	4748850.82	11-Dec-11	197.83	198.81	4.80E-10	195.57	192.52
TW59-13S	393107.46	4748192.76	20-Mar-13	201.36	202.04	5.90E-08	198.61	195.56
TW61-13I	393685.64	4748564.37	10-Jul-13	209.69	210.67	1.50E-08	199.94	196.89
TW61-13S	393685.57	4748565.70	10-Jul-13	209.72	210.63	5.70E-10	203.93	200.88
TW62-13S	393623.54	4748071.66	13-Dec-13	201.47	202.39	-	199.03	195.99
TW63-13S	393678.97	4748072.29	13-Dec-13	201.54	202.36	-	199.03	195.98
TW64-16-IV	393706.07	4747666.93	11-Jan-16	201.21	202.12	-	199.31	196.26
Transition Zone								
TW64-16-III	393706.15	4747664.34	11-Jan-16	201.23	202.24	-	193.99	190.94
Inactive Aquitard								
TW64-16-I	393706.00	4747660.15	07-Jan-16	201.22	202.21	-	179.43	176.38
TW64-16-II	393706.11	4747662.56	08-Jan-16	201.19	202.08	-	189.3	186.25

Note:

- No calculated hydraulic conductivity

Table 1
Well Completion Details
2019 Annual Groundwater Monitoring Report
Clean Harbors Canada Inc.
Lambton Facility

Well ID	Easting	Northing	Survey Date	Ground Elevation (m AMSL)	Reference Elevation (m AMSL)	Hydraulic Conductivity (K m/s)	Top of Screen Elevation	Bottom of Screen Elevation
Interface Aquifer								
OW32-90D	394484.50	4748065.00	13-Dec-90	200.25	201.46	8.00E-10	158.42	156.92
OW35-05D	394499.70	4748569.40	01-Mar-05	198.58	199.63	1.40E-06	158.08	155.08
PW1-N	393972.85	4748755.29	Mar-00 ^(a) /21-Jul-14	201.00 ^(a)	202.82 ^(b)	-	162.00	158.89
PW2-S(R11)	393953.61	4748519.39	Dec-11 ^(a) /21-Jul-14	202.53 ^(a)	203.52 ^(b)	5.00E-06	--	--
TW22-99D	393616.00	4748579.00	18-Feb-99	200.65	201.38	3.20E-07	160.24	158.89
TW30-99D	394475.41	4747778.55	03-Apr-99	200.62	201.35	6.80E-05	158.18	157.26
TW32-94-II	394362.90	4748857.70	07-Dec-94	198.09	198.65	2.00E-08	157.00	155.48
TW39-99D	393710.60	4748822.80	23-Feb-99	211.92	212.63	4.70E-08	161.75	160.42
TW40-99D	394000.30	4748882.30	03-Feb-99	198.78	199.51	7.80E-07	158.70	157.40
TW41-99D	394282.82	4747542.67	03-Sep-99	200.42	201.18	7.20E-05	157.43	156.07
TW43-99D	393853.56	4747401.44	16-Mar-99	200.21	200.99	3.20E-06	160.43	157.69
TW45-99D	393597.90	4748054.80	03-Dec-99	201.45	202.39	3.70E-09	159.35	153.73
TW46-99D	394402.90	4748800.60	08-Sep-99	212.02	212.80	7.10E-09	155.94	154.64
TW47-00D	393868.90	4748889.00	22-Jun-00	199.59	200.43	3.90E-10	162.41	159.54
TW48-00D	393589.40	4747707.29	18-Jan-16	200.68	201.40	3.20E-07	160.27	157.40
TW49-00D	394072.73	4747339.78	10-Nov-14	199.87	200.77	8.10E-10	159.99	157.12
TW53-03D	394487.10	4748289.20	18-Aug-03	198.96	199.86	7.20E-06	159.25	156.00
TW54-09D	393757.50	4748241.40	01-Dec-09	202.42	203.34	1.01E-08	160.35	158.83
TW55-09D	394445.49	4746726.11	01-Dec-09	198.66	199.47	8.64E-08	153.34	151.82
TW56-11D	394823.57	4748841.11	11-Dec-11	197.51	198.54	1.20E-05	155.62	154.10
TW57-11D	395081.21	4747495.47	11-Dec-11	200.38	201.27	1.30E-06	158.02	156.49
TW59-13D	393107.43	4748191.18	20-Mar-13	201.35	202.10	1.11E-03	155.23	153.71
TW60-13D	393613.59	4748573.73	10-Jul-13	200.55	201.55	8.30E-06	160.01	158.49
TW61-13D	393685.69	4748562.38	10-Jul-13	209.68	210.56	2.80E-10	160.17	158.66
PW5-17	--	--	03-Nov-17	198.72	199.67	-	160.24	157.20
PW6-17	--	--	03-Nov-17	198.83	199.73	-	157.69	154.64
Shale Aquitard								
TW32-94-I	-	-	-	-	-	-	152.93	151.41
TW42-99D	394076.47	4747352.06	10-Nov-14	199.78	200.62	2.20E-09	157.99	155.25
Sub-Cell 3 Wells								
EW1a-01	393928.93	4748654.82	11-Dec-11	201.53	203.45	-	--	--
EW1b-13	393951.62	4748638.32	10-Jul-13	201.57	203.13	-	--	--
EW1c-13	393954.34	4748608.23	10-Jul-13	201.54	203.22	-	--	--
EW2a-01	393928.31	4748587.69	11-Dec-11	201.27	202.77	-	--	--
EW2b-13	393959.52	4748586.67	10-Jul-13	201.57	203.20	-	--	--
EW2c-13	393961.22	4748566.69	10-Jul-13	201.57	203.23	-	--	--
Leachate Collection Trench								
LCSOW1-15	393734.76	4747806.59	18-Dec-15	204.52	205.61	-	199.95	196.9
LCSOW2-15	393731.36	4747635.38	18-Dec-15	204.16	205.37	-	199.59	196.54
LCSOW3-15	393823.46	4747568.54	19-Dec-15	202.99	204.02	-	199.48	196.44
LCSOW4-15	394029.44	4747565.88	19-Dec-15	201.52	202.57	-	199.49	196.44

Note:

- * Decommissioned
- No calculated hydraulic conductivity
- No data available

Table 2

**Monitoring Methodology for Perimeter Monitoring Wells at Lambton Property
2019 Annual Groundwater Monitoring Report
Clean Harbors Canada Inc.
Lambton Facility**

Monitor	Water Level Measurement		Groundwater Sample Collection	
	Semi-Annual Manual Measurement	Quarterly Manual and Continuous (Pressure Transducer)	Continuous Volume	Low Flow
Active Aquitard				
OW32-90S	√		√	
OW35-90S		√	√	
TW21-94-II	√		√	
TW22-94		√	√	
TW30-94		√	√	
TW32-94-IV	√		√	
TW39-99I		√	√	
TW39-99S	√		√	
TW40-99S	√		√	
TW41-99S	√		√	
TW42-99S		√	√	
TW43-99S	√		√	
TW45-99S	√		√	
TW46-99I	√		√	
TW46-99S	√		√	
TW48-16S		√	√	
TW50-02A ⁽¹⁾				
TW50-02B ⁽²⁾	√		√	
TW51-02A ⁽¹⁾				
TW51-02B ⁽²⁾	√		√	
TW52-02A ⁽²⁾		√	√	
TW52-02B ⁽²⁾		√	√	
TW53-03S	√		√	
TW55-09S	√		√	
TW56-11S	√		√	
TW57-11S	√		√	
TW58-11S	√		√	
TW59-13S	√		√	
TW61-13I		√	√	
TW61-13S	√		√	
TW62-13S	√		√	
TW63-13S	√		√	
TW64-16-IV	√	√		
Transition Zone				
TW64-16-III	√	√		
Inactive Aquifer				
TW32-94-III	√			
TW64-16-I	√	√		
TW64-16-II	√	√		
Interface Aquifer				
OW32-90D	√			√
OW35-05D		√		√
PW1-N		√		√
PW2-S(R11)		√		√
TW22-99D	√			√
TW30-99D		√		√
TW32-94-II		√		√
TW39-99D		√		√

Table 2

**Monitoring Methodology for Perimeter Monitoring Wells at Lambton Property
2019 Annual Groundwater Monitoring Report
Clean Harbors Canada Inc.
Lambton Facility**

Monitor	Water Level Measurement		Groundwater Sample Collection	
	Semi-Annual Manual Measurement	Quarterly Manual and Continuous (Pressure Transducer)	Continuous Volume	Low Flow
TW40-99D		√		√
TW41-99D	√			√
Interface Aquifer (Continued)				
TW43-99D	√			√
TW45-99D	√			√
TW46-99D		√		√
TW47-00D		√		√
TW48-00D		√		√
TW49-00D		√		√
TW53-03D		√		√
TW54-09D		√		√
TW55-09D		√		√
TW56-11D	√			√
TW57-11D	√			√
TW59-13D	√			√
TW60-13D	√			√
TW61-13D		√		√
Shale Aquitard				
TW32-94-I				
TW42-99D				
Deep Hydraulic Control Layer Wells (Sub-Cell 3)				
EW1a-01		√		√
EW1b-13		√		√
EW1c-13		√		√
EW2a-01		√		√
EW2b-13		√		√
EW2c-13		√		√
Leachate Collection Trench				
LCSOW1-15		√		
LCSOW2-15		√		
LCSOW3-15 ⁽³⁾		√		
LCSOW4-15 ⁽³⁾		√		

Notes:

Manual water level measurements collected semi-annually with the exception of deep shale monitoring wells monitored bi-annually.

Continuous water level measurements collected hourly. Dataloggers downloaded quarterly.

- (1) No results in 2019 – Location destroyed
- (2) No results in December 2019 – Location destroyed
- (3) Removed due to construction of Surface Water Management Pond

Table 3

Groundwater Elevations
2019 Annual Groundwater Monitoring Report
Clean Harbors Canada Inc.
Lambton Facility

Well ID	Easting	Northing	Survey	Date	Reference	Middle of	Water Level	Water Level	Depth
Shallow Monitoring Wells									
OW32-90S	394484.28	4748064.15	13-Dec-90	9-Apr-19	201.28	196.42	1.65	199.63	m
	394484.28	4748064.15	13-Dec-90	12-Jun-19	201.28	196.42	1.88	199.40	m
	394484.28	4748064.15	13-Dec-90	14-Oct-19	201.28	196.42	1.98	199.30	m
	394484.28	4748064.15	13-Dec-90	2-Dec-19	201.28	196.42	1.54	199.74	m
OW35-90S	394507.41	4748570.04	13-Dec-90	25-Jan-19	199.26	194.60	1.01	198.25	m
	394507.41	4748570.04	13-Dec-90	9-Apr-19	199.26	194.60	1.05	198.21	m
	394507.41	4748570.04	13-Dec-90	12-Jun-19	199.26	194.60	1.36	197.90	m
	394507.41	4748570.04	13-Dec-90	21-Aug-19	199.26	194.60	1.09	198.17	m
	394507.41	4748570.04	13-Dec-90	14-Oct-19	199.26	194.60	1.26	198.00	m
	394507.41	4748570.04	13-Dec-90	2-Dec-19	199.26	194.60	1.05	198.21	m
TW21-94-II	393769.34	4748890.36	5-Apr-94	9-Apr-19	200.08	196.37	1.52	198.56	m
	393769.34	4748890.36	5-Apr-94	12-Jun-19	200.08	196.37	1.90	198.18	m
	393769.34	4748890.36	5-Apr-94	14-Oct-19	200.08	196.37	2.15	197.93	m
	393769.34	4748890.36	5-Apr-94	3-Dec-19	200.08	196.37	1.16	198.92	m
TW22-94	393627.30	4748561.65	6-Oct-94	25-Jan-19	201.31	197.25	0.92	200.39	m
	393627.30	4748561.65	6-Oct-94	9-Apr-19	201.31	197.25	0.94	200.37	m
	393627.30	4748561.65	6-Oct-94	11-Jun-19	201.31	197.25	1.17	200.14	m
	393627.30	4748561.65	6-Oct-94	21-Aug-19	201.31	197.25	1.32	199.99	m
	393627.30	4748561.65	6-Oct-94	14-Oct-19	201.31	197.25	1.09	200.22	m
	393627.30	4748561.65	6-Oct-94	2-Dec-19	201.31	197.25	1.01	200.30	m
TW30-94	394481.04	4747779.85	29-Jun-94	25-Jan-19	201.35	197.25	1.04	200.31	m
	394481.04	4747779.85	29-Jun-94	9-Apr-19	201.35	197.25	0.93	200.42	m
	394481.04	4747779.85	29-Jun-94	12-Jun-19	201.35	197.25	1.14	200.21	m
	394481.04	4747779.85	29-Jun-94	21-Aug-19	201.35	197.25	1.60	199.75	m
	394481.04	4747779.85	29-Jun-94	14-Oct-19	201.35	197.25	3.71	197.64	m
	394481.04	4747779.85	29-Jun-94	2-Dec-19	201.35	197.25	1.63	199.72	m
TW32-94-IV	394350.52	4748883.71	26-Jul-94	9-Apr-19	198.8	194.13	0.87	197.93	m
	394350.52	4748883.71	26-Jul-94	12-Jun-19	198.8	194.13	1.26	197.54	m
	394350.52	4748883.71	26-Jul-94	14-Oct-19	198.8	194.13	1.24	197.56	m
	394350.52	4748883.71	26-Jul-94	3-Dec-19	198.8	194.13	0.79	198.01	m
TW39-99I	393726.35	4748826.82	24-Feb-99	25-Jan-19	212.65	198.15	11.68	200.97	m
	393726.35	4748826.82	24-Feb-99	9-Apr-19	212.65	198.15	11.27	201.38	m
	393726.35	4748826.82	24-Feb-99	11-Jun-19	212.65	198.15	12.84	199.81	m
	393726.35	4748826.82	24-Feb-99	21-Aug-19	212.65	198.15	11.67	200.98	m
	393726.35	4748826.82	24-Feb-99	14-Oct-19	212.65	198.15	11.67	200.98	m
	393726.35	4748826.82	24-Feb-99	3-Dec-19	212.65	198.15	13.64	199.01	m
TW39-99S	393742.71	4748829.70	25-Feb-99	9-Apr-19	212.58	201.73	7.67	204.91	m
	393742.71	4748829.70	25-Feb-99	12-Jun-19	212.58	201.73	10.53	202.05	m
	393742.71	4748829.70	25-Feb-99	14-Oct-19	212.58	201.73	7.72	204.86	m
	393742.71	4748829.70	25-Feb-99	3-Dec-19	212.58	201.73	11.23	201.35	m
TW40-99S	394021.18	4748880.00	3-Feb-99	9-Apr-19	199.49	195.60	0.86	198.63	m
	394021.18	4748880.00	3-Feb-99	12-Jun-19	199.49	195.60	2.34	197.15	m
	394021.18	4748880.00	3-Feb-99	14-Oct-19	199.49	195.60	1.59	197.90	m
	394021.18	4748880.00	3-Feb-99	3-Dec-19	199.49	195.60	2.28	197.21	m
TW41-99S	394316.59	4747550.26	3-Oct-99	15-Apr-19	201.01	197.09	0.61	200.40	m
	394316.59	4747550.26	3-Oct-99	12-Jun-19	201.01	197.09	0.68	200.33	m
	394316.59	4747550.26	3-Oct-99	14-Oct-19	201.01	197.09	0.82	200.19	m
	394316.59	4747550.26	3-Oct-99	2-Dec-19	201.01	197.09	0.64	200.37	m
TW42-99S	394075.87	4747348.61	10-Nov-14	8-Apr-19	200.72	196.71	1.01	199.63	m
	394075.87	4747348.61	10-Nov-14	11-Jun-19	200.72	196.71	1.25	199.39	m
	394075.87	4747348.61	10-Nov-14	20-Aug-19	200.72	196.71	2.68	197.96	m
	394075.87	4747348.61	10-Nov-14	14-Oct-19	200.72	196.71	2.41	198.23	m
	394075.87	4747348.61	10-Nov-14	2-Dec-19	200.72	196.71	1.48	199.16	m
TW43-99S	393853.94	4747401.36	16-Mar-99	8-Apr-19	200.73	196.70	0.92	199.81	m
	393853.94	4747401.36	16-Mar-99	11-Jun-19	200.73	196.70	1.10	199.63	m
	393853.94	4747401.36	16-Mar-99	14-Oct-19	200.73	196.70	2.41	198.32	m
	393853.94	4747401.36	16-Mar-99	2-Dec-19	200.73	196.70	1.05	199.68	m
TW45-99S				8-Apr-19	202.25	197.73	1.10	201.15	m
				11-Jun-19	202.25	197.73	1.56	200.69	m
				14-Oct-19	202.25	197.73	1.29	200.96	m
				4-Dec-19	202.25	197.73	0.99	201.26	m

Notes:

m BTOR

Metres below top of riser

m AMSL

Metres above mean sea-level

Active Aquitard June and November water levels may not be representative
of static water level due to pre-purging

Table 3

Groundwater Elevations
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Clean Harbors Canada Inc.
Lambton Facility

Well ID	Easting	Northing	Survey	Date	Reference	Middle of	Water Level	Water Level	Depth
Shallow Monitoring Wells									
TW46-99I	394418.85	4748804.01	8-Sep-99	9-Apr-19	212.84	195.39	12.60	200.24	m
	394418.85	4748804.01	8-Sep-99	12-Jun-19	212.84	195.39	12.71	200.13	m
	394418.85	4748804.01	8-Sep-99	14-Oct-19	212.84	195.39	12.81	200.03	m
	394418.85	4748804.01	8-Sep-99	3-Dec-19	212.84	195.39	12.70	200.14	m
TW46-99S	394430.91	4748795.86	8-Sep-99	9-Apr-19	212.85	200.08	2.12	210.73	m
	394430.91	4748795.86	8-Sep-99	12-Jun-19	212.85	200.08	11.51	201.34	m
	394430.91	4748795.86	8-Sep-99	14-Oct-19	212.85	200.08	1.79	211.06	m
	394430.91	4748795.86	8-Sep-99	3-Dec-19	212.85	200.08	11.64	201.21	m
TW48-16S	393586.74	4747704.73	12-Jan-16	8-Apr-19	201.56	197.28	1.02	200.54	m
	393586.74	4747704.73	12-Jan-16	11-Jun-19	201.56	197.28	1.45	200.11	m
	393586.74	4747704.73	12-Jan-16	20-Aug-19	201.56	197.28	1.73	199.83	m
	393586.74	4747704.73	12-Jan-16	14-Oct-19	201.56	197.28	1.32	200.24	m
	393586.74	4747704.73	12-Jan-16	3-Dec-19	201.56	197.28	1.33	200.23	m
TW50-02A	393803.30	4747552.56	20-Mar-13	14-Apr-19	201.146	197.50	1.29	199.86	m
	393803.30	4747552.56	20-Mar-13	12-Jun-19	201.146	197.50	-	-	m
TW50-02B	393803.89	4747532.57	20-Mar-13	15-Apr-19	203.921	197.50	0.83	203.09	m
	393803.89	4747532.57	20-Mar-13	12-Jun-19	203.921	197.50	3.31	200.61	m
TW51-02A	393950.17	4747547.19	20-Mar-13	15-Apr-19	201.26	197.50	0.91	200.35	m
	393950.17	4747547.19	20-Mar-13	12-Jun-19	201.26	197.50	-	-	m
TW51-02B	393949.32	4747523.98	20-Mar-13	15-Apr-19	203.93	197.50	3.37	200.44	m
	393949.32	4747523.98	20-Mar-13	12-Jun-19	203.93	197.50	3.43	200.38	m
TW52-02A	394080.64	4747542.20	20-Mar-13	25-Jan-19	201.155	197.50	0.78	200.38	m
	394080.64	4747542.20	20-Mar-13	15-Apr-19	201.155	197.50	0.85	200.31	m
	394080.64	4747542.20	20-Mar-13	12-Jun-19	201.155	197.50	0.42	200.74	m
TW52-02B	394079.82	4747519.09	20-Mar-13	25-Jan-19	204.254	197.50	4.09	200.16	m
	394079.82	4747519.09	20-Mar-13	15-Apr-19	204.254	197.50	4.20	200.05	m
	394079.82	4747519.09	20-Mar-13	12-Jun-19	204.254	197.50	3.89	200.36	m
	394079.82	4747519.09	20-Mar-13	21-Aug-19	204.254	197.50	3.62	200.63	m
TW53-03S	394499.68	4748287.76	19-Aug-03	9-Apr-19	199.74	196.70	1.07	198.67	m
	394499.68	4748287.76	19-Aug-03	12-Jun-19	199.74	196.70	1.84	197.90	m
	394499.68	4748287.76	19-Aug-03	14-Oct-19	199.74	196.70	1.69	198.05	m
	394499.68	4748287.76	19-Aug-03	2-Dec-19	199.74	196.70	1.04	198.70	m
TW55-09S	394444.74	4746723.41	1-Dec-09	8-Apr-19	199.36	194.31	1.04	198.32	m
	394444.74	4746723.41	1-Dec-09	11-Jun-19	199.36	194.31	1.57	197.79	m
	394444.74	4746723.41	1-Dec-09	14-Oct-19	199.36	194.31	2.12	197.24	m
	394444.74	4746723.41	1-Dec-09	2-Dec-19	199.36	194.31	3.57	195.79	m
TW56-11S	394823.27	4748839.80	11-Dec-11	8-Apr-19	198.54	193.29	1.44	197.10	m
	394823.27	4748839.80	11-Dec-11	11-Jun-19	198.54	193.29	1.48	197.06	m
	394823.27	4748839.80	11-Dec-11	14-Oct-19	198.54	193.29	1.57	196.97	m
	394823.27	4748839.80	11-Dec-11	2-Dec-19	198.54	193.29	2.56	195.98	m
TW57-11S	395080.1	4747496.7	11-Dec-11	8-Apr-19	201.20	196.69	1.25	199.95	m
	395080.1	4747496.7	11-Dec-11	11-Jun-19	201.20	196.69	1.51	199.69	m
	395080.1	4747496.7	11-Dec-11	14-Oct-19	201.20	196.69	3.77	197.43	m
	395080.1	4747496.7	11-Dec-11	4-Dec-19	201.20	196.69	2.13	199.07	m
TW58-11S	394817.3	4748850.8	11-Dec-11	8-Apr-19	198.81	194.05	1.96	196.85	m
	394817.3	4748850.8	11-Dec-11	11-Jun-19	198.81	194.05	2.19	196.62	m
	394817.3	4748850.8	11-Dec-11	14-Oct-19	198.81	194.05	2.13	196.68	m
	394817.3	4748850.8	11-Dec-11	2-Dec-19	198.81	194.05	3.97	194.84	m
TW59-13S	393107.5	4748192.8	20-Mar-13	8-Apr-19	202.04	197.09	0.82	201.22	m
	393107.5	4748192.8	20-Mar-13	11-Jun-19	202.04	197.09	1.24	200.80	m
	393107.5	4748192.8	20-Mar-13	14-Oct-19	202.04	197.09	1.73	200.31	m
	393107.5	4748192.8	20-Mar-13	2-Dec-19	202.04	197.09	0.93	201.11	m
TW61-13I	393685.6	4748564.4	10-Jul-13	25-Jan-19	210.67	198.42	8.50	202.17	m
	393685.6	4748564.4	10-Jul-13	9-Apr-19	210.67	198.42	8.61	202.06	m
	393685.6	4748564.4	10-Jul-13	11-Jun-19	210.67	198.42	8.68	201.99	m
	393685.6	4748564.4	10-Jul-13	21-Aug-19	210.67	198.42	8.74	201.93	m
	393685.6	4748564.4	10-Jul-13	14-Oct-19	210.67	198.42	8.68	201.99	m
	393685.6	4748564.4	10-Jul-13	2-Dec-19	210.67	198.42	8.50	202.17	m

Notes:

m BTOR

m AMSL

Metres below top of riser

Metres above mean sea-level

Active Aquitard June and November water levels may not be representative of static water level due to pre-purging

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Lambton Facility

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Shallow Monitoring Wells									
TW61-13S	393685.6	4748565.7	10-Jul-13	9-Apr-19	210.63	202.41	5.73	204.90	m
	393685.6	4748565.7	10-Jul-13	11-Jun-19	210.63	202.41	6.05	204.58	m
	393685.6	4748565.7	10-Jul-13	14-Oct-19	210.63	202.41	5.59	205.04	m
	393685.6	4748565.7	10-Jul-13	2-Dec-19	210.63	198.42	7.14	203.49	m
TW62-13S	393623.5	4748071.7	13-Dec-13	8-Apr-19	202.39	197.51	1.06	201.33	m
	393623.5	4748071.7	13-Dec-13	11-Jun-19	202.39	197.51	1.40	200.99	m
	393623.5	4748071.7	13-Dec-13	14-Oct-19	202.39	197.51	1.18	201.21	m
	393623.5	4748071.7	13-Dec-13	2-Dec-19	202.39	197.51	0.97	201.42	m
TW63-13S	393679.0	4748072.3	13-Dec-13	8-Apr-19	202.36	197.51	1.11	201.25	m
	393679.0	4748072.3	13-Dec-13	11-Jun-19	202.36	197.51	1.30	201.06	m
	393679.0	4748072.3	13-Dec-13	14-Oct-19	202.36	197.51	1.27	201.09	m
	393679.0	4748072.3	13-Dec-13	2-Dec-19	202.36	197.51	0.78	201.58	m
Deep Monitoring Wells									
OW32-90D	394484.5	4748065.0	13-Dec-90	7-Apr-19	201.46	157.67	3.50	197.96	m
	394484.5	4748065.0	13-Dec-90	12-Jun-19	201.46	157.67	3.68	197.78	m
	394484.5	4748065.0	13-Dec-90	14-Oct-19	201.46	157.67	2.34	199.12	m
	394484.5	4748065.0	13-Dec-90	2-Dec-19	201.46	157.67	-	-	m
OW35-05D	394499.7	4748569.4	1-Mar-05	25-Jan-19	199.63		3.67	195.96	m
	394499.7	4748569.4	1-Mar-05	12-Jun-19	199.63		3.68	195.95	m
	394499.7	4748569.4	1-Mar-05	21-Aug-19	199.63		3.63	196.00	m
	394499.7	4748569.4	1-Mar-05	14-Oct-19	199.63		3.62	196.01	m
	394499.7	4748569.4	1-Mar-05	2-Dec-19	199.63		3.61	196.02	m
PW1-N			21-Jul-15	25-Jan-19	202.82	160.45	4.25	198.57	m
			21-Jul-15	13-Jun-19	202.82	160.45	-	-	m
			21-Jul-15	21-Aug-19	202.82	160.45	4.20	198.62	m
			21-Jul-15	14-Oct-19	202.82	160.45	6.59	196.23	m
			21-Jul-15	4-Dec-19	202.82	160.45	4.10	198.72	m
PW2-S(R11)	393953.6	4748519.4	21-Jul-15	25-Jan-19	203.52		4.81	198.71	m
	393953.6	4748519.4	21-Jul-15	13-Jun-19	203.52		4.64	198.88	m
	393953.6	4748519.4	21-Jul-15	21-Aug-19	203.52		4.62	198.90	m
	393953.6	4748519.4	21-Jul-15	14-Oct-19	203.52		4.62	198.90	m
	393953.6	4748519.4	21-Jul-15	4-Dec-19	203.52		4.47	199.05	m
TW22-99D	393616.0	4748579.0	18-Feb-99	11-Jun-19	201.38	159.57	0.95	200.43	m
	393616.0	4748579.0	18-Feb-99	4-Dec-19	201.38	159.57	0.57	200.81	m
TW30-99D	394475.4	4747778.6	3-Apr-99	25-Jan-19	201.35	157.72	2.63	198.72	m
	394475.4	4747778.6	3-Apr-99	12-Jun-19	201.35	157.72	2.64	198.71	m
	394475.4	4747778.6	3-Apr-99	21-Aug-19	201.35	157.72	2.64	198.71	m
	394475.4	4747778.6	3-Apr-99	14-Oct-19	201.35	157.72	2.64	198.71	m
	394475.4	4747778.6	3-Apr-99	2-Dec-19	201.35	157.72	2.59	198.76	m
TW32-94-II	394362.9	4748857.7	7-Dec-94	25-Jan-19	198.65	156.24	2.93	195.72	m
	394362.9	4748857.7	7-Dec-94	12-Jun-19	198.65	156.24	2.94	195.71	m
	394362.9	4748857.7	7-Dec-94	21-Aug-19	198.65	156.24	2.90	195.75	m
	394362.9	4748857.7	7-Dec-94	14-Oct-19	198.65	156.24	2.92	195.73	m
	394362.9	4748857.7	7-Dec-94	3-Dec-19	198.65	156.24	2.86	195.79	m
TW39-99D	393710.6	4748822.8	23-Feb-99	25-Jan-19	212.63	161.09	10.98	201.65	m
	393710.6	4748822.8	23-Feb-99	11-Jun-19	212.63	161.09	11.00	201.63	m
	393710.6	4748822.8	23-Feb-99	21-Aug-19	212.63	161.09	11.00	201.63	m
	393710.6	4748822.8	23-Feb-99	14-Oct-19	212.63	161.09	10.97	201.66	m
	393710.6	4748822.8	23-Feb-99	3-Dec-19	212.63	161.09	11.00	201.63	m
TW40-99D	394000.3	4748882.3	3-Feb-99	25-Jan-19	199.51	158.05	1.19	198.32	m
	394000.3	4748882.3	3-Feb-99	12-Jun-19	199.51	158.05	1.14	198.37	m
	394000.3	4748882.3	3-Feb-99	21-Aug-19	199.51	158.05	1.07	198.44	m
	394000.3	4748882.3	3-Feb-99	14-Oct-19	199.51	158.05	1.07	198.44	m
	394000.3	4748882.3	3-Feb-99	3-Dec-19	199.51	158.05	1.02	198.49	m
TW41-99D	394282.8	4747542.7	3-Sep-99	7-Apr-19	201.18	156.75	2.66	198.52	m
	394282.8	4747542.7	3-Sep-99	12-Jun-19	201.18	156.75	2.60	198.58	m
	394282.8	4747542.7	3-Sep-99	14-Oct-19	201.18	156.75	2.59	198.59	m
	394282.8	4747542.7	3-Sep-99	2-Dec-19	201.18	156.75	2.54	198.64	m

Notes:

m BTOR

Metres below top of riser

m AMSL

Metres above mean sea-level

Active Aquitard June and November water levels may not be representative

of static water level due to pre-purging

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Deep Monitoring Wells									
TW43-99D	393853.6	4747401.4	16-Mar-99	7-Apr-19	200.99	159.06	0.85	200.14	m
	393853.6	4747401.4	16-Mar-99	11-Jun-19	200.99	159.06	0.83	200.16	m
	393853.6	4747401.4	16-Mar-99	14-Oct-19	200.99	159.06	0.78	200.21	m
	393853.6	4747401.4	16-Mar-99	2-Dec-19	200.99	159.06	0.69	200.30	m
TW45-99D	393597.9	4748054.8	3-Dec-99	7-Apr-19	202.39	156.54	44.31	158.08	m
	393597.9	4748054.8	3-Dec-99	11-Jun-19	202.39	156.54	43.87	158.52	m
	393597.9	4748054.8	3-Dec-99	14-Oct-19	202.39	156.54	43.75	158.64	m
	393597.9	4748054.8	3-Dec-99	3-Dec-19	202.39	156.54	43.46	158.93	m
TW46-99D	394402.9	4748800.6	8-Sep-99	25-Jan-19	212.80	155.29	16.50	196.30	m
	394402.9	4748800.6	8-Sep-99	12-Jun-19	212.80	155.29	16.49	196.31	m
	394402.9	4748800.6	8-Sep-99	21-Aug-19	212.80	155.29	16.47	196.33	m
	394402.9	4748800.6	8-Sep-99	14-Oct-19	212.80	155.29	16.44	196.36	m
TW47-00D	394402.9	4748800.6	8-Sep-99	3-Dec-19	212.80	155.29	16.43	196.37	m
	393868.9	4748889.0	22-Jun-00	25-Jan-19	200.43	160.98	1.94	198.49	m
	393868.9	4748889.0	22-Jun-00	7-Apr-19	200.43	160.98	1.91	198.52	m
	393868.9	4748889.0	22-Jun-00	12-Jun-19	200.43	160.98	1.94	198.49	m
TW48-00D	393868.9	4748889.0	22-Jun-00	21-Aug-19	200.43	160.98	1.89	198.54	m
	393868.9	4748889.0	22-Jun-00	14-Oct-19	200.43	160.98	1.84	198.59	m
	393868.9	4748889.0	22-Jun-00	3-Dec-19	200.43	160.98	1.83	198.60	m
	393589.4	4747707.3	18-Jan-16	11-Jun-19	201.40	158.84	2.38	199.02	m
TW49-00D	393589.4	4747707.3	18-Jan-16	20-Aug-19	201.40	158.84	2.55	198.85	m
	393589.4	4747707.3	18-Jan-16	14-Oct-19	201.40	158.84	2.47	198.93	m
	393589.4	4747707.3	18-Jan-16	3-Dec-19	201.40	158.84	2.38	199.02	m
	394072.7	4747339.8	10-Nov-14	11-Jun-19	200.77	158.56	2.95	197.82	m
TW53-03D	394072.7	4747339.8	10-Nov-14	20-Aug-19	200.77	158.56	3.44	197.33	m
	394072.7	4747339.8	10-Nov-14	14-Oct-19	200.77	158.56	3.09	197.68	m
	394072.7	4747339.8	10-Nov-14	2-Dec-19	200.77	158.56	3.01	197.76	m
	394487.1	4748289.2	18-Aug-03	25-Jan-19	199.86	157.63	3.85	196.01	m
TW54-09D	394487.1	4748289.2	18-Aug-03	12-Jun-19	199.86	157.63	3.82	196.04	m
	394487.1	4748289.2	18-Aug-03	21-Aug-19	199.86	157.63	3.86	196.00	m
	394487.1	4748289.2	18-Aug-03	14-Oct-19	199.86	157.63	3.80	196.06	m
	394487.1	4748289.2	18-Aug-03	2-Dec-19	199.86	157.63	3.80	196.06	m
TW55-09D	393757.5	4748241.4	1-Dec-09	25-Jan-19	203.34	159.59	1.50	201.84	m
	393757.5	4748241.4	1-Dec-09	11-Jun-19	203.34	159.59	1.44	201.90	m
	393757.5	4748241.4	1-Dec-09	20-Aug-19	203.34	159.59	1.40	201.94	m
	393757.5	4748241.4	1-Dec-09	14-Oct-19	203.34	159.59	1.47	201.87	m
	393757.5	4748241.4	1-Dec-09	2-Dec-19	203.34	159.59	1.43	201.91	m
TW56-11D	394445.5	4746726.1	1-Dec-09	7-Apr-19	199.47	152.58	3.04	196.43	m
	394445.5	4746726.1	1-Dec-09	11-Jun-19	199.47	152.58	2.99	196.48	m
	394445.5	4746726.1	1-Dec-09	14-Oct-19	199.47	152.58	2.98	196.49	m
	394445.5	4746726.1	1-Dec-09	2-Dec-19	199.47	152.58	2.92	196.55	m
TW57-11D	394823.6	4748841.1	11-Dec-11	7-Apr-19	198.54	154.86	2.69	195.85	m
	394823.6	4748841.1	11-Dec-11	11-Jun-19	198.54	154.86	2.72	195.82	m
	394823.6	4748841.1	11-Dec-11	14-Oct-19	198.54	154.86	2.66	195.88	m
	394823.6	4748841.1	11-Dec-11	2-Dec-19	198.54	154.86	2.56	195.98	m
TW59-13D	395081.2	4747495.5	11-Dec-11	7-Apr-19	201.27	157.26	4.30	196.97	m
	395081.2	4747495.5	11-Dec-11	11-Jun-19	201.27	157.26	4.33	196.94	m
	395081.2	4747495.5	11-Dec-11	14-Oct-19	201.27	157.26	4.26	197.01	m
	395081.2	4747495.5	11-Dec-11	4-Dec-19	201.27	157.26	4.40	196.87	m
TW60-13D	393107.4	4748191.2	20-Mar-13	7-Apr-19	202.10	154.47	4.84	197.26	m
	393107.4	4748191.2	20-Mar-13	11-Jun-19	202.10	154.47	4.86	197.24	m
	393107.4	4748191.2	20-Mar-13	14-Oct-19	202.10	154.47	4.82	197.28	m
	393107.4	4748191.2	20-Mar-13	2-Dec-19	202.10	154.47	4.78	197.32	m
TW61-13D	393613.6	4748573.7	10-Jul-13	11-Jun-19	201.55	159.25	1.13	200.42	m
	393613.6	4748573.7	10-Jul-13	2-Dec-19	201.55	159.25	4.17	197.38	m
TW61-13D	393685.7	4748562.4	10-Jul-13	25-Jan-19	210.56	159.42	7.72	202.84	m
	393685.7	4748562.4	10-Jul-13	11-Jun-19	210.56	159.42	6.83	203.73	m
	393685.7	4748562.4	10-Jul-13	21-Aug-19	210.56	159.42	7.60	202.96	m
	393685.7	4748562.4	10-Jul-13	14-Oct-19	210.56	159.42	7.29	203.27	m
	393685.7	4748562.4	10-Jul-13	2-Dec-19	210.56	159.42	7.11	203.45	m

Notes:

m BTOR
m AMSL

Metres below top of riser
Metres above mean sea-level

Table 3

Groundwater Elevations
2019 Annual Groundwater Monitoring Report
Clean Harbors Canada Inc.
Lambton Facility

Well ID	Easting	Northing	Survey	Date	Reference	Middle of	Water Level	Water Level	Depth
Deep Shale Monitoring Well									
TW32-94-I			19-May-94	14-Oct-19	198.81	152.17	3.20	195.61	m
TW42-99D	394076.5	4747352.1	10-Nov-14	14-Oct-19	200.68	156.62	2.32	198.36	m
Sub-Cell 3 Wells									
EW1a-01	393928.9	4748654.8	11-Dec-11	25-Jan-19	203.45		12.53	190.92	m
	393928.9	4748654.8	11-Dec-11	13-Jun-19	203.45		9.28	194.17	m
	393928.9	4748654.8	11-Dec-11	21-Aug-19	203.45		8.42	195.03	m
	393928.9	4748654.8	11-Dec-11	4-Dec-19	203.45		7.27	196.18	m
EW1b-13	393951.6	4748638.3	10-Jul-13	25-Jan-19	203.13		12.11	191.02	m
	393951.6	4748638.3	10-Jul-13	13-Jun-19	203.13		8.90	194.23	m
	393951.6	4748638.3	10-Jul-13	21-Aug-19	203.13		8.04	195.09	m
	393951.6	4748638.3	10-Jul-13	14-Oct-19	203.13		7.49	195.64	m
	393951.6	4748638.3	10-Jul-13	4-Dec-19	203.13		6.92	196.21	m
EW1c-13	393954.3	4748608.2	10-Jul-13	25-Jan-19	203.22		12.18	191.04	m
	393954.3	4748608.2	10-Jul-13	13-Jun-19	203.22		8.95	194.27	m
	393954.3	4748608.2	10-Jul-13	21-Aug-19	203.22		8.12	195.10	m
	393954.3	4748608.2	10-Jul-13	14-Oct-19	203.22		7.60	195.62	m
	393954.3	4748608.2	10-Jul-13	3-Dec-19	203.22		6.99	196.23	m
EW2a-01	393928.3	4748587.7	11-Dec-11	25-Jan-19	202.77		8.47	194.30	m
	393928.3	4748587.7	11-Dec-11	13-Jun-19	202.77		4.45	198.32	m
	393928.3	4748587.7	11-Dec-11	21-Aug-19	202.77		3.74	199.03	m
	393928.3	4748587.7	11-Dec-11	14-Oct-19	202.77		3.32	199.45	m
	393928.3	4748587.7	11-Dec-11	3-Dec-19	202.77		2.95	199.82	m
EW2b-13	393959.5	4748586.7	10-Jul-13	25-Jan-19	203.20		8.85	194.35	m
	393959.5	4748586.7	10-Jul-13	13-Jun-19	203.20		5.14	198.06	m
	393959.5	4748586.7	10-Jul-13	21-Aug-19	203.20		4.20	199.00	m
	393959.5	4748586.7	10-Jul-13	14-Oct-19	203.20		3.73	199.47	m
	393959.5	4748586.7	10-Jul-13	3-Dec-19	203.20		3.55	199.65	m
EW2c-13	393961.2	4748566.7	10-Jul-13	25-Jan-19	203.23		8.88	194.35	m
	393961.2	4748566.7	10-Jul-13	13-Jun-19	203.23		5.00	198.23	m
	393961.2	4748566.7	10-Jul-13	21-Aug-19	203.23		4.23	199.00	m
	393961.2	4748566.7	10-Jul-13	14-Oct-19	203.23		3.80	199.43	m
	393961.2	4748566.7	10-Jul-13	3-Dec-19	203.23		3.50	199.73	m
Leachate Collection Trench									
LCSOW1-15	393734.8	4747806.6	18-Dec-15	25-Jan-19	205.61	198.42	6.74	198.87	m
	393734.8	4747806.6	18-Dec-15	14-Jun-19	205.61	198.42	2.95	202.66	m
	393734.8	4747806.6	18-Dec-15	21-Aug-19	205.61	198.42	3.75	201.86	m
	393734.8	4747806.6	18-Dec-15	5-Dec-19	205.61	198.42	5.20	200.41	m
LCSOW2-15	393731.4	4747635.4	18-Dec-15	25-Jan-19	205.37	198.06	5.10	200.27	m
	393731.4	4747635.4	18-Dec-15	14-Jun-19	205.37	198.06	3.65	201.72	m
	393731.4	4747635.4	18-Dec-15	21-Aug-19	205.37	198.06	3.45	201.92	m
	393731.4	4747635.4	18-Dec-15	5-Dec-19	205.37	198.06	5.00	200.37	m
LCSOW3-15	393823.5	4747568.5	19-Dec-15	25-Jan-19	204.02	197.96	6.48	197.54	m
	393823.5	4747568.5	19-Dec-15	14-Jun-19	204.02	197.96	2.35	201.67	m
	393823.5	4747568.5	19-Dec-15	21-Aug-19	204.02	197.96	2.10	201.92	m
	393823.5	4747568.5	19-Dec-15	5-Dec-19	204.02	197.96	3.55	200.47	m
LCSOW4-15	394029.4	4747565.9	19-Dec-15	25-Jan-19	202.57		3.67	198.90	m
	394029.4	4747565.9	19-Dec-15	14-Jun-19	202.57		-	-	m
Transect Active Aquifer Monitoring Wells									
TW64-16-I	393706.0	4747660.2	7-Jan-16	14-Jun-19	202.21	177.90	2.51	199.70	m
	393706.0	4747660.2	7-Jan-16	20-Aug-19	202.21	177.90	2.24	199.97	m
	393706.0	4747660.2	7-Jan-16	14-Oct-19	202.21	177.90	1.77	200.44	m
	393706.0	4747660.2	7-Jan-16	3-Dec-19	202.21	177.90	1.83	200.38	m
TW64-16-II	393706.1	4747662.6	8-Jan-16	14-Jun-19	202.08	187.78	2.35	199.73	m
	393706.1	4747662.6	8-Jan-16	20-Aug-19	202.08	187.78	2.24	199.84	m
	393706.1	4747662.6	8-Jan-16	14-Oct-19	202.08	187.78	2.04	200.04	m
	393706.1	4747662.6	8-Jan-16	3-Dec-19	202.08	187.78	2.19	199.89	m
TW64-16-III	393706.2	4747664.3	11-Jan-16	14-Jun-19	202.24	192.57	2.40	199.84	m
	393706.2	4747664.3	11-Jan-16	20-Aug-19	202.24	192.57	2.77	199.47	m
	393706.2	4747664.3	11-Jan-16	14-Oct-19	202.24	192.57	2.91	199.33	m
	393706.2	4747664.3	11-Jan-16	3-Dec-19	202.24	192.57	3.12	199.12	m
TW64-16-IV	393706.1	4747666.9	11-Jan-16	14-Jun-19	202.12	197.83	2.40	199.72	m
	393706.1	4747666.9	11-Jan-16	20-Aug-19	202.12	197.83	4.32	197.80	m
	393706.1	4747666.9	11-Jan-16	14-Oct-19	202.12	197.83	3.43	198.69	m
	393706.1	4747666.9	11-Jan-16	3-Dec-19	202.12	197.83	3.26	198.86	m

Notes:

m BTOR
m AMSL

Metres below top of riser
Metres above mean sea-level

Table 4

Groundwater Chemistry - Shallow Wells Located Off the Facility Property (Active Aquitard)
 2019 Annual Groundwater Monitoring Report
 Clean Harbors Canada Inc. - Lambton Facility

Sample Location: Sample ID: Sample Date:	ODWS SOURCE	PWQO	TW55-09S			TW56-11S				TW57-11S			TW58-11S			TW59-13S		
			05/26/2010 - 11/19/2018 Historical Range	55S 6/11/2019	55S 12/2/2019	06/13/2012 - 11/19/2018 Historical Range	56S 6/11/2019	98 6/11/2019 Duplicate	56S 12/2/2019	06/12/2012 - 11/19/2018 Historical Range	57S 6/11/2019	57S 12/4/2019	06/13/2012 - 11/19/2018 Historical Range	58S 6/11/2019	58S 12/2/2019	05/21/2013 - 11/19/2018 Historical Range	59S 6/11/2019	59S 12/2/2019
Parameters	Units																	
Field Parameters																		
Conductivity, field	uS/cm	-	1240 - 1360	1640 ^c	1420 ^c	2140 - 2280	2510 ^c	2510 ^c	1570 ^c	1520 - 1690	2160 ^c	1830 ^c	3030 - 3320	2160 ^c	3230	764 - 1130	1410 ^c	980
pH, field	s.u.	6.5-8.5	6.73 - 7.78	7.5	7.3	6.53 - 7.52	7.31	7.31	7.27	6.7 - 7.52	7.43	7.19	6.49 - 7.48	7.2	7.09	6.76 - 7.57	7.49	7.32
Temperature, field	Deg C	15	10.7 - 12.3	9.63 ^c	9.45 ^c	10.8 - 12.35	10.03 ^c	10.03 ^c	11.66	10.2 - 11.8	9.77 ^c	10.45	10.8 - 11.8	10.73 ^c	10.01 ^c	10.5 - 11.57	10.07 ^c	10.71
Total dissolved solids, field (TDS)	mg/L	500	-	0.1	6.91	-	0.09	0.09	5.35	-	0.1	5.1	-	0.1	6.51	-	0.1	7.63
General Indicators																		
Conductivity, electrical	uS/cm	-	1180 - 1440	1180	1020 ^c	1960 - 2400	1640 ^c	1710 ^c	1340 ^c	1290 - 2240	1530	1300	2930 - 3470	3030	2510 ^c	850 - 994	907	755 ^c
pH, lab	s.u.	6.5-8.5	7.8 - 8.29	7.8	7.71 ^c	7.65 - 8.13	7.78	7.78	7.7	7.58 - 8.06	7.83	7.85	7.64 - 8.03	7.71	7.64	7.82 - 8.22	7.84	7.83
Total dissolved solids (TDS)	mg/L	500	786 - 1080	752 ^{ac}	850 ^a	1400 - 2050	1410 ^a	1440 ^a	1290 ^{ac}	838 - 1790	1030 ^a	1370 ^a	2080 - 3250	2340 ^a	2390 ^a	506 - 631	556 ^a	522 ^a
Minor Ions - Anions																		
Alkalinity, total (as CaCO3)	mg/L	30-500	272 - 335	287	305	317 - 362	354	343	398 ^c	459 - 550	485	523 ^a	469 - 544	466 ^c	463 ^c	358 - 408	369	409 ^c
Chloride	mg/L	250	13.4 - 16.8	15	13.6	55.5 - 67.3	36 ^c	39.3 ^c	34.5 ^c	19.1 - 31	23.8	20.3	278 - 355	296 ^a	267 ^{ac}	11 - 17.7	15.8	17.1
Sulfate	mg/L	500	408 - 521	418	417	845 - 1100	603 ^{bc}	668 ^{bc}	564 ^{bc}	267 - 912	487	441	935 - 1240	1080 ^a	1160 ^a	103 - 164	113	103
Major Ions - Cations																		
Calcium (dissolved)	mg/L	-	119 - 170	129	139	219 - 336	201 ^c	207 ^c	189 ^c	130 - 319	174	175	261 - 385	294	291	84.7 - 104	98	93
Magnesium (dissolved)	mg/L	-	56.5 - 87	59.4	60.3	113 - 161	89.5 ^c	94 ^c	81.9 ^c	76.1 - 174	101	93.4	211 - 280	230	208 ^c	45.1 - 57	52.6	48.8
Potassium (dissolved)	mg/L	-	2.48 - 3	2.71	3	3 - 4	2.54 ^c	2.58 ^c	2.68 ^c	2.64 - 5	3.63	3.25	4 - 7	4.51	5.27	2 - 3	2.24	2.29
Sodium (dissolved)	mg/L	20/200	41 - 59	50.8 ^a	51.6 ^a	68 - 90	64.8 ^{bc}	66.3 ^{bc}	63.8 ^{bc}	39 - 69	47.8 ^a	49.1 ^a	105 - 138	107 ^a	117 ^a	21.6 - 52	26.3 ^a	26.7 ^a
Major Ions - Nutrients																		
Ammonia-N	mg/L	-	ND(0.02) - 0.16	ND(0.02)	ND(0.02)	ND(0.02) - 0.32	ND(0.02)	0.02	ND(0.02)	0.02 - 1.02	ND(0.02)	ND(0.02)	ND(0.02) - 0.38	0.05	ND(0.02)	0.02 - 12	ND(0.02)	ND(0.02)
Nitrate (as N)	mg/L	10.0	ND(0.1) - 0.54	ND(0.25)	ND(0.25)	ND(0.1) - ND(1)	ND(0.5)	ND(0.5)	0.7	0.1 - ND(0.5)	ND(0.25)	ND(0.5)	0.1 - ND(1)	ND(1)	ND(1)	ND(0.1) - 1.26	ND(0.25)	ND(0.1)
Nitrite (as N)	mg/L	1.0	ND(0.1) - ND(0.25)	ND(0.25)	ND(0.25)	ND(0.1) - ND(1)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.1) - ND(0.5)	ND(0.25)	ND(0.5)	ND(0.1) - ND(1)	ND(1)	ND(1)	ND(0.1) - 1.5	ND(0.25)	ND(0.1)
Major Ions - Miscellaneous																		
Bromide	mg/L	-	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25) - ND(1)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.25) - ND(0.5)	ND(0.25)	ND(0.5)	ND(0.25) - ND(1)	ND(1)	ND(1)	ND(0.25)	ND(0.25)	ND(0.1)
Cyanide (free)	mg/L	-	ND(0.002) - ND(0.01)	ND(0.002)	ND(0.002) J	ND(0.002) - ND(0.005)	ND(0.002)	ND(0.002)	ND(0.002) J	ND(0.002) - ND(0.01)	ND(0.002)	0.003 J	ND(0.002) - ND(0.005)	ND(0.002)	ND(0.002) J	ND(0.002) - ND(0.005)	ND(0.002)	ND(0.002) J
Fluoride	mg/L	1.5	ND(0.25) - 1	0.39	0.59	ND(0.5) - ND(1)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5) - 1.48	0.55	ND(0.5)	0.55 - 1.06	ND(1)	ND(1)	ND(0.25) - 1.13	0.5	0.83
Metals																		
Arsenic (dissolved)	mg/L	0.010	ND(0.001) - ND(0.01)	ND(0.003)	-	ND(0.001) - ND(0.003)	ND(0.003)	ND(0.003)	-	ND(0.001) - ND(0.003)	ND(0.003)	-	ND(0.001) - ND(0.003)	ND(0.003)	-	ND(0.001) - ND(0.003)	ND(0.003)	-
Barium (dissolved)	mg/L	1.0	0.018 - 0.05	0.019	-	0.01 - 0.04	0.011	0.011	-	0.02 - 0.031	0.024	-	0.01 - 0.05	0.011	-	0.033 - 0.08	0.036	-
Boron (dissolved)	mg/L	5.0	0.17 - 0.42	0.201 ^b	-	0.32 - 0.43	0.251 ^{bc}	0.263 ^{bc}	-	0.13 - 0.25	0.147	-	0.2 - 0.32	0.236 ^b	-	0.1 - 0.15	0.11 J+	-
Cadmium (dissolved)	mg/L	0.005	ND(0.0001) - ND(0.001)	ND(0.001)	-	ND(0.0001) - ND(0.001)	ND(0.001)	ND(0.001)	-	ND(0.0001) - ND(0.001)	ND(0.001)	-	ND(0.0001) - ND(0.001)	ND(0.001)	-	ND(0.0001) - ND(0.001)	ND(0.001)	-
Chromium (dissolved)	mg/L	0.05	ND(0.001) - ND(0.005)	ND(0.003)	-	0.001 - ND(0.003)	ND(0.003)	ND(0.003)	-	ND(0.001) - ND(0.005)	ND(0.003)	-	ND(0.001) - ND(0.005)	0.004 ^c	-	ND(0.001) - ND(0.005)	ND(0.003)	-
Iron (dissolved)	mg/L	0.30	ND(0.01) - ND(0.03)	ND(0.01)	-	ND(0.01) - ND(0.03)	0.011	0.014	-	ND(0.01) - 0.759	ND(0.01)	-	ND(0.01) - 0.759	ND(0.01)	-	ND(0.01) - ND(0.03)	ND(0.01)	-
Lead (dissolved)	mg/L	0.01	ND(0.001) - ND(0.002)	ND(0.001)	-	ND(0.001) - ND(0.002)	ND(0.001)	ND(0.001)	-	0.001 - ND(0.002)	ND(0.001)	-	ND(0.001) - ND(0.002)	ND(0.001)	-	ND(0.001) - ND(0.002)	ND(0.001)	-
Mercury (dissolved)	mg/L	0.001	ND(0.0001)	ND(0.0001)	-	ND(0.0001)	ND(0.0001)	ND(0.0001)	-	ND(0.0001)	ND(0.0001)	-	ND(0.0001)	ND(0.0001)	-	ND(0.0001)	ND(0.0001)	-
Nickel (dissolved)	mg/L	-	0.003 - 0.015	0.004	0.005	0.003 - 0.015	0.004	0.005	-	0.003 - 0.005	0.004	-	0.004 - 0.014	0.007	-	ND(0.003) - ND(0.005)	ND(0.003)	-
Zinc (dissolved)	mg/L	5.0	ND(0.005) - 0.02	ND(0.005)	-	ND(0.005) - 0.04	ND(0.005)	ND(0.005)	-	ND(0.005) - 0.02	ND(0.005)	-	ND(0.005) - 0.02	ND(0.005)	-	ND(0.005) - 0.01	ND(0.005)	-
Volatile Organic Compounds																		
1,1,1,2-Tetrachloroethane	ug/L	-	ND(0.1) - ND(0.5)	ND(0.1)	-	ND(0.1) - ND(0.5)	ND(0.1)	ND(0.1)	-	ND(0.1) - ND(0.5)	ND(0.1)	-	ND(0.1) - ND(0.5)	ND(0.1)	-	ND(0.1) - ND(0.5)	ND(0.1)	-
1,1,1-Trichloroethane	ug/L	-	ND(0.3) - ND(0.4)	ND(0.3)	-	ND(0.3) - ND(0.4)	ND(0.3)	ND(0.3)	-	ND(0.3) - ND(0.4)	ND(0.3)	-	ND(0.3) - ND(0.4)	ND(0.3)	-	ND(0.3) - ND(0.4)	ND(0.3)	-
1,1,2,2-Tetrachloroethane	ug/L	-	70	ND(0.1) - ND(0.5)	ND(0.1)	ND(0.1) - ND(0.5)	ND(0.1)	ND(0.1)	-	ND(0.1) - ND(0.5)	ND(0.1)	-	ND(0.1) - ND(0.5)	ND(0.1)	-	ND(0.1) - ND(0.5)	ND(0.1)	-
1,1,2-Trichloroethane	ug/L	-	200	ND(0.2) - ND(0.4)	ND(0.2)	ND(0.2) - ND(0.4)	ND(0.2)	ND(0.2)	-	ND(0.2) - ND(0.4)	ND(0.2)	-	ND(0.2) - ND(0.4)	ND(0.2)	-	ND(0.2) - ND(0.4)	ND(0.2)	-
1,1-Dichloroethane	ug/L	-	800	ND(0.3) - ND(0.4)	ND(0.3)	ND(0.3) - ND(0.4)	ND(0.3)	ND(0.3)	-	ND(0.3) - ND(0.4)	ND(0.3)	-	ND(0.3) - ND(0.4)	ND(0.3)	-	ND(0.3) - ND(0.4)	ND(0.3)	-
1,1-Dichloroethane	ug/L	14	MAC	40	ND(0.3) - ND(0.5)	ND(0.3)	ND(0.3)	ND(0.3)	-	ND(0.3) - ND(0.5)	ND(0.3)	-	ND(0.3) - ND(0.5)	ND(0.3)	-	ND(0.3) - ND(0.5)	ND(0.3)	-
1,2,4-Trichlorobenzene	ug/L	-	0.5	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.3)	-	ND(0.3)	ND(0.3)	-	ND(0.3)	ND(0.3)	-	ND(0.3)	ND(0.3)	-
1,2-Dibromoethane (Ethylene dibromide)	ug/L	-	5	ND(0.1) - ND(1)	ND(0.1)	ND(0.1) - ND(2)	ND(0.1)	ND(0.1)	-	ND(0.1) - ND(2)	ND(0.1)	-	ND(0.1) - ND(2)	ND(0.1)	-	ND(0.1) - ND(2)	ND(0.1)	-
1,2-Dichlorobenzene	ug/L	200	MAC	2.5	ND(0.1) - ND(0.4)	ND(0.1)	ND(0.1)	ND(0.1)	-	ND(0.1) - ND(0.4)	ND(0.1)	-	ND(0.1) - ND(0.4)	ND(0.1)	-	ND(0.1) - ND(0.4)	ND(0.1)	-
1,2-Dichloroethane	ug/L	5	IMAC	100	ND(0.2) - ND(0.5)	ND(0.2)	ND(0.2)	ND(0.2)	-	ND(0.2)	ND(0.2)	-	ND(0.2)	ND(0.2)	-	ND(0.2)	ND(0.2)	-
1,2-Dichloropropane	ug/L	-	0.7	ND(0.2) - ND(0.5)	ND(0.2)	ND(0.2) - ND(0.5)	ND(0.2)	ND(0.2)	-	ND(0.2) - ND(0.5)	ND(0.2)	-	ND(0.2) - ND(0.5)	ND(0.2)	-	ND(0.2) - ND(0.5)	ND(0.2)	-
1,3-Dichlorobenzene	ug/L	-	2.5	ND(0.1) - ND(0.4)	ND(0.1)	ND(0.1) - ND(0.4)	ND(0.1)	ND(0.1)	-	ND(0.1) - ND(0.4)	ND(0.1)	-	ND(0.1) - ND(0.4)	ND(0.1)	-	ND(0.1) - ND(0.4)	ND(0.1)	-
1,3-Dichloropropane	ug/L	-	-	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.3)	ND(0.3)	-	ND(0.3)	ND(0.3)	-	ND(0.3)	ND(0.3)	-	ND(0.3)	ND(0.3)	-
1,4-Dichlorobenzene	ug/L	5	MAC	4	ND(0.1) - ND(0.4)	ND(0.1)	ND(0.1)	ND(0.1)	-	ND(0.1) - ND(0.4)	ND(0.1)	-	ND(0.1) - ND(0.4)	ND(0.1)	-	ND(0.1) - ND(0.4)	ND(0.1)	-
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	-	400	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	-	ND(1)	ND(1)	-	ND(1)	ND(1)	-	ND(1)	ND(1)	-
2-Hexanone	ug/L	-	-	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	-	ND(1)	ND(1)	-	ND(1)	ND(1)	-	ND(1)	ND(1)	-
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	-	-	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	-	ND(1)	ND(1)	-	ND(1)	ND(1)	-	ND(1)	ND(1)	-
Acetone	ug/L	-	-	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	-	ND(1)	ND(1)	-	ND(1)	ND(1)	-	ND(1)	ND(1)	-
Benzene	ug/L	1	MAC	100	ND(0.2) - ND(0.5)	ND(0.2)	ND(0.2)	ND(0.2)	-	ND(0.2) - ND(0.5)	ND(0.2)	-	ND(0.2) - ND(0.5)	ND(0.2)	-	ND(0.2) - ND(0.5)	ND(0.2)	-
Bromodichloromethane	ug/L	-	200	ND(0.2) - ND(0.3)	ND(0.2)	ND(0.2) - ND(0.3)	ND(0.2)	ND(0.2)	-	ND(0.2) - ND(0.3)	ND(0.2)	-	ND(0.2) - ND(0.3)	ND(0.2)	-	ND(0.2) - ND(0.3)	ND(0.2)	-
Bromoform	ug/L	-	60	ND(0.1) - ND(0.4)	ND(0.1)	ND(0.1) - ND(0.4)												

Table 4

Groundwater Chemistry - Shallow Wells Located Off the Facility Property (Active Aquitard)
 2019 Annual Groundwater Monitoring Report
 Clean Harbors Canada Inc. - Lambton Facility

Sample Location: Sample ID: Sample Date:	Units	ODWS a	SOURCE	PWQO b	TW55-09S			TW56-11S				TW57-11S			TW58-11S			TW59-13S		
					05/26/2010 - 11/19/2018 Historical Range	55S 6/11/2019	55S 12/2/2019	06/13/2012 - 11/19/2018 Historical Range	56S 6/11/2019	98 6/11/2019 Duplicate	56S 12/2/2019	06/12/2012 - 11/19/2018 Historical Range	57S 6/11/2019	57S 12/4/2019	06/13/2012 - 11/19/2018 Historical Range	58S 6/11/2019	58S 12/2/2019	05/21/2013 - 11/19/2018 Historical Range	59S 6/11/2019	59S 12/2/2019
trans-1,3-Dichloropropene	ug/L	-	-	7	ND(0.2) - ND(0.3)	ND (0.3)	-	ND(0.2) - ND(0.3)	ND (0.3)	ND (0.3)	-	ND(0.2) - ND(0.3)	ND (0.3)	-	ND(0.2) - ND(0.3)	ND (0.3)	-	ND(0.2) - ND(0.3)	ND (0.3)	-
Trichloroethene	ug/L	5	MAC	20	ND(0.2) - ND(0.3)	ND (0.2)	-	ND(0.2) - ND(0.3)	ND (0.2)	ND (0.2)	-	ND(0.2) - ND(0.3)	ND (0.2)	-	ND(0.2) - ND(0.3)	ND (0.2)	-	ND(0.2) - ND(0.3)	ND (0.2)	-
Trichlorofluoromethane (CFC-11)	ug/L	-	-	-	ND(0.4) - ND(0.5)	ND (0.4)	-	ND(0.4) - ND(0.5)	ND (0.4)	ND (0.4)	-	ND(0.4) - ND(0.5)	ND (0.4)	-	ND(0.4) - ND(0.5)	ND (0.4)	-	ND(0.4) - ND(0.5)	ND (0.4)	-
Vinyl chloride	ug/L	1	MAC	600	ND(0.17) - ND(0.2)	ND (0.17)	-	ND(0.17) - ND(0.2)	ND (0.17)	ND (0.17)	-	ND(0.17) - ND(0.2)	ND (0.17)	-	ND(0.17) - ND(0.2)	ND (0.17)	-	ND(0.17) - ND(0.2)	ND (0.17)	-
Xylenes (total)	ug/L	90	MAC	-	ND(0.2) - ND(1.5)	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	-

Notes:

- ^a Indicates value exceeds Ontario Drinking Water Standards, Objectives and Guidelines, Ontario Ministry of the Environment, as revised June 2006 (ODWS).
- ^b Indicates value exceeds Policy and Guidelines - Provincial Water Quality The Ontario Ministry of the Environment and Energy, July 1994 (PWQO).
- ^c Analytical result outside of the historical concentration range for the parameter.
- ND Not detected at the associated reporting limit.
- J Estimated concentration.
- 4.90 Detected result exceeds associated standard.
- OG Operational Guideline
- AO Aesthetic Objective
- MAC Maximum Acceptable Concentration
- IMAC Interim Maximum Acceptable Concentration
- Not applicable or not analysed.

Table 5

Groundwater Chemistry - Shallow Wells Installed in the North Berm (Active Aquitard)
2019 Annual Groundwater Monitoring Report
Clean Harbors Canada Inc. - Lambton Facility

Sample Location: Sample ID: Sample Date:	Units	TW39-99I			TW39-99S			TW46-99I					
		ODWS a	ODWS SOURCE	PWQO b	06/09/1999 - 11/20/2018 Historical Range	39I 6/12/2019	39I 12/3/2019	06/09/1999 - 11/20/2018 Historical Range	39S 6/12/2019	39S 12/3/2019	11/03/1999 - 11/19/2018 Historical Range	46I 6/12/2019	46I 12/3/2019
Field Parameters													
Conductivity, field	uS/cm	-	-	-	1020 - 1570	2040 ^c	1498	997 - 1310	4160 ^c	1340 ^c	973 - 1700	713 ^c	1450
pH, field	s.u.	6.5-8.5	OG	6.5-8.5	6.49 - 8.37	7.59	7.12	6.57 - 8.15	7.37	7.06	6.79 - 7.88	7.36	7.11
Temperature, field	Deg C	15	AO	-	7.3 - 16.2	10.91	9.95	6.6 - 15	11.33	6.19 ^c	10.5 - 15.6	11.25	11.21
Total dissolved solids, field (TDS)	mg/L	500	AO	-	-	0.11	3.86	-	0.1	5	-	0.1	5
General Indicators													
Conductivity, electrical	uS/cm	-	-	-	1100 - 1700	1420	1170	1080 - 1500	1250	1030 ^c	1060 - 1560	1410	1170
pH, lab	s.u.	6.5-8.5	OG	6.5-8.5	7.5 - 8.33	7.81	7.74	7.5 - 8.24	7.8	7.74	7.3 - 8.2	7.83	7.76
Total dissolved solids (TDS)	mg/L	500	AO	-	848 - 1340	942 ^a	916 ^a	748 - 1420	800 ^a	786 ^a	772 - 1130	1010 ^a	978 ^a
Minor Ions - Anions													
Alkalinity, total (as CaCO3)	mg/L	30-500	OG	-	410 - 598	491	546 ^a	357 - 487	405	450	332 - 417	365	397
Chloride	mg/L	250	AO	-	17 - 28.8	17.2	16.9 ^c	17.5 - 24	20.2	20.8	28.6 - 44.6	40.7	39
Sulfate	mg/L	500	AO	-	287 - 389	324	308	256 - 477	275	275	213 - 447	442	403
Major Ions - Cations													
Calcium (dissolved)	mg/L	-	-	-	82 - 123	108	103	89.2 - 128	111	106	121 - 173	157	149
Magnesium (dissolved)	mg/L	-	-	-	27 - 124	109	101	62 - 90	80.7	76.3	66.4 - 97	87.7	79.5
Potassium (dissolved)	mg/L	-	-	-	1 - 2.2	1.51	1.38	1 - 3	1.54	1.04	1 - 3	2.3	1.81
Sodium (dissolved)	mg/L	20/200	AO	-	20 - 94	69.1 ^a	69.4 ^a	49.6 - 88	59.3 ^a	59.5 ^a	37.6 - 57	50.2 ^a	50.8 ^a
Major Ions - Nutrients													
Ammonia-N	mg/L	-	-	-	0.02 - 1.35	ND (0.02)	ND (0.02)	0.02 - 0.09	0.05	ND (0.02)	0.02 - 0.35	0.05	ND (0.02)
Nitrate (as N)	mg/L	10.0	MAC	-	0.074 - ND(1)	ND (0.25)	ND (0.25)	ND(0.1) - ND(1)	ND (0.25)	ND (0.25)	ND(0.01) - 0.26	ND (0.25)	ND (0.25)
Nitrite (as N)	mg/L	1.0	MAC	-	ND(0.01) - ND(0.5)	ND (0.25)	ND (0.25)	ND(0.01) - ND(0.25)	ND (0.25)	ND (0.25)	ND(0.01) - ND(0.25)	ND (0.25)	ND (0.25)
Major Ions - Miscellaneous													
Bromide	mg/L	-	-	-	0.18 - ND(3.5)	ND (0.25)	0.41	0.22 - ND(3.5)	ND (0.25)	0.48	ND(0.05) - 0.37	ND (0.25)	ND (0.25)
Cyanide (free)	mg/L	-	-	0.005	ND(0.002) - ND(0.02)	ND (0.002)	ND (0.002) J	ND(0.002) - ND(0.02)	ND (0.002)	ND (0.002) J	ND(0.002) - ND(0.02)	ND (0.002)	ND (0.002) J
Fluoride	mg/L	1.5	MAC	-	ND(0.25) - 1.5	0.71	0.44	ND(0.25) - 1.3	0.64	0.4	ND(0.25) - 1.2	0.44	ND (0.25)
Metals													
Arsenic (dissolved)	mg/L	0.010	IMAC	0.005	0.001 - ND(0.01)	ND (0.003)	-	ND(0.001) - ND(0.003)	ND (0.003)	-	0.001 - ND(0.003)	ND (0.003)	-
Barium (dissolved)	mg/L	1.0	MAC	-	0.032 - 0.07	0.037	-	0.027 - 0.05	0.027	-	0.03 - 0.08	0.026 ^c	-
Boron (dissolved)	mg/L	5.0	IMAC	0.2	0.04 - 0.197	0.191	-	0.19 - 0.387	0.299 ^b	-	0.087 - 0.16	0.099 J+	-
Cadmium (dissolved)	mg/L	0.005	MAC	0.0002	ND(0.0001) - 0.004	ND (0.001)	-	ND(0.0001) - ND(0.003)	ND (0.001)	-	ND(0.0001) - ND(0.003)	ND (0.001)	-
Chromium (dissolved)	mg/L	0.05	MAC	0.001	0.001 - ND(0.01)	ND (0.003)	-	ND(0.001) - ND(0.01)	ND (0.003)	-	ND(0.0003) - ND(0.01)	ND (0.003)	-
Iron (dissolved)	mg/L	0.30	AO	0.3	ND(0.005) - 1.52	ND (0.01)	-	ND(0.005) - ND(0.05)	ND (0.01)	-	ND(0.005) - ND(0.05)	ND (0.01)	-
Lead (dissolved)	mg/L	0.01	MAC	0.005	ND(0.0001) - ND(0.002)	ND (0.001)	-	ND(0.0001) - ND(0.002)	ND (0.001)	-	ND(0.0001) - 0.002	ND (0.001)	-
Mercury (dissolved)	mg/L	0.001	MAC	0.0002	ND(0.0001) - 0.0003	ND (0.0001)	-	ND(0.0001) - 0.0008	ND (0.0001)	-	ND(0.0001) - ND(0.001)	ND (0.0001)	-
Nickel (dissolved)	mg/L	-	-	0.025	ND(0.001) - ND(0.01)	ND (0.003)	-	ND(0.001) - ND(0.01)	ND (0.003)	-	ND(0.001) - ND(0.01)	0.003	-
Zinc (dissolved)	mg/L	5.0	AO	0.03	ND(0.005) - 0.084	ND (0.005)	-	0.004 - 0.04	0.008	-	0.003 - 0.04	ND (0.005)	-
Volatile Organic Compounds													
1,1,1,2-Tetrachloroethane	ug/L	-	-	20	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(1)	ND (0.1)	-
1,1,1-Trichloroethane	ug/L	-	-	10	ND(0.2) - ND(0.4)	ND (0.3)	-	ND(0.1) - ND(0.4)	ND (0.3)	-	ND(0.2) - ND(0.8)	ND (0.3)	-
1,1,2,2-Tetrachloroethane	ug/L	-	-	70	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(1)	ND (0.1)	-
1,1,2-Trichloroethane	ug/L	-	-	800	ND(0.2) - ND(0.4)	ND (0.2)	-	ND(0.1) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.8)	ND (0.2)	-
1,1-Dichloroethane	ug/L	-	-	200	ND(0.1) - ND(0.7)	ND (0.3)	-	ND(0.1) - ND(0.7)	ND (0.3)	-	ND(0.1) - ND(0.8)	ND (0.3)	-
1,1-Dichloroethene	ug/L	14	MAC	40	ND(0.1) - ND(0.5)	ND (0.3)	-	ND(0.1) - ND(0.5)	ND (0.3)	-	ND(0.1) - ND(1)	ND (0.3)	-
1,2,4-Trichlorobenzene	ug/L	-	-	0.5	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-
1,2-Dibromoethane (Ethylene dibromide)	ug/L	-	-	5	ND(0.1) - ND(1)	ND (0.1)	-	ND(0.1) - ND(1)	ND (0.1)	-	ND(0.1) - ND(2)	ND (0.1)	-
1,2-Dichlorobenzene	ug/L	200	MAC	2.5	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.8)	ND (0.1)	-
1,2-Dichloroethane	ug/L	5	IMAC	100	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(1)	ND (0.2)	-
1,2-Dichloropropane	ug/L	-	-	0.7	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	-
1,3-Dichlorobenzene	ug/L	-	-	2.5	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.8)	ND (0.1)	-

Table 5

Groundwater Chemistry - Shallow Wells Installed in the North Berm (Active Aquitard)
 2019 Annual Groundwater Monitoring Report
 Clean Harbors Canada Inc. - Lambton Facility

Sample Location: Sample ID: Sample Date:	Units	ODWS		PWQO	TW39-99I			TW39-99S			TW46-99I			
		a	SOURCE		b	06/09/1999 - 11/20/2018	6/12/2019	39I	12/3/2019	06/09/1999 - 11/20/2018	6/12/2019	39S	12/3/2019	11/03/1999 - 11/19/2018
Parameters					Historical Range			Historical Range			Historical Range			
1,3-Dichloropropene	ug/L	-	-	-	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-	
1,4-Dichlorobenzene	ug/L	5	MAC	4	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(10)	ND (0.1)	-	ND(0.1) - ND(0.8)	ND (0.1)	-	
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	-	-	400	ND(1) - ND(5)	ND (1)	-	ND(0.2) - ND(1)	ND (1)	-	ND(1) - ND(5)	ND (1)	-	
2-Hexanone	ug/L	-	-	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-	
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	-	-	-	ND(0.1) - ND(1)	ND (1)	-	ND(0.1) - ND(1)	ND (1)	-	ND(0.1) - ND(1)	ND (1)	-	
Acetone	ug/L	-	-	-	ND(0.1) - ND(1)	ND (1)	-	ND(0.1) - ND(1)	ND (1)	-	ND(0.1) - ND(1)	ND (1)	-	
Benzene	ug/L	1	MAC	100	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	-	
Bromodichloromethane	ug/L	-	-	200	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.3)	ND (0.2)	-	ND(0.2) - ND(0.6)	ND (0.2)	-	
Bromoform	ug/L	-	-	60	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.8)	ND (0.1)	-	
Bromomethane (Methyl bromide)	ug/L	-	-	0.9	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(1)	ND (0.2)	-	
Carbon tetrachloride	ug/L	2	MAC	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	-	
Chlorobenzene	ug/L	80	MAC	15	ND(0.1) - ND(0.2)	ND (0.1)	-	ND(0.1) - ND(0.2)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	
Chloroethane	ug/L	-	-	-	ND(0.2) - ND(1)	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	-	ND(0.2) - ND(2)	ND (0.2)	-	
Chloroform (Trichloromethane)	ug/L	-	-	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(1)	ND (0.2)	-	
Chloromethane (Methyl chloride)	ug/L	-	-	700	ND(0.2) - ND(1)	ND (0.4)	-	ND(0.2) - ND(1)	ND (0.4)	-	ND(0.2) - ND(2)	ND (0.4)	-	
cis-1,2-Dichloroethene	ug/L	-	-	200	ND(0.1) - ND(0.4)	ND (0.2)	-	ND(0.1) - ND(0.4)	ND (0.2)	-	ND(0.1) - ND(0.8)	ND (0.2)	-	
cis-1,3-Dichloropropene	ug/L	-	-	-	ND(0.1) - ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.1) - ND(0.4)	ND (0.2)	-	
Dibromochloromethane	ug/L	-	-	40	ND(0.1) - ND(0.3)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.6)	ND (0.1)	-	
Dichlorodifluoromethane (CFC-12)	ug/L	-	-	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	-	
Ethylbenzene	ug/L	140	MAC	8	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(1)	ND (0.1)	-	
Hexane	ug/L	-	-	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	
m&p-Xylenes	ug/L	-	-	2	ND(0.1) - ND(1)	ND (0.2)	-	ND(0.1) - ND(1)	ND (0.2)	-	ND(0.1) - ND(2)	ND (0.2)	-	
Methyl tert butyl ether (MTBE)	ug/L	15	AO	200	ND(0.1) - ND(0.2)	ND (0.2)	-	ND(0.2) - ND(5)	ND (0.2)	-	ND(0.1) - ND(0.2)	ND (0.2)	-	
Methylene chloride	ug/L	50	MAC	100	ND(0.3) - ND(5)	ND (0.3)	-	ND(0.1) - ND(4)	ND (0.3)	-	ND(0.3) - ND(8)	ND (0.3)	-	
o-Xylene	ug/L	-	-	40	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(1)	ND (0.1)	-	
Styrene	ug/L	-	-	4	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(1)	ND (0.1)	-	
Tetrachloroethene	ug/L	10	MAC	50	ND(0.1) - ND(0.3)	ND (0.2)	-	ND(0.2) - ND(0.3)	ND (0.2)	-	ND(0.1) - ND(0.6)	ND (0.2)	-	
Toluene	ug/L	60	MAC	0.8	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	-	
trans-1,2-Dichloroethene	ug/L	-	-	200	ND(0.1) - ND(0.4)	ND (0.2)	-	ND(0.1) - ND(0.4)	ND (0.2)	-	ND(0.1) - ND(0.8)	ND (0.2)	-	
trans-1,3-Dichloropropene	ug/L	-	-	7	ND(0.2) - ND(10)	ND (0.3)	-	ND(0.1) - ND(0.3)	ND (0.3)	-	ND(0.2) - ND(10)	ND (0.3)	-	
Trichloroethene	ug/L	5	MAC	20	ND(0.2) - ND(0.3)	ND (0.2)	-	ND(0.2) - ND(0.3)	ND (0.2)	-	ND(0.2) - ND(0.6)	ND (0.2)	-	
Trichlorofluoromethane (CFC-11)	ug/L	-	-	-	ND(0.1) - ND(0.5)	ND (0.4)	-	ND(0.2) - ND(0.5)	ND (0.4)	-	ND(0.1) - ND(1)	ND (0.4)	-	
Vinyl chloride	ug/L	1	MAC	600	ND(0.1) - ND(0.2)	ND (0.17)	-	ND(0.1) - ND(0.2)	ND (0.17)	-	ND(0.1) - ND(0.4)	ND (0.17)	-	
Xylenes (total)	ug/L	90	MAC	-	ND(0.2) - ND(1.5)	ND (0.2)	-	ND(0.2) - ND(1.5)	ND (0.2)	-	ND(0.2) - ND(1.5)	ND (0.2)	-	

Notes:

- ^a Indicates value exceeds Ontario Drinking Water Standards. Objectives and Guidelines, Ontario Ministry of the Environment, as revised June 2006 (ODWS).
- ^b Indicates value exceeds Policy and Guidelines - Provincial Water Quality Guidelines. The Ontario Ministry of the Environment and Energy, July 1994 (PWQO).
- ^c Analytical result outside of the historical concentration range for the parameter.
- ND Not detected at the associated reporting limit.
- J Estimated concentration.
- 4.90** Detected result exceeds associated standard.
- OG Operational Guideline
- AO Aesthetic Objective
- MAC Maximum Acceptable Concentration
- IMAC Interim Maximum Acceptable Concentration
- Not applicable or not analysed.

Table 5

Groundwater Chemistry - Shallow Wells Installed in the North Berm (Active Aquitard)
2019 Annual Groundwater Monitoring Report
Clean Harbors Canada Inc. - Lambton Facility

Sample Location:	TW46-99S			TW61-13I			TW61-13S			
	Sample ID:	46S	46S	61I	61I	61S	61S			
Sample Date:	11/03/1999 - 11/19/2018	6/12/2019	12/3/2019	11/05/2013 - 11/20/2018	6/11/2019	12/4/2019	11/07/2013 - 11/20/2018	6/11/2019	12/3/2019	
Parameters	Units	Historical Range		Historical Range		Historical Range				
Field Parameters										
Conductivity, field	uS/cm	1030 - 2070	-	1870	980 - 1260	1000	1190	1230 - 1320	1000 ^c	1280
pH, field	s.u.	6.75 - 7.65	7.28	7.14	6.58 - 7.71	7.61	7.09	6.48 - 7.54	7.56 ^c	7.13
Temperature, field	Deg C	10 - 16.4	11.77	12.21	10.6 - 12.78	13.95 ^c	9.95 ^c	11.17 - 12.6	12.92 ^c	10.01 ^c
Total dissolved solids, field (TDS)	mg/L	-	0.1	5.45	-	0.1	6.87	-	0.1	6.57
General Indicators										
Conductivity, electrical	uS/cm	1310 - 2400	1760	1480	899 - 1100	1060	914	1150 - 1370	1230	1010 ^c
pH, lab	s.u.	7.3 - 8.21	7.78	7.72	7.63 - 8.27	7.85	7.69	7.64 - 8.25	7.84	7.81
Total dissolved solids (TDS)	mg/L	917 - 1980	1380 ^a	1360 ^a	620 - 696	700 ^{ac}	762 ^{ac}	766 - 890	776 ^a	738 ^{ac}
Minor Ions - Anions										
Alkalinity, total (as CaCO3)	mg/L	270 - 375	327	335	329 - 372	309 ^c	334	368 - 469	430	453
Chloride	mg/L	23 - 100	28.4	36.3	21.8 - 24.8	21.2 ^c	20.5 ^c	18.8 - 22.6	19.8	19.5
Sulfate	mg/L	356 - 956	720 ^a	727 ^a	189 - 280	262	294 ^c	262 - 313	242 ^c	246 ^c
Major Ions - Cations										
Calcium (dissolved)	mg/L	78 - 243	206	194	98.8 - 128	124	128	108 - 140	128	121
Magnesium (dissolved)	mg/L	33 - 110	86.7	79.2	47.5 - 63	57.1	56.9	55.8 - 74	63.9	58.3
Potassium (dissolved)	mg/L	5 - 19	7.95	6.5	0.62 - 1	1.26 ^c	1.03 ^c	1.78 - 3	2.47	2.3
Sodium (dissolved)	mg/L	78.5 - 320	89.2 ^a	102 ^a	23 - 30.2	32.6 ^{ac}	32.5 ^{ac}	55.5 - 68	71 ^{ac}	68 ^a
Major Ions - Nutrients										
Ammonia-N	mg/L	0.02 - 0.36	ND (0.02)	ND (0.02)	ND(0.02) - 0.1	ND (0.02)	ND (0.02)	0.02 - 0.05	0.08 ^c	ND (0.02)
Nitrate (as N)	mg/L	ND(0.1) - 0.88	ND (0.5)	ND (0.5)	ND(0.1) - ND(0.25)	ND (0.25)	ND (0.25)	0.11 - 0.89	ND (0.25)	ND (0.25)
Nitrite (as N)	mg/L	ND(0.01) - 0.5	ND (0.5)	ND (0.5)	ND(0.1) - ND(0.25)	ND (0.25)	ND (0.25)	ND(0.1) - ND(0.25)	ND (0.25)	ND (0.25)
Major Ions - Miscellaneous										
Bromide	mg/L	0.12 - 1.3	ND (0.5)	ND (0.5)	ND(0.25)	ND (0.25)	ND (0.25)	ND(0.25) - 0.62	ND (0.25)	0.71 ^c
Cyanide (free)	mg/L	ND(0.002) - ND(0.02)	ND (0.002)	ND (0.002) J	ND(0.002) - ND(0.005)	ND (0.002)	ND (0.002) J	ND(0.002) - ND(0.005)	ND (0.002)	ND (0.002) J
Fluoride	mg/L	ND(0.05) - 1.5	ND (0.5)	ND (0.5)	ND(0.25) - 0.48	ND (0.25)	ND (0.25)	ND(0.25) - 0.99	0.62	0.43
Metals										
Arsenic (dissolved)	mg/L	0.001 - ND(0.01)	ND (0.003)	-	ND(0.001) - ND(0.003)	ND (0.003)	-	ND(0.001) - ND(0.003)	ND (0.003)	-
Barium (dissolved)	mg/L	0.015 - 0.068	0.015	-	0.053 - 0.07	0.047 ^c	-	0.04 - 0.08	0.036 ^c	-
Boron (dissolved)	mg/L	0.81 - 31	2.18 ^b	-	0.08 - 0.44	0.109 J+	-	0.302 - 0.4	0.267 ^{bc}	-
Cadmium (dissolved)	mg/L	ND(0.0001) - ND(0.003)	ND (0.001)	-	ND(0.0001) - ND(0.001)	ND (0.001)	-	ND(0.0001) - ND(0.001)	ND (0.001)	-
Chromium (dissolved)	mg/L	ND(0.0003) - ND(0.01)	ND (0.003)	-	ND(0.001) - 0.003	ND (0.003)	-	ND(0.001) - 0.004	ND (0.003)	-
Iron (dissolved)	mg/L	ND(0.005) - ND(0.05)	ND (0.01)	-	ND(0.01) - ND(0.03)	ND (0.01)	-	ND(0.01) - ND(0.03)	ND (0.01)	-
Lead (dissolved)	mg/L	ND(0.0005) - ND(0.002)	ND (0.001)	-	ND(0.001) - ND(0.002)	ND (0.001)	-	ND(0.001) - ND(0.002)	ND (0.001)	-
Mercury (dissolved)	mg/L	ND(0.0001) - ND(0.001)	ND (0.0001)	-	ND(0.0001)	ND (0.0001)	-	ND(0.0001)	ND (0.0001)	-
Nickel (dissolved)	mg/L	ND(0.003) - 0.012	0.005	-	ND(0.003) - ND(0.005)	ND (0.003)	-	ND(0.003) - 0.006	ND (0.003)	-
Zinc (dissolved)	mg/L	ND(0.003) - 0.04	ND (0.005)	-	ND(0.005) - 0.03	ND (0.005)	-	ND(0.005) - 0.01	ND (0.005)	-
Volatile Organic Compounds										
1,1,1,2-Tetrachloroethane	ug/L	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
1,1,1-Trichloroethane	ug/L	ND(0.2) - ND(0.4)	ND (0.3)	-	ND(0.3) - ND(0.4)	ND (0.3)	-	ND(0.3) - ND(0.4)	ND (0.3)	-
1,1,2,2-Tetrachloroethane	ug/L	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
1,1,2-Trichloroethane	ug/L	ND(0.2) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-
1,1-Dichloroethane	ug/L	ND(0.1) - ND(0.7)	ND (0.3)	-	ND(0.3) - ND(0.4)	ND (0.3)	-	ND(0.3) - ND(0.4)	ND (0.3)	-
1,1-Dichloroethene	ug/L	ND(0.1) - ND(0.5)	ND (0.3)	-	ND(0.3) - ND(0.5)	ND (0.3)	-	ND(0.3) - ND(0.5)	ND (0.3)	-
1,2,4-Trichlorobenzene	ug/L	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-
1,2-Dibromoethane (Ethylene dibromide)	ug/L	ND(0.1) - ND(1)	ND (0.1)	-	ND(0.1) - ND(0.2)	ND (0.1)	-	ND(0.1) - ND(0.2)	ND (0.1)	-
1,2-Dichlorobenzene	ug/L	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
1,2-Dichloroethane	ug/L	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-
1,2-Dichloropropane	ug/L	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
1,3-Dichlorobenzene	ug/L	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-

Table 5

**Groundwater Chemistry - Shallow Wells Installed in the North Berm (Active Aquitard)
2019 Annual Groundwater Monitoring Report
Clean Harbors Canada Inc. - Lambton Facility**

Sample Location: Sample ID: Sample Date:	TW46-99S			TW61-13I			TW61-13S			
	46S		46S	61I		61I	61S		61S	
	11/03/1999 - 11/19/2018	6/12/2019	12/3/2019	11/05/2013 - 11/20/2018	6/11/2019	12/4/2019	11/07/2013 - 11/20/2018	6/11/2019	12/3/2019	
Parameters	Units	Historical Range			Historical Range			Historical Range		
1,3-Dichloropropene	ug/L	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-
1,4-Dichlorobenzene	ug/L	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	ND(1) - ND(5)	ND (1)	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-
2-Hexanone	ug/L	ND(1)	ND (1)	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	ND(0.1) - ND(1)	ND (1)	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-
Acetone	ug/L	ND(0.1) - ND(1)	ND (1)	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-
Benzene	ug/L	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
Bromodichloromethane	ug/L	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.3)	ND (0.2)	-	ND(0.2) - ND(0.3)	ND (0.2)	-
Bromoform	ug/L	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
Bromomethane (Methyl bromide)	ug/L	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
Carbon tetrachloride	ug/L	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-
Chlorobenzene	ug/L	ND(0.1) - ND(0.2)	ND (0.1)	-	ND(0.1) - ND(0.2)	ND (0.1)	-	ND(0.1) - ND(0.2)	ND (0.1)	-
Chloroethane	ug/L	ND(0.2) - ND(1)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-
Chloroform (Trichloromethane)	ug/L	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
Chloromethane (Methyl chloride)	ug/L	ND(0.2) - ND(1)	ND (0.4)	-	ND(0.2) - ND(0.4)	ND (0.4)	-	ND(0.2) - ND(0.4)	ND (0.4)	-
cis-1,2-Dichloroethene	ug/L	ND(0.1) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-
cis-1,3-Dichloropropene	ug/L	ND(0.1) - ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-
Dibromochloromethane	ug/L	ND(0.1) - ND(0.3)	ND (0.1)	-	ND(0.1) - ND(0.3)	ND (0.1)	-	ND(0.1) - ND(0.3)	ND (0.1)	-
Dichlorodifluoromethane (CFC-12)	ug/L	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
Ethylbenzene	ug/L	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
Hexane	ug/L	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-
m&p-Xylenes	ug/L	ND(0.1) - ND(1)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
Methyl tert butyl ether (MTBE)	ug/L	ND(0.1) - ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-
Methylene chloride	ug/L	ND(0.3) - ND(5)	ND (0.3)	-	ND(0.3) - ND(4)	ND (0.3)	-	ND(0.3) - ND(4)	ND (0.3)	-
o-Xylene	ug/L	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
Styrene	ug/L	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
Tetrachloroethene	ug/L	ND(0.1) - ND(0.3)	ND (0.2)	-	ND(0.2) - ND(0.3)	ND (0.2)	-	ND(0.2) - ND(0.3)	ND (0.2)	-
Toluene	ug/L	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
trans-1,2-Dichloroethene	ug/L	ND(0.1) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-
trans-1,3-Dichloropropene	ug/L	ND(0.2) - ND(10)	ND (0.3)	-	ND(0.2) - ND(0.3)	ND (0.3)	-	ND(0.2) - ND(0.3)	ND (0.3)	-
Trichloroethene	ug/L	ND(0.2) - ND(0.3)	ND (0.2)	-	ND(0.2) - ND(0.3)	ND (0.2)	-	ND(0.2) - ND(0.3)	ND (0.2)	-
Trichlorofluoromethane (CFC-11)	ug/L	ND(0.1) - ND(0.5)	ND (0.4)	-	ND(0.4) - ND(0.5)	ND (0.4)	-	ND(0.4) - ND(0.5)	ND (0.4)	-
Vinyl chloride	ug/L	ND(0.1) - ND(0.2)	ND (0.17)	-	ND(0.17) - ND(0.2)	ND (0.17)	-	ND(0.17) - ND(0.2)	ND (0.17)	-
Xylenes (total)	ug/L	ND(0.2) - ND(1.5)	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	-

Notes:

- ^a Indicates value exceeds Ontario Drinking Water Standards Guidelines, Ontario Ministry of the Environment, as revised
- ^b Indicates value exceeds Policy and Guidelines - Provincial The Ontario Ministry of the Environment and Energy, July
- ^c Analytical result outside of the historical concentration range
- ND Not detected at the associated reporting limit.
- J Estimated concentration.
- 4.90** Detected result exceeds associated standard.
- OG Operational Guideline
- AO Aesthetic Objective
- MAC Maximum Acceptable Concentration
- IMAC Interim Maximum Acceptable Concentration
- Not applicable or not analysed.

Table 6

Groundwater Chemistry - Shallow Wells along Perimeter of Facility Property, Downgradient of North Berm (Active Aquitard)
 2019 Annual Groundwater Monitoring Report
 Clean Harbors Canada Inc. - Lambton Facility

Sample Location: Sample ID: Sample Date:	Units	ODWS a	ODWS SOURCE	PWQO b	OW32-90S			OW35-90S			TW21-94-II		
					06/19/1991 - 11/21/2018 Historical Range	32S 6/12/2019	32S 12/2/2019	06/20/1991 - 11/21/2018 Historical Range	35S 6/12/2019	35S 12/2/2019	08/22/1994 - 11/19/2018 Historical Range	21II 6/12/2019	21II 12/3/2019
Field Parameters													
Conductivity, field	uS/cm	-	-	-	802 - 1290	2180 ^c	1190	1000 - 1490	5940 ^c	1450	810 - 1270	1670 ^c	1260
pH, field	s.u.	6.5-8.5	OG	6.5-8.5	7.04 - 7.86	7.51	7.22	6.93 - 8.03	7.51	7.29	6.44 - 8.06	7.39	7.15
Temperature, field	Deg C	15	AO	-	8.9 - 16	12.1	10.77	10.27 - 15.8	10.63	10.09 ^c	10.5 - 15.6	10.84	10.39 ^c
Total dissolved solids, field (TDS)	mg/L	500	AO	-	-	0.09	6.58	-	0.1	2.53	-	0.1	4.6
General Indicators													
Conductivity, electrical	uS/cm	-	-	-	889 - 1430	1200	939	804 - 1500	1490	1160	742 - 1400	1210	939
pH, lab	s.u.	6.5-8.5	OG	6.5-8.5	7.2 - 8.18	7.88	7.77	7.5 - 8.33	7.8	7.73	7.49 - 8.22	7.8	7.71
Total dissolved solids (TDS)	mg/L	500	AO	-	578 - 1100	894 ^a	780 ^a	631 - 1100	1160 ^{abc}	1070 ^a	400 - 900	872 ^a	786 ^a
Minor Ions - Anions													
Alkalinity, total (as CaCO3)	mg/L	30-500	OG	-	200 - 360	325	323	200 - 338	349 ^c	314	210 - 495	401	451
Chloride	mg/L	250	AO	-	9.23 - 45.1	9.52	8.3 ^c	7 - 36.6	8.8	7.2	5.24 - 16	5.69	4.1 ^c
Sulfate	mg/L	500	AO	-	235 - 495	362	354	152 - 628	548 ^a	555 ^a	85 - 422	303	233
Major Ions - Cations													
Calcium (dissolved)	mg/L	-	-	-	110 - 191	173	158	21.7 - 178	204 ^c	186 ^c	71.6 - 191	181	170
Magnesium (dissolved)	mg/L	-	-	-	38.3 - 71	58.8	51.5	8 - 84	85.9 ^c	74.2	36 - 68	55.2	47.7
Potassium (dissolved)	mg/L	-	-	-	1.49 - 6	2.23	1.91	0.8 - 5.4	3.95	3.21	0.51 - 3.2	1.08	0.82
Sodium (dissolved)	mg/L	20/200	AO	-	20.2 - 69.1	22.3 ^a	23 ^a	28.7 - 306	34.1 ^a	32.7 ^a	15.7 - 46	18.9	18.7
Major Ions - Nutrients													
Ammonia-N	mg/L	-	-	-	0.02 - 0.26	ND (0.02)	ND (0.02)	0.02 - 0.44	0.52 ^c	ND (0.02)	ND(0.02) - 0.24	0.02	ND (0.02)
Nitrate (as N)	mg/L	10.0	MAC	-	ND(0.03) - 2.63	ND (0.25)	ND (0.25)	ND(0.03) - 1.02	ND (0.5)	ND (0.5)	ND(0.086) - ND(5)	ND (0.25)	ND (0.5)
Nitrite (as N)	mg/L	1.0	MAC	-	ND(0.01) - ND(0.25)	ND (0.25)	ND (0.25)	ND(0.01) - ND(0.25)	ND (0.5)	ND (0.5)	ND(0.01) - ND(0.25)	ND (0.25)	ND (0.5)
Major Ions - Miscellaneous													
Bromide	mg/L	-	-	-	ND(0.05) - ND(3.5)	ND (0.25)	ND (0.25)	ND(0.02) - ND(0.35)	ND (0.5)	ND (0.5)	ND(0.02) - ND(3.5)	ND (0.25)	ND (0.5)
Cyanide (free)	mg/L	-	-	0.005	ND(0.002) - ND(0.02)	ND (0.002)	ND (0.002) J	0.002 - ND(0.02)	ND (0.002)	ND (0.002) J	ND(0.002) - ND(0.02)	ND (0.002)	ND (0.002) J
Fluoride	mg/L	1.5	MAC	-	ND(0.25) - ND(1)	ND (0.25)	ND (0.25)	ND(0.25) - 1	ND (0.5)	ND (0.5)	0.22 - 1	ND (0.25)	ND (0.5)
Metals													
Arsenic (dissolved)	mg/L	0.010	IMAC	0.005	ND(0.001) - ND(0.06)	ND (0.003)	-	ND(0.001) - ND(0.06)	0.003	-	ND(0.001) - ND(0.06)	ND (0.003)	-
Barium (dissolved)	mg/L	1.0	MAC	-	0.02 - 0.06	0.027	-	0.02 - 0.29	0.026	-	0.04 - 0.073	0.048	-
Boron (dissolved)	mg/L	5.0	IMAC	0.2	0.21 - 3.71	0.183 ^c	-	0.083 - 2.46	0.195	-	ND(0.03) - 0.309	0.092 J+	-
Cadmium (dissolved)	mg/L	0.005	MAC	0.0002	ND(0.0001) - ND(0.005)	ND (0.001)	-	0.0001 - ND(0.005)	ND (0.001)	-	ND(0.0001) - ND(0.005)	ND (0.001)	-
Chromium (dissolved)	mg/L	0.05	MAC	0.001	0.001 - ND(0.01)	ND (0.003)	-	0.001 - ND(0.01)	ND (0.003)	-	ND(0.001) - ND(0.01)	ND (0.003)	-
Iron (dissolved)	mg/L	0.30	AO	0.3	ND(0.005) - 0.05	ND (0.01)	-	ND(0.005) - 0.17	1.83 ^{abc}	-	ND(0.005) - 0.062	ND (0.01)	-
Lead (dissolved)	mg/L	0.01	MAC	0.005	ND(0.0005) - ND(0.05)	ND (0.001)	-	ND(0.0005) - ND(0.05)	ND (0.001)	-	ND(0.0005) - ND(0.025)	ND (0.001)	-
Mercury (dissolved)	mg/L	0.001	MAC	0.0002	ND(0.0001) - 0.00018	ND (0.0001)	-	ND(0.0001) - 0.00016	ND (0.0001)	-	ND(0.0001)	ND (0.0001)	-
Nickel (dissolved)	mg/L	-	-	0.025	ND(0.001) - 0.01	ND (0.003)	-	ND(0.003) - ND(0.01)	0.007	-	0.001 - ND(0.01)	ND (0.003)	-
Zinc (dissolved)	mg/L	5.0	AO	0.03	ND(0.003) - 0.05	ND (0.005)	-	0.005 - 0.09	ND (0.005)	-	ND(0.005) - 0.045	ND (0.005)	-
Volatile Organic Compounds													
1,1,1,2-Tetrachloroethane	ug/L	-	-	20	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
1,1,1-Trichloroethane	ug/L	-	-	10	ND(0.2) - ND(0.4)	ND (0.3)	-	ND(0.2) - ND(0.4)	ND (0.3)	-	ND(0.2) - ND(0.4)	ND (0.3)	-
1,1,2,2-Tetrachloroethane	ug/L	-	-	70	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
1,1,2-Trichloroethane	ug/L	-	-	800	ND(0.2) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-
1,1-Dichloroethane	ug/L	-	-	200	ND(0.1) - ND(0.7)	ND (0.3)	-	ND(0.1) - ND(0.7)	ND (0.3)	-	ND(0.1) - ND(0.7)	ND (0.3)	-
1,1-Dichloroethene	ug/L	14	MAC	40	ND(0.1) - ND(0.5)	ND (0.3)	-	ND(0.1) - ND(0.5)	ND (0.3)	-	ND(0.1) - ND(0.5)	ND (0.3)	-
1,2,4-Trichlorobenzene	ug/L	-	-	0.5	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-
1,2-Dibromoethane (Ethylene dibromide)	ug/L	-	-	5	ND(0.1) - ND(1)	ND (0.1)	-	ND(0.1) - ND(1)	ND (0.1)	-	ND(0.1) - ND(1)	ND (0.1)	-
1,2-Dichlorobenzene	ug/L	200	MAC	2.5	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
1,2-Dichloroethane	ug/L	5	IMAC	100	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(0.5)	ND (0.2)	-
1,2-Dichloropropane	ug/L	-	-	0.7	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
1,3-Dichlorobenzene	ug/L	-	-	2.5	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
1,3-Dichloropropene	ug/L	-	-	-	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-

Table 6

**Groundwater Chemistry - Shallow Wells along Perimeter of Facility Property, Downgradient of North Berm (Active Aquitard)
2019 Annual Groundwater Monitoring Report
Clean Harbors Canada Inc. - Lambton Facility**

Sample Location: Sample ID: Sample Date:	Units				OW32-90S			OW35-90S			TW21-94-II		
		ODWS	ODWS	PWQO	06/19/1991 - 11/21/2018	32S 6/12/2019	32S 12/2/2019	06/20/1991 - 11/21/2018	35S 6/12/2019	35S 12/2/2019	08/22/1994 - 11/19/2018	21II 6/12/2019	21II 12/3/2019
		a	SOURCE	b	Historical Range			Historical Range			Historical Range		
1,4-Dichlorobenzene	ug/L	5	MAC	4	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	-	-	400	ND(1) - ND(5)	ND (1)	-	ND(1) - ND(5)	ND (1)	-	ND(1) - ND(5)	ND (1)	-
2-Hexanone	ug/L	-	-	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	-	-	-	ND(0.1) - ND(1)	ND (1)	-	ND(0.1) - ND(1)	ND (1)	-	ND(0.1) - ND(1)	ND (1)	-
Acetone	ug/L	-	-	-	ND(0.1) - ND(1)	ND (1)	-	ND(0.1) - ND(1)	ND (1)	-	ND(0.1) - ND(1)	ND (1)	-
Benzene	ug/L	1	MAC	100	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
Bromodichloromethane	ug/L	-	-	200	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
Bromoform	ug/L	-	-	60	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
Bromomethane (Methyl bromide)	ug/L	-	-	0.9	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(0.5)	ND (0.2)	-
Carbon tetrachloride	ug/L	2	MAC	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
Chlorobenzene	ug/L	80	MAC	15	ND(0.1) - ND(0.2)	ND (0.1)	-	ND(0.1) - ND(0.2)	ND (0.1)	-	ND(0.1) - ND(0.2)	ND (0.1)	-
Chloroethane	ug/L	-	-	-	ND(0.2) - ND(1)	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	-
Chloroform (Trichloromethane)	ug/L	-	-	-	ND(0.1) - 0.9	ND (0.2)	-	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
Chloromethane (Methyl chloride)	ug/L	-	-	700	ND(0.2) - ND(1)	ND (0.4)	-	ND(0.2) - ND(1)	ND (0.4)	-	ND(0.2) - ND(1)	ND (0.4)	-
cis-1,2-Dichloroethene	ug/L	-	-	200	ND(0.1) - ND(0.4)	ND (0.2)	-	ND(0.1) - ND(0.4)	ND (0.2)	-	ND(0.1) - ND(0.4)	ND (0.2)	-
cis-1,3-Dichloropropene	ug/L	-	-	-	ND(0.1) - ND(0.2)	ND (0.2)	-	ND(0.1) - ND(0.2)	ND (0.2)	-	ND(0.1) - ND(0.2)	ND (0.2)	-
Dibromochloromethane	ug/L	-	-	40	ND(0.1) - ND(0.3)	ND (0.1)	-	ND(0.1) - ND(0.3)	ND (0.1)	-	ND(0.1) - ND(0.3)	ND (0.1)	-
Dichlorodifluoromethane (CFC-12)	ug/L	-	-	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
Ethylbenzene	ug/L	140	MAC	8	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
Hexane	ug/L	-	-	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-
m&p-Xylenes	ug/L	-	-	2	ND(0.1) - ND(1)	ND (0.2)	-	ND(0.1) - ND(1)	ND (0.2)	-	ND(0.1) - ND(1)	ND (0.2)	-
Methyl tert butyl ether (MTBE)	ug/L	15	AO	200	ND(0.1) - ND(0.2)	ND (0.2)	-	ND(0.1) - ND(0.2)	ND (0.2)	-	ND(0.1) - ND(0.2)	ND (0.2)	-
Methylene chloride	ug/L	50	MAC	100	ND(0.3) - ND(5)	ND (0.3)	-	ND(0.3) - ND(5)	ND (0.3)	-	ND(0.3) - ND(5)	ND (0.3)	-
o-Xylene	ug/L	-	-	40	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
Styrene	ug/L	-	-	4	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
Tetrachloroethene	ug/L	10	MAC	50	ND(0.1) - ND(0.3)	ND (0.2)	-	ND(0.1) - ND(0.3)	ND (0.2)	-	ND(0.1) - ND(0.3)	ND (0.2)	-
Toluene	ug/L	60	MAC	0.8	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	0.43	-	ND(0.2) - ND(0.5)	ND (0.2)	-
trans-1,2-Dichloroethene	ug/L	-	-	200	ND(0.1) - ND(0.4)	ND (0.2)	-	ND(0.1) - ND(0.4)	ND (0.2)	-	ND(0.1) - ND(0.4)	ND (0.2)	-
trans-1,3-Dichloropropene	ug/L	-	-	7	ND(0.2) - ND(10)	ND (0.3)	-	ND(0.2) - ND(10)	ND (0.3)	-	ND(0.2) - ND(10)	ND (0.3)	-
Trichloroethene	ug/L	5	MAC	20	ND(0.2) - ND(0.3)	ND (0.2)	-	ND(0.2) - ND(0.3)	ND (0.2)	-	ND(0.2) - ND(0.3)	ND (0.2)	-
Trichlorofluoromethane (CFC-11)	ug/L	-	-	-	ND(0.1) - ND(0.5)	ND (0.4)	-	ND(0.1) - ND(0.5)	ND (0.4)	-	ND(0.1) - ND(0.5)	ND (0.4)	-
Vinyl chloride	ug/L	1	MAC	600	ND(0.1) - ND(0.2)	ND (0.17)	-	ND(0.1) - ND(0.2)	ND (0.17)	-	ND(0.1) - ND(0.2)	ND (0.17)	-
Xylenes (total)	ug/L	90	MAC	-	ND(0.2) - ND(1.5)	ND (0.2)	-	ND(0.2) - ND(1.5)	ND (0.2)	-	ND(0.2) - ND(1.5)	ND (0.2)	-

Notes:

- ^a Indicates value exceeds Ontario Drinking Water Standards. Objectives and Guidelines, Ontario Ministry of the Environment, as revised June 2006 (ODWS).
- ^b Indicates value exceeds Policy and Guidelines - Provincial Water Quality Guidelines. The Ontario Ministry of the Environment and Energy, July 1994 (PWQO).
- ^c Analytical result outside of the historical concentration range for the parameter.
- ND Not detected at the associated reporting limit.
- J Estimated concentration.
- 4.90** Detected result exceeds associated standard.
- OG Operational Guideline
- AO Aesthetic Objective
- MAC Maximum Acceptable Concentration
- IMAC Interim Maximum Acceptable Concentration
- Not applicable or not analysed.

Table 6

**Groundwater Chemistry - Shallow Wells along Perimeter of Facility Property, Downgradient of North Berm (Active Aquitard)
2019 Annual Groundwater Monitoring Report
Clean Harbors Canada Inc. - Lambton Facility**

Sample Location: Sample ID: Sample Date:	TW22-94			TW32-94-IV			TW40-99S			TW53-03S			
	08/13/1994 - 11/19/2018 Historical Range	22 6/11/2019	22S 12/3/2019	08/05/1994 - 11/19/2018 Historical Range	32IV 6/12/2019	32IV 12/3/2019	06/08/1999 - 11/19/2018 Historical Range	40S 6/12/2019	40S 12/3/2019	10/28/2003 - 11/21/2018 Historical Range	53S 6/12/2019	53S 12/2/2019	
Parameters	Units												
Field Parameters													
Conductivity, field	uS/cm	1140 - 1860	2390 ^c	1880 ^c	869 - 1440	4310 ^c	9850 ^c	813 - 9490	2960	1350	912 - 1340	-	1420 ^c
pH, field	s.u.	6.61 - 8.09	7.81	7.16	6.77 - 8.2	7.49	7.24	6.71 - 8.12	7.45	7.1	6.87 - 7.58	7.3	7.16
Temperature, field	Deg C	10.5 - 18.4	12.61	10.6	8.9 - 15.9	10.55	10.17	9.8 - 17.5	10.5	11.03	10.5 - 16.9	10.92	10.74
Total dissolved solids, field (TDS)	mg/L	-	0.1	6.08	-	0.1	6.33	-	0.1	4.9	-	0.1	2.7
General Indicators													
Conductivity, electrical	uS/cm	1029 - 1850	1850	1500	915 - 1600	859 ^c	684 ^c	780 - 1300	1230	1050	860 - 1550	1190	1100
pH, lab	s.u.	7.48 - 8.2	7.87	7.74	7.63 - 8.39	7.87	7.88	7.6 - 8.27	7.83	7.67	7.7 - 8.21	7.85	7.71
Total dissolved solids (TDS)	mg/L	692 - 1520	1360 ^a	1300 ^a	522 - 1200	546 ^a	514 ^{ac}	533 - 955	848 ^a	864 ^a	ND(5) - 1110	872 ^a	954 ^a
Minor Ions - Anions													
Alkalinity, total (as CaCO3)	mg/L	340 - 487	438	459	260 - 428	345	334	334 - 422	358	408	299 - 449	342	391
Chloride	mg/L	30 - 74.3	60.7	57.5	17.2 - 260	12.2 ^c	12.4 ^c	17 - 26	18	19.1	4.1 - 13	4.99	4.56
Sulfate	mg/L	282 - 692	644 ^a	589 ^a	ND(1) - 564	102	125	126 - 348	319	339	173 - 516	371	437
Major Ions - Cations													
Calcium (dissolved)	mg/L	102 - 178	178	175	15 - 195	87.7	86.9	77.7 - 106	113 ^c	119 ^c	100 - 258	173	199
Magnesium (dissolved)	mg/L	73.3 - 121	115	105	7 - 88.5	45.8	40.8	52.5 - 74	77.5 ^c	78.5 ^c	40 - 85	59.5	64.8
Potassium (dissolved)	mg/L	1.69 - 4.4	1.63 ^c	2.14	0.54 - 4	0.7	1.03	1.64 - 3	1.71	2.14	0.95 - 3	1.23	1.02
Sodium (dissolved)	mg/L	58.7 - 109	81.8 ^a	85.8 ^a	30.1 - 256	35.8 ^a	35 ^a	40 - 54.9	47.1 ^a	52.7 ^a	17.1 - 90	18.6	20
Major Ions - Nutrients													
Ammonia-N	mg/L	0.02 - 0.14	0.02	ND (0.02)	0.02 - 0.4	ND (0.02)	ND (0.02)	0.02 - 0.16	ND (0.02)	ND (0.02)	0.02 - 0.28	0.02	ND (0.02)
Nitrate (as N)	mg/L	ND(0.01) - ND(2)	ND (0.5)	ND (0.5)	ND(0.01) - ND(2)	ND (0.25)	ND (0.1)	0.072 - 3.23	ND (0.25)	ND (0.25)	ND(0.1) - ND(0.5)	ND (0.25)	ND (0.25)
Nitrite (as N)	mg/L	ND(0.01) - ND(0.5)	ND (0.5)	ND (0.5)	ND(0.01) - ND(0.25)	ND (0.25)	ND (0.1)	ND(0.01) - ND(0.25)	ND (0.25)	ND (0.25)	ND(0.01) - ND(0.25)	ND (0.25)	ND (0.25)
Major Ions - Miscellaneous													
Bromide	mg/L	ND(0.05) - ND(3.5)	ND (0.5)	ND (0.5)	ND(0.02) - ND(3.5)	ND (0.25)	ND (0.1)	ND(0.05) - ND(3.5)	ND (0.25)	ND (0.25)	ND(0.05) - ND(1.8)	ND (0.25)	ND (0.25)
Cyanide (free)	mg/L	ND(0.002) - ND(0.02)	ND (0.002)	ND (0.002) J	ND(0.002) - ND(0.02)	ND (0.002)	ND (0.002) J	ND(0.002) - ND(0.02)	ND (0.002)	ND (0.002) J	ND(0.002) - ND(0.02)	ND (0.002)	ND (0.002) J
Fluoride	mg/L	ND(0.25) - 1.3	ND (0.5)	ND (0.5)	ND(0.25) - 1.35	ND (0.25)	0.3	ND(0.25) - 1.4	0.77	0.49	ND(0.25) - 0.97	ND (0.25)	ND (0.25)
Metals													
Arsenic (dissolved)	mg/L	ND(0.001) - ND(0.06)	ND (0.003)	-	ND(0.001) - ND(0.06)	ND (0.003)	-	ND(0.001) - ND(0.003)	ND (0.003)	-	ND(0.001) - ND(0.003)	ND (0.003)	-
Barium (dissolved)	mg/L	ND(0.002) - 0.058	0.018	-	0.01 - 0.19	0.023	-	0.028 - 0.06	0.028	-	0.03 - 0.068	0.026 ^c	-
Boron (dissolved)	mg/L	ND(0.03) - 0.295	0.137	-	0.12 - 1.8	0.071 J+ ^c	-	0.15 - 0.24	0.166	-	0.09 - 0.19	0.111 J+	-
Cadmium (dissolved)	mg/L	ND(0.0001) - ND(0.005)	ND (0.001)	-	ND(0.0001) - ND(0.005)	ND (0.001)	-	ND(0.0001) - 0.005	ND (0.001)	-	ND(0.0001) - ND(0.001)	ND (0.001)	-
Chromium (dissolved)	mg/L	ND(0.001) - ND(0.01)	ND (0.003)	-	0.001 - ND(0.01)	ND (0.003)	-	0.001 - ND(0.01)	ND (0.003)	-	0.001 - ND(0.01)	ND (0.003)	-
Iron (dissolved)	mg/L	ND(0.005) - 0.46	ND (0.01)	-	ND(0.005) - 0.682	ND (0.01)	-	ND(0.005) - ND(0.05)	ND (0.01)	-	ND(0.01) - ND(0.05)	ND (0.01)	-
Lead (dissolved)	mg/L	ND(0.0005) - ND(0.025)	ND (0.001)	-	ND(0.0005) - ND(0.025)	0.002	-	ND(0.0005) - ND(0.002)	ND (0.001)	-	ND(0.0005) - ND(0.002)	ND (0.001)	-
Mercury (dissolved)	mg/L	ND(0.0001)	ND (0.0001)	-	ND(0.0001) - 0.0005	ND (0.0001)	-	ND(0.0001)	ND (0.0001)	-	ND(0.0001)	ND (0.0001)	-
Nickel (dissolved)	mg/L	ND(0.001) - ND(0.01)	0.004	-	ND(0.001) - 0.02	ND (0.003)	-	ND(0.001) - ND(0.01)	ND (0.003)	-	ND(0.001) - ND(0.01)	0.003	-
Zinc (dissolved)	mg/L	ND(0.003) - 0.097	ND (0.005)	-	ND(0.005) - 0.04	0.055 ^{bc}	-	ND(0.003) - 0.067	ND (0.005)	-	ND(0.005) - 0.02	ND (0.005)	-
Volatile Organic Compounds													
1,1,1,2-Tetrachloroethane	ug/L	ND(0.1) - ND(1)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
1,1,1-Trichloroethane	ug/L	ND(0.2) - ND(0.8)	ND (0.3)	-	ND(0.2) - ND(0.4)	ND (0.3)	-	ND(0.01) - ND(10)	ND (0.3)	-	ND(0.01) - ND(0.4)	ND (0.3)	-
1,1,2,2-Tetrachloroethane	ug/L	ND(0.1) - ND(1)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.6)	ND (0.1)	-	ND(0.1) - ND(0.6)	ND (0.1)	-
1,1,2-Trichloroethane	ug/L	ND(0.2) - ND(0.8)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-
1,1-Dichloroethane	ug/L	ND(0.1) - ND(0.8)	ND (0.3)	-	ND(0.1) - ND(0.7)	ND (0.3)	-	ND(0.01) - ND(10)	ND (0.3)	-	ND(0.01) - ND(0.7)	ND (0.3)	-
1,1-Dichloroethene	ug/L	ND(0.1) - ND(1)	ND (0.3)	-	ND(0.1) - ND(0.5)	ND (0.3)	-	ND(0.1) - ND(0.6)	ND (0.3)	-	ND(0.1) - ND(0.6)	ND (0.3)	-
1,2,4-Trichlorobenzene	ug/L	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-
1,2-Dibromoethane (Ethylene dibromide)	ug/L	ND(0.1) - ND(2)	ND (0.1)	-	ND(0.1) - ND(1)	ND (0.1)	-	ND(0.1) - ND(1)	ND (0.1)	-	ND(0.1) - ND(1)	ND (0.1)	-
1,2-Dichlorobenzene	ug/L	ND(0.1) - ND(0.8)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.002) - ND(2)	ND (0.1)	-	ND(0.002) - ND(0.4)	ND (0.1)	-
1,2-Dichloroethane	ug/L	ND(0.1) - ND(1)	ND (0.2)	-	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.002) - ND(2)	ND (0.2)	-	ND(0.002) - ND(0.5)	ND (0.2)	-
1,2-Dichloropropane	ug/L	ND(0.2) - ND(1)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(0.5)	ND (0.2)	-
1,3-Dichlorobenzene	ug/L	ND(0.1) - ND(0.8)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
1,3-Dichloropropene	ug/L	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-

Table 6

**Groundwater Chemistry - Shallow Wells along Perimeter of Facility Property, Downgradient of North Berm (Active Aquitard)
2019 Annual Groundwater Monitoring Report
Clean Harbors Canada Inc. - Lambton Facility**

Sample Location: Sample ID: Sample Date:	TW22-94			TW32-94-IV			TW40-99S			TW53-03S			
		22	22S		32IV	32IV		40S	40S		53S	53S	
	08/13/1994 - 11/19/2018	6/11/2019	12/3/2019	08/05/1994 - 11/19/2018	6/12/2019	12/3/2019	06/08/1999 - 11/19/2018	6/12/2019	12/3/2019	10/28/2003 - 11/21/2018	6/12/2019	12/2/2019	
Parameters	Units	Historical Range			Historical Range			Historical Range			Historical Range		
1,4-Dichlorobenzene	ug/L	ND(0.1) - ND(0.8)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.002) - ND(2)	ND (0.1)	-	ND(0.002) - ND(0.4)	ND (0.1)	-
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	ND(1) - ND(5)	ND (1)	-	ND(1) - ND(5)	ND (1)	-	ND(1) - ND(5)	ND (1)	-	ND(1) - ND(5)	ND (1)	-
2-Hexanone	ug/L	ND(1)	ND (1)	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	ND(0.1) - ND(1)	ND (1)	-	ND(0.1) - ND(1)	ND (1)	-	ND(1) - ND(5)	ND (1)	-	ND(1) - ND(5)	ND (1)	-
Acetone	ug/L	ND(0.1) - ND(1)	ND (1)	-	ND(0.1) - ND(1)	ND (1)	-	ND(1) - ND(10)	ND (1)	-	ND(1) - ND(10)	ND (1)	-
Benzene	ug/L	ND(0.2) - ND(1)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.001) - ND(1)	ND (0.2)	-	ND(0.001) - ND(0.5)	ND (0.2)	-
Bromodichloromethane	ug/L	ND(0.2) - ND(0.6)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(0.4)	ND (0.2)	-	ND(0.1) - ND(0.4)	ND (0.2)	-
Bromoform	ug/L	ND(0.1) - ND(0.8)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
Bromomethane (Methyl bromide)	ug/L	ND(0.1) - ND(1)	ND (0.2)	-	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.7)	ND (0.2)	-	ND(0.2) - ND(0.7)	ND (0.2)	-
Carbon tetrachloride	ug/L	ND(0.2) - ND(1)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(0.5)	ND (0.2)	-
Chlorobenzene	ug/L	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.2)	ND (0.1)	-	ND(0.1) - ND(0.3)	ND (0.1)	-	ND(0.1) - ND(0.3)	ND (0.1)	-
Chloroethane	ug/L	ND(0.2) - ND(2)	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	-	ND(0.01) - ND(10)	ND (0.2)	-	ND(0.01) - ND(1)	ND (0.2)	-
Chloroform (Trichloromethane)	ug/L	ND(0.2) - ND(1)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.6)	ND (0.2)	-	ND(0.2) - ND(0.6)	ND (0.2)	-
Chloromethane (Methyl chloride)	ug/L	ND(0.2) - ND(2)	ND (0.4)	-	ND(0.2) - ND(1)	ND (0.4)	-	ND(0.2) - ND(1)	ND (0.4)	-	ND(0.2) - ND(1)	ND (0.4)	-
cis-1,2-Dichloroethene	ug/L	ND(0.1) - ND(0.8)	ND (0.2)	-	ND(0.1) - ND(0.4)	ND (0.2)	-	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(0.5)	ND (0.2)	-
cis-1,3-Dichloropropene	ug/L	ND(0.1) - ND(0.4)	ND (0.2)	-	ND(0.1) - ND(0.2)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-
Dibromochloromethane	ug/L	ND(0.1) - ND(0.6)	ND (0.1)	-	ND(0.1) - ND(0.3)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
Dichlorodifluoromethane (CFC-12)	ug/L	ND(0.2) - ND(1)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
Ethylbenzene	ug/L	ND(0.1) - ND(1)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.001) - ND(1)	ND (0.1)	-	ND(0.001) - ND(0.5)	ND (0.1)	-
Hexane	ug/L	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-
m&p-Xylenes	ug/L	ND(0.1) - ND(2)	ND (0.2)	-	ND(0.1) - ND(1)	ND (0.2)	-	ND(0.1) - ND(10)	ND (0.2)	-	ND(0.1) - ND(1)	ND (0.2)	-
Methyl tert butyl ether (MTBE)	ug/L	ND(0.1) - ND(0.2)	ND (0.2)	-	ND(0.1) - ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-
Methylene chloride	ug/L	ND(0.3) - ND(8)	ND (0.3)	-	ND(0.3) - ND(5)	ND (0.3)	-	ND(0.01) - ND(10)	ND (0.3)	-	ND(0.01) - ND(4)	ND (0.3)	-
o-Xylene	ug/L	ND(0.1) - ND(1)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(10)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
Styrene	ug/L	ND(0.1) - ND(1)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
Tetrachloroethene	ug/L	ND(0.1) - ND(0.6)	ND (0.2)	-	ND(0.1) - ND(0.3)	ND (0.2)	-	ND(0.1) - ND(0.3)	ND (0.2)	-	ND(0.1) - ND(0.3)	ND (0.2)	-
Toluene	ug/L	ND(0.2) - ND(1)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.01) - ND(10)	ND (0.2)	-	ND(0.01) - ND(0.5)	ND (0.2)	-
trans-1,2-Dichloroethene	ug/L	ND(0.1) - ND(0.8)	ND (0.2)	-	ND(0.1) - ND(0.4)	ND (0.2)	-	ND(0.1) - ND(0.9)	ND (0.2)	-	ND(0.1) - ND(0.9)	ND (0.2)	-
trans-1,3-Dichloropropene	ug/L	ND(0.2) - ND(10)	ND (0.3)	-	ND(0.2) - ND(10)	ND (0.3)	-	ND(0.2) - ND(0.3)	ND (0.3)	-	ND(0.2) - ND(0.3)	ND (0.3)	-
Trichloroethene	ug/L	ND(0.2) - ND(0.6)	ND (0.2)	-	ND(0.2) - ND(0.3)	ND (0.2)	-	ND(0.01) - ND(10)	ND (0.2)	-	ND(0.01) - ND(0.3)	ND (0.2)	-
Trichlorofluoromethane (CFC-11)	ug/L	ND(0.1) - ND(1)	ND (0.4)	-	ND(0.1) - ND(0.5)	ND (0.4)	-	ND(0.2) - ND(0.5)	ND (0.4)	-	ND(0.2) - ND(0.5)	ND (0.4)	-
Vinyl chloride	ug/L	ND(0.1) - ND(0.4)	ND (0.17)	-	ND(0.1) - ND(0.2)	ND (0.17)	-	ND(0.17) - ND(0.2)	ND (0.17)	-	ND(0.17) - ND(0.2)	ND (0.17)	-
Xylenes (total)	ug/L	ND(0.2) - ND(1.5)	ND (0.2)	-	ND(0.2) - ND(1.5)	ND (0.2)	-	ND(0.01) - ND(1.5)	ND (0.2)	-	ND(0.01) - ND(1.5)	ND (0.2)	-

Notes:

- ^a Indicates value exceeds Ontario Drinking Water Standards Guidelines, Ontario Ministry of the Environment, as revised
- ^b Indicates value exceeds Policy and Guidelines - Provincial The Ontario Ministry of the Environment and Energy, July
- ^c Analytical result outside of the historical concentration range
- ND Not detected at the associated reporting limit.
- J Estimated concentration.
- 4.90** Detected result exceeds associated standard.
- OG Operational Guideline
- AO Aesthetic Objective
- MAC Maximum Acceptable Concentration
- IMAC Interim Maximum Acceptable Concentration
- Not applicable or not analysed.

Table 7

Groundwater Chemistry - Shallow Wells along Perimeter of Facility Property, Removed from North Berm (Active Aquitard)
 2019 Annual Groundwater Monitoring Report
 Clean Harbors Canada Inc. - Lambton Facility

Sample Location: Sample ID: Sample Date:	Units	ODWS a	SOURCE	PWQO b	TW30-94			TW41-99S			TW42-99S		
					06/07/1999 - 11/21/2018 Historical Range	30S 6/12/2019	30S 12/2/2019	06/07/1999 - 11/21/2018 Historical Range	41S 6/12/2019	41S 12/2/2019	06/07/1999 - 11/19/2018 Historical Range	42S 6/11/2019	42S 12/2/2019
Field Parameters													
Conductivity, field	uS/cm	-	-	-	658 - 931	793	960 ^c	1080 - 1590	-	1790 ^c	1610 - 3450	2990	2870
pH, field	s.u.	6.5-8.5	OG	6.5-8.5	7.01 - 7.81	7.71	7.37	6.6 - 7.81	7.78	7.14	6.51 - 7.34	7.32	7.21
Temperature, field	Deg C	15	AO	-	10.4 - 14.1	11.49	10.3 ^c	9.9 - 16.8	11.47	10.74	10.19 - 16.3	10.52	10.11 ^c
Total dissolved solids, field (TDS)	mg/L	500	AO	-	-	0.1	6.99	-	0.01	6.16	-	0.1	6.76
General Indicators													
Conductivity, electrical	uS/cm	-	-	-	645 - 1010	898	722	1220 - 1720	1540	1350	724 - 3400	2830	2460
pH, lab	s.u.	6.5-8.5	OG	6.5-8.5	7.14 - 8.4	8.02	7.84	7.4 - 8.14	7.77	7.64	7.4 - 8.25	7.69	7.57
Total dissolved solids (TDS)	mg/L	500	AO	-	420 - 630	530 ^a	510 ^a	793 - 1250	1140 ^a	1250 ^a	471 - 2970	2780 ^a	2580 ^a
Minor Ions - Anions													
Alkalinity, total (as CaCO3)	mg/L	30-500	OG	-	349 - 468	372	396	386 - 608	459	461	183 - 429	311	360
Chloride	mg/L	250	AO	-	4 - 6.16	5.25	4.31	7 - 60	34.5	55.5	3 - 57	39.2	36.4
Sulfate	mg/L	500	AO	-	90 - 160	115	111	238 - 603	430	476	162 - 1980	1720 ^a	1790 ^a
Major Ions - Cations													
Calcium (dissolved)	mg/L	-	-	-	74 - 106	81.7	81.3	151 - 236	204	218	68 - 509	427	449
Magnesium (dissolved)	mg/L	-	-	-	48 - 62.1	52.8	49.7	46 - 100	72.1	72	24 - 229	202	198
Potassium (dissolved)	mg/L	-	-	-	1 - 4	1.68	1.93	1 - 4	1.81	1.75	1 - 8	3.71	4.57
Sodium (dissolved)	mg/L	20/200	AO	-	27 - 49	38.9 ^a	36.1 ^a	41 - 65	44.2 ^a	51.3 ^a	37 - 105	62.8 ^a	70.5 ^a
Major Ions - Nutrients													
Ammonia-N	mg/L	-	-	-	0.02 - 0.49	ND (0.02)	ND (0.02)	ND(0.02) - 0.18	0.08	ND (0.02)	ND(0.02) - 0.47	ND (0.02)	ND (0.02)
Nitrate (as N)	mg/L	10.0	MAC	-	0.093 - 1.28	ND (0.25)	ND (0.1)	0.069 - 0.26	ND (0.25)	ND (0.25)	0.045 - ND(1)	ND (1)	ND (2.5)
Nitrite (as N)	mg/L	1.0	MAC	-	ND(0.01) - ND(0.25)	ND (0.25)	ND (0.1)	ND(0.01) - ND(0.25)	ND (0.25)	ND (0.25)	ND(0.01) - ND(1)	ND (1)	ND (2.5)
Major Ions - Miscellaneous													
Bromide	mg/L	-	-	-	ND(0.05) - ND(0.5)	ND (0.25)	ND (0.1)	ND(0.05) - 1.24	ND (0.25)	2.23 ^c	ND(0.05) - 1.39	ND (1)	ND (2.5)
Cyanide (free)	mg/L	-	-	0.005	ND(0.002) - ND(0.02)	ND (0.002)	ND (0.002) J	ND(0.002) - ND(0.05)	ND (0.002)	ND (0.002) J	ND(0.002) - ND(0.02)	ND (0.002)	ND (0.002) J
Fluoride	mg/L	1.5	MAC	-	ND(0.25) - 1.74	0.75	1.08	ND(0.25) - 1.3	ND (0.25)	ND (0.25)	0.41 - 1.16	ND (1)	ND (2.5)
Metals													
Arsenic (dissolved)	mg/L	0.010	IMAC	0.005	ND(0.001) - ND(0.003)	ND (0.003)	-	ND(0.001) - ND(0.003)	ND (0.003)	-	0.001 - ND(0.01)	ND (0.003)	-
Barium (dissolved)	mg/L	1.0	MAC	-	0.029 - 0.058	0.028 ^c	-	0.018 - 0.05	0.022	-	0.014 - ND(0.1)	0.014	-
Boron (dissolved)	mg/L	5.0	IMAC	0.2	ND(0.03) - 0.18	0.082 J+	-	0.06 - 0.342	0.134	-	0.12 - 0.3	0.205 ^b	-
Cadmium (dissolved)	mg/L	0.005	MAC	0.0002	ND(0.0001) - 0.005	ND (0.001)	-	ND(0.0001) - ND(0.003)	ND (0.001)	-	ND(0.0001) - ND(0.003)	ND (0.001)	-
Chromium (dissolved)	mg/L	0.05	MAC	0.001	0.001 - ND(0.01)	ND (0.003)	-	0.001 - ND(0.01)	ND (0.003)	-	0.001 - ND(0.01)	ND (0.003)	-
Iron (dissolved)	mg/L	0.30	AO	0.3	ND(0.005) - 0.304	ND (0.01)	-	ND(0.005) - 0.058	ND (0.01)	-	ND(0.005) - ND(0.3)	ND (0.01)	-
Lead (dissolved)	mg/L	0.01	MAC	0.005	ND(0.0005) - ND(0.01)	ND (0.001)	-	ND(0.0005) - ND(0.002)	ND (0.001)	-	ND(0.001) - ND(0.05)	ND (0.001)	-
Mercury (dissolved)	mg/L	0.001	MAC	0.0002	ND(0.0001)	ND (0.0001)	-	ND(0.0001)	ND (0.0001)	-	ND(0.0001) - 0.00044	ND (0.0001)	-
Nickel (dissolved)	mg/L	-	-	0.025	ND(0.001) - ND(0.01)	ND (0.003)	-	ND(0.001) - ND(0.01)	0.004	-	0.004 - ND(0.05)	0.011	-
Zinc (dissolved)	mg/L	5.0	AO	0.03	ND(0.003) - 0.039	ND (0.005)	-	ND(0.003) - 0.061	ND (0.005)	-	ND(0.005) - ND(0.1)	0.007	-
Volatile Organic Compounds													
1,1,1,2-Tetrachloroethane	ug/L	-	-	20	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
1,1,1-Trichloroethane	ug/L	-	-	10	ND(0.2) - ND(0.4)	ND (0.3)	-	ND(0.1) - ND(0.4)	ND (0.3)	-	ND(0.1) - ND(0.4)	ND (0.3)	-
1,1,2,2-Tetrachloroethane	ug/L	-	-	70	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
1,1,2-Trichloroethane	ug/L	-	-	800	ND(0.2) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-
1,1-Dichloroethane	ug/L	-	-	200	ND(0.1) - ND(0.7)	ND (0.3)	-	ND(0.1) - ND(0.7)	ND (0.3)	-	ND(0.1) - ND(0.4)	ND (0.3)	-
1,1-Dichloroethene	ug/L	14	MAC	40	ND(0.1) - ND(0.5)	ND (0.3)	-	ND(0.1) - ND(0.5)	ND (0.3)	-	ND(0.1) - ND(0.5)	ND (0.3)	-
1,2,4-Trichlorobenzene	ug/L	-	-	0.5	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-
1,2-Dibromoethane (Ethylene dibromide)	ug/L	-	-	5	ND(0.1) - ND(1)	ND (0.1)	-	ND(0.1) - ND(1)	ND (0.1)	-	ND(0.1) - ND(1)	ND (0.1)	-
1,2-Dichlorobenzene	ug/L	200	MAC	2.5	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
1,2-Dichloroethane	ug/L	5	IMAC	100	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(0.5)	ND (0.2)	-
1,2-Dichloropropane	ug/L	-	-	0.7	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(0.5)	ND (0.2)	-
1,3-Dichlorobenzene	ug/L	-	-	2.5	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
1,3-Dichloropropene	ug/L	-	-	-	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-

Table 7

Groundwater Chemistry - Shallow Wells along Perimeter of Facility Property, Removed from North Berm (Active Aquitard)
 2019 Annual Groundwater Monitoring Report
 Clean Harbors Canada Inc. - Lambton Facility

Sample Location: Sample ID: Sample Date:	Units				TW30-94			TW41-99S			TW42-99S					
		ODWS		PWQO	30S		30S		41S		41S		42S		42S	
		ODWS	SOURCE		06/07/1999 - 11/21/2018	6/12/2019	12/2/2019	06/07/1999 - 11/21/2018	6/12/2019	12/2/2019	06/07/1999 - 11/19/2018	6/11/2019	12/2/2019	06/07/1999 - 11/19/2018	6/11/2019	12/2/2019
Parameters	Units	a	b	Historical Range	Historical Range	Historical Range	Historical Range	Historical Range	Historical Range	Historical Range	Historical Range	Historical Range	Historical Range	Historical Range	Historical Range	
1,4-Dichlorobenzene	ug/L	5	MAC	4	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	-	-	400	ND(1) - ND(5)	ND (1)	-	ND(1) - ND(5)	ND (1)	-	ND(1) - ND(5)	ND (1)	-	ND(1) - ND(5)	ND (1)	
2-Hexanone	ug/L	-	-	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-	ND(1)	ND (1)	
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	-	-	-	ND(0.1) - ND(1)	ND (1)	-	ND(1) - ND(5)	ND (1)	-	ND(1) - ND(5)	ND (1)	-	ND(1) - ND(5)	ND (1)	
Acetone	ug/L	-	-	-	ND(0.1) - ND(1)	ND (1)	-	ND(1) - ND(10)	ND (1)	-	ND(1) - ND(10)	ND (1)	-	ND(1) - ND(10)	ND (1)	
Benzene	ug/L	1	MAC	100	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	
Bromodichloromethane	ug/L	-	-	200	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(0.3)	ND (0.2)	-	ND(0.1) - ND(0.3)	ND (0.2)	-	ND(0.1) - ND(0.3)	ND (0.2)	
Bromoform	ug/L	-	-	60	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	
Bromomethane (Methyl bromide)	ug/L	-	-	0.9	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	
Carbon tetrachloride	ug/L	2	MAC	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(0.5)	ND (0.2)	
Chlorobenzene	ug/L	80	MAC	15	ND(0.1) - ND(0.2)	ND (0.1)	-	ND(0.1) - ND(0.2)	ND (0.1)	-	ND(0.1) - ND(0.2)	ND (0.1)	-	ND(0.1) - ND(0.2)	ND (0.1)	
Chloroethane	ug/L	-	-	-	ND(0.2) - ND(1)	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	
Chloroform (Trichloromethane)	ug/L	-	-	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(0.5)	ND (0.2)	
Chloromethane (Methyl chloride)	ug/L	-	-	700	ND(0.2) - ND(1)	ND (0.4)	-	ND(0.2) - ND(1)	ND (0.4)	-	ND(0.2) - ND(1)	ND (0.4)	-	ND(0.2) - ND(1)	ND (0.4)	
cis-1,2-Dichloroethene	ug/L	-	-	200	ND(0.1) - ND(0.4)	ND (0.2)	-	ND(0.1) - ND(0.4)	ND (0.2)	-	ND(0.1) - ND(0.4)	ND (0.2)	-	ND(0.1) - ND(0.4)	ND (0.2)	
cis-1,3-Dichloropropene	ug/L	-	-	-	ND(0.1) - ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	
Dibromochloromethane	ug/L	-	-	40	ND(0.1) - ND(0.3)	ND (0.1)	-	ND(0.1) - ND(0.3)	ND (0.1)	-	ND(0.1) - ND(0.3)	ND (0.1)	-	ND(0.1) - ND(0.3)	ND (0.1)	
Dichlorodifluoromethane (CFC-12)	ug/L	-	-	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	
Ethylbenzene	ug/L	140	MAC	8	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	
Hexane	ug/L	-	-	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	
m&p-Xylenes	ug/L	-	-	2	ND(0.1) - ND(1)	ND (0.2)	-	ND(0.1) - ND(1)	ND (0.2)	-	ND(0.1) - ND(1)	ND (0.2)	-	ND(0.1) - ND(1)	ND (0.2)	
Methyl tert butyl ether (MTBE)	ug/L	15	AO	200	ND(0.1) - ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	
Methylene chloride	ug/L	50	MAC	100	ND(0.3) - ND(5)	ND (0.3)	-	ND(0.3) - ND(4)	ND (0.3)	-	ND(0.3) - ND(4)	ND (0.3)	-	ND(0.3) - ND(4)	ND (0.3)	
o-Xylene	ug/L	-	-	40	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	
Styrene	ug/L	-	-	4	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	
Tetrachloroethene	ug/L	10	MAC	50	ND(0.1) - ND(0.3)	ND (0.2)	-	ND(0.1) - ND(0.3)	ND (0.2)	-	ND(0.1) - ND(0.3)	ND (0.2)	-	ND(0.1) - ND(0.3)	ND (0.2)	
Toluene	ug/L	60	MAC	0.8	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	
trans-1,2-Dichloroethene	ug/L	-	-	200	ND(0.1) - ND(0.4)	ND (0.2)	-	ND(0.1) - ND(0.4)	ND (0.2)	-	ND(0.1) - ND(0.4)	ND (0.2)	-	ND(0.1) - ND(0.4)	ND (0.2)	
trans-1,3-Dichloropropene	ug/L	-	-	7	ND(0.2) - ND(10)	ND (0.3)	-	ND(0.2) - ND(0.3)	ND (0.3)	-	ND(0.2) - ND(0.3)	ND (0.3)	-	ND(0.2) - ND(0.3)	ND (0.3)	
Trichloroethene	ug/L	5	MAC	20	ND(0.2) - ND(0.3)	ND (0.2)	-	ND(0.1) - ND(0.3)	ND (0.2)	-	ND(0.1) - ND(0.3)	ND (0.2)	-	ND(0.1) - ND(0.3)	ND (0.2)	
Trichlorofluoromethane (CFC-11)	ug/L	-	-	-	ND(0.1) - ND(0.5)	ND (0.4)	-	ND(0.2) - ND(0.5)	ND (0.4)	-	ND(0.2) - ND(0.5)	ND (0.4)	-	ND(0.2) - ND(0.5)	ND (0.4)	
Vinyl chloride	ug/L	1	MAC	600	ND(0.1) - ND(0.2)	ND (0.17)	-	ND(0.17) - ND(0.2)	ND (0.17)	-	ND(0.17) - ND(0.2)	ND (0.17)	-	ND(0.17) - ND(0.2)	ND (0.17)	
Xylenes (total)	ug/L	90	MAC	-	ND(0.2) - ND(1.5)	ND (0.2)	-	ND(0.2) - ND(1.5)	ND (0.2)	-	ND(0.2) - ND(1.5)	ND (0.2)	-	ND(0.2) - ND(1.5)	ND (0.2)	

Notes:

- ^a Indicates value exceeds Ontario Drinking Water Standards. Objectives and Guidelines, Ontario Ministry of the Environment, as revised June 2006 (ODWS).
- ^b Indicates value exceeds Policy and Guidelines - Provincial Water Quality The Ontario Ministry of the Environment and Energy, July 1994 (PWQO).
- ^c Analytical result outside of the historical concentration range for the parameter.
- ND Not detected at the associated reporting limit.
- J Estimated concentration.
- 4.90** Detected result exceeds associated standard.
- OG Operational Guideline
- AO Aesthetic Objective
- MAC Maximum Acceptable Concentration
- IMAC Interim Maximum Acceptable Concentration
- Not applicable or not analysed.

Table 7

Groundwater Chemistry - Shallow Wells along Perimeter of Facility Property, Removed from North Berm (Active Aquitard)
2019 Annual Groundwater Monitoring Report
Clean Harbors Canada Inc. - Lambton Facility

Sample Location: Sample ID: Sample Date:	TW43-99S				TW45-99S			TW48-16S			TW62-13S			
	06/07/1999 - 11/19/2018 Historical Range	43S 6/11/2019	43S 12/2/2019	98 12/2/2019 Duplicate	06/09/1999 - 11/20/2018 Historical Range	45S 6/11/2019	45S 12/4/2019	05/06/2016 - 11/20/2018 Historical Range	48S 6/11/2019	48S 12/3/2019	11/12/2013 - 11/20/2018 Historical Range	62S 6/11/2019	62S 12/2/2019	
Parameters	Units													
Field Parameters														
Conductivity, field	uS/cm	571 - 1263	1100	878	878	687 - 1140	2220 ^c	1000	861 - 1070	1550 ^c	1060	830 - 1000	1907 ^c	1110 ^c
pH, field	s.u.	6.8 - 7.98	7.86	7.4	7.4	6.49 - 7.92	7.44	7.06	6.68 - 7.9	7.49	7.18	7.02 - 7.92	7.45	7.34
Temperature, field	Deg C	9.53 - 19.7	10.55	9.69	9.69	10.4 - 18.1	11.23	10.09 ^c	9.8 - 10.7	11 ^c	9.86	11.1 - 12.1	11.4	10.67 ^c
Total dissolved solids, field (TDS)	mg/L	-	0.1	8.51	8.51	-	0.1	4.76	-	0.09	5.32	-	0.1	5.7
General Indicators														
Conductivity, electrical	uS/cm	599 - 1350	681	597 ^c	609	618 - 1400	898	792	1030 - 1170	1050	872 ^c	959 - 1100	938 ^c	794 ^c
pH, lab	s.u.	7.4 - 8.29	7.81	7.82	7.79	7.58 - 8.26	7.65	7.8	7.67 - 8.13	7.87	7.86	7.55 - 8.26	7.8	7.8
Total dissolved solids (TDS)	mg/L	350 - 995	418	448	418	430 - 830	602 ^a	550 ^a	592 - 696	622 ^a	660 ^a	590 - 690	584 ^{ac}	570 ^{ac}
Minor Ions - Anions														
Alkalinity, total (as CaCO3)	mg/L	259 - 363	301	278	282	260 - 542	363	388	397 - 420	370 ^c	403	315 - 355	281 ^c	316
Chloride	mg/L	7.28 - 16	9.04	11.9	12	10.9 - 240	31.3	44.3	19 - 23.7	20.2	19.4	25 - 37	32.1	36.4
Sulfate	mg/L	64 - 455	55.6 ^c	115	116	2.5 - 190	66.5	91.5	167 - 206	198	186	177 - 226	180	177
Major Ions - Cations														
Calcium (dissolved)	mg/L	0.001 - 172	88.8	96.1	95.4	13 - 144	113	116	89.4 - 119	106	105	79.6 - 118	105	95.6
Magnesium (dissolved)	mg/L	22 - 77.6	25.7	26.6	26.9	4.5 - 51	36.2	37.1	50 - 64	59.1	55	34.4 - 48	41.5	37.2
Potassium (dissolved)	mg/L	1 - 3.4	1.45	1.59	1.62	1 - 3	1.89	1.99	1.8 - 3	2.29	2.22	1.95 - 4	2.38	2.24
Sodium (dissolved)	mg/L	22.2 - 56	21 ^{ac}	23.1 ^a	22.9 ^a	28 - 260	27.5 ^{ac}	33.8 ^a	32.9 - 50	38.8 ^a	41.8 ^a	48.3 - 66	55.4 ^a	58.1 ^a
Major Ions - Nutrients														
Ammonia-N	mg/L	0.02 - 0.37	0.03	ND (0.02)	ND (0.02)	0.02 - 0.26	0.09	ND (0.02)	ND(0.02) - ND(0.05)	0.04	ND (0.02)	ND(0.02) - 0.4	0.02	ND (0.02)
Nitrate (as N)	mg/L	0.1 - ND(0.25)	ND (0.25)	ND (0.1)	ND (0.1)	0.066 - 0.33	ND (0.25)	ND (0.25)	ND(0.1) - ND(0.25)	ND (0.25)	ND (0.25)	ND(0.1) - 0.26	ND (0.25)	ND (0.1)
Nitrite (as N)	mg/L	ND(0.01) - ND(0.25)	ND (0.25)	ND (0.1)	ND (0.1)	ND(0.01) - ND(0.25)	ND (0.25)	ND (0.25)	ND(0.1) - ND(0.25)	ND (0.25)	ND (0.25)	ND(0.1) - ND(0.25)	ND (0.25)	ND (0.1)
Major Ions - Miscellaneous														
Bromide	mg/L	ND(0.05) - 36.5	ND (0.25)	ND (0.1)	ND (0.1)	ND(0.05) - 0.6	ND (0.25)	ND (0.25)	ND(0.25)	ND (0.25)	ND (0.25)	ND(0.25)	ND (0.25)	ND (0.1)
Cyanide (free)	mg/L	ND(0.002) - ND(0.02)	ND (0.002)	ND (0.002)	ND (0.002) J	ND(0.002) - ND(0.02)	ND (0.002)	ND (0.002) J	ND(0.002) - ND(0.005)	ND (0.002)	ND (0.002) J	ND(0.002) - ND(0.005)	ND (0.002)	ND (0.002) J
Fluoride	mg/L	ND(0.1) - 1.1	ND (0.25)	0.28	0.18	ND(0.25) - 1.3	0.26	ND (0.25)	ND(0.25) - 1.2	0.67	0.49	ND(0.25) - 0.93	0.41	0.73
Metals														
Arsenic (dissolved)	mg/L	ND(0.001) - ND(0.003)	ND (0.003)	-	-	0.001 - ND(0.01)	ND (0.003)	-	ND(0.001) - ND(0.003)	ND (0.003)	-	ND(0.001) - ND(0.01)	ND (0.003)	-
Barium (dissolved)	mg/L	0.02 - 0.063	0.037	-	-	0.05 - 0.14	0.066	-	0.03 - 0.038	0.028 ^c	-	0.038 - 0.09	0.035 ^c	-
Boron (dissolved)	mg/L	0.05 - 0.358	0.074 J+	-	-	0.05 - 0.206	0.078 J+	-	0.2 - 0.3	0.238 ^b	-	0.12 - 0.18	0.16	-
Cadmium (dissolved)	mg/L	ND(0.0001) - 0.004	ND (0.001)	-	-	ND(0.0001) - 0.003	ND (0.001)	-	ND(0.0001) - ND(0.001)	ND (0.001)	-	ND(0.0001) - ND(0.001)	ND (0.001)	-
Chromium (dissolved)	mg/L	0.001 - ND(0.01)	ND (0.003)	-	-	ND(0.001) - ND(0.01)	ND (0.003)	-	ND(0.001) - ND(0.003)	ND (0.003)	-	ND(0.001) - ND(0.005)	ND (0.003)	-
Iron (dissolved)	mg/L	ND(0.005) - 0.07	ND (0.01)	-	-	ND(0.005) - 2.52	ND (0.01)	-	ND(0.01) - ND(0.03)	0.047 ^c	-	ND(0.01) - ND(0.03)	ND (0.01)	-
Lead (dissolved)	mg/L	ND(0.001) - ND(0.05)	ND (0.001)	-	-	ND(0.0005) - ND(0.002)	ND (0.001)	-	ND(0.001) - ND(0.002)	ND (0.001)	-	ND(0.001) - ND(0.002)	ND (0.001)	-
Mercury (dissolved)	mg/L	ND(0.0001) - 0.0013	ND (0.0001)	-	-	ND(0.0001) - 0.0012	ND (0.0001)	-	ND(0.0001)	ND (0.0001)	-	ND(0.0001)	ND (0.0001)	-
Nickel (dissolved)	mg/L	ND(0.001) - ND(0.01)	ND (0.003)	-	-	ND(0.001) - ND(0.01)	ND (0.003)	-	ND(0.003) - ND(0.005)	ND (0.003)	-	ND(0.003) - ND(0.005)	ND (0.003)	-
Zinc (dissolved)	mg/L	ND(0.005) - 0.039	ND (0.005)	-	-	ND(0.003) - 0.037	ND (0.005)	-	ND(0.005) - ND(0.01)	ND (0.005)	-	ND(0.005) - 0.02	ND (0.005)	-
Volatile Organic Compounds														
1,1,1,2-Tetrachloroethane	ug/L	ND(0.1) - ND(0.5)	ND (0.1)	-	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
1,1,1-Trichloroethane	ug/L	ND(0.1) - ND(0.4)	ND (0.3)	-	-	ND(0.2) - ND(0.4)	ND (0.3)	-	ND(0.3)	ND (0.3)	-	ND(0.3) - ND(0.4)	ND (0.3)	-
1,1,2,2-Tetrachloroethane	ug/L	ND(0.1) - ND(0.5)	ND (0.1)	-	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
1,1,2-Trichloroethane	ug/L	ND(0.2) - ND(0.4)	ND (0.2)	-	-	ND(0.2) - ND(0.4)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-
1,1-Dichloroethane	ug/L	ND(0.1) - ND(0.7)	ND (0.3)	-	-	ND(0.1) - ND(0.7)	ND (0.3)	-	ND(0.3)	ND (0.3)	-	ND(0.3) - ND(0.4)	ND (0.3)	-
1,1-Dichloroethene	ug/L	ND(0.1) - ND(0.5)	ND (0.3)	-	-	ND(0.1) - ND(0.5)	ND (0.3)	-	ND(0.3)	ND (0.3)	-	ND(0.3) - ND(0.5)	ND (0.3)	-
1,2,4-Trichlorobenzene	ug/L	ND(0.3)	ND (0.3)	-	-	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-
1,2-Dibromoethane (Ethylene dibromide)	ug/L	ND(0.1) - ND(1)	ND (0.1)	-	-	ND(0.1) - ND(1)	ND (0.1)	-	ND(0.1)	ND (0.1)	-	ND(0.1) - ND(0.2)	ND (0.1)	-
1,2-Dichlorobenzene	ug/L	ND(0.1) - ND(0.4)	ND (0.1)	-	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
1,2-Dichloroethane	ug/L	ND(0.1) - ND(0.5)	ND (0.2)	-	-	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-
1,2-Dichloropropane	ug/L	ND(0.1) - ND(0.5)	ND (0.2)	-	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
1,3-Dichlorobenzene	ug/L	ND(0.1) - ND(0.4)	ND (0.1)	-	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
1,3-Dichloropropene	ug/L	ND(0.3)	ND (0.3)	-	-	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-

Table 7

**Groundwater Chemistry - Shallow Wells along Perimeter of Facility Property, Removed from North Berm (Active Aquitard)
2019 Annual Groundwater Monitoring Report
Clean Harbors Canada Inc. - Lambton Facility**

Sample Location: Sample ID: Sample Date:	Units	TW43-99S				TW45-99S			TW48-16S			TW62-13S		
		06/07/1999 - 11/19/2018	43S	43S	98	06/09/1999 - 11/20/2018	45S	45S	05/06/2016 - 11/20/2018	48S	48S	11/12/2013 - 11/20/2018	62S	62S
		Historical Range	6/11/2019	12/2/2019	12/2/2019 Duplicate	Historical Range	6/11/2019	12/4/2019	Historical Range	6/11/2019	12/3/2019	Historical Range	6/11/2019	12/2/2019
Parameters														
1,4-Dichlorobenzene	ug/L	ND(0.1) - ND(0.4)	ND (0.1)	-	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	ND(1) - ND(5)	ND (1)	-	-	ND(1) - ND(5)	ND (1)	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-
2-Hexanone	ug/L	ND(1)	ND (1)	-	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	ND(1) - ND(5)	ND (1)	-	-	ND(0.1) - ND(1)	ND (1)	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-
Acetone	ug/L	ND(1) - ND(10)	ND (1)	-	-	ND(0.1) - ND(1)	ND (1)	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-
Benzene	ug/L	ND(0.2) - ND(0.5)	ND (0.2)	-	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
Bromodichloromethane	ug/L	ND(0.1) - ND(0.3)	ND (0.2)	-	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2) - ND(0.3)	ND (0.2)	-
Bromoform	ug/L	ND(0.1) - ND(0.4)	ND (0.1)	-	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
Bromomethane (Methyl bromide)	ug/L	ND(0.2) - ND(0.5)	ND (0.2)	-	-	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
Carbon tetrachloride	ug/L	ND(0.1) - ND(0.5)	ND (0.2)	-	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-
Chlorobenzene	ug/L	ND(0.1) - ND(0.2)	ND (0.1)	-	-	ND(0.1) - ND(0.2)	ND (0.1)	-	ND(0.1)	ND (0.1)	-	ND(0.1) - ND(0.2)	ND (0.1)	-
Chloroethane	ug/L	ND(0.2) - ND(1)	ND (0.2)	-	-	ND(0.2) - ND(1)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-
Chloroform (Trichloromethane)	ug/L	ND(0.1) - ND(0.5)	ND (0.2)	-	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
Chloromethane (Methyl chloride)	ug/L	ND(0.2) - ND(1)	ND (0.4)	-	-	ND(0.2) - ND(1)	ND (0.4)	-	ND(0.4)	ND (0.4)	-	ND(0.2) - ND(0.4)	ND (0.4)	-
cis-1,2-Dichloroethene	ug/L	ND(0.1) - ND(0.4)	ND (0.2)	-	-	ND(0.1) - ND(0.4)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-
cis-1,3-Dichloropropene	ug/L	ND(0.2)	ND (0.2)	-	-	ND(0.1) - ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-
Dibromochloromethane	ug/L	ND(0.1) - ND(0.3)	ND (0.1)	-	-	ND(0.1) - ND(0.3)	ND (0.1)	-	ND(0.1)	ND (0.1)	-	ND(0.1) - ND(0.3)	ND (0.1)	-
Dichlorodifluoromethane (CFC-12)	ug/L	ND(0.2) - ND(0.5)	ND (0.2)	-	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
Ethylbenzene	ug/L	ND(0.1) - ND(0.5)	ND (0.1)	-	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
Hexane	ug/L	ND(0.2)	ND (0.2)	-	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-
m&p-Xylenes	ug/L	ND(0.1) - ND(1)	ND (0.2)	-	-	ND(0.1) - ND(1)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-
Methyl tert butyl ether (MTBE)	ug/L	ND(0.2)	ND (0.2)	-	-	ND(0.1) - ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-
Methylene chloride	ug/L	ND(0.3) - ND(4)	ND (0.3)	-	-	ND(0.3) - ND(5)	ND (0.3)	-	ND(0.3)	ND (0.3)	-	ND(0.3) - ND(4)	ND (0.3)	-
o-Xylene	ug/L	ND(0.1) - ND(0.5)	ND (0.1)	-	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
Styrene	ug/L	ND(0.1) - ND(0.5)	ND (0.1)	-	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
Tetrachloroethene	ug/L	ND(0.1) - ND(0.3)	ND (0.2)	-	-	ND(0.1) - ND(0.3)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2) - ND(0.3)	ND (0.2)	-
Toluene	ug/L	ND(0.2) - ND(0.5)	ND (0.2)	-	-	ND(0.2) - ND(0.5)	0.39	-	ND(0.2)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
trans-1,2-Dichloroethene	ug/L	ND(0.1) - ND(0.4)	ND (0.2)	-	-	ND(0.1) - ND(0.4)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-
trans-1,3-Dichloropropene	ug/L	ND(0.2) - ND(0.3)	ND (0.3)	-	-	ND(0.2) - ND(10)	ND (0.3)	-	ND(0.3)	ND (0.3)	-	ND(0.2) - ND(0.3)	ND (0.3)	-
Trichloroethene	ug/L	ND(0.1) - ND(0.3)	ND (0.2)	-	-	ND(0.2) - ND(0.3)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2) - ND(0.3)	ND (0.2)	-
Trichlorofluoromethane (CFC-11)	ug/L	ND(0.2) - ND(0.5)	ND (0.4)	-	-	ND(0.1) - ND(0.5)	ND (0.4)	-	ND(0.4)	ND (0.4)	-	ND(0.4) - ND(0.5)	ND (0.4)	-
Vinyl chloride	ug/L	ND(0.17) - ND(0.2)	ND (0.17)	-	-	ND(0.1) - ND(0.2)	ND (0.17)	-	ND(0.17)	ND (0.17)	-	ND(0.17) - ND(0.2)	ND (0.17)	-
Xylenes (total)	ug/L	ND(0.2) - ND(1.5)	ND (0.2)	-	-	ND(0.2) - ND(1.5)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-

Notes:

- ^a Indicates value exceeds Ontario Drinking Water Station Guidelines, Ontario Ministry of the Environment, as reported.
- ^b Indicates value exceeds Policy and Guidelines - Prohibited Substances, Ontario Ministry of the Environment and Energy.
- ^c Analytical result outside of the historical concentration range.
- ND Not detected at the associated reporting limit.
- J Estimated concentration.
- 4.90** Detected result exceeds associated standard.
- OG Operational Guideline
- AO Aesthetic Objective
- MAC Maximum Acceptable Concentration
- IMAC Interim Maximum Acceptable Concentration
- Not applicable or not analysed.

Table 8

Groundwater Chemistry - Shallow Wells Internal to Facility Property South Berm (Active Aquitard)
 2019 Annual Groundwater Monitoring Report
 Clean Harbors Canada Inc. - Lambton Facility

Sample Location: Sample ID: Sample Date:	Units	ODWS a	ODWS SOURCE	PWQO b	TW50-02B		TW51-02B		TW52-02A		TW52-02B	
					10/28/2002 - 11/20/2018 Historical Range	50B 6/12/2019	10/28/2002 - 11/20/2018 Historical Range	51B 6/12/2019	10/28/2002 - 11/20/2018 Historical Range	52A 6/12/2019	10/28/2002 - 11/20/2018 Historical Range	52B 6/12/2019
Field Parameters												
Conductivity, field	uS/cm	-	-	-	864 - 2340	-	1080 - 1602	1980 ^c	1300 - 1860	3460 ^c	995 - 1290	-
pH, field	s.u.	6.5-8.5	OG	6.5-8.5	6.37 - 7.72	7.76 ^c	6.32 - 7.81	7.53	6.38 - 7.77	7.73	6.44 - 7.9	7.85
Temperature, field	Deg C	15	AO	-	10.4 - 12.7	11.8	9.7 - 11.7	11.89 ^c	10.8 - 13.7	12.64	10.08 - 14.4	12.74
Total dissolved solids, field (TDS)	mg/L	-	-	-	-	0.01	-	0.09	-	0.1	-	0.1
General Indicators												
Conductivity, electrical	uS/cm	-	-	-	958 - 1220	1020	1280 - 1680	1520	1470 - 1920	1590	971 - 1390	1220
pH, lab	s.u.	6.5-8.5	OG	6.5-8.5	7.73 - 8	7.79	7.73 - 8.02	7.87	7.73 - 8.22	7.85	7.71 - 8.27	7.83
Total dissolved solids (TDS)	mg/L	500	AO	-	598 - 793	654 ^a	1010 - 1090	1110 ^{ac}	1030 - 1340	1140 ^a	631 - 920	768 ^a
Minor Ions - Anions												
Alkalinity, total (as CaCO3)	mg/L	30-500	OG	-	405 - 557	402 ^c	427 - 463	400 ^c	430 - 579	447	407 - 453	388 ^c
Chloride	mg/L	250	AO	-	2 - 27.8	5.46	17 - 23	20.7	21 - 97	35.6	5 - 13	10.2
Sulfate	mg/L	500	AO	-	93 - 259	168	401 - 534	471	426 - 665	499	150 - 343	293
Major Ions - Cations												
Calcium (dissolved)	mg/L	-	-	-	124 - 163	139	115 - 151	140	150 - 204	157	91.9 - 171	112
Magnesium (dissolved)	mg/L	-	-	-	37.5 - 74	45.5	72.2 - 89	85.7	93 - 123	102	42 - 75	66.8
Potassium (dissolved)	mg/L	-	-	-	1.84 - 3	2.75	2.89 - 4	3.49	1.44 - 3	2.12	2 - 3	2.95
Sodium (dissolved)	mg/L	20/200	AO	-	9.57 - 126	21.4 ^a	71 - 93	83.7 ^a	45.5 - 91	50.5 ^a	11 - 74	64 ^a
Major Ions - Nutrients												
Ammonia-N	mg/L	-	-	-	ND(0.02) - 0.23	0.04	ND(0.02) - 0.13	ND (0.02)	ND(0.02) - 0.11	ND (0.02)	ND(0.02) - 0.17	0.02
Nitrate (as N)	mg/L	10.0	MAC	-	ND(0.1) - ND(0.25)	ND (0.25)	ND(0.1) - ND(0.5)	ND (0.25)	ND(0.1) - ND(0.25)	ND (0.25)	ND(0.1) - ND(0.25)	ND (0.25)
Nitrite (as N)	mg/L	1.0	MAC	-	ND(0.1) - ND(0.25)	ND (0.25)	ND(0.1) - ND(0.5)	ND (0.25)	ND(0.1) - ND(0.25)	ND (0.25)	ND(0.1) - ND(0.25)	ND (0.25)
Major Ions - Miscellaneous												
Bromide	mg/L	-	-	-	ND(0.25)	ND (0.25)	ND(0.25) - ND(0.5)	ND (0.25)	ND(0.25)	ND (0.25)	ND(0.25)	ND (0.25)
Cyanide (free)	mg/L	-	-	0.005	ND(0.002) - ND(0.005)	ND (0.002)	ND(0.002) - ND(0.005)	ND (0.002)	ND(0.002) - ND(0.005)	ND (0.002)	ND(0.002) - ND(0.005)	ND (0.002)
Fluoride	mg/L	1.5	MAC	-	ND(0.25) - 1.23	ND (0.25)	ND(0.25) - 1.07	0.9	ND(0.25) - 1.19	0.5	0.17 - 1.36	0.9
Metals												
Arsenic (dissolved)	mg/L	0.010	IMAC	0.005	ND(0.001) - ND(0.003)	ND (0.003)	ND(0.001) - ND(0.003)	ND (0.003)	ND(0.001) - ND(0.003)	ND (0.003)	ND(0.001) - ND(0.003)	ND (0.003)
Barium (dissolved)	mg/L	1.0	MAC	-	0.02 - 0.027	0.028 ^c	0.02 - 0.024	0.019 ^c	0.01 - 0.02	0.014	0.016 - 0.07	0.014 ^c
Boron (dissolved)	mg/L	5.0	IMAC	0.2	0.1 - 0.3	0.119 J+	0.384 - 0.394	0.32 ^{bc}	0.16 - 0.32	0.175	0.09 - 0.28	0.222 ^b
Cadmium (dissolved)	mg/L	0.005	MAC	0.0002	ND(0.0001) - ND(0.001)	ND (0.001)	ND(0.0001) - ND(0.001)	ND (0.001)	ND(0.0001) - ND(0.001)	ND (0.001)	ND(0.0001) - ND(0.001)	ND (0.001)
Chromium (dissolved)	mg/L	0.05	MAC	0.001	ND(0.001) - ND(0.003)	ND (0.003)	ND(0.001) - ND(0.003)	ND (0.003)	ND(0.001) - ND(0.005)	ND (0.003)	ND(0.001) - ND(0.005)	ND (0.003)
Iron (dissolved)	mg/L	0.30	AO	0.3	ND(0.03) - 0.823	0.059	ND(0.01) - ND(0.03)	ND (0.01)	ND(0.01) - ND(0.03)	ND (0.01)	ND(0.01) - 1.43	ND (0.01)
Lead (dissolved)	mg/L	0.01	MAC	0.005	ND(0.001) - ND(0.002)	ND (0.001)	ND(0.001) - ND(0.002)	ND (0.001)	ND(0.001) - ND(0.002)	ND (0.001)	ND(0.001) - ND(0.002)	ND (0.001)
Mercury (dissolved)	mg/L	0.001	MAC	0.0002	ND(0.0001)	ND (0.0001)	ND(0.0001)	ND (0.0001)	ND(0.0001)	ND (0.0001)	ND(0.0001)	ND (0.0001)
Nickel (dissolved)	mg/L	-	-	0.025	ND(0.003) - ND(0.005)	ND (0.003)	ND(0.003) - ND(0.005)	ND (0.003)	ND(0.003) - ND(0.005)	ND (0.003)	ND(0.003) - ND(0.005)	ND (0.003)
Zinc (dissolved)	mg/L	5.0	AO	0.03	ND(0.005) - ND(0.01)	ND (0.005)	ND(0.005) - ND(0.01)	ND (0.005)	ND(0.005) - 0.01	ND (0.005)	0.006 - 0.02	ND (0.005)
Volatile Organic Compounds												
1,1,1,2-Tetrachloroethane	ug/L	-	-	20	ND(0.1)	ND (0.1)	ND(0.1)	ND (0.1)	ND(0.1) - ND(0.5)	ND (0.1)	ND(0.1) - ND(0.5)	ND (0.1)
1,1,1-Trichloroethane	ug/L	-	-	10	ND(0.3)	ND (0.3)	ND(0.3)	ND (0.3)	ND(0.3) - ND(0.4)	ND (0.3)	ND(0.3) - ND(0.4)	ND (0.3)
1,1,2,2-Tetrachloroethane	ug/L	-	-	70	ND(0.1)	ND (0.1)	ND(0.1)	ND (0.1)	ND(0.1) - ND(0.5)	ND (0.1)	ND(0.1) - ND(0.5)	ND (0.1)
1,1,2-Trichloroethane	ug/L	-	-	800	ND(0.2)	ND (0.2)	ND(0.2)	ND (0.2)	ND(0.2) - ND(0.4)	ND (0.2)	ND(0.2) - ND(0.4)	ND (0.2)
1,1-Dichloroethane	ug/L	-	-	200	ND(0.3)	ND (0.3)	ND(0.3)	ND (0.3)	ND(0.3) - ND(0.4)	ND (0.3)	ND(0.3) - ND(0.4)	ND (0.3)
1,1-Dichloroethene	ug/L	14	MAC	40	ND(0.3)	ND (0.3)	ND(0.3)	ND (0.3)	ND(0.3) - ND(0.5)	ND (0.3)	ND(0.3) - ND(0.5)	ND (0.3)
1,2,4-Trichlorobenzene	ug/L	-	-	0.5	ND(0.3)	ND (0.3)	ND(0.3)	ND (0.3)	ND(0.3)	ND (0.3)	ND(0.3)	ND (0.3)
1,2-Dibromoethane (Ethylene dibromide)	ug/L	-	-	5	ND(0.1)	ND (0.1)	ND(0.1)	ND (0.1)	ND(0.1) - ND(0.2)	ND (0.1)	ND(0.1) - ND(0.2)	ND (0.1)
1,2-Dichlorobenzene	ug/L	200	MAC	2.5	ND(0.1)	ND (0.1)	ND(0.1)	ND (0.1)	ND(0.1) - ND(0.4)	ND (0.1)	ND(0.1) - ND(0.4)	ND (0.1)

Table 8

Groundwater Chemistry - Shallow Wells Internal to Facility Property South Berm (Active Aquitard)
 2019 Annual Groundwater Monitoring Report
 Clean Harbors Canada Inc. - Lambton Facility

Sample Location: Sample ID: Sample Date:	Units				TW50-02B		TW51-02B		TW52-02A		TW52-02B	
		ODWS	SOURCE	PWQO	50B		51B		52A		52B	
					10/28/2002 - 11/20/2018	6/12/2019	10/28/2002 - 11/20/2018	6/12/2019	10/28/2002 - 11/20/2018	6/12/2019	10/28/2002 - 11/20/2018	6/12/2019
Parameters		a		b	Historical Range		Historical Range		Historical Range		Historical Range	
1,2-Dichloroethane	ug/L	5	IMAC	100	ND(0.2)	ND (0.2)	ND(0.2)	ND (0.2)	ND(0.2)	ND (0.2)	ND(0.2)	ND (0.2)
1,2-Dichloropropane	ug/L	-	-	0.7	ND(0.2)	ND (0.2)	ND(0.2)	ND (0.2)	ND(0.2) - ND(0.5)	ND (0.2)	ND(0.2) - ND(0.5)	ND (0.2)
1,3-Dichlorobenzene	ug/L	-	-	2.5	ND(0.1)	ND (0.1)	ND(0.1)	ND (0.1)	ND(0.1) - ND(0.4)	ND (0.1)	ND(0.1) - ND(0.4)	ND (0.1)
1,3-Dichloropropene	ug/L	-	-	-	ND(0.3)	ND (0.3)	ND(0.3)	ND (0.3)	ND(0.3)	ND (0.3)	ND(0.3)	ND (0.3)
1,4-Dichlorobenzene	ug/L	5	MAC	4	ND(0.1)	ND (0.1)	ND(0.1)	ND (0.1)	ND(0.1) - ND(0.4)	ND (0.1)	ND(0.1) - ND(0.4)	ND (0.1)
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	-	-	400	ND(1)	ND (1)	ND(1)	ND (1)	ND(1)	ND (1)	ND(1)	ND (1)
2-Hexanone	ug/L	-	-	-	ND(1)	ND (1)	ND(1)	ND (1)	ND(1)	ND (1)	ND(1)	ND (1)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	-	-	-	ND(1)	ND (1)	ND(1)	ND (1)	ND(1)	ND (1)	ND(1)	ND (1)
Acetone	ug/L	-	-	-	ND(1)	ND (1)	ND(1)	ND (1)	ND(1)	ND (1)	ND(1)	ND (1)
Benzene	ug/L	1	MAC	100	ND(0.2)	ND (0.2)	ND(0.2)	ND (0.2)	ND(0.2) - ND(0.5)	ND (0.2)	ND(0.2) - ND(0.5)	ND (0.2)
Bromodichloromethane	ug/L	-	-	200	ND(0.2)	ND (0.2)	ND(0.2)	ND (0.2)	ND(0.2) - ND(0.3)	ND (0.2)	ND(0.2) - ND(0.3)	ND (0.2)
Bromoform	ug/L	-	-	60	ND(0.1)	ND (0.1)	ND(0.1)	ND (0.1)	ND(0.1) - ND(0.4)	ND (0.1)	ND(0.1) - ND(0.4)	ND (0.1)
Bromomethane (Methyl bromide)	ug/L	-	-	0.9	ND(0.2)	ND (0.2)	ND(0.2)	ND (0.2)	ND(0.2) - ND(0.5)	ND (0.2)	ND(0.2) - ND(0.5)	ND (0.2)
Carbon tetrachloride	ug/L	2	MAC	-	ND(0.2)	ND (0.2)	ND(0.2)	ND (0.2)	ND(0.2)	ND (0.2)	ND(0.2)	ND (0.2)
Chlorobenzene	ug/L	80	MAC	15	ND(0.1)	ND (0.1)	ND(0.1)	ND (0.1)	ND(0.1) - ND(0.2)	ND (0.1)	ND(0.1) - ND(0.2)	ND (0.1)
Chloroethane	ug/L	-	-	-	ND(0.2)	ND (0.2)	ND(0.2)	ND (0.2)	ND(0.2)	ND (0.2)	ND(0.2)	ND (0.2)
Chloroform (Trichloromethane)	ug/L	-	-	-	ND(0.2)	ND (0.2)	ND(0.2)	ND (0.2)	ND(0.2) - ND(0.5)	ND (0.2)	ND(0.2) - ND(0.5)	ND (0.2)
Chloromethane (Methyl chloride)	ug/L	-	-	700	ND(0.4)	ND (0.4)	ND(0.4)	ND (0.4)	ND(0.2) - ND(0.4)	ND (0.4)	ND(0.2) - ND(0.4)	ND (0.4)
cis-1,2-Dichloroethene	ug/L	-	-	200	ND(0.2)	ND (0.2)	ND(0.2)	ND (0.2)	ND(0.2) - ND(0.4)	ND (0.2)	ND(0.2) - ND(0.4)	ND (0.2)
cis-1,3-Dichloropropene	ug/L	-	-	-	ND(0.2)	ND (0.2)	ND(0.2)	ND (0.2)	ND(0.2)	ND (0.2)	ND(0.2)	ND (0.2)
Dibromochloromethane	ug/L	-	-	40	ND(0.1)	ND (0.1)	ND(0.1)	ND (0.1)	ND(0.1) - ND(0.3)	ND (0.1)	ND(0.1) - ND(0.3)	ND (0.1)
Dichlorodifluoromethane (CFC-12)	ug/L	-	-	-	ND(0.2)	ND (0.2)	ND(0.2)	ND (0.2)	ND(0.2) - ND(0.5)	ND (0.2)	ND(0.2) - ND(0.5)	ND (0.2)
Ethylbenzene	ug/L	140	MAC	8	ND(0.1)	ND (0.1)	ND(0.1)	ND (0.1)	ND(0.1) - ND(0.5)	ND (0.1)	ND(0.1) - ND(0.5)	ND (0.1)
Hexane	ug/L	-	-	-	ND(0.2)	ND (0.2)	ND(0.2)	ND (0.2)	ND(0.2)	ND (0.2)	ND(0.2)	ND (0.2)
m&p-Xylenes	ug/L	-	-	2	ND(0.2)	ND (0.2)	ND(0.2)	ND (0.2)	ND(0.2) - ND(0.4)	ND (0.2)	ND(0.2) - ND(0.4)	ND (0.2)
Methyl tert butyl ether (MTBE)	ug/L	15	AO	200	ND(0.2)	ND (0.2)	ND(0.2)	ND (0.2)	ND(0.2)	ND (0.2)	ND(0.2)	ND (0.2)
Methylene chloride	ug/L	50	MAC	100	ND(0.3)	ND (0.3)	ND(0.3)	ND (0.3)	ND(0.3) - ND(0.4)	ND (0.3)	ND(0.3) - ND(0.4)	ND (0.3)
o-Xylene	ug/L	-	-	40	ND(0.1)	ND (0.1)	ND(0.1)	ND (0.1)	ND(0.1) - ND(0.4)	ND (0.1)	ND(0.1) - ND(0.4)	ND (0.1)
Styrene	ug/L	-	-	4	ND(0.1)	ND (0.1)	ND(0.1)	ND (0.1)	ND(0.1) - ND(0.5)	ND (0.1)	ND(0.1) - ND(0.5)	ND (0.1)
Tetrachloroethene	ug/L	10	MAC	50	ND(0.2)	ND (0.2)	ND(0.2)	ND (0.2)	ND(0.2) - ND(0.3)	ND (0.2)	ND(0.2) - ND(0.3)	ND (0.2)
Toluene	ug/L	60	MAC	0.8	ND(0.2)	ND (0.2)	ND(0.2)	ND (0.2)	ND(0.2) - ND(0.5)	ND (0.2)	ND(0.2) - ND(0.5)	ND (0.2)
trans-1,2-Dichloroethene	ug/L	-	-	200	ND(0.2)	ND (0.2)	ND(0.2)	ND (0.2)	ND(0.2) - ND(0.4)	ND (0.2)	ND(0.2) - ND(0.4)	ND (0.2)
trans-1,3-Dichloropropene	ug/L	-	-	7	ND(0.3)	ND (0.3)	ND(0.3)	ND (0.3)	ND(0.2) - ND(0.3)	ND (0.3)	ND(0.2) - ND(0.3)	ND (0.3)
Trichloroethene	ug/L	5	MAC	20	ND(0.2)	ND (0.2)	ND(0.2)	ND (0.2)	ND(0.2) - ND(0.3)	ND (0.2)	ND(0.2) - ND(0.3)	ND (0.2)
Trichlorofluoromethane (CFC-11)	ug/L	-	-	-	ND(0.4)	ND (0.4)	ND(0.4)	ND (0.4)	ND(0.4) - ND(0.5)	ND (0.4)	ND(0.4) - ND(0.5)	ND (0.4)
Vinyl chloride	ug/L	1	MAC	600	ND(0.17)	ND (0.17)	ND(0.17)	ND (0.17)	ND(0.17) - ND(0.2)	ND (0.17)	ND(0.17) - ND(0.2)	ND (0.17)
Xylenes (total)	ug/L	90	MAC	-	ND(0.2)	ND (0.2)	ND(0.2)	ND (0.2)	ND(0.2) - ND(0.5)	ND (0.2)	ND(0.2) - ND(0.5)	ND (0.2)

Notes:

- a Indicates value exceeds Ontario Drinking Water Standards. Objectives and Guidelines, Ontario Ministry of the Environment, as revised June 2006 (ODWS).
- b Indicates value exceeds Policy and Guidelines - Provincial Water Quality The Ontario Ministry of the Environment and Energy, July 1994 (PWQO).
- c Analytical result outside of the historical concentration range for the parameter.
- ND Not detected at the associated reporting limit.
- J Estimated concentration.
- 4.90 Detected result exceeds associated standard.
- OG Operational Guideline
- AO Aesthetic Objective
- MAC Maximum Acceptable Concentration
- IMAC Interim Maximum Acceptable Concentration
- Not applicable or not analysed.

Table 9

**Groundwater Chemistry - Shallow Wells Internal to Facility Property
Influenced by Waste Handling/Disposal (Active Aquitard)
2019 Annual Groundwater Monitoring Report
Clean Harbors Canada Inc**

Sample Location: Sample ID: Sample Date:	Units	ODWS a	ODWS SOURCE	PWQO b	TW63-13S		
					11/12/2013 - 11/20/2018 Historical Range	63S 6/11/2019	63S 12/2/2019
Field Parameters							
Conductivity, field	uS/cm	-	-	-	2230 - 2600	3610 ^c	2470
pH, field	s.u.	6.5-8.5	OG	6.5-8.5	6.52 - 7.52	7.38	7.18
Temperature, field	Deg C	15	AO	-	9.38 - 12.3	11.11	10.89
Total dissolved solids, field (TDS)	mg/L	500	AO	-	-	0.09	6.69
General Indicators							
Conductivity, electrical	uS/cm	-	-	-	2290 - 2840	2280 ^c	1930 ^c
pH, lab	s.u.	6.5-8.5	OG	6.5-8.5	7.58 - 8.1	7.81	7.72
Total dissolved solids (TDS)	mg/L	500	AO	-	1330 - 2250	1250 ^{ac}	1370 ^a
Minor Ions - Anions							
Alkalinity, total (as CaCO ₃)	mg/L	30-500	OG	-	389 - 442	384 ^c	435
Chloride	mg/L	250	AO	-	549 - 668	533 ^{ac}	534 ^{ac}
Sulfate	mg/L	500	AO	-	64 - 80	60.9 ^c	56.8 ^c
Major Ions - Cations							
Calcium (dissolved)	mg/L	-	-	-	146 - 236	188	181
Magnesium (dissolved)	mg/L	-	-	-	67.2 - 106	81.5	74.5
Potassium (dissolved)	mg/L	-	-	-	2.9 - 5	3.29	3.27
Sodium (dissolved)	mg/L	20/200	AO	-	138 - 196	161 ^a	172 ^a
Major Ions - Nutrients							
Ammonia-N	mg/L	-	-	-	ND(0.02) - 0.11	ND (0.02)	ND (0.02)
Nitrate (as N)	mg/L	10.0	MAC	-	ND(0.1) - ND(1)	ND (0.5)	ND (0.5)
Nitrite (as N)	mg/L	1.0	MAC	-	ND(0.1) - ND(1)	ND (0.5)	ND (0.5)
Major Ions - Miscellaneous							
Bromide	mg/L	-	-	-	0.94 - 2.54	2.2	ND (0.5)
Cyanide (free)	mg/L	-	-	0.005	ND(0.002) - ND(0.005)	ND (0.002)	ND (0.002) J
Fluoride	mg/L	1.5	MAC	-	0.37 - ND(1)	ND (0.5)	ND (0.5)
Metals							
Arsenic (dissolved)	mg/L	0.010	IMAC	0.005	ND(0.001) - ND(0.01)	ND (0.003)	-
Barium (dissolved)	mg/L	1.0	MAC	-	0.125 - 0.19	0.112 ^c	-
Boron (dissolved)	mg/L	5.0	IMAC	0.2	0.2 - 0.38	0.248 ^b	-
Cadmium (dissolved)	mg/L	0.005	MAC	0.0002	0.0001 - ND(0.001)	ND (0.001)	-
Chromium (dissolved)	mg/L	0.05	MAC	0.001	ND(0.001) - ND(0.005)	ND (0.003)	-
Iron (dissolved)	mg/L	0.30	AO	0.3	ND(0.01) - ND(0.03)	ND (0.01)	-
Lead (dissolved)	mg/L	0.01	MAC	0.005	ND(0.001) - ND(0.002)	ND (0.001)	-
Mercury (dissolved)	mg/L	0.001	MAC	0.0002	ND(0.0001)	ND (0.0001)	-
Nickel (dissolved)	mg/L	-	-	0.025	0.077 - 0.092	0.077 ^b	-
Zinc (dissolved)	mg/L	5.0	AO	0.03	0.005 - 0.02	ND (0.005)	-
Volatile Organic Compounds							
1,1,1,2-Tetrachloroethane	ug/L	-	-	20	ND(0.1) - ND(0.5)	ND (0.1)	-
1,1,1-Trichloroethane	ug/L	-	-	10	ND(0.3) - ND(0.4)	ND (0.3)	-
1,1,2,2-Tetrachloroethane	ug/L	-	-	70	ND(0.1) - ND(0.5)	ND (0.1)	-
1,1,2-Trichloroethane	ug/L	-	-	800	ND(0.2) - ND(0.4)	ND (0.2)	-
1,1-Dichloroethane	ug/L	-	-	200	ND(0.3) - ND(0.4)	ND (0.3)	-
1,1-Dichloroethene	ug/L	14	MAC	40	ND(0.3) - ND(0.5)	ND (0.3)	-
1,2,4-Trichlorobenzene	ug/L	-	-	0.5	ND(0.3)	ND (0.3)	-

Table 9

**Groundwater Chemistry - Shallow Wells Internal to Facility Property
Influenced by Waste Handling/Disposal (Active Aquitard)
2019 Annual Groundwater Monitoring Report
Clean Harbors Canada Inc**

Sample Location: Sample ID: Sample Date:	Units	ODWS a	ODWS SOURCE	PWQO b	TW63-13S		
					11/12/2013 - 11/20/2018	63S 6/11/2019	63S 12/2/2019
					Historical Range		
Parameters							
1,2-Dibromoethane (Ethylene dibromide)	ug/L	-	-	5	ND(0.1) - ND(0.2)	ND (0.1)	-
1,2-Dichlorobenzene	ug/L	200	MAC	2.5	ND(0.1) - ND(0.4)	ND (0.1)	-
1,2-Dichloroethane	ug/L	5	IMAC	100	ND(0.2)	ND (0.2)	-
1,2-Dichloropropane	ug/L	-	-	0.7	ND(0.2) - ND(0.5)	ND (0.2)	-
1,3-Dichlorobenzene	ug/L	-	-	2.5	ND(0.1) - ND(0.4)	ND (0.1)	-
1,3-Dichloropropene	ug/L	-	-	-	ND(0.3)	ND (0.3)	-
1,4-Dichlorobenzene	ug/L	5	MAC	4	ND(0.1) - ND(0.4)	ND (0.1)	-
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	-	-	400	ND(1)	ND (1)	-
2-Hexanone	ug/L	-	-	-	ND(1)	ND (1)	-
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	-	-	-	ND(1)	ND (1)	-
Acetone	ug/L	-	-	-	ND(1)	ND (1)	-
Benzene	ug/L	1	MAC	100	ND(0.2) - ND(0.5)	ND (0.2)	-
Bromodichloromethane	ug/L	-	-	200	ND(0.2) - ND(0.3)	ND (0.2)	-
Bromoform	ug/L	-	-	60	ND(0.1) - ND(0.4)	ND (0.1)	-
Bromomethane (Methyl bromide)	ug/L	-	-	0.9	ND(0.2) - ND(0.5)	ND (0.2)	-
Carbon tetrachloride	ug/L	2	MAC	-	ND(0.2)	ND (0.2)	-
Chlorobenzene	ug/L	80	MAC	15	ND(0.1) - ND(0.2)	ND (0.1)	-
Chloroethane	ug/L	-	-	-	ND(0.2)	ND (0.2)	-
Chloroform (Trichloromethane)	ug/L	-	-	-	ND(0.2) - ND(0.5)	ND (0.2)	-
Chloromethane (Methyl chloride)	ug/L	-	-	700	ND(0.2) - ND(0.4)	ND (0.4)	-
cis-1,2-Dichloroethene	ug/L	-	-	200	ND(0.2) - ND(0.4)	ND (0.2)	-
cis-1,3-Dichloropropene	ug/L	-	-	-	ND(0.2)	ND (0.2)	-
Dibromochloromethane	ug/L	-	-	40	ND(0.1) - ND(0.3)	ND (0.1)	-
Dichlorodifluoromethane (CFC-12)	ug/L	-	-	-	ND(0.2) - ND(0.5)	ND (0.2)	-
Ethylbenzene	ug/L	140	MAC	8	ND(0.1) - ND(0.5)	ND (0.1)	-
Hexane	ug/L	-	-	-	ND(0.2)	ND (0.2)	-
m&p-Xylenes	ug/L	-	-	2	ND(0.2) - ND(0.4)	ND (0.2)	-
Methyl tert butyl ether (MTBE)	ug/L	15	AO	200	ND(0.2)	ND (0.2)	-
Methylene chloride	ug/L	50	MAC	100	ND(0.3) - ND(0.4)	ND (0.3)	-
o-Xylene	ug/L	-	-	40	ND(0.1) - ND(0.4)	ND (0.1)	-
Styrene	ug/L	-	-	4	ND(0.1) - ND(0.5)	ND (0.1)	-
Tetrachloroethene	ug/L	10	MAC	50	ND(0.2) - ND(0.3)	ND (0.2)	-
Toluene	ug/L	60	MAC	0.8	ND(0.2) - ND(0.5)	ND (0.2)	-
trans-1,2-Dichloroethene	ug/L	-	-	200	ND(0.2) - ND(0.4)	ND (0.2)	-
trans-1,3-Dichloropropene	ug/L	-	-	7	ND(0.2) - ND(0.3)	ND (0.3)	-
Trichloroethene	ug/L	5	MAC	20	ND(0.2) - ND(0.3)	ND (0.2)	-
Trichlorofluoromethane (CFC-11)	ug/L	-	-	-	ND(0.4) - ND(0.5)	ND (0.4)	-
Vinyl chloride	ug/L	1	MAC	600	ND(0.17) - ND(0.2)	ND (0.17)	-
Xylenes (total)	ug/L	90	MAC	-	ND(0.2) - ND(0.5)	ND (0.2)	-

Notes:

- a Indicates value exceeds Ontario Drinking Water Standards. Objectives and Guidelines, Ontario Ministry of the Environment, as revised June 2006 (ODWS).
- b Indicates value exceeds Policy and Guidelines - Provincial Water Quality Guidelines. The Ontario Ministry of the Environment and Energy, July 1994 (PWQO).
- c Analytical result outside of the historical concentration range for the parameter.
- ND Not detected at the associated reporting limit.
- J Estimated concentration.
- 4.90 Detected result exceeds associated standard.
- OG Operational Guideline
- AO Aesthetic Objective
- MAC Maximum Acceptable Concentration
- IMAC Interim Maximum Acceptable Concentration
- Not applicable or not analysed.

Table 10

**Groundwater Chemistry - Deep Wells Located Off the Facility Property (Interface Aquifer)
2019 Annual Groundwater Monitoring Report
Clean Harbors Canada Inc. - Lambton Facility**

Sample Location: Sample ID: Sample Date:	Units	ODWS a	ODWS SOURCE b	PWQO b	TW55-09D			TW56-11D			TW57-11D			TW59-13D				
					05/26/2010 - 11/19/2018	6/11/2019	12/2/2019	06/13/2012 - 11/19/2018	6/11/2019	12/2/2019	06/12/2012 - 11/19/2018	6/11/2019	12/4/2019	05/16/2013 - 11/19/2018		59D	98	59D
					Historical Range			Historical Range			Historical Range			Historical Range		Duplicate		
Field Parameters																		
Conductivity, field	uS/cm	-	-	-	1850 - 2210	1830 ^c	2070	1590 - 1940	1510 ^c	1610	1680 - 2980	2510	3890 ^c	931 - 1270	9550 ^c	9550 ^c	1030	
pH, field	s.u.	6.5-8.5	OG	6.5-8.5	6.93 - 7.66	8.97 ^{abc}	8.11 ^c	7.59 - 8.04	9.56 ^{abc}	8.4 ^c	7.2 - 7.68	8.76 ^{abc}	7.62	7.25 - 7.98	9.22 ^{abc}	9.22 ^{abc}	8.56 ^{abc}	
Temperature, field	Deg C	15	AO	-	9.99 - 11.8	11.48	10	9.99 - 13.3	13.11	10.16	7.8 - 12	12.29 ^c	8.38	9.65 - 11.2	12.13 ^c	12.13 ^c	9.54 ^c	
Total dissolved solids, field (TDS)	mg/L	500	AO	-	-	0.1	8.18	-	0.1	5.98	-	0.1	0.1	-	0.1	0.1	0.12	
General Indicators																		
Conductivity, electrical	uS/cm	-	-	-	1620 - 1940	1740	1480 ^c	1410 - 1770	1400 ^c	1160 ^c	1360 - 2310	1770	1640	791 - 983	826	839	684 ^c	
pH, lab	s.u.	6.5-8.5	OG	6.5-8.5	7.84 - 8.53	7.83 ^c	7.87	7.87 - 8.42	7.86 ^c	7.88	7.84 - 8.44	7.96	7.83 ^c	7.97 - 8.37	7.82 ^c	7.79 ^c	7.78 ^c	
Total dissolved solids (TDS)	mg/L	500	AO	-	880 - 1220	854 ^{ac}	954 ^a	580 - 1150	764 ^a	722 ^a	690 - 1500	928 ^a	1080 ^a	410 - 610	450	460	434	
Minor Ions - Anions																		
Alkalinity, total (as CaCO ₃)	mg/L	30-500	OG	-	272 - 310	260 ^c	283	329 - 357	300 ^c	328 ^c	289 - 432	317	359	242 - 293	227 ^c	229 ^c	249	
Chloride	mg/L	250	AO	-	344 - 451	420 ^a	425 ^a	282 - 334	283 ^a	277 ^{ac}	299 - 448	384 ^a	455 ^{ac}	110 - 136	129	121	123	
Sulfate	mg/L	500	AO	-	0.72 - 27	ND (0.5)	ND (1)	ND(0.5) - 7	ND (0.5)	ND (0.5)	ND(0.5) - 4	ND (0.5)	ND (1)	ND(0.5) - 15	ND (0.5)	ND (0.5)	ND (0.2)	
Major Ions - Cations																		
Calcium (dissolved)	mg/L	-	-	-	14 - 22	21.3	20.6	17.8 - 31	23.9	21.4	15 - 24	19.5	18.8	14.1 - 18	17.2	14.7	14.9	
Magnesium (dissolved)	mg/L	-	-	-	6 - 8	7	6.72	6.95 - 11	8.66	7.38	6 - 9	7.25	7.08	4.68 - 6	5.51	4.72	4.69	
Potassium (dissolved)	mg/L	-	-	-	2 - 4	3.68	3.41	1 - 3	2.67	2.27	1 - 3	2.18	2.06	1 - 3	1.93	1.7	1.78	
Sodium (dissolved)	mg/L	20/200	AO	-	294 - 385	330 ^a	342 ^a	247 - 366	271 ^a	273 ^a	291 - 474	342 ^a	396 ^a	157 - 192	174 ^a	148 ^{ac}	163 ^a	
Major Ions - Nutrients																		
Nitrate (as N)	mg/L	10.0	MAC	-	ND(0.1) - ND(0.5)	ND (0.25)	ND (0.5)	ND(0.1) - ND(0.5)	ND (0.25)	ND (0.25)	ND(0.1) - ND(0.5)	ND (0.25)	ND (0.5)	ND(0.1) - ND(0.25)	ND (0.25)	ND (0.25)	ND (0.1)	
Nitrite (as N)	mg/L	1.0	MAC	-	ND(0.1) - ND(0.5)	ND (0.25)	ND (0.5)	ND(0.1) - ND(0.5)	ND (0.25)	ND (0.25)	ND(0.1) - ND(0.5)	ND (0.25)	ND (0.5)	ND(0.1) - ND(0.25)	ND (0.25)	ND (0.25)	ND (0.1)	
Major Ions - Miscellaneous																		
Bromide	mg/L	-	-	-	ND(0.25) - 2.96	0.44	ND (0.5)	ND(0.25) - 1.73	0.49	ND (0.25)	ND(0.25) - 4.11	0.59	ND (0.5)	ND(0.25) - 0.77	ND (0.25)	ND (0.25)	0.51	
Cyanide (free)	mg/L	-	-	0.005	ND(0.002) - ND(0.01)	ND (0.002)	ND (0.002) J	ND(0.002) - 0.006	ND (0.002)	ND (0.002) J	ND(0.002) - ND(0.005)	ND (0.002)	0.003 J-	ND(0.002) - ND(0.005)	ND (0.002)	ND (0.002)	ND (0.002) J	
Fluoride	mg/L	1.5	MAC	-	ND(0.5) - 1.88	1.1	0.7	ND(0.25) - 1.48	0.78	0.88	ND(0.5) - 1.69	0.89	ND (0.5)	ND(0.25) - 1.65	1.14	1.27	1.3	
Metals																		
Arsenic (dissolved)	mg/L	0.010	IMAC	0.005	ND(0.001) - ND(0.01)	ND (0.003)	-	0.001 - ND(0.01)	ND (0.003)	-	ND(0.001) - ND(0.01)	ND (0.003)	-	0.001 - ND(0.01)	ND (0.003)	ND (0.003)	-	
Barium (dissolved)	mg/L	1.0	MAC	-	0.14 - 0.29	0.199	-	0.117 - 0.25	0.105 ^c	-	0.083 - 0.14	0.094	-	0.094 - 0.18	0.091 ^c	0.093 ^c	-	
Boron (dissolved)	mg/L	5.0	IMAC	0.2	1.3 - 1.9	1.74 ^b	-	1.85 - 2.5	2.06 ^b	-	1.6 - 2.4	1.95 ^b	-	1.12 - 1.4	1.21 ^b	1.09 ^{bc}	-	
Cadmium (dissolved)	mg/L	0.005	MAC	0.0002	ND(0.0001) - ND(0.001)	ND (0.001)	-	ND(0.0001) - ND(0.001)	ND (0.001)	-	ND(0.0001) - ND(0.001)	ND (0.001)	-	ND(0.0001) - ND(0.001)	ND (0.001)	ND (0.001)	-	
Chromium (dissolved)	mg/L	0.05	MAC	0.001	ND(0.001) - 0.007	ND (0.003)	-	ND(0.001) - 0.004	ND (0.003)	-	ND(0.001) - 0.037	0.003 ^b	-	ND(0.001) - 0.003	ND (0.003)	0.003 ^b	-	
Iron (dissolved)	mg/L	0.30	AO	0.3	ND(0.01) - 0.47	0.251	-	ND(0.03) - 1.08	1.1 ^{abc}	-	0.23 - 7.5	1.83 ^{ab}	-	ND(0.03) - 0.369	0.405 ^{abc}	0.344 ^{ab}	-	
Lead (dissolved)	mg/L	0.01	MAC	0.005	ND(0.001) - ND(0.002)	ND (0.001)	-	ND(0.001) - ND(0.002)	ND (0.001)	-	ND(0.001) - ND(0.002)	ND (0.001)	-	ND(0.001) - ND(0.002)	ND (0.001)	ND (0.001)	-	
Mercury (dissolved)	mg/L	0.001	MAC	0.0002	ND(0.0001)	ND (0.0001)	-	ND(0.0001)	ND (0.0001)	-	ND(0.0001)	ND (0.0001)	-	ND(0.0001)	ND (0.0001)	ND (0.0001)	-	
Nickel (dissolved)	mg/L	-	-	0.025	ND(0.003) - 0.006	ND (0.003)	-	ND(0.003) - ND(0.005)	ND (0.003)	-	ND(0.003) - 0.013	ND (0.003)	-	ND(0.003) - ND(0.005)	ND (0.003)	ND (0.003)	-	
Zinc (dissolved)	mg/L	5.0	AO	0.03	ND(0.005) - 0.04	ND (0.005)	-	ND(0.005) - 0.04	ND (0.005)	-	ND(0.005) - 0.02	ND (0.005)	-	ND(0.005) - 0.03	ND (0.005)	ND (0.005)	-	
Volatile Organic Compounds																		
1,1,1,2-Tetrachloroethane	ug/L	-	-	20	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	ND (0.1)	-	
1,1,1-Trichloroethane	ug/L	-	-	10	ND(0.3) - ND(0.4)	ND (0.3)	-	ND(0.3) - ND(0.4)	ND (0.3)	-	ND(0.3) - ND(0.4)	ND (0.3)	-	ND(0.3) - ND(1.2)	ND (0.3)	ND (0.3)	-	
1,1,2,2-Tetrachloroethane	ug/L	-	-	70	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	ND (0.1)	-	
1,1,2-Trichloroethane	ug/L	-	-	800	ND(0.2) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.8)	ND (0.2)	ND (0.2)	-	
1,1-Dichloroethane	ug/L	-	-	200	ND(0.3) - ND(0.4)	ND (0.3)	-	ND(0.3) - ND(0.4)	ND (0.3)	-	ND(0.3) - ND(0.4)	ND (0.3)	-	ND(0.3) - ND(1.2)	ND (0.3)	ND (0.3)	-	
1,1-Dichloroethene	ug/L	14	MAC	40	ND(0.3) - ND(0.5)	ND (0.3)	-	ND(0.3) - ND(0.5)	ND (0.3)	-	ND(0.3) - ND(0.5)	ND (0.3)	-	ND(0.3) - ND(1.2)	ND (0.3)	ND (0.3)	-	
1,2,4-Trichlorobenzene	ug/L	-	-	0.5	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-	ND(0.3) - ND(1.2)	ND (0.3)	ND (0.3)	-	
1,2-Dibromoethane (Ethylene dibromide)	ug/L	-	-	5	ND(0.1) - ND(1)	ND (0.1)	-	ND(0.1) - ND(0.2)	ND (0.1)	-	ND(0.1) - ND(0.2)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	ND (0.1)	-	
1,2-Dichlorobenzene	ug/L	200	MAC	2.5	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	ND (0.1)	-	
1,2-Dichloroethane	ug/L	5	IMAC	100	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2) - ND(0.8)	ND (0.2)	ND (0.2)	-	
1,2-Dichloropropane	ug/L	-	-	0.7	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.8)	ND (0.2)	ND (0.2)	-	
1,3-Dichlorobenzene	ug/L	-	-	2.5	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	ND (0.1)	-	
1,3-Dichloropropene	ug/L	-	-	-	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-	ND(0.3) - ND(1.2)	ND (0.3)	ND (0.3)	-	
1,4-Dichlorobenzene	ug/L	5	MAC	4	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	ND (0.1)	-	
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	-	-	400	ND(1)	ND (1)	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-	ND(1) - ND(4)	ND (1)	ND (1)	-	
2-Hexanone	ug/L	-	-	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-	ND(1) - ND(4)	ND (1)	ND (1)	-	
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	-	-	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-	ND(1) - ND(4)	ND (1)	ND (1)	-	
Acetone	ug/L	-	-	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-	ND(1) - ND(4)	ND (1)	ND (1)	-	
Benzene	ug/L	1	MAC	100	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - 0.6	ND (0.2)	-	2.1 - 8.1	5.3 ^a	-	ND(0.5) - 3.6	1.3 ^a	1.1 ^a	-	
Bromodichloromethane	ug/L	-	-	200	ND(0.2) - ND(0.3)	ND (0.2)	-	ND(0.2) - ND(0.3)	ND (0.2)	-	ND(0.2) - ND(0.3)	ND (0.2)	-	ND(0.2) - ND(0.8)	ND (0.2)	ND (0.2)	-	
Bromoform	ug/L	-	-	60	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	ND (0.1)	-	
Bromomethane (Methyl bromide)	ug/L	-	-	0.9	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.8)	ND (0.2)	ND (0.2)	-	
Carbon tetrachloride	ug/L	2	MAC	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2) - ND(0.8)	ND (0.2)	ND (0.2)	-	
Chlorobenzene	ug/L	80	MAC	15	ND(0.1) - ND(0.2)	ND (0.1)	-	ND(0.1) - ND(0.2)	ND (0.1)	-	ND(0.1) - ND(0.2)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	ND (0.1)	-	
Chloroethane	ug/L	-	-	-	ND(0.2) - ND(1)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2) - ND(0.8)	ND (0.2)	ND (0.2)	-	
Chloroform (Trichloromethane)	ug/L	-	-	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.8)	ND (0.2)	ND (0.2)	-	
Chloromethane (Methyl chloride)	ug/L	-	-	700	ND(0.2) - ND(1)	ND (0.4)	-	ND(0.2) - ND(0.4)	ND (0.4)	-	ND(0.2) - ND(0.4)	ND (0.4)	-	ND(0.2) - ND(1.6)	ND (0.4)	ND (0.4)	-	
cis-1,2-Dichloroethene	ug/L	-</																

Table 10

Groundwater Chemistry - Deep Wells Located Off the Facility Property (Interface Aquifer)
2019 Annual Groundwater Monitoring Report
Clean Harbors Canada Inc. - Lambton Facility

Sample Location: Sample ID: Sample Date:				TW55-09D			TW56-11D			TW57-11D			TW59-13D				
	Units	ODWS		PWQO	55D	55D	56D	56D	57D	57D	59D	98	59D				
		a	SOURCE		b	05/26/2010 - 11/19/2018	6/11/2019	12/2/2019	06/13/2012 - 11/19/2018	6/11/2019	12/2/2019	06/12/2012 - 11/19/2018	6/11/2019	12/4/2019	05/16/2013 - 11/19/2018	6/11/2019	6/11/2019
Parameters				Historical Range			Historical Range			Historical Range			Historical Range			Duplicate	
Dibromochloromethane	ug/L	-	-	40	ND(0.1) - ND(0.3)	ND (0.1)	-	ND(0.1) - ND(0.3)	ND (0.1)	-	ND(0.1) - ND(0.3)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	ND (0.1)	-
Dichlorodifluoromethane (CFC-12)	ug/L	-	-	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.8)	ND (0.2)	ND (0.2)	-
Ethylbenzene	ug/L	140	MAC	8	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	ND (0.1)	-
Hexane	ug/L	-	-	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2) - ND(0.8)	ND (0.2)	ND (0.2)	-
m&p-Xylenes	ug/L	-	-	2	ND(0.2) - ND(1)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.8)	ND (0.2)	ND (0.2)	-
Methyl tert butyl ether (MTBE)	ug/L	15	AO	200	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2) - ND(0.8)	ND (0.2)	ND (0.2)	-
Methylene chloride	ug/L	50	MAC	100	ND(0.3) - ND(4)	ND (0.3)	-	ND(0.3) - ND(4)	ND (0.3)	-	ND(0.3) - ND(4)	ND (0.3)	-	ND(0.3) - ND(4)	ND (0.3)	ND (0.3)	-
o-Xylene	ug/L	-	-	40	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	ND (0.1)	-
Styrene	ug/L	-	-	4	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	ND (0.1)	-
Tetrachloroethene	ug/L	10	MAC	50	ND(0.2) - ND(0.3)	ND (0.2)	-	ND(0.2) - ND(0.3)	ND (0.2)	-	ND(0.2) - ND(0.3)	ND (0.2)	-	ND(0.2) - ND(0.8)	ND (0.2)	ND (0.2)	-
Toluene	ug/L	60	MAC	0.8	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - 1	ND (0.2)	-	0.41 - ND(0.8)	ND (0.2)	ND (0.2)	-
trans-1,2-Dichloroethene	ug/L	-	-	200	ND(0.2) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.8)	ND (0.2)	ND (0.2)	-
trans-1,3-Dichloropropene	ug/L	-	-	7	ND(0.2) - ND(0.3)	ND (0.3)	-	ND(0.2) - ND(0.3)	ND (0.3)	-	ND(0.2) - ND(0.3)	ND (0.3)	-	ND(0.2) - ND(1.2)	ND (0.3)	ND (0.3)	-
Trichloroethene	ug/L	5	MAC	20	ND(0.2) - ND(0.3)	ND (0.2)	-	ND(0.2) - ND(0.3)	ND (0.2)	-	ND(0.2) - ND(0.3)	ND (0.2)	-	ND(0.2) - ND(0.8)	ND (0.2)	ND (0.2)	-
Trichlorofluoromethane (CFC-11)	ug/L	-	-	-	ND(0.4) - ND(0.5)	ND (0.4)	-	ND(0.4) - ND(0.5)	ND (0.4)	-	ND(0.4) - ND(0.5)	ND (0.4)	-	ND(0.4) - ND(1.6)	ND (0.4)	ND (0.4)	-
Vinyl chloride	ug/L	1	MAC	600	ND(0.17) - ND(0.2)	ND (0.17)	-	ND(0.17) - ND(0.2)	ND (0.17)	-	ND(0.17) - ND(0.2)	ND (0.17)	-	ND(0.17) - ND(0.68)	ND (0.17)	ND (0.17)	-
Xylenes (total)	ug/L	90	MAC	-	ND(0.2) - ND(1.5)	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	ND (0.2)	-

Notes:

- ^a Indicates value exceeds Ontario Drinking Water Standards. Objectives and Guidelines, Ontario Ministry of the Environment, as revised June 2006 (ODWS).
- ^b Indicates value exceeds Policy and Guidelines - Provincial Water Quality Guidelines. The Ontario Ministry of the Environment and Energy, July 1994 (PWQO).
- ^c Analytical result outside of the historical concentration range for the parameter.
- ND Not detected at the associated reporting limit.
- J Estimated concentration.
- 4.90 Detected result exceeds associated standard.
- OG Operational Guideline
- AO Aesthetic Objective
- MAC Maximum Acceptable Concentration
- IMAC Interim Maximum Acceptable Concentration
- Not applicable or not analysed.

Table 11

**Groundwater Chemistry - Deep Wells Internal to the Facility Property (Interface Aquifer)
2019 Annual Groundwater Monitoring Report
Clean Harbors Canada Inc. - Lambton Facility**

Sample Location: Sample ID: Sample Date:	Units				TW39-99D			TW46-99D			TW54-09D			TW61-13D		
		ODWS		PWQO	06/09/1999 - 11/20/2018 Historical Range	39D 6/12/2019	39D 12/3/2019	11/03/1999 - 11/19/2018 Historical Range	46D 6/12/2019	46D 12/3/2019	11/03/2009 - 11/20/2018 Historical Range	54D 6/11/2019	54D 12/2/2019	11/07/2013 - 11/20/2018 Historical Range	61D 6/11/2019	61D 12/3/2019
		ODWS	SOURCE													
Field Parameters		a	b													
Conductivity, field	uS/cm	-	-	-	1240 - 1860	1740	1550	901 - 1630	1330	1570	910 - 1360	1660 ^c	1100	1010 - 1350	1030	1190
pH, field	s.u.	6.5-8.5	OG	6.5-8.5	6.85 - 8.3	8.44 ^c	7.47	7.11 - 8.05	8.56 ^{abc}	7.52	7.38 - 7.98	9.09 ^{abc}	8.81 ^{abc}	6.6 - 7.68	8.11 ^c	7.69 ^c
Temperature, field	Deg C	15	AO	-	9.69 - 19.9	12.23	9.77	9.5 - 16.5	14.82	8.52 ^c	10.44 - 11.5	14.02 ^c	10.81	8.12 - 13.6	15.52 ^{bc}	8.39
Total dissolved solids, field (TDS)	mg/L	500	AO	-	-	0.11	0.12	-	0.12	0.09	-	0.1	0.1	-	0.1	0.11
General Indicators																
Conductivity, electrical	uS/cm	-	-	-	1370 - 2400	1270 ^c	1030 ^c	1000 - 1400	1190	985 ^c	880 - 1010	900	753 ^c	934 - 1320	971	812 ^c
pH, lab	s.u.	6.5-8.5	OG	6.5-8.5	7.71 - 8.54	7.7 ^c	7.64 ^c	7.68 - 8.71	7.93	7.84	7.78 - 8.64	8.09	7.79	7.6 - 8.53	7.85	7.99
Total dissolved solids (TDS)	mg/L	500	AO	-	702 - 1230	676 ^{bc}	662 ^{bc}	290 - 845	632 ^a	646 ^a	458 - 620	520 ^a	504 ^a	490 - 858	540 ^a	526 ^a
Minor Ions - Anions																
Alkalinity, total (as CaCO3)	mg/L	30-500	OG	-	312 - 421	283 ^c	306 ^c	300 - 356	290 ^c	320	245 - 289	238 ^c	259	206 - 313	214	242
Chloride	mg/L	250	AO	-	242 - 528	245	232 ^c	153 - 292	202	200	116 - 154	141	144	128 - 225	144	144
Sulfate	mg/L	500	AO	-	0.49 - 10	ND (0.5)	ND (0.5)	0.47 - 11	ND (0.5)	ND (1)	ND(0.5) - 12	ND (0.5)	ND (0.2)	12 - 67	47.1	53.1
Major Ions - Cations																
Calcium (dissolved)	mg/L	-	-	-	18 - 36.1	24.1	22.9	13.3 - 23	16.4	16.3	14.4 - 18	17	16.4	17 - 27	23.4	25.1
Magnesium (dissolved)	mg/L	-	-	-	6.2 - 18.3	6.62	6.12 ^c	4.61 - 7.1	4.93	4.64	4.77 - 7	5.46	5.2	5 - 7	7.96 ^c	8.69 ^c
Potassium (dissolved)	mg/L	-	-	-	1 - 2.1	1.68	1.53	1 - 4	1.9	1.68	1.24 - 3	1.67	1.67	1 - 2	1.47	1.52
Sodium (dissolved)	mg/L	20/200	AO	-	220 - 415	234 ^a	241 ^a	201 - 290	227 ^a	243 ^a	150 - 196	167 ^a	176 ^a	168 - 275	162 ^{bc}	177 ^a
Major Ions - Nutrients																
Ammonia-N	mg/L	-	-	-	-	-	-	0.15 - 0.37	-	-	-	-	-	-	-	-
Nitrate (as N)	mg/L	10.0	MAC	-	0.015 - ND(1)	ND (0.25)	ND (0.25)	ND(0.021) - 0.46	ND (0.25)	ND (0.5)	ND(0.1) - ND(0.25)	ND (0.25)	ND (0.1)	ND(0.1) - ND(0.25)	ND (0.25)	ND (0.25)
Nitrite (as N)	mg/L	1.0	MAC	-	ND(0.01) - ND(0.5)	ND (0.25)	ND (0.25)	ND(0.01) - ND(0.25)	ND (0.25)	ND (0.5)	ND(0.1) - ND(0.25)	ND (0.25)	ND (0.1)	ND(0.1) - ND(0.25)	ND (0.25)	ND (0.25)
Major Ions - Miscellaneous																
Bromide	mg/L	-	-	-	ND(0.25) - ND(3.5)	ND (0.25)	0.51	ND(0.25) - 2.61	ND (0.25)	ND (0.5)	ND(0.25) - 1.1	ND (0.25)	0.48	ND(0.25) - 0.64	1.68 ^c	0.51
Cyanide (free)	mg/L	-	-	0.005	ND(0.002) - ND(0.02)	ND (0.002)	ND (0.002)	ND(0.002) - ND(0.02)	ND (0.002)	ND (0.002)	ND(0.002) - ND(0.01)	ND (0.002)	ND (0.002)	ND(0.002) - ND(0.005)	ND (0.002)	ND (0.002)
Fluoride	mg/L	1.5	MAC	-	ND(0.25) - 2	1.29	1.05	ND(0.25) - 1.8	1.04	ND (0.5)	ND(0.25) - 1.77	1.28	1.22	ND(0.25) - 1.69	1.23	0.89
Metals																
Arsenic (dissolved)	mg/L	0.010	IMAC	0.005	ND(0.001) - ND(0.01)	ND (0.003)	-	0.001 - ND(0.003)	ND (0.003)	-	ND(0.001) - ND(0.1)	ND (0.003)	-	0.003 - 0.004	ND (0.003)	-
Barium (dissolved)	mg/L	1.0	MAC	-	0.1 - 0.312	0.107	-	0.08 - 0.2	0.082	-	0.11 - 0.3	0.106 ^c	-	0.045 - 0.13	0.046	-
Boron (dissolved)	mg/L	5.0	IMAC	0.2	1.67 - 2.4	1.8 ^b	-	1.5 - 2.09	1.46 ^{bc}	-	1.4 - 1.7	1.63 ^b	-	1.4 - 1.6	1.4 ^b	-
Cadmium (dissolved)	mg/L	0.005	MAC	0.0002	ND(0.0001) - 0.003	ND (0.001)	-	ND(0.0001) - 0.003	ND (0.001)	-	ND(0.0001) - ND(0.001)	ND (0.001)	-	ND(0.0001) - ND(0.001)	ND (0.001)	-
Chromium (dissolved)	mg/L	0.05	MAC	0.001	ND(0.001) - ND(0.01)	ND (0.003)	-	0.0003 - ND(0.01)	0.003 ^b	-	0.001 - 0.004	ND (0.003)	-	ND(0.001) - ND(0.003)	ND (0.003)	-
Iron (dissolved)	mg/L	0.30	AO	0.3	0.008 - 0.284	0.302 ^{abc}	-	0.018 - 0.59	0.755 ^{abc}	-	ND(0.03) - 0.23	0.131	-	ND(0.01) - 0.1	ND (0.01)	-
Lead (dissolved)	mg/L	0.01	MAC	0.005	ND(0.0005) - ND(0.002)	ND (0.001)	-	ND(0.0005) - ND(0.002)	ND (0.001)	-	ND(0.001) - ND(0.002)	ND (0.001)	-	ND(0.001) - ND(0.002)	ND (0.001)	-
Mercury (dissolved)	mg/L	0.001	MAC	0.0002	ND(0.0001) - 0.00048	ND (0.0001)	-	ND(0.0001) - ND(0.001)	ND (0.0001)	-	ND(0.0001) - ND(0.001)	ND (0.0001)	-	ND(0.0001) - ND(0.001)	ND (0.0001)	-
Nickel (dissolved)	mg/L	-	-	0.025	ND(0.001) - ND(0.01)	ND (0.003)	-	ND(0.001) - 0.01	ND (0.003)	-	ND(0.003) - ND(0.005)	ND (0.003)	-	ND(0.003) - ND(0.005)	ND (0.003)	-
Zinc (dissolved)	mg/L	5.0	AO	0.03	0.005 - 0.096	ND (0.005)	-	ND(0.003) - 0.19	ND (0.005)	-	ND(0.005) - 0.04	0.006	-	ND(0.005) - 0.02	ND (0.005)	-
Volatile Organic Compounds																
1,1,1,2-Tetrachloroethane	ug/L	-	-	20	ND(0.1) - ND(0.5)	ND (0.4)	-	ND(0.1) - ND(0.5)	ND (0.4)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
1,1,1-Trichloroethane	ug/L	-	-	10	ND(0.01) - ND(10)	ND (1.2)	-	ND(0.2) - ND(1.2)	ND (1.2)	-	ND(0.3) - ND(0.4)	ND (0.3)	-	ND(0.3) - ND(0.4)	ND (0.3)	-
1,1,2,2-Tetrachloroethane	ug/L	-	-	70	ND(0.1) - ND(0.6)	ND (0.4)	-	ND(0.1) - ND(0.5)	ND (0.4)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
1,1,2-Trichloroethane	ug/L	-	-	800	ND(0.2) - ND(0.8)	ND (0.8)	-	ND(0.2) - ND(0.8)	ND (0.8)	-	ND(0.2) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-
1,1-Dichloroethane	ug/L	-	-	200	ND(0.01) - ND(10)	ND (1.2)	-	ND(0.1) - ND(1.2)	ND (1.2)	-	ND(0.3) - ND(0.4)	ND (0.3)	-	ND(0.3) - ND(0.4)	ND (0.3)	-
1,1-Dichloroethene	ug/L	14	MAC	40	ND(0.1) - ND(1.2)	ND (1.2)	-	ND(0.1) - ND(1.2)	ND (1.2)	-	ND(0.3) - ND(0.5)	ND (0.3)	-	ND(0.3) - ND(0.5)	ND (0.3)	-
1,2,4-Trichlorobenzene	ug/L	-	-	0.5	ND(0.3) - ND(1.2)	ND (1.2)	-	ND(0.3) - ND(1.2)	ND (1.2)	-	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-
1,2-Dibromoethane (Ethylene dibromide)	ug/L	-	-	5	ND(0.1) - ND(1)	ND (0.4)	-	ND(0.1) - ND(1)	ND (0.4)	-	ND(0.1) - ND(1)	ND (0.1)	-	ND(0.1) - ND(0.2)	ND (0.1)	-
1,2-Dichlorobenzene	ug/L	200	MAC	2.5	ND(0.002) - ND(2)	ND (0.4)	-	ND(0.1) - ND(0.4)	ND (0.4)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
1,2-Dichloroethane	ug/L	5	IMAC	100	ND(0.002) - ND(2)	ND (0.8)	-	ND(0.1) - ND(0.8)	ND (0.8)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2)	ND (0.2)	-
1,2-Dichloropropane	ug/L	-	-	0.7	ND(0.1) - ND(0.8)	ND (0.8)	-	ND(0.2) - ND(0.8)	ND (0.8)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
1,3-Dichlorobenzene	ug/L	-	-	2.5	ND(0.1) - ND(0.4)	ND (0.4)	-	ND(0.1) - ND(0.4)	ND (0.4)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
1,3-Dichloropropene	ug/L	-	-	-	ND(0.3) - ND(1.2)	ND (1.2)	-	ND(0.3) - ND(1.2)	ND (1.2)	-	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-
1,4-Dichlorobenzene	ug/L	5	MAC	4	ND(0.002) - ND(2)	ND (0.4)	-	ND(0.1) - ND(0.4)	ND (0.4)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	-	-	400	ND(1) - ND(5)	ND (4)	-	ND(1) - ND(5)	ND (4)	-	ND(1) - ND(5)	ND (1)	-	ND(1)	ND (1)	-
2-Hexanone	ug/L	-	-	-	ND(1) - ND(4)	ND (4)	-	ND(1) - ND(4)	ND (4)	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	-	-	-	ND(1) - ND(5)	ND (4)	-	ND(0.1) - ND(4)	ND (4)	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-
Acetone	ug/L	-	-	-	ND(1) - ND(10)	ND (4)	-	ND(0.1) - ND(4)	ND (4)	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-
Benzene	ug/L	1	MAC	100	ND(0.001) - ND(1)	ND (0.8)	-	ND(0.2) - ND(0.8)	ND (0.8)	-	ND(0.2) - 0.7	0.35	-	ND(0.2) - 5.6	ND (0.2)	-
Bromodichloromethane	ug/L	-	-	200	ND(0.1) - ND(0.8)	ND (0.8)	-	ND(0.2) - ND(0.8)	ND (0.8)	-	ND(0.2) - ND(0.3)	ND (0.2)	-	ND(0.2) - ND(0.3)	ND (0.2)	-

Table 11

**Groundwater Chemistry - Deep Wells Internal to the Facility Property (Interface Aquifer)
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Sample Location: Sample ID: Sample Date:				TW39-99D			TW46-99D			TW54-09D			TW61-13D		
	ODWS			06/09/1999 - 11/20/2018	39D 6/12/2019	39D 12/3/2019	11/03/1999 - 11/19/2018	46D 6/12/2019	46D 12/3/2019	11/03/2009 - 11/20/2018	54D 6/11/2019	54D 12/2/2019	11/07/2013 - 11/20/2018	61D 6/11/2019	61D 12/3/2019
	ODWS	SOURCE	PWQO	Historical Range			Historical Range			Historical Range			Historical Range		
Parameters	Units	a	b												
Bromoform	ug/L	-	60	ND(0.1) - 0.4	ND (0.4)	-	ND(0.1) - 0.4	ND (0.4)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
Bromomethane (Methyl bromide)	ug/L	-	0.9	ND(0.2) - ND(0.8)	ND (0.8)	-	ND(0.1) - ND(0.8)	ND (0.8)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
Carbon tetrachloride	ug/L	2	MAC	ND(0.1) - ND(0.8)	ND (0.8)	-	ND(0.2) - ND(0.8)	ND (0.8)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2)	ND (0.2)	-
Chlorobenzene	ug/L	80	MAC	ND(0.1) - ND(0.4)	ND (0.4)	-	ND(0.1) - ND(0.4)	ND (0.4)	-	ND(0.1) - ND(0.2)	ND (0.1)	-	ND(0.1) - ND(0.2)	ND (0.1)	-
Chloroethane	ug/L	-	-	ND(0.01) - ND(10)	ND (0.8)	-	ND(0.2) - ND(1)	ND (0.8)	-	ND(0.2) - ND(1)	ND (0.2)	-	ND(0.2)	ND (0.2)	-
Chloroform (Trichloromethane)	ug/L	-	-	ND(0.2) - ND(0.8)	ND (0.8)	-	0.1 - ND(0.8)	ND (0.8)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
Chloromethane (Methyl chloride)	ug/L	-	700	ND(0.2) - ND(1.6)	ND (1.6)	-	ND(0.2) - ND(1.6)	ND (1.6)	-	ND(0.2) - ND(1)	ND (0.4)	-	ND(0.2) - ND(0.4)	ND (0.4)	-
cis-1,2-Dichloroethene	ug/L	-	200	ND(0.1) - ND(0.8)	ND (0.8)	-	ND(0.1) - ND(0.8)	ND (0.8)	-	ND(0.2) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-
cis-1,3-Dichloropropene	ug/L	-	-	ND(0.2) - ND(0.8)	ND (0.8)	-	ND(0.1) - ND(0.8)	ND (0.8)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-
Dibromochloromethane	ug/L	-	40	ND(0.1) - ND(0.4)	ND (0.4)	-	ND(0.1) - ND(0.4)	ND (0.4)	-	ND(0.1) - ND(0.3)	ND (0.1)	-	ND(0.1) - ND(0.3)	ND (0.1)	-
Dichlorodifluoromethane (CFC-12)	ug/L	-	-	ND(0.2) - ND(0.8)	ND (0.8)	-	ND(0.2) - ND(0.8)	ND (0.8)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
Ethylbenzene	ug/L	140	MAC	ND(0.001) - ND(1)	ND (0.4)	-	ND(0.1) - ND(0.5)	ND (0.4)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
Hexane	ug/L	-	-	ND(0.2) - ND(0.8)	ND (0.8)	-	ND(0.2) - ND(0.8)	ND (0.8)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-
m&p-Xylenes	ug/L	-	2	ND(0.1) - ND(10)	ND (0.8)	-	ND(0.1) - ND(1)	ND (0.8)	-	ND(0.2) - ND(1)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
Methyl tert butyl ether (MTBE)	ug/L	15	AO	ND(0.2) - ND(0.8)	ND (0.8)	-	ND(0.1) - ND(0.8)	ND (0.8)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-
Methylene chloride	ug/L	50	MAC	ND(0.01) - ND(10)	ND (1.2)	-	ND(0.3) - ND(5)	ND (1.2)	-	ND(0.3) - ND(4)	ND (0.3)	-	ND(0.3) - ND(4)	ND (0.3)	-
o-Xylene	ug/L	-	40	ND(0.1) - ND(10)	ND (0.4)	-	ND(0.1) - ND(0.5)	ND (0.4)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
Styrene	ug/L	-	4	ND(0.1) - ND(0.5)	ND (0.4)	-	ND(0.1) - ND(0.5)	ND (0.4)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
Tetrachloroethene	ug/L	10	MAC	ND(0.1) - ND(0.8)	ND (0.8)	-	ND(0.1) - ND(0.8)	ND (0.8)	-	ND(0.2) - ND(0.3)	ND (0.2)	-	ND(0.2) - ND(0.3)	ND (0.2)	-
Toluene	ug/L	60	MAC	ND(0.01) - ND(10)	ND (0.8)	-	ND(0.2) - 1.2	ND (0.8)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - 0.8	ND (0.2)	-
trans-1,2-Dichloroethene	ug/L	-	200	ND(0.1) - ND(0.9)	ND (0.8)	-	ND(0.1) - ND(0.8)	ND (0.8)	-	ND(0.2) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-
trans-1,3-Dichloropropene	ug/L	-	7	ND(0.2) - ND(1.2)	ND (1.2)	-	ND(0.2) - ND(10)	ND (1.2)	-	ND(0.2) - ND(0.3)	ND (0.3)	-	ND(0.2) - ND(0.3)	ND (0.3)	-
Trichloroethene	ug/L	5	MAC	ND(0.01) - ND(10)	ND (0.8)	-	ND(0.2) - ND(0.8)	ND (0.8)	-	ND(0.2) - ND(0.3)	ND (0.2)	-	ND(0.2) - ND(0.3)	ND (0.2)	-
Trichlorofluoromethane (CFC-11)	ug/L	-	-	ND(0.2) - ND(1.6)	ND (1.6)	-	ND(0.1) - ND(1.6)	ND (1.6)	-	ND(0.4) - ND(0.5)	ND (0.4)	-	ND(0.4) - ND(0.5)	ND (0.4)	-
Vinyl chloride	ug/L	1	MAC	ND(0.17) - ND(0.68)	ND (0.68)	-	ND(0.1) - ND(0.68)	ND (0.68)	-	ND(0.17) - ND(0.2)	ND (0.17)	-	ND(0.17) - ND(0.2)	ND (0.17)	-
Xylenes (total)	ug/L	90	MAC	ND(0.01) - ND(1.5)	ND (0.8)	-	ND(0.2) - ND(1.5)	ND (0.8)	-	ND(0.2) - ND(1.5)	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	-

Notes:

- ^a Indicates value exceeds Ontario Drinking Water Standards, Objectives and Guidelines, Ontario Ministry of the Environment, as revised June 2006 (ODWS).
- ^b Indicates value exceeds Policy and Guidelines - Provincial Water Quality The Ontario Ministry of the Environment and Energy, July 1994 (PWQO).
- ^c Analytical result outside of the historical concentration range for the parameter.
- ND Not detected at the associated reporting limit.
- J Estimated concentration.
- 4.90** Detected result exceeds associated standard.
- OG Operational Guideline
- AO Aesthetic Objective
- MAC Maximum Acceptable Concentration
- IMAC Interim Maximum Acceptable Concentration
- Not applicable or not analysed.

Table 12

**Groundwater Chemistry - Deep Wells along the Perimeter of the Facility Property (Interface Aquifer)
2019 Annual Groundwater Monitoring Report
Clean Harbors Canada Inc. - Lambton Facility**

Sample Location: Sample ID: Sample Date:	Units	OW32-90D			OW35-05D			TW22-99D					
		ODWS a	SOURCE	PWQO b	32D	32D	32D	35D	35D	35D	22D	22D	
					06/19/1991 - 11/21/2018 Historical Range	6/12/2019	12/2/2019	05/31/2005 - 11/21/2018 Historical Range	6/12/2019	12/2/2019	06/21/1994 - 11/20/2018 Historical Range	6/12/2019	12/4/2019
Field Parameters													
Conductivity, field	uS/cm	-	-	-	1040 - 1930	1500	1610	954 - 1760	1480	1550	3110 - 5010	5000	5400 ^c
pH, field	s.u.	6.5-8.5	OG	6.5-8.5	7.22 - 8.28	8.66 ^{abc}	7.84	7.45 - 7.83	9.07 ^{abc}	8.16 ^c	6.44 - 8	8.81 ^{abc}	7.65
Temperature, field	Deg C	15	AO	-	6.5 - 17.1	15.66 ^a	9.7	9.37 - 14.9	13.68	9.96	9.36 - 16.5	11.42	8.61 ^c
Total dissolved solids, field (TDS)	mg/L	500	AO	-	-	0.09	0.11	-	0.09	0.12	-	0.11	0.1
General Indicators													
Conductivity, electrical	uS/cm	-	-	-	647 - 1580	1370	1110	1130 - 1520	1310	1070 ^c	1100 - 5410	4510	3790
pH, lab	s.u.	6.5-8.5	OG	6.5-8.5	7.61 - 8.4	7.84	7.88	7.6 - 8.43	7.83	7.82	7.49 - 8.48	8.03	8.05
Total dissolved solids (TDS)	mg/L	500	AO	-	462 - 949	704 ^a	680 ^a	658 - 897	686 ^a	672 ^a	2300 - 3220	2440 ^a	2570 ^a
Minor Ions - Anions													
Alkalinity, total (as CaCO3)	mg/L	30-500	OG	-	188 - 263	226	234	255 - 334	234 ^c	256	320 - 766	652 ^a	717 ^a
Chloride	mg/L	250	AO	-	42.4 - 400	296 ^a	303 ^a	234 - 327	279 ^a	278 ^a	932 - 1690	1110 ^a	1140 ^a
Sulfate	mg/L	500	AO	-	ND(0.5) - 95.2	0.75	ND (0.5)	ND(0.5) - 11	ND (0.5)	ND (0.5)	ND(0.1) - 22	ND (5)	ND (5)
Major Ions - Cations													
Calcium (dissolved)	mg/L	-	-	-	19.1 - 66	26.2	21.8	17 - 28	22.7	21.5	21 - 67	33	33.4
Magnesium (dissolved)	mg/L	-	-	-	6 - 22	8.35	7.1	6 - 9	7.58	7.19	8 - 19.2	13.4	13
Potassium (dissolved)	mg/L	-	-	-	1.5 - 5.2	2.79	2.4	1.29 - 2.4	2.01	1.92	2 - 4	3.3	3.2
Sodium (dissolved)	mg/L	20/200	AO	-	62 - 280	236 ^a	244 ^a	207 - 310	234 ^a	247 ^a	250 - 1250	913 ^a	974 ^a
Major Ions - Nutrients													
Ammonia-N	mg/L	-	-	-	-	-	-	0.28 - 0.3	-	-	0.44 - 0.57	-	-
Nitrate (as N)	mg/L	10.0	MAC	-	ND(0.002) - ND(0.25)	ND (0.25)	ND (0.25)	ND(0.1) - ND(0.25)	ND (0.25)	ND (0.25)	0.016 - ND(2.5)	ND (2.5)	ND (2.5)
Nitrite (as N)	mg/L	1.0	MAC	-	ND(0.01) - ND(0.25)	ND (0.25)	ND (0.25)	ND(0.1) - ND(0.25)	ND (0.25)	ND (0.25)	ND(0.01) - ND(2.5)	ND (2.5)	ND (2.5)
Major Ions - Miscellaneous													
Bromide	mg/L	-	-	-	0.16 - 3.7	ND (0.25)	ND (0.25)	0.15 - 2.11	ND (0.25)	ND (0.25)	0.2 - 8	ND (2.5)	ND (2.5)
Cyanide (free)	mg/L	-	-	0.005	ND(0.002) - ND(0.02)	ND (0.002)	ND (0.002) J	ND(0.002) - ND(0.02)	ND (0.002)	ND (0.002) J	ND(0.002) - ND(0.02)	ND (0.002)	ND (0.002) J
Fluoride	mg/L	1.5	MAC	-	ND(0.25) - 1.6	1.15	0.93	ND(0.25) - 1.55	1.11	0.8	ND(0.05) - 3.2	ND (2.5)	ND (2.5)
Metals													
Arsenic (dissolved)	mg/L	0.010	IMAC	0.005	ND(0.001) - ND(0.06)	ND (0.003)	-	0.001 - ND(0.01)	ND (0.003)	-	0.001 - ND(0.01)	ND (0.003)	-
Barium (dissolved)	mg/L	1.0	MAC	-	0.072 - 0.23	0.118	-	0.11 - 0.22	0.111	-	0.29 - 0.597	0.37	-
Boron (dissolved)	mg/L	5.0	IMAC	0.2	0.97 - 2.1	1.25 ^b	-	1.4 - 1.9	1.37 ^{bc}	-	3.09 - 5.6	4.44 ^b	-
Cadmium (dissolved)	mg/L	0.005	MAC	0.0002	ND(0.0001) - 0.005	ND (0.001)	-	ND(0.0001) - ND(0.001)	ND (0.001)	-	ND(0.0001) - ND(0.003)	ND (0.001)	-
Chromium (dissolved)	mg/L	0.05	MAC	0.001	0.001 - ND(0.01)	ND (0.003)	-	ND(0.001) - 0.007	ND (0.003)	-	ND(0.001) - ND(0.01)	0.003 ^b	-
Iron (dissolved)	mg/L	0.30	AO	0.3	ND(0.005) - 0.815	1.02 ^{abc}	-	ND(0.03) - 0.67	0.571 ^{ab}	-	ND(0.005) - 2.66	1.23 ^{ab}	-
Lead (dissolved)	mg/L	0.01	MAC	0.005	ND(0.0005) - ND(0.05)	ND (0.001)	-	ND(0.0005) - ND(0.002)	ND (0.001)	-	ND(0.0005) - ND(0.01)	ND (0.001)	-
Mercury (dissolved)	mg/L	0.001	MAC	0.0002	0.0001 - 0.0013	ND (0.0001)	-	ND(0.0001)	ND (0.0001)	-	ND(0.0001) - 0.0007	ND (0.0001)	-
Nickel (dissolved)	mg/L	-	-	0.025	0.003 - ND(0.05)	ND (0.003)	-	ND(0.001) - ND(0.005)	ND (0.003)	-	ND(0.001) - ND(0.05)	ND (0.003)	-
Zinc (dissolved)	mg/L	5.0	AO	0.03	ND(0.003) - 0.04	ND (0.005)	-	ND(0.005) - 0.06	ND (0.005)	-	ND(0.003) - 0.11	ND (0.005)	-
Volatile Organic Compounds													
1,1,1,2-Tetrachloroethane	ug/L	-	-	20	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
1,1,1-Trichloroethane	ug/L	-	-	10	ND(0.2) - ND(0.4)	ND (0.3)	-	ND(0.2) - ND(0.4)	ND (0.3)	-	ND(0.2) - ND(0.4)	ND (0.3)	-
1,1,2,2-Tetrachloroethane	ug/L	-	-	70	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
1,1,2-Trichloroethane	ug/L	-	-	800	ND(0.2) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-
1,1-Dichloroethane	ug/L	-	-	200	ND(0.1) - ND(0.7)	ND (0.3)	-	ND(0.1) - ND(0.4)	ND (0.3)	-	ND(0.1) - ND(0.7)	ND (0.3)	-
1,1-Dichloroethene	ug/L	14	MAC	40	ND(0.1) - ND(0.5)	ND (0.3)	-	ND(0.1) - ND(0.5)	ND (0.3)	-	ND(0.1) - ND(0.5)	ND (0.3)	-
1,2,4-Trichlorobenzene	ug/L	-	-	0.5	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-
1,2-Dibromoethane (Ethylene dibromide)	ug/L	-	-	5	ND(0.1) - ND(1)	ND (0.1)	-	ND(0.1) - ND(1)	ND (0.1)	-	ND(0.1) - ND(1)	ND (0.1)	-
1,2-Dichlorobenzene	ug/L	200	MAC	2.5	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
1,2-Dichloroethane	ug/L	5	IMAC	100	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(0.5)	ND (0.2)	-
1,2-Dichloropropane	ug/L	-	-	0.7	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
1,3-Dichlorobenzene	ug/L	-	-	2.5	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
1,3-Dichloropropene	ug/L	-	-	-	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-

Table 12

Groundwater Chemistry - Deep Wells along the Perimeter of the Facility Property (Interface Aquifer)
 2019 Annual Groundwater Monitoring Report
 Clean Harbors Canada Inc. - Lambton Facility

Sample Location: Sample ID: Sample Date:	Units				OW32-90D			OW35-05D			TW22-99D		
		ODWS		PWQO	06/19/1991 - 11/21/2018 Historical Range	32D		05/31/2005 - 11/21/2018 Historical Range	35D		06/21/1994 - 11/20/2018 Historical Range	22D	
		ODWS	SOURCE			6/12/2019	12/2/2019		6/12/2019	12/2/2019		6/12/2019	12/4/2019
Parameters		a		b									
1,4-Dichlorobenzene	ug/L	5	MAC	4	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	-	-	400	ND(1) - ND(5)	ND (1)	-	ND(1) - ND(5)	ND (1)	-	ND(1) - ND(10)	ND (1)	-
2-Hexanone	ug/L	-	-	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	-	-	-	ND(0.1) - ND(1)	ND (1)	-	ND(0.1) - ND(1)	ND (1)	-	ND(0.1) - ND(10)	ND (1)	-
Acetone	ug/L	-	-	-	ND(0.1) - ND(1)	ND (1)	-	ND(0.1) - ND(1)	ND (1)	-	ND(0.1) - ND(30)	ND (1)	-
Benzene	ug/L	1	MAC	100	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - 3.8	1.7 ^a	-
Bromodichloromethane	ug/L	-	-	200	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
Bromoform	ug/L	-	-	60	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - 1.4	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
Bromomethane (Methyl bromide)	ug/L	-	-	0.9	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(0.5)	ND (0.2)	-
Carbon tetrachloride	ug/L	2	MAC	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
Chlorobenzene	ug/L	80	MAC	15	ND(0.1) - ND(0.2)	ND (0.1)	-	ND(0.1) - ND(0.2)	ND (0.1)	-	ND(0.1) - ND(0.2)	ND (0.1)	-
Chloroethane	ug/L	-	-	-	ND(0.2) - ND(1)	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	-
Chloroform (Trichloromethane)	ug/L	-	-	-	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
Chloromethane (Methyl chloride)	ug/L	-	-	700	ND(0.2) - ND(1)	ND (0.4)	-	ND(0.2) - ND(1)	ND (0.4)	-	ND(0.2) - ND(1)	ND (0.4)	-
cis-1,2-Dichloroethene	ug/L	-	-	200	ND(0.1) - ND(0.4)	ND (0.2)	-	ND(0.1) - ND(0.4)	ND (0.2)	-	ND(0.2) - 2.6	0.91	-
cis-1,3-Dichloropropene	ug/L	-	-	-	ND(0.1) - ND(0.2)	ND (0.2)	-	ND(0.1) - ND(0.2)	ND (0.2)	-	ND(0.1) - ND(0.2)	ND (0.2)	-
Dibromochloromethane	ug/L	-	-	40	ND(0.1) - ND(0.3)	ND (0.1)	-	ND(0.1) - ND(0.3)	ND (0.1)	-	ND(0.1) - ND(0.3)	ND (0.1)	-
Dichlorodifluoromethane (CFC-12)	ug/L	-	-	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
Ethylbenzene	ug/L	140	MAC	8	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
Hexane	ug/L	-	-	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-
m&p-Xylenes	ug/L	-	-	2	ND(0.1) - ND(1)	ND (0.2)	-	ND(0.1) - ND(1)	ND (0.2)	-	ND(0.1) - ND(1)	ND (0.2)	-
Methyl tert butyl ether (MTBE)	ug/L	15	AO	200	ND(0.1) - ND(0.2)	ND (0.2)	-	ND(0.1) - ND(0.2)	ND (0.2)	-	ND(0.1) - ND(2)	ND (0.2)	-
Methylene chloride	ug/L	50	MAC	100	ND(0.3) - ND(5)	ND (0.3)	-	ND(0.3) - ND(5)	ND (0.3)	-	ND(0.3) - ND(5)	ND (0.3)	-
o-Xylene	ug/L	-	-	40	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
Styrene	ug/L	-	-	4	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
Tetrachloroethene	ug/L	10	MAC	50	ND(0.1) - ND(0.3)	ND (0.2)	-	ND(0.1) - ND(0.3)	ND (0.2)	-	ND(0.1) - 0.3	ND (0.2)	-
Toluene	ug/L	60	MAC	0.8	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - 0.77	ND (0.2)	-
trans-1,2-Dichloroethene	ug/L	-	-	200	ND(0.1) - ND(0.4)	ND (0.2)	-	ND(0.1) - ND(0.4)	ND (0.2)	-	ND(0.1) - 0.5	ND (0.2)	-
trans-1,3-Dichloropropene	ug/L	-	-	7	ND(0.2) - ND(10)	ND (0.3)	-	ND(0.2) - ND(10)	ND (0.3)	-	ND(0.2) - ND(10)	ND (0.3)	-
Trichloroethene	ug/L	5	MAC	20	ND(0.2) - ND(0.3)	ND (0.2)	-	ND(0.2) - ND(0.3)	ND (0.2)	-	ND(0.3) - 4.9	3.4	-
Trichlorofluoromethane (CFC-11)	ug/L	-	-	-	ND(0.1) - ND(0.5)	ND (0.4)	-	ND(0.1) - ND(0.5)	ND (0.4)	-	ND(0.1) - ND(0.5)	ND (0.4)	-
Vinyl chloride	ug/L	1	MAC	600	ND(0.1) - ND(0.2)	ND (0.17)	-	ND(0.1) - ND(0.2)	ND (0.17)	-	ND(0.1) - ND(0.2)	ND (0.17)	-
Xylenes (total)	ug/L	90	MAC	-	ND(0.2) - ND(1.5)	ND (0.2)	-	ND(0.2) - ND(1.5)	ND (0.2)	-	ND(0.2) - ND(1.5)	ND (0.2)	-

Notes:

- ^a Indicates value exceeds Ontario Drinking Water Standards, Objectives and Guidelines, Ontario Ministry of the Environment, as revised June 2006 (ODWS).
- ^b Indicates value exceeds Policy and Guidelines - Provincial Water Quality Guidelines. The Ontario Ministry of the Environment and Energy, July 1994 (PWQO).
- ^c Analytical result outside of the historical concentration range for the parameter.
- ND Not detected at the associated reporting limit.
- J Estimated concentration.
- 4.90 Detected result exceeds associated standard.
- OG Operational Guideline
- AO Aesthetic Objective
- MAC Maximum Acceptable Concentration
- IMAC Interim Maximum Acceptable Concentration
- Not applicable or not analysed.

Table 12

**Groundwater Chemistry - Deep Wells along the Perimeter of the Facility Property (Interface Aquifer)
2019 Annual Groundwater Monitoring Report
Clean Harbors Canada Inc. - Lambton Facility**

Sample Location: Sample ID: Sample Date:	TW30-99D			TW32-94-II		TW40-99D			TW41-99D			
	06/07/1999 - 11/21/2018 Historical Range	30D 6/12/2019	30D 12/2/2019	08/05/1994 - 06/04/2018 Historical Range	32II 12/3/2019	06/08/1999 - 11/19/2018 Historical Range	40D 6/12/2019	40D 12/3/2019	06/07/1999 - 11/21/2018 Historical Range	41D 6/12/2019	41D 12/2/2019	
Parameters	Units											
Field Parameters												
Conductivity, field	uS/cm	1030 - 1630	1270	1400	938 - 2170	4800 ^c	1060 - 1830	2010 ^c	1900 ^c	919 - 1560	1210	1320
pH, field	s.u.	7.04 - 8.04	9.05 ^{abc}	8.16 ^c	7.53 - 8.38	9.11 ^{abc}	7.24 - 8.29	9.42 ^{abc}	8.23	7.36 - 8.34	8.77 ^{abc}	7.99
Temperature, field	Deg C	9.28 - 14.2	12.11	9.9	10 - 17.9	9.99 ^c	6.1 - 18.4	12.57	9.85	8.1 - 16.8	11.54	9.94
Total dissolved solids, field (TDS)	mg/L	-	0.1	0.1	-	0.1	-	0.1	0.11	-	0.11	0.1
General Indicators												
Conductivity, electrical	uS/cm	1040 - 1600	1180	968 ^c	1190 - 6790	2330	1190 - 3340	1460	1180 ^c	978 - 1400	1120	917 ^c
pH, lab	s.u.	7.73 - 8.57	7.93	7.75	7.6 - 8.52	8.15	7.72 - 8.37	7.82	7.71 ^c	7.68 - 8.6	7.86	7.74
Total dissolved solids (TDS)	mg/L	588 - 1010	620 ^a	596 ^a	309 - 4410	1250 ^a	690 - 2170	810 ^a	750 ^a	540 - 895	584 ^a	556 ^a
Minor Ions - Anions												
Alkalinity, total (as CaCO ₃)	mg/L	243 - 312	225 ^c	245	234 - 384	274	238 - 327	224 ^c	245	288 - 358	258 ^c	284 ^c
Chloride	mg/L	208 - 365	242	246	24 - 1940	811 ^a	247 - 819	332 ^a	327 ^a	45.8 - 278	197	200
Sulfate	mg/L	ND(0.5) - 11	ND (0.5)	ND (0.5)	1 - 380	ND (2)	ND(0.5) - 6	ND (1)	ND (0.5)	ND(0.5) - 11	ND (0.5)	ND (0.5)
Major Ions - Cations												
Calcium (dissolved)	mg/L	18 - 32	22.1	21	11.6 - 120	15.7	25.3 - 78	31.4	29.3	12 - 19.7	15.9	15.3
Magnesium (dissolved)	mg/L	6.89 - 14	7.73	7.2	6 - 81	15.6	9 - 28	11.1	10.2	4.55 - 7.2	5.34	5.05
Potassium (dissolved)	mg/L	ND(1) - 3	2.5	2.44	1 - 5	3.28	1.9 - 4	2.52	2.46	1 - 3.3	1.85	1.65
Sodium (dissolved)	mg/L	182 - 320	205 ^a	216 ^a	75 - 1380	554 ^a	222 - 572	247 ^a	254 ^a	181 - 320	209 ^a	216 ^a
Major Ions - Nutrients												
Ammonia-N	mg/L	0.32 - 0.4	-	-	-	-	0.18 - 0.2	-	-	0.26	-	-
Nitrate (as N)	mg/L	0.018 - ND(0.5)	ND (0.25)	ND (0.25)	ND(0.01) - ND(0.5)	ND (1)	ND(0.021) - ND(1)	ND (0.5)	ND (0.25)	ND(0.01) - 0.3	ND (0.25)	ND (0.25)
Nitrite (as N)	mg/L	ND(0.01) - ND(0.25)	ND (0.25)	ND (0.25)	ND(0.01) - ND(0.5)	ND (1)	ND(0.01) - ND(0.25)	ND (0.5)	ND (0.25)	ND(0.01) - ND(0.25)	ND (0.25)	ND (0.25)
Major Ions - Miscellaneous												
Bromide	mg/L	0.15 - 1.81	ND (0.25)	ND (0.25)	ND(0.05) - 4.31	ND (1)	ND(0.05) - 3.99	ND (0.5)	ND (0.25)	ND(0.25) - 1.8	ND (0.25)	0.56
Cyanide (free)	mg/L	ND(0.002) - ND(0.05)	ND (0.002)	ND (0.002) J	ND(0.002) - ND(0.02)	ND (0.002) J	ND(0.002) - ND(0.05)	ND (0.002)	ND (0.002) J	ND(0.002) - ND(0.05)	ND (0.002)	ND (0.002) J
Fluoride	mg/L	ND(0.25) - 1.62	1.16	0.92	ND(0.5) - 1.7	ND (1)	ND(0.25) - 1.41	ND (0.5)	0.74	ND(0.25) - 1.55	1.16	0.85
Metals												
Arsenic (dissolved)	mg/L	ND(0.001) - ND(0.003)	ND (0.003)	-	ND(0.001) - ND(0.06)	-	0.001 - ND(0.01)	ND (0.003)	-	ND(0.001) - ND(0.003)	ND (0.003)	-
Barium (dissolved)	mg/L	0.29 - 0.46	0.356	-	0.013 - 1	-	0.186 - 0.37	0.217	-	0.077 - 0.93	0.074 ^c	-
Boron (dissolved)	mg/L	1.4 - 2	1.32 ^{bc}	-	0.27 - 3.83	-	1.4 - 2.4	1.59 ^b	-	1.5 - 2.1	1.61 ^b	-
Cadmium (dissolved)	mg/L	ND(0.0001) - ND(0.003)	ND (0.001)	-	ND(0.0001) - ND(0.005)	-	ND(0.0001) - 0.005	ND (0.001)	-	ND(0.0001) - 0.006	ND (0.001)	-
Chromium (dissolved)	mg/L	ND(0.001) - ND(0.01)	ND (0.003)	-	0.001 - ND(0.01)	-	ND(0.001) - ND(0.01)	ND (0.003)	-	0.001 - ND(0.01)	ND (0.003)	-
Iron (dissolved)	mg/L	ND(0.01) - 0.304	0.292	-	ND(0.005) - ND(0.3)	-	ND(0.013) - 1.87	1.92 ^{abc}	-	ND(0.02) - 4.9	0.038	-
Lead (dissolved)	mg/L	ND(0.0005) - 0.003	ND (0.001)	-	ND(0.0005) - ND(0.025)	-	ND(0.0005) - 0.002	ND (0.001)	-	ND(0.0005) - 0.0073	ND (0.001)	-
Mercury (dissolved)	mg/L	ND(0.0001)	ND (0.0001)	-	ND(0.0001) - 0.0003	-	0.0001	ND (0.0001)	-	ND(0.0001) - 0.00035	ND (0.0001)	-
Nickel (dissolved)	mg/L	ND(0.001) - ND(0.01)	ND (0.003)	-	ND(0.001) - ND(0.05)	-	ND(0.001) - ND(0.01)	ND (0.003)	-	ND(0.001) - ND(0.01)	ND (0.003)	-
Zinc (dissolved)	mg/L	ND(0.003) - 0.09	ND (0.005)	-	ND(0.003) - ND(0.1)	-	ND(0.005) - 0.516	ND (0.005)	-	ND(0.005) - 0.53	ND (0.005)	-
Volatile Organic Compounds												
1,1,1,2-Tetrachloroethane	ug/L	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(1)	ND (0.1)	-
1,1,1-Trichloroethane	ug/L	ND(0.2) - ND(0.4)	ND (0.3)	-	ND(0.2) - ND(0.4)	-	ND(0.01) - ND(10)	ND (0.3)	-	ND(0.1) - ND(0.8)	ND (0.3)	-
1,1,2,2-Tetrachloroethane	ug/L	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	-	ND(0.1) - ND(0.6)	ND (0.1)	-	ND(0.1) - ND(1)	ND (0.1)	-
1,1,2-Trichloroethane	ug/L	ND(0.2) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.4)	-	ND(0.2) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.8)	ND (0.2)	-
1,1-Dichloroethane	ug/L	ND(0.1) - ND(0.7)	ND (0.3)	-	ND(0.1) - ND(0.7)	-	ND(0.01) - ND(10)	ND (0.3)	-	ND(0.1) - ND(0.8)	ND (0.3)	-
1,1-Dichloroethene	ug/L	ND(0.1) - ND(0.5)	ND (0.3)	-	ND(0.1) - ND(0.5)	-	ND(0.1) - ND(0.6)	ND (0.3)	-	ND(0.1) - ND(1)	ND (0.3)	-
1,2,4-Trichlorobenzene	ug/L	ND(0.3)	ND (0.3)	-	ND(0.3)	-	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-
1,2-Dibromoethane (Ethylene dibromide)	ug/L	ND(0.1) - ND(1)	ND (0.1)	-	ND(0.1) - ND(1)	-	ND(0.1) - ND(1)	ND (0.1)	-	ND(0.1) - ND(2)	ND (0.1)	-
1,2-Dichlorobenzene	ug/L	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	-	ND(0.002) - ND(2)	ND (0.1)	-	ND(0.1) - ND(0.8)	ND (0.1)	-
1,2-Dichloroethane	ug/L	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(0.5)	-	ND(0.002) - ND(2)	ND (0.2)	-	ND(0.1) - ND(1)	ND (0.2)	-
1,2-Dichloropropane	ug/L	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	-	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(1)	ND (0.2)	-
1,3-Dichlorobenzene	ug/L	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.8)	ND (0.1)	-
1,3-Dichloropropene	ug/L	ND(0.3)	ND (0.3)	-	ND(0.3)	-	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-

Table 12

**Groundwater Chemistry - Deep Wells along the Perimeter of the Facility Property (Interface Aquifer)
2019 Annual Groundwater Monitoring Report
Clean Harbors Canada Inc. - Lambton Facility**

Sample Location: Sample ID: Sample Date:	TW30-99D			TW32-94-II		TW40-99D			TW41-99D			
		30D	30D		32II		40D	40D		41D	41D	
	06/07/1999 - 11/21/2018	6/12/2019	12/2/2019	08/05/1994 - 06/04/2018	12/3/2019	06/08/1999 - 11/19/2018	6/12/2019	12/3/2019	06/07/1999 - 11/21/2018	6/12/2019	12/2/2019	
Parameters	Units	Historical Range			Historical Range		Historical Range			Historical Range		
1,4-Dichlorobenzene	ug/L	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	-	ND(0.002) - ND(2)	ND (0.1)	-	ND(0.1) - ND(0.8)	ND (0.1)	-
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	ND(1) - ND(5)	ND (1)	-	ND(1) - ND(5)	-	ND(1) - ND(5)	ND (1)	-	ND(1) - ND(5)	ND (1)	-
2-Hexanone	ug/L	ND(1)	ND (1)	-	ND(1)	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	ND(0.1) - ND(1)	ND (1)	-	ND(0.1) - ND(1)	-	ND(1) - ND(5)	ND (1)	-	ND(1) - ND(5)	ND (1)	-
Acetone	ug/L	ND(0.1) - ND(1)	ND (1)	-	ND(0.1) - ND(1)	-	ND(1) - ND(10)	ND (1)	-	ND(1) - ND(10)	ND (1)	-
Benzene	ug/L	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	-	ND(0.001) - ND(1)	ND (0.2)	-	ND(0.1) - ND(1)	ND (0.2)	-
Bromodichloromethane	ug/L	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	-	ND(0.1) - ND(0.4)	ND (0.2)	-	ND(0.1) - ND(0.6)	ND (0.2)	-
Bromoform	ug/L	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - 0.5	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.8)	ND (0.1)	-
Bromomethane (Methyl bromide)	ug/L	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(0.5)	-	ND(0.2) - ND(0.7)	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	-
Carbon tetrachloride	ug/L	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	-	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(1)	ND (0.2)	-
Chlorobenzene	ug/L	ND(0.1) - ND(0.2)	ND (0.1)	-	ND(0.1) - ND(0.2)	-	ND(0.1) - ND(0.3)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
Chloroethane	ug/L	ND(0.2) - ND(1)	ND (0.2)	-	ND(0.2) - ND(1)	-	ND(0.01) - ND(10)	ND (0.2)	-	ND(0.2) - ND(2)	ND (0.2)	-
Chloroform (Trichloromethane)	ug/L	ND(0.2) - 0.7	ND (0.2)	-	ND(0.2) - ND(0.5)	-	ND(0.2) - 2.1	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	-
Chloromethane (Methyl chloride)	ug/L	ND(0.2) - ND(1)	ND (0.4)	-	ND(0.2) - ND(1)	-	ND(0.2) - ND(1)	ND (0.4)	-	ND(0.2) - ND(2)	ND (0.4)	-
cis-1,2-Dichloroethene	ug/L	ND(0.1) - ND(0.4)	ND (0.2)	-	ND(0.1) - ND(0.4)	-	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(0.8)	ND (0.2)	-
cis-1,3-Dichloropropene	ug/L	ND(0.1) - ND(0.2)	ND (0.2)	-	ND(0.1) - ND(0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-
Dibromochloromethane	ug/L	ND(0.1) - ND(0.3)	ND (0.1)	-	ND(0.1) - ND(0.3)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.6)	ND (0.1)	-
Dichlorodifluoromethane (CFC-12)	ug/L	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	-
Ethylbenzene	ug/L	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	-	ND(0.001) - ND(1)	ND (0.1)	-	ND(0.1) - ND(1)	ND (0.1)	-
Hexane	ug/L	ND(0.2)	ND (0.2)	-	ND(0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-
m&p-Xylenes	ug/L	ND(0.1) - ND(1)	ND (0.2)	-	ND(0.1) - ND(1)	-	ND(0.1) - ND(10)	ND (0.2)	-	ND(0.1) - ND(2)	ND (0.2)	-
Methyl tert butyl ether (MTBE)	ug/L	ND(0.1) - ND(0.2)	ND (0.2)	-	ND(0.1) - ND(0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-
Methylene chloride	ug/L	ND(0.3) - ND(5)	ND (0.3)	-	ND(0.3) - ND(5)	-	ND(0.01) - ND(10)	ND (0.3)	-	ND(0.3) - ND(8)	ND (0.3)	-
o-Xylene	ug/L	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	-	ND(0.1) - ND(10)	ND (0.1)	-	ND(0.1) - ND(1)	ND (0.1)	-
Styrene	ug/L	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(1)	ND (0.1)	-
Tetrachloroethene	ug/L	ND(0.1) - ND(0.3)	ND (0.2)	-	ND(0.1) - ND(0.3)	-	ND(0.1) - ND(0.3)	ND (0.2)	-	ND(0.1) - ND(0.6)	ND (0.2)	-
Toluene	ug/L	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - 2.1	-	ND(0.01) - ND(10)	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	-
trans-1,2-Dichloroethene	ug/L	ND(0.1) - ND(0.4)	ND (0.2)	-	ND(0.1) - ND(0.4)	-	ND(0.1) - ND(0.9)	ND (0.2)	-	ND(0.1) - ND(0.8)	ND (0.2)	-
trans-1,3-Dichloropropene	ug/L	ND(0.2) - ND(10)	ND (0.3)	-	ND(0.2) - ND(10)	-	ND(0.2) - ND(0.3)	ND (0.3)	-	ND(0.2) - ND(0.4)	ND (0.3)	-
Trichloroethene	ug/L	ND(0.2) - ND(0.3)	ND (0.2)	-	ND(0.2) - ND(0.3)	-	ND(0.01) - ND(10)	ND (0.2)	-	ND(0.1) - ND(0.6)	ND (0.2)	-
Trichlorofluoromethane (CFC-11)	ug/L	ND(0.1) - ND(0.5)	ND (0.4)	-	ND(0.1) - ND(0.5)	-	ND(0.2) - ND(0.5)	ND (0.4)	-	ND(0.2) - ND(1)	ND (0.4)	-
Vinyl chloride	ug/L	ND(0.1) - ND(0.2)	ND (0.17)	-	ND(0.1) - ND(0.2)	-	ND(0.17) - ND(0.5)	ND (0.17)	-	ND(0.17) - ND(0.4)	ND (0.17)	-
Xylenes (total)	ug/L	ND(0.2) - ND(1.5)	ND (0.2)	-	ND(0.2) - ND(1.5)	-	ND(0.01) - ND(1.5)	ND (0.2)	-	ND(0.2) - ND(1.5)	ND (0.2)	-

Notes:

- ^a Indicates value exceeds Ontario Drinking Water Standards Guidelines, Ontario Ministry of the Environment, as revised
- ^b Indicates value exceeds Policy and Guidelines - Provincial The Ontario Ministry of the Environment and Energy, July
- ^c Analytical result outside of the historical concentration range
- ND Not detected at the associated reporting limit.
- J Estimated concentration.
- 4.90** Detected result exceeds associated standard.
- OG Operational Guideline
- AO Aesthetic Objective
- MAC Maximum Acceptable Concentration
- IMAC Interim Maximum Acceptable Concentration
- Not applicable or not analysed.

Table 12

**Groundwater Chemistry - Deep Wells along the Perimeter of the Facility Property (Interface Aquifer)
2019 Annual Groundwater Monitoring Report
Clean Harbors Canada Inc. - Lambton Facility**

Sample Location: Sample ID: Sample Date:	TW43-99D				TW45-99D			TW47-00D			
	Historical Range	43D 6/11/2019	43D 12/2/2019	98 12/2/2019 Duplicate	Historical Range	45D 6/11/2019	45D 12/4/2019	Historical Range	47D 6/12/2019	47D 12/3/2019	
Parameters	Units										
Field Parameters											
Conductivity, field	uS/cm	922 - 1580	1180	1350	1350	1120 - 4220	5040 ^c	5750 ^c	1200 - 11000	6500	11900 ^c
pH, field	s.u.	7.02 - 8.34	9.28 ^{abc}	8.45 ^c	8.45 ^c	6.81 - 8.36	8.74 ^{abc}	7.73	6.94 - 8.49	8.88 ^{abc}	7.78
Temperature, field	Deg C	9.45 - 12.2	11.22	9.63	9.63	9.54 - 18.1	13.84	7.7 ^c	9.7 - 14.1	12.25	10.19
Total dissolved solids, field (TDS)	mg/L	-	0.1	0.1	0.1	-	0.09	0.12	-	0.12	0.13
General Indicators											
Conductivity, electrical	uS/cm	1090 - 1310	1140	952 ^c	961 ^c	770 - 4690	4660	3740	1100 - 12200	4520	5980
pH, lab	s.u.	7.7 - 8.49	7.77	7.85	7.86	7.8 - 8.58	8.15	8.22	7.75 - 8.52	8	7.98
Total dissolved solids (TDS)	mg/L	580 - 833	598 ^a	640 ^a	624 ^a	500 - 2470	2590 ^{ac}	2940 ^{ac}	680 - 7930	2460 ^a	3270 ^a
Minor Ions - Anions											
Alkalinity, total (as CaCO3)	mg/L	240 - 294	237 ^c	259	260	264 - 1030	921 ^a	1010 ^a	270 - 1360	549 ^a	885 ^a
Chloride	mg/L	204 - 367	248	233	233	13 - 956	1080 ^{ac}	1020 ^{ac}	240 - 3150	1140 ^a	2160 ^a
Sulfate	mg/L	0.14 - ND(5)	ND (0.5)	ND (0.5)	ND (0.5)	0.63 - 120	ND (4)	ND (5)	0.44 - ND(5)	ND (5)	ND (5)
Major Ions - Cations											
Calcium (dissolved)	mg/L	19 - 33	24.7	25.1	24.4	4 - 75	7.6	6.21	17 - 104	56.3	66.3
Magnesium (dissolved)	mg/L	7 - 11	8.62	8.63	8.49	1 - 34	4.3	3.89	ND(0.1) - 47	23.5	28.9
Potassium (dissolved)	mg/L	1 - 3	1.83	1.77	1.77	1 - 3	3	2.51	1.3 - 10	4.2	4.88
Sodium (dissolved)	mg/L	189 - 259	196 ^a	210 ^a	207 ^a	42 - 1020	1030 ^{ac}	1030 ^{ac}	250 - 3040	855 ^a	1480 ^a
Major Ions - Nutrients											
Ammonia-N	mg/L	0.2 - 0.24	-	-	-	0.22	-	-	0.62 - 1.24	-	-
Nitrate (as N)	mg/L	0.016 - ND(1)	ND (0.25)	ND (0.25)	ND (0.25)	0.023 - ND(2.5)	ND (2)	ND (2.5)	0.011 - ND(2.5)	ND (2.5)	ND (2.5)
Nitrite (as N)	mg/L	ND(0.01) - ND(0.25)	ND (0.25)	ND (0.25)	ND (0.25)	ND(0.01) - ND(2.5)	ND (2)	ND (2.5)	ND(0.01) - ND(2.5)	ND (2.5)	ND (2.5)
Major Ions - Miscellaneous											
Bromide	mg/L	0.11 - ND(3.5)	0.47	ND (0.25)	ND (0.25)	ND(0.1) - 3.08	ND (2)	ND (2.5)	0.09 - 4.77	ND (2.5)	ND (2.5)
Cyanide (free)	mg/L	ND(0.002) - ND(0.05)	ND (0.002)	ND (0.002)	ND (0.002) J	ND(0.002) - ND(0.02)	ND (0.002)	0.003 J	ND(0.002) - ND(0.02)	ND (0.002)	ND (0.002) J
Fluoride	mg/L	0.18 - 1.6	0.75	0.98	0.75	0.3 - ND(2.5)	ND (2)	ND (2.5)	0.49 - ND(2.5)	ND (2.5)	ND (2.5)
Metals											
Arsenic (dissolved)	mg/L	ND(0.001) - ND(0.01)	ND (0.003)	-	-	0.001 - ND(0.1)	0.007 ^b	-	0.001 - ND(0.01)	ND (0.003)	-
Barium (dissolved)	mg/L	0.139 - 0.3	0.164	-	-	0.069 - 0.32	0.217	-	0.2 - 3.4	1.48 ^a	-
Boron (dissolved)	mg/L	1 - 1.7	1.33 ^b	-	-	0.9 - 3.8	2.98 ^b	-	2 - 6	2.95 ^b	-
Cadmium (dissolved)	mg/L	ND(0.0001) - ND(0.003)	ND (0.001)	-	-	ND(0.0001) - 0.006	ND (0.001)	-	ND(0.0001) - ND(0.001)	ND (0.001)	-
Chromium (dissolved)	mg/L	0.001 - ND(0.01)	ND (0.003)	-	-	ND(0.001) - ND(0.01)	0.004 ^b	-	ND(0.001) - ND(0.01)	0.004 ^b	-
Iron (dissolved)	mg/L	ND(0.01) - 0.591	0.48 ^{ab}	-	-	ND(0.005) - 4.56	ND (0.01)	-	ND(0.019) - 6.79	2.47 ^{ab}	-
Lead (dissolved)	mg/L	ND(0.0005) - ND(0.002)	ND (0.001)	-	-	ND(0.0005) - ND(0.002)	ND (0.001)	-	ND(0.0005) - ND(0.01)	ND (0.001)	-
Mercury (dissolved)	mg/L	ND(0.0001)	ND (0.0001)	-	-	ND(0.0001) - 0.0007	ND (0.0001)	-	0.0001	ND (0.0001)	-
Nickel (dissolved)	mg/L	ND(0.001) - ND(0.01)	ND (0.003)	-	-	ND(0.001) - ND(0.01)	0.007	-	ND(0.001) - ND(0.05)	ND (0.003)	-
Zinc (dissolved)	mg/L	0.004 - 0.06	ND (0.005)	-	-	ND(0.003) - 0.036	0.005	-	ND(0.001) - 0.2	ND (0.005)	-
Volatile Organic Compounds											
1,1,1,2-Tetrachloroethane	ug/L	ND(0.1) - ND(0.5)	ND (0.1)	-	-	ND(0.1) - ND(0.5)	ND (0.4)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
1,1,1-Trichloroethane	ug/L	ND(0.1) - ND(0.4)	ND (0.3)	-	-	ND(0.2) - ND(0.6)	ND (1.2)	-	ND(0.01) - ND(10)	ND (0.3)	-
1,1,2,2-Tetrachloroethane	ug/L	ND(0.1) - ND(0.5)	ND (0.1)	-	-	ND(0.1) - ND(0.5)	ND (0.4)	-	ND(0.1) - ND(0.6)	ND (0.1)	-
1,1,2-Trichloroethane	ug/L	ND(0.2) - ND(0.4)	ND (0.2)	-	-	ND(0.2) - ND(0.4)	ND (0.8)	-	ND(0.2) - ND(0.4)	ND (0.2)	-
1,1-Dichloroethane	ug/L	ND(0.1) - ND(0.7)	ND (0.3)	-	-	ND(0.1) - ND(0.7)	ND (1.2)	-	ND(0.01) - ND(10)	ND (0.3)	-
1,1-Dichloroethene	ug/L	ND(0.1) - ND(0.5)	ND (0.3)	-	-	ND(0.1) - ND(0.6)	ND (1.2)	-	ND(0.1) - ND(0.6)	ND (0.3)	-
1,2,4-Trichlorobenzene	ug/L	ND(0.3)	ND (0.3)	-	-	ND(0.3) - ND(0.6)	ND (1.2)	-	ND(0.3)	ND (0.3)	-
1,2-Dibromoethane (Ethylene dibromide)	ug/L	ND(0.1) - ND(1)	ND (0.1)	-	-	ND(0.1) - ND(1)	ND (0.4)	-	ND(0.1) - ND(1)	ND (0.1)	-
1,2-Dichlorobenzene	ug/L	ND(0.1) - ND(0.4)	ND (0.1)	-	-	ND(0.1) - ND(0.4)	ND (0.4)	-	ND(0.002) - ND(2)	ND (0.1)	-
1,2-Dichloroethane	ug/L	ND(0.1) - ND(0.5)	ND (0.2)	-	-	ND(0.1) - ND(0.5)	ND (0.8)	-	ND(0.002) - ND(2)	ND (0.2)	-
1,2-Dichloropropane	ug/L	ND(0.1) - ND(0.5)	ND (0.2)	-	-	ND(0.2) - ND(0.5)	ND (0.8)	-	ND(0.1) - ND(0.5)	ND (0.2)	-
1,3-Dichlorobenzene	ug/L	ND(0.1) - ND(0.4)	ND (0.1)	-	-	ND(0.1) - ND(0.4)	ND (0.4)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
1,3-Dichloropropene	ug/L	ND(0.3)	ND (0.3)	-	-	ND(0.3) - ND(0.6)	ND (1.2)	-	ND(0.3)	ND (0.3)	-

Table 12

**Groundwater Chemistry - Deep Wells along the Perimeter of the Facility Property (Interface Aquifer)
2019 Annual Groundwater Monitoring Report
Clean Harbors Canada Inc. - Lambton Facility**

Sample Location: Sample ID: Sample Date:	TW43-99D				TW45-99D			TW47-00D		
	06/07/1999 - 11/19/2018 Historical Range	43D 6/11/2019	43D 12/2/2019	98 12/2/2019 Duplicate	06/09/1999 - 11/20/2018 Historical Range	45D 6/11/2019	45D 12/4/2019	11/13/2000 - 11/19/2018 Historical Range	47D 6/12/2019	47D 12/3/2019
Parameters	Units									
1,4-Dichlorobenzene	ug/L	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.4)	-	ND(0.002) - ND(2)	ND (0.1)	-
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	ND(1) - ND(5)	ND (1)	-	ND(1) - ND(5)	ND (4)	-	ND(1) - ND(5)	ND (1)	-
2-Hexanone	ug/L	ND(1)	ND (1)	-	ND(1) - ND(2)	ND (4)	-	ND(1)	ND (1)	-
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	ND(1) - ND(5)	ND (1)	-	ND(0.1) - ND(2)	ND (4)	-	ND(1) - ND(5)	ND (1)	-
Acetone	ug/L	ND(1) - ND(10)	ND (1)	-	ND(0.1) - ND(2)	ND (4)	-	ND(1) - ND(10)	ND (1)	-
Benzene	ug/L	ND(0.1) - 0.7	ND (0.2)	-	ND(0.2) - 1.6	ND (0.8)	-	ND(0.001) - 6.3	ND (0.2)	-
Bromodichloromethane	ug/L	ND(0.1) - ND(0.3)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.8)	-	ND(0.1) - ND(0.4)	ND (0.2)	-
Bromoform	ug/L	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.4)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
Bromomethane (Methyl bromide)	ug/L	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.1) - ND(0.5)	ND (0.8)	-	ND(0.2) - ND(0.7)	ND (0.2)	-
Carbon tetrachloride	ug/L	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.8)	-	ND(0.1) - ND(0.5)	ND (0.2)	-
Chlorobenzene	ug/L	ND(0.1) - ND(0.2)	ND (0.1)	-	ND(0.1) - ND(0.2)	ND (0.4)	-	ND(0.1) - ND(0.3)	ND (0.1)	-
Chloroethane	ug/L	ND(0.2) - ND(1)	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.8)	-	ND(0.01) - ND(10)	ND (0.2)	-
Chloroform (Trichloromethane)	ug/L	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.1) - 8.8	ND (0.8)	-	ND(0.2) - ND(0.6)	ND (0.2)	-
Chloromethane (Methyl chloride)	ug/L	ND(0.2) - ND(1)	ND (0.4)	-	ND(0.2) - 6	ND (1.6)	-	ND(0.2) - ND(1)	ND (0.4)	-
cis-1,2-Dichloroethene	ug/L	ND(0.1) - ND(0.4)	ND (0.2)	-	ND(0.1) - ND(0.4)	ND (0.8)	-	ND(0.1) - ND(0.5)	ND (0.2)	-
cis-1,3-Dichloropropene	ug/L	ND(0.2)	ND (0.2)	-	ND(0.1) - ND(0.4)	ND (0.8)	-	ND(0.2) - ND(0.4)	ND (0.2)	-
Dibromochloromethane	ug/L	ND(0.1) - ND(0.3)	ND (0.1)	-	ND(0.1) - ND(0.3)	ND (0.4)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
Dichlorodifluoromethane (CFC-12)	ug/L	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.8)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
Ethylbenzene	ug/L	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.4)	-	ND(0.001) - ND(1)	ND (0.1)	-
Hexane	ug/L	ND(0.2)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.8)	-	ND(0.2)	ND (0.2)	-
m&p-Xylenes	ug/L	ND(0.1) - ND(1)	ND (0.2)	-	ND(0.1) - ND(1)	ND (0.8)	-	ND(0.1) - ND(10)	ND (0.2)	-
Methyl tert butyl ether (MTBE)	ug/L	ND(0.2)	ND (0.2)	-	ND(0.1) - ND(0.4)	ND (0.8)	-	ND(0.2)	ND (0.2)	-
Methylene chloride	ug/L	ND(0.3) - ND(4)	ND (0.3)	-	ND(0.3) - ND(5)	ND (1.2)	-	ND(0.01) - ND(10)	ND (0.3)	-
o-Xylene	ug/L	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.4)	-	ND(0.1) - ND(10)	ND (0.1)	-
Styrene	ug/L	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.4)	-	ND(0.1) - 0.528	ND (0.1)	-
Tetrachloroethene	ug/L	ND(0.1) - ND(0.3)	ND (0.2)	-	ND(0.1) - ND(0.4)	ND (0.8)	-	ND(0.1) - ND(0.3)	ND (0.2)	-
Toluene	ug/L	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.8)	-	ND(0.01) - ND(10)	ND (0.2)	-
trans-1,2-Dichloroethene	ug/L	ND(0.1) - ND(0.4)	ND (0.2)	-	ND(0.1) - ND(0.4)	ND (0.8)	-	ND(0.1) - ND(0.9)	ND (0.2)	-
trans-1,3-Dichloropropene	ug/L	ND(0.2) - ND(0.3)	ND (0.3)	-	ND(0.2) - ND(10)	ND (1.2)	-	ND(0.2) - ND(0.3)	ND (0.3)	-
Trichloroethene	ug/L	ND(0.1) - ND(0.3)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.8)	-	ND(0.01) - ND(10)	ND (0.2)	-
Trichlorofluoromethane (CFC-11)	ug/L	ND(0.2) - ND(0.5)	ND (0.4)	-	ND(0.1) - ND(0.8)	ND (1.6)	-	ND(0.2) - ND(0.5)	ND (0.4)	-
Vinyl chloride	ug/L	ND(0.17) - ND(0.2)	ND (0.17)	-	ND(0.1) - ND(0.34)	ND (0.68)	-	ND(0.17) - ND(0.5)	ND (0.17)	-
Xylenes (total)	ug/L	ND(0.2) - ND(1.5)	ND (0.2)	-	ND(0.2) - ND(1.5)	ND (0.8)	-	ND(0.01) - ND(1.5)	ND (0.2)	-

Notes:

- ^a Indicates value exceeds Ontario Drinking Water Standards Guidelines, Ontario Ministry of the Environment, as revised
- ^b Indicates value exceeds Policy and Guidelines - Provincial The Ontario Ministry of the Environment and Energy, July
- ^c Analytical result outside of the historical concentration range
- ND Not detected at the associated reporting limit.
- J Estimated concentration.
- 4.90** Detected result exceeds associated standard.
- OG Operational Guideline
- AO Aesthetic Objective
- MAC Maximum Acceptable Concentration
- IMAC Interim Maximum Acceptable Concentration
- Not applicable or not analysed.

Table 12

**Groundwater Chemistry - Deep Wells along the Perimeter of the Facility Property (Interface Aquifer)
2019 Annual Groundwater Monitoring Report
Clean Harbors Canada Inc. - Lambton Facility**

Sample Location:	Sample ID:	TW48-00D			TW49-00D			TW53-03D			TW60-13D		
		06/11/2001 - 11/20/2018	48D 6/11/2019	48D 12/4/2019	06/11/2001 - 11/19/2018	49D 6/11/2019	49D 12/2/2019	10/28/2003 - 11/21/2018	53D 6/12/2019	53D 12/2/2019	11/05/2013 - 11/20/2018	60D 6/12/2019	60D 12/3/2019
Parameters	Units	Historical Range			Historical Range			Historical Range			Historical Range		
Field Parameters													
Conductivity, field	uS/cm	1660 - 2410	1730	1930	472 - 1160	835	469 ^c	1340 - 1970	1790	2150 ^c	2930 - 3480	3900 ^c	4570 ^c
pH, field	s.u.	7.38 - 8.31	9.38 ^{abc}	8.09	7.13 - 8.43	8.75 ^{abc}	8.24	7.29 - 7.71	8.62 ^{abc}	7.84 ^c	7.14 - 7.6	8.35 ^c	7.71 ^c
Temperature, field	Deg C	8.9 - 14.4	11.87	8.52 ^c	10.3 - 15	12.07	10.14 ^c	9.54 - 16.2	13.13	9.59	9.36 - 12.6	10.98	9.41
Total dissolved solids, field (TDS)	mg/L	-	0.12	0.09	-	0.09	ND ()	-	0.1	0.11	-	0.11	0.16
General Indicators													
Conductivity, electrical	uS/cm	1640 - 2670	1590 ^c	1350 ^c	600 - 2010	705	586 ^c	1300 - 4920	1690	1360	2840 - 4630	3480	3200
pH, lab	s.u.	7.8 - 8.54	7.9	7.92	7.8 - 8.57	7.78 ^c	7.81	7.78 - 8.53	7.89	7.8	7.92 - 8.44	8.09	7.97
Total dissolved solids (TDS)	mg/L	848 - 1600	796 ^{ac}	856 ^a	360 - 551	368	368	480 - 3200	836 ^a	902 ^a	1450 - 3010	1870 ^a	2020 ^a
Minor Ions - Anions													
Alkalinity, total (as CaCO3)	mg/L	254 - 494	308	337	206 - 268	220	238	250 - 607	266	283	458 - 746	512 ^a	619 ^a
Chloride	mg/L	305 - 610	331 ^a	346 ^a	83 - 99	90.7	91	253 - 1210	399 ^a	371 ^a	696 - 1120	820 ^a	1010 ^a
Sulfate	mg/L	ND(0.5) - 12	ND (0.5)	ND (1)	ND(0.2) - 43.4	ND (0.5)	ND (0.2)	0.45 - 22	ND (0.5)	ND (1)	ND(1) - 4.9	ND (5)	ND (2)
Major Ions - Cations													
Calcium (dissolved)	mg/L	12 - 34.9	26.2	25.5	9 - 28.9	19.7	19	19 - 65	29.3	27.2	21.1 - 39	27	25.6
Magnesium (dissolved)	mg/L	7 - 14.8	9.08	8.65	3.7 - 7.6	5.17	5.03	7 - 25	10	9.21	8 - 14	10.1	9.99
Potassium (dissolved)	mg/L	1.9 - 4	2.82	2.6	1 - 2	1.28	1.31	1.74 - 4	2.3	2.2	1.76 - 4	2.9	2.52
Sodium (dissolved)	mg/L	260 - 510	295 ^a	308 ^a	124 - 166	123 ^{ac}	131 ^a	242 - 853	298 ^a	301 ^a	498 - 1010	707 ^a	801 ^a
Major Ions - Nutrients													
Ammonia-N	mg/L	0.26	-	-	0.18	-	-	0.34 - 0.42	-	-	-	-	-
Nitrate (as N)	mg/L	0.012 - ND(0.5)	ND (0.25)	ND (0.5)	ND(0.01) - ND(0.25)	ND (0.25)	ND (0.1)	ND(0.05) - ND(1)	ND (0.25)	ND (0.5)	ND(0.1) - ND(1)	ND (2.5)	ND (1)
Nitrite (as N)	mg/L	ND(0.01) - ND(0.5)	ND (0.25)	ND (0.5)	ND(0.01) - ND(0.25)	ND (0.25)	ND (0.1)	ND(0.01) - ND(0.5)	ND (0.25)	ND (0.5)	ND(0.1) - ND(1)	ND (2.5)	ND (1)
Major Ions - Miscellaneous													
Bromide	mg/L	0.17 - 3.2	0.4	ND (0.5)	0.08 - 0.8	0.44	0.59	0.19 - ND(3.5)	ND (0.25)	ND (0.5)	ND(0.25) - 1.66	ND (2.5)	1
Cyanide (free)	mg/L	ND(0.002) - ND(0.02)	ND (0.002)	0.002 J-	ND(0.002) - ND(0.02)	ND (0.002)	ND (0.002)	ND(0.002) - ND(0.05)	ND (0.002)	ND (0.002) J	ND(0.002) - ND(0.005)	ND (0.002)	ND (0.002) J
Fluoride	mg/L	ND(0.25) - 1.89	0.97	ND (0.5)	ND(0.01) - 1.7	0.87	1.23	ND(0.25) - 1.54	1.24	ND (0.5)	0.58 - ND(1)	ND (2.5)	ND (1)
Metals													
Arsenic (dissolved)	mg/L	0.001 - ND(0.01)	ND (0.003)	-	0.001 - ND(0.01)	ND (0.003)	-	0.001 - ND(0.003)	ND (0.003)	-	ND(0.001) - ND(0.01)	ND (0.003)	-
Barium (dissolved)	mg/L	0.16 - 0.63	0.165	-	0.06 - 0.8	0.08	-	0.15 - 1.03	0.18	-	0.196 - 0.49	0.254	-
Boron (dissolved)	mg/L	0.3 - 3.5	2.11 ^b	-	0.9 - 1.5	1.16 ^b	-	1.3 - 3.6	1.53 ^b	-	3.09 - 5.6	3.84 ^b	-
Cadmium (dissolved)	mg/L	ND(0.0001) - ND(0.001)	ND (0.001)	-	ND(0.0001) - ND(0.001)	ND (0.001)	-	ND(0.0001) - ND(0.001)	ND (0.001)	-	ND(0.0001) - ND(0.001)	ND (0.001)	-
Chromium (dissolved)	mg/L	ND(0.001) - ND(0.01)	ND (0.003)	-	ND(0.001) - ND(0.01)	ND (0.003)	-	ND(0.001) - ND(0.01)	0.003 ^b	-	ND(0.001) - ND(0.01)	0.004 ^b	-
Iron (dissolved)	mg/L	0.014 - 0.37	0.543 ^{abc}	-	ND(0.03) - 1.2	0.036	-	0.025 - 0.592	0.509 ^{ab}	-	0.04 - 1.6	ND (0.01)	-
Lead (dissolved)	mg/L	ND(0.0005) - ND(0.002)	ND (0.001)	-	ND(0.0005) - ND(0.002)	ND (0.001)	-	ND(0.0005) - ND(0.002)	ND (0.001)	-	ND(0.001) - ND(0.01)	ND (0.001)	-
Mercury (dissolved)	mg/L	ND(0.0001)	ND (0.0001)	-	ND(0.0001)	ND (0.0001)	-	ND(0.0001)	ND (0.0001)	-	ND(0.0001)	ND (0.0001)	-
Nickel (dissolved)	mg/L	ND(0.001) - ND(0.01)	ND (0.003)	-	ND(0.001) - ND(0.01)	ND (0.003)	-	ND(0.001) - ND(0.01)	ND (0.003)	-	ND(0.003) - 0.05	ND (0.003)	-
Zinc (dissolved)	mg/L	ND(0.005) - 0.042	ND (0.005)	-	ND(0.005) - 0.08	ND (0.005)	-	ND(0.005) - 0.73	0.008	-	ND(0.005) - ND(0.1)	0.006	-
Volatile Organic Compounds													
1,1,1,2-Tetrachloroethane	ug/L	ND(0.1) - ND(1)	ND (0.1)	-	ND(0.1) - ND(1)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
1,1,1-Trichloroethane	ug/L	ND(0.1) - ND(0.8)	ND (0.3)	-	ND(0.1) - ND(0.8)	ND (0.3)	-	ND(0.01) - ND(0.4)	ND (0.3)	-	ND(0.3) - ND(0.4)	ND (0.3)	-
1,1,2,2-Tetrachloroethane	ug/L	ND(0.1) - ND(1)	ND (0.1)	-	ND(0.1) - ND(1)	ND (0.1)	-	ND(0.1) - ND(0.6)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
1,1,2-Trichloroethane	ug/L	ND(0.2) - ND(0.8)	ND (0.2)	-	ND(0.2) - ND(0.8)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-
1,1-Dichloroethane	ug/L	ND(0.1) - ND(0.8)	ND (0.3)	-	ND(0.1) - ND(0.8)	ND (0.3)	-	ND(0.01) - ND(0.7)	ND (0.3)	-	ND(0.3) - ND(0.4)	ND (0.3)	-
1,1-Dichloroethene	ug/L	ND(0.1) - ND(1)	ND (0.3)	-	ND(0.1) - ND(1)	ND (0.3)	-	ND(0.1) - ND(0.6)	ND (0.3)	-	ND(0.3) - ND(0.5)	ND (0.3)	-
1,2,4-Trichlorobenzene	ug/L	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-
1,2-Dibromoethane (Ethylene dibromide)	ug/L	ND(0.1) - ND(2)	ND (0.1)	-	ND(0.1) - ND(2)	ND (0.1)	-	ND(0.1) - ND(1)	ND (0.1)	-	ND(0.1) - ND(0.2)	ND (0.1)	-
1,2-Dichlorobenzene	ug/L	ND(0.1) - ND(0.8)	ND (0.1)	-	ND(0.1) - ND(0.8)	ND (0.1)	-	ND(0.002) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
1,2-Dichloroethane	ug/L	ND(0.1) - ND(1)	ND (0.2)	-	ND(0.1) - ND(1)	ND (0.2)	-	ND(0.002) - ND(0.5)	ND (0.2)	-	ND(0.2)	ND (0.2)	-
1,2-Dichloropropane	ug/L	ND(0.1) - ND(1)	ND (0.2)	-	ND(0.1) - ND(1)	ND (0.2)	-	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
1,3-Dichlorobenzene	ug/L	ND(0.1) - ND(0.8)	ND (0.1)	-	ND(0.1) - ND(0.8)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
1,3-Dichloropropene	ug/L	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-

Table 12

**Groundwater Chemistry - Deep Wells along the Perimeter of the Facility Property (Interface Aquifer)
2019 Annual Groundwater Monitoring Report
Clean Harbors Canada Inc. - Lambton Facility**

Sample Location: Sample ID: Sample Date:	TW48-00D			TW49-00D			TW53-03D			TW60-13D			
	48D	48D	48D	49D	49D	49D	53D	53D	53D	60D	60D		
	06/11/2001 - 11/20/2018	6/11/2019	12/4/2019	06/11/2001 - 11/19/2018	6/11/2019	12/2/2019	10/28/2003 - 11/21/2018	6/12/2019	12/2/2019	11/05/2013 - 11/20/2018	6/12/2019	12/3/2019	
Parameters	Historical Range			Historical Range			Historical Range			Historical Range			
Units													
1,4-Dichlorobenzene	ug/L	ND(0.1) - ND(0.8)	ND (0.1)	-	ND(0.1) - ND(0.8)	ND (0.1)	-	ND(0.002) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	ND(1) - 7.7	ND (1)	-	ND(1) - ND(5)	ND (1)	-	ND(1) - ND(5)	ND (1)	-	ND(1) - ND(10)	5.1	-
2-Hexanone	ug/L	ND(1)	ND (1)	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	ND(1) - ND(5)	ND (1)	-	ND(1) - ND(5)	ND (1)	-	ND(1) - ND(5)	ND (1)	-	ND(1) - ND(10)	ND (1)	-
Acetone	ug/L	ND(1) - 85	ND (1)	-	ND(1) - 35	ND (1)	-	ND(1) - ND(10)	ND (1)	-	ND(1) - ND(30)	ND (1)	-
Benzene	ug/L	ND(0.1) - ND(1)	ND (0.2)	-	0.2 - ND(1)	ND (0.2)	-	ND(0.001) - 1.6	ND (0.2)	-	ND(0.2) - 7	0.3	-
Bromodichloromethane	ug/L	ND(0.1) - ND(0.6)	ND (0.2)	-	ND(0.1) - ND(0.6)	ND (0.2)	-	ND(0.1) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.3)	ND (0.2)	-
Bromoform	ug/L	ND(0.1) - ND(0.8)	ND (0.1)	-	ND(0.1) - ND(0.8)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
Bromomethane (Methyl bromide)	ug/L	ND(0.2) - ND(1)	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	-	ND(0.2) - ND(0.7)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
Carbon tetrachloride	ug/L	ND(0.1) - ND(1)	ND (0.2)	-	ND(0.1) - ND(1)	ND (0.2)	-	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.2)	ND (0.2)	-
Chlorobenzene	ug/L	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.3)	ND (0.1)	-	ND(0.1) - ND(0.2)	ND (0.1)	-
Chloroethane	ug/L	ND(0.2) - ND(2)	ND (0.2)	-	ND(0.2) - ND(2)	ND (0.2)	-	ND(0.01) - ND(1)	ND (0.2)	-	ND(0.2)	ND (0.2)	-
Chloroform (Trichloromethane)	ug/L	ND(0.1) - ND(1)	ND (0.2)	-	0.1 - ND(1)	ND (0.2)	-	ND(0.2) - 0.7	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
Chloromethane (Methyl chloride)	ug/L	ND(0.2) - ND(2)	ND (0.4)	-	ND(0.2) - ND(2)	ND (0.4)	-	ND(0.2) - ND(1)	ND (0.4)	-	ND(0.2) - ND(0.4)	ND (0.4)	-
cis-1,2-Dichloroethene	ug/L	ND(0.1) - ND(0.8)	ND (0.2)	-	ND(0.1) - ND(0.8)	ND (0.2)	-	ND(0.1) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-
cis-1,3-Dichloropropene	ug/L	ND(0.2) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-	ND(0.2)	ND (0.2)	-
Dibromochloromethane	ug/L	ND(0.1) - ND(0.6)	ND (0.1)	-	ND(0.1) - ND(0.6)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.3)	ND (0.1)	-
Dichlorodifluoromethane (CFC-12)	ug/L	ND(0.2) - ND(1)	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
Ethylbenzene	ug/L	ND(0.1) - ND(1)	ND (0.1)	-	ND(0.1) - ND(1)	ND (0.1)	-	ND(0.001) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
Hexane	ug/L	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-
m&p-Xylenes	ug/L	ND(0.1) - ND(2)	ND (0.2)	-	ND(0.1) - ND(2)	ND (0.2)	-	ND(0.1) - ND(1)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
Methyl tert butyl ether (MTBE)	ug/L	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2) - ND(2)	ND (0.2)	-
Methylene chloride	ug/L	ND(0.3) - ND(8)	ND (0.3)	-	ND(0.3) - ND(8)	ND (0.3)	-	ND(0.01) - ND(4)	ND (0.3)	-	ND(0.3) - ND(4)	ND (0.3)	-
o-Xylene	ug/L	ND(0.1) - ND(1)	ND (0.1)	-	ND(0.1) - ND(1)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
Styrene	ug/L	ND(0.1) - ND(1)	ND (0.1)	-	ND(0.1) - ND(1)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
Tetrachloroethene	ug/L	ND(0.1) - ND(0.6)	ND (0.2)	-	ND(0.1) - ND(0.6)	ND (0.2)	-	ND(0.1) - ND(0.3)	ND (0.2)	-	ND(0.2) - ND(0.3)	ND (0.2)	-
Toluene	ug/L	ND(0.2) - ND(1)	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	-	ND(0.01) - ND(0.5)	ND (0.2)	-	ND(0.2) - 1.5	ND (0.2)	-
trans-1,2-Dichloroethene	ug/L	ND(0.1) - ND(0.8)	ND (0.2)	-	ND(0.1) - ND(0.8)	ND (0.2)	-	ND(0.1) - ND(0.9)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-
trans-1,3-Dichloropropene	ug/L	ND(0.2) - ND(0.4)	ND (0.3)	-	ND(0.2) - ND(0.4)	ND (0.3)	-	ND(0.2) - ND(0.3)	ND (0.3)	-	ND(0.2) - ND(0.3)	ND (0.3)	-
Trichloroethene	ug/L	ND(0.1) - ND(0.6)	ND (0.2)	-	ND(0.1) - ND(0.6)	ND (0.2)	-	ND(0.01) - ND(0.3)	ND (0.2)	-	ND(0.2) - ND(0.3)	ND (0.2)	-
Trichlorofluoromethane (CFC-11)	ug/L	ND(0.2) - ND(1)	ND (0.4)	-	ND(0.2) - ND(1)	ND (0.4)	-	ND(0.2) - ND(0.5)	ND (0.4)	-	ND(0.4) - ND(0.5)	ND (0.4)	-
Vinyl chloride	ug/L	ND(0.17) - ND(0.4)	ND (0.17)	-	ND(0.17) - ND(0.4)	ND (0.17)	-	ND(0.17) - ND(0.2)	ND (0.17)	-	ND(0.17) - ND(0.2)	ND (0.17)	-
Xylenes (total)	ug/L	ND(0.2) - ND(1.5)	ND (0.2)	-	ND(0.2) - ND(1.5)	ND (0.2)	-	ND(0.01) - ND(1.5)	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	-

Notes:

- ^a Indicates value exceeds Ontario Drinking Water Standards Guidelines, Ontario Ministry of the Environment, as revised
- ^b Indicates value exceeds Policy and Guidelines - Provincial The Ontario Ministry of the Environment and Energy, July
- ^c Analytical result outside of the historical concentration range
- ND Not detected at the associated reporting limit.
- J Estimated concentration.
- 4.90** Detected result exceeds associated standard.
- OG Operational Guideline
- AO Aesthetic Objective
- MAC Maximum Acceptable Concentration
- IMAC Interim Maximum Acceptable Concentration
- Not applicable or not analysed.

Table 13

Groundwater Chemistry - Wells Located in Sub-Cell 3, Cell 18
 2019 Annual Groundwater Monitoring Report
 Clean Harbors Canada Inc. - Lambton Facility

Sample Location: Sample ID: Sample Date:	Units	ODWS a	ODWS SOURCE	PWQO b	EW1a-01			EW1b-13			EW1c-13		
					11/03/2004 - 11/20/2017 Historical Range	EW1A 6/13/2019	EW1A 12/4/2019	05/15/2014 - 11/22/2018 Historical Range	EW1B 6/13/2019	EW1B 12/4/2019	05/15/2014 - 11/22/2018 Historical Range	EW1C 6/13/2019	EW1C 12/3/2019
General Indicators													
Conductivity, electrical	uS/cm	-	-	-	1700 - 2130	1620 ^c	1350 ^c	1650 - 1930	1640 ^c	1350 ^c	1630 - 1900	1610 ^c	1320 ^c
pH, lab	s.u.	6.5-8.5	OG	6.5-8.5	7.56 - 8.42	7.93	7.86	7.83 - 8.23	7.91	7.93	7.81 - 8.22	7.94	7.84
Total dissolved solids (TDS)	mg/L	500	AO	-	940 - 1380	976 ^a	908 ^{bc}	910 - 1230	958 ^a	900 ^{bc}	906 - 1180	916 ^a	890 ^{bc}
Minor Ions - Anions													
Alkalinity, total (as CaCO3)	mg/L	30-500	OG	-	262 - 347	257 ^c	284	279 - 321	254 ^c	276 ^c	283 - 326	252 ^c	270 ^c
Chloride	mg/L	250	AO	-	292 - 402	308 ^a	314 ^a	302 - 356	323 ^a	318 ^a	281 - 348	331 ^a	302 ^a
Sulfate	mg/L	500	AO	-	67 - 179	112	111	125 - 147	125	116 ^c	116 - 165	131	119
Major Ions - Cations													
Calcium (dissolved)	mg/L	-	-	-	52 - 129	87.2	81.6	70.5 - 109	85.8	84.5	69.1 - 108	86.7	82.5
Magnesium (dissolved)	mg/L	-	-	-	26 - 78	46.6	43.6	40.6 - 62	45.4	44.6	41 - 57	45.3	42.7
Potassium (dissolved)	mg/L	-	-	-	3.7 - 8	4.86	4.8	4.08 - 6	4.62	4.64	3.98 - 6	4.52	4.44
Sodium (dissolved)	mg/L	20/200	AO	-	171 - 300	175 ^a	181 ^a	157 - 211	171 ^a	187 ^a	156 - 202	171 ^a	179 ^a
Major Ions - Nutrients													
Ammonia-N	mg/L	-	-	-	0.37	-	-	-	-	-	-	-	-
Nitrate (as N)	mg/L	10.0	MAC	-	0.1 - ND(1)	ND (0.25)	ND (0.5)	ND(0.1) - ND(0.5)	ND (0.25)	ND (0.5)	ND(0.1) - ND(0.5)	ND (0.25)	ND (0.5)
Nitrite (as N)	mg/L	1.0	MAC	-	0.013 - ND(0.25)	ND (0.25)	ND (0.5)	ND(0.1) - ND(0.5)	ND (0.25)	ND (0.5)	ND(0.1) - ND(0.5)	ND (0.25)	ND (0.5)
Major Ions - Miscellaneous													
Bromide	mg/L	-	-	-	0.96 - 9.28	2.46	2.5	0.8 - 2.98	2.36	2.7	1.65 - 2.96	4.23 ^c	2.5
Cyanide (free)	mg/L	-	-	0.005	ND(0.002) - ND(0.01)	ND (0.002)	0.004 J-	ND(0.002) - ND(0.005)	ND (0.002)	0.004 J-	ND(0.002) - ND(0.005)	ND (0.002)	ND (0.002) J
Fluoride	mg/L	1.5	MAC	-	0.71 - 2	1.11	ND (0.5)	ND(0.5) - 1.51	1.21	ND (0.5)	ND(0.5) - 1.54	1.27	0.7
Metals													
Arsenic (dissolved)	mg/L	0.010	IMAC	0.005	ND(0.001) - ND(0.1)	ND (0.003)	-	ND(0.001) - ND(0.005)	ND (0.003)	-	0.002 - ND(0.005)	0.003	-
Barium (dissolved)	mg/L	1.0	MAC	-	0.05 - 0.11	0.061	-	0.048 - 0.07	0.053	-	0.049 - 0.06	0.052	-
Boron (dissolved)	mg/L	5.0	IMAC	0.2	1 - 1.9	1.18 ^b	-	1.2 - 1.4	1.15 ^{bc}	-	1.1 - 1.4	1.18 ^b	-
Cadmium (dissolved)	mg/L	0.005	MAC	0.0002	ND(0.0001) - ND(0.0004)	ND (0.001)	-	ND(0.0001) - ND(0.001)	ND (0.001)	-	ND(0.0001) - ND(0.001)	ND (0.001)	-
Chromium (dissolved)	mg/L	0.05	MAC	0.001	ND(0.001) - 0.009	ND (0.003)	-	ND(0.001) - ND(0.005)	ND (0.003)	-	ND(0.001) - ND(0.005)	ND (0.003)	-
Iron (dissolved)	mg/L	0.30	AO	0.3	ND(0.01) - 0.23	1.58 ^{abc}	-	0.11 - 0.67	0.625 ^{ab}	-	0.04 - 0.54	0.467 ^{ab}	-
Lead (dissolved)	mg/L	0.01	MAC	0.005	ND(0.001) - ND(0.002)	ND (0.001)	-	ND(0.001) - ND(0.002)	ND (0.001)	-	ND(0.001) - ND(0.002)	ND (0.001)	-
Mercury (dissolved)	mg/L	0.001	MAC	0.0002	ND(0.0001)	ND (0.0001)	-	ND(0.0001)	ND (0.0001)	-	ND(0.0001)	ND (0.0001)	-
Nickel (dissolved)	mg/L	-	-	0.025	ND(0.003) - ND(0.005)	ND (0.003)	-	ND(0.003) - ND(0.005)	ND (0.003)	-	ND(0.003) - ND(0.005)	ND (0.003)	-
Zinc (dissolved)	mg/L	5.0	AO	0.03	ND(0.005) - ND(0.05)	ND (0.005)	-	ND(0.005) - 0.01	ND (0.005)	-	ND(0.005) - 0.01	0.013 ^c	-
Volatile Organic Compounds													
1,1,1,2-Tetrachloroethane	ug/L	-	-	20	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
1,1,1-Trichloroethane	ug/L	-	-	10	ND(0.3) - ND(0.4)	ND (0.3)	-	ND(0.3) - ND(0.4)	ND (0.3)	-	ND(0.3) - ND(0.4)	ND (0.3)	-
1,1,2,2-Tetrachloroethane	ug/L	-	-	70	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
1,1,2-Trichloroethane	ug/L	-	-	800	ND(0.2) - ND(0.4)	1.3 ^c	-	ND(0.2) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-
1,1-Dichloroethane	ug/L	-	-	200	ND(0.3) - ND(0.4)	ND (0.3)	-	ND(0.3) - ND(0.4)	ND (0.3)	-	ND(0.3) - ND(0.4)	ND (0.3)	-
1,1-Dichloroethene	ug/L	14	MAC	40	ND(0.3) - ND(0.5)	ND (0.3)	-	ND(0.3) - ND(0.5)	ND (0.3)	-	ND(0.3) - ND(0.5)	ND (0.3)	-
1,2,4-Trichlorobenzene	ug/L	-	-	0.5	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-
1,2-Dibromoethane (Ethylene dibromide)	ug/L	-	-	5	ND(0.1) - ND(1)	ND (0.1)	-	ND(0.1) - ND(0.2)	ND (0.1)	-	ND(0.1) - ND(0.2)	ND (0.1)	-
1,2-Dichlorobenzene	ug/L	200	MAC	2.5	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
1,2-Dichloroethane	ug/L	5	IMAC	100	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-
1,2-Dichloropropane	ug/L	-	-	0.7	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
1,3-Dichlorobenzene	ug/L	-	-	2.5	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
1,3-Dichloropropene	ug/L	-	-	-	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-
1,4-Dichlorobenzene	ug/L	5	MAC	4	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	-	-	400	ND(1)	ND (1)	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-
2-Hexanone	ug/L	-	-	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	-	-	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-
Acetone	ug/L	-	-	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-
Benzene	ug/L	1	MAC	100	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
Bromodichloromethane	ug/L	-	-	200	ND(0.2) - ND(0.3)	ND (0.2)	-	ND(0.2) - ND(0.3)	ND (0.2)	-	ND(0.2) - ND(0.3)	ND (0.2)	-
Bromoform	ug/L	-	-	60	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
Bromomethane (Methyl bromide)	ug/L	-	-	0.9	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
Carbon tetrachloride	ug/L	2	MAC	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-

Table 13

Groundwater Chemistry - Wells Located in Sub-Cell 3, Cell 18
2019 Annual Groundwater Monitoring Report
Clean Harbors Canada Inc. - Lambton Facility

Sample Location: Sample ID: Sample Date:	Units				EW1a-01			EW1b-13			EW1c-13		
		ODWS a	ODWS SOURCE	PWQO b	EW1A		EW1B		EW1C		EW1C		
					11/03/2004 - 11/20/2017 Historical Range	6/13/2019	12/4/2019	05/15/2014 - 11/22/2018 Historical Range	6/13/2019	12/4/2019	05/15/2014 - 11/22/2018 Historical Range	6/13/2019	12/3/2019
Chlorobenzene	ug/L	80	MAC	15	ND(0.1) - ND(0.2)	ND (0.1)	-	ND(0.1) - ND(0.2)	ND (0.1)	-	ND(0.1) - ND(0.2)	ND (0.1)	-
Chloroethane	ug/L	-	-	-	ND(0.2) - ND(1)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-
Chloroform (Trichloromethane)	ug/L	-	-	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
Chloromethane (Methyl chloride)	ug/L	-	-	700	ND(0.2) - ND(1)	ND (0.4)	-	ND(0.2) - ND(0.4)	ND (0.4)	-	ND(0.2) - ND(0.4)	ND (0.4)	-
cis-1,2-Dichloroethene	ug/L	-	-	200	ND(0.2) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-
cis-1,3-Dichloropropene	ug/L	-	-	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-
Dibromochloromethane	ug/L	-	-	40	ND(0.1) - ND(0.3)	ND (0.1)	-	ND(0.1) - ND(0.3)	ND (0.1)	-	ND(0.1) - ND(0.3)	ND (0.1)	-
Dichlorodifluoromethane (CFC-12)	ug/L	-	-	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
Ethylbenzene	ug/L	140	MAC	8	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
Hexane	ug/L	-	-	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-
m&p-Xylenes	ug/L	-	-	2	ND(0.2) - ND(1)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-
Methyl tert butyl ether (MTBE)	ug/L	15	AO	200	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-
Methylene chloride	ug/L	50	MAC	100	ND(0.3) - ND(4)	ND (0.3)	-	ND(0.3) - ND(4)	ND (0.3)	-	ND(0.3) - ND(4)	ND (0.3)	-
o-Xylene	ug/L	-	-	40	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
Styrene	ug/L	-	-	4	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
Tetrachloroethene	ug/L	10	MAC	50	ND(0.2) - ND(0.3)	ND (0.2)	-	ND(0.2) - ND(0.3)	ND (0.2)	-	ND(0.2) - ND(0.3)	ND (0.2)	-
Toluene	ug/L	60	MAC	0.8	ND(0.2) - ND(0.5)	0.88 ^{bc}	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
trans-1,2-Dichloroethene	ug/L	-	-	200	ND(0.2) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-
trans-1,3-Dichloropropene	ug/L	-	-	7	ND(0.2) - ND(0.3)	ND (0.3)	-	ND(0.2) - ND(0.3)	ND (0.3)	-	ND(0.2) - ND(0.3)	ND (0.3)	-
Trichloroethene	ug/L	5	MAC	20	ND(0.2) - ND(0.3)	ND (0.2)	-	ND(0.2) - ND(0.3)	ND (0.2)	-	ND(0.2) - ND(0.3)	ND (0.2)	-
Trichlorofluoromethane (CFC-11)	ug/L	-	-	-	ND(0.4) - ND(0.5)	ND (0.4)	-	ND(0.4) - ND(0.5)	ND (0.4)	-	ND(0.4) - ND(0.5)	ND (0.4)	-
Vinyl chloride	ug/L	1	MAC	600	ND(0.17) - ND(0.2)	ND (0.17)	-	ND(0.17) - ND(0.2)	ND (0.17)	-	ND(0.17) - ND(0.2)	ND (0.17)	-
Xylenes (total)	ug/L	90	MAC	-	ND(0.2) - ND(1.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-

Notes:

- ^a Indicates value exceeds Ontario Drinking Water Standards. Objectives and Guidelines, Ontario Ministry of the Environment, as revised June 2006 (ODWS).
- ^b Indicates value exceeds Policy and Guidelines - Provincial Water Quality Guidelines. The Ontario Ministry of the Environment and Energy, July 1994 (PWQO).
- ^c Analytical result outside of the historical concentration range for the parameter.
- ND Not detected at the associated reporting limit.
- J Estimated concentration.
- 4.90 Detected result exceeds associated standard.
- OG Operational Guideline
- AO Aesthetic Objective
- MAC Maximum Acceptable Concentration
- IMAC Interim Maximum Acceptable Concentration
- Not applicable or not analysed.

Table 13

Groundwater Chemistry - Wells Located in Sub-Cell 3, Cell 18
2019 Annual Groundwater Monitoring Report
Clean Harbors Canada Inc. - Lambton Facility

Sample Location: Sample ID: Sample Date:	Units	EW2a-01				EW2b-13			EW2c-13		
		12/05/2001 - 11/20/2017 Historical Range	EW2A 6/13/2019	EW2A 12/3/2019	98 12/3/2019 Duplicate	05/15/2014 - 11/22/2018 Historical Range	EW2B 6/13/2019	EW2B 12/3/2019	05/15/2014 - 11/21/2018 Historical Range	EW2C 6/13/2019	EW2C 12/3/2019
General Indicators											
Conductivity, electrical	uS/cm	533 - 1200	718	593	592	729 - 847	712 ^c	584 ^c	720 - 859	692 ^c	565 ^c
pH, lab	s.u.	7.41 - 8.35	7.86	7.7	7.83	7.8 - 8.37	7.95	7.87	7.73 - 8.28	7.94	7.88
Total dissolved solids (TDS)	mg/L	346 - 719	370	364	370	370 - 521	368 ^c	366 ^c	358 - 540	382	354 ^c
Minor Ions - Anions											
Alkalinity, total (as CaCO3)	mg/L	119 - 290	201	219	221	225 - 257	204 ^c	221 ^c	208 - 248	199 ^c	214
Chloride	mg/L	62 - 220	101	101	102	95 - 105	97	97.7	92 - 109	95.3	95.8
Sulfate	mg/L	2.82 - 150	1.69 ^c	1.05 ^c	0.85 ^c	3.74 - 52	2.84 ^c	2.1 ^c	0.81 - 72	0.57 ^c	0.51 ^c
Major Ions - Cations											
Calcium (dissolved)	mg/L	32.5 - 78	32.2 ^c	33.2	33.8	31.7 - 51	34.3	33.8	30.2 - 54	32.2	31.5
Magnesium (dissolved)	mg/L	13 - 46	13.6	13.7	13.9	14.2 - 21	14.1 ^c	13.8 ^c	13.9 - 22	13.5 ^c	13.3 ^c
Potassium (dissolved)	mg/L	2 - 8.1	2.34	2.45	2.52	2.27 - 3	2.42	2.51	2.22 - 3	2.22	2.37
Sodium (dissolved)	mg/L	61 - 114	85.3 ^a	94.4 ^a	95.5 ^a	89.1 - 106	87.2 ^{ac}	94.1 ^a	87.9 - 103	86.2 ^{ac}	92.7 ^a
Major Ions - Nutrients											
Ammonia-N	mg/L	0.51	-	-	-	-	-	-	-	-	-
Nitrate (as N)	mg/L	0.056 - 1.2	ND (0.1)	ND (0.1)	ND (0.1)	ND(0.1) - ND(0.25)	ND (0.1)	ND (0.1)	ND(0.1) - ND(0.25)	ND (0.1)	ND (0.1)
Nitrite (as N)	mg/L	ND(0.01) - 0.11	ND (0.1)	ND (0.1)	ND (0.1)	ND(0.1) - ND(0.25)	ND (0.1)	ND (0.1)	ND(0.1) - ND(0.25)	ND (0.1)	ND (0.1)
Major Ions - Miscellaneous											
Bromide	mg/L	0.66 - 3.38	0.98	0.95	1	ND(0.25) - 1.18	0.82	0.94	ND(0.25) - 1.03	0.81	0.92
Cyanide (free)	mg/L	ND(0.002) - 0.01	ND (0.002)	ND (0.002) J	ND (0.002) J	ND(0.002) - ND(0.005)	ND (0.002)	ND (0.002) J	ND(0.002) - ND(0.005)	ND (0.002)	ND (0.002) J
Fluoride	mg/L	0.67 - 1.41	1.08	1.2	1.28	ND(0.25) - 1.36	1.08	1.14	ND(0.25) - 1.45	1.06	1.19
Metals											
Arsenic (dissolved)	mg/L	0.001 - ND(0.01)	ND (0.003)	-	-	ND(0.001) - ND(0.003)	ND (0.003)	-	ND(0.001) - ND(0.003)	ND (0.003)	-
Barium (dissolved)	mg/L	0.08 - 0.21	0.129	-	-	0.12 - 0.14	0.126	-	0.11 - 0.141	0.141	-
Boron (dissolved)	mg/L	0.83 - 1.3	1.07 ^b	-	-	1.1 - 1.3	1.14 ^b	-	1.1 - 1.26	1.12 ^b	-
Cadmium (dissolved)	mg/L	ND(0.0001) - ND(0.001)	ND (0.001)	-	-	ND(0.0001) - ND(0.001)	ND (0.001)	-	ND(0.0001) - ND(0.001)	ND (0.001)	-
Chromium (dissolved)	mg/L	ND(0.001) - ND(0.01)	ND (0.003)	-	-	ND(0.001) - ND(0.005)	ND (0.003)	-	ND(0.001) - ND(0.005)	ND (0.003)	-
Iron (dissolved)	mg/L	ND(0.01) - 0.16	ND (0.01)	-	-	ND(0.01) - 0.08	0.024	-	ND(0.01) - 0.22	0.051	-
Lead (dissolved)	mg/L	ND(0.001) - ND(0.002)	ND (0.001)	-	-	ND(0.001) - ND(0.002)	ND (0.001)	-	ND(0.001) - ND(0.002)	ND (0.001)	-
Mercury (dissolved)	mg/L	ND(0.0001)	ND (0.0001)	-	-	ND(0.0001)	ND (0.0001)	-	ND(0.0001)	ND (0.0001)	-
Nickel (dissolved)	mg/L	ND(0.003) - ND(0.01)	ND (0.003)	-	-	ND(0.003) - ND(0.005)	ND (0.003)	-	ND(0.003) - ND(0.005)	ND (0.003)	-
Zinc (dissolved)	mg/L	ND(0.005) - 0.04	ND (0.005)	-	-	ND(0.005) - ND(0.01)	ND (0.005)	-	ND(0.005) - 0.01	ND (0.005)	-
Volatile Organic Compounds											
1,1,1,2-Tetrachloroethane	ug/L	ND(0.1) - ND(0.5)	ND (0.1)	-	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
1,1,1-Trichloroethane	ug/L	ND(0.3) - ND(0.4)	ND (0.3)	-	-	ND(0.3) - ND(0.4)	ND (0.3)	-	ND(0.3) - ND(0.4)	ND (0.3)	-
1,1,2,2-Tetrachloroethane	ug/L	ND(0.1) - ND(0.5)	ND (0.1)	-	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
1,1,2-Trichloroethane	ug/L	ND(0.2) - ND(0.4)	ND (0.2)	-	-	ND(0.2) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-
1,1-Dichloroethane	ug/L	ND(0.3) - ND(0.7)	ND (0.3)	-	-	ND(0.3) - ND(0.4)	ND (0.3)	-	ND(0.3) - ND(0.4)	ND (0.3)	-
1,1-Dichloroethene	ug/L	ND(0.3) - ND(0.5)	ND (0.3)	-	-	ND(0.3) - ND(0.5)	ND (0.3)	-	ND(0.3) - ND(0.5)	ND (0.3)	-
1,2,4-Trichlorobenzene	ug/L	ND(0.3)	ND (0.3)	-	-	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-
1,2-Dibromoethane (Ethylene dibromide)	ug/L	ND(0.1) - ND(1)	ND (0.1)	-	-	ND(0.1) - ND(0.2)	ND (0.1)	-	ND(0.1) - ND(0.2)	ND (0.1)	-
1,2-Dichlorobenzene	ug/L	ND(0.1) - ND(0.4)	ND (0.1)	-	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
1,2-Dichloroethane	ug/L	ND(0.2) - ND(0.5)	ND (0.2)	-	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-
1,2-Dichloropropane	ug/L	ND(0.2) - ND(0.5)	ND (0.2)	-	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
1,3-Dichlorobenzene	ug/L	ND(0.1) - ND(0.4)	ND (0.1)	-	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
1,3-Dichloropropene	ug/L	ND(0.3)	ND (0.3)	-	-	ND(0.3)	ND (0.3)	-	ND(0.3)	ND (0.3)	-
1,4-Dichlorobenzene	ug/L	ND(0.1) - ND(0.4)	ND (0.1)	-	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	ND(1)	ND (1)	-	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-
2-Hexanone	ug/L	ND(1)	ND (1)	-	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	ND(1)	ND (1)	-	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-
Acetone	ug/L	ND(1)	ND (1)	-	-	ND(1)	ND (1)	-	ND(1)	ND (1)	-
Benzene	ug/L	ND(0.2) - ND(0.5)	ND (0.2)	-	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
Bromodichloromethane	ug/L	ND(0.2) - ND(0.3)	ND (0.2)	-	-	ND(0.2) - ND(0.3)	ND (0.2)	-	ND(0.2) - ND(0.3)	ND (0.2)	-
Bromoform	ug/L	ND(0.1) - ND(0.4)	ND (0.1)	-	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
Bromomethane (Methyl bromide)	ug/L	ND(0.2) - ND(0.5)	ND (0.2)	-	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
Carbon tetrachloride	ug/L	ND(0.2) - ND(0.5)	ND (0.2)	-	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-

Table 13

Groundwater Chemistry - Wells Located in Sub-Cell 3, Cell 18
 2019 Annual Groundwater Monitoring Report
 Clean Harbors Canada Inc. - Lambton Facility

Sample Location: Sample ID: Sample Date:	Units	EW2a-01				EW2b-13			EW2c-13		
		12/05/2001 - 11/20/2017 Historical Range	EW2A 6/13/2019	EW2A 12/3/2019	98 12/3/2019 Duplicate	05/15/2014 - 11/22/2018 Historical Range	EW2B 6/13/2019	EW2B 12/3/2019	05/15/2014 - 11/21/2018 Historical Range	EW2C 6/13/2019	EW2C 12/3/2019
Chlorobenzene	ug/L	ND(0.1) - ND(0.2)	ND (0.1)	-	-	ND(0.1) - ND(0.2)	ND (0.1)	-	ND(0.1) - ND(0.2)	ND (0.1)	-
Chloroethane	ug/L	ND(0.2) - ND(1)	ND (0.2)	-	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-
Chloroform (Trichloromethane)	ug/L	ND(0.2) - ND(0.5)	ND (0.2)	-	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
Chloromethane (Methyl chloride)	ug/L	ND(0.2) - ND(1)	ND (0.4)	-	-	ND(0.2) - ND(0.4)	ND (0.4)	-	ND(0.2) - ND(0.4)	ND (0.4)	-
cis-1,2-Dichloroethene	ug/L	ND(0.2) - ND(0.4)	ND (0.2)	-	-	ND(0.2) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-
cis-1,3-Dichloropropene	ug/L	ND(0.2)	ND (0.2)	-	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-
Dibromochloromethane	ug/L	ND(0.1) - ND(0.3)	ND (0.1)	-	-	ND(0.1) - ND(0.3)	ND (0.1)	-	ND(0.1) - ND(0.3)	ND (0.1)	-
Dichlorodifluoromethane (CFC-12)	ug/L	ND(0.2) - ND(0.5)	ND (0.2)	-	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
Ethylbenzene	ug/L	ND(0.1) - ND(0.5)	ND (0.1)	-	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
Hexane	ug/L	ND(0.2)	ND (0.2)	-	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-
m&p-Xylenes	ug/L	ND(0.2) - ND(1)	ND (0.2)	-	-	ND(0.2) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-
Methyl tert butyl ether (MTBE)	ug/L	ND(0.2)	ND (0.2)	-	-	ND(0.2)	ND (0.2)	-	ND(0.2)	ND (0.2)	-
Methylene chloride	ug/L	ND(0.3) - ND(4)	ND (0.3)	-	-	ND(0.3) - ND(4)	ND (0.3)	-	ND(0.3) - ND(4)	ND (0.3)	-
o-Xylene	ug/L	ND(0.1) - ND(0.5)	ND (0.1)	-	-	ND(0.1) - ND(0.4)	ND (0.1)	-	ND(0.1) - ND(0.4)	ND (0.1)	-
Styrene	ug/L	ND(0.1) - ND(0.5)	ND (0.1)	-	-	ND(0.1) - ND(0.5)	ND (0.1)	-	ND(0.1) - ND(0.5)	ND (0.1)	-
Tetrachloroethene	ug/L	ND(0.2) - ND(0.3)	ND (0.2)	-	-	ND(0.2) - ND(0.3)	ND (0.2)	-	ND(0.2) - ND(0.3)	ND (0.2)	-
Toluene	ug/L	ND(0.2) - ND(0.5)	ND (0.2)	-	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-
trans-1,2-Dichloroethene	ug/L	ND(0.2) - ND(0.4)	ND (0.2)	-	-	ND(0.2) - ND(0.4)	ND (0.2)	-	ND(0.2) - ND(0.4)	ND (0.2)	-
trans-1,3-Dichloropropene	ug/L	ND(0.2) - ND(0.3)	ND (0.3)	-	-	ND(0.2) - ND(0.3)	ND (0.3)	-	ND(0.2) - ND(0.3)	ND (0.3)	-
Trichloroethene	ug/L	ND(0.2) - ND(0.3)	ND (0.2)	-	-	ND(0.2) - ND(0.3)	ND (0.2)	-	ND(0.2) - ND(0.3)	ND (0.2)	-
Trichlorofluoromethane (CFC-11)	ug/L	ND(0.4) - ND(0.5)	ND (0.4)	-	-	ND(0.4) - ND(0.5)	ND (0.4)	-	ND(0.4) - ND(0.5)	ND (0.4)	-
Vinyl chloride	ug/L	ND(0.17) - ND(0.2)	ND (0.17)	-	-	ND(0.17) - ND(0.2)	ND (0.17)	-	ND(0.17) - ND(0.2)	ND (0.17)	-
Xylenes (total)	ug/L	ND(0.2) - ND(1.5)	ND (0.2)	-	-	ND(0.2) - ND(0.5)	ND (0.2)	-	ND(0.2) - ND(0.5)	ND (0.2)	-

Notes:

- ^a Indicates value exceeds Ontario Drinking Water Standards Guidelines, Ontario Ministry of the Environment, as revised
- ^b Indicates value exceeds Policy and Guidelines - Provincial The Ontario Ministry of the Environment and Energy, July
- ^c Analytical result outside of the historical concentration range
- ND Not detected at the associated reporting limit.
- J Estimated concentration.
- 4.90** Detected result exceeds associated standard.
- OG Operational Guideline
- AO Aesthetic Objective
- MAC Maximum Acceptable Concentration
- IMAC Interim Maximum Acceptable Concentration
- Not applicable or not analysed.

Table 13

**Groundwater Chemistry - Wells Located in Sub-Cell 3, Cell 18
2019 Annual Groundwater Monitoring Report
Clean Harbors Canada Inc. - Lambton Facility**

Sample Location: Sample ID: Sample Date:	Units	PW1-N			PW2-S(R11)			
		11/14/2001 - 11/22/2018 Historical Range	PW1 6/13/2019	PW1 12/4/2019	06/16/2011 - 11/21/2018 Historical Range	PW2 6/13/2019	98 6/13/2019 Duplicate	PW2 12/4/2019
General Indicators								
Conductivity, electrical	uS/cm	1400 - 1920	1710	1390 ^c	1560 - 2770	1420 ^c	1430 ^c	1240 ^c
pH, lab	s.u.	7.97 - 8.54	8.13	8.14	7.97 - 8.72	7.97	7.97	8.15
Total dissolved solids (TDS)	mg/L	746 - 1250	898 ^a	908 ^a	760 - 1800	700 ^{bc}	704 ^{bc}	794 ^a
Minor Ions - Anions								
Alkalinity, total (as CaCO ₃)	mg/L	197 - 355	281	310	42 - 454	280	281	321
Chloride	mg/L	267 - 408	382 ^a	374 ^a	277 - 600	288 ^a	278 ^a	304 ^a
Sulfate	mg/L	1 - 49	3.3	3.9	ND(0.5) - 24	3.46	3.36	4.83
Major Ions - Cations								
Calcium (dissolved)	mg/L	10.8 - 159	14.3	12.2	14 - 33	14.3	14.3	12.6 ^c
Magnesium (dissolved)	mg/L	4.17 - 50	7.67	6.87	6 - 16	6.49	6.44	6.81
Potassium (dissolved)	mg/L	ND(1) - 45	2.35	2.27	1.83 - 23	2.53	2.52	2.69
Sodium (dissolved)	mg/L	92 - 391	323 ^a	340 ^a	258 - 579	250 ^{bc}	253 ^{bc}	301 ^a
Major Ions - Nutrients								
Ammonia-N	mg/L	ND(0.05) - 0.27	-	-	ND(0.05) - 0.39	-	-	-
Nitrate (as N)	mg/L	0.065 - ND(1)	ND (0.5)	ND (0.5)	ND(0.1) - ND(0.5)	ND (0.25)	ND (0.25)	ND (0.25)
Nitrite (as N)	mg/L	ND(0.01) - ND(0.5)	ND (0.5)	ND (0.5)	ND(0.01) - ND(0.5)	ND (0.25)	ND (0.25)	ND (0.25)
Major Ions - Miscellaneous								
Bromide	mg/L	0.2 - ND(3.5)	ND (0.5)	ND (0.5)	ND(0.25) - 2.37	ND (0.25)	ND (0.25)	ND (0.25)
Cyanide (free)	mg/L	ND(0.002) - ND(0.02)	ND (0.002)	0.004 J	ND(0.002) - ND(0.01)	ND (0.002)	ND (0.002)	ND (0.002) J
Fluoride	mg/L	0.39 - 14	ND (0.5)	ND (0.5)	0.44 - 8.2	0.71	0.81	0.51
Metals								
Arsenic (dissolved)	mg/L	0.001 - ND(0.01)	ND (0.003)	-	0.001 - ND(0.01)	ND (0.003)	ND (0.003)	-
Barium (dissolved)	mg/L	0.17 - 0.57	0.16 ^c	-	0.136 - 0.41	0.128 ^c	0.133 ^c	-
Boron (dissolved)	mg/L	1.6 - 2.7	1.89 ^b	-	2.1 - 3.6	2.01 ^{bc}	1.97 ^{bc}	-
Cadmium (dissolved)	mg/L	ND(0.0001) - ND(0.001)	ND (0.001)	-	ND(0.0001) - ND(0.001)	ND (0.001)	ND (0.001)	-
Chromium (dissolved)	mg/L	0.001 - ND(0.01)	ND (0.003)	-	ND(0.001) - 0.01	ND (0.003)	ND (0.003)	-
Iron (dissolved)	mg/L	ND(0.019) - 0.527	0.013 ^c	-	ND(0.01) - 0.64	0.085	0.086	-
Lead (dissolved)	mg/L	ND(0.0005) - ND(0.01)	ND (0.001)	-	ND(0.001) - ND(0.01)	ND (0.001)	ND (0.001)	-
Mercury (dissolved)	mg/L	ND(0.0001)	ND (0.0001)	-	ND(0.0001)	ND (0.0001)	ND (0.0001)	-
Nickel (dissolved)	mg/L	ND(0.001) - ND(0.05)	ND (0.003)	-	ND(0.003) - ND(0.05)	ND (0.003)	ND (0.003)	-
Zinc (dissolved)	mg/L	ND(0.005) - ND(0.1)	ND (0.005)	-	ND(0.005) - ND(0.1)	0.005	ND (0.005)	-
Volatile Organic Compounds								
1,1,1,2-Tetrachloroethane	ug/L	ND(0.1) - ND(1)	ND (0.1)	-	ND(0.1) - ND(1)	ND (0.1)	ND (0.4)	-
1,1,1-Trichloroethane	ug/L	ND(0.01) - ND(10)	ND (0.3)	-	ND(0.3) - ND(1.2)	ND (0.3)	ND (1.2)	-
1,1,2,2-Tetrachloroethane	ug/L	ND(0.1) - ND(2)	ND (0.1)	-	ND(0.1) - ND(2)	ND (0.1)	ND (0.4)	-
1,1,2-Trichloroethane	ug/L	ND(0.2) - ND(2)	ND (0.2)	-	ND(0.2) - ND(2)	ND (0.2)	ND (0.8)	-
1,1-Dichloroethane	ug/L	ND(0.01) - ND(10)	ND (0.3)	-	ND(0.3) - ND(1.2)	ND (0.3)	ND (1.2)	-
1,1-Dichloroethene	ug/L	ND(0.1) - ND(1.2)	ND (0.3)	-	ND(0.3) - ND(1.2)	ND (0.3)	ND (1.2)	-
1,2,4-Trichlorobenzene	ug/L	ND(0.1) - ND(1.2)	ND (0.3)	-	ND(0.1) - ND(1.2)	ND (0.3)	ND (1.2)	-
1,2-Dibromoethane (Ethylene dibromide)	ug/L	ND(0.1) - ND(2)	ND (0.1)	-	ND(0.1) - ND(2)	ND (0.1)	ND (0.4)	-
1,2-Dichlorobenzene	ug/L	ND(0.002) - ND(2)	ND (0.1)	-	ND(0.1) - ND(2)	ND (0.1)	ND (0.4)	-
1,2-Dichloroethane	ug/L	ND(0.002) - ND(2)	ND (0.2)	-	ND(0.2) - ND(2)	ND (0.2)	ND (0.8)	-
1,2-Dichloropropane	ug/L	ND(0.1) - ND(1)	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	ND (0.8)	-
1,3-Dichlorobenzene	ug/L	ND(0.1) - ND(2)	ND (0.1)	-	ND(0.1) - ND(2)	ND (0.1)	ND (0.4)	-
1,3-Dichloropropene	ug/L	ND(0.3) - ND(1.2)	ND (0.3)	-	ND(0.3) - ND(1.2)	ND (0.3)	ND (1.2)	-
1,4-Dichlorobenzene	ug/L	ND(0.002) - ND(2)	ND (0.1)	-	ND(0.1) - ND(2)	ND (0.1)	ND (0.4)	-
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	ND(1) - ND(50)	ND (1)	-	ND(1) - ND(50)	ND (1)	ND (4)	-
2-Hexanone	ug/L	ND(1) - ND(4)	ND (1)	-	ND(1) - ND(4)	ND (1)	ND (4)	-
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	ND(1) - ND(50)	ND (1)	-	ND(1) - ND(50)	ND (1)	ND (4)	-
Acetone	ug/L	ND(1) - ND(100)	ND (1)	-	ND(1) - ND(100)	ND (1)	ND (4)	-
Benzene	ug/L	ND(0.001) - 1.9	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	ND (0.8)	-
Bromodichloromethane	ug/L	ND(0.1) - ND(1)	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	ND (0.8)	-
Bromoform	ug/L	ND(0.1) - ND(2)	ND (0.1)	-	ND(0.1) - ND(2)	ND (0.1)	ND (0.4)	-
Bromomethane (Methyl bromide)	ug/L	ND(0.2) - ND(5)	ND (0.2)	-	ND(0.2) - ND(5)	ND (0.2)	ND (0.8)	-
Carbon tetrachloride	ug/L	ND(0.1) - ND(1)	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	ND (0.8)	-

Table 13

Groundwater Chemistry - Wells Located in Sub-Cell 3, Cell 18
 2019 Annual Groundwater Monitoring Report
 Clean Harbors Canada Inc. - Lambton Facility

Sample Location: Sample ID: Sample Date:	Units	PW1-N			PW2-S(R11)			
		11/14/2001 - 11/22/2018 Historical Range	PW1 6/13/2019	PW1 12/4/2019	06/16/2011 - 11/21/2018 Historical Range	PW2 6/13/2019	98 6/13/2019 Duplicate	PW2 12/4/2019
Chlorobenzene	ug/L	ND(0.1) - ND(1)	ND (0.1)	-	ND(0.1) - ND(1)	ND (0.1)	ND (0.4)	-
Chloroethane	ug/L	ND(0.01) - ND(10)	ND (0.2)	-	ND(0.2) - ND(2)	ND (0.2)	ND (0.8)	-
Chloroform (Trichloromethane)	ug/L	ND(0.2) - 23.8	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	ND (0.8)	-
Chloromethane (Methyl chloride)	ug/L	ND(0.2) - ND(1.6)	ND (0.4)	-	ND(0.2) - ND(1.6)	ND (0.4)	ND (1.6)	-
cis-1,2-Dichloroethene	ug/L	ND(0.1) - ND(1)	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	ND (0.8)	-
cis-1,3-Dichloropropene	ug/L	ND(0.2) - ND(2)	ND (0.2)	-	ND(0.2) - ND(2)	ND (0.2)	ND (0.8)	-
Dibromochloromethane	ug/L	ND(0.1) - ND(2)	ND (0.1)	-	ND(0.1) - ND(2)	ND (0.1)	ND (0.4)	-
Dichlorodifluoromethane (CFC-12)	ug/L	ND(0.2) - ND(5)	ND (0.2)	-	ND(0.2) - ND(5)	ND (0.2)	ND (0.8)	-
Ethylbenzene	ug/L	ND(0.001) - ND(1)	ND (0.1)	-	ND(0.1) - ND(1)	ND (0.1)	ND (0.4)	-
Hexane	ug/L	ND(0.2) - ND(5)	ND (0.2)	-	ND(0.2) - ND(5)	ND (0.2)	ND (0.8)	-
m&p-Xylenes	ug/L	ND(0.1) - ND(10)	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	ND (0.8)	-
Methyl tert butyl ether (MTBE)	ug/L	ND(0.2) - ND(2)	ND (0.2)	-	ND(0.2) - ND(2)	ND (0.2)	ND (0.8)	-
Methylene chloride	ug/L	ND(0.01) - ND(10)	ND (0.3)	-	ND(0.3) - ND(5)	ND (0.3)	ND (1.2)	-
o-Xylene	ug/L	ND(0.1) - ND(10)	ND (0.1)	-	ND(0.1) - ND(1)	ND (0.1)	ND (0.4)	-
Styrene	ug/L	ND(0.1) - ND(2)	ND (0.1)	-	ND(0.1) - ND(2)	ND (0.1)	ND (0.4)	-
Tetrachloroethene	ug/L	ND(0.1) - ND(1)	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	ND (0.8)	-
Toluene	ug/L	ND(0.01) - ND(10)	ND (0.2)	-	ND(0.2) - ND(2)	ND (0.2) J	1.7 J ^b	-
trans-1,2-Dichloroethene	ug/L	ND(0.1) - ND(1)	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	ND (0.8)	-
trans-1,3-Dichloropropene	ug/L	ND(0.2) - ND(2)	ND (0.3)	-	ND(0.2) - ND(2)	ND (0.3)	ND (1.2)	-
Trichloroethene	ug/L	ND(0.01) - ND(10)	ND (0.2)	-	ND(0.2) - ND(1)	ND (0.2)	ND (0.8)	-
Trichlorofluoromethane (CFC-11)	ug/L	ND(0.2) - ND(2)	ND (0.4)	-	ND(0.4) - ND(2)	ND (0.4)	ND (1.6)	-
Vinyl chloride	ug/L	ND(0.17) - ND(2)	ND (0.17)	-	ND(0.17) - ND(2)	ND (0.17)	ND (0.68)	-
Xylenes (total)	ug/L	ND(0.01) - ND(1.5)	ND (0.2)	-	ND(0.2) - ND(1.5)	ND (0.2)	ND (0.8)	-

Notes:

- ^a Indicates value exceeds Ontario Drinking Water Standards Guidelines, Ontario Ministry of the Environment, as revised
- ^b Indicates value exceeds Policy and Guidelines - Provincial The Ontario Ministry of the Environment and Energy, July
- ^c Analytical result outside of the historical concentration range
- ND Not detected at the associated reporting limit.
- J Estimated concentration.
- 4.90 Detected result exceeds associated standard.
- OG Operational Guideline
- AO Aesthetic Objective
- MAC Maximum Acceptable Concentration
- IMAC Interim Maximum Acceptable Concentration
- Not applicable or not analysed.

Table 14

**Upper Confidence Limits Summary Table
Clean Harbors Canada, Inc.
Lambton County, Ontario**

Well	Analyte	Unit	Date Range	Number of Samples	Percent Non-Detect	Minimum	Maximum	Median	Mean	Standard Deviation	Shewhart UCL ⁽¹⁾
EW1a-01	Chloride	mg/L	2004 - 2008	8	0%	306	402	327	329	18	382
	Sulfate	mg/L	2004 - 2008	8	0%	67	136	120	112	24	185
	Potassium (dissolved)	mg/L	2004 - 2008	8	0%	3.7	8.0	5.0	5.1	1.37	9.2
	Sodium (dissolved)	mg/L	2004 - 2008	8	0%	242	300	267	267	18	321
	Bromide	mg/L	2004 - 2008	8	13%	0.96	3.5 U	1.5	1.33	0.26	2.1
	Fluoride	mg/L	2004 - 2008	8	0%	1.44	2.0	1.5	1.60	0.19	2.2
	Barium (dissolved)	mg/L	2006 - 2013	8	13%	0.1 U	0.11	0.08	0.08	0.02	0.138
	Boron (dissolved)	mg/L	2006 - 2013	8	0%	1.0	1.9	1.5	1.47	0.25	2.2
EW1b-13	Chloride	mg/L	2014 - 2017	8	0%	302	345	328	325	15	370
	Sulfate	mg/L	2014 - 2017	8	0%	128	147	141	139	7.0	160
	Potassium (dissolved)	mg/L	2014 - 2017	8	0%	4.8	6.0	5.0	5.19	0.51	6.7
	Sodium (dissolved)	mg/L	2014 - 2017	8	0%	182	211	199	198.4	8.9	225
	Bromide	mg/L	2014 - 2017	8	0%	1.81	3.0	2.8	2.53	0.47	3.9
	Fluoride	mg/L	2014 - 2017	8	0%	0.74	1.5	1.4	1.23	0.32	2.2
	Barium (dissolved)	mg/L	2014 - 2018	6	0%	0.05	0.07	0.05	0.06	0.01	0.088
	Boron (dissolved)	mg/L	2014 - 2018	6	0%	1.15	1.4	1.3	1.27	0.09	1.5
EW1c-13	Chloride	mg/L	2014 - 2017	8	0%	281	329	315	311	16	360
	Sulfate	mg/L	2014 - 2017	8	0%	120	165	131	136	16	183
	Potassium (dissolved)	mg/L	2014 - 2017	8	0%	4.74	6.0	5.0	5.06	0.39	6.2
	Sodium (dissolved)	mg/L	2014 - 2017	8	0%	179	202	195	193	7.8	217
	Bromide	mg/L	2014 - 2017	8	0%	1.65	3.0	2.5	2.40	0.46	3.8
	Fluoride	mg/L	2014 - 2017	8	0%	0.72	1.54	1.4	1.20	0.33	2.2
	Barium (dissolved)	mg/L	2014 - 2018	6	0%	0.05	0.06	0.05	0.05	0.005	0.069
	Boron (dissolved)	mg/L	2014 - 2018	6	0%	1.1	1.4	1.3	1.27	0.13	1.6
EW2a-01	Chloride	mg/L	2001 - 2005	8	0%	129	220	155	158	31	251
	Sulfate	mg/L	2001 - 2005	8	0%	110	150	140	133	15	177
	Potassium (dissolved)	mg/L	2001 - 2005	8	0%	3.7	8.1	4.4	5.1	1.6	9.8
	Sodium (dissolved)	mg/L	2001 - 2005	8	0%	83	100	96	94.6	5.4	111
	Bromide	mg/L	2003 - 2006	8	13%	1.8 U	1.7	1.5	1.49	0.13	1.9
	Fluoride	mg/L	2003 - 2006	8	0%	0.90	1.38	1.2	1.15	0.16	1.6
	Barium (dissolved)	mg/L	2003 - 2011	8	0%	0.08	0.11	0.09	0.09	0.01	0.124
	Boron (dissolved)	mg/L	2003 - 2011	8	0%	0.83	1.2	1.0	1.02	0.10	1.3

Note:

(1) UCL - Upper Confidence Limit on the mean, using 95 percent confidence level.

UCLs were calculated using data from the initial 8 sampling events.

Non-detects were replaced by one-half the detection limit.

Table 14

**Upper Confidence Limits Summary Table
Clean Harbors Canada, Inc.
Lambton County, Ontario**

Well	Analyte	Unit	Date Range	Number of Samples	Percent	Minimum	Maximum	Median	Mean	Standard Deviation	Shewhart UCL ⁽¹⁾
					Non-Detect						
EW2b-13	Chloride	mg/L	2014 - 2017	8	0%	95	104	101	101	3.0	110
	Sulfate	mg/L	2014 - 2017	8	0%	4.0	52	15	21	18	75.5
	Potassium (dissolved)	mg/L	2014 - 2017	8	0%	2.6	3.0	3.0	2.91	0.17	3.4
	Sodium (dissolved)	mg/L	2014 - 2017	8	0%	94	106	101	100	4.3	113
	Bromide	mg/L	2014 - 2017	8	0%	0.56	1.2	0.98	0.93	0.19	1.5
	Fluoride	mg/L	2014 - 2017	8	0%	0.81	1.4	1.3	1.18	0.19	1.7
	Barium (dissolved)	mg/L	2014 - 2018	6	0%	0.12	0.14	0.13	0.13	0.01	0.156
	Boron (dissolved)	mg/L	2014 - 2018	6	0%	1.1	1.3	1.2	1.20	0.09	1.5
EW2c-13	Chloride	mg/L	2014 - 2017	8	0%	92	109	100	100	5.1	116
	Sulfate	mg/L	2014 - 2017	8	0%	1.1	72	35	35	27	118
	Potassium (dissolved)	mg/L	2014 - 2017	8	0%	2.4	3.0	3.0	2.86	0.26	3.6
	Sodium (dissolved)	mg/L	2014 - 2017	8	0%	94	103	101	99.3	3.6	110
	Bromide	mg/L	2014 - 2017	8	0%	0.68	1.0	0.94	0.90	0.13	1.3
	Fluoride	mg/L	2014 - 2017	8	0%	0.84	1.5	1.3	1.19	0.21	1.8
	Barium (dissolved)	mg/L	2014 - 2018	6	0%	0.11	0.14	0.13	0.13	0.01	0.170
	Boron (dissolved)	mg/L	2014 - 2018	6	0%	1.1	1.26	1.18	1.17	0.06	1.4
OW32-90D	Chloride	mg/L	1991 - 1994	8	0%	276	365	347	332	37	443
	Sulfate	mg/L	1991 - 1994	8	0%	3.2	11	5.9	6.0	2.3	13.0
	Potassium (dissolved)	mg/L	1991 - 1994	8	0%	2.4	5.2	3.5	3.60	0.8	6.0
	Sodium (dissolved)	mg/L	1991 - 1994	8	0%	228	274	257	256	13	296
	Bromide	mg/L	1996 - 2000	8	38%	0.35 U	0.7	0.32	0.45	0.17	0.959
	Fluoride	mg/L	1996 - 2000	8	0%	1.2	1.5	1.4	1.41	0.10	1.7
	Barium (dissolved)	mg/L	1991 - 1994	8	0%	0.09	0.18	0.15	0.15	0.03	0.238
	Boron (dissolved)	mg/L	1991 - 1994	8	0%	1.4	2.1	1.5	1.60	0.24	2.3
OW32-90S	Chloride	mg/L	1991 - 1994	8	0%	32	45	41	40.4	4.3	53.4
	Sulfate	mg/L	1991 - 1994	8	0%	271	395	369	353	43	482
	Potassium (dissolved)	mg/L	1991 - 1994	8	0%	3.3	4.5	3.7	3.77	0.40	5.0
	Sodium (dissolved)	mg/L	1991 - 1994	8	0%	42	68	55	55.4	8	79.1
	Bromide	mg/L	1996 - 2000	8	50%	0.35 U	0.90	0.28	0.32	0.22	0.988
	Fluoride	mg/L	1996 - 2000	8	0%	0.26	0.90	0.70	0.65	0.24	1.4
	Barium (dissolved)	mg/L	1991 - 1994	8	0%	0.04	0.05	0.04	0.043	0.003	0.053
	Boron (dissolved)	mg/L	1991 - 1994	8	0%	1.4	3.7	3.2	2.94	0.69	5.0

Note:

(1) UCL - Upper Confidence Limit on the mean, using 95 percent confidence level.

UCLs were calculated using data from the initial 8 sampling events.

Non-detects were replaced by one-half the detection limit.

Table 14

**Upper Confidence Limits Summary Table
Clean Harbors Canada, Inc.
Lambton County, Ontario**

Well	Analyte	Unit	Date Range	Number of Samples	Percent Non-Detect	Minimum	Maximum	Median	Mean	Standard Deviation	Shewhart UCL ⁽¹⁾
OW35-05D	Chloride	mg/L	2005 - 2008	8	0%	244	261	246	248	5.5	264
	Sulfate	mg/L	2005 - 2008	8	13%	0.5 U	3.0	2.5	2.2	0.93	5.0
	Potassium (dissolved)	mg/L	2005 - 2008	8	0%	2.0	2.4	2.0	2.05	0.14	2.5
	Sodium (dissolved)	mg/L	2005 - 2008	8	0%	232	310	242	251	27	330
	Bromide	mg/L	2005 - 2008	8	0%	0.15	0.90	0.63	0.61	0.21	1.3
	Fluoride	mg/L	2005 - 2008	8	0%	1.1	1.5	1.4	1.35	0.12	1.7
	Barium (dissolved)	mg/L	2005 - 2011	8	0%	0.11	0.22	0.14	0.16	0.05	0.301
	Boron (dissolved)	mg/L	2005 - 2011	8	0%	1.4	1.9	1.6	1.62	0.2	2.1
OW35-90S	Chloride	mg/L	1991 - 1995	8	0%	19	37	22	23.4	5.7	40.3
	Sulfate	mg/L	1991 - 1995	8	0%	152	235	202	201	23.8	272
	Potassium (dissolved)	mg/L	1991 - 1994	8	0%	1.4	3.5	2.8	2.57	0.72	4.7
	Sodium (dissolved)	mg/L	1991 - 1994	8	0%	46	54	50	49.6	3.0	58.6
	Bromide	mg/L	1996 - 2000	8	88%	0.02 U	0.25	0.35 U	0.10	0.11	0.422
	Fluoride	mg/L	1996 - 2000	8	0%	0.64	1.0	0.90	0.84	0.15	1.3
	Barium (dissolved)	mg/L	1991 - 1994	8	0%	0.03	0.11	0.04	0.05	0.02	0.123
	Boron (dissolved)	mg/L	1991 - 1994	8	0%	0.56	1.3	0.83	0.87	0.22	1.5
PW1-N	Chloride	mg/L	2001 - 2005	8	0%	340	388	362	362	16	410
	Sulfate	mg/L	2001 - 2005	8	75%	1 U	5 U	1 U	1.10	0.16	1.6
	Potassium (dissolved)	mg/L	2001 - 2005	8	0%	1.9	2.7	2.0	2.10	0.25	2.9
	Sodium (dissolved)	mg/L	2001 - 2005	8	0%	300	350	317	316	17	366
	Bromide	mg/L	2003 - 2006	8	13%	0.6	3.5 U	0.78	0.83	0.22	1.5
	Fluoride	mg/L	2003 - 2006	8	0%	0.94	1.3	1.2	1.17	0.15	1.6
	Barium (dissolved)	mg/L	2003 - 2010	8	0%	0.25	0.34	0.27	0.28	0.03	0.364
	Boron (dissolved)	mg/L	2003 - 2010	8	0%	1.9	2.2	2.1	2.05	0.14	2.5
PW2-S(R11)	Chloride	mg/L	2011 - 2014	8	0%	277	600	369	404	119	762
	Sulfate	mg/L	2011 - 2014	8	63%	1 U	24	2 U	6.8	9.0	33.6
	Potassium (dissolved)	mg/L	2011 - 2014	8	0%	2.0	23	2.0	4.8	7.4	26.9
	Sodium (dissolved)	mg/L	2011 - 2014	8	0%	341	579	409	426	80	666
	Bromide	mg/L	2011 - 2014	8	13%	0.25 U	2.4	0.9	1.01	0.6	2.8
	Fluoride	mg/L	2011 - 2014	8	0%	0.94	8.2	1.3	2.1	2.5	9.5
	Barium (dissolved)	mg/L	2011 - 2015	8	0%	0.17	0.41	0.23	0.24	0.09	0.502
	Boron (dissolved)	mg/L	2011 - 2015	8	0%	2.1	3.6	2.8	2.84	0.44	4.3

Note:

(1) UCL - Upper Confidence Limit on the mean, using 95 percent confidence level.

UCLs were calculated using data from the initial 8 sampling events.

Non-detects were replaced by one-half the detection limit.

Table 14

**Upper Confidence Limits Summary Table
Clean Harbors Canada, Inc.
Lambton County, Ontario**

Well	Analyte	Unit	Date Range	Number of Samples	Percent Non-Detect	Minimum	Maximum	Median	Mean	Standard Deviation	Shewhart UCL ⁽¹⁾
TW21-94-II	Chloride	mg/L	1994 - 2000	8	0%	8.5	16	9	10.2	2.6	18.1
	Sulfate	mg/L	1994 - 2000	8	0%	85	189	141	136	39	255
	Potassium (dissolved)	mg/L	1994 - 2000	8	25%	1 U	3.2	1.7	1.8	0.8	4.3
	Sodium (dissolved)	mg/L	1994 - 2000	8	0%	28	43	33	34.3	6.1	52.6
	Bromide	mg/L	1994 - 2000	8	100%	0.02 U	0.5 U	0.35 U	0.15	0.07	0.5 U
	Fluoride	mg/L	1994 - 2000	8	0%	0.35	0.9	0.70	0.64	0.2	1.2
	Barium (dissolved)	mg/L	1994 - 2004	8	0%	0.05	0.07	0.06	0.06	0.01	0.083
	Boron (dissolved)	mg/L	1994 - 2004	8	13%	0.03 U	0.31	0.11	0.12	0.08	0.353
TW22-94	Chloride	mg/L	1994 - 2000	8	0%	30	66	48	49	13	88.0
	Sulfate	mg/L	1994 - 2000	8	0%	295	358	326	326	24	399
	Potassium (dissolved)	mg/L	1994 - 2000	8	0%	2.0	4.4	2.3	2.7	1.0	5.7
	Sodium (dissolved)	mg/L	1994 - 2000	8	0%	60	80	68	68.5	7.1	89.9
	Bromide	mg/L	1994 - 2000	8	88%	0.05 U	0.5 U	0.35 U	0.08	0.025	0.150
	Fluoride	mg/L	1994 - 2000	8	0%	0.79	1.3	1.0	1.01	0.2	1.6
	Barium (dissolved)	mg/L	1997 - 2004	8	13%	0.002 U	0.06	0.03	0.03	0.02	0.082
	Boron (dissolved)	mg/L	1997 - 2004	8	13%	0.03 U	0.30	0.16	0.16	0.07	0.359
TW22-99D	Chloride	mg/L	1999 - 2002	8	0%	1010	1690	1100	1240	251	1992
	Sulfate	mg/L	1999 - 2002	8	63%	0.5 U	3.6	1 U	1.3	1.2	4.9
	Potassium (dissolved)	mg/L	1999 - 2002	8	0%	2.0	3.2	3.0	2.81	0.4	3.9
	Sodium (dissolved)	mg/L	1999 - 2002	8	0%	820	1250	918	957	138	1371
	Bromide	mg/L	1999 - 2002	8	50%	0.2 U	4	2.5	1.6	1.4	5.9
	Fluoride	mg/L	1999 - 2002	8	13%	0.05 U	3.2	1.1	1.5	1.2	5.2
	Barium (dissolved)	mg/L	1999 - 2006	8	0%	0.35	0.60	0.40	0.42	0.08	0.657
	Boron (dissolved)	mg/L	1999 - 2006	8	0%	3.9	5.4	4.3	4.46	0.48	5.9
TW30-94	Chloride	mg/L	1999 - 2002	8	0%	4.6	5.6	5.0	4.99	0.30	5.9
	Sulfate	mg/L	1999 - 2002	8	0%	105	151	110	115	15	160
	Potassium (dissolved)	mg/L	1999 - 2002	8	0%	1.0	3.8	2.2	2.17	0.92	4.9
	Sodium (dissolved)	mg/L	1999 - 2002	8	0%	31	49	35	36.5	5.6	53.4
	Bromide	mg/L	1999 - 2002	8	100%	0.2 U	0.5 U	0.28 U	0.15	0.06	0.5 U
	Fluoride	mg/L	1999 - 2002	8	0%	1.0	1.74	1.2	1.24	0.2	1.9
	Barium (dissolved)	mg/L	1999 - 2005	8	0%	0.03	0.06	0.04	0.04	0.01	0.076
	Boron (dissolved)	mg/L	1999 - 2005	8	13%	0.03 U	0.17	0.16	0.15	0.04	0.279

Note:

(1) UCL - Upper Confidence Limit on the mean, using 95 percent confidence level.

UCLs were calculated using data from the initial 8 sampling events.

Non-detects were replaced by one-half the detection limit.

Table 14

**Upper Confidence Limits Summary Table
Clean Harbors Canada, Inc.
Lambton County, Ontario**

Well	Analyte	Unit	Date Range	Number of Samples	Percent	Minimum	Maximum	Median	Mean	Standard Deviation	Shewhart UCL ⁽¹⁾
					Non-Detect						
TW30-99D	Chloride	mg/L	1999 - 2002	8	0%	236	365	309	314	41	438
	Sulfate	mg/L	1999 - 2002	8	38%	1 U	3.3	1.7	1.8	0.83	4.3
	Potassium (dissolved)	mg/L	1999 - 2002	8	13%	1 U	3.0	2.5	2.26	0.77	4.6
	Sodium (dissolved)	mg/L	1999 - 2002	8	0%	231	320	271	269	29	355
	Bromide	mg/L	1999 - 2002	8	38%	0.35 U	0.86	0.73	0.63	0.22	1.28
	Fluoride	mg/L	1999 - 2002	8	0%	1.20	1.60	1.40	1.41	0.17	1.93
	Barium (dissolved)	mg/L	1999 - 2006	8	0%	0.34	0.43	0.36	0.37	0.03	0.454
	Boron (dissolved)	mg/L	1999 - 2006	8	0%	1.60	1.99	1.67	1.70	0.13	2.1
TW32-94-I	Chloride	mg/L	1994 - 2014	8	0%	4690	7720	6087	6065	872	8680
	Sulfate	mg/L	1994 - 2014	8	25%	0.5 U	15	3.4	4.3	4.4	17.4
	Potassium (dissolved)	mg/L	1994 - 2014	8	0%	8.0	17	13	12.9	3.1	22.3
	Sodium (dissolved)	mg/L	1994 - 2014	8	0%	4120	5345	4824	4755	438	6069
	Bromide	mg/L	1994 - 2014	8	88%	0.02 U	50 U	2.38 U	0.6	1.2	50
	Fluoride	mg/L	1994 - 2014	8	0%	0.55	9.5	0.7	1.8	3.1	11.1
	Barium (dissolved)	mg/L	1994 - 2017	8	0%	1.6	2.5	2.1	2.04	0.30	2.9
	Boron (dissolved)	mg/L	1994 - 2017	8	0%	7.0	10	7.6	7.9	1.02	10.9
TW32-94-II	Chloride	mg/L	1994 - 2000	8	0%	227	408	303	303	55	468
	Sulfate	mg/L	1994 - 2000	8	0%	1.8	7.0	3.4	3.7	1.6	8.3
	Potassium (dissolved)	mg/L	1994 - 2000	8	0%	1.0	4.0	3.0	2.8	1.0	5.9
	Sodium (dissolved)	mg/L	1994 - 2000	8	0%	243	307	275	276	20	337
	Bromide	mg/L	1994 - 2000	8	38%	0.35 U	1.0	0.50	0.57	0.3	1.4
	Fluoride	mg/L	1994 - 2000	8	0%	1.1	1.7	1.3	1.35	0.2	2.0
	Barium (dissolved)	mg/L	1994 - 2004	7	0%	0.13	0.19	0.14	0.15	0.02	0.221
	Boron (dissolved)	mg/L	1994 - 2004	7	0%	1.9	3.8	2.6	2.80	0.8	5.1
TW32-94-IV	Chloride	mg/L	1994 - 2000	8	0%	17	24	20	20.2	2.6	27.9
	Sulfate	mg/L	1994 - 2000	8	0%	196	564	390	394	102	701
	Potassium (dissolved)	mg/L	1994 - 2000	8	0%	1.0	4.0	2.3	2.4	1.1	5.6
	Sodium (dissolved)	mg/L	1994 - 2000	8	0%	68	98	77	78.5	9.2	106
	Bromide	mg/L	1994 - 2000	8	75%	0.02 U	0.5 U	0.35 U	0.12	0.07	0.344
	Fluoride	mg/L	1994 - 2000	8	0%	0.85	1.2	1.1	1.06	0.1	1.4
	Barium (dissolved)	mg/L	1997 - 2004	8	0%	0.01	0.19	0.02	0.04	0.06	0.223
	Boron (dissolved)	mg/L	1997 - 2004	8	0%	0.13	1.8	0.29	0.47	0.5	2.1

Note:

(1) UCL - Upper Confidence Limit on the mean, using 95 percent confidence level.

UCLs were calculated using data from the initial 8 sampling events.

Non-detects were replaced by one-half the detection limit.

Table 14

**Upper Confidence Limits Summary Table
Clean Harbors Canada, Inc.
Lambton County, Ontario**

Well	Analyte	Unit	Date Range	Number of Samples	Percent		Minimum	Maximum	Median	Mean	Standard Deviation	Shewhart UCL ⁽¹⁾
					Non-Detect							
TW39-99D	Chloride	mg/L	1999 - 2002	8	0%		315	528	362	402	85	658
	Sulfate	mg/L	1999 - 2002	8	13%		1 U	5.9	1.7	2.8	1.9	8.6
	Potassium (dissolved)	mg/L	1999 - 2002	8	0%		1.0	2.1	1.7	1.58	0.5	3.0
	Sodium (dissolved)	mg/L	1999 - 2002	8	0%		289	397	328	330	32	425
	Bromide	mg/L	1999 - 2002	8	25%		0.35 U	3.0	0.7	1.1	0.9	3.8
	Fluoride	mg/L	1999 - 2002	8	0%		1.3	2.0	1.4	1.48	0.3	2.2
	Barium (dissolved)	mg/L	1999 - 2005	8	0%		0.18	0.31	0.23	0.23	0.04	0.350
	Boron (dissolved)	mg/L	1999 - 2005	8	0%		1.9	2.27	2.0	2.02	0.1	2.4
TW39-99I	Chloride	mg/L	1999 - 2002	8	0%		17	29	18	20.1	4	31.8
	Sulfate	mg/L	1999 - 2002	8	0%		315	389	329	336	24	408
	Potassium (dissolved)	mg/L	1999 - 2002	8	13%		1 U	2.2	1.4	1.46	0.4	2.7
	Sodium (dissolved)	mg/L	1999 - 2002	8	0%		68	94	77	77.8	8	103
	Bromide	mg/L	1999 - 2002	8	50%		0.2 U	0.38	0.29	0.26	0.06	0.445
	Fluoride	mg/L	1999 - 2002	8	0%		0.75	1.5	1.0	1.02	0.2	1.7
	Barium (dissolved)	mg/L	1999 - 2005	8	0%		0.04	0.07	0.05	0.05	0.01	0.078
	Boron (dissolved)	mg/L	1999 - 2005	8	0%		0.12	0.18	0.14	0.14	0.02	0.197
TW39-99S	Chloride	mg/L	1999 - 2002	8	0%		18	21	18	18.8	1	22.4
	Sulfate	mg/L	1999 - 2002	8	0%		298	477	319	338	58	511
	Potassium (dissolved)	mg/L	1999 - 2002	8	0%		1.9	2.4	2.0	2.04	0.2	2.6
	Sodium (dissolved)	mg/L	1999 - 2002	8	0%		61	80	65	68.3	8	90.8
	Bromide	mg/L	1999 - 2002	8	38%		0.35 U	0.40	0.25	0.31	0.1	0.494
	Fluoride	mg/L	1999 - 2002	8	0%		0.60	1.3	0.85	0.88	0.2	1.5
	Barium (dissolved)	mg/L	1999 - 2005	8	0%		0.03	0.04	0.04	0.037	0.004	0.049
	Boron (dissolved)	mg/L	1999 - 2005	8	0%		0.21	0.29	0.24	0.24	0.03	0.327
TW40-99D	Chloride	mg/L	1999 - 2002	8	0%		247	480	299	322	72	538
	Sulfate	mg/L	1999 - 2002	8	0%		1.5	6.0	2.9	3.3	1.6	8.2
	Potassium (dissolved)	mg/L	1999 - 2002	8	0%		1.9	3.0	2.3	2.39	0.5	3.7
	Sodium (dissolved)	mg/L	1999 - 2002	8	0%		232	333	266	275	35	378
	Bromide	mg/L	1999 - 2002	8	38%		0.35 U	3.2	0.68	1.0	0.9	3.8
	Fluoride	mg/L	1999 - 2002	8	0%		0.99	1.4	1.2	1.24	0.2	1.7
	Barium (dissolved)	mg/L	1999 - 2006	8	0%		0.19	0.32	0.22	0.24	0.05	0.379
	Boron (dissolved)	mg/L	1999 - 2006	8	0%		1.6	2.2	1.8	1.80	0.2	2.4

Note:

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UCLs were calculated using data from the initial 8 sampling events.

Non-detects were replaced by one-half the detection limit.

Table 14

**Upper Confidence Limits Summary Table
Clean Harbors Canada, Inc.
Lambton County, Ontario**

Well	Analyte	Unit	Date Range	Number of Samples	Percent	Minimum	Maximum	Median	Mean	Standard Deviation	Shewhart UCL ⁽¹⁾
					Non-Detect						
TW40-99S	Chloride	mg/L	1999 - 2002	8	0%	17	26	19	19.8	2.9	28.6
	Sulfate	mg/L	1999 - 2002	8	0%	126	144	136	136.3	6.2	155
	Potassium (dissolved)	mg/L	1999 - 2002	8	0%	2.0	3.0	2.2	2.33	0.4	3.4
	Sodium (dissolved)	mg/L	1999 - 2002	8	0%	42	55	47	48.1	4.8	62.5
	Bromide	mg/L	1999 - 2002	8	88%	0.2 U	0.20	0.28 U	0.20	0	0.200
	Fluoride	mg/L	1999 - 2002	8	0%	0.85	1.4	1.0	1.02	0.2	1.5
	Barium (dissolved)	mg/L	1999 - 2006	8	0%	0.03	0.06	0.04	0.04	0.01	0.073
	Boron (dissolved)	mg/L	1999 - 2006	8	0%	0.15	0.22	0.18	0.18	0.02	0.234
TW41-99D	Chloride	mg/L	1999 - 2002	8	0%	218	278	238	238	19	295
	Sulfate	mg/L	1999 - 2002	8	0%	1.6	6.0	3.7	3.6	1.5	8.2
	Potassium (dissolved)	mg/L	1999 - 2002	8	0%	1.3	3.3	1.9	2.0	0.6	3.8
	Sodium (dissolved)	mg/L	1999 - 2002	8	0%	208	262	255	247	18	301
	Bromide	mg/L	1999 - 2002	8	25%	0.35 U	1.8	0.61	0.79	0.5	2.3
	Fluoride	mg/L	1999 - 2002	8	0%	1.1	1.5	1.2	1.28	0.1	1.7
	Barium (dissolved)	mg/L	1999 - 2006	8	0%	0.08	0.93	0.30	0.38	0.3	1.3
	Boron (dissolved)	mg/L	1999 - 2006	8	0%	1.8	2.1	1.9	1.95	0.1	2.3
TW41-99S	Chloride	mg/L	1999 - 2002	8	0%	11	15	12	12.1	1.4	16.3
	Sulfate	mg/L	1999 - 2002	8	0%	419	603	498	504	52	659
	Potassium (dissolved)	mg/L	1999 - 2002	8	0%	2.0	4.0	3.3	3.16	0.64	5.1
	Sodium (dissolved)	mg/L	1999 - 2002	8	0%	46	59	50	50.7	4.5	64.1
	Bromide	mg/L	1999 - 2002	8	88%	0.2 U	0.25	0.28 U	0.21	0.02	0.270
	Fluoride	mg/L	1999 - 2002	8	0%	0.72	1.3	1.0	1.04	0.20	1.6
	Barium (dissolved)	mg/L	1999 - 2006	8	0%	0.02	0.05	0.03	0.03	0.01	0.066
	Boron (dissolved)	mg/L	1999 - 2006	8	0%	0.16	0.34	0.21	0.22	0.06	0.387
TW42-99D	Chloride	mg/L	1999 - 2015	8	0%	2150	3730	2425	2565	522	4131
	Sulfate	mg/L	1999 - 2015	8	25%	1.0	6.0	2.8	3.1	1.6	8.0
	Potassium (dissolved)	mg/L	1999 - 2015	8	0%	3.0	8.0	6.3	6.1	1.7	11.2
	Sodium (dissolved)	mg/L	1999 - 2015	8	0%	1970	2620	2150	2186	210	2815
	Bromide	mg/L	1999 - 2015	8	50%	0.25 U	5.9	2.38 U	1.6	1.8	7.0
	Fluoride	mg/L	1999 - 2015	8	0%	0.67	6.4	0.8	2.4	2.4	9.7
	Barium (dissolved)	mg/L	1999 - 2017	7	0%	0.86	1.3	1.0	1.03	0.16	1.5
	Boron (dissolved)	mg/L	1999 - 2017	7	0%	4.9	6.6	5.9	5.71	0.60	7.5

Note:

(1) UCL - Upper Confidence Limit on the mean, using 95 percent confidence level.

UCLs were calculated using data from the initial 8 sampling events.

Non-detects were replaced by one-half the detection limit.

Table 14

**Upper Confidence Limits Summary Table
Clean Harbors Canada, Inc.
Lambton County, Ontario**

Well	Analyte	Unit	Date Range	Number of Samples	Percent Non-Detect	Minimum	Maximum	Median	Mean	Standard Deviation	Shewhart UCL ⁽¹⁾
TW42-99S	Chloride	mg/L	1999 - 2004	8	0%	12	42	28	26	10	55.0
	Sulfate	mg/L	1999 - 2004	8	0%	162	750	388	390	178	923
	Potassium (dissolved)	mg/L	1999 - 2004	8	0%	1.0	4.0	3.1	2.90	0.85	5.4
	Sodium (dissolved)	mg/L	1999 - 2004	8	0%	37.1	50	42	43.2	4.3	56.3
	Bromide	mg/L	1999 - 2004	8	100%	0.2 U	0.35 U	0.2 U	0.13	0.04	0.35 U
	Fluoride	mg/L	1999 - 2004	8	0%	0.56	1.1	0.76	0.75	0.17	1.3
	Barium (dissolved)	mg/L	1999 - 2007	8	0%	0.05	0.06	0.05	0.053	0.004	0.065
	Boron (dissolved)	mg/L	1999 - 2007	8	0%	0.12	0.20	0.18	0.17	0.03	0.247
TW43-99D	Chloride	mg/L	1999 - 2002	8	0%	229	300	243	251	22	318
	Sulfate	mg/L	1999 - 2002	8	63%	0.5 U	4.1	1 U	1.3	1.4	5.6
	Potassium (dissolved)	mg/L	1999 - 2002	8	0%	1.0	2.6	1.8	1.80	0.6	3.6
	Sodium (dissolved)	mg/L	1999 - 2002	8	0%	197	250	225	224	15	269
	Bromide	mg/L	1999 - 2002	8	25%	0.35 U	2.0	0.72	0.91	0.5	2.5
	Fluoride	mg/L	1999 - 2002	8	0%	0.97	1.6	1.2	1.20	0.2	1.8
	Barium (dissolved)	mg/L	1999 - 2006	8	0%	0.19	0.28	0.23	0.23	0.03	0.326
	Boron (dissolved)	mg/L	1999 - 2006	8	0%	1.3	1.4	1.3	1.33	0.05	1.5
TW43-99S	Chloride	mg/L	1999 - 2002	8	0%	12	16	13	13.2	1.3	17.3
	Sulfate	mg/L	1999 - 2002	8	0%	336	455	403	397	39	513
	Potassium (dissolved)	mg/L	1999 - 2002	8	0%	2.7	3.0	2.9	2.85	0.14	3.3
	Sodium (dissolved)	mg/L	1999 - 2002	8	0%	34	56	39	41.8	8.7	67.9
	Bromide	mg/L	1999 - 2002	8	88%	0.2 U	37	0.2 U	5	12	40.8
	Fluoride	mg/L	1999 - 2002	8	13%	0.1 U	1.1	0.72	0.68	0.3	1.5
	Barium (dissolved)	mg/L	1999 - 2006	8	0%	0.02	0.06	0.04	0.04	0.01	0.080
	Boron (dissolved)	mg/L	1999 - 2006	8	0%	0.14	0.36	0.20	0.21	0.07	0.409
TW45-99D	Chloride	mg/L	1999 - 2002	8	0%	205	397	235	267	69	475
	Sulfate	mg/L	1999 - 2002	8	0%	1.2	5.4	1.7	2.3	1.4	6.7
	Potassium (dissolved)	mg/L	1999 - 2002	8	0%	1.0	3.0	1.2	1.48	0.70	3.6
	Sodium (dissolved)	mg/L	1999 - 2002	8	0%	217	320	257	256	37	365
	Bromide	mg/L	1999 - 2002	8	25%	0.35 U	1.4	0.63	0.77	0.39	1.9
	Fluoride	mg/L	1999 - 2002	8	0%	1.2	1.5	1.4	1.35	0.11	1.7
	Barium (dissolved)	mg/L	1999 - 2006	8	0%	0.07	0.22	0.14	0.15	0.05	0.289
	Boron (dissolved)	mg/L	1999 - 2006	8	0%	1.7	2.6	2.0	2.02	0.31	2.9

Note:

(1) UCL - Upper Confidence Limit on the mean, using 95 percent confidence level.

UCLs were calculated using data from the initial 8 sampling events.

Non-detects were replaced by one-half the detection limit.

Table 14

**Upper Confidence Limits Summary Table
Clean Harbors Canada, Inc.
Lambton County, Ontario**

Well	Analyte	Unit	Date Range	Number of Samples	Percent Non-Detect	Minimum	Maximum	Median	Mean	Standard Deviation	Shewhart UCL ⁽¹⁾
TW45-99S	Chloride	mg/L	1999 - 2002	8	0%	11	16	13	13.2	1.9	18.8
	Sulfate	mg/L	1999 - 2002	8	0%	30	122	90	89	27	170
	Potassium (dissolved)	mg/L	1999 - 2002	8	0%	1.0	3.0	2.1	2.06	0.57	3.8
	Sodium (dissolved)	mg/L	1999 - 2002	8	0%	32	49	35	37.9	6.0	56.0
	Bromide	mg/L	1999 - 2002	8	88%	0.2 U	0.25	0.28 U	0.21	0.02	0.270
	Fluoride	mg/L	1999 - 2002	8	0%	0.67	1.2	0.93	0.90	0.18	1.4
	Barium (dissolved)	mg/L	1999 - 2006	8	0%	0.06	0.10	0.07	0.07	0.01	0.112
	Boron (dissolved)	mg/L	1999 - 2006	8	0%	0.10	0.21	0.14	0.15	0.04	0.268
TW46-99D	Chloride	mg/L	1999 - 2003	8	0%	153	265	190	197	32	294
	Sulfate	mg/L	1999 - 2003	8	25%	1 U	4.7	1.4	2.0	1.3	5.9
	Potassium (dissolved)	mg/L	1999 - 2003	8	0%	1.3	3.0	1.9	1.89	0.5	3.4
	Sodium (dissolved)	mg/L	1999 - 2003	8	0%	220	251	234	234	11	265
	Bromide	mg/L	1999 - 2003	8	13%	0.35 U	1.6	0.64	0.80	0.4	2.0
	Fluoride	mg/L	1999 - 2003	8	0%	1.2	1.8	1.3	1.39	0.2	2.0
	Barium (dissolved)	mg/L	1999 - 2005	8	0%	0.09	0.19	0.11	0.12	0.03	0.226
	Boron (dissolved)	mg/L	1999 - 2005	8	0%	1.5	2.1	1.7	1.74	0.16	2.2
TW46-99I	Chloride	mg/L	1999 - 2003	8	0%	29	33	31	31.1	1.3	35.1
	Sulfate	mg/L	1999 - 2003	8	0%	213	330	289	280	34	384
	Potassium (dissolved)	mg/L	1999 - 2003	8	0%	1.4	3.0	2.0	2.05	0.45	3.4
	Sodium (dissolved)	mg/L	1999 - 2003	8	0%	38	42	41	40.1	1.5	44.6
	Bromide	mg/L	1999 - 2003	8	88%	0.2 U	0.27	0.2 U	0.21	0.03	0.290
	Fluoride	mg/L	1999 - 2003	8	0%	0.49	1.2	0.71	0.73	0.22	1.4
	Barium (dissolved)	mg/L	1999 - 2006	8	0%	0.04	0.07	0.05	0.05	0.01	0.079
	Boron (dissolved)	mg/L	1999 - 2006	8	0%	0.09	0.13	0.11	0.11	0.02	0.157
TW46-99S	Chloride	mg/L	1999 - 2003	8	0%	71	97.9	79	80.4	9	106
	Sulfate	mg/L	1999 - 2003	8	0%	675	949	862	846	77	1077
	Potassium (dissolved)	mg/L	1999 - 2003	8	0%	5.0	9.0	6.0	6.2	1.31	10.1
	Sodium (dissolved)	mg/L	1999 - 2003	8	0%	111	160	120	128	18	181
	Bromide	mg/L	1999 - 2003	8	13%	0.35 U	0.9	0.68	0.67	0.14	1.1
	Fluoride	mg/L	1999 - 2003	8	13%	0.05 U	1.5	0.78	0.78	0.39	2.0
	Barium (dissolved)	mg/L	1999 - 2006	8	0%	0.02	0.07	0.03	0.04	0.02	0.096
	Boron (dissolved)	mg/L	1999 - 2005	8	0%	0.81	31	4.3	8.2	10	39.6

Note:

(1) UCL - Upper Confidence Limit on the mean, using 95 percent confidence level.

UCLs were calculated using data from the initial 8 sampling events.

Non-detects were replaced by one-half the detection limit.

Table 14

**Upper Confidence Limits Summary Table
Clean Harbors Canada, Inc.
Lambton County, Ontario**

Well	Analyte	Unit	Date Range	Number of Samples	Percent Non-Detect	Minimum	Maximum	Median	Mean	Standard Deviation	Shewhart UCL ⁽¹⁾
TW47-00D	Chloride	mg/L	2000 - 2004	8	0%	240	347	275	277	35	383
	Sulfate	mg/L	2000 - 2004	8	38%	1 U	2.9	1.3	1.41	0.59	3.2
	Potassium (dissolved)	mg/L	2000 - 2004	8	0%	1.3	2.2	1.7	1.73	0.26	2.5
	Sodium (dissolved)	mg/L	2000 - 2004	8	0%	250	310	266	272	21	333
	Bromide	mg/L	2000 - 2004	8	0%	0.64	2.5	0.7	1.11	0.72	3.3
	Fluoride	mg/L	2000 - 2004	8	0%	1.1	1.5	1.30	1.33	0.14	1.7
	Barium (dissolved)	mg/L	2001 - 2008	8	0%	0.21	0.58	0.30	0.35	0.13	0.752
	Boron (dissolved)	mg/L	2001 - 2008	8	0%	2.0	2.7	2.3	2.30	0.26	3.1
TW48-00D	Chloride	mg/L	2001 - 2004	8	0%	433	610	510	526	60	708
	Sulfate	mg/L	2001 - 2004	8	13%	1 U	3.0	1.4	1.50	0.70	3.6
	Potassium (dissolved)	mg/L	2001 - 2004	8	0%	2.4	3.1	2.7	2.66	0.23	3.3
	Sodium (dissolved)	mg/L	2001 - 2004	8	0%	420	510	466	469	30	559
	Bromide	mg/L	2001 - 2004	8	0%	0.71	3.2	0.86	0.92	0.30	4.3
	Fluoride	mg/L	2001 - 2004	8	0%	1.2	1.6	1.4	1.40	0.18	1.9
	Barium (dissolved)	mg/L	2001 - 2008	8	0%	0.22	0.44	0.31	0.32	0.08	0.543
	Boron (dissolved)	mg/L	2001 - 2008	8	0%	2.7	2.9	2.7	2.77	0.09	3.0
TW48-16S	Chloride	mg/L	2016 - 2019	8	0%	19	23.7	20	21	1.6	25.2
	Sulfate	mg/L	2016 - 2019	8	0%	167	206	188	188	11.9	224
	Potassium (dissolved)	mg/L	2016 - 2019	8	0%	1.8	3	2.3	2.4	0.44	3.7
	Sodium (dissolved)	mg/L	2016 - 2019	8	0%	32.9	50	40	41	5.9	58.8
	Bromide	mg/L	2016 - 2019	8	100%	0.25 U	0.25 U	0.25 U	0.25 U	0	0.25 U
	Fluoride	mg/L	2016 - 2019	8	25%	0.25 U	1.2	0.50	0.56	0.29	1.4
	Barium (dissolved)	mg/L	2016 - 2019	4	0%	0.028	0.038	0.03	0.03	0.004	0.045
	Boron (dissolved)	mg/L	2016 - 2019	4	0%	0.2	0.3	0.23	0.24	0.044	0.37
TW49-00D	Chloride	mg/L	2001 - 2004	8	0%	83	92	87	87.1	3.3	97.1
	Sulfate	mg/L	2001 - 2004	8	0%	1.2	43	1.7	2.5	1.9	51.3
	Potassium (dissolved)	mg/L	2001 - 2004	8	13%	1 U	2.0	1.4	1.48	0.34	2.5
	Sodium (dissolved)	mg/L	2001 - 2004	8	0%	130	166	140	141	12	176
	Bromide	mg/L	2001 - 2004	8	0%	0.45	0.63	0.59	0.57	0.06	0.742
	Fluoride	mg/L	2001 - 2004	8	0%	1.1	1.7	1.4	1.44	0.24	2.2
	Barium (dissolved)	mg/L	2001 - 2008	8	0%	0.07	0.48	0.11	0.18	0.16	0.656
	Boron (dissolved)	mg/L	2001 - 2008	8	0%	1.0	1.3	1.1	1.15	0.08	1.4

Note:

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Non-detects were replaced by one-half the detection limit.

Table 14

**Upper Confidence Limits Summary Table
Clean Harbors Canada, Inc.
Lambton County, Ontario**

Well	Analyte	Unit	Date Range	Number of Samples	Percent Non-Detect	Minimum	Maximum	Median	Mean	Standard Deviation	Shewhart UCL ⁽¹⁾
TW50-02A	Chloride	mg/L	2002 - 2006	8	0%	16	21	19	18.6	1.6	23.5
	Sulfate	mg/L	2016 - 2017	4	0%	437	543	508	499	47	641
	Potassium (dissolved)	mg/L	2016 - 2017	4	0%	2.0	3.2	2.9	2.77	0.54	4.4
	Sodium (dissolved)	mg/L	2002 - 2006	8	0%	54	64	60	59.0	3.9	70.7
	Bromide	mg/L	2016 - 2018	6	100%	0.25 U	0.5 U	0.25 U	0.15	0.05	0.5 U
	Fluoride	mg/L	2016 - 2018	6	50%	0.25 U	1.1	0.51	0.49	0.3	1.4
	Barium (dissolved)	mg/L	2016 - 2017	2	0%	0.01	0.02	0.02	0.017	0.00	0.031
	Boron (dissolved)	mg/L	2016 - 2017	2	0%	0.22	0.31	0.27	0.27	0.07	0.461
TW50-02B	Chloride	mg/L	2002 - 2006	8	0%	21	28	23	23.0	2	29.6
	Sulfate	mg/L	2016 - 2019	7	0%	93	259	168	179	64	372
	Potassium (dissolved)	mg/L	2016 - 2019	7	0%	1.8	3.0	2.8	2.60	0.4	3.9
	Sodium (dissolved)	mg/L	2002 - 2006	8	0%	83	110	92	94	10	122
	Bromide	mg/L	2016 - 2019	7	100%	0.25 U	0.25 U	0.25 U	0.25 U	0	0.25 U
	Fluoride	mg/L	2016 - 2019	7	71%	0.25 U	1.23	0.25 U	0.40	0.3	1.4
	Barium (dissolved)	mg/L	2016 - 2019	4	0%	0.02	0.03	0.02	0.024	0.004	0.036
	Boron (dissolved)	mg/L	2016 - 2019	4	0%	0.10	0.30	0.12	0.16	0.09	0.443
TW51-02A	Chloride	mg/L	2002 - 2006	8	0%	15	18.4	16	16.2	1.1	19.5
	Sulfate	mg/L	2016 - 2018	6	0%	298	496	422	400	76	628
	Potassium (dissolved)	mg/L	2016 - 2018	6	0%	2.0	16.0	2.0	2.11	0.18	2.7
	Sodium (dissolved)	mg/L	2002 - 2006	8	0%	28	37	31	31.4	2.9	40.1
	Bromide	mg/L	2016 - 2018	6	100%	0.25 U	0.25 U	0.25 U	0.25 U	0	0.25 U
	Fluoride	mg/L	2016 - 2018	6	50%	0.25 U	0.90	0.35	0.48	0.3	1.3
	Barium (dissolved)	mg/L	2016 - 2018	3	0%	0.05	0.06	0.05	0.05	0.01	0.075
	Boron (dissolved)	mg/L	2016 - 2018	1	0%	0.15	0.16	0.16	0.16	0.01	0.179
TW51-02B	Chloride	mg/L	2002 - 2006	8	0%	17	20	19	18.8	0.86	21
	Sulfate	mg/L	2016 - 2019	7	0%	401	523	464	458	40	577
	Potassium (dissolved)	mg/L	2016 - 2019	7	0%	2.9	4.0	3.3	3.35	0.38	4.5
	Sodium (dissolved)	mg/L	2002 - 2006	8	0%	71	90	79	80.8	7.8	104
	Bromide	mg/L	2016 - 2019	7	100%	0.25 U	0.5 U	0.25 U	0.25 U	0.047	0.5 U
	Fluoride	mg/L	2016 - 2019	7	29%	0.25 U	1.07	0.62	0.65	0.3	1.6
	Barium (dissolved)	mg/L	2016 - 2019	4	0%	0.019	0.02	0.02	0.022	0.00	0.029
	Boron (dissolved)	mg/L	2016 - 2019	4	0%	0.32	0.39	0.39	0.373	0.04	0.479

Note:

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Non-detects were replaced by one-half the detection limit.

Table 14

**Upper Confidence Limits Summary Table
Clean Harbors Canada, Inc.
Lambton County, Ontario**

Well	Analyte	Unit	Date Range	Number of Samples	Percent Non-Detect	Minimum	Maximum	Median	Mean	Standard Deviation	Shewhart UCL ⁽¹⁾
TW52-02A	Chloride	mg/L	2002 - 2006	8	0%	40	97	71	72	20	132
	Sulfate	mg/L	2014 - 2018	8	0%	426	665	471	503	83	753
	Potassium (dissolved)	mg/L	2014 - 2018	8	0%	1.4	3.0	2.0	2.10	0.6	3.9
	Sodium (dissolved)	mg/L	2002 - 2006	8	0%	56	70	65	64.3	4.4	77.4
	Bromide	mg/L	2014 - 2018	8	100%	0.25 U	0.25 U	0.25 U	0.25 U	0	0.25 U
	Fluoride	mg/L	2014 - 2018	8	50%	0.25 U	1.19	0.43	0.60	0.4	1.8
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	0.01	0.02	0.02	0.016	0.00	0.029
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	0.16	0.32	0.24	0.22	0.06	0.414
TW52-02B	Chloride	mg/L	2002 - 2006	8	0%	9.0	10	9	9.54	1	11.0
	Sulfate	mg/L	2014 - 2018	8	0%	150	343	292	277	57	448
	Potassium (dissolved)	mg/L	2014 - 2018	8	0%	2.0	3.0	2.9	2.74	0.4	3.9
	Sodium (dissolved)	mg/L	2002 - 2006	8	0%	64	74	71	69.4	4	80.8
	Bromide	mg/L	2014 - 2018	8	100%	0.25 U	0.25 U	0.25 U	0.25 U	0	0.25 U
	Fluoride	mg/L	2014 - 2018	8	25%	0.25 U	1.36	0.64	0.70	0.5	2.1
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	0.01	0.07	0.02	0.03	0.02	0.099
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	0.09	0.28	0.24	0.21	0.07	0.428
TW53-03D	Chloride	mg/L	2003 - 2007	8	0%	274	520	308	338	83	585
	Sulfate	mg/L	2003 - 2007	8	13%	0.45	5.0	1.5	1.7	1.4	5.9
	Potassium (dissolved)	mg/L	2003 - 2007	8	0%	2.0	2.7	2.0	2.16	0.3	2.9
	Sodium (dissolved)	mg/L	2003 - 2007	8	0%	254	410	272	293	51	447
	Bromide	mg/L	2003 - 2007	8	13%	0.19	3.4	0.8	0.7	0.3	1.5
	Fluoride	mg/L	2003 - 2007	8	0%	1.0	1.5	1.3	1.29	0.2	1.9
	Barium (dissolved)	mg/L	2004 - 2009	8	0%	0.15	0.68	0.27	0.27	0.07	0.886
	Boron (dissolved)	mg/L	2004 - 2009	8	0%	1.4	3.6	1.8	1.81	0.3	4.1
TW53-03S	Chloride	mg/L	2003 - 2007	8	0%	11	13	12	11.76	0.71	13.9
	Sulfate	mg/L	2003 - 2007	8	0%	173	290	264	241	50	391
	Potassium (dissolved)	mg/L	2003 - 2007	8	0%	1.0	3.0	1.8	1.75	0.6	3.7
	Sodium (dissolved)	mg/L	2003 - 2007	8	0%	32	62	40	43	10	72.2
	Bromide	mg/L	2003 - 2007	8	63%	0.05 U	1.8 U	0.16	0.13	0.12	1.8 U
	Fluoride	mg/L	2003 - 2007	8	0%	0.52	0.97	0.72	0.74	0.15	1.2
	Barium (dissolved)	mg/L	2004 - 2011	8	0%	0.03	0.07	0.05	0.05	0.01	0.088
	Boron (dissolved)	mg/L	2004 - 2011	8	0%	0.09	0.19	0.17	0.16	0.03	0.261

Note:

(1) UCL - Upper Confidence Limit on the mean, using 95 percent confidence level.

UCLs were calculated using data from the initial 8 sampling events.

Non-detects were replaced by one-half the detection limit.

Table 14

**Upper Confidence Limits Summary Table
Clean Harbors Canada, Inc.
Lambton County, Ontario**

Well	Analyte	Unit	Date Range	Number of Samples	Percent Non-Detect	Minimum	Maximum	Median	Mean	Standard Deviation	Shewhart UCL ⁽¹⁾
TW54-09D	Chloride	mg/L	2009 - 2013	8	0%	116	144	136	132	10	161
	Sulfate	mg/L	2009 - 2013	8	0%	1.0	12	3.0	4.1	3	14.3
	Potassium (dissolved)	mg/L	2009 - 2013	8	0%	2.0	3.0	2.0	2.13	0.4	3.2
	Sodium (dissolved)	mg/L	2009 - 2013	8	0%	161	196	174	174	11	206
	Bromide	mg/L	2009 - 2013	8	0%	0.44	1.1	0.67	0.72	0.2	1.5
	Fluoride	mg/L	2009 - 2013	8	0%	1.43	1.59	1.5	1.51	0.1	1.7
	Barium (dissolved)	mg/L	2010 - 2017	8	0%	0.11	0.30	0.17	0.18	0.07	0.389
	Boron (dissolved)	mg/L	2010 - 2017	8	0%	1.4	1.7	1.6	1.58	0.1	1.9
TW55-09D	Chloride	mg/L	2010 - 2013	8	0%	362	411	377	380	15	425
	Sulfate	mg/L	2010 - 2013	8	0%	6.0	27	13	13.5	7	35.8
	Potassium (dissolved)	mg/L	2010 - 2013	8	0%	3.0	4.0	3.5	3.50	0.5	5.1
	Sodium (dissolved)	mg/L	2010 - 2013	8	0%	316	382	360	357	23	424
	Bromide	mg/L	2010 - 2013	8	13%	0.25 U	3.0	0.9	1.19	0.8	3.5
	Fluoride	mg/L	2010 - 2013	8	0%	1.54	1.8	1.7	1.69	0.1	2.0
	Barium (dissolved)	mg/L	2010 - 2017	8	0%	0.14	0.29	0.22	0.22	0.04	0.352
	Boron (dissolved)	mg/L	2010 - 2017	8	0%	1.3	1.9	1.8	1.71	0.2	2.3
TW55-09S	Chloride	mg/L	2010 - 2013	8	0%	14	15	15	14.75	0	16.1
	Sulfate	mg/L	2010 - 2013	8	0%	451	521	495	492	22	557
	Potassium (dissolved)	mg/L	2010 - 2013	8	0%	3.0	3.0	3.0	3	0.0	3.0
	Sodium (dissolved)	mg/L	2010 - 2013	8	0%	41	56	49	47.4	5	63.2
	Bromide	mg/L	2010 - 2013	8	100%	0.25 U	0.25 U	0.25 U	0.25 U	0	0.25 U
	Fluoride	mg/L	2010 - 2013	8	0%	0.73	0.98	0.80	0.83	0.09	1.1
	Barium (dissolved)	mg/L	2010 - 2017	8	0%	0.02	0.05	0.03	0.03	0.01	0.062
	Boron (dissolved)	mg/L	2010 - 2017	8	0%	0.17	0.42	0.28	0.27	0.07	0.487
TW56-11D	Chloride	mg/L	2012 - 2015	8	0%	282	334	303	303	17	355
	Sulfate	mg/L	2012 - 2015	8	0%	1.0	7.0	3.5	3.6	2.0	9.6
	Potassium (dissolved)	mg/L	2012 - 2015	8	0%	1.0	3.0	3.0	2.50	0.8	4.8
	Sodium (dissolved)	mg/L	2012 - 2015	8	0%	297	366	327	323	22	390
	Bromide	mg/L	2012 - 2015	8	0%	0.38	1.7	0.74	0.82	0.5	2.2
	Fluoride	mg/L	2012 - 2015	8	0%	1.2	1.5	1.4	1.34	0.1	1.6
	Barium (dissolved)	mg/L	2012 - 2019	8	0%	0.11	0.25	0.13	0.16	0.05	0.313
	Boron (dissolved)	mg/L	2012 - 2019	8	0%	1.9	2.5	2.2	2.16	0.2	2.8

Note:

(1) UCL - Upper Confidence Limit on the mean, using 95 percent confidence level.

UCLs were calculated using data from the initial 8 sampling events.

Non-detects were replaced by one-half the detection limit.

Table 14

**Upper Confidence Limits Summary Table
Clean Harbors Canada, Inc.
Lambton County, Ontario**

Well	Analyte	Unit	Date Range	Number of Samples	Percent Non-Detect	Minimum	Maximum	Median	Mean	Standard Deviation	Shewhart UCL ⁽¹⁾
TW56-11S	Chloride	mg/L	2012 - 2015	8	0%	58	64	62	61.9	2	67.3
	Sulfate	mg/L	2012 - 2015	8	0%	882	1050	995	976	57	1147
	Potassium (dissolved)	mg/L	2012 - 2015	8	0%	3.0	4.0	4.0	3.88	0.4	4.9
	Sodium (dissolved)	mg/L	2012 - 2015	8	0%	79	90	84	84.1	4	95.8
	Bromide	mg/L	2012 - 2015	8	100%	0.25 U	0.25 U	0.25 U	0.25 U	0	0.25 U
	Fluoride	mg/L	2012 - 2015	8	0%	0.73	0.95	0.86	0.85	0.1	1.1
	Barium (dissolved)	mg/L	2012 - 2019	8	0%	0.01	0.04	0.01	0.02	0.01	0.059
	Boron (dissolved)	mg/L	2012 - 2019	8	0%	0.257	0.43	0.36	0.35	0.05	0.513
TW57-11D	Chloride	mg/L	2012 - 2015	8	0%	299	448	358	367	57	538
	Sulfate	mg/L	2012 - 2015	8	75%	1 U	4.0	1 U	1.4	1.0	4.4
	Potassium (dissolved)	mg/L	2012 - 2015	8	0%	1.0	3.0	2.0	2.13	0.6	4.0
	Sodium (dissolved)	mg/L	2012 - 2015	8	0%	291	474	390	388	64	578
	Bromide	mg/L	2012 - 2015	8	0%	0.38	4.1	0.9	1.2	1.2	4.8
	Fluoride	mg/L	2012 - 2015	8	0%	1.22	1.69	1.4	1.43	0.1	1.9
	Barium (dissolved)	mg/L	2012 - 2019	8	0%	0.08	0.14	0.11	0.11	0.02	0.173
	Boron (dissolved)	mg/L	2012 - 2019	8	0%	1.6	2.4	2.0	1.98	0.3	2.8
TW57-11S	Chloride	mg/L	2012 - 2015	8	0%	23	31	28	27.5	3	36.1
	Sulfate	mg/L	2012 - 2015	8	0%	462	907	739	707	189	1274
	Potassium (dissolved)	mg/L	2012 - 2015	8	0%	4.0	5.0	5.0	4.63	0.5	6.2
	Sodium (dissolved)	mg/L	2012 - 2015	8	0%	39	68	57	55	11	88.5
	Bromide	mg/L	2012 - 2015	8	100%	0.25 U	0.25 U	0.25 U	0.25 U	0	0.25 U
	Fluoride	mg/L	2012 - 2015	8	0%	0.91	1.5	1.3	1.22	0.2	1.8
	Barium (dissolved)	mg/L	2012 - 2019	8	0%	0.02	0.031	0.03	0.03	0.01	0.041
	Boron (dissolved)	mg/L	2012 - 2019	8	0%	0.13	0.25	0.16	0.17	0.04	0.288
TW58-11S	Chloride	mg/L	2012 - 2015	8	0%	278	350	310	315	23	385
	Sulfate	mg/L	2012 - 2015	8	0%	992	1160	1095	1092	55	1257
	Potassium (dissolved)	mg/L	2012 - 2015	8	0%	4.0	7.0	5.5	5.6	1.1	8.8
	Sodium (dissolved)	mg/L	2012 - 2015	8	0%	106	138	126	125	11	158
	Bromide	mg/L	2012 - 2015	8	63%	0.25 U	0.43	0.38 U	0.29	0.06	0.485
	Fluoride	mg/L	2012 - 2015	8	0%	0.83	1.06	0.96	0.94	0.09	1.2
	Barium (dissolved)	mg/L	2012 - 2019	8	0%	0.01	0.05	0.02	0.02	0.01	0.059
	Boron (dissolved)	mg/L	2012 - 2019	8	0%	0.2	0.32	0.24	0.25	0.04	0.376

Note:

(1) UCL - Upper Confidence Limit on the mean, using 95 percent confidence level.

UCLs were calculated using data from the initial 8 sampling events.

Non-detects were replaced by one-half the detection limit.

Table 14

**Upper Confidence Limits Summary Table
Clean Harbors Canada, Inc.
Lambton County, Ontario**

Well	Analyte	Unit	Date Range	Number of Samples	Percent Non-Detect	Minimum	Maximum	Median	Mean	Standard Deviation	Shewhart UCL ⁽¹⁾
TW59-13D	Chloride	mg/L	2013 - 2016	8	0%	110	129	121	120.3	6	137
	Sulfate	mg/L	2013 - 2016	8	13%	1 U	15	4.0	5.5	5	19.7
	Potassium (dissolved)	mg/L	2013 - 2016	8	0%	1.0	3.0	2.0	2.00	0.5	3.6
	Sodium (dissolved)	mg/L	2013 - 2016	8	0%	170	192	185	183.4	8	207
	Bromide	mg/L	2013 - 2016	8	0%	0.28	0.65	0.43	0.45	0.11	0.791
	Fluoride	mg/L	2013 - 2016	8	0%	1.1	1.7	1.5	1.47	0.2	1.9
	Barium (dissolved)	mg/L	2013 - 2019	7	0%	0.09	0.18	0.10	0.12	0.03	0.214
	Boron (dissolved)	mg/L	2013 - 2019	7	0%	1.1	1.4	1.2	1.25	0.1	1.6
TW59-13S	Chloride	mg/L	2013 - 2016	8	0%	11	13	11	11.8	1	14.9
	Sulfate	mg/L	2013 - 2016	8	0%	103	164	119	126	21	188
	Potassium (dissolved)	mg/L	2013 - 2016	8	0%	2.0	3.0	2.0	2.25	0.5	3.6
	Sodium (dissolved)	mg/L	2013 - 2016	8	0%	28	52	31	35.0	9	61.6
	Bromide	mg/L	2013 - 2016	8	100%	0.25 U	0.25 U	0.25 U	0.25 U	0	0.25 U
	Fluoride	mg/L	2013 - 2016	8	0%	0.63	1.1	1.1	1.00	0.2	1.5
	Barium (dissolved)	mg/L	2013 - 2019	7	0%	0.03	0.08	0.04	0.05	0.02	0.102
	Boron (dissolved)	mg/L	2013 - 2019	7	0%	0.10	0.15	0.12	0.12	0.02	0.174
TW60-13D	Chloride	mg/L	2013 - 2017	8	0%	696	1120	984	961	122	1325
	Sulfate	mg/L	2013 - 2017	8	88%	1 U	4.9	1 U	1.5	1.3	5.4
	Potassium (dissolved)	mg/L	2013 - 2017	8	0%	2.28	4.0	3.0	3.29	0.6	5.2
	Sodium (dissolved)	mg/L	2013 - 2017	8	0%	557	1010	956	909	146	1347
	Bromide	mg/L	2013 - 2017	8	50%	0.25 U	1.52	0.77	0.73	0.5	2.3
	Fluoride	mg/L	2013 - 2017	8	13%	1 U	0.91	0.78	0.77	0.1	1.0
	Barium (dissolved)	mg/L	2014 - 2018	6	0%	0.20	0.49	0.31	0.32	0.11	0.661
	Boron (dissolved)	mg/L	2014 - 2018	6	0%	3.1	5.6	4.3	4.2	1.0	7.1
TW61-13D	Chloride	mg/L	2013 - 2017	8	0%	128	225	151	166	38	280
	Sulfate	mg/L	2013 - 2017	8	0%	12	67	27	30	18	83.0
	Potassium (dissolved)	mg/L	2013 - 2017	8	0%	1.0	2.0	1.2	1.42	0.5	2.9
	Sodium (dissolved)	mg/L	2013 - 2017	8	0%	170	275	204	214	35	320
	Bromide	mg/L	2013 - 2017	8	25%	0.25 U	0.64	0.46	0.43	0.1	0.848
	Fluoride	mg/L	2013 - 2017	8	0%	0.79	1.7	1.4	1.30	0.3	2.1
	Barium (dissolved)	mg/L	2014 - 2019	6	0%	0.05	0.13	0.05	0.07	0.03	0.168
	Boron (dissolved)	mg/L	2014 - 2019	6	0%	1.4	1.6	1.5	1.49	0.1	1.8

Note:

(1) UCL - Upper Confidence Limit on the mean, using 95 percent confidence level.

UCLs were calculated using data from the initial 8 sampling events.

Non-detects were replaced by one-half the detection limit.

Table 14

**Upper Confidence Limits Summary Table
Clean Harbors Canada, Inc.
Lambton County, Ontario**

Well	Analyte	Unit	Date Range	Number of Samples	Percent Non-Detect	Minimum	Maximum	Median	Mean	Standard Deviation	Shewhart UCL ⁽¹⁾
TW61-13I	Chloride	mg/L	2013 - 2017	8	0%	22	24	23	23.04	0.76	25.3
	Sulfate	mg/L	2013 - 2017	8	0%	189	212	193	195.6	8.1	220
	Potassium (dissolved)	mg/L	2013 - 2017	8	50%	1 U	1.0	0.95	0.94	0.05	1.1
	Sodium (dissolved)	mg/L	2013 - 2017	8	0%	23	30	26	25.8	2.1	32.1
	Bromide	mg/L	2013 - 2017	8	100%	0.25 U	0.25 U	0.25 U	0.25 U	0	0.25 U
	Fluoride	mg/L	2013 - 2017	8	13%	0.25 U	0.48	0.40	0.38	0.06	0.572
	Barium (dissolved)	mg/L	2014 - 2019	6	0%	0.05	0.07	0.06	0.06	0.01	0.087
	Boron (dissolved)	mg/L	2014 - 2019	6	0%	0.08	0.44	0.11	0.16	0.14	0.576
TW61-13S	Chloride	mg/L	2013 - 2017	8	0%	20	21	20	20.23	0.42	21.5
	Sulfate	mg/L	2013 - 2017	8	0%	263	313	286	288	15	332
	Potassium (dissolved)	mg/L	2013 - 2017	8	0%	2.4	3.0	3.0	2.92	0.23	3.6
	Sodium (dissolved)	mg/L	2013 - 2017	8	0%	62.7	68	65	65.0	1.9	70.7
	Bromide	mg/L	2013 - 2017	8	13%	0.25 U	0.62	0.58	0.55	0.12	0.894
	Fluoride	mg/L	2013 - 2017	8	13%	0.25 U	0.99	0.87	0.77	0.23	1.5
	Barium (dissolved)	mg/L	2014 - 2019	6	0%	0.036	0.08	0.04	0.05	0.02	0.108
	Boron (dissolved)	mg/L	2014 - 2019	6	0%	0.27	0.4	0.33	0.33	0.05	0.476
TW62-13S	Chloride	mg/L	2013 - 2017	8	0%	25	35	27	27.9	3.7	38.8
	Sulfate	mg/L	2013 - 2017	8	0%	177	226	192	195	16	242
	Potassium (dissolved)	mg/L	2013 - 2017	8	0%	2.0	4.0	2.6	2.66	0.72	4.8
	Sodium (dissolved)	mg/L	2013 - 2017	8	0%	52	66	58	57.8	4.9	72.5
	Bromide	mg/L	2013 - 2017	8	100%	0.25 U	0.25 U	0.25 U	0.25 U	0	0.25 U
	Fluoride	mg/L	2013 - 2017	8	13%	0.25 U	0.93	0.86	0.76	0.23	1.4
	Barium (dissolved)	mg/L	2013 - 2019	7	0%	0.04	0.09	0.04	0.05	0.02	0.111
	Boron (dissolved)	mg/L	2013 - 2019	7	0%	0.12	0.18	0.16	0.16	0.02	0.211
TW63-13S	Chloride	mg/L	2013 - 2017	8	0%	552	668	596	603	36	712
	Sulfate	mg/L	2013 - 2017	8	0%	64	80	72	72.0	5.9	89.6
	Potassium (dissolved)	mg/L	2013 - 2017	8	0%	3.0	5.0	4.0	4.06	0.68	6.1
	Sodium (dissolved)	mg/L	2013 - 2017	8	0%	166	196	182	183	11	216
	Bromide	mg/L	2013 - 2017	8	0%	0.94	2.5	1.8	1.76	0.58	3.5
	Fluoride	mg/L	2013 - 2017	8	13%	0.5 U	0.76	0.68	0.61	0.15	1.0
	Barium (dissolved)	mg/L	2013 - 2019	7	0%	0.11	0.19	0.14	0.15	0.03	0.236
	Boron (dissolved)	mg/L	2013 - 2019	7	0%	0.2	0.38	0.25	0.27	0.06	0.433

Note:

(1) UCL - Upper Confidence Limit on the mean, using 95 percent confidence level.

UCLs were calculated using data from the initial 8 sampling events.

Non-detects were replaced by one-half the detection limit.

Table 15

**Linear Regression Results
Clean Harbors Canada , Inc.
Lambton County, Ontario**

Well	Analyte	Unit	Date Range	Number of Samples	Percent Non-Detect	Linear Regression			
						Slope	Intercept	Probability	Conclusion
EW1a-01	Chloride	mg/L	2015 - 2019	8	0%	-0.016	1007	0.016	Decreasing
	Sulfate	mg/L	2015 - 2019	8	0%	-0.016	799	6E-06	Decreasing
	Potassium (dissolved)	mg/L	2015 - 2019	8	0%	-0.001	39	0.010	Decreasing
	Sodium (dissolved)	mg/L	2015 - 2019	8	0%	-0.017	940	0.005	Decreasing
	Bromide	mg/L	2015 - 2019	8	0%	-2E-04	12	0.470	No trend
	Fluoride	mg/L	2015 - 2019	8	13%	-5E-04	24	0.028	Decreasing
	Barium (dissolved)	mg/L	2015 - 2019	4	0%	-1E-05	0.529	0.445	No trend
	Boron (dissolved)	mg/L	2015 - 2019	4	0%	-2E-05	2.19	0.852	No trend
EW1b-13	Chloride	mg/L	2015 - 2019	10	0%	0.003	181	0.736	No trend
	Sulfate	mg/L	2015 - 2019	10	0%	-0.015	784	0.001	Decreasing
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-0.001	34	0.008	Decreasing
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.020	1026	0.020	Decreasing
	Bromide	mg/L	2015 - 2019	10	0%	-1E-04	7	0.810	No trend
	Fluoride	mg/L	2015 - 2019	10	20%	-5E-04	24	0.038	Decreasing
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-9E-06	0.45	0.286	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	-4E-05	3.05	0.523	No trend
EW1c-13	Chloride	mg/L	2015 - 2019	10	0%	0.005	121	0.727	No trend
	Sulfate	mg/L	2015 - 2019	10	0%	-0.007	434	0.109	No trend
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-0.001	39	0.003	Decreasing
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.018	947	0.017	Decreasing
	Bromide	mg/L	2015 - 2019	10	0%	3E-04	-11	0.483	No trend
	Fluoride	mg/L	2015 - 2019	10	10%	-4E-04	17	0.115	No trend
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-4E-06	0.21	0.377	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	-1E-05	1.8	0.917	No trend

Notes:

Linear regressions were performed using data from the last 5 years (2014 - 2019).

No test was performed on data sets with 100% non-detects.

Probability of significance: A value less than 0.05 indicates greater than 95 percent confidence of a statistically significant trend.

(1)

A trend was not calculated. Non-detect results have been reported in recent monitoring events with detection limits above previous detected results. This yields ambiguous data comparisons that may not be meaningfully assessed for temporal trend.

Table 15

Linear Regression Results
Clean Harbors Canada , Inc.
Lambton County, Ontario

Well	Analyte	Unit	Date Range	Number of Samples	Percent Non-Detect	Linear Regression			
						Slope	Intercept	Probability	Conclusion
EW2a-01	Chloride	mg/L	2015 - 2019	8	0%	0.002	37	0.440	No trend
	Sulfate	mg/L	2015 - 2019	8	0%	-0.013	567	0.120	No trend
	Potassium (dissolved)	mg/L	2015 - 2019	8	0%	-4E-04	21	0.003	Decreasing
	Sodium (dissolved)	mg/L	2015 - 2019	8	0%	-0.007	419	0.134	No trend
	Bromide	mg/L	2015 - 2019	8	0%	3E-05	-0.30	0.657	No trend
	Fluoride	mg/L	2015 - 2019	8	0%	-9E-05	5.06	0.295	No trend
	Barium (dissolved)	mg/L	2015 - 2019	4	0%	-2E-05	0.99	0.689	No trend
	Boron (dissolved)	mg/L	2015 - 2019	4	0%	3E-05	0.03	0.872	No trend
EW2b-13	Chloride	mg/L	2015 - 2019	10	0%	-0.001	155	0.561	No trend
	Sulfate	mg/L	2015 - 2019	10	0%	-0.013	549	1E-03	Decreasing
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-4E-04	21	0.001	Decreasing
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.007	416	0.005	Decreasing
	Bromide	mg/L	2015 - 2019	10	10%	-1E-04	6.2	0.519	No trend
	Fluoride	mg/L	2015 - 2019	10	10%	-2E-04	8	0.450	No trend
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-1E-05	0.603	0.012	Decreasing
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	-3E-05	2.330	0.772	No trend
EW2c-13	Chloride	mg/L	2015 - 2019	10	0%	-0.001	147	0.660	No trend
	Sulfate	mg/L	2015 - 2019	10	0%	-0.030	1319	6E-04	Decreasing
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-5E-04	26	0.001	Decreasing
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.008	444	0.004	Decreasing
	Bromide	mg/L	2015 - 2019	10	10%	-9E-05	4.54	0.602	No trend
	Fluoride	mg/L	2015 - 2019	10	10%	-2E-04	9	0.404	No trend
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	2E-05	-0.714	0.101	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	-2E-06	1.25	0.978	No trend

Notes:

Linear regressions were performed using data from the last 5 years (2014 - 2019).

No test was performed on data sets with 100% non-detects.

Probability of significance: A value less than 0.05 indicates greater than 95 percent confidence of a statistically significant trend.

(1)

A trend was not calculated. Non-detect results have been reported in recent monitoring events with detection limits above previous detected results. This yields ambiguous data comparisons that may not be meaningfully assessed for temporal trend.

Table 15

Linear Regression Results
Clean Harbors Canada , Inc.
Lambton County, Ontario

Well	Analyte	Unit	Date Range	Number of Samples	Percent Non-Detect	Linear Regression			
						Slope	Intercept	Probability	Conclusion
OW32-90D	Chloride	mg/L	2015 - 2019	10	0%	0.005	111	0.670	No trend
	Sulfate	mg/L	2015 - 2019	10	90%	-8E-05	4.03	0.430	Over 50% non-detect
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-4E-04	18	0.132	No trend
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.002	335	0.873	No trend
	Bromide	mg/L	2015 - 2019	10	70%	-2E-04	9	0.078	Over 50% non-detect
	Fluoride	mg/L	2015 - 2019	10	10%	-4E-04	20	0.095	No trend
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-9E-05	3.82	0.023	Decreasing
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	-1E-06	1.53	0.996	No trend
OW32-90S	Chloride	mg/L	2015 - 2019	10	0%	-0.005	216	0.003	Decreasing
	Sulfate	mg/L	2015 - 2019	10	0%	0.015	-279	0.623	No trend
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-2E-04	9	0.569	No trend
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.005	225	0.102	No trend
	Bromide	mg/L	2015 - 2019	10	100%	0E+00	0.125	1.000	No detected results
	Fluoride	mg/L	2015 - 2019	10	60%	-3E-04	12	0.003	Over 50% non-detect
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-2E-05	0.790	0.127	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	-3E-05	1.704	0.096	No trend
OW35-05D	Chloride	mg/L	2015 - 2019	9	0%	0.024	-748	0.052	Increasing
	Sulfate	mg/L	2015 - 2019	9	100%	-2E-04	8.73	0.004	No detected results
	Potassium (dissolved)	mg/L	2015 - 2019	9	0%	-7E-05	4.83	0.082	No trend
	Sodium (dissolved)	mg/L	2015 - 2019	9	0%	-0.004	424	0.472	No trend
	Bromide	mg/L	2015 - 2019	9	56%	-3E-04	12	0.031	Over 50% non-detect
	Fluoride	mg/L	2015 - 2019	9	22%	-0.001	26	3E-02	Decreasing
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-2E-05	1.040	0.443	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	-2E-04	8.5	0.357	No trend

Notes:

Linear regressions were performed using data from the last 5 years (2014 - 2019).

No test was performed on data sets with 100% non-detects.

Probability of significance: A value less than 0.05 indicates greater than 95 percent confidence of a statistically significant trend.

(1)

A trend was not calculated. Non-detect results have been reported in recent monitoring events with detection limits above previous detected results. This yields ambiguous data comparisons that may not be meaningfully assessed for temporal trend.

Table 15

Linear Regression Results
Clean Harbors Canada , Inc.
Lambton County, Ontario

Well	Analyte	Unit	Date Range	Number of Samples	Percent Non-Detect	Linear Regression			
						Slope	Intercept	Probability	Conclusion
OW35-90S	Chloride	mg/L	2015 - 2019	10	0%	-0.002	78	0.188	No trend
	Sulfate	mg/L	2015 - 2019	10	0%	0.110	-4225	0.027	Increasing
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	2E-04	-4	0.541	No trend
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.008	379	0.033	Decreasing
	Bromide	mg/L	2015 - 2019	10	100%	7E-05	-2.668	0.025	No detected results
	Fluoride	mg/L	2015 - 2019	10	60%	-3E-04	13	0.010	Over 50% non-detect
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-2E-05	0.834	0.120	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	-3E-05	1.58	0.710	No trend
PW1-N	Chloride	mg/L	2015 - 2019	10	0%	-0.023	1353	0.379	No trend
	Sulfate	mg/L	2015 - 2019	10	30%	0.003	-126	0.006	Increasing
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-3E-04	17	0.174	No trend
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.028	1533	0.197	No trend
	Bromide	mg/L	2015 - 2019	10	70%	-2E-04	10	0.192	Over 50% non-detect
	Fluoride	mg/L	2015 - 2019	10	30%	-7E-04	29	2E-04	Decreasing
	Barium (dissolved)	mg/L	2015 - 2019	6	0%	-2E-04	8.5	0.040	Decreasing
	Boron (dissolved)	mg/L	2015 - 2019	6	0%	-4E-04	20	0.057	No trend
PW2-S(R11)	Chloride	mg/L	2015 - 2019	10	0%	-0.068	3283	0.003	Decreasing
	Sulfate	mg/L	2015 - 2019	10	50%	0.003	-137	0.012	Increasing
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	9E-05	-1.51	0.709	No trend
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.104	4793	0.001	Decreasing
	Bromide	mg/L	2015 - 2019	10	80%	-2E-04	8	0.212	Over 50% non-detect
	Fluoride	mg/L	2015 - 2019	10	10%	-0.001	23	0.013	Decreasing
	Barium (dissolved)	mg/L	2015 - 2019	6	0%	-7E-05	3.3	0.143	No trend
	Boron (dissolved)	mg/L	2015 - 2019	6	0%	-7E-04	33	0.049	Decreasing

Notes:

Linear regressions were performed using data from the last 5 years (2014 - 2019).

No test was performed on data sets with 100% non-detects.

Probability of significance: A value less than 0.05 indicates greater than 95 percent confidence of a statistically significant trend.

(1)

A trend was not calculated. Non-detect results have been reported in recent monitoring events with detection limits above previous detected results. This yields ambiguous data comparisons that may not be meaningfully assessed for temporal trend.

Table 15

Linear Regression Results
Clean Harbors Canada , Inc.
Lambton County, Ontario

Well	Analyte	Unit	Date Range	Number of Samples	Percent Non-Detect	Linear Regression			
						Slope	Intercept	Probability	Conclusion
TW21-94-II	Chloride	mg/L	2015 - 2019	10	0%	-0.004	165	0.004	Decreasing
	Sulfate	mg/L	2015 - 2019	10	0%	-4E-04	298	0.990	No trend
	Potassium (dissolved)	mg/L	2015 - 2019	10	20%	-2E-04	8.7	0.619	No trend
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.008	369	0.082	No trend
	Bromide	mg/L	2015 - 2019	10	100%	4E-05	-1.43	0.124	No detected results
	Fluoride	mg/L	2015 - 2019	10	60%	-2E-04	7.43	0.072	Over 50% non-detect
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-4E-06	0.241	0.540	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	-1E-06	0.155	0.872	No trend
TW22-94	Chloride	mg/L	2015 - 2019	10	0%	1E-04	55	0.974	No trend
	Sulfate	mg/L	2015 - 2019	10	0%	0.088	-3238	0.010	Increasing
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-4E-04	19.27	0.194	No trend
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.015	724	0.022	Decreasing
	Bromide	mg/L	2015 - 2019	10	100%	1E-04	-4.04	0.002	No detected results
	Fluoride	mg/L	2015 - 2019	10	60%	-6E-04	24	0.008	Over 50% non-detect
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-2E-06	0.088	0.013	Decreasing
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	-2E-05	0.86	0.400	No trend
TW22-99D	Chloride	mg/L	2015 - 2019	10	0%	0.016	437	0.662	No trend
	Sulfate	mg/L	2015 - 2019	10	100%	0.002	-66	0.002	No detected results
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-6E-04	29	0.076	No trend
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.043	2787	0.137	No trend
	Bromide	mg/L	2015 - 2019	10	90%	8E-04	-36	0.001	Over 50% non-detect
	Fluoride	mg/L	2015 - 2019	10	60%	4E-04	-17	0.003	Over 50% non-detect
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-6E-05	2.88	0.087	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	-6E-04	28	0.362	No trend

Notes:

Linear regressions were performed using data from the last 5 years (2014 - 2019).

No test was performed on data sets with 100% non-detects.

Probability of significance: A value less than 0.05 indicates greater than 95 percent confidence of a statistically significant trend.

(1)

A trend was not calculated. Non-detect results have been reported in recent monitoring events with detection limits above previous detected results. This yields ambiguous data comparisons that may not be meaningfully assessed for temporal trend.

Table 15

**Linear Regression Results
Clean Harbors Canada , Inc.
Lambton County, Ontario**

Well	Analyte	Unit	Date Range	Number of Samples	Percent Non-Detect	Linear Regression			
						Slope	Intercept	Probability	Conclusion
TW30-94	Chloride	mg/L	2015 - 2019	10	0%	-7E-04	37.6	0.057	No trend
	Sulfate	mg/L	2015 - 2019	10	0%	0.005	-95	0.704	No trend
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-7E-04	31.1	0.151	No trend
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-1E-04	44	0.963	No trend
	Bromide	mg/L	2015 - 2019	10	100%	-2E-05	1.06	0.124	No detected results
	Fluoride	mg/L	2015 - 2019	10	20%	0.000	21	0.123	No trend
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-1E-05	0.502	0.152	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	-3E-05	1.38	0.241	No trend
TW30-99D	Chloride	mg/L	2015 - 2019	10	0%	0.017	-507	0.088	No trend
	Sulfate	mg/L	2015 - 2019	10	100%	-2E-04	8.82	0.002	No detected results
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-3E-04	17.0	0.142	No trend
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.020	1073	0.022	Decreasing
	Bromide	mg/L	2015 - 2019	10	70%	-3E-04	13	0.020	Over 50% non-detect
	Fluoride	mg/L	2015 - 2019	10	20%	-4E-04	19	0.168	No trend
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-3E-05	1.65	0.234	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	-2E-04	10.3	0.310	No trend
TW32-94-I	Chloride	mg/L	2015 - 2017	4	0%	-2.666	117722	0.551	No trend
	Sulfate	mg/L	2015 - 2017	4	75%	0.001	-45	0.873	Over 50% non-detect
	Potassium (dissolved)	mg/L	2015 - 2017	4	0%	-0.013	569	0.414	No trend
	Sodium (dissolved)	mg/L	2015 - 2017	4	0%	-2.99	130810	0.344	No trend
	Bromide	mg/L	2015 - 2017	4	75%	0.002	-73	0.659	Over 50% non-detect
	Fluoride	mg/L	2015 - 2017	4	50%	0.002	-71	0.665	No trend
	Barium (dissolved)	mg/L	2015 - 2017	2	0%	--	--	--	Insufficient data
	Boron (dissolved)	mg/L	2015 - 2017	2	0%	--	--	--	Insufficient data

Notes:

Linear regressions were performed using data from the last 5 years (2014 - 2019).

No test was performed on data sets with 100% non-detects.

Probability of significance: A value less than 0.05 indicates greater than 95 percent confidence of a statistically significant trend.

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Table 15

Linear Regression Results
Clean Harbors Canada , Inc.
Lambton County, Ontario

Well	Analyte	Unit	Date Range	Number of Samples	Percent Non-Detect	Linear Regression			
						Slope	Intercept	Probability	Conclusion
TW32-94-II	Chloride	mg/L	2015 - 2019	7	0%	0.247	-10076	0.063	No trend
	Sulfate	mg/L	2015 - 2019	7	100%	3E-04	-10.14	0.046	No detected results
	Potassium (dissolved)	mg/L	2015 - 2019	7	0%	6E-04	-21	0.138	No trend
	Sodium (dissolved)	mg/L	2015 - 2019	7	0%	0.127	-5035	0.162	No trend
	Bromide	mg/L	2015 - 2019	7	50%	-1E-04	5	0.577	No trend
	Fluoride	mg/L	2015 - 2019	7	33%	-0.001	26	0.052	Decreasing
	Barium (dissolved)	mg/L	2015 - 2018	4	0%	-3E-05	1.56	0.805	No trend
	Boron (dissolved)	mg/L	2015 - 2018	4	0%	1E-04	-2.0	0.838	No trend
TW32-94-IV	Chloride	mg/L	2015 - 2019	10	0%	-0.009	410	0.007	Decreasing
	Sulfate	mg/L	2015 - 2019	10	0%	-0.096	4367	0.112	No trend
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-8E-04	34	0.121	No trend
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.026	1160	0.011	Decreasing
	Bromide	mg/L	2015 - 2019	10	100%	-2E-05	1.060	0.124	No detected results
	Fluoride	mg/L	2015 - 2019	10	50%	-4E-04	17	0.020	Decreasing
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	5E-06	-0.177	0.378	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	-1E-05	0.641	0.750	No trend
TW39-99D	Chloride	mg/L	2015 - 2019	10	0%	-0.063	2997	2E-04	Decreasing
	Sulfate	mg/L	2015 - 2019	10	100%	-2E-04	7.74	0.017	No detected results
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-4E-04	17.5	0.002	Decreasing
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.069	3224	5E-05	Decreasing
	Bromide	mg/L	2015 - 2019	10	60%	-3E-04	11	0.160	Over 50% non-detect
	Fluoride	mg/L	2015 - 2019	10	20%	-3E-04	12	0.379	No trend
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-5E-05	2.42	0.020	Decreasing
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	-2E-04	10.27	0.084	No trend

Notes:

Linear regressions were performed using data from the last 5 years (2014 - 2019).

No test was performed on data sets with 100% non-detects.

Probability of significance: A value less than 0.05 indicates greater than 95 percent confidence of a statistically significant trend.

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Table 15

Linear Regression Results
Clean Harbors Canada , Inc.
Lambton County, Ontario

Well	Analyte	Unit	Date Range	Number of Samples	Percent Non-Detect	Linear Regression			
						Slope	Intercept	Probability	Conclusion
TW39-99I	Chloride	mg/L	2015 - 2019	10	0%	-0.001	72	0.072	No trend
	Sulfate	mg/L	2015 - 2019	10	0%	0.019	-498	0.041	Increasing
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	2E-04	-6.54	0.366	No trend
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.007	355	0.031	Decreasing
	Bromide	mg/L	2015 - 2019	10	50%	-1E-04	4.91	0.188	No trend
	Fluoride	mg/L	2015 - 2019	10	20%	-2E-04	10	0.186	No trend
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-2E-05	0.89	0.125	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	2E-05	-0.683	0.400	No trend
TW39-99S	Chloride	mg/L	2015 - 2019	10	0%	-0.001	73	0.155	No trend
	Sulfate	mg/L	2015 - 2019	10	0%	0.015	-362	0.064	No trend
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-7E-04	31	0.059	No trend
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.013	625	0.030	Decreasing
	Bromide	mg/L	2015 - 2019	10	60%	-6E-05	3	0.526	Over 50% non-detect
	Fluoride	mg/L	2015 - 2019	10	20%	-3E-04	14	0.083	No trend
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-7E-06	0.341	0.111	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	-5E-05	2.62	0.233	No trend
TW40-99D	Chloride	mg/L	2015 - 2019	10	0%	-0.050	2480	0.066	No trend
	Sulfate	mg/L	2015 - 2019	10	100%	-1E-04	6.35	0.071	No detected results
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-4E-04	19	0.074	No trend
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.052	2495	0.023	Decreasing
	Bromide	mg/L	2015 - 2019	10	70%	-2E-04	11	0.106	Over 50% non-detect
	Fluoride	mg/L	2015 - 2019	10	30%	-5E-04	23	0.029	Decreasing
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-9E-05	4.27	0.102	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	-4E-04	17	0.042	Decreasing

Notes:

Linear regressions were performed using data from the last 5 years (2014 - 2019).

No test was performed on data sets with 100% non-detects.

Probability of significance: A value less than 0.05 indicates greater than 95 percent confidence of a statistically significant trend.

(1)

A trend was not calculated. Non-detect results have been reported in recent monitoring events with detection limits above previous detected results. This yields ambiguous data comparisons that may not be meaningfully assessed for temporal trend.

Table 15

Linear Regression Results
Clean Harbors Canada , Inc.
Lambton County, Ontario

Well	Analyte	Unit	Date Range	Number of Samples	Percent Non-Detect	Linear Regression			
						Slope	Intercept	Probability	Conclusion
TW40-99S	Chloride	mg/L	2015 - 2019	10	0%	0.001	-16	0.197	No trend
	Sulfate	mg/L	2015 - 2019	10	0%	0.101	-4085	1E-04	Increasing
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-5E-04	26	0.094	No trend
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.001	112	0.512	No trend
	Bromide	mg/L	2015 - 2019	10	100%	0E+00	0.125	1.000	No detected results
	Fluoride	mg/L	2015 - 2019	10	20%	-4E-04	19	0.055	No trend
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-2E-05	0.780	0.157	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	-1E-05	0.625	0.735	No trend
TW41-99D	Chloride	mg/L	2015 - 2019	10	0%	0.011	-265	0.100	No trend
	Sulfate	mg/L	2015 - 2019	10	100%	-2E-04	9	0.002	No detected results
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-3E-04	15	0.030	Decreasing
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.022	1161	0.026	Decreasing
	Bromide	mg/L	2015 - 2019	10	70%	-4E-05	2	0.801	Over 50% non-detect
	Fluoride	mg/L	2015 - 2019	10	20%	-4E-04	18	0.187	No trend
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-5E-05	2.4	0.103	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	7E-05	-1.4	0.644	No trend
TW41-99S	Chloride	mg/L	2015 - 2019	10	0%	-0.003	156	0.665	No trend
	Sulfate	mg/L	2015 - 2019	10	0%	0.126	-5054	0.008	Increasing
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	4E-04	-16	0.082	No trend
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.004	210	0.181	No trend
	Bromide	mg/L	2015 - 2019	10	50%	4E-04	-17.4	0.341	No trend
	Fluoride	mg/L	2015 - 2019	10	60%	-3E-04	13	0.002	Over 50% non-detect
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-8E-06	0.379	0.271	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	2E-05	-0.914	0.636	No trend

Notes:

Linear regressions were performed using data from the last 5 years (2014 - 2019).

No test was performed on data sets with 100% non-detects.

Probability of significance: A value less than 0.05 indicates greater than 95 percent confidence of a statistically significant trend.

(1)

A trend was not calculated. Non-detect results have been reported in recent monitoring events with detection limits above previous detected results. This yields ambiguous data comparisons that may not be meaningfully assessed for temporal trend.

Table 15

Linear Regression Results
Clean Harbors Canada , Inc.
Lambton County, Ontario

Well	Analyte	Unit	Date Range	Number of Samples	Percent Non-Detect	Linear Regression			
						Slope	Intercept	Probability	Conclusion
TW42-99D	Chloride	mg/L	2015 - 2017	3	0%	0.508	-19110	0.432	Insufficient data
	Sulfate	mg/L	2015 - 2017	3	100%	0.004	-174	0.391	No detected results
	Potassium (dissolved)	mg/L	2015 - 2017	3	0%	-0.005	223	0.149	Insufficient data
	Sodium (dissolved)	mg/L	2015 - 2017	3	0%	0.058	-433	0.258	Insufficient data
	Bromide	mg/L	2015 - 2017	3	67%	0.003	-112	0.162	Insufficient data
	Fluoride	mg/L	2015 - 2017	3	33%	0.003	-106	0.164	(1)
	Barium (dissolved)	mg/L	2015 - 2017	2	0%	--	--	--	Insufficient data
	Boron (dissolved)	mg/L	2015 - 2017	2	0%	--	--	--	Insufficient data
TW42-99S	Chloride	mg/L	2015 - 2019	8	0%	0.008	-313	0.089	No trend
	Sulfate	mg/L	2015 - 2019	8	0%	0.132	-3979	0.148	No trend
	Potassium (dissolved)	mg/L	2015 - 2019	8	0%	-8E-04	40.0	0.426	No trend
	Sodium (dissolved)	mg/L	2015 - 2019	8	0%	-0.002	151	0.681	No trend
	Bromide	mg/L	2015 - 2019	8	100%	5E-04	-22	0.012	No detected results
	Fluoride	mg/L	2015 - 2019	8	63%	8E-05	-3	0.677	Over 50% non-detect
	Barium (dissolved)	mg/L	2015 - 2019	5	20%	-1E-05	0.581	0.381	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	3E-05	-1.0	0.604	No trend
TW43-99D	Chloride	mg/L	2015 - 2019	10	0%	0.019	-574	0.021	Increasing
	Sulfate	mg/L	2015 - 2019	10	100%	-2E-04	8.8	0.002	No detected results
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-2E-04	11	0.013	Decreasing
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.016	879	0.112	No trend
	Bromide	mg/L	2015 - 2019	10	70%	-1E-05	1	0.908	Over 50% non-detect
	Fluoride	mg/L	2015 - 2019	10	20%	0.000	15	0.153	No trend
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-6E-05	2.6	0.258	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	-1E-05	1.9	0.813	No trend

Notes:

Linear regressions were performed using data from the last 5 years (2014 - 2019).

No test was performed on data sets with 100% non-detects.

Probability of significance: A value less than 0.05 indicates greater than 95 percent confidence of a statistically significant trend.

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Table 15

Linear Regression Results
Clean Harbors Canada, Inc.
Lambton County, Ontario

Well	Analyte	Unit	Date Range	Number of Samples	Percent Non-Detect	Linear Regression			
						Slope	Intercept	Probability	Conclusion
TW43-99S	Chloride	mg/L	2015 - 2019	10	0%	6E-05	8	0.964	No trend
	Sulfate	mg/L	2015 - 2019	10	0%	-0.038	1774	0.452	No trend
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-4E-05	3.3	0.895	No trend
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.011	494	0.055	No trend
	Bromide	mg/L	2015 - 2019	10	100%	-3E-05	1.5	0.147	No detected results
	Fluoride	mg/L	2015 - 2019	10	40%	-3E-04	13	0.062	No trend
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-6E-06	0.290	0.488	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	2E-06	0.0	0.982	No trend
TW45-99D	Chloride	mg/L	2015 - 2019	10	0%	0.446	-18411	0.003	Increasing
	Sulfate	mg/L	2015 - 2019	10	80%	4E-04	-16	0.494	Over 50% non-detect
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	6E-04	-23.7	0.072	No trend
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	0.306	-12339	0.018	Increasing
	Bromide	mg/L	2015 - 2019	10	100%	7E-04	-31	0.005	No detected results
	Fluoride	mg/L	2015 - 2019	10	60%	5E-04	-19.7	0.026	Over 50% non-detect
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-7E-06	0.5	0.897	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	8E-04	-30	0.128	No trend
TW45-99S	Chloride	mg/L	2015 - 2019	10	0%	-0.013	601	0.115	No trend
	Sulfate	mg/L	2015 - 2019	10	0%	-0.024	1156	0.243	No trend
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-6E-04	27	0.079	No trend
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.008	399	0.017	Decreasing
	Bromide	mg/L	2015 - 2019	10	100%	0E+00	0.125	1.000	No detected results
	Fluoride	mg/L	2015 - 2019	10	50%	-3E-04	12	0.038	Decreasing
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-4E-05	1.8	0.218	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	2E-05	-0.852	0.040	Increasing

Notes:

Linear regressions were performed using data from the last 5 years (2014 - 2019).

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Table 15

Linear Regression Results
Clean Harbors Canada , Inc.
Lambton County, Ontario

Well	Analyte	Unit	Date Range	Number of Samples	Percent Non-Detect	Linear Regression			
						Slope	Intercept	Probability	Conclusion
TW46-99D	Chloride	mg/L	2015 - 2019	10	0%	0.002	122	0.761	No trend
	Sulfate	mg/L	2015 - 2019	10	100%	-1E-04	6	0.116	No detected results
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-2E-04	11	0.020	Decreasing
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.017	964	0.062	No trend
	Bromide	mg/L	2015 - 2019	10	70%	-3E-04	12	0.050	Over 50% non-detect
	Fluoride	mg/L	2015 - 2019	10	30%	-6E-04	25	0.045	Decreasing
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-6E-05	2.9	0.023	Decreasing
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	-4E-05	3.419	0.781	No trend
TW46-99I	Chloride	mg/L	2015 - 2019	10	0%	4E-04	25	0.731	No trend
	Sulfate	mg/L	2015 - 2019	10	0%	0.041	-1337	0.010	Increasing
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-6E-05	4.5	0.677	No trend
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.002	125	0.459	No trend
	Bromide	mg/L	2015 - 2019	10	100%	0E+00	0.125	1.000	No detected results
	Fluoride	mg/L	2015 - 2019	10	50%	-3E-04	13	0.019	Decreasing
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-3E-05	1.371	0.066	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	-6E-06	0.365	0.706	No trend
TW46-99S	Chloride	mg/L	2015 - 2019	10	0%	-0.005	269	0.435	No trend
	Sulfate	mg/L	2015 - 2019	10	0%	0.018	27	0.731	No trend
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-0.002	88	0.036	Decreasing
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.024	1149	0.004	Decreasing
	Bromide	mg/L	2015 - 2019	10	90%	7E-05	-2.9	0.054	Over 50% non-detect
	Fluoride	mg/L	2015 - 2019	10	50%	-4E-04	16	7E-04	Decreasing
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-2E-05	0.88	0.120	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	-0.001	62	0.050	Decreasing

Notes:

Linear regressions were performed using data from the last 5 years (2014 - 2019).

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Table 15

Linear Regression Results
Clean Harbors Canada , Inc.
Lambton County, Ontario

Well	Analyte	Unit	Date Range	Number of Samples	Percent Non-Detect	Linear Regression			
						Slope	Intercept	Probability	Conclusion
TW47-00D	Chloride	mg/L	2015 - 2019	10	0%	-0.590	27102	0.096	No trend
	Sulfate	mg/L	2015 - 2019	10	90%	0.001	-22	0.297	Over 50% non-detect
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-0.002	91	0.011	Decreasing
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.662	29776	0.049	Decreasing
	Bromide	mg/L	2015 - 2019	10	80%	-5E-04	24	0.538	Over 50% non-detect
	Fluoride	mg/L	2015 - 2019	10	60%	4E-04	-18	0.012	Over 50% non-detect
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-7E-04	31	0.434	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	-0.002	69	0.181	No trend
TW48-00D	Chloride	mg/L	2015 - 2019	10	0%	-0.043	2214	0.070	No trend
	Sulfate	mg/L	2015 - 2019	10	90%	-2E-04	10	0.123	Over 50% non-detect
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-3E-04	15	0.244	No trend
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.088	4141	0.007	Decreasing
	Bromide	mg/L	2015 - 2019	10	60%	-2E-04	9	0.159	Over 50% non-detect
	Fluoride	mg/L	2015 - 2019	10	30%	-0.001	34	0.028	Decreasing
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-2E-04	11.0	0.165	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	-1E-04	7	0.718	No trend
TW48-16S	Chloride	mg/L	2016 - 2019	8	0%	6E-04	-6	0.671	No trend
	Sulfate	mg/L	2016 - 2019	8	0%	0.002	111	0.872	No trend
	Potassium (dissolved)	mg/L	2016 - 2019	8	0%	-7E-04	33	0.041	Decreasing
	Sodium (dissolved)	mg/L	2016 - 2019	8	0%	-0.008	399	0.090	No trend
	Bromide	mg/L	2016 - 2019	8	100%	0	0.125	1.000	No detected results
	Fluoride	mg/L	2016 - 2019	8	25%	-2E-04	10	0.504	No trend
	Barium (dissolved)	mg/L	2016 - 2019	4	0%	9E-08	0.03	0.990	No trend
	Boron (dissolved)	mg/L	2016 - 2019	4	0%	-5E-05	2.3	0.480	No trend

Notes:

Linear regressions were performed using data from the last 5 years (2014 - 2019).

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Table 15

Linear Regression Results
Clean Harbors Canada, Inc.
Lambton County, Ontario

Well	Analyte	Unit	Date Range	Number of Samples	Percent Non-Detect	Linear Regression			
						Slope	Intercept	Probability	Conclusion
TW49-00D	Chloride	mg/L	2015 - 2019	10	0%	0.001	32.0	0.513	No trend
	Sulfate	mg/L	2015 - 2019	10	90%	-4E-04	17	0.016	Over 50% non-detect
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-5E-04	25	5E-04	Decreasing
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.007	439	0.112	No trend
	Bromide	mg/L	2015 - 2019	10	10%	5E-05	-1.5	0.608	No trend
	Fluoride	mg/L	2015 - 2019	10	10%	-4E-04	18	0.129	No trend
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-8E-05	3.6	0.193	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	-4E-06	1.3	0.948	No trend
TW50-02A	Chloride	mg/L	2016 - 2018	8	0%	-0.015	647	0.038	Decreasing
	Sulfate	mg/L	2016 - 2018	8	0%	0.109	-4150	0.010	Increasing
	Potassium (dissolved)	mg/L	2016 - 2018	8	0%	1E-04	-3	0.800	No trend
	Sodium (dissolved)	mg/L	2016 - 2018	8	0%	-0.021	936	0.001	Decreasing
	Bromide	mg/L	2017 - 2018	6	100%	1E-04	-4.9	0.346	No detected results
	Fluoride	mg/L	2017 - 2018	6	50%	-0.001	50	0.174	No trend
	Barium (dissolved)	mg/L	2016 - 2018	3	0%	-1E-05	0.470	0.245	No trend
	Boron (dissolved)	mg/L	2016 - 2018	3	0%	1E-04	-5.1	0.301	No trend
TW50-02B	Chloride	mg/L	2015 - 2019	9	0%	-0.002	112	0.160	No trend
	Sulfate	mg/L	2016 - 2019	9	0%	-0.098	4377	0.091	No trend
	Potassium (dissolved)	mg/L	2016 - 2019	9	0%	-3E-04	17	0.377	No trend
	Sodium (dissolved)	mg/L	2015 - 2019	9	0%	-0.016	723	0.291	No trend
	Bromide	mg/L	2017 - 2019	7	100%	0E+00	0.125	1.000	No detected results
	Fluoride	mg/L	2017 - 2019	7	71%	-0.001	56	0.044	Over 50% non-detect
	Barium (dissolved)	mg/L	2016 - 2019	4	0%	5E-06	-0.197	0.357	No trend
	Boron (dissolved)	mg/L	2016 - 2019	4	0%	-1E-04	6	0.266	No trend

Notes:

Linear regressions were performed using data from the last 5 years (2014 - 2019).

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Table 15

Linear Regression Results
Clean Harbors Canada , Inc.
Lambton County, Ontario

Well	Analyte	Unit	Date Range	Number of Samples	Percent Non-Detect	Linear Regression			
						Slope	Intercept	Probability	Conclusion
TW51-02A	Chloride	mg/L	2016 - 2018	8	0%	-0.002	101	0.269	No trend
	Sulfate	mg/L	2016 - 2018	8	0%	0.164	-6638	0.026	Increasing
	Potassium (dissolved)	mg/L	2016 - 2018	8	0%	5E-05	0.1	0.816	No trend
	Sodium (dissolved)	mg/L	2016 - 2018	8	0%	-0.006	278	0.015	Decreasing
	Bromide	mg/L	2017 - 2018	6	100%	0E+00	0.125	1.000	No detected results
	Fluoride	mg/L	2017 - 2018	6	50%	-0.001	57	0.079	No trend
	Barium (dissolved)	mg/L	2016 - 2018	3	0%	-2E-05	0.900	0.106	No trend
	Boron (dissolved)	mg/L	2016 - 2018	3	0%	-2E-05	0.877	0.389	No trend
TW51-02B	Chloride	mg/L	2016 - 2019	9	0%	0.001	-9.6	0.713	No trend
	Sulfate	mg/L	2016 - 2019	9	0%	0.074	-2715	0.048	Increasing
	Potassium (dissolved)	mg/L	2016 - 2019	9	0%	-4E-04	23	0.215	No trend
	Sodium (dissolved)	mg/L	2016 - 2019	9	0%	-0.015	739	0.017	Decreasing
	Bromide	mg/L	2017 - 2019	7	100%	-5E-06	0.346	0.959	No detected results
	Fluoride	mg/L	2017 - 2019	7	29%	-5E-04	22	0.463	No trend
	Barium (dissolved)	mg/L	2016 - 2019	4	0%	-1E-06	0.064	0.802	No trend
	Boron (dissolved)	mg/L	2016 - 2019	4	0%	-5E-05	2.694	0.265	No trend
TW52-02A	Chloride	mg/L	2015 - 2019	9	0%	-0.019	859	0.054	Decreasing
	Sulfate	mg/L	2015 - 2019	8	0%	0.077	-2783	0.244	No trend
	Potassium (dissolved)	mg/L	2015 - 2019	8	0%	-4E-04	21	0.265	No trend
	Sodium (dissolved)	mg/L	2015 - 2019	9	0%	-0.017	803	0.002	Decreasing
	Bromide	mg/L	2015 - 2019	8	100%	0E+00	0.125	1.000	No detected results
	Fluoride	mg/L	2015 - 2019	8	50%	-0.001	27	0.033	Decreasing
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-1E-06	0.058	0.830	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	-2E-05	1.00	0.786	No trend

Notes:

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Clean Harbors Canada , Inc.
Lambton County, Ontario

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TW52-02B	Chloride	mg/L	2015 - 2019	8	0%	1E-04	4	0.949	No trend
	Sulfate	mg/L	2015 - 2019	8	0%	0.061	-2334	0.179	No trend
	Potassium (dissolved)	mg/L	2015 - 2019	8	0%	5E-05	0.7	0.880	No trend
	Sodium (dissolved)	mg/L	2015 - 2019	8	0%	0.007	-247	0.678	No trend
	Bromide	mg/L	2015 - 2019	8	100%	0E+00	0.125	1.000	No detected results
	Fluoride	mg/L	2015 - 2019	8	25%	-3E-04	14	0.449	No trend
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-3E-05	1.3	0.135	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	7E-06	-0.07	0.931	No trend
TW53-03D	Chloride	mg/L	2015 - 2019	10	0%	0.008	25	0.675	No trend
	Sulfate	mg/L	2015 - 2019	10	100%	-1E-04	4.6	0.219	No detected results
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-4E-04	20	0.087	No trend
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.040	2011	0.031	Decreasing
	Bromide	mg/L	2015 - 2019	10	70%	-4E-04	15	0.067	Over 50% non-detect
	Fluoride	mg/L	2015 - 2019	10	30%	-5E-04	24	0.066	No trend
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-5E-05	2.3	0.028	Decreasing
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	-3E-04	13.9	0.103	No trend
TW53-03S	Chloride	mg/L	2015 - 2019	10	0%	-0.003	149	0.054	Decreasing
	Sulfate	mg/L	2015 - 2019	10	0%	0.032	-984	0.500	No trend
	Potassium (dissolved)	mg/L	2015 - 2019	10	20%	-1E-04	7	0.787	No trend
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.011	484	0.080	No trend
	Bromide	mg/L	2015 - 2019	10	100%	0E+00	0.125	1.000	No detected results
	Fluoride	mg/L	2015 - 2019	10	60%	-3E-04	13	0.007	Decreasing
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-1E-05	0.570	0.107	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	2E-05	-0.57	0.527	No trend

Notes:

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Linear Regression Results
Clean Harbors Canada , Inc.
Lambton County, Ontario

Well	Analyte	Unit	Date Range	Number of Samples	Percent Non-Detect	Linear Regression			
						Slope	Intercept	Probability	Conclusion
TW54-09D	Chloride	mg/L	2015 - 2019	10	0%	0.010	-292	0.038	Increasing
	Sulfate	mg/L	2015 - 2019	10	100%	-2E-04	11	0.000	No detected results
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-3E-04	15	0.013	Decreasing
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.010	583	0.171	No trend
	Bromide	mg/L	2015 - 2019	10	50%	-2E-04	8	0.140	No trend
	Fluoride	mg/L	2015 - 2019	10	10%	-3E-04	15	0.226	No trend
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-3E-05	1.3	0.158	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	-3E-05	3.0	0.733	No trend
TW55-09D	Chloride	mg/L	2015 - 2019	10	0%	0.035	-1121	0.032	Increasing
	Sulfate	mg/L	2015 - 2019	10	40%	-0.002	69	6E-03	Decreasing
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-3E-04	14.9	0.315	No trend
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.025	1394	0.101	No trend
	Bromide	mg/L	2015 - 2019	10	60%	-1E-05	1	0.891	Over 50% non-detect
	Fluoride	mg/L	2015 - 2019	10	20%	-0.001	32	0.010	Decreasing
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-3E-05	1.45	0.165	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	2E-04	-6.998	0.286	No trend
TW55-09S	Chloride	mg/L	2015 - 2019	10	0%	-8E-04	50	0.214	No trend
	Sulfate	mg/L	2015 - 2019	10	0%	-0.009	833	0.453	No trend
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-2E-04	10	0.154	No trend
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.003	193	0.206	No trend
	Bromide	mg/L	2015 - 2019	10	100%	0E+00	0.125	1.000	No detected results
	Fluoride	mg/L	2015 - 2019	10	30%	-3E-04	14	0.091	No trend
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-6E-06	0.296	0.116	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	-4E-06	0.40	0.930	No trend

Notes:

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Table 15

Linear Regression Results
Clean Harbors Canada , Inc.
Lambton County, Ontario

Well	Analyte	Unit	Date Range	Number of Samples	Percent Non-Detect	Linear Regression			
						Slope	Intercept	Probability	Conclusion
TW56-11D	Chloride	mg/L	2015 - 2019	10	0%	-0.005	506	0.548	No trend
	Sulfate	mg/L	2015 - 2019	10	70%	-0.001	47	0.023	Over 50% non-detect
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-6E-04	26.5	0.011	Decreasing
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.042	2082	0.018	Decreasing
	Bromide	mg/L	2015 - 2019	10	60%	-8E-05	4	0.434	Over 50% non-detect
	Fluoride	mg/L	2015 - 2019	10	20%	-4E-04	18	0.100	No trend
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-1E-05	0.72	0.151	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	-2E-04	9	0.237	No trend
TW56-11S	Chloride	mg/L	2015 - 2019	10	0%	-0.011	546	0.066	No trend
	Sulfate	mg/L	2015 - 2019	10	0%	-0.147	7223	0.172	No trend
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-9E-04	43	3E-04	Decreasing
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.013	628	0.003	Decreasing
	Bromide	mg/L	2015 - 2019	10	100%	1E-04	-5.1	0.062	No detected results
	Fluoride	mg/L	2015 - 2019	10	60%	-4E-04	17	0.003	Over 50% non-detect
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-1E-05	0.646	0.203	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	-8E-05	3.952	0.107	No trend
TW57-11D	Chloride	mg/L	2015 - 2019	10	0%	0.023	-578	0.489	No trend
	Sulfate	mg/L	2015 - 2019	10	100%	-6E-05	3.0	0.444	No detected results
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-2E-04	11	0.319	No trend
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.024	1378	0.482	No trend
	Bromide	mg/L	2015 - 2019	10	60%	-4E-06	0	0.975	Over 50% non-detect
	Fluoride	mg/L	2015 - 2019	10	30%	-0.001	30	0.004	Decreasing
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-3E-05	1.18	0.198	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	-1E-04	8	0.545	No trend

Notes:

Linear regressions were performed using data from the last 5 years (2014 - 2019).

No test was performed on data sets with 100% non-detects.

Probability of significance: A value less than 0.05 indicates greater than 95 percent confidence of a statistically significant trend.

(1)

A trend was not calculated. Non-detect results have been reported in recent monitoring events with detection limits above previous detected results. This yields ambiguous data comparisons that may not be meaningfully assessed for temporal trend.

Table 15

Linear Regression Results
Clean Harbors Canada , Inc.
Lambton County, Ontario

Well	Analyte	Unit	Date Range	Number of Samples	Percent Non-Detect	Linear Regression			
						Slope	Intercept	Probability	Conclusion
TW57-11S	Chloride	mg/L	2015 - 2019	10	0%	-0.005	221	0.042	Decreasing
	Sulfate	mg/L	2015 - 2019	10	0%	-0.128	6115	0.377	No trend
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-0.001	34	0.172	No trend
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.004	219	0.545	No trend
	Bromide	mg/L	2015 - 2019	10	100%	5E-05	-2.12	0.147	No detected results
	Fluoride	mg/L	2015 - 2019	10	30%	-5E-04	24	0.012	Decreasing
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-3E-07	0.036	0.962	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	-4E-06	0.32	0.898	No trend
TW58-11S	Chloride	mg/L	2015 - 2019	10	0%	-0.016	973	0.323	No trend
	Sulfate	mg/L	2015 - 2019	10	0%	0.090	-2747	0.122	No trend
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-5E-04	25	0.371	No trend
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.008	443	0.211	No trend
	Bromide	mg/L	2015 - 2019	10	90%	2E-04	-10.2	0.008	Over 50% non-detect
	Fluoride	mg/L	2015 - 2019	10	60%	-3E-04	13	0.011	Over 50% non-detect
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-5E-06	0.207	0.229	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	3E-06	0.133	0.953	No trend
TW59-13D	Chloride	mg/L	2015 - 2019	10	0%	0.002	36	0.516	No trend
	Sulfate	mg/L	2015 - 2019	10	70%	-0.001	61	0.004	Over 50% non-detect
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-2E-04	8.5	0.003	Decreasing
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.019	969	0.002	Decreasing
	Bromide	mg/L	2015 - 2019	10	40%	-1E-04	4.5	0.479	No trend
	Fluoride	mg/L	2015 - 2019	10	10%	-3E-04	14	0.284	No trend
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-5E-05	2.1	0.158	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	-2E-04	7.9	0.099	No trend

Notes:

Linear regressions were performed using data from the last 5 years (2014 - 2019).

No test was performed on data sets with 100% non-detects.

Probability of significance: A value less than 0.05 indicates greater than 95 percent confidence of a statistically significant trend.

(1)

A trend was not calculated. Non-detect results have been reported in recent monitoring events with detection limits above previous detected results. This yields ambiguous data comparisons that may not be meaningfully assessed for temporal trend.

Table 15

Linear Regression Results
Clean Harbors Canada , Inc.
Lambton County, Ontario

Well	Analyte	Unit	Date Range	Number of Samples	Percent Non-Detect	Linear Regression			
						Slope	Intercept	Probability	Conclusion
TW59-13S	Chloride	mg/L	2015 - 2019	10	0%	0.003	-129	0.004	Increasing
	Sulfate	mg/L	2015 - 2019	10	0%	-0.013	663	0.093	No trend
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-5E-05	4.56	0.795	No trend
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.008	395	0.076	No trend
	Bromide	mg/L	2015 - 2019	10	100%	-2E-05	1.06	0.124	No detected results
	Fluoride	mg/L	2015 - 2019	10	30%	-3E-04	14	0.212	No trend
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-3E-05	1.13	0.130	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	-5E-06	0.320	0.813	No trend
TW60-13D	Chloride	mg/L	2015 - 2019	10	0%	-0.123	6182	0.152	No trend
	Sulfate	mg/L	2015 - 2019	10	70%	0.001	-39	0.321	Over 50% non-detect
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-0.001	47	0.018	Decreasing
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.209	9743	0.046	Decreasing
	Bromide	mg/L	2015 - 2019	10	80%	5E-04	-19.1	0.077	No trend
	Fluoride	mg/L	2015 - 2019	10	60%	8E-06	0	0.961	Over 50% non-detect
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-2E-04	7.7	0.092	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	-0.001	53	0.248	No trend
TW61-13D	Chloride	mg/L	2015 - 2019	10	0%	-0.040	1864	0.024	Decreasing
	Sulfate	mg/L	2015 - 2019	10	0%	0.023	-958	1E-04	Increasing
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-3E-04	15.63	0.109	No trend
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.054	2526	0.010	Decreasing
	Bromide	mg/L	2015 - 2019	10	50%	3E-04	-14	0.257	No trend
	Fluoride	mg/L	2015 - 2019	10	10%	-3E-04	14	0.192	No trend
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-5E-05	2.0	0.161	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	-1E-04	7.828	0.015	Decreasing

Notes:

Linear regressions were performed using data from the last 5 years (2014 - 2019).

No test was performed on data sets with 100% non-detects.

Probability of significance: A value less than 0.05 indicates greater than 95 percent confidence of a statistically significant trend.

(1)

A trend was not calculated. Non-detect results have been reported in recent monitoring events with detection limits above previous detected results. This yields ambiguous data comparisons that may not be meaningfully assessed for temporal trend.

Table 15

**Linear Regression Results
Clean Harbors Canada , Inc.
Lambton County, Ontario**

Well	Analyte	Unit	Date Range	Number of Samples	Percent Non-Detect	Linear Regression			
						Slope	Intercept	Probability	Conclusion
TW61-13I	Chloride	mg/L	2015 - 2019	10	0%	-0.001	70	0.167	No trend
	Sulfate	mg/L	2015 - 2019	10	0%	0.064	-2515	0.001	Increasing
	Potassium (dissolved)	mg/L	2015 - 2019	10	30%	3E-04	-12.7	0.041	Increasing
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	5E-03	-179.8	0.002	Increasing
	Bromide	mg/L	2015 - 2019	10	100%	0E+00	0.125	1.000	No detected results
	Fluoride	mg/L	2015 - 2019	10	60%	-2E-04	9	1E-03	Over 50% non-detect
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-2E-05	0.783	0.007	Decreasing
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	3E-05	-1.1	0.224	No trend
TW61-13S	Chloride	mg/L	2015 - 2019	10	0%	-4E-04	39	0.515	No trend
	Sulfate	mg/L	2015 - 2019	10	0%	-0.032	1641	0.014	Decreasing
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-0.001	28	0.007	Decreasing
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-1E-04	69	0.972	No trend
	Bromide	mg/L	2015 - 2019	10	50%	-2E-04	9	0.205	No trend
	Fluoride	mg/L	2015 - 2019	10	30%	-3E-04	13	0.129	No trend
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-2E-05	0.82	0.129	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	-6E-05	2.8	0.053	Decreasing
TW62-13S	Chloride	mg/L	2015 - 2019	10	0%	0.005	-205	0.010	Increasing
	Sulfate	mg/L	2015 - 2019	10	0%	-0.002	293	0.688	No trend
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-2E-04	9	0.514	No trend
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-4E-04	72	0.887	No trend
	Bromide	mg/L	2015 - 2019	10	100%	-2E-05	1	0.124	No detected results
	Fluoride	mg/L	2015 - 2019	10	20%	-2E-04	11	0.176	No trend
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-1E-05	0.637	0.085	No trend
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	2E-05	-0.797	0.158	No trend

Notes:

Linear regressions were performed using data from the last 5 years (2014 - 2019).

No test was performed on data sets with 100% non-detects.

Probability of significance: A value less than 0.05 indicates greater than 95 percent confidence of a statistically significant trend.

(1)

A trend was not calculated. Non-detect results have been reported in recent monitoring events with detection limits above previous detected results. This yields ambiguous data comparisons that may not be meaningfully assessed for temporal trend.

Table 15

**Linear Regression Results
Clean Harbors Canada , Inc.
Lambton County, Ontario**

Well	Analyte	Unit	Date Range	Number of Samples	Percent Non-Detect	Linear Regression			
						Slope	Intercept	Probability	Conclusion
TW63-13S	Chloride	mg/L	2015 - 2019	10	0%	-0.064	3351	0.005	Decreasing
	Sulfate	mg/L	2015 - 2019	10	0%	-0.006	303	0.065	No trend
	Potassium (dissolved)	mg/L	2015 - 2019	10	0%	-5E-04	24	0.053	Decreasing
	Sodium (dissolved)	mg/L	2015 - 2019	10	0%	-0.025	1256	0.014	Decreasing
	Bromide	mg/L	2015 - 2019	10	20%	-6E-04	26	0.254	No trend
	Fluoride	mg/L	2015 - 2019	10	60%	-2E-04	11	0.027	Over 50% non-detect
	Barium (dissolved)	mg/L	2015 - 2019	5	0%	-4E-05	1.87	0.026	Decreasing
	Boron (dissolved)	mg/L	2015 - 2019	5	0%	2E-05	-0.470	0.573	No trend

Notes:

Linear regressions were performed using data from the last 5 years (2015 - 2019).

No test was performed on data sets with over 50% non-detects.

Probability of significance: A value less than 0.05 indicates greater than 95 percent confidence of a statistically significant trend.

⁽¹⁾ A trend was not calculated. Non-detect results have been reported in recent monitoring events with detection limits

above previous detected results. This yields ambiguous data comparisons that may not be meaningfully assessed for temporal trend.

Table 16

Shallow Wells along Perimeter of Facility Property, Downgradient of North Berm
 Reasonable Use Concept Derived Criteria
 2019 Annual Groundwater Monitoring Report
 Clean Harbors Canada Inc.
 Lambton Facility

Sample Location: Sample ID: Sample Date:	Units	ODWS	ODWS SOURCE	RUC	OW32-90S		OW35-90S		TW21-94-II		TW22-94		TW32-94-IV		TW40-99S		TW53-03S		
					32S 6/12/2019	32S 12/2/2019	35S 6/12/2019	35S 12/2/2019	21II 6/12/2019	21II 12/3/2019	22 6/11/2019	22S 12/3/2019	32IV 6/12/2019	32IV 12/3/2019	40S 6/12/2019	40S 12/3/2019	53S 6/12/2019	53S 12/2/2019	
General Indicators																			
Total dissolved solids (TDS)	mg/L	500	AO	500*	894	780	1160	1070	872	786	1360	1300	546	514	848	864	872	954	
Minor Ions - Anions																			
Alkalinity, total (as CaCO3)	mg/L	30-500	OG	438	325	323	349	314	401	451	438	459	345	334	358	408	342	391	
Chloride	mg/L	250	AO	139	9.52	8.3	8.8	7.2	5.69	4.1	60.7	57.5	12.2	12.4	18	19.1	4.99	4.56	
Sulfate	mg/L	500	AO	466	362	354	548	555	303	233	644	589	102	125	319	339	371	437	
Major Ions - Cations																			
Sodium (dissolved)	mg/L	20/200	AO	126	22.3	23	34.1	32.7	18.9	18.7	81.8	85.8	35.8	35	47.1	52.7	18.6	20	
Major Ions - Nutrients																			
Nitrate (as N)	mg/L	10.0	MAC	2.63	ND (0.25)	ND (0.25)	ND (0.5)	ND (0.5)	ND (0.25)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.25)	ND (0.1)	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	
Nitrite (as N)	mg/L	1.0	MAC	0.29	ND (0.25)	ND (0.25)	ND (0.5)	ND (0.5)	ND (0.25)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.25)	ND (0.1)	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	
Major Ions - Miscellaneous																			
Fluoride	mg/L	1.5	MAC	0.81	ND (0.25)	ND (0.25)	ND (0.5)	ND (0.5)	ND (0.25)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.25)	0.3	0.77	0.49	ND (0.25)	ND (0.25)	
Metals																			
Arsenic (dissolved)	mg/L	0.010	IMAC	0.0029	ND (0.003)	-	0.003	-	ND (0.003)	-	ND (0.003)	-	ND (0.003)	-	ND (0.003)	-	ND (0.003)	-	
Barium (dissolved)	mg/L	1.0	MAC	0.27	0.027	-	0.026	-	0.048	-	0.018	-	0.023	-	0.028	-	0.026	-	
Boron (dissolved)	mg/L	5.0	IMAC	1.44	0.183	-	0.195	-	0.092 J+	-	0.137	-	0.071 J+	-	0.166	-	0.111 J+	-	
Cadmium (dissolved)	mg/L	0.005	MAC	0.0013	ND (0.001)	-	ND (0.001)	-	ND (0.001)	-	ND (0.001)	-	ND (0.001)	-	ND (0.001)	-	ND (0.001)	-	
Chromium (dissolved)	mg/L	0.05	MAC	0.013	ND (0.003)	-	ND (0.003)	-	ND (0.003)	-	ND (0.003)	-	ND (0.003)	-	ND (0.003)	-	ND (0.003)	-	
Iron (dissolved)	mg/L	0.30	AO	0.16	ND (0.01)	-	1.83	-	ND (0.01)	-	ND (0.01)	-	ND (0.01)	-	ND (0.01)	-	ND (0.01)	-	
Lead (dissolved)	mg/L	0.01	MAC	0.0029	ND (0.001)	-	ND (0.001)	-	ND (0.001)	-	ND (0.001)	-	0.002	-	ND (0.001)	-	ND (0.001)	-	
Mercury (dissolved)	mg/L	0.001	MAC	0.0003	ND (0.0001)	-	ND (0.0001)	-	ND (0.0001)	-	ND (0.0001)	-	ND (0.0001)	-	ND (0.0001)	-	ND (0.0001)	-	
Zinc (dissolved)	mg/L	5.0	AO	2.5	ND (0.005)	-	ND (0.005)	-	ND (0.005)	-	ND (0.005)	-	0.055	-	ND (0.005)	-	ND (0.005)	-	
Volatile Organic Compounds																			
1,1-Dichloroethene	ug/L	14	MAC	3.69	ND (0.3)	-	ND (0.3)	-	ND (0.3)	-	ND (0.3)	-	ND (0.3)	-	ND (0.3)	-	ND (0.3)	-	
1,2-Dichlorobenzene	ug/L	200	MAC	50.15	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	
1,2-Dichloroethane	ug/L	5	IMAC	1.33	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	
1,4-Dichlorobenzene	ug/L	5	MAC	1.45	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	
Benzene	ug/L	1	MAC	1*	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	
Carbon tetrachloride	ug/L	2	MAC	0.58	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	
Chlorobenzene	ug/L	80	MAC	20.08	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	
Ethylbenzene	ug/L	140	MAC	0.93	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	
Methyl tert butyl ether (MTBE)	ug/L	15	AO	7.55	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	
Methylene chloride	ug/L	50	MAC	14	ND (0.3)	-	ND (0.3)	-	ND (0.3)	-	ND (0.3)	-	ND (0.3)	-	ND (0.3)	-	ND (0.3)	-	
Tetrachloroethene	ug/L	10	MAC	2.61	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	
Toluene	ug/L	60	MAC	12.13	ND (0.2)	-	0.43	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	
Trichloroethene	ug/L	5	MAC	1.36	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	
Vinyl chloride	ug/L	1	MAC	0.33	ND (0.17)	-	ND (0.17)	-	ND (0.17)	-	ND (0.17)	-	ND (0.17)	-	ND (0.17)	-	ND (0.17)	-	
Xylenes (total)	ug/L	90	MAC	10.13	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	

Notes:

- ODWS Ontario Drinking Water Standards, Objectives and Guidelines, Ontario Ministry of the Environment, as revised June 2006 (ODWS).
- RUC Reasonable Use Concept.
- ND Not detected at the associated reporting limit.
- J Estimated concentration.
- 4.90 Detected result exceeds associated RUC standard.
- ND (0.3) Reporting limit exceeds associated RUC standard.
- OG Operational Guideline
- AO Aesthetic Objective
- MAC Maximum Acceptable Concentration
- IMAC Interim Maximum Acceptable Concentration
- Not applicable or not analysed.
- * Background concentration exceeds ODWS, RUC Standard Defaulted to

Table 17

Shallow Wells along Perimeter of Facility Property, Removed from North Berm
 Reasonable Use Concept Derived Criteria
 2019 Annual Groundwater Monitoring Report
 Clean Harbors Canada Inc.
 Lambton Facility

Sample Location:					TW30-94	TW30-94	TW41-99S	TW41-99S	TW42-99S	TW42-99S	TW43-99S	TW43-99S	TW43-99S	TW45-99S	TW45-99S	TW48-16S	TW48-16S	TW62-13S	TW62-13S		
Sample ID:					30S	30S	41S	41S	42S	42S	43S	43S	98	45S	45S	48S	48S	62S	62S		
Sample Date:					6/12/2019	12/2/2019	6/12/2019	12/2/2019	6/11/2019	12/2/2019	6/11/2019	12/2/2019	12/2/2019 Duplicate	6/11/2019	12/4/2019	6/11/2019	12/3/2019	6/11/2019	12/2/2019		
Parameters	Units	ODWS	ODWS SOURCE	RUC																	
General Indicators																					
Total dissolved solids (TDS)	mg/L	500	AO	500*	530	510	1140	1250	2780	2580	418	448	418	602	550	622	660	584	570		
Minor Ions - Anions																					
Alkalinity, total (as CaCO3)	mg/L	30-500	OG	438	372	396	459	461	311	360	301	278	282	363	388	370	403	281	316		
Chloride	mg/L	250	AO	139	5.25	4.31	34.5	55.5	39.2	36.4	9.04	11.9	12	31.3	44.3	20.2	19.4	32.1	36.4		
Sulfate	mg/L	500	AO	466	115	111	430	476	1720	1790	55.6	115	116	66.5	91.5	198	186	180	177		
Major Ions - Cations																					
Sodium (dissolved)	mg/L	20/200	AO	126	38.9	36.1	44.2	51.3	62.8	70.5	21	23.1	22.9	27.5	33.8	38.8	41.8	55.4	58.1		
Major Ions - Nutrients																					
Ammonia-N	mg/L	-	-	-	ND (0.02)	ND (0.02)	0.08	ND (0.02)	ND (0.02)	ND (0.02)	0.03	ND (0.02)	ND (0.02)	0.09	ND (0.02)	0.04	ND (0.02)	0.02	ND (0.02)		
Nitrate (as N)	mg/L	10.0	MAC	2.63	ND (0.25)	ND (0.1)	ND (0.25)	ND (0.25)	ND (1)	ND (2.5)	ND (0.25)	ND (0.1)	ND (0.1)	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.1)		
Nitrite (as N)	mg/L	1.0	MAC	0.29	ND (0.25)	ND (0.1)	ND (0.25)	ND (0.25)	ND (1)	ND (2.5)	ND (0.25)	ND (0.1)	ND (0.1)	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)		
Major Ions - Miscellaneous																					
Fluoride	mg/L	1.5	MAC	0.81	0.75	1.08	ND (0.25)	ND (0.25)	ND (1)	ND (2.5)	ND (0.25)	0.28	0.18	0.26	ND (0.25)	0.67	0.49	0.41	0.73		
Metals																					
Arsenic (dissolved)	mg/L	0.010	IMAC	0.0029	ND (0.003)	-	ND (0.003)	-	ND (0.003)	-	ND (0.003)	-	-	ND (0.003)	-	ND (0.003)	-	ND (0.003)	-		
Barium (dissolved)	mg/L	1.0	MAC	0.27	0.028	-	0.022	-	0.014	-	0.037	-	-	0.066	-	0.028	-	0.035	-		
Boron (dissolved)	mg/L	5.0	IMAC	1.44	0.082 J+	-	0.134	-	0.205	-	0.074 J+	-	-	0.078 J+	-	0.238	-	0.16	-		
Cadmium (dissolved)	mg/L	0.005	MAC	0.0013	ND (0.001)	-	ND (0.001)	-	ND (0.001)	-	ND (0.001)	-	-	ND (0.001)	-	ND (0.001)	-	ND (0.001)	-		
Chromium (dissolved)	mg/L	0.05	MAC	0.013	ND (0.003)	-	ND (0.003)	-	ND (0.003)	-	ND (0.003)	-	-	ND (0.003)	-	ND (0.003)	-	ND (0.003)	-		
Iron (dissolved)	mg/L	0.30	AO	0.16	ND (0.01)	-	ND (0.01)	-	ND (0.01)	-	ND (0.01)	-	-	ND (0.01)	-	0.047	-	ND (0.01)	-		
Lead (dissolved)	mg/L	0.01	MAC	0.0029	ND (0.001)	-	ND (0.001)	-	ND (0.001)	-	ND (0.001)	-	-	ND (0.001)	-	ND (0.001)	-	ND (0.001)	-		
Mercury (dissolved)	mg/L	0.001	MAC	0.0003	ND (0.0001)	-	ND (0.0001)	-	ND (0.0001)	-	ND (0.0001)	-	-	ND (0.0001)	-	ND (0.0001)	-	ND (0.0001)	-		
Zinc (dissolved)	mg/L	5.0	AO	2.5	ND (0.005)	-	ND (0.005)	-	0.007	-	ND (0.005)	-	-	ND (0.005)	-	ND (0.005)	-	ND (0.005)	-		
Volatile Organic Compounds																					
1,1-Dichloroethene	ug/L	14	MAC	3.69	ND (0.3)	-	ND (0.3)	-	ND (0.3)	-	ND (0.3)	-	-	ND (0.3)	-	ND (0.3)	-	ND (0.3)	-		
1,2-Dichlorobenzene	ug/L	200	MAC	50.15	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	-	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-		
1,2-Dichloroethane	ug/L	5	IMAC	1.33	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-		
1,4-Dichlorobenzene	ug/L	5	MAC	1.45	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	-	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-		
Benzene	ug/L	1	MAC	1*	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-		
Carbon tetrachloride	ug/L	2	MAC	0.58	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-		
Chlorobenzene	ug/L	80	MAC	20.08	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	-	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-		
Ethylbenzene	ug/L	140	MAC	0.93	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	-	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-		
Methyl tert butyl ether (MTBE)	ug/L	15	AO	7.55	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-		
Methylene chloride	ug/L	50	MAC	14	ND (0.3)	-	ND (0.3)	-	ND (0.3)	-	ND (0.3)	-	-	ND (0.3)	-	ND (0.3)	-	ND (0.3)	-		
Tetrachloroethene	ug/L	10	MAC	2.61	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-		
Toluene	ug/L	60	MAC	12.13	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	-	0.39	-	ND (0.2)	-	ND (0.2)	-		
Trichloroethene	ug/L	5	MAC	1.36	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-		
Vinyl chloride	ug/L	1	MAC	0.33	ND (0.17)	-	ND (0.17)	-	ND (0.17)	-	ND (0.17)	-	-	ND (0.17)	-	ND (0.17)	-	ND (0.17)	-		
Xylenes (total)	ug/L	90	MAC	10.13	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-		

Notes:

- ODWS Ontario Drinking Water Standards, Objectives and Guidelines, Ontario Ministry of the Environment, as revised June 2006 (ODWS).
- RUC Reasonable Use Concept.
- ND Not detected at the associated reporting limit.
- J Estimated concentration.
- 4.90 Detected result exceeds associated RUC standard.
- ND (0.3) Reporting limit exceeds associated RUC standard.
- OG Operational Guideline
- AO Aesthetic Objective
- MAC Maximum Acceptable Concentration
- IMAC Interim Maximum Acceptable Concentration
- Not applicable or not analysed.
- * Background concentration exceeds ODWS, RUC Standard Defaulted to ODWS

Table 18

Deep Wells along the Perimeter of the Facility Property (Interface Aquifer)
 Reasonable Use Concept Derived Criteria
 2019 Annual Groundwater Monitoring Report
 Clean Harbors Canada Inc.
 Lambton Facility

Sample Location:				OW32-90D	OW32-90D	OW35-05D	OW35-05D	TW22-99D	TW22-99D	TW30-99D	TW30-99D	TW32-94-II	TW40-99D	TW40-99D	TW41-99D	TW41-99D	
Sample ID:				32D	32D	35D	35D	22D	22D	30D	30D	32II	40D	40D	41D	41D	
Sample Date:				6/12/2019	12/2/2019	6/12/2019	12/2/2019	6/12/2019	12/4/2019	6/12/2019	12/2/2019	12/3/2019	6/12/2019	12/3/2019	6/12/2019	12/2/2019	
Parameters	Units	ODWS	ODWS SOURCE	RUC													
General Indicators																	
Total dissolved solids (TDS)	mg/L	500	AO	500*	704	680	686	672	2440	2570	620	596	1250	810	750	584	556
Minor Ions - Anions																	
Alkalinity, total (as CaCO3)	mg/L	30-500	OG	416	226	234	234	256	652	717	225	245	274	224	245	258	284
Chloride	mg/L	250	AO	250	296	303	279	278	1110	1140	242	246	811	332	327	197	200
Sulfate	mg/L	500	AO	250	0.75	ND (0.5)	ND (0.5)	ND (0.5)	ND (5)	ND (5)	ND (0.5)	ND (0.5)	ND (2)	ND (1)	ND (0.5)	ND (0.5)	ND (0.5)
Major Ions - Cations																	
Sodium (dissolved)	mg/L	20/200	AO	200	236	244	234	247	913	974	205	216	554	247	254	209	216
Major Ions - Nutrients																	
Nitrate (as N)	mg/L	10.0	MAC	2.5	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	ND (2.5)	ND (2.5)	ND (0.25)	ND (0.25)	ND (1)	ND (0.5)	ND (0.25)	ND (0.25)	ND (0.25)
Nitrite (as N)	mg/L	1.0	MAC	0.3	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	ND (2.5)	ND (2.5)	ND (0.25)	ND (0.25)	ND (1)	ND (0.5)	ND (0.25)	ND (0.25)	ND (0.25)
Major Ions - Miscellaneous																	
Fluoride	mg/L	1.5	MAC	1.14	1.15	0.93	1.11	0.8	ND (2.5)	ND (2.5)	1.16	0.92	ND (1)	ND (0.5)	0.74	1.16	0.85
Metals																	
Arsenic (dissolved)	mg/L	0.010	IMAC	0.0032	ND (0.003)	-	ND (0.003)	-	ND (0.003)	-	ND (0.003)	-	-	ND (0.003)	-	ND (0.003)	-
Barium (dissolved)	mg/L	1.0	MAC	0.35	0.118	-	0.111	-	0.37	-	0.356	-	-	0.217	-	0.074	-
Boron (dissolved)	mg/L	5.0	IMAC	2.68	1.25	-	1.37	-	4.44	-	1.32	-	-	1.59	-	1.61	-
Cadmium (dissolved)	mg/L	0.005	MAC	0.0013	ND (0.001)	-	ND (0.001)	-	ND (0.001)	-	ND (0.001)	-	-	ND (0.001)	-	ND (0.001)	-
Chromium (dissolved)	mg/L	0.05	MAC	0.019	ND (0.003)	-	ND (0.003)	-	0.003	-	ND (0.003)	-	-	ND (0.003)	-	ND (0.003)	-
Iron (dissolved)	mg/L	0.30	AO	0.3	1.02	-	0.571	-	1.23	-	0.292	-	-	1.92	-	0.038	-
Lead (dissolved)	mg/L	0.01	MAC	0.003	ND (0.001)	-	ND (0.001)	-	ND (0.001)	-	ND (0.001)	-	-	ND (0.001)	-	ND (0.001)	-
Mercury (dissolved)	mg/L	0.001	MAC	0.0003	ND (0.0001)	-	ND (0.0001)	-	ND (0.0001)	-	ND (0.0001)	-	-	ND (0.0001)	-	ND (0.0001)	-
Zinc (dissolved)	mg/L	5.0	AO	2.5	ND (0.005)	-	ND (0.005)	-	ND (0.005)	-	ND (0.005)	-	-	ND (0.005)	-	ND (0.005)	-
Volatile Organic Compounds																	
1,1-Dichloroethene	ug/L	14	MAC	3.69	ND (0.3)	-	ND (0.3)	-	ND (0.3)	-	ND (0.3)	-	-	ND (0.3)	-	ND (0.3)	-
1,2-Dichlorobenzene	ug/L	200	MAC	50.15	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	-	ND (0.1)	-	ND (0.1)	-
1,2-Dichloroethane	ug/L	5	IMAC	1.33	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	-	ND (0.2)	-	ND (0.2)	-
1,4-Dichlorobenzene	ug/L	5	MAC	1.45	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	-	ND (0.1)	-	ND (0.1)	-
Benzene	ug/L	1	MAC	1*	ND (0.2)	-	ND (0.2)	-	1.7	-	ND (0.2)	-	-	ND (0.2)	-	ND (0.2)	-
Carbon tetrachloride	ug/L	2	MAC	0.58	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	-	ND (0.2)	-	ND (0.2)	-
Chlorobenzene	ug/L	80	MAC	20.08	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	-	ND (0.1)	-	ND (0.1)	-
Ethylbenzene	ug/L	140	MAC	0.93	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	-	ND (0.1)	-	ND (0.1)	-
Methyl tert butyl ether (MTBE)	ug/L	15	AO	7.55	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	-	ND (0.2)	-	ND (0.2)	-
Methylene chloride	ug/L	50	MAC	14	ND (0.3)	-	ND (0.3)	-	ND (0.3)	-	ND (0.3)	-	-	ND (0.3)	-	ND (0.3)	-
Tetrachloroethene	ug/L	10	MAC	2.61	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	-	ND (0.2)	-	ND (0.2)	-
Toluene	ug/L	60	MAC	12.13	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	-	ND (0.2)	-	ND (0.2)	-
Trichloroethene	ug/L	5	MAC	1.36	ND (0.2)	-	ND (0.2)	-	3.4	-	ND (0.2)	-	-	ND (0.2)	-	ND (0.2)	-
Vinyl chloride	ug/L	1	MAC	0.33	ND (0.17)	-	ND (0.17)	-	ND (0.17)	-	ND (0.17)	-	-	ND (0.17)	-	ND (0.17)	-
Xylenes (total)	ug/L	90	MAC	10.13	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	-	ND (0.2)	-	ND (0.2)	-

Notes:

- ODWS Ontario Drinking Water Standards, Objectives and Guidelines, Ontario Ministry of the Environment, as revised June 2006 (ODWS).
- RUC Reasonable Use Concept.
- ND Not detected at the associated reporting limit.
- J Estimated concentration.
- 4.90 Detected result exceeds associated RUC standard.
- ND (0.3) Reporting limit exceeds associated RUC standard.
- OG Operational Guideline
- AO Aesthetic Objective
- MAC Maximum Acceptable Concentration
- IMAC Interim Maximum Acceptable Concentration
- Not applicable or not analysed.
- * Background concentration exceeds ODWS, RUC Standard Defaulted to ODWS

Table 18

Deep Wells along the Perimeter of the Facility Property (Interface Aquifer)
Reasonable Use Concept Derived Criteria
2019 Annual Groundwater Monitoring Report
Clean Harbors Canada Inc.
Lambton Facility

Sample Location:	TW43-99D	TW43-99D	TW43-99D	TW45-99D	TW45-99D	TW47-00D	TW47-00D	TW48-00D	TW48-00D	TW49-00D	TW49-00D	TW53-03D	TW53-03D	TW60-13D	TW60-13D	
Sample ID:	43D	43D	98	45D	45D	47D	47D	48D	48D	49D	49D	53D	53D	60D	60D	
Sample Date:	6/11/2019	12/2/2019	12/2/2019 Duplicate	6/11/2019	12/4/2019	6/12/2019	12/3/2019	6/11/2019	12/4/2019	6/11/2019	12/2/2019	6/12/2019	12/2/2019	6/12/2019	12/3/2019	
Parameters	Units															
General Indicators																
Total dissolved solids (TDS)	mg/L	598	640	624	2590	2940	2460	3270	796	856	368	368	836	902	1870	2020
Minor Ions - Anions																
Alkalinity, total (as CaCO3)	mg/L	237	259	260	921	1010	549	885	308	337	220	238	266	283	512	619
Chloride	mg/L	248	233	233	1080	1020	1140	2160	331	346	90.7	91	399	371	820	1010
Sulfate	mg/L	ND (0.5)	ND (0.5)	ND (0.5)	ND (4)	ND (5)	ND (5)	ND (5)	ND (0.5)	ND (1)	ND (0.5)	ND (0.2)	ND (0.5)	ND (1)	ND (5)	ND (2)
Major Ions - Cations																
Sodium (dissolved)	mg/L	196	210	207	1030	1030	855	1480	295	308	123	131	298	301	707	801
Major Ions - Nutrients																
Nitrate (as N)	mg/L	ND (0.25)	ND (0.25)	ND (0.25)	ND (2)	ND (2.5)	ND (2.5)	ND (2.5)	ND (0.25)	ND (0.5)	ND (0.25)	ND (0.1)	ND (0.25)	ND (0.5)	ND (2.5)	ND (1)
Nitrite (as N)	mg/L	ND (0.25)	ND (0.25)	ND (0.25)	ND (2)	ND (2.5)	ND (2.5)	ND (2.5)	ND (0.25)	ND (0.5)	ND (0.25)	ND (0.1)	ND (0.25)	ND (0.5)	ND (2.5)	ND (1)
Major Ions - Miscellaneous																
Fluoride	mg/L	0.75	0.98	0.75	ND (2)	ND (2.5)	ND (2.5)	ND (2.5)	0.97	ND (0.5)	0.87	1.23	1.24	ND (0.5)	ND (2.5)	ND (1)
Metals																
Arsenic (dissolved)	mg/L	ND (0.003)	-	-	0.007	-	ND (0.003)	-	ND (0.003)	-	ND (0.003)	-	ND (0.003)	-	ND (0.003)	-
Barium (dissolved)	mg/L	0.164	-	-	0.217	-	1.48	-	0.165	-	0.08	-	0.18	-	0.254	-
Boron (dissolved)	mg/L	1.33	-	-	2.98	-	2.95	-	2.11	-	1.16	-	1.53	-	3.84	-
Cadmium (dissolved)	mg/L	ND (0.001)	-	-	ND (0.001)	-	ND (0.001)	-	ND (0.001)	-	ND (0.001)	-	ND (0.001)	-	ND (0.001)	-
Chromium (dissolved)	mg/L	ND (0.003)	-	-	0.004	-	0.004	-	ND (0.003)	-	ND (0.003)	-	0.003	-	0.004	-
Iron (dissolved)	mg/L	0.48	-	-	ND (0.01)	-	2.47	-	0.543	-	0.036	-	0.509	-	ND (0.01)	-
Lead (dissolved)	mg/L	ND (0.001)	-	-	ND (0.001)	-	ND (0.001)	-	ND (0.001)	-	ND (0.001)	-	ND (0.001)	-	ND (0.001)	-
Mercury (dissolved)	mg/L	ND (0.0001)	-	-	ND (0.0001)	-	ND (0.0001)	-	ND (0.0001)	-	ND (0.0001)	-	ND (0.0001)	-	ND (0.0001)	-
Zinc (dissolved)	mg/L	ND (0.005)	-	-	0.005	-	ND (0.005)	-	ND (0.005)	-	ND (0.005)	-	0.008	-	0.006	-
Volatile Organic Compounds																
1,1-Dichloroethene	ug/L	ND (0.3)	-	-	ND (1.2)	-	ND (0.3)	-	ND (0.3)	-	ND (0.3)	-	ND (0.3)	-	ND (0.3)	-
1,2-Dichlorobenzene	ug/L	ND (0.1)	-	-	ND (0.4)	-	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-
1,2-Dichloroethane	ug/L	ND (0.2)	-	-	ND (0.8)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-
1,4-Dichlorobenzene	ug/L	ND (0.1)	-	-	ND (0.4)	-	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-
Benzene	ug/L	ND (0.2)	-	-	ND (0.8)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	0.3	-
Carbon tetrachloride	ug/L	ND (0.2)	-	-	ND (0.8)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-
Chlorobenzene	ug/L	ND (0.1)	-	-	ND (0.4)	-	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-
Ethylbenzene	ug/L	ND (0.1)	-	-	ND (0.4)	-	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-	ND (0.1)	-
Methyl tert butyl ether (MTBE)	ug/L	ND (0.2)	-	-	ND (0.8)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-
Methylene chloride	ug/L	ND (0.3)	-	-	ND (1.2)	-	ND (0.3)	-	ND (0.3)	-	ND (0.3)	-	ND (0.3)	-	ND (0.3)	-
Tetrachloroethene	ug/L	ND (0.2)	-	-	ND (0.8)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-
Toluene	ug/L	ND (0.2)	-	-	ND (0.8)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-
Trichloroethene	ug/L	ND (0.2)	-	-	ND (0.8)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-
Vinyl chloride	ug/L	ND (0.17)	-	-	ND (0.68)	-	ND (0.17)	-	ND (0.17)	-	ND (0.17)	-	ND (0.17)	-	ND (0.17)	-
Xylenes (total)	ug/L	ND (0.2)	-	-	ND (0.8)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-	ND (0.2)	-

Notes:

- ODWS Ontario Drinking Water Standards, Objective: Ontario Ministry of the Environment, as revise
- RUC Reasonable Use Concept.
- ND Not detected at the associated reporting limit.
- J Estimated concentration.
- 4.90 Detected result exceeds associated RUC stan
- ND (0.3) Reporting limit exceeds associated RUC stan
- OG Operational Guideline
- AO Aesthetic Objective
- MAC Maximum Acceptable Concentration
- IMAC Interim Maximum Acceptable Concentration
- Not applicable or not analysed.
- * Background concentration exceeds ODWS, f

Appendices

Appendix A
Quality Assurance/Quality Control Data
Validation Memoranda



Memorandum

December 24, 2019

To: Brian Packer; Jeff Leader; Ben Kempel

Ref. No.: 044985-40

From: Laura Ermeta/kf/62 *LE*

**Subject: Analytical Data Verification
Groundwater Sampling Events
Clean Harbors Canada Inc.
Sarnia, Ontario
June and December 2019**

1. Introduction

The following document details an analytical data verification of results for groundwater samples collected at the Clean Harbors Canada Inc. site in Sarnia, Ontario during June and December 2019. Samples were submitted to AGAT Laboratories (AGAT) located in Mississauga, Ontario. A sample collection and analysis summary is presented in Table 1. A summary of the analytical methodology is presented in Table 2.

Standard GHD Limited (GHD) report deliverables were submitted by the laboratory. The final results and supporting quality assurance/quality control (QA/QC) data were assessed. Evaluation of the data was based on information obtained from the chain of custody forms, finished report forms, method blank data, duplicate data, recovery data from surrogate spikes, laboratory control samples (LCS), matrix spikes (MS), and field QC samples.

The QA/QC criteria by which these data have been assessed are outlined in the analytical methods referenced in Table 2 and applicable guidance from the documents entitled:

- i) "National Functional Guidelines for Superfund Organic Methods Data Review", USEPA-540-R-2016-002, September 2016
- ii) "National Functional Guidelines for Inorganic Superfund Methods Data Review", USEPA-540-R-2016-001, September 2016

Items i) and ii) will subsequently be referred to as the "Guidelines" in this Memorandum.

2. Sample Holding Time and Preservation

The sample holding time criteria for the analyses are summarized in Table 2. Sample chain of custody documents and analytical reports were used to determine sample holding times. All samples were prepared and analyzed within the required holding times.



All samples were properly preserved, delivered on ice, and stored by the laboratory at the required temperature of <10 degrees Celsius (°C).

3. Laboratory Method Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures.

For this study, laboratory method blanks were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

All method blank results were non-detect, indicating that laboratory contamination was not a factor for this investigation.

4. Surrogate Spike Recoveries

In accordance with the methods employed, all samples, blanks, and QC samples analyzed for organics are spiked with surrogate compounds prior to sample extraction and/or analysis. Surrogate recoveries provide a means to evaluate the effects of laboratory performance on individual sample matrices.

All samples submitted for volatile organic compound (VOC) determinations were spiked with the appropriate number of surrogate compounds prior to sample analysis.

Surrogate recoveries were assessed against laboratory control limits. All surrogate recoveries met the above criteria.

5. Laboratory Control Sample Analyses

LCS are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects.

For this study, LCS were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

Organic Analyses

The LCS contained all compounds of interest. All LCS recoveries were within the laboratory control limits, demonstrating acceptable analytical accuracy.

Inorganic Analyses

The LCS contained all analytes of interest. LCS recoveries were assessed per the "Guidelines". All LCS recoveries were within the control limits, demonstrating acceptable analytical accuracy.



6. Matrix Spike Analyses

To evaluate the effects of sample matrices on the extraction or digestion process, measurement procedures, and accuracy of a particular analysis, samples are spiked with a known concentration of the analyte of concern and analyzed as MS samples. If the original sample concentration is significantly greater than the spike concentration, the recovery is not assessed.

Organic Analyses

The MS samples were spiked with all compounds of interest. All MS recoveries were within the laboratory control limits, demonstrating acceptable analytical accuracy.

Inorganic Analyses

The MS samples were spiked with the analytes of interest, and the results were evaluated using the "Guidelines". Most percent recoveries were within the control limits, demonstrating acceptable analytical accuracy. One cyanide MS recovery did not meet the above guidance. Samples associated with the outlying recovery were qualified as follows (see Table 3):

- I. Positive sample results associated with the low MS recovery were qualified as estimated with a potential low bias.
- II. Non-detect results associated with the low MS recovery were qualified as estimated.

7. Duplicate Sample Analyses

Analytical precision is evaluated based on the analysis of laboratory duplicate samples. For this study, duplicate samples were prepared and analyzed by the laboratory. The laboratory performed additional site-specific duplicate analyses internally. The relative percent differences (RPDs) associated with these duplicate samples must be less than 20 percent for water samples. If the reported concentration in either the investigative sample or its duplicate is less than five times the reporting limit (RL), the evaluation criteria is a difference of one times the RL value for water samples. All duplicate analyses performed were acceptable, demonstrating acceptable analytical precision.

8. Field QA/QC Samples

The field QA/QC consisted of one trip blank, six field blanks and six field duplicate sample sets.

Trip Blank Sample Analysis

To evaluate contamination from sample collection, transportation, storage, and analytical activities, one trip blank sample was submitted to the laboratory for VOC analysis as outlined in Table 1. All results were non-detect for the compounds of interest.



Field Blank Sample Analysis

To evaluate contamination sample collection, transportation, storage, and analytical activities, six field blank samples were collected and submitted to the laboratory for analyses.

Most sample concentrations were non-detect for the compounds of interest. Boron was detected in field blank GW-44985-061319-DD-B1. Associated sample concentrations that were greater than ten times the blank value were not qualified. Associated sample concentrations that were detected between five and ten times the blank value were qualified as estimated with a potential high bias (see Table 4).

Field Duplicate Sample Analysis

To assess the analytical and sampling protocol precision, six field duplicate sample sets were collected and submitted "blind" to the laboratory, as specified in Table 1. The RPDs associated with these duplicate samples must be less than 50 percent for water samples. If the reported concentration in either the investigative sample or its duplicate is less than five times the RL, the evaluation criteria is a difference of one times the RL value for water samples.

Most field duplicate results were within acceptable agreement, demonstrating acceptable sampling and analytical precision. The toluene results for sample GW-44985-061319-DD-PW2 and its field duplicate did show some variability. The original and duplicate sample results were qualified as estimated (see Table 5).

9. Conclusion

Based on the assessment detailed in the foregoing, the data are acceptable with the specific qualifications noted herein.

Table 1

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Groundwater Sampling Events
Clean Harbors Canada Inc.
Sarnia, Ontario
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Lab Report #	Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Analysis/Parameters											Comments		
					Alkalinity	Ammonia-N	pH	Metals	Cations	Mercury	Cyanide, free	Conductivity	Total Dissolved Solids	Anions (Cl, Br, F, NO2-N, NO3-N, SO4)	VOCs			
19T480053	GW-44985-061119-DD-43D	TW43-99D	Groundwater	06/11/2019	X	-	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061119-DD-43S	TW43-99S	Groundwater	06/11/2019	X	X	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061119-DD-55D	TW55-09D	Groundwater	06/11/2019	X	-	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061119-DD-55S	TW55-09S	Groundwater	06/11/2019	X	X	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061119-DD-49D	TW49-00D	Groundwater	06/11/2019	X	-	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061119-DD-42S	TW42-99S	Groundwater	06/11/2019	X	X	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061119-DD-57D	TW57-11D	Groundwater	06/11/2019	X	-	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061119-DD-57S	TW57-11S	Groundwater	06/11/2019	X	X	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061119-DD-58S	TW58-11S	Groundwater	06/11/2019	X	X	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061119-DD-56D	TW56-11D	Groundwater	06/11/2019	X	-	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061119-DD-56S	TW56-11S	Groundwater	06/11/2019	X	X	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061119-DD-56S-98	TW56-11S	Groundwater	06/11/2019	X	X	X	X	X	X	X	X	X	X	X	X	X	FD (GW-44985-061119-DD-56S)
19T480053	GW-44985-061119-DD-59S	TW59-13S	Groundwater	06/11/2019	X	X	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061119-DD-59D	TW59-13D	Groundwater	06/11/2019	X	-	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061119-DD-48S	TW48-16S	Groundwater	06/11/2019	X	X	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061119-DD-48D	TW48-00D	Groundwater	06/11/2019	X	-	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061119-DD-45D	TW45-99D	Groundwater	06/11/2019	X	-	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061119-DD-45S	TW45-99S	Groundwater	06/11/2019	X	X	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061119-DD-62S	TW62-13S	Groundwater	06/11/2019	X	X	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061119-DD-63S	TW63-13S	Groundwater	06/11/2019	X	X	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061119-DD-54D	TW54-09D	Groundwater	06/11/2019	X	-	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061119-DD-61D	TW61-13D	Groundwater	06/11/2019	X	-	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061119-DD-61I	TW61-13I	Groundwater	06/11/2019	X	X	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061119-DD-61S	TW61-13S	Groundwater	06/11/2019	X	X	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061119-DD-22	TW22-94	Groundwater	06/11/2019	X	X	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061219-DD-22D	TW22-99D	Groundwater	06/12/2019	X	-	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061219-DD-60D	TW60-13D	Groundwater	06/12/2019	X	-	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061219-DD-39D	TW39-99D	Groundwater	06/12/2019	X	-	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061219-DD-39I	TW39-99I	Groundwater	06/12/2019	X	X	X	X	X	X	X	X	X	X	X	X	X	

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					Alkalinity	Ammonia-N	pH	Metals	Cations	Mercury	Cyanide, free	Conductivity	Total Dissolved Solids	Anions (Cl, Br, F, NO2-N, NO3-N, SO4)	VOCs			
19T480053	GW-44985-061219-DD-39S	TW39-99S	Groundwater	06/12/2019	X	X	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061219-DD-21II	TW21-94-II	Groundwater	06/12/2019	X	X	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061219-DD-47D	TW47-00D	Groundwater	06/12/2019	X	-	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061219-DD-40S	TW40-99S	Groundwater	06/12/2019	X	X	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061219-DD-40D	TW40-99D	Groundwater	06/12/2019	X	-	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061219-DD-32IV	TW32-94-IV	Groundwater	06/12/2019	X	X	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061219-DD-46D	TW46-99D	Groundwater	06/12/2019	X	-	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061219-DD-46I	TW46-99I	Groundwater	06/12/2019	X	X	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061219-DD-46S	TW46-99S	Groundwater	06/12/2019	X	X	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061219-DD-35S	OW35-90S	Groundwater	06/12/2019	X	X	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061219-DD-35D	OW35-05D	Groundwater	06/12/2019	X	-	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061219-DD-53S	TW53-03S	Groundwater	06/12/2019	X	X	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061219-DD-53D	TW53-03D	Groundwater	06/12/2019	X	-	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061219-DD-32S	OW32-90S	Groundwater	06/12/2019	X	X	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061219-DD-32D	OW32-90D	Groundwater	06/12/2019	X	-	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061219-DD-30D	TW30-99D	Groundwater	06/12/2019	X	-	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061219-DD-30S	TW30-94	Groundwater	06/12/2019	X	X	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061219-DD-41D	TW41-99D	Groundwater	06/12/2019	X	-	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061219-DD-41S	TW41-99S	Groundwater	06/12/2019	X	X	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061219-DD-52B	TW52-02B	Groundwater	06/12/2019	X	X	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061219-DD-50B	TW50-02B	Groundwater	06/12/2019	X	X	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061219-DD-51B	TW51-02B	Groundwater	06/12/2019	X	X	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061219-DD-52A	TW52-02A	Groundwater	06/12/2019	X	X	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061119-DD-59D-98	TW59-13D	Groundwater	06/11/2019	X	-	X	X	X	X	X	X	X	X	X	X	X	FD (GW-44985-061119-DD-59D)
19T480053	GW-44985-061319-DD-PW2	PW2-S(R11)	Groundwater	06/13/2019	X	-	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061319-DD-PW2-98	PW2-S(R11)	Groundwater	06/13/2019	X	-	X	X	X	X	X	X	X	X	X	X	X	FD (GW-44985-061319-DD-PW2)
19T480053	GW-44985-061319-DD-EW2A	EW2a-01	Groundwater	06/13/2019	X	-	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061319-DD-EW2C	EW2c-13	Groundwater	06/13/2019	X	-	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061319-DD-EW2B	EW2b-13	Groundwater	06/13/2019	X	-	X	X	X	X	X	X	X	X	X	X	X	

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					Alkalinity	Ammonia-N	pH	Metals	Cations	Mercury	Cyanide, free	Conductivity	Total Dissolved Solids	Anions (Cl, Br, F, NO2-N, NO3-N, SO4)	VOCs			
19T480053	GW-44985-061319-DD-EW1C	EW1c-13	Groundwater	06/13/2019	X	-	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061319-DD-EW1B	EW1b-13	Groundwater	06/13/2019	X	-	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061319-DD-EW1A	EW1a-01	Groundwater	06/13/2019	X	-	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061319-DD-PW1	PW1-N	Groundwater	06/13/2019	X	-	X	X	X	X	X	X	X	X	X	X	X	
19T480053	GW-44985-061319-DD-B1	-	Water	06/13/2019	X	X	X	X	X	X	X	X	X	X	X	X	-	Field Blank
19T480053	GW-44985-061319-DD-B2	-	Water	06/13/2019	X	-	X	X	X	X	X	X	X	X	X	X	-	Field Blank
19T480053	GW-44985-061319-DD-B3	-	Water	06/13/2019	X	-	X	X	X	X	X	X	X	X	X	X	-	Field Blank
19T480053	Trip Blank	-	Water	06/13/2019	-	-	-	-	-	-	-	-	-	-	-	-	X	Trip Blank
19L552742	GW-44985-120219-DD-43S	TW43-99S	Groundwater	12/02/2019	X	X	X	-	X	-	X	X	X	X	X	X	-	
19L552742	GW-44985-120219-DD-43D	TW43-99D	Groundwater	12/02/2019	X	-	X	-	X	-	X	X	X	X	X	X	-	
19L552742	GW-44985-120219-DD-49D	TW49-00D	Groundwater	12/02/2019	X	-	X	-	X	-	X	X	X	X	X	X	-	
19L552742	GW-44985-120219-DD-42S	TW42-99S	Groundwater	12/02/2019	X	X	X	-	X	-	X	X	X	X	X	X	-	
19L552742	GW-44985-120219-DD-55S	TW55-09S	Groundwater	12/02/2019	X	X	X	-	X	-	X	X	X	X	X	X	-	
19L552742	GW-44985-120219-DD-55D	TW55-09D	Groundwater	12/02/2019	X	-	X	-	X	-	X	X	X	X	X	X	-	
19L552742	GW-44985-120219-DD-58S	TW58-11S	Groundwater	12/02/2019	X	X	X	-	X	-	X	X	X	X	X	X	-	
19L552742	GW-44985-120219-DD-56S	TW56-11S	Groundwater	12/02/2019	X	X	X	-	X	-	X	X	X	X	X	X	-	
19L552742	GW-44985-120219-DD-56D	TW56-11D	Groundwater	12/02/2019	X	-	X	-	X	-	X	X	X	X	X	X	-	
19L552742	GW-44985-120219-DD-62S	TW62-13S	Groundwater	12/02/2019	X	X	X	-	X	-	X	X	X	X	X	X	-	
19L552742	GW-44985-120219-DD-59S	TW59-13S	Groundwater	12/02/2019	X	X	X	-	X	-	X	X	X	X	X	X	-	
19L552742	GW-44985-120219-DD-59D	TW59-13D	Groundwater	12/02/2019	X	-	X	-	X	-	X	X	X	X	X	X	-	
19L552742	GW-44985-120219-DD-63S	TW63-13S	Groundwater	12/02/2019	X	X	X	-	X	-	X	X	X	X	X	X	-	
19L552742	GW-44985-120219-DD-54D	TW54-09D	Groundwater	12/02/2019	X	-	X	-	X	-	X	X	X	X	X	X	-	
19L552742	GW-44985-120219-DD-41S	TW41-99S	Groundwater	12/02/2019	X	X	X	-	X	-	X	X	X	X	X	X	-	
19L552742	GW-44985-120219-DD-41D	TW41-99D	Groundwater	12/02/2019	X	-	X	-	X	-	X	X	X	X	X	X	-	
19L552742	GW-44985-120219-DD-30S	TW30-94	Groundwater	12/02/2019	X	X	X	-	X	-	X	X	X	X	X	X	-	
19L552742	GW-44985-120219-DD-30D	TW30-99D	Groundwater	12/02/2019	X	-	X	-	X	-	X	X	X	X	X	X	-	
19L552742	GW-44985-120219-DD-32S	OW32-90S	Groundwater	12/02/2019	X	X	X	-	X	-	X	X	X	X	X	X	-	
19L552742	GW-44985-120219-DD-32D	OW32-90D	Groundwater	12/02/2019	X	-	X	-	X	-	X	X	X	X	X	X	-	

Table 1

**Sample Collection and Analysis Summary
Groundwater Sampling Events
Clean Harbors Canada Inc.
Sarnia, Ontario
June and December 2019**

Lab Report #	Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Analysis/Parameters											Comments
					Alkalinity	Ammonia-N	pH	Metals	Cations	Mercury	Cyanide, free	Conductivity	Total Dissolved Solids	Anions (Cl, Br, F, NO2-N, NO3-N, SO4)	VOCs	
19L552742	GW-44985-120219-DD-53S	TW53-03S	Groundwater	12/02/2019	X	X	X	-	X	-	X	X	X	X	-	
19L552742	GW-44985-120219-DD-53D	TW53-03D	Groundwater	12/02/2019	X	-	X	-	X	-	X	X	X	X	-	
19L552742	GW-44985-120219-DD-35S	OW35-90S	Groundwater	12/02/2019	X	X	X	-	X	-	X	X	X	X	-	
19L552742	GW-44985-120219-DD-35D	OW35-05D	Groundwater	12/02/2019	X	-	X	-	X	-	X	X	X	X	-	
19L552742	GW-44985-120219-DD-43S-98	TW43-99S	Groundwater	12/02/2019	X	X	X	-	X	-	X	X	X	X	-	FD (GW-44985-120219-DD-43S)
19L552742	GW-44985-120219-DD-43D-98	TW43-99D	Groundwater	12/02/2019	X	-	X	-	X	-	X	X	X	X	-	FD (GW-44985-120219-DD-43D)
19L552742	GW-44985-120219-DD-B1	-	Water	12/02/2019	X	X	X	-	X	-	X	X	X	X	-	Field Blank
19L552742	GW-44985-120319-DD-61D	TW61-13D	Groundwater	12/03/2019	X	-	X	-	X	-	X	X	X	X	-	
19L552742	GW-44985-120319-DD-61S	TW61-13S	Groundwater	12/03/2019	X	X	X	-	X	-	X	X	X	X	-	
19L552742	GW-44985-120319-DD-22S	TW22-94	Groundwater	12/03/2019	X	X	X	-	X	-	X	X	X	X	-	
19L552742	GW-44985-120319-DD-60D	TW60-13D	Groundwater	12/03/2019	X	-	X	-	X	-	X	X	X	X	-	
19L552742	GW-44985-120319-DD-39D	TW39-99D	Groundwater	12/03/2019	X	-	X	-	X	-	X	X	X	X	-	
19L552742	GW-44985-120319-DD-39I	TW39-99I	Groundwater	12/03/2019	X	X	X	-	X	-	X	X	X	X	-	
19L552742	GW-44985-120319-DD-39S	TW39-99S	Groundwater	12/03/2019	X	X	X	-	X	-	X	X	X	X	-	
19L552742	GW-44985-120319-DD-21II	TW21-94-II	Groundwater	12/03/2019	X	X	X	-	X	-	X	X	X	X	-	
19L552742	GW-44985-120319-DD-47D	TW47-00D	Groundwater	12/03/2019	X	-	X	-	X	-	X	X	X	X	-	
19L552742	GW-44985-120319-DD-40S	TW40-99S	Groundwater	12/03/2019	X	X	X	-	X	-	X	X	X	X	-	
19L552742	GW-44985-120319-DD-40D	TW40-99D	Groundwater	12/03/2019	X	-	X	-	X	-	X	X	X	X	-	
19L552742	GW-44985-120319-DD-32IV	TW32-94-IV	Groundwater	12/03/2019	X	X	X	-	X	-	X	X	X	X	-	
19L552742	GW-44985-120319-DD-32II	TW32-94-II	Groundwater	12/03/2019	X	-	X	-	X	-	X	X	X	X	-	
19L552742	GW-44985-120319-DD-46D	TW46-99D	Groundwater	12/03/2019	X	-	X	-	X	-	X	X	X	X	-	
19L552742	GW-44985-120319-DD-46I	TW46-99I	Groundwater	12/03/2019	X	X	X	-	X	-	X	X	X	X	-	
19L552742	GW-44985-120319-DD-46S	TW46-99S	Groundwater	12/03/2019	X	X	X	-	X	-	X	X	X	X	-	
19L552742	GW-44985-120319-DD-48S	TW48-16S	Groundwater	12/03/2019	X	X	X	-	X	-	X	X	X	X	-	
19L552742	GW-44985-120319-DD-EW2A	EW2a-01	Groundwater	12/03/2019	X	-	X	-	X	-	X	X	X	X	-	
19L552742	GW-44985-120319-DD-EW2A-98	EW2a-01	Groundwater	12/03/2019	X	-	X	-	X	-	X	X	X	X	-	FD (GW-44985-120319-DD-EW2A)
19L552742	GW-44985-120319-DD-EW2C	EW2c-13	Groundwater	12/03/2019	X	-	X	-	X	-	X	X	X	X	-	
19L552742	GW-44985-120319-DD-EW2B	EW2b-13	Groundwater	12/03/2019	X	-	X	-	X	-	X	X	X	X	-	
19L552742	GW-44985-120319-DD-EW1C	EW1c-13	Groundwater	12/03/2019	X	-	X	-	X	-	X	X	X	X	-	

Table 1

**Sample Collection and Analysis Summary
Groundwater Sampling Events
Clean Harbors Canada Inc.
Sarnia, Ontario
June and December 2019**

Lab Report #	Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Analysis/Parameters											Comments
					Alkalinity	Ammonia-N	pH	Metals	Cations	Mercury	Cyanide, free	Conductivity	Total Dissolved Solids	Anions (Cl, Br, F, NO2-N, NO3-N, SO4)	VOCs	
19L552742	GW-44985-120319-DD-B2	-	Water	12/03/2019	X	-	X	-	X	-	X	X	X	X	-	Field Blank
19L552742	GW-44985-120419-DD-PW2	PW2-S(R11)	Groundwater	12/04/2019	X	-	X	-	X	-	X	X	X	X	-	
19L552742	GW-44985-120419-DD-22D	TW22-99D	Groundwater	12/04/2019	X	-	X	-	X	-	X	X	X	X	-	
19L552742	GW-44985-120419-DD-61I	TW61-13I	Groundwater	12/04/2019	X	X	X	-	X	-	X	X	X	X	-	
19L552742	GW-44985-120419-DD-45S	TW45-99S	Groundwater	12/04/2019	X	X	X	-	X	-	X	X	X	X	-	
19L552742	GW-44985-120419-DD-48D	TW48-00D	Groundwater	12/04/2019	X	-	X	-	X	-	X	X	X	X	-	
19L552742	GW-44985-120419-DD-57S	TW57-11S	Groundwater	12/04/2019	X	X	X	-	X	-	X	X	X	X	-	
19L552742	GW-44985-120419-DD-57D	TW57-11D	Groundwater	12/04/2019	X	-	X	-	X	-	X	X	X	X	-	
19L552742	GW-44985-120419-DD-EW1B	EW1b-13	Groundwater	12/04/2019	X	-	X	-	X	-	X	X	X	X	-	
19L552742	GW-44985-120419-DD-EW1A	EW1a-01	Groundwater	12/04/2019	X	-	X	-	X	-	X	X	X	X	-	
19L552742	GW-44985-120419-DD-PW1	PW1-N	Groundwater	12/04/2019	X	-	X	-	X	-	X	X	X	X	-	
19L552742	GW-44985-120419-DD-B3	-	Water	12/04/2019	X	-	X	-	X	-	X	X	X	X	-	Field Blank
19L552742	GW-44985-120419-DD-45D	TW45-99D	Groundwater	12/04/2019	X	-	X	-	X	-	X	X	X	X	-	

Notes:

- "-" - Not applicable
- FD - Field Duplicate Sample of sample in parenthesis
- N - Nitrogen
- Cl - Chloride
- Br - Bromide
- F - Fluoride
- NO2-N - Nitrite-Nitrogen
- NO3-N - Nitrate-Nitrogen
- SO4 - Sulphate
- VOCs - Volatile Organic Compounds

Table 2

**Analytical Method and Holding Time Criteria
Groundwater Sampling Events
Clean Harbors Canada Inc.
Sarnia, Ontario
June and December 2019**

Parameters	Methodology ⁽¹⁾	Holding Time Criteria
		Water
Alkalinity	SM 2320	14 days
Ammonia-N	SM 4500 NH3-F	28 days
pH	SM 4500H	28 days
Metals	SW846 6020/EPA 200.8	60 days
Cations	SW846 6010/EPA 200.7	60 days
Mercury	SW846 7470/EPA 245.1	28 days
Cyanide, free	SM 4500 CN-I	14 days
Conductivity	SM 2510	28 days
Total Dissolved Solids	SM 2540C	7 days
Anions (Chloride, Bromide, Fluoride, Sulphate)	SM 4110	28 days
Anions (Nitrite-N, Nitrate-N)	SM 4110	7 days
Volatile Organic Compounds	SW846 5030/8260	14 days

Notes:

(1) Methods referenced from the following:

SM - "Standard Methods for the Examination of Water and Wastewater", 21st Ed., APHA, September 2005

SW846 - "Test Method for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, 1986,
with subsequent revisions

N Nitrogen

Table 3

**Qualified Sample Results Due To Outlying Matrix Spike Results
Groundwater Sampling Events
Clean Harbors Canada Inc.
Sarnia, Ontario
June and December 2019**

Lab Report #	Parameter	Sample ID	Analyte	MS % Recovery	Control Limits % Recovery	Qualified Result	Units
19L552742	Gen Chem	GW-44985-120219-DD-42S	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120219-DD-55S	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120219-DD-55D	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120219-DD-58S	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120219-DD-56S	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120219-DD-56D	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120219-DD-62S	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120219-DD-59S	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120219-DD-59D	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120219-DD-63S	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120219-DD-54D	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120219-DD-41S	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120219-DD-41D	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120219-DD-30S	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120219-DD-30D	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120219-DD-32S	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120219-DD-32D	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120219-DD-53S	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120219-DD-53D	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120219-DD-35S	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120219-DD-35D	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120219-DD-43S-98	Cyanide (free)	72	75-125	0.002 UJ	mg/L

Table 3

**Qualified Sample Results Due To Outlying Matrix Spike Results
Groundwater Sampling Events
Clean Harbors Canada Inc.
Sarnia, Ontario
June and December 2019**

Lab Report #	Parameter	Sample ID	Analyte	MS % Recovery	Control Limits % Recovery	Qualified Result	Units
19L552742	Gen Chem	GW-44985-120219-DD-43D-98	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120319-DD-61D	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120319-DD-61S	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120319-DD-22S	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120319-DD-60D	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120319-DD-39D	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120319-DD-39I	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120319-DD-39S	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120319-DD-21II	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120319-DD-47D	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120319-DD-40S	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120319-DD-40D	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120319-DD-32IV	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120319-DD-32II	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120319-DD-46D	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120319-DD-46I	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120319-DD-46S	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120319-DD-48S	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120319-DD-EW2A	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120319-DD-EW2A-98	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120319-DD-EW2C	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120319-DD-EW2B	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120319-DD-EW1C	Cyanide (free)	72	75-125	0.002 UJ	mg/L

Table 3

Qualified Sample Results Due To Outlying Matrix Spike Results
Groundwater Sampling Events
Clean Harbors Canada Inc.
Sarnia, Ontario
June and December 2019

Lab Report #	Parameter	Sample ID	Analyte	MS % Recovery	Control Limits % Recovery	Qualified Result	Units
19L552742	Gen Chem	GW-44985-120419-DD-PW2	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120419-DD-22D	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120419-DD-61I	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120419-DD-45S	Cyanide (free)	72	75-125	0.002 UJ	mg/L
19L552742	Gen Chem	GW-44985-120419-DD-48D	Cyanide (free)	72	75-125	0.002 J-	mg/L
19L552742	Gen Chem	GW-44985-120419-DD-57S	Cyanide (free)	72	75-125	0.003 J-	mg/L
19L552742	Gen Chem	GW-44985-120419-DD-57D	Cyanide (free)	72	75-125	0.003 J-	mg/L
19L552742	Gen Chem	GW-44985-120419-DD-EW1B	Cyanide (free)	72	75-125	0.004 J-	mg/L
19L552742	Gen Chem	GW-44985-120419-DD-EW1A	Cyanide (free)	72	75-125	0.004 J-	mg/L
19L552742	Gen Chem	GW-44985-120419-DD-PW1	Cyanide (free)	72	75-125	0.004 J-	mg/L
19L552742	Gen Chem	GW-44985-120419-DD-45D	Cyanide (free)	72	75-125	0.003 J-	mg/L

Notes:

- MS - Matrix Spike
 UJ - Not detected; associated reporting limit is estimated
 J- - Estimated concentration, but the result may be biased low
 Gen Chem - General Chemistry

Table 4

**Qualified Sample Data Due To Analyte Concentrations in the Field Blank
Groundwater Sampling Events
Clean Harbors Canada Inc.
Sarnia, Ontario
June and December 2019**

Lab Report #	Parameter	Rinse Blank ID	Analyte	Blank Result	Associated Sample ID	Qualified Result	Units
19T480053	Metals	GW-44985-061319-DD-B1	Boron (dissolved)	0.012	GW-44985-061119-DD-43S	0.074 J+	mg/L
					GW-44985-061119-DD-59S	0.110 J+	mg/L
					GW-44985-061119-DD-45S	0.078 J+	mg/L
					GW-44985-061119-DD-61I	0.109 J+	mg/L
					GW-44985-061219-DD-21II	0.092 J+	mg/L
					GW-44985-061219-DD-32IV	0.071 J+	mg/L
					GW-44985-061219-DD-46I	0.099 J+	mg/L
					GW-44985-061219-DD-53S	0.111 J+	mg/L
					GW-44985-061219-DD-30S	0.082 J+	mg/L
					GW-44985-061219-DD-50B	0.119 J+	mg/L

Note:

J+ - Estimated concentration, but the result may be biased high

Table 5

**Qualified Sample Data Due To Variability in Field Duplicate Results
Groundwater Sampling Events
Clean Harbors Canada Inc.
Sarnia, Ontario
June and December 2019**

Lab Report #	Parameter	Analyte	Diff	Sample ID	Qualified Result	Field Duplicate Sample ID	Qualified Result	Units
19T480053	VOCs	Toluene	>1xRL	GW-44985-061319-DD-PW2	0.20 UJ	GW-44985-061319-DD-PW2-98	1.7 J	µg/L

Notes:

- Diff - Difference (i.e., >1X RL for waters)
- RL - Reporting limit
- UJ - Not detected; associated reporting limit is estimated
- J - Estimated concentration
- VOCs - Volatile Organic Compounds

Appendix B

Transducer Hydrographs

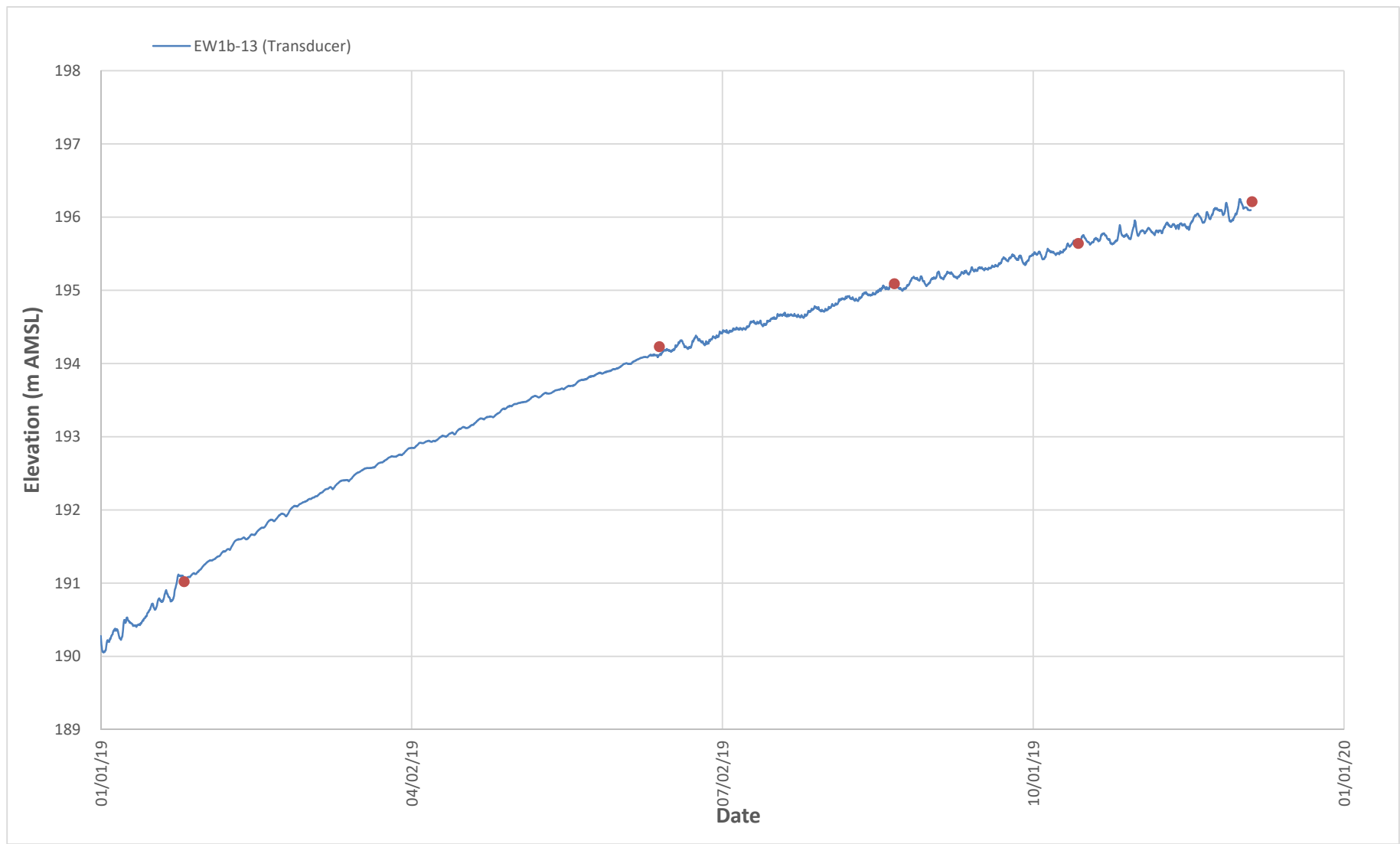


Figure B-1
HYDROGRAPH - EW1b-13
2019 ANNUAL GROUNDWATER MONITORING REPORT
CLEAN HARBORS CANADA INC.
Lambton Facility



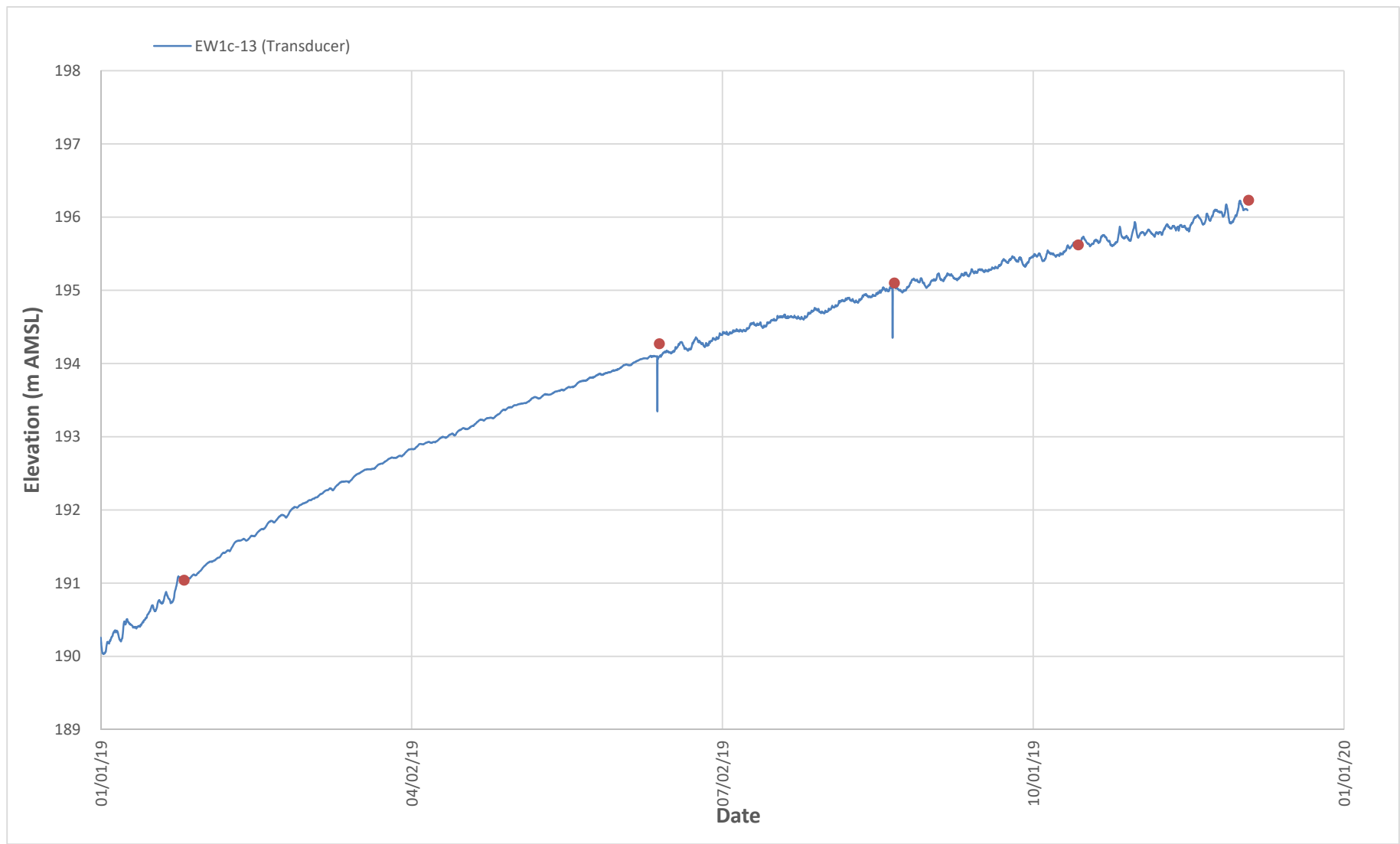


Figure B-2
HYDROGRAPH - EW1c-13
2019 ANNUAL GROUNDWATER MONITORING REPORT
CLEAN HARBORS CANADA INC.
Lambton Facility



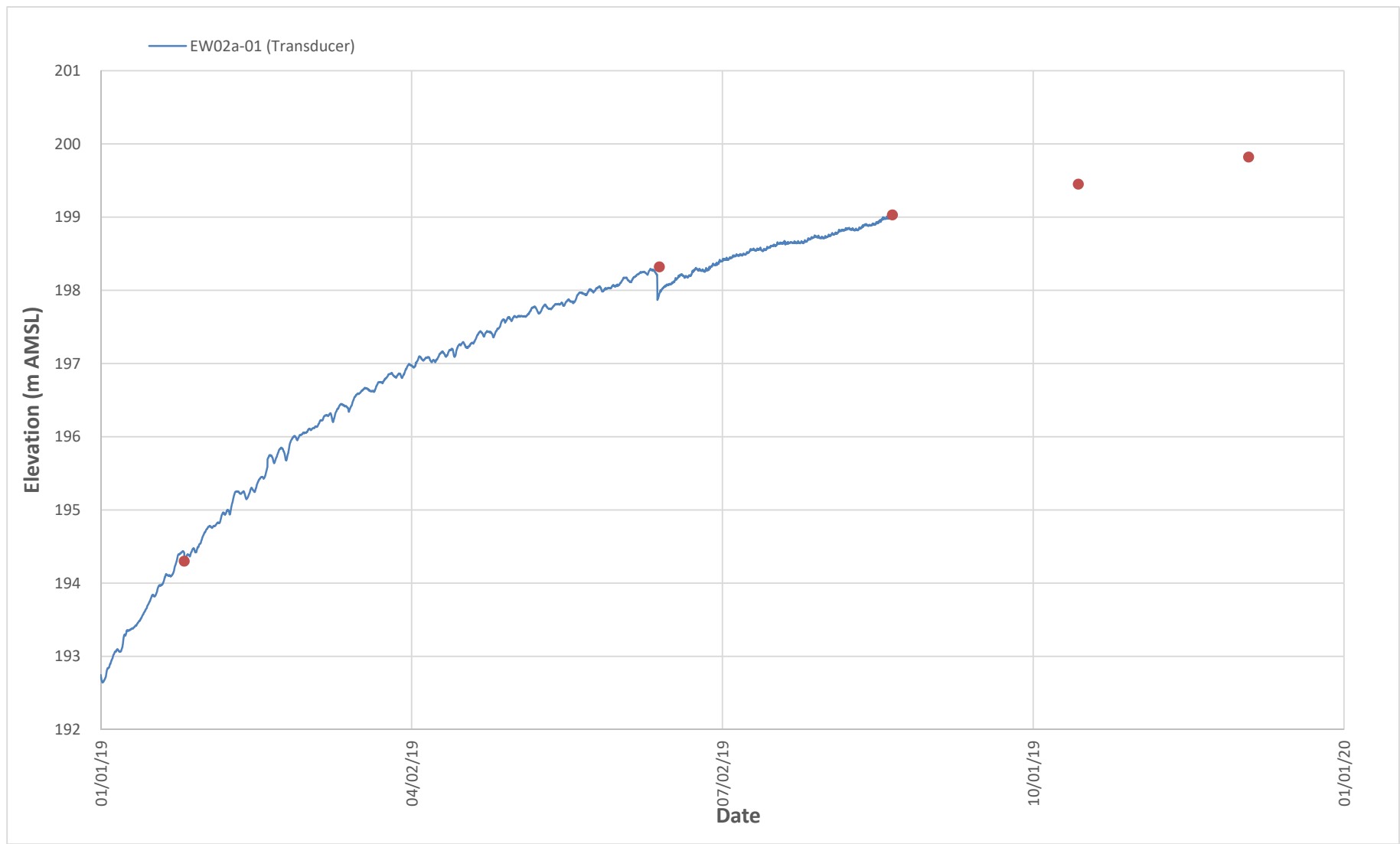


Figure B-3
HYDROGRAPH - EW2a-01
2019 ANNUAL GROUNDWATER MONITORING REPORT
CLEAN HARBORS CANADA INC.
Lambton Facility



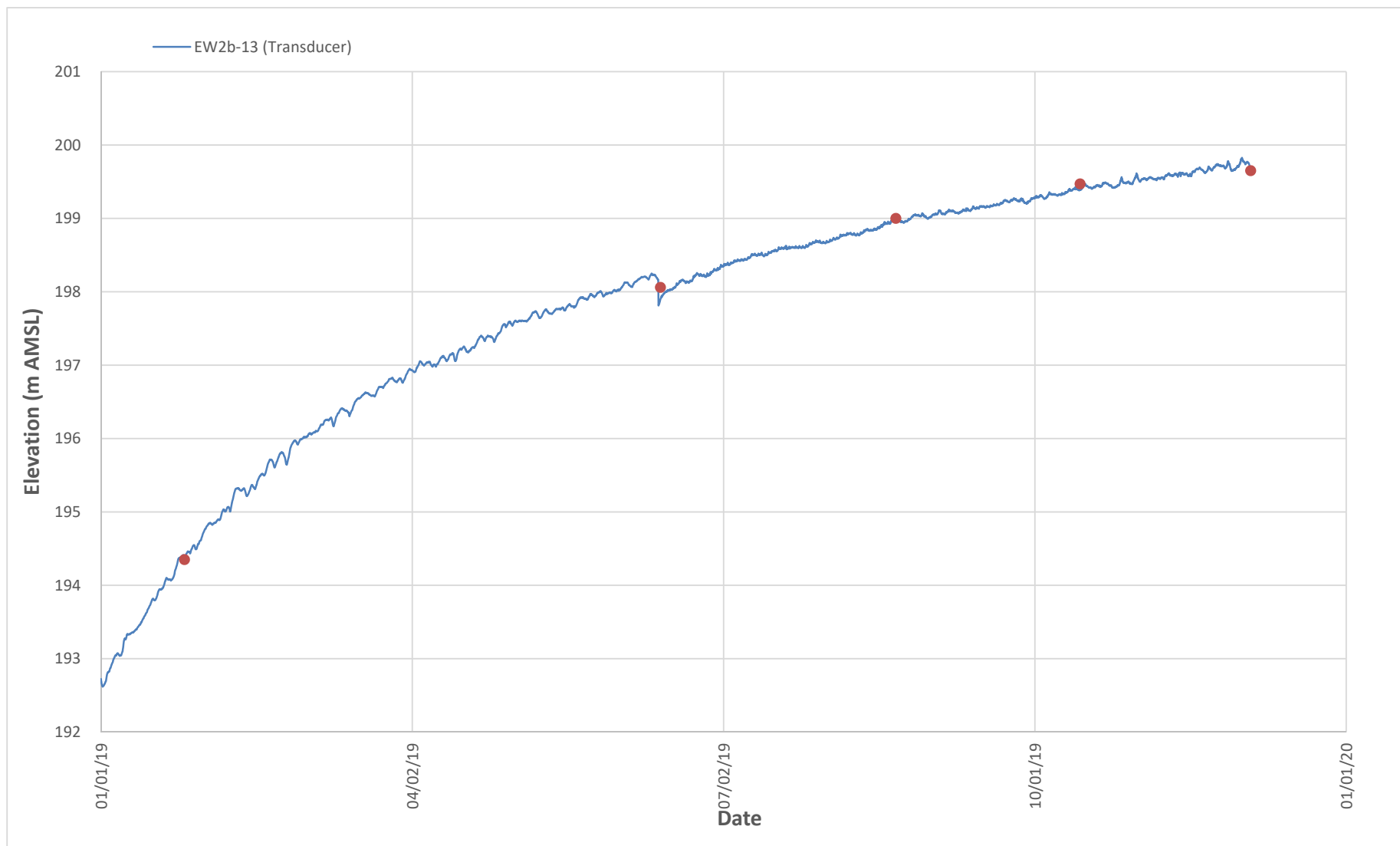


Figure B-4
HYDROGRAPH - EW2b-13
2019 ANNUAL GROUNDWATER MONITORING REPORT
CLEAN HARBORS CANADA INC.
Lambton Facility



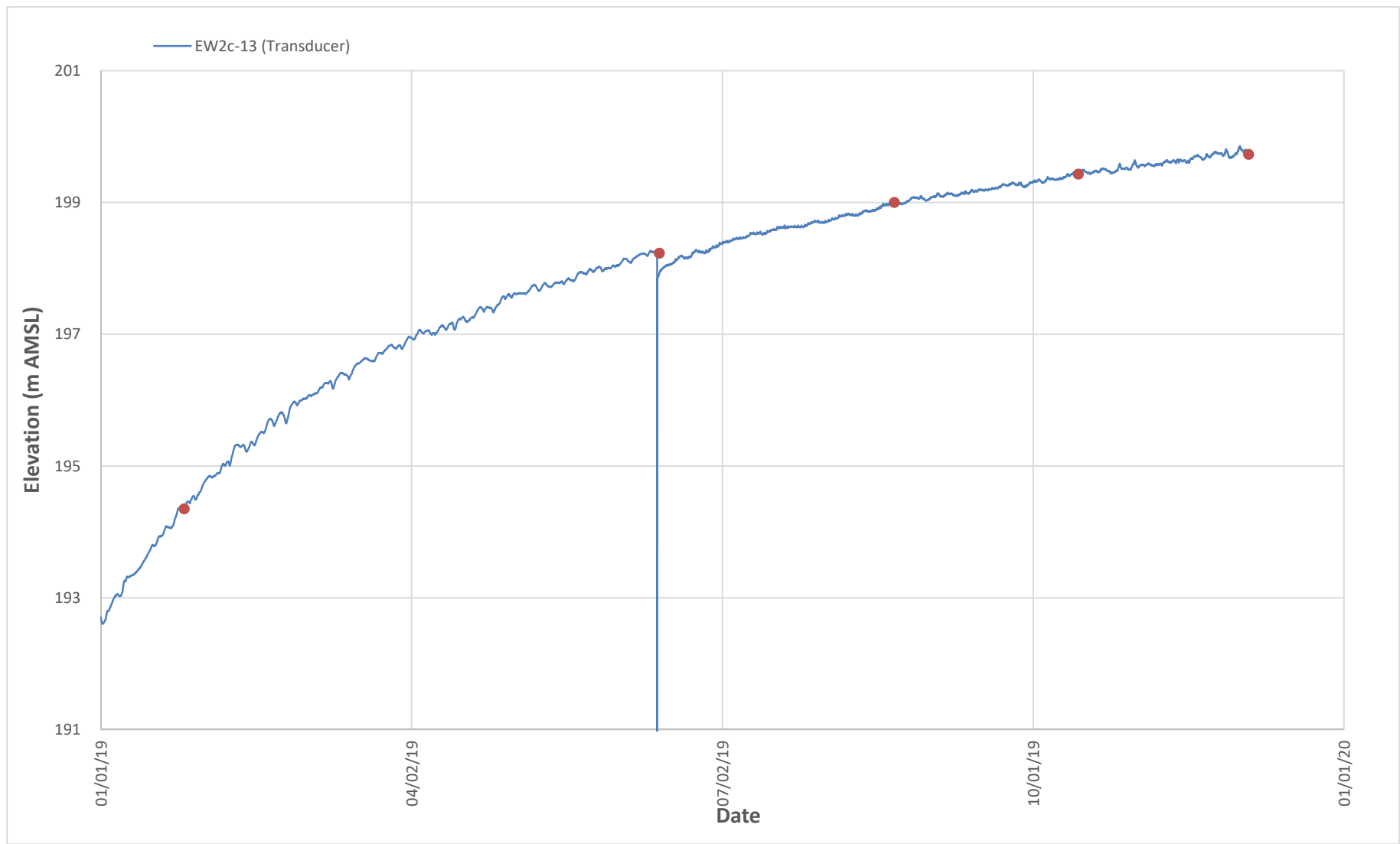


Figure B-5
HYDROGRAPH - EW2c-13
2019 ANNUAL GROUNDWATER MONITORING REPORT
CLEAN HARBORS CANADA INC.
Lambton Facility



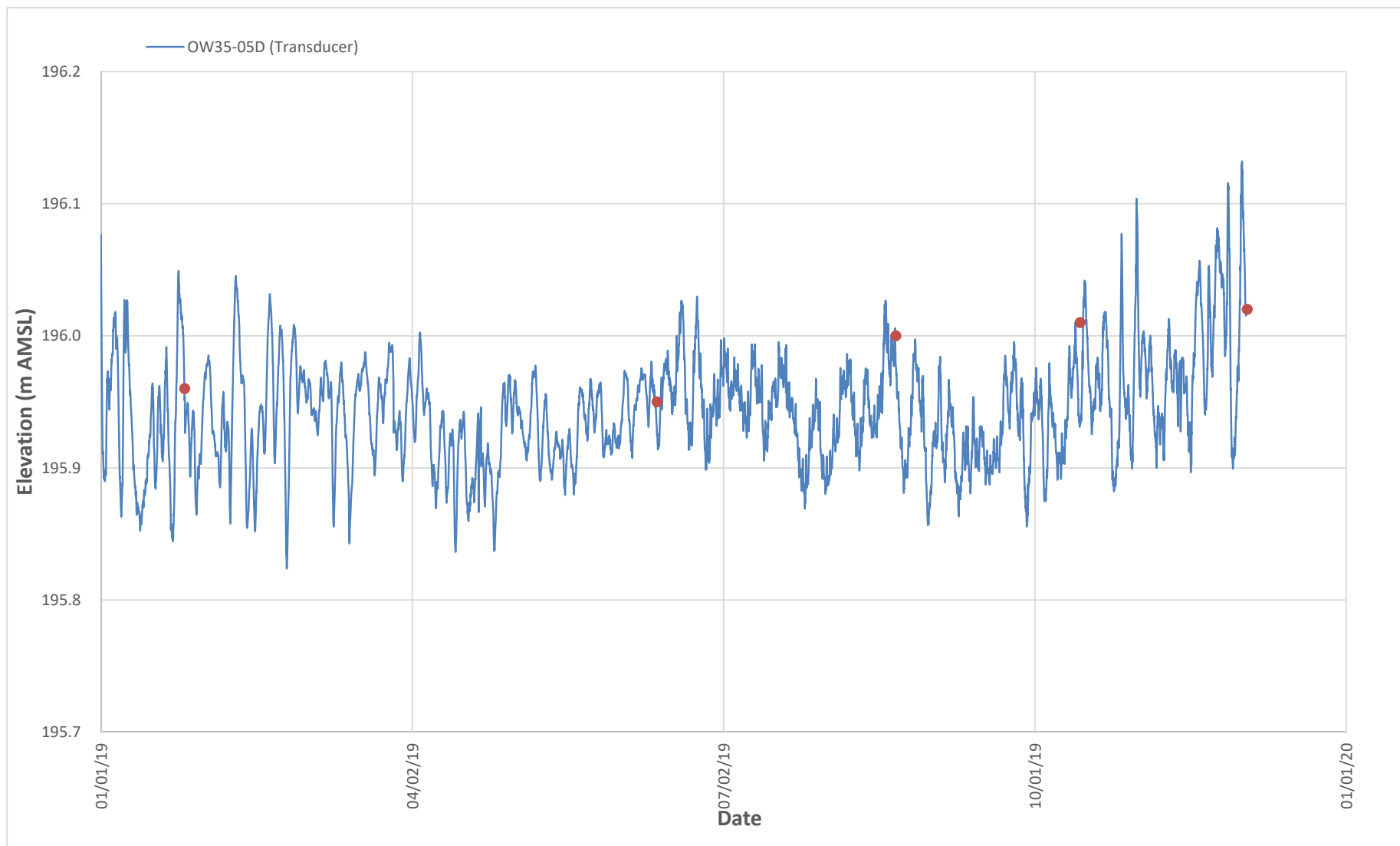


Figure B-6
HYDROGRAPH - OW35-05D
2019 ANNUAL GROUNDWATER MONITORING REPORT
CLEAN HARBORS CANADA INC.
Lambton Facility



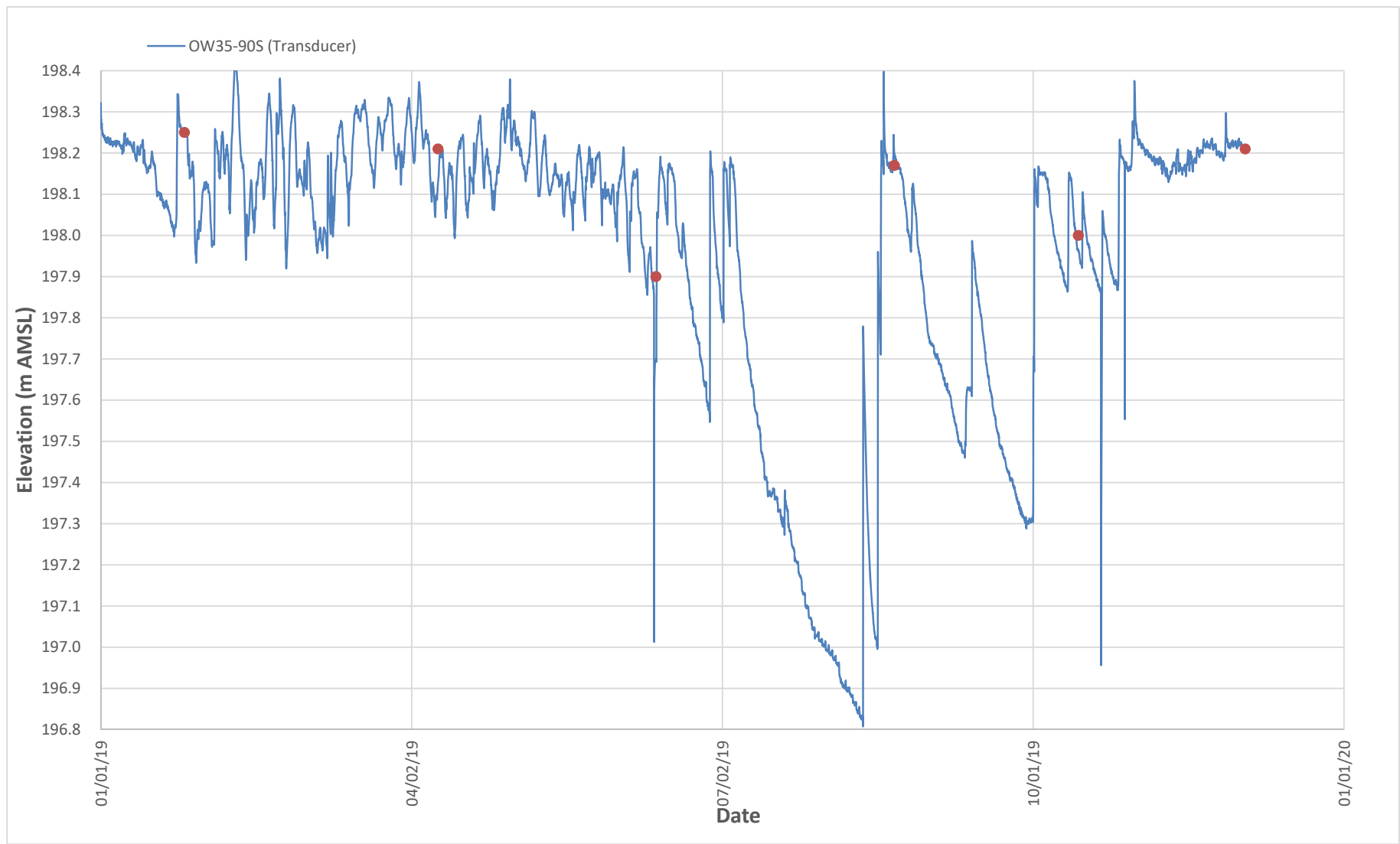


Figure B-7
HYDROGRAPH - OW35-90S
2019 ANNUAL GROUNDWATER MONITORING REPORT
CLEAN HARBORS CANADA INC.
Lambton Facility



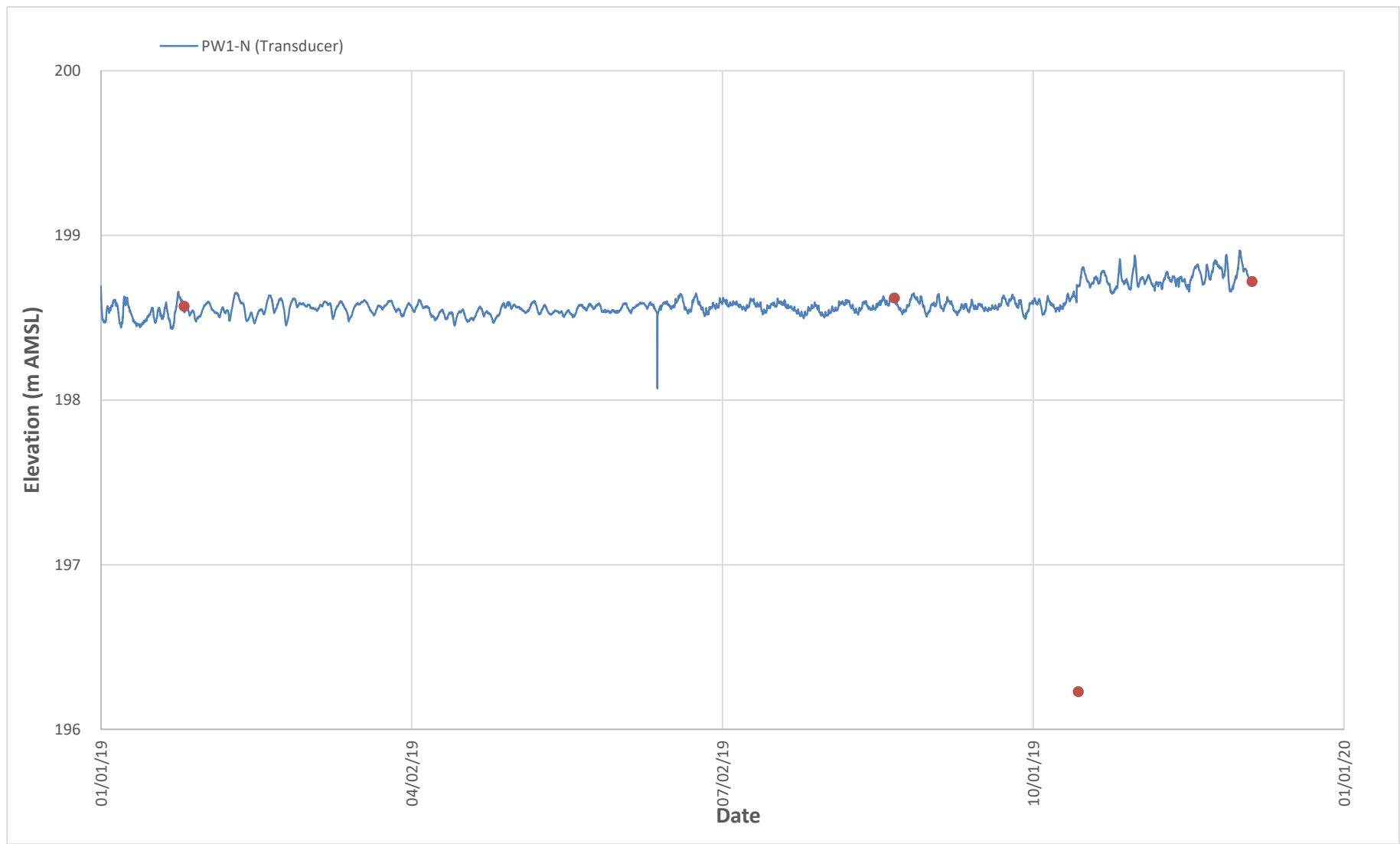


Figure B-8
HYDROGRAPH - PW1-N
2019 ANNUAL GROUNDWATER MONITORING REPORT
CLEAN HARBORS CANADA INC.
Lambton Facility



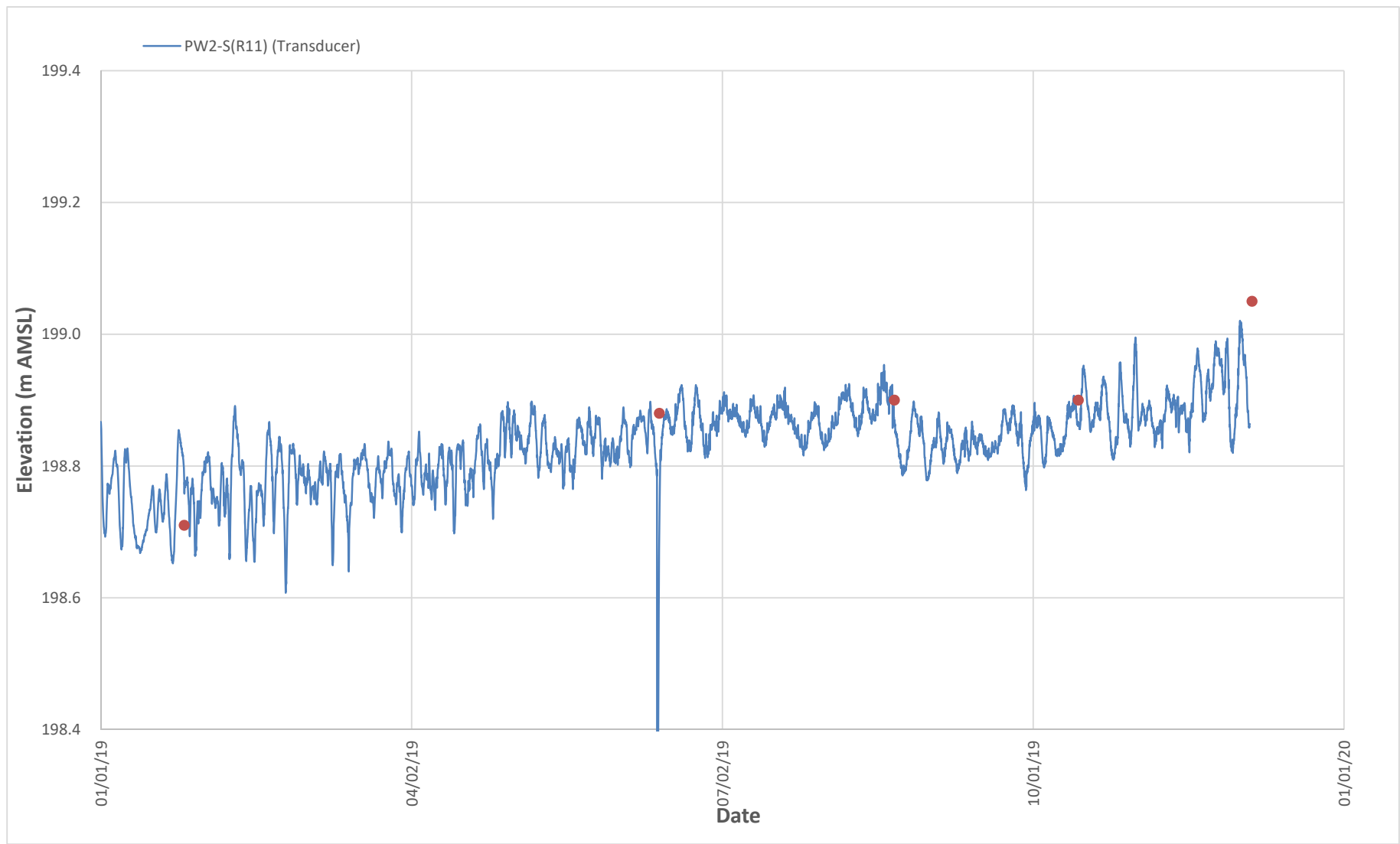


Figure B-9
HYDROGRAPH - PW2-S(R11)
2019 ANNUAL GROUNDWATER MONITORING REPORT
CLEAN HARBORS CANADA INC.
Lambton Facility



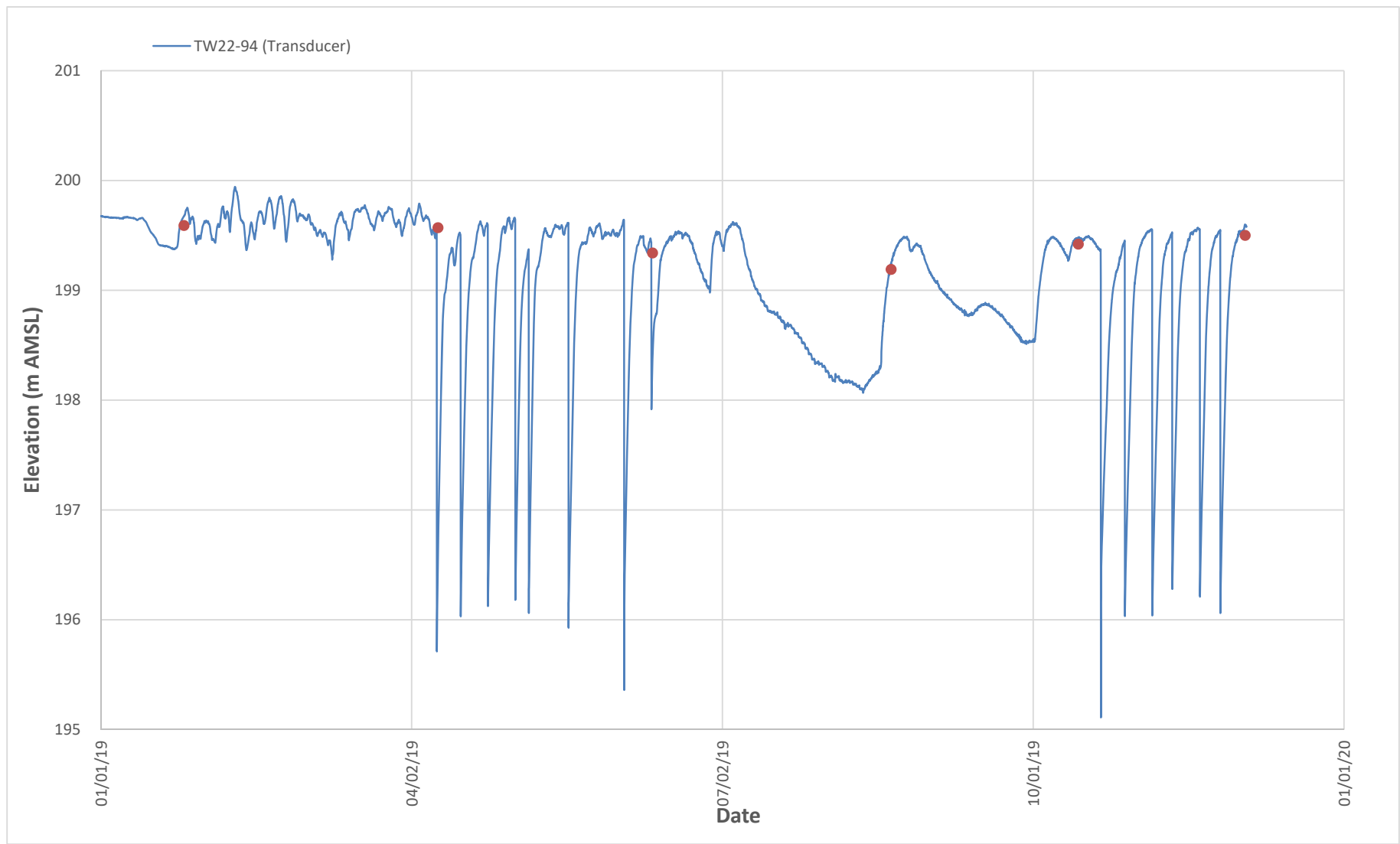


Figure B-10
HYDROGRAPH - TW22-94
2019 ANNUAL GROUNDWATER MONITORING REPORT
CLEAN HARBORS CANADA INC.
Lambton Facility



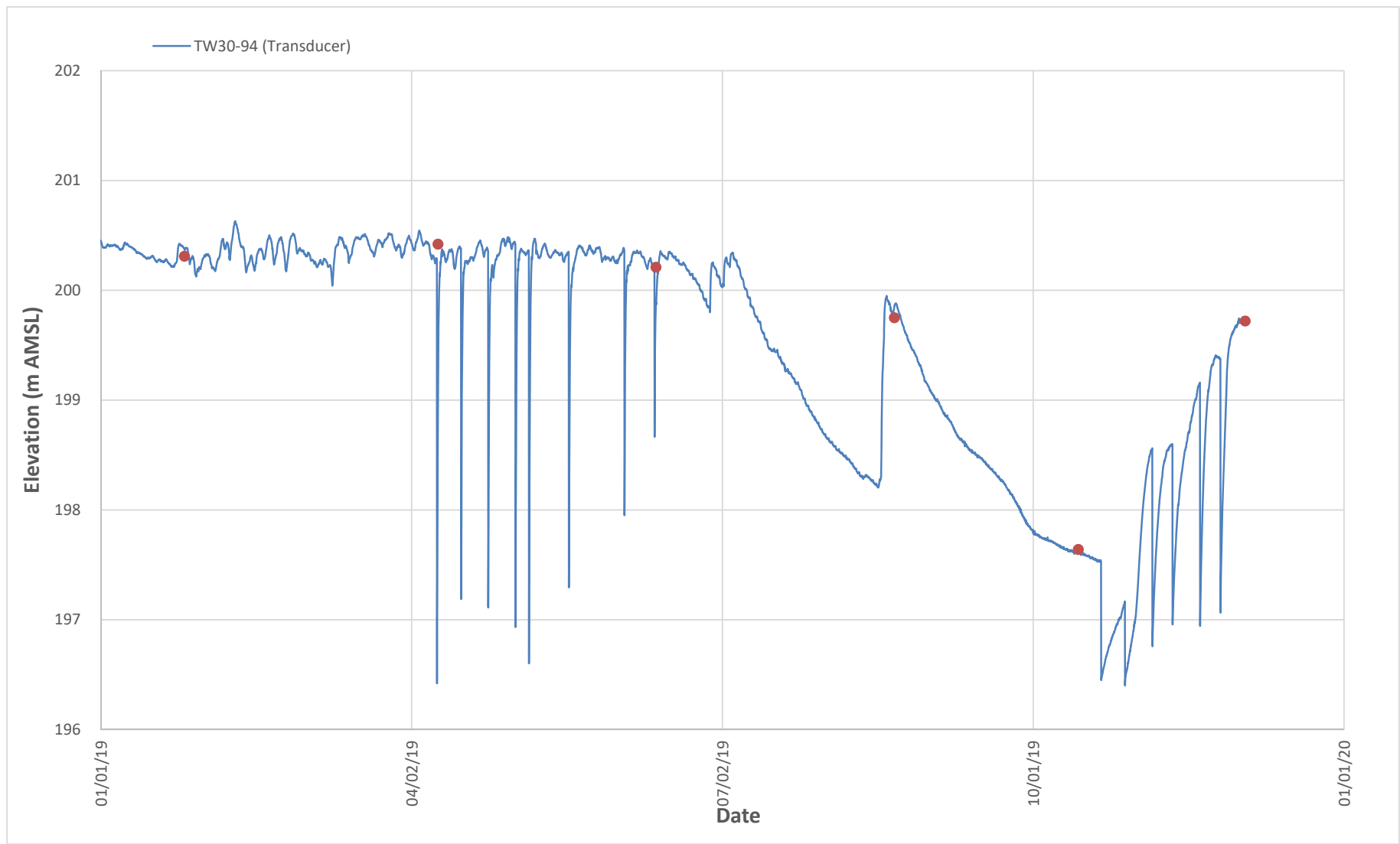


Figure B-11
HYDROGRAPH - TW30-94
2019 ANNUAL GROUNDWATER MONITORING REPORT
CLEAN HARBORS CANADA INC.
Lambton Facility



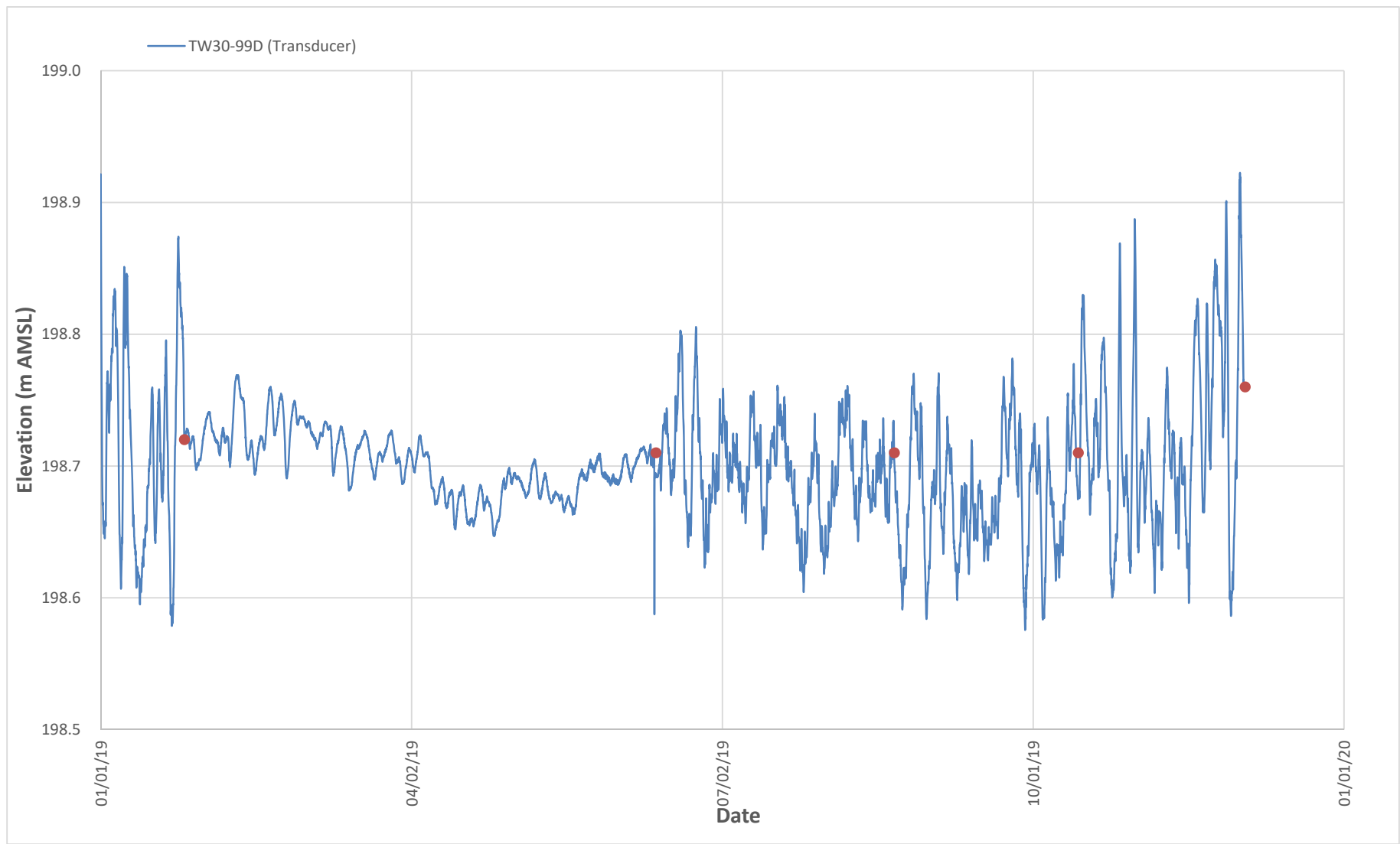


Figure B-12
HYDROGRAPH - TW30-99D
2019 ANNUAL GROUNDWATER MONITORING REPORT
CLEAN HARBORS CANADA INC.
Lambton Facility



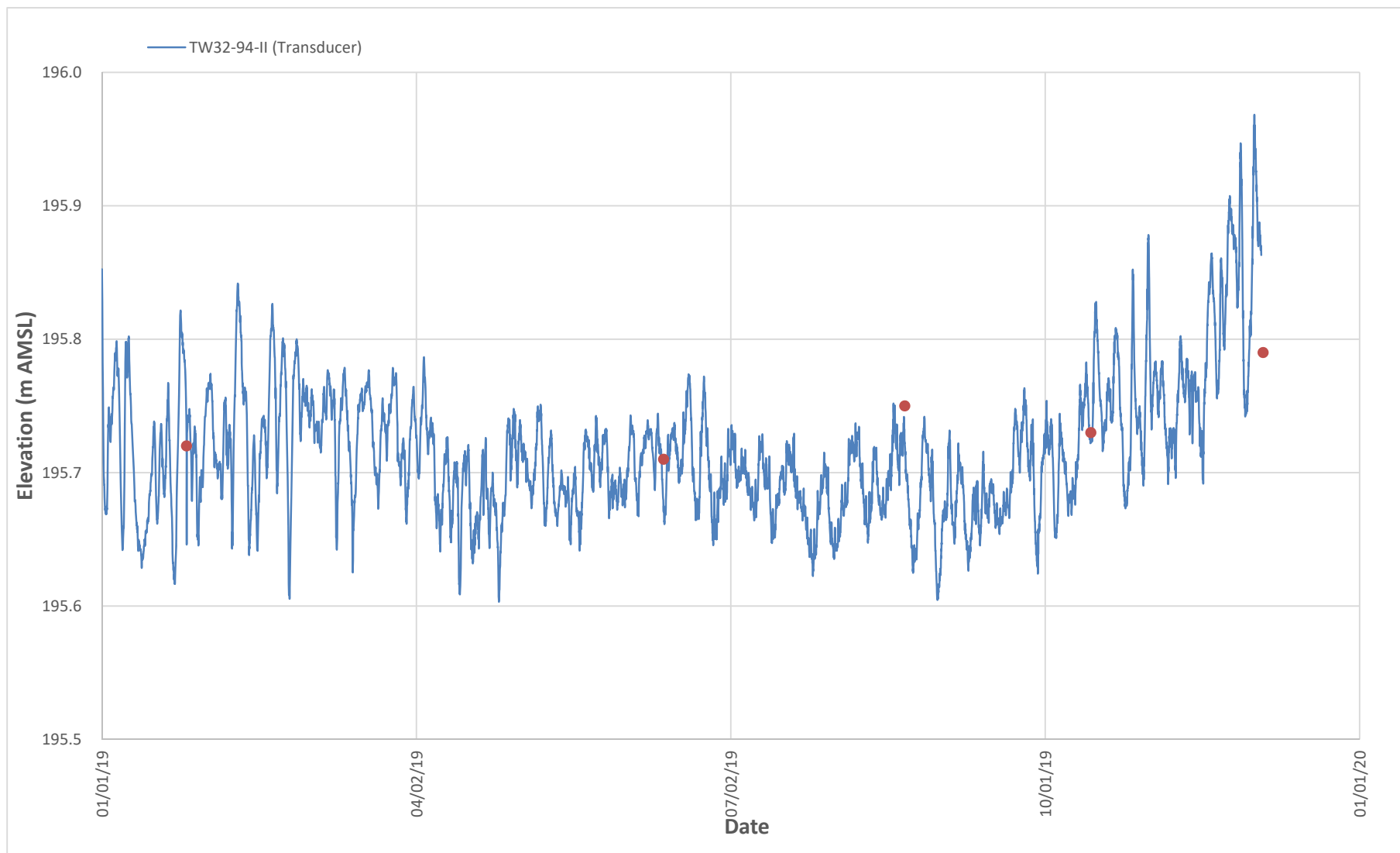


Figure B-13
HYDROGRAPH - TW32-94-II
2019 ANNUAL GROUNDWATER MONITORING REPORT
CLEAN HARBORS CANADA INC.
Lambton Facility



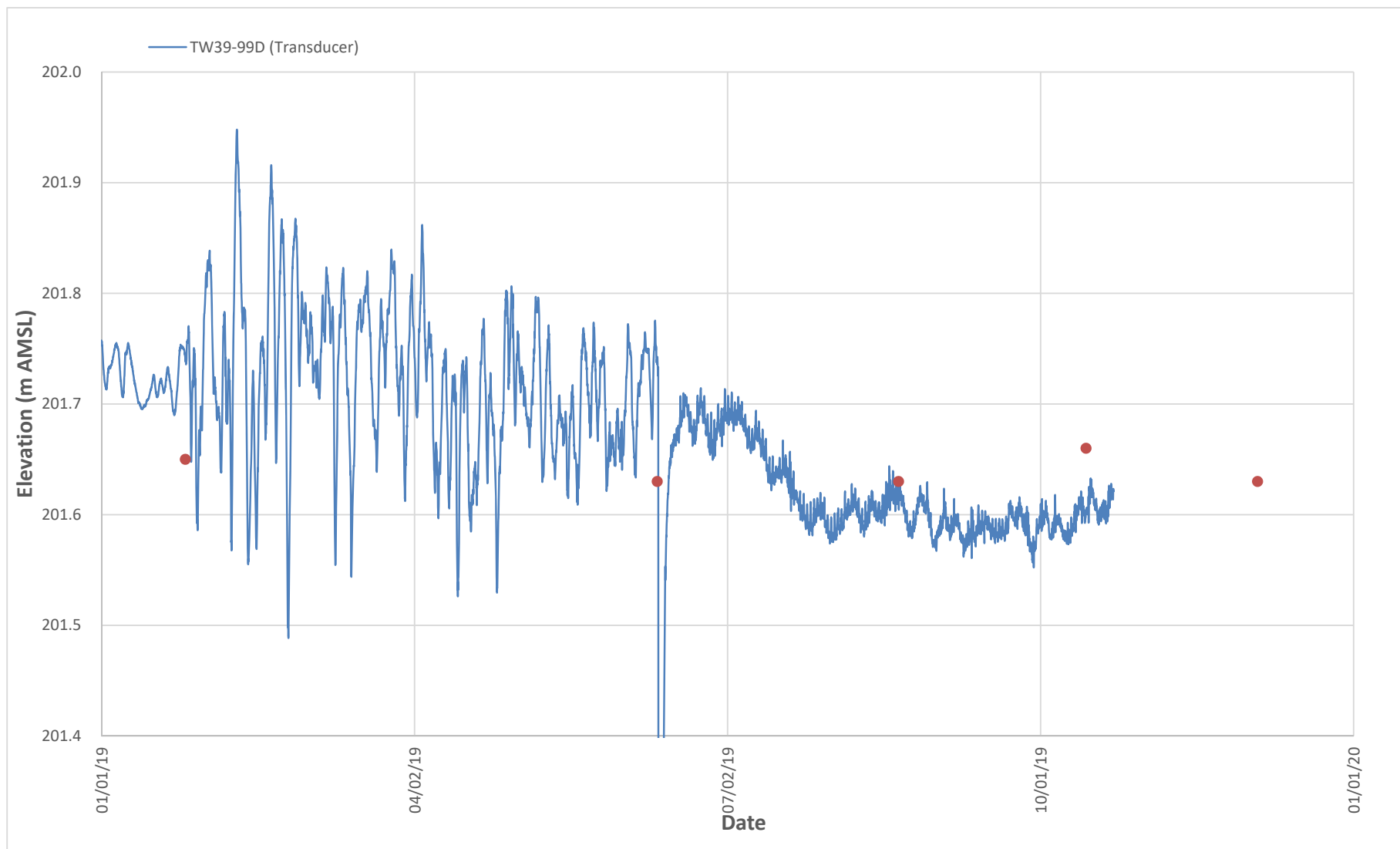


Figure B-14
HYDROGRAPH - TW39-99D
2019 ANNUAL GROUNDWATER MONITORING REPORT
CLEAN HARBORS CANADA INC.
Lambton Facility



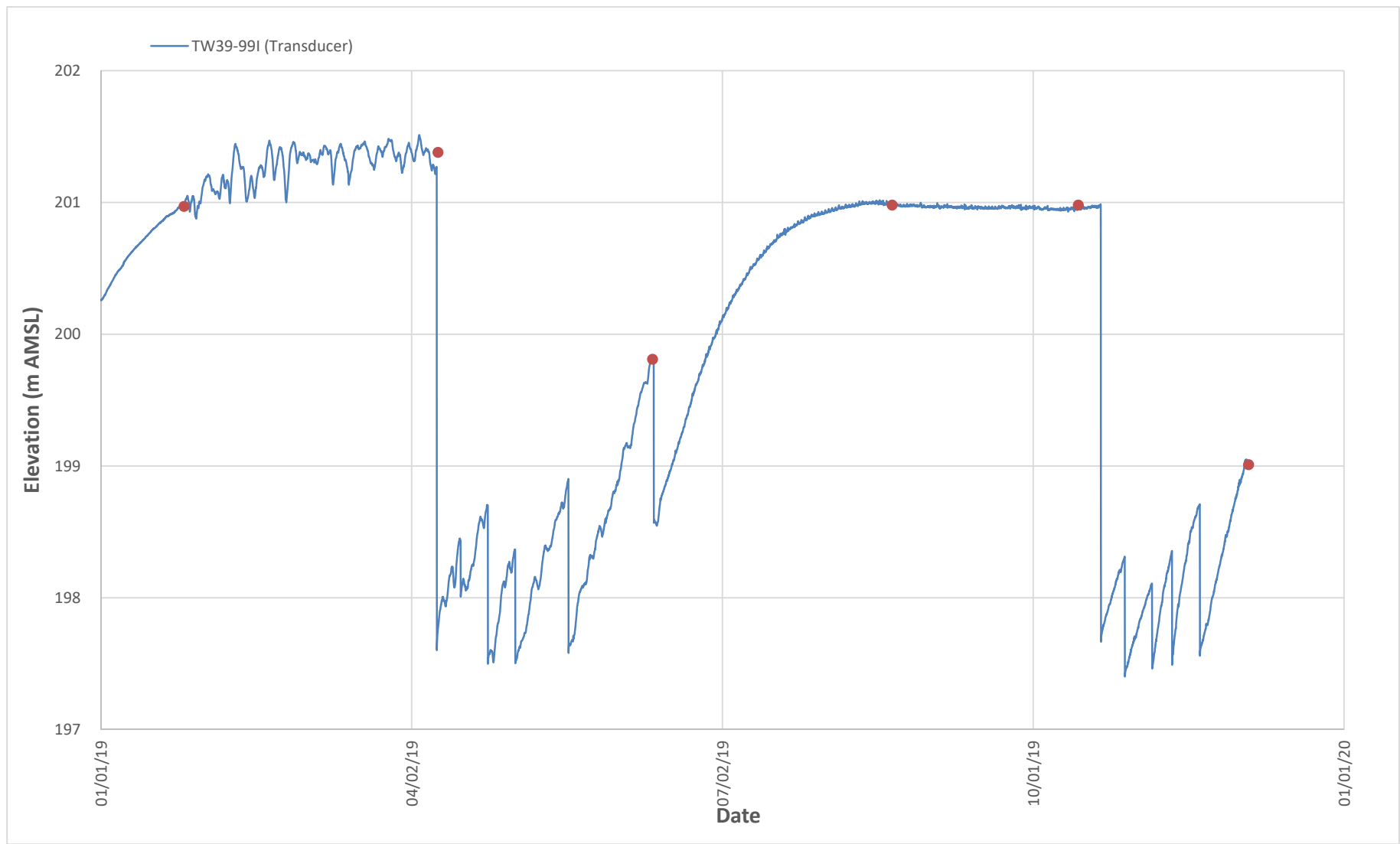


Figure B-15
HYDROGRAPH - TW39-99I
2019 ANNUAL GROUNDWATER MONITORING REPORT
CLEAN HARBORS CANADA INC.
Lambton Facility



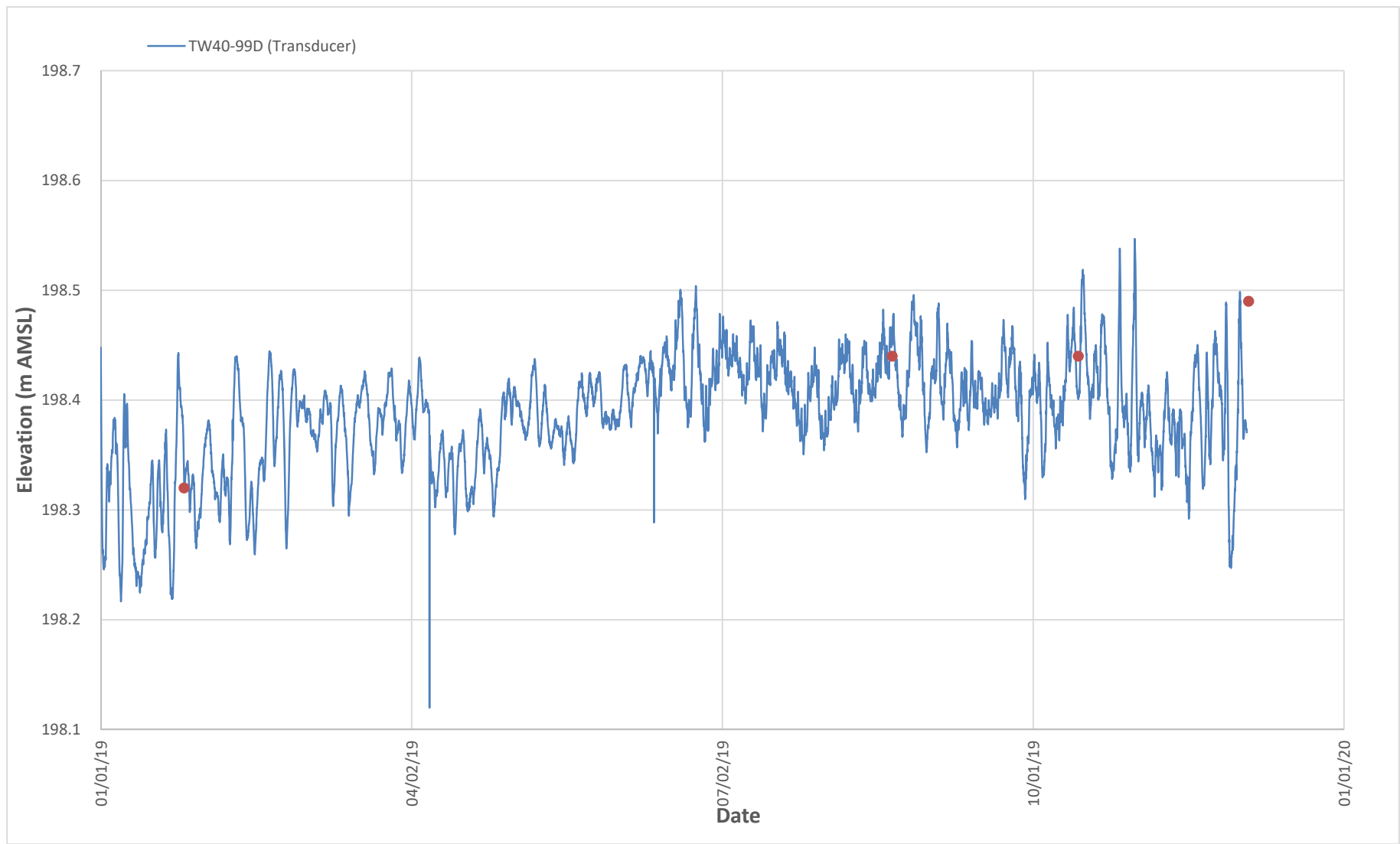


Figure B-16
HYDROGRAPH - TW40-99D
2019 ANNUAL GROUNDWATER MONITORING REPORT
CLEAN HARBORS CANADA INC.
Lambton Facility



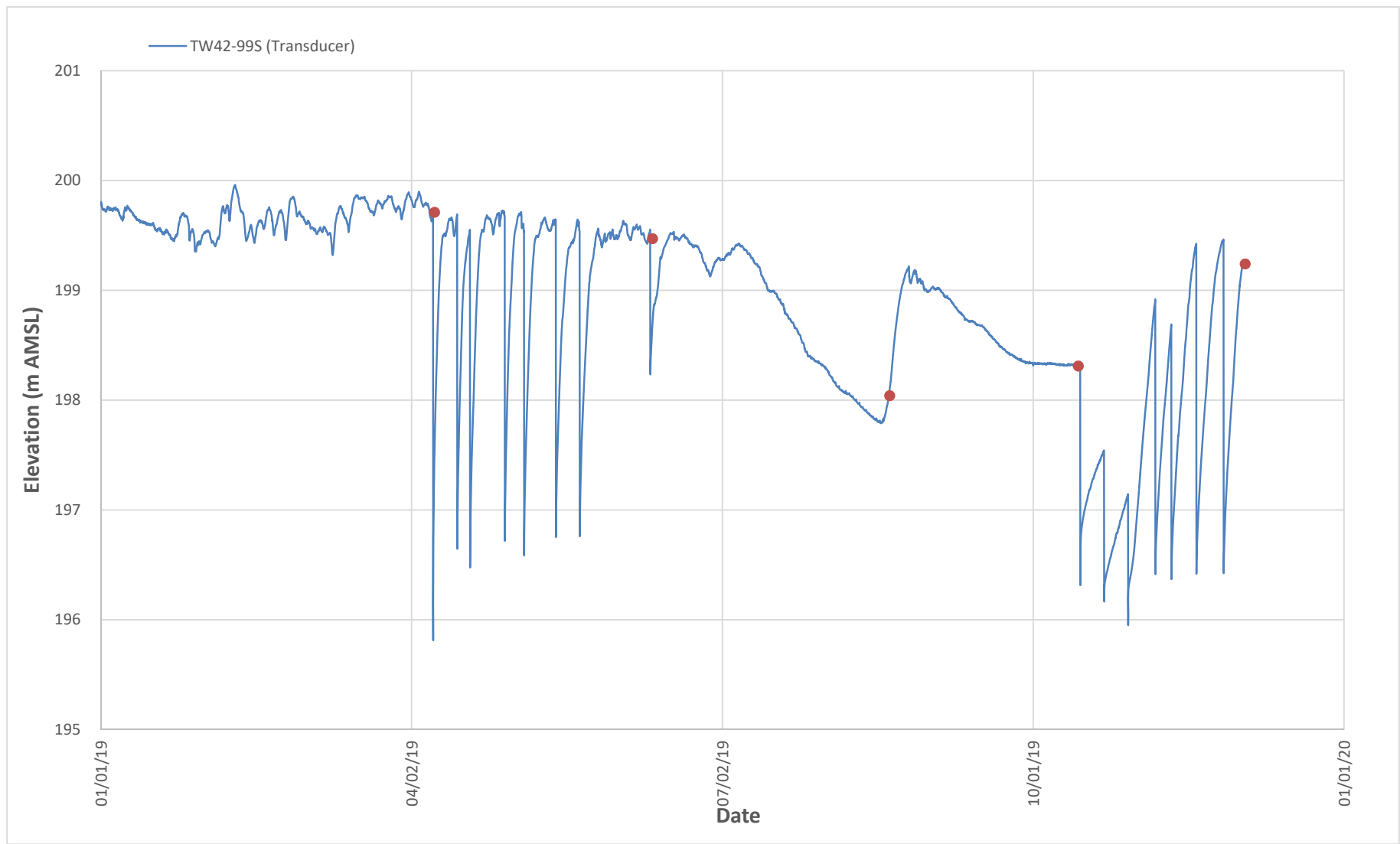


Figure B-17
HYDROGRAPH - TW42-99S
2019 ANNUAL GROUNDWATER MONITORING REPORT
CLEAN HARBORS CANADA INC.
Lambton Facility



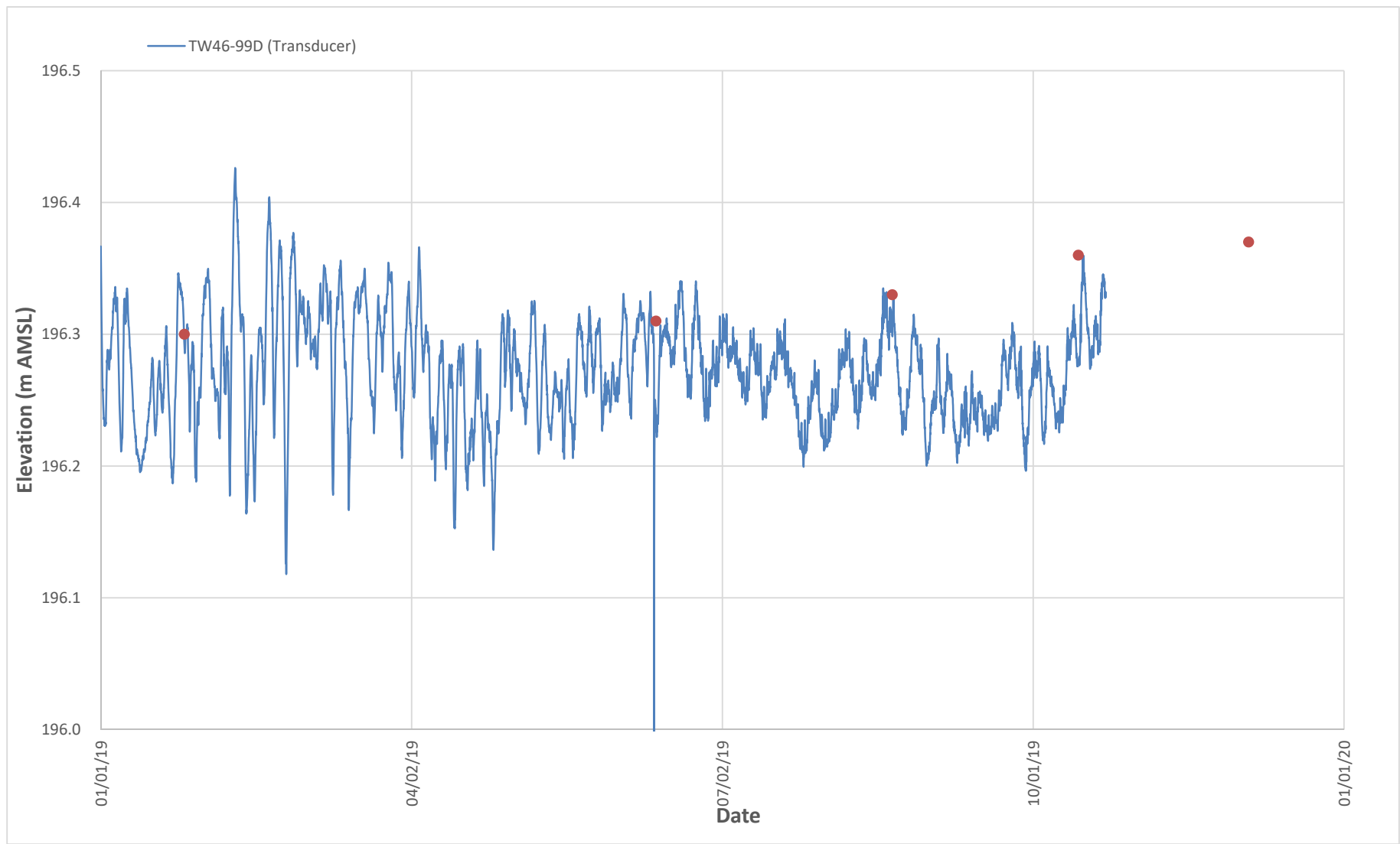


Figure B-18
HYDROGRAPH - TW46-99D
2019 ANNUAL GROUNDWATER MONITORING REPORT
CLEAN HARBORS CANADA INC.
Lambton Facility



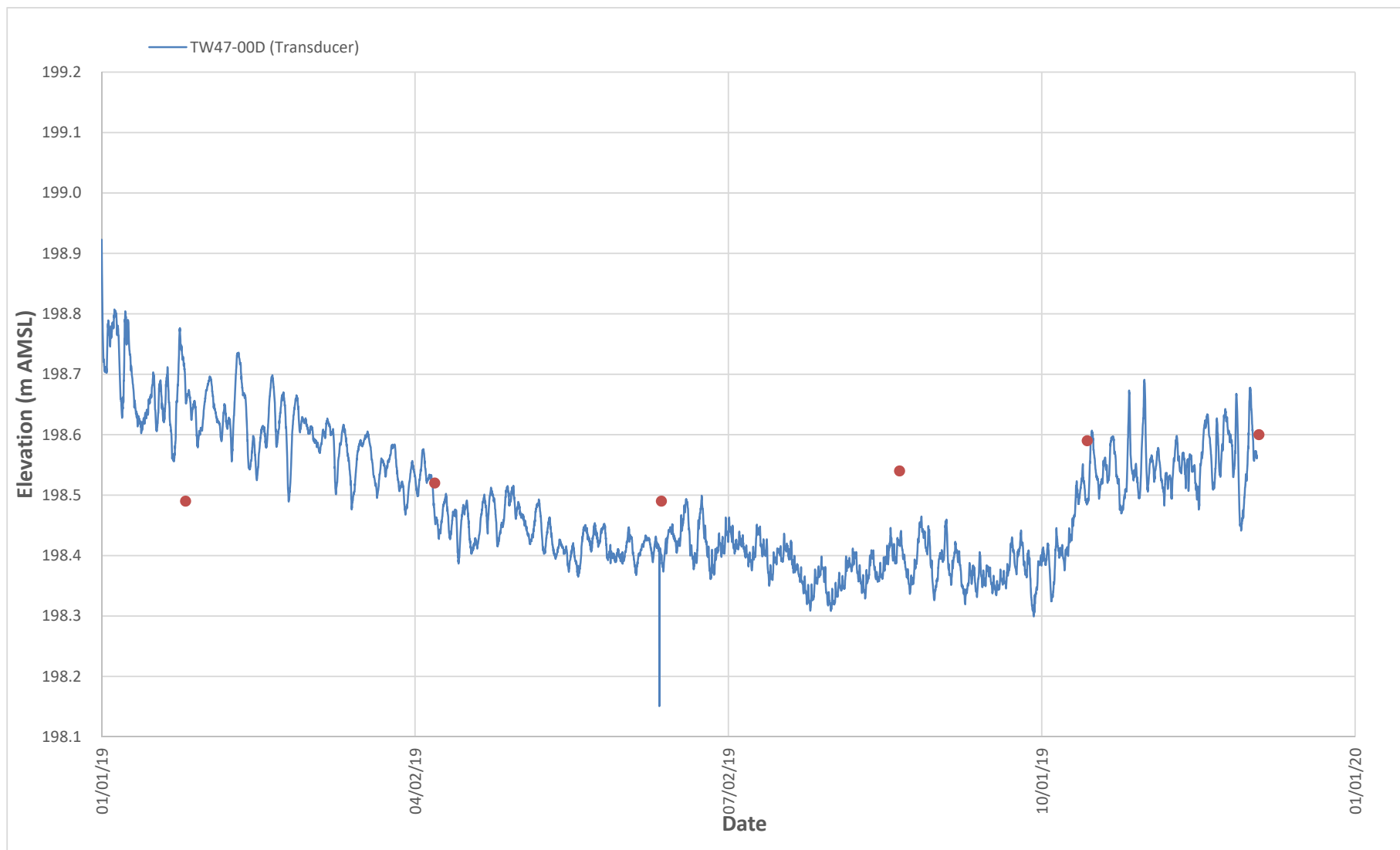


Figure B-19
HYDROGRAPH - TW47-00D
2019 ANNUAL GROUNDWATER MONITORING REPORT
CLEAN HARBORS CANADA INC.
Lambton Facility



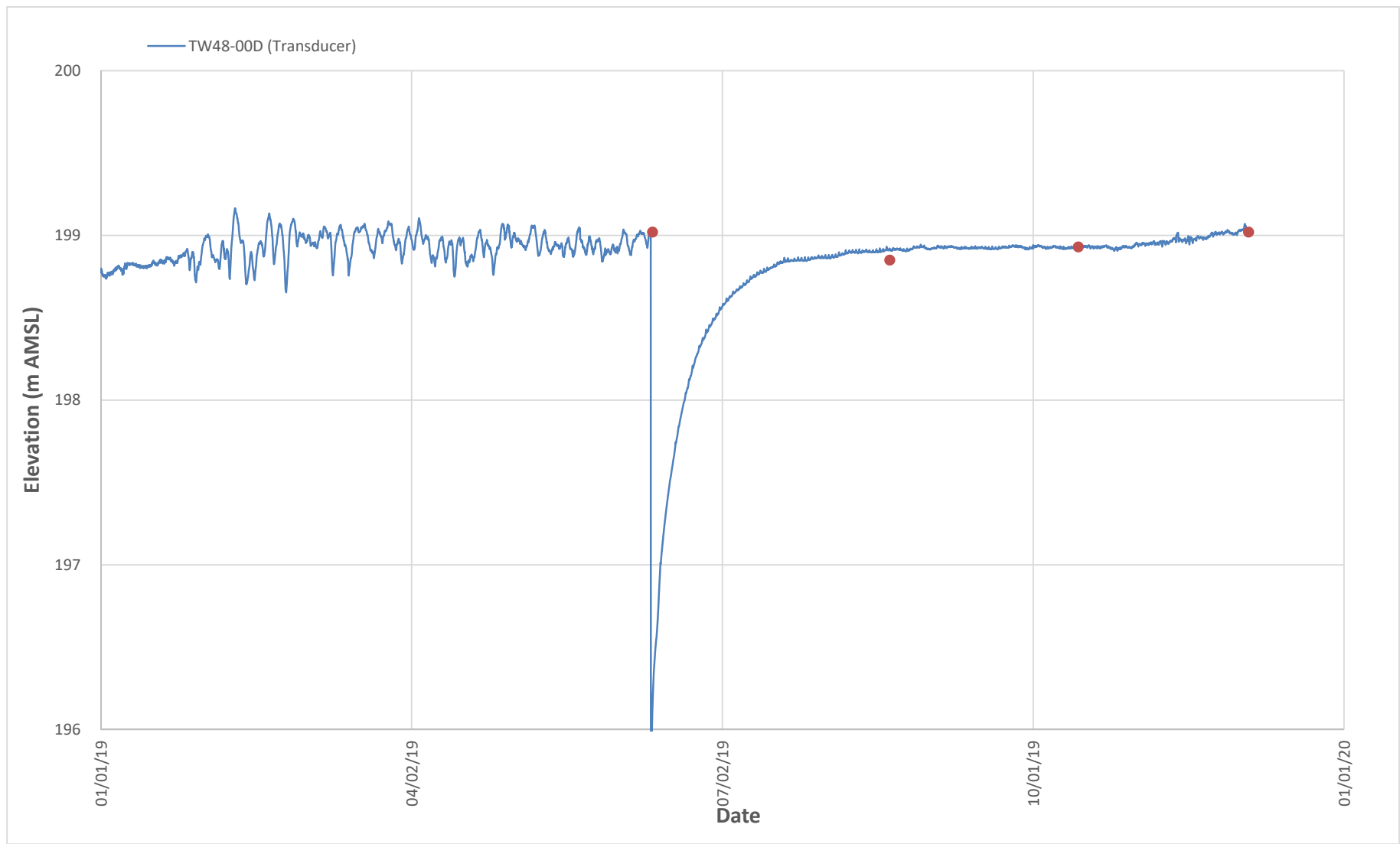


Figure B-20
HYDROGRAPH - TW48-00D
2019 ANNUAL GROUNDWATER MONITORING REPORT
CLEAN HARBORS CANADA INC.
Lambton Facility



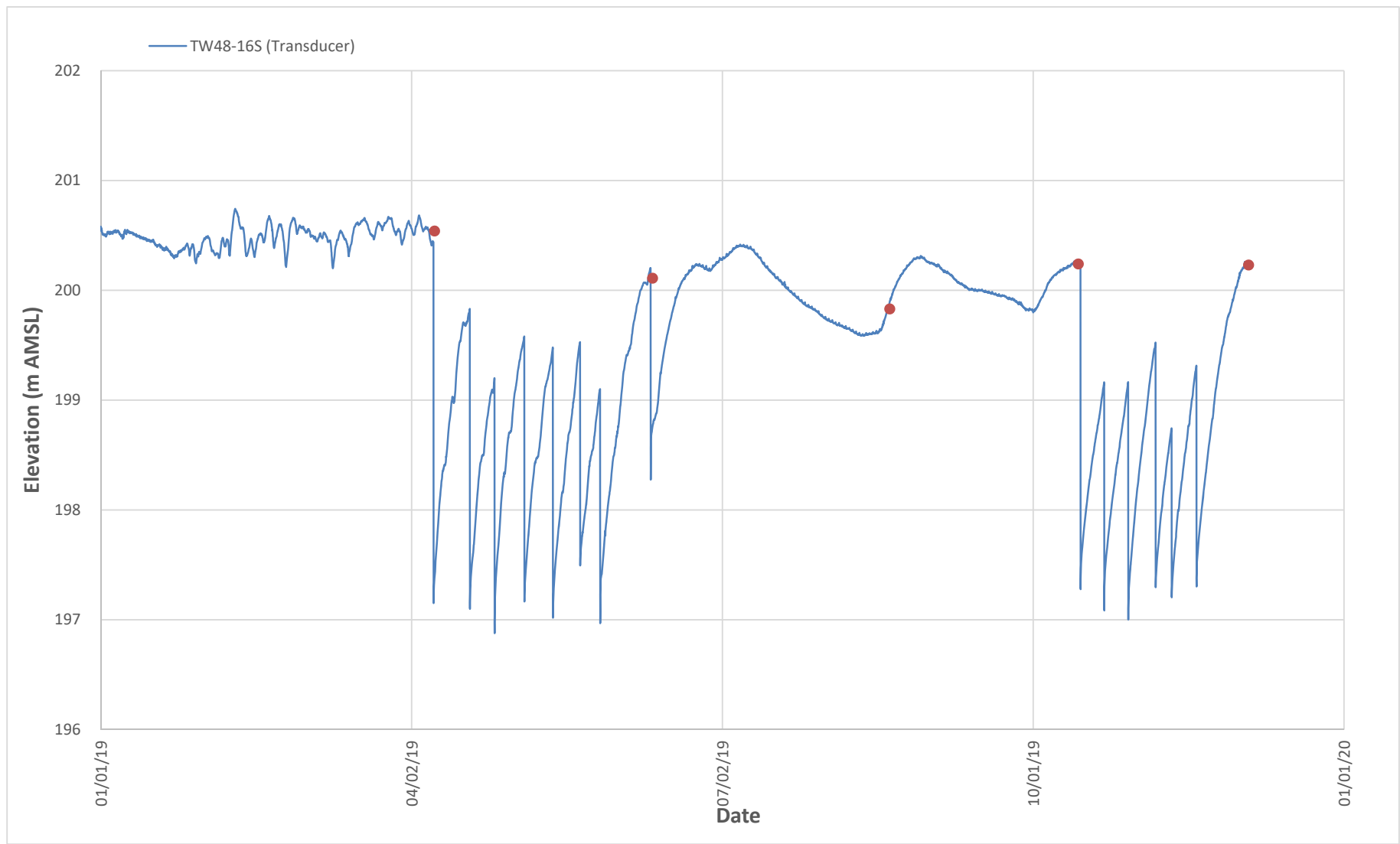


Figure B-21
HYDROGRAPH - TW48-16S
2019 ANNUAL GROUNDWATER MONITORING REPORT
CLEAN HARBORS CANADA INC.
Lambton Facility



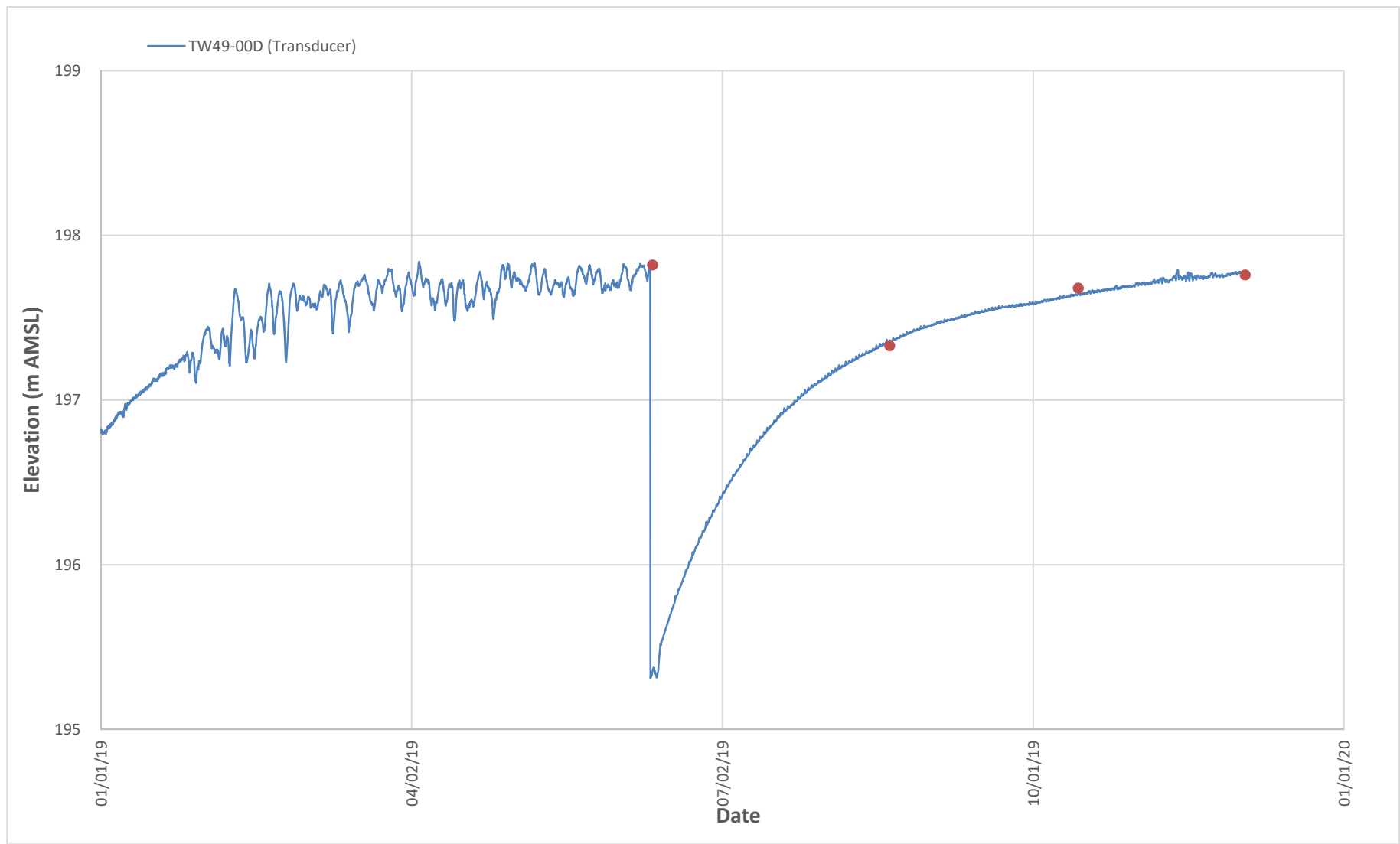


Figure B-22
HYDROGRAPH - TW49-00D
2019 ANNUAL GROUNDWATER MONITORING REPORT
CLEAN HARBORS CANADA INC.
Lambton Facility



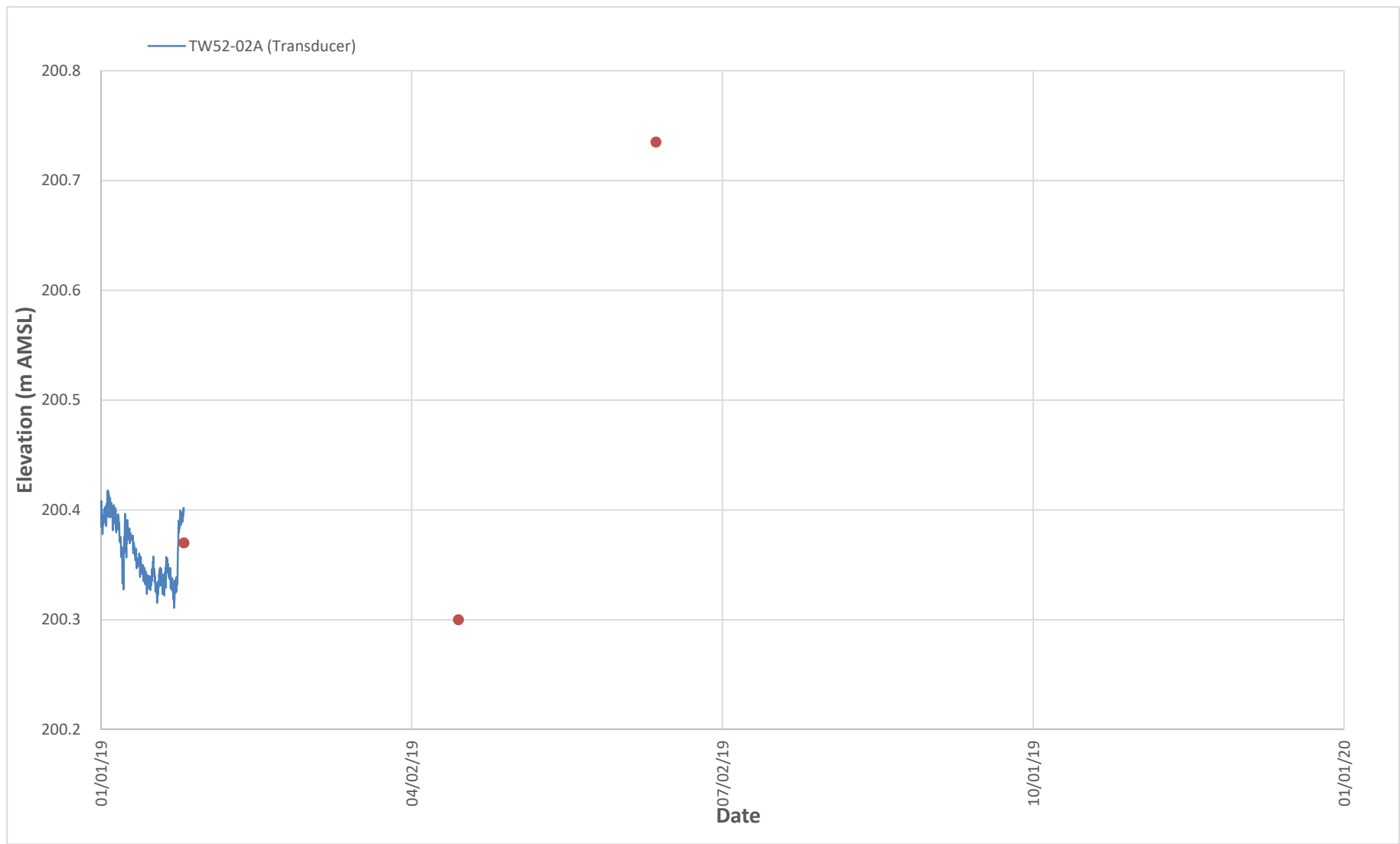


Figure B-23
HYDROGRAPH - TW52-02A
2019 ANNUAL GROUNDWATER MONITORING REPORT
CLEAN HARBORS CANADA INC.
Lambton Facility



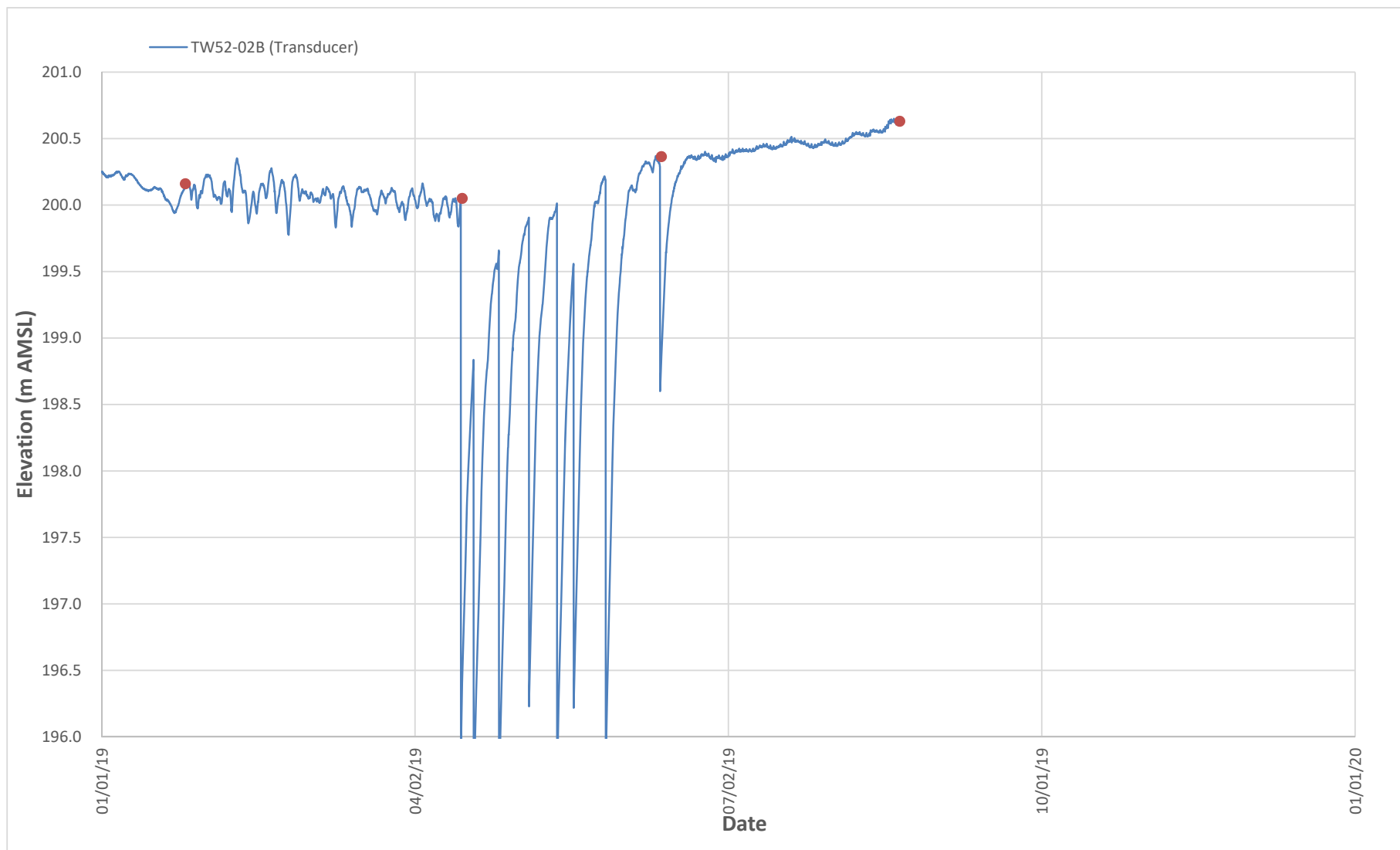


Figure B-24
HYDROGRAPH - TW52-02B
2019 ANNUAL GROUNDWATER MONITORING REPORT
CLEAN HARBORS CANADA INC.
Lambton Facility



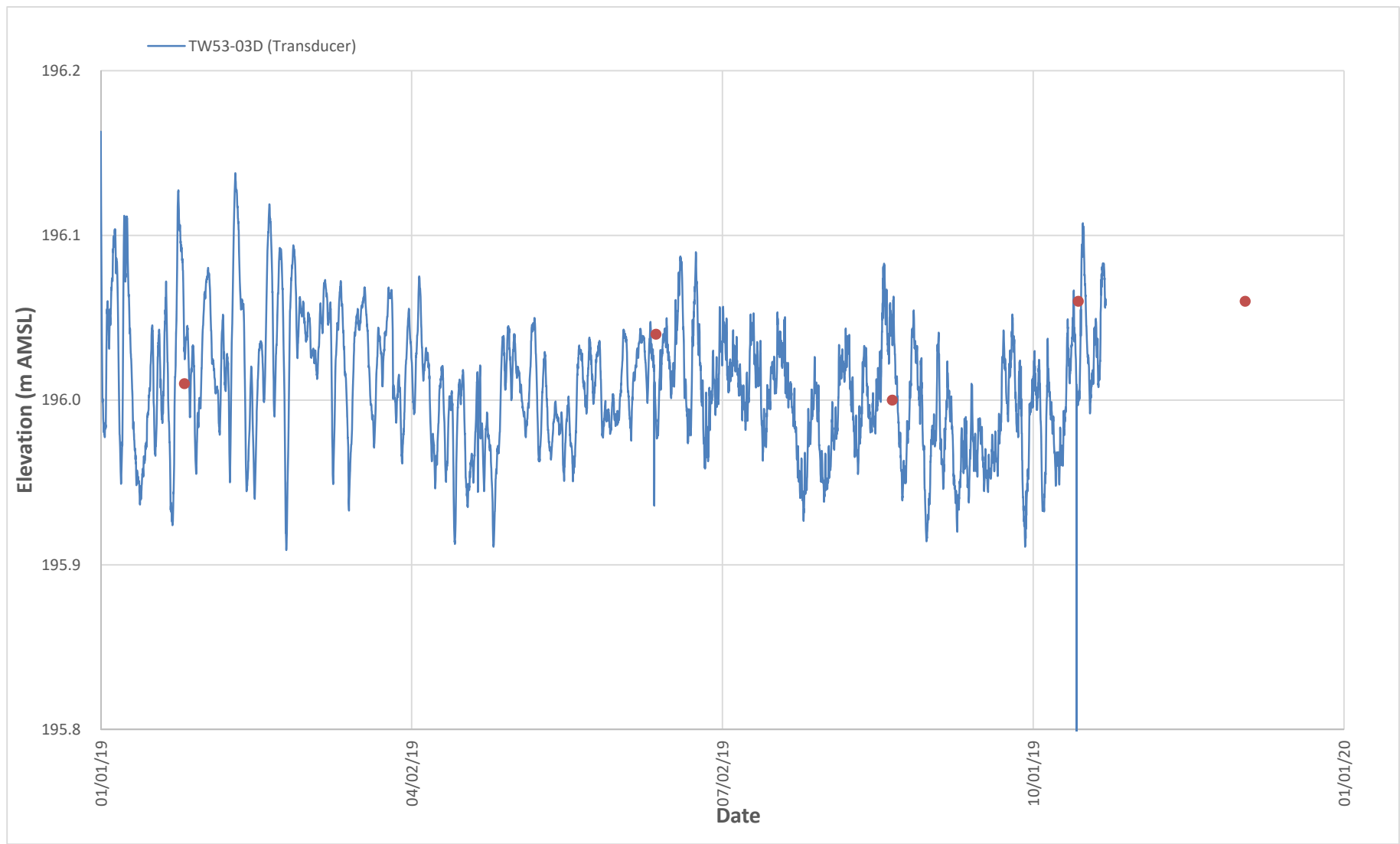


Figure B-25
HYDROGRAPH - TW53-03D
2019 ANNUAL GROUNDWATER MONITORING REPORT
CLEAN HARBORS CANADA INC.
Lambton Facility



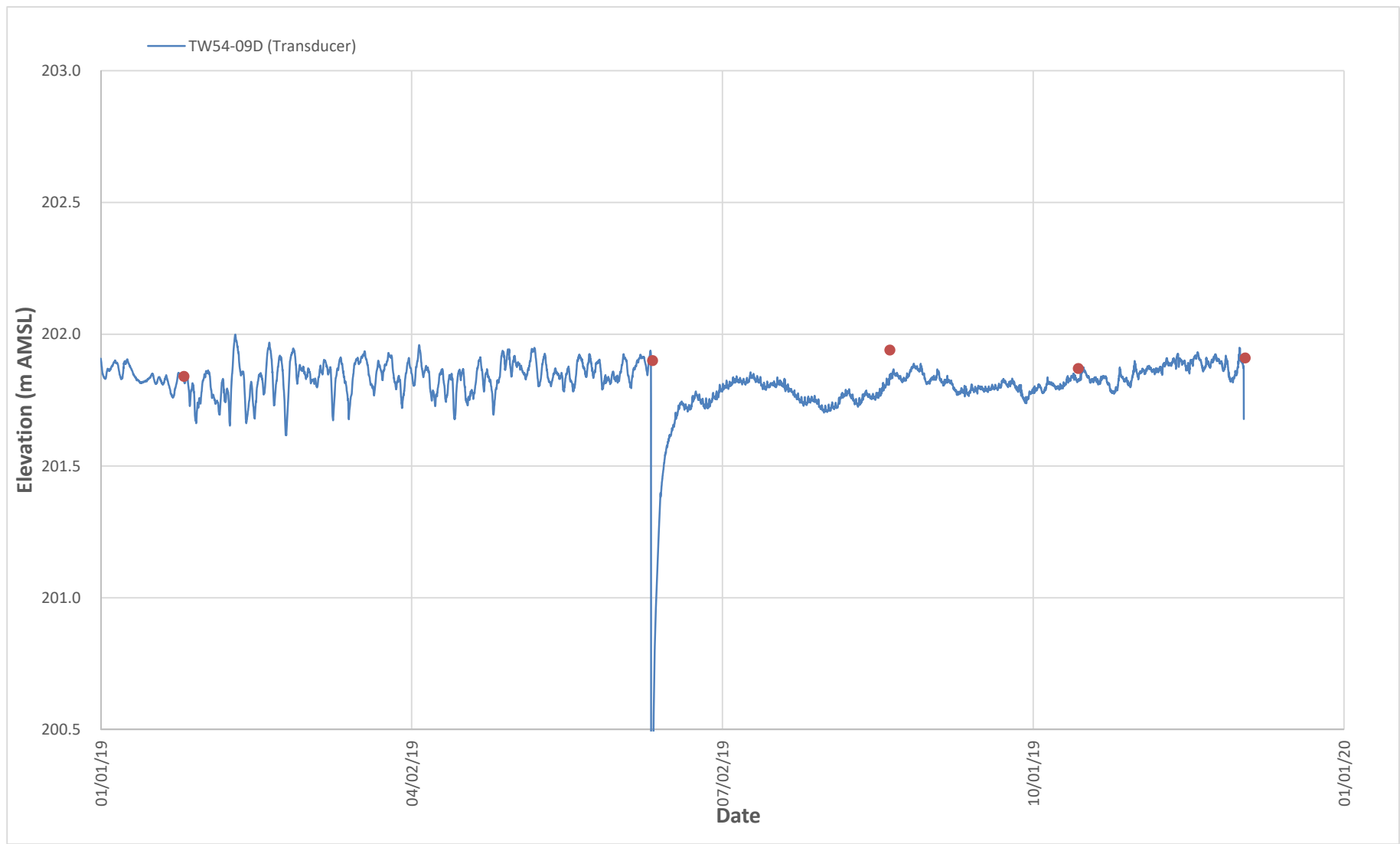


Figure B-26
HYDROGRAPH - TW54-09D
2019 ANNUAL GROUNDWATER MONITORING REPORT
CLEAN HARBORS CANADA INC.
Lambton Facility



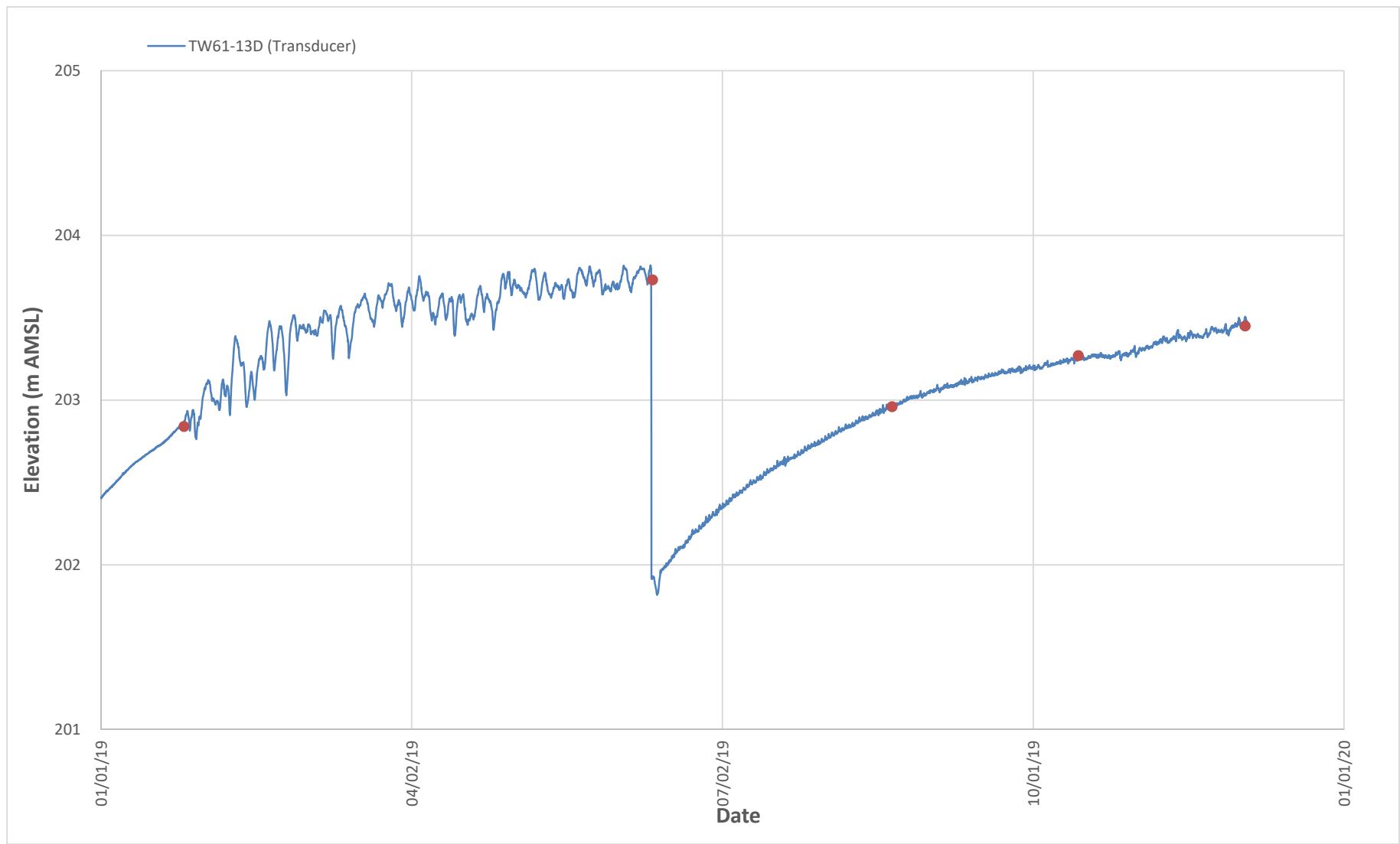


Figure B-27
HYDROGRAPH - TW61-13D
2019 ANNUAL GROUNDWATER MONITORING REPORT
CLEAN HARBORS CANADA INC.
Lambton Facility



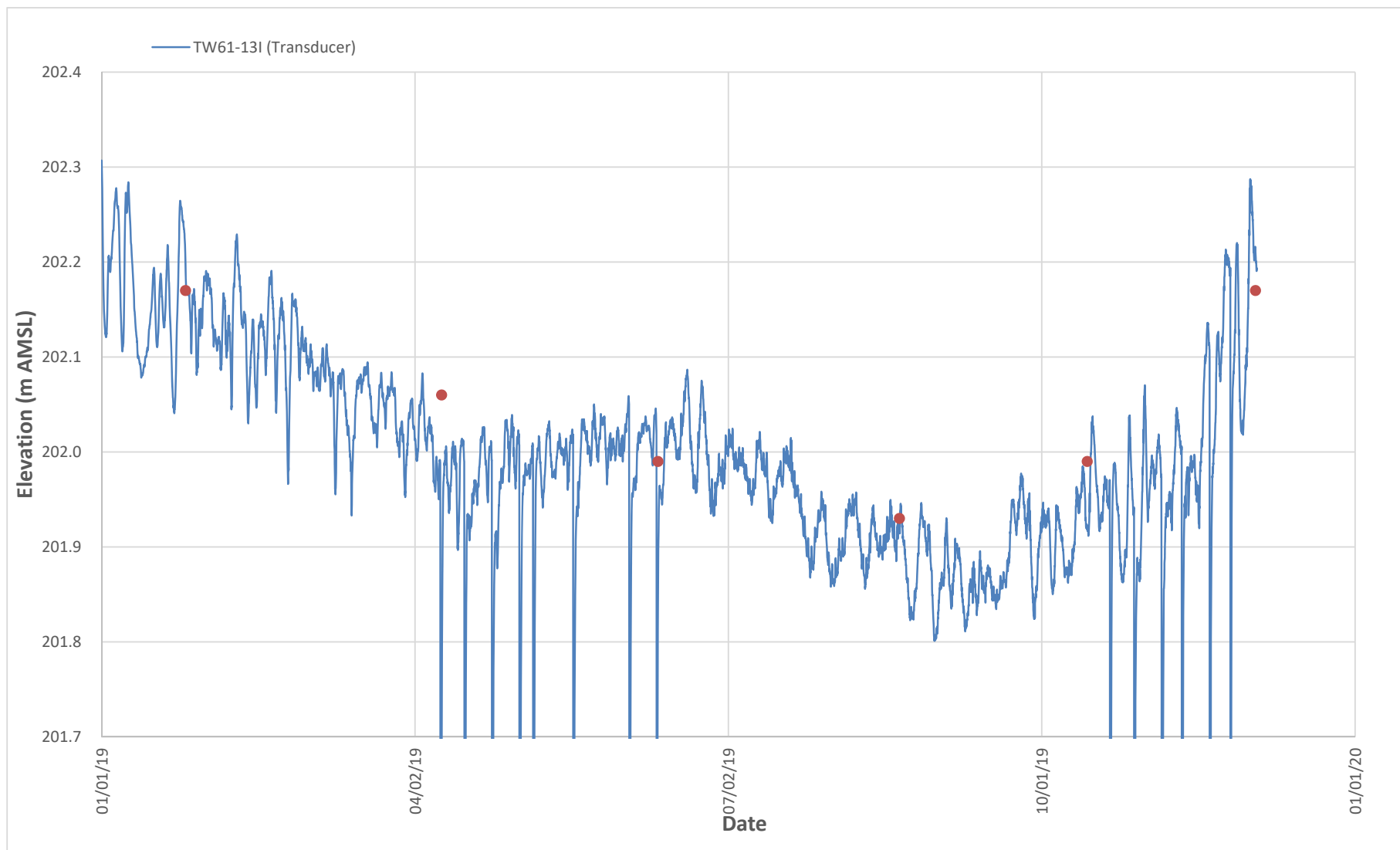


Figure B-28
HYDROGRAPH - TW61-131
2019 ANNUAL GROUNDWATER MONITORING REPORT
CLEAN HARBORS CANADA INC.
Lambton Facility



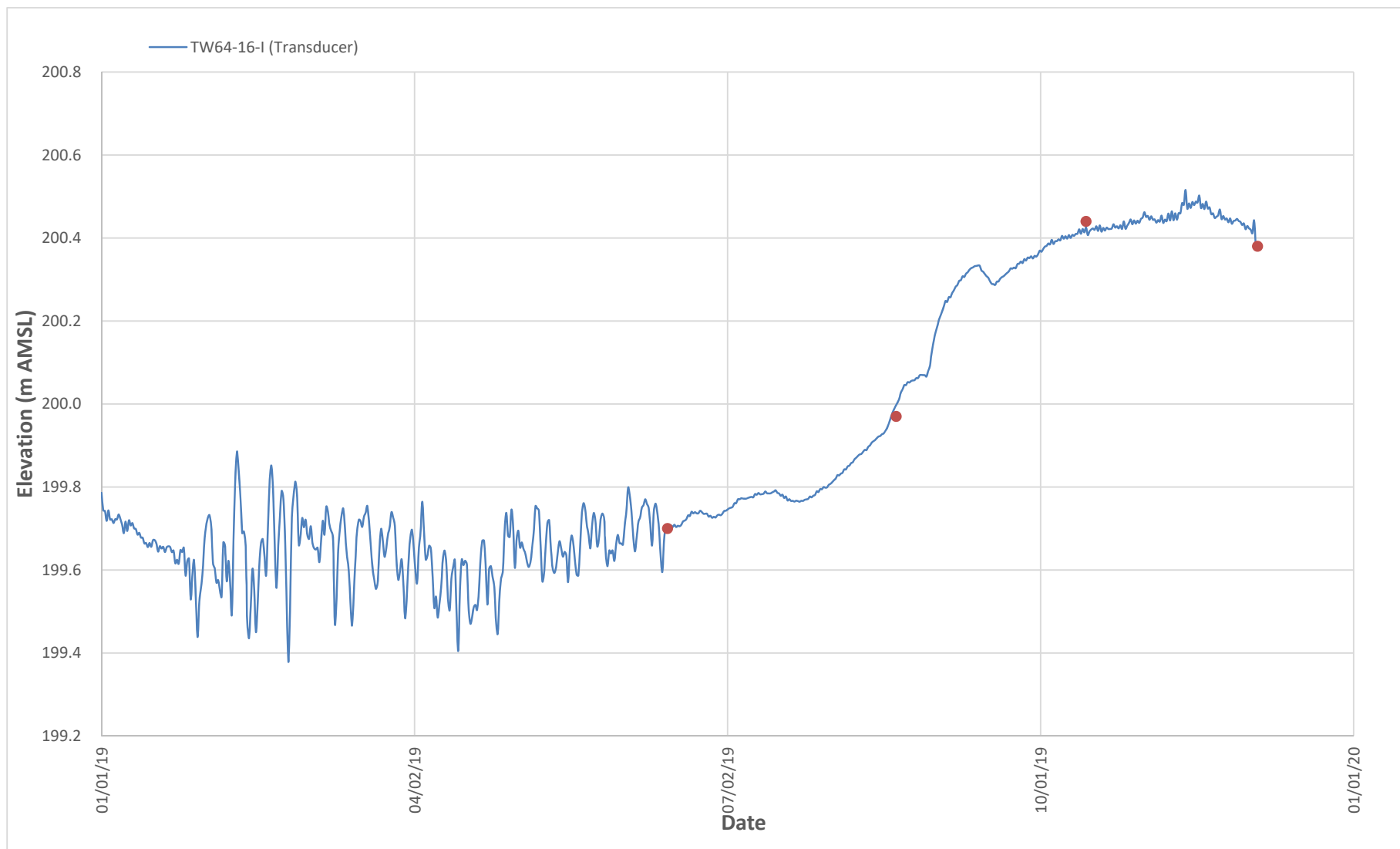


Figure B-29
HYDROGRAPH - TW64-16-I
2019 ANNUAL GROUNDWATER MONITORING REPORT
CLEAN HARBORS CANADA INC.
Lambton Facility



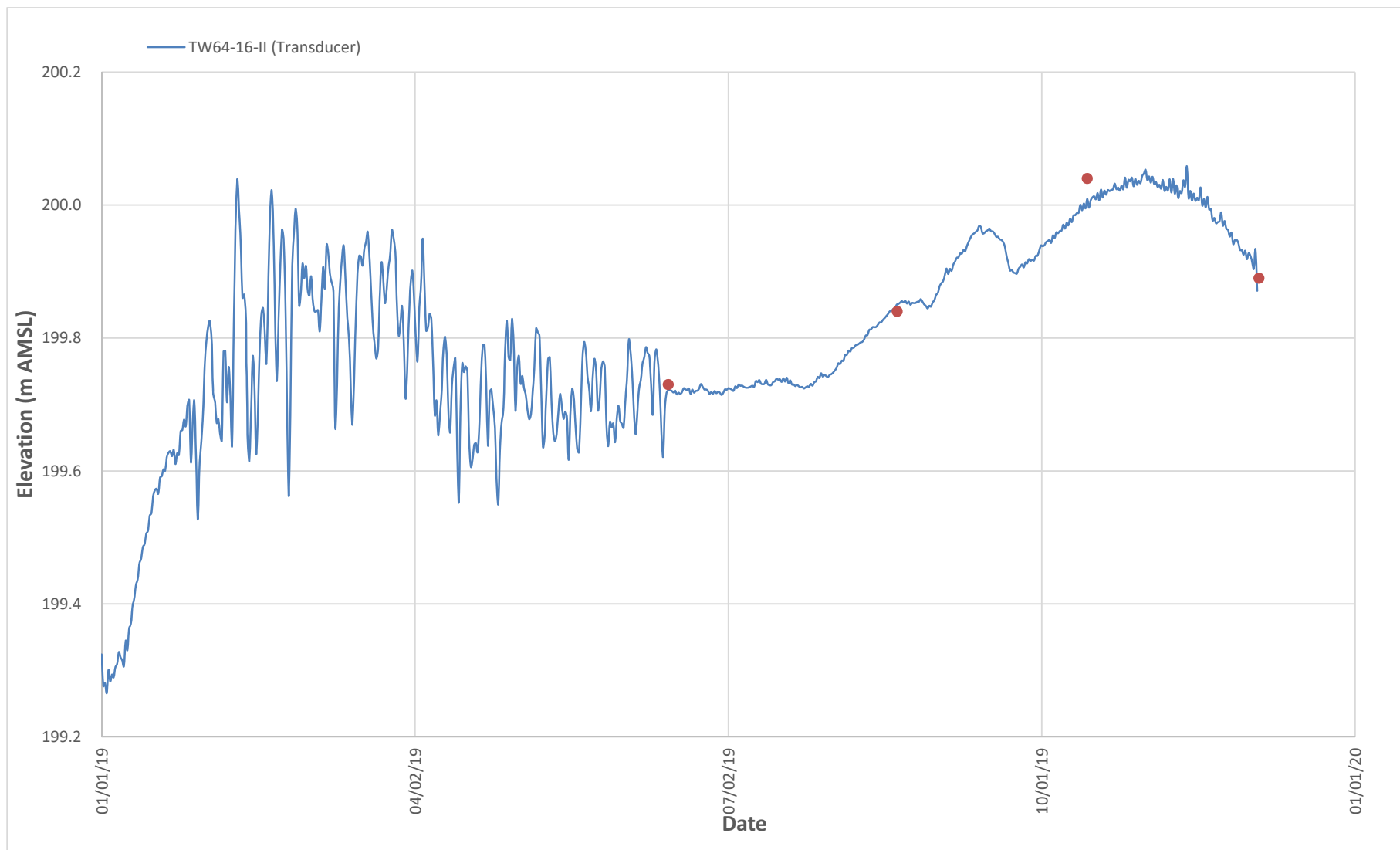


Figure B-30
HYDROGRAPH - TW64-16-II
2019 ANNUAL GROUNDWATER MONITORING REPORT
CLEAN HARBORS CANADA INC.
Lambton Facility



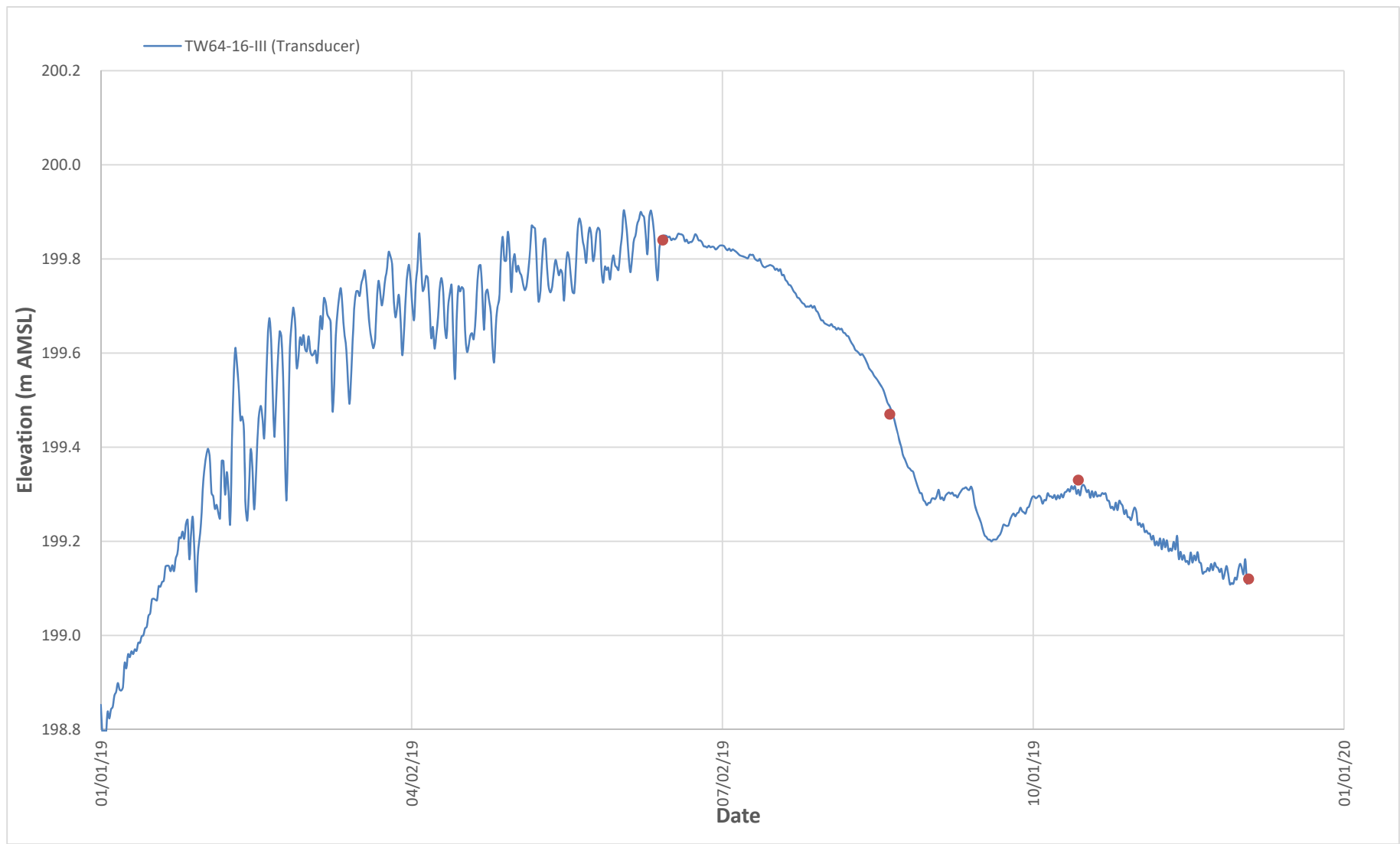


Figure B-31
HYDROGRAPH - TW64-16-III
2019 ANNUAL GROUNDWATER MONITORING REPORT
CLEAN HARBORS CANADA INC.
Lambton Facility



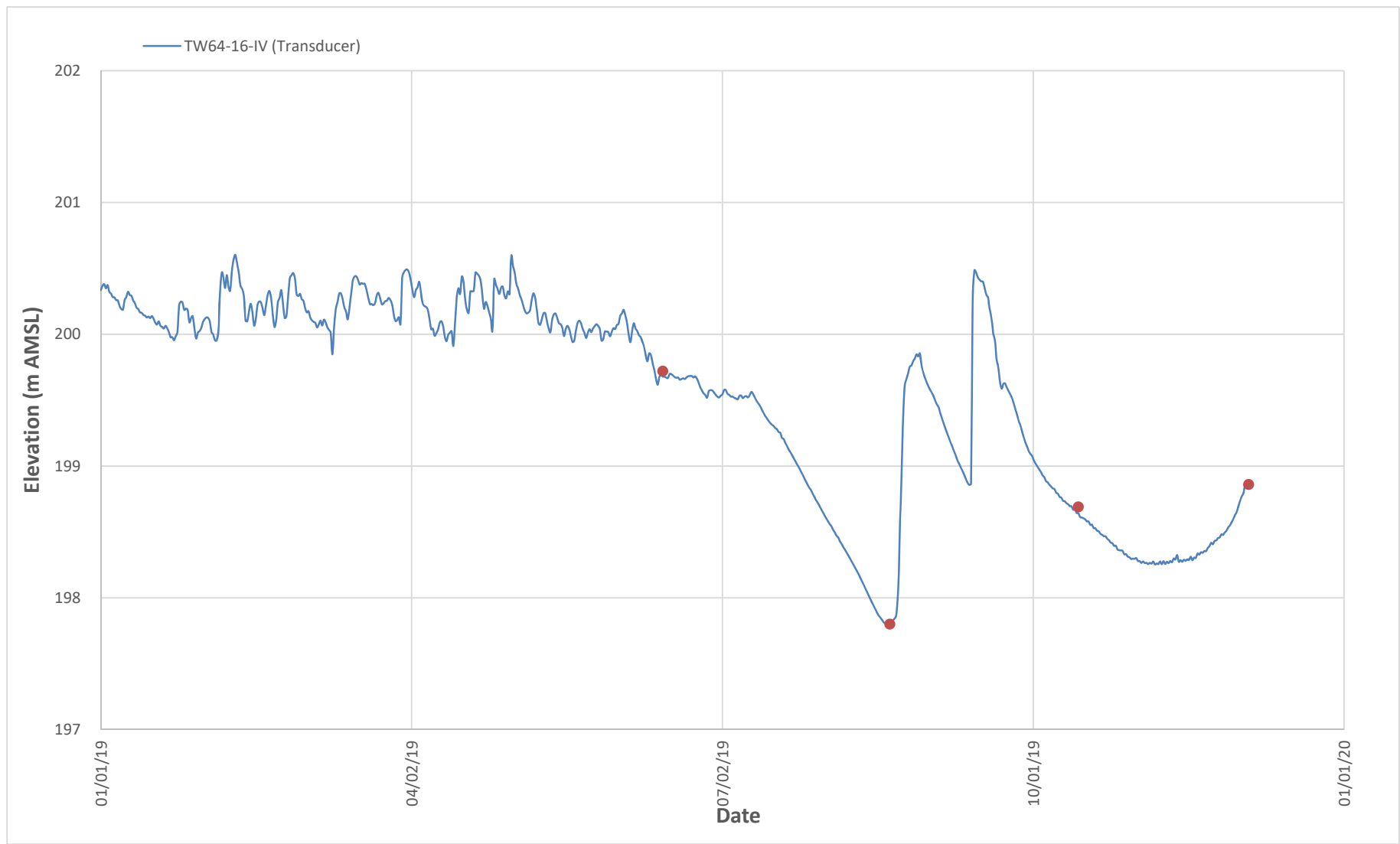


Figure B-32
HYDROGRAPH - TW64-16-IV
2019 ANNUAL GROUNDWATER MONITORING REPORT
CLEAN HARBORS CANADA INC.
Lambton Facility



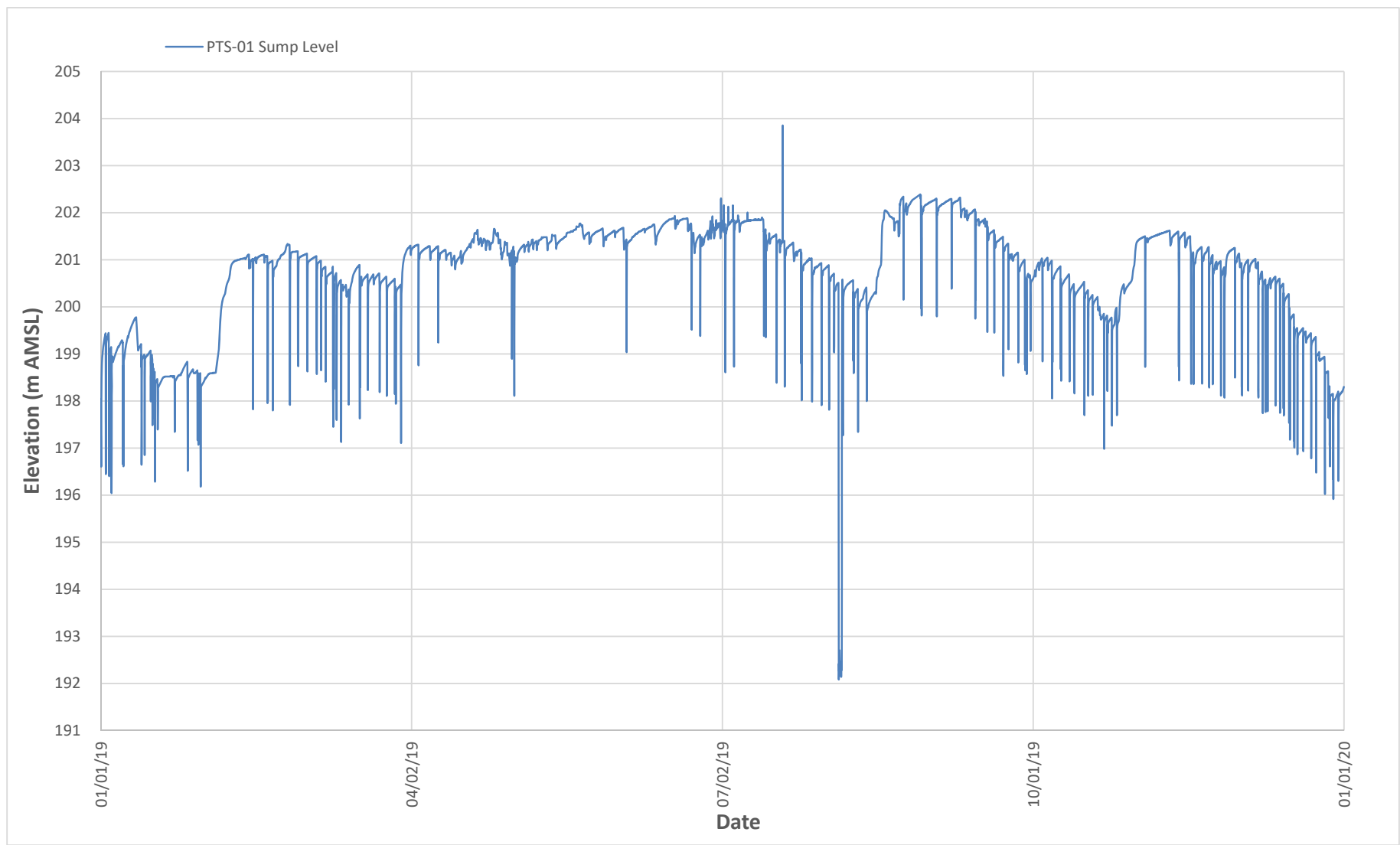


Figure B-33
HYDROGRAPH - PTS-01
2019 ANNUAL GROUNDWATER MONITORING REPORT
CLEAN HARBORS CANADA INC.
Lambton Facility



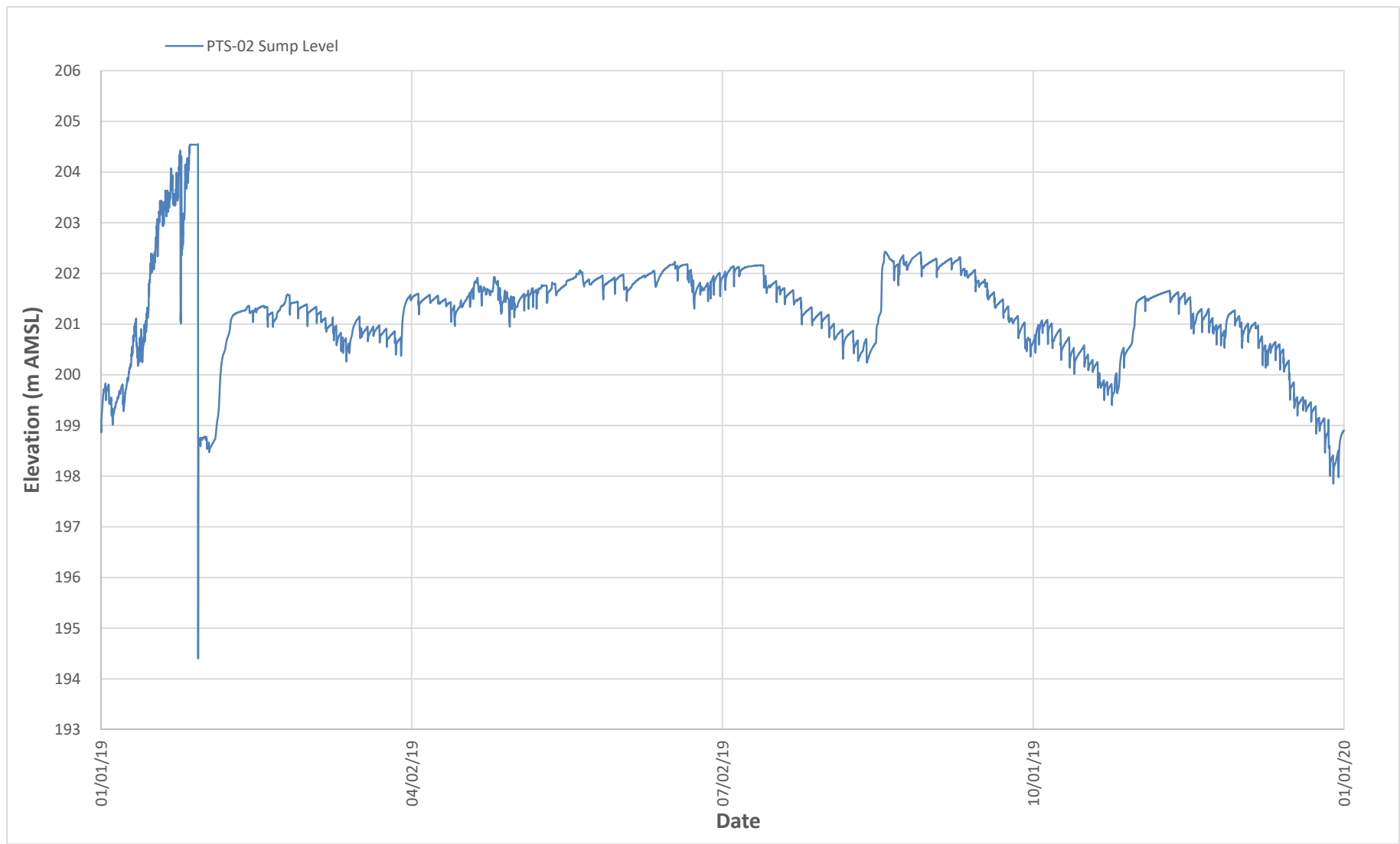


Figure B-34
HYDROGRAPH - PTS-02
2019 ANNUAL GROUNDWATER MONITORING REPORT
CLEAN HARBORS CANADA INC.
Lambton Facility



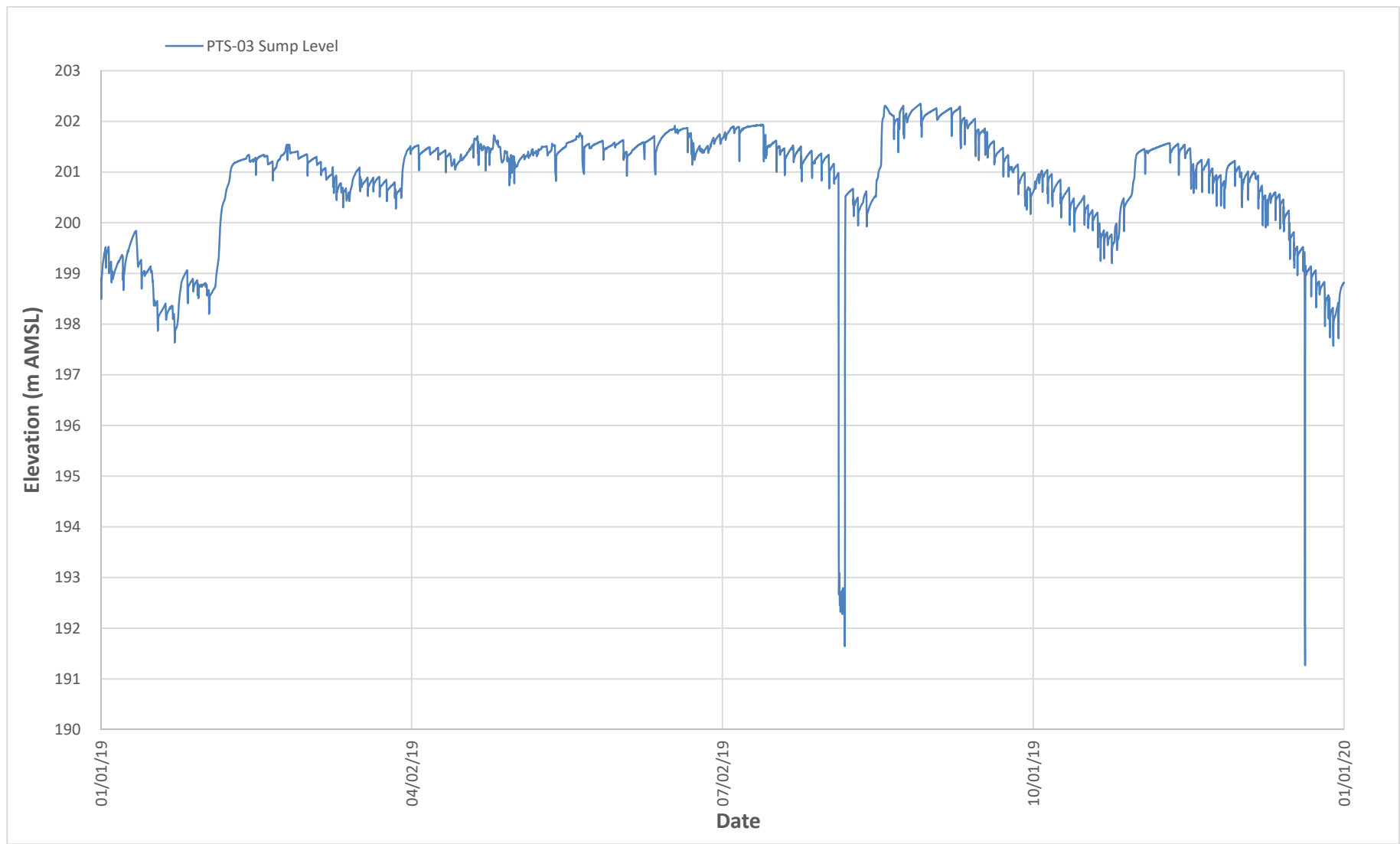


Figure B-35
HYDROGRAPH - PTS-03
2019 ANNUAL GROUNDWATER MONITORING REPORT
CLEAN HARBORS CANADA INC.
Lambton Facility



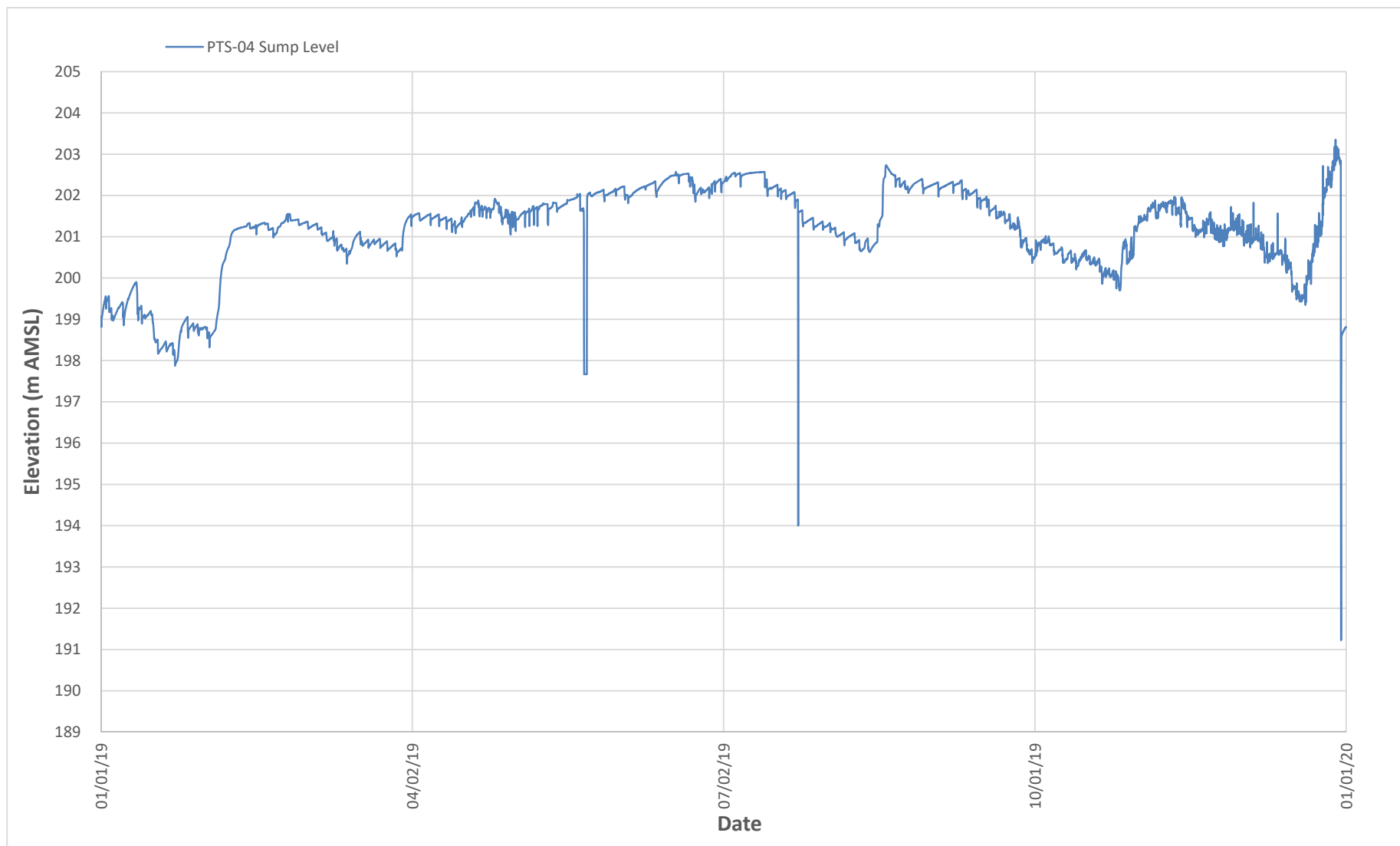


Figure B-36
HYDROGRAPH - PTS-04
2019 ANNUAL GROUNDWATER MONITORING REPORT
CLEAN HARBORS CANADA INC.
Lambton Facility



Appendix C

Historical Manual Hydrographs

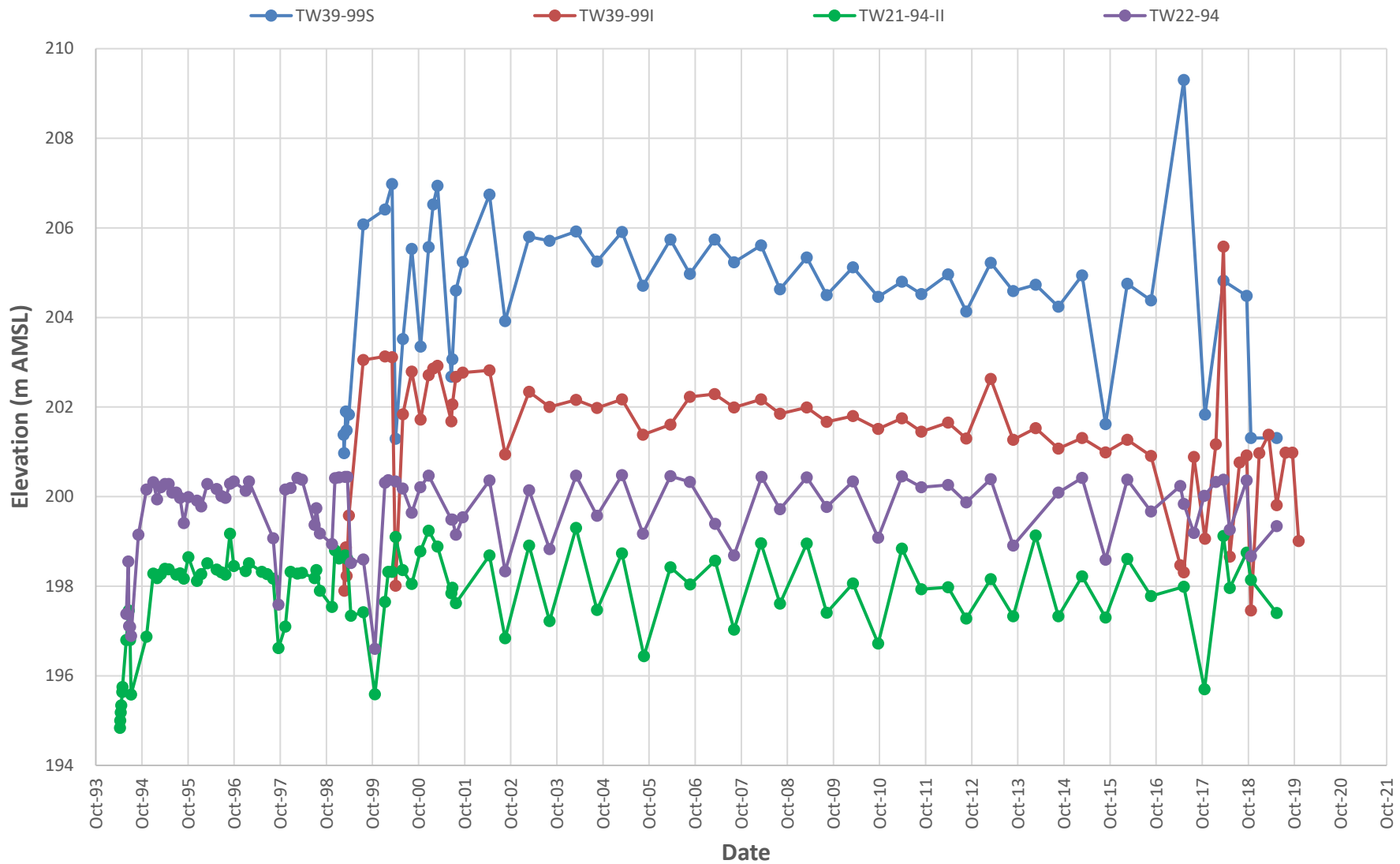


figure C-1
HYDROGRAPHS FOR SHALLOW GROUNDWATER WELLS IN THE VICINITY OF THE FACILITY
NORTH-WEST CORNER BERM AREA
2019 ANNUAL GROUNDWATER MONITORING REPORT
Clean Harbors



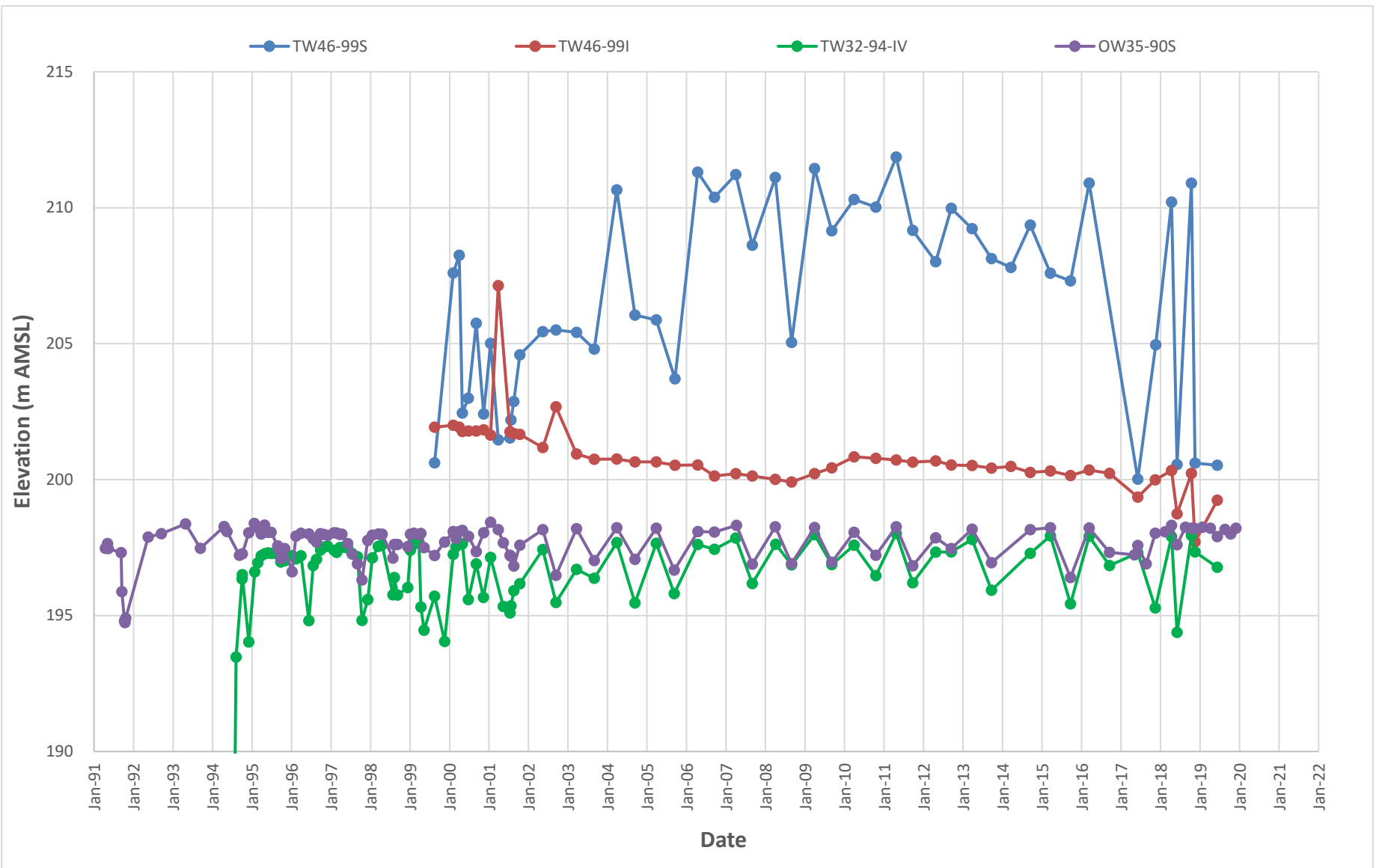


figure C-2

**HYDROGRAPHS FOR SHALLOW GROUNDWATER WELLS IN THE VICINITY OF THE FACILITY
NORTH-EAST CORNER BERM AREA**

2019 ANNUAL GROUNDWATER MONITORING REPORT

Clean Harbors



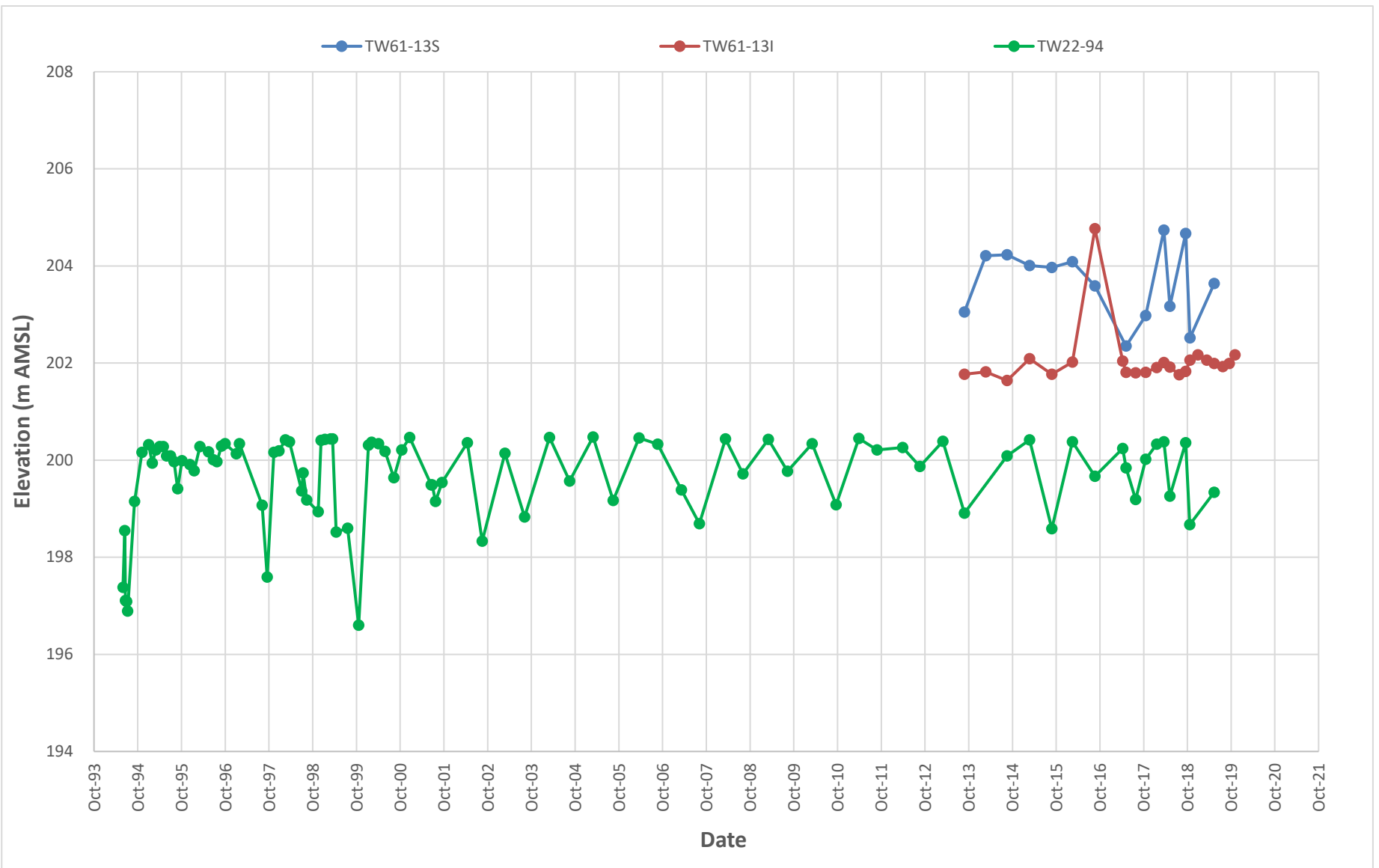


figure C-3
HYDROGRAPHS FOR SHALLOW GROUNDWATER WELLS IN THE VICINITY OF THE FACILITY
NORTH-WEST BERM AREA
2019 ANNUAL GROUNDWATER MONITORING REPORT
Clean Harbors



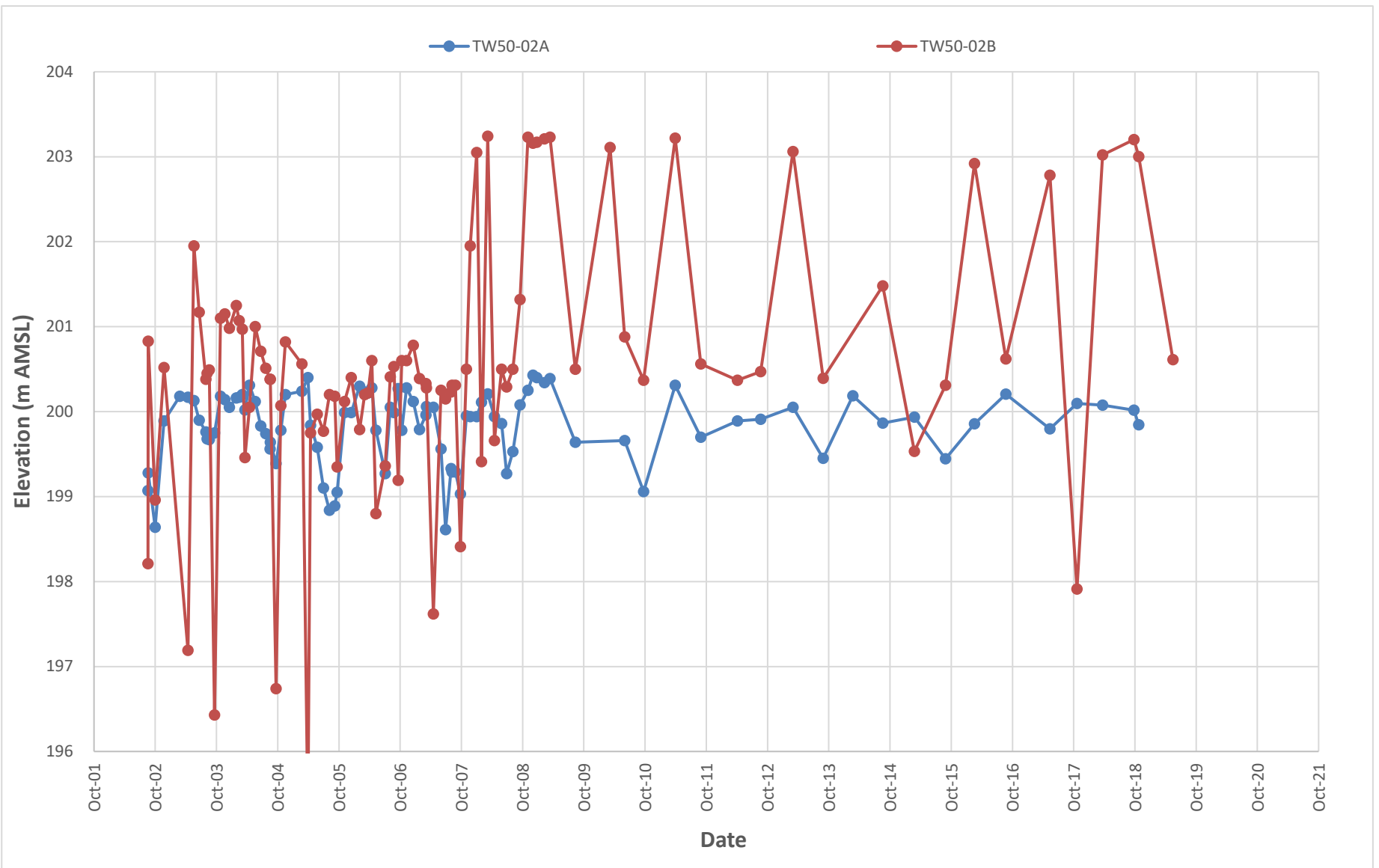


figure C-4
HYDROGRAPHS FOR SHALLOW GROUNDWATER WELLS IN THE VICINITY OF THE FACILITY
SOUTHERN BERM WELL NEST TW50-02
2019 ANNUAL GROUNDWATER MONITORING REPORT
Clean Harbors



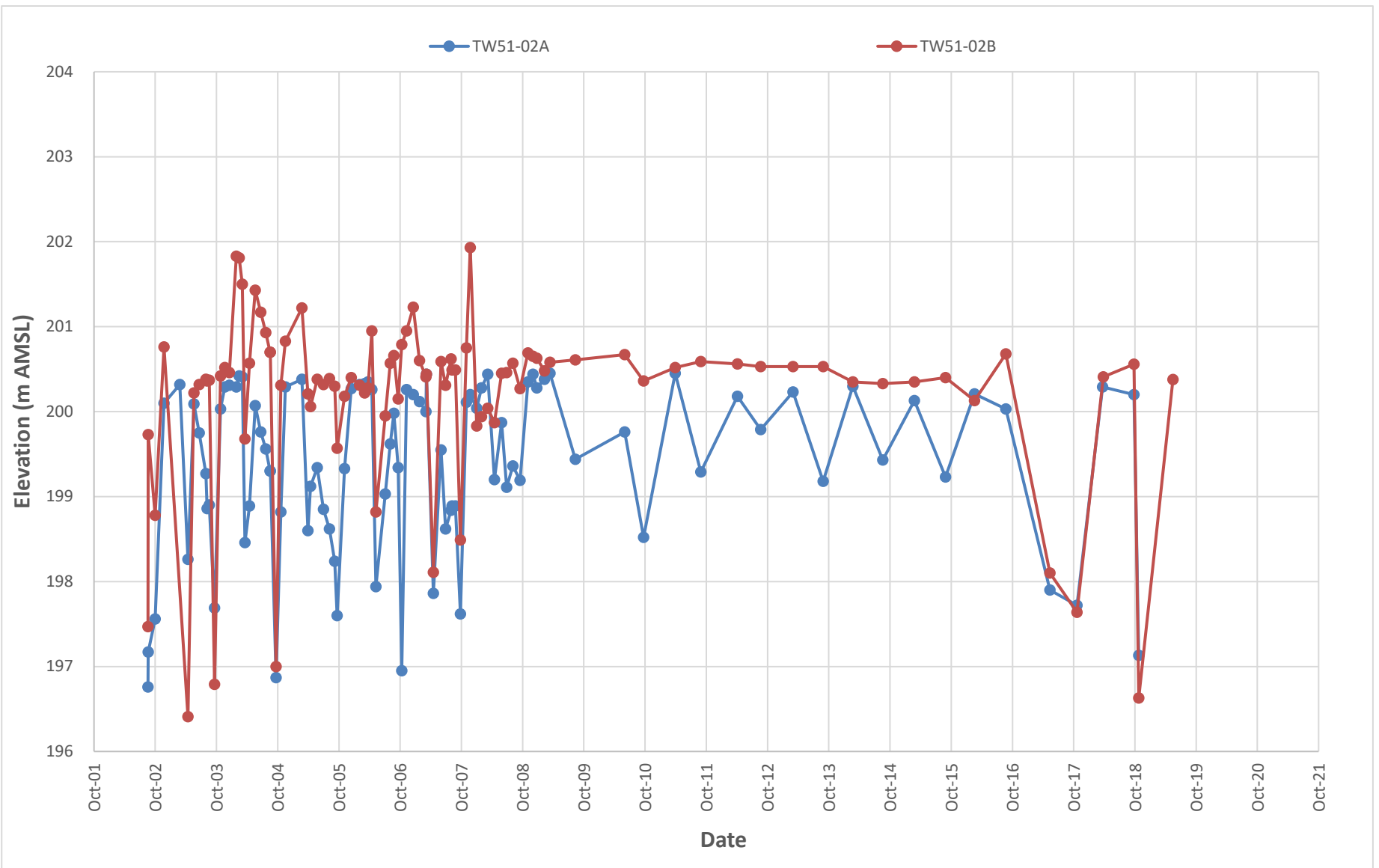


figure C-5

HYDROGRAPHS FOR SHALLOW GROUNDWATER WELLS IN THE VICINITY OF THE FACILITY
SOUTHERN BERM WELL NEST TW51-02
2019 ANNUAL GROUNDWATER MONITORING REPORT
Clean Harbors



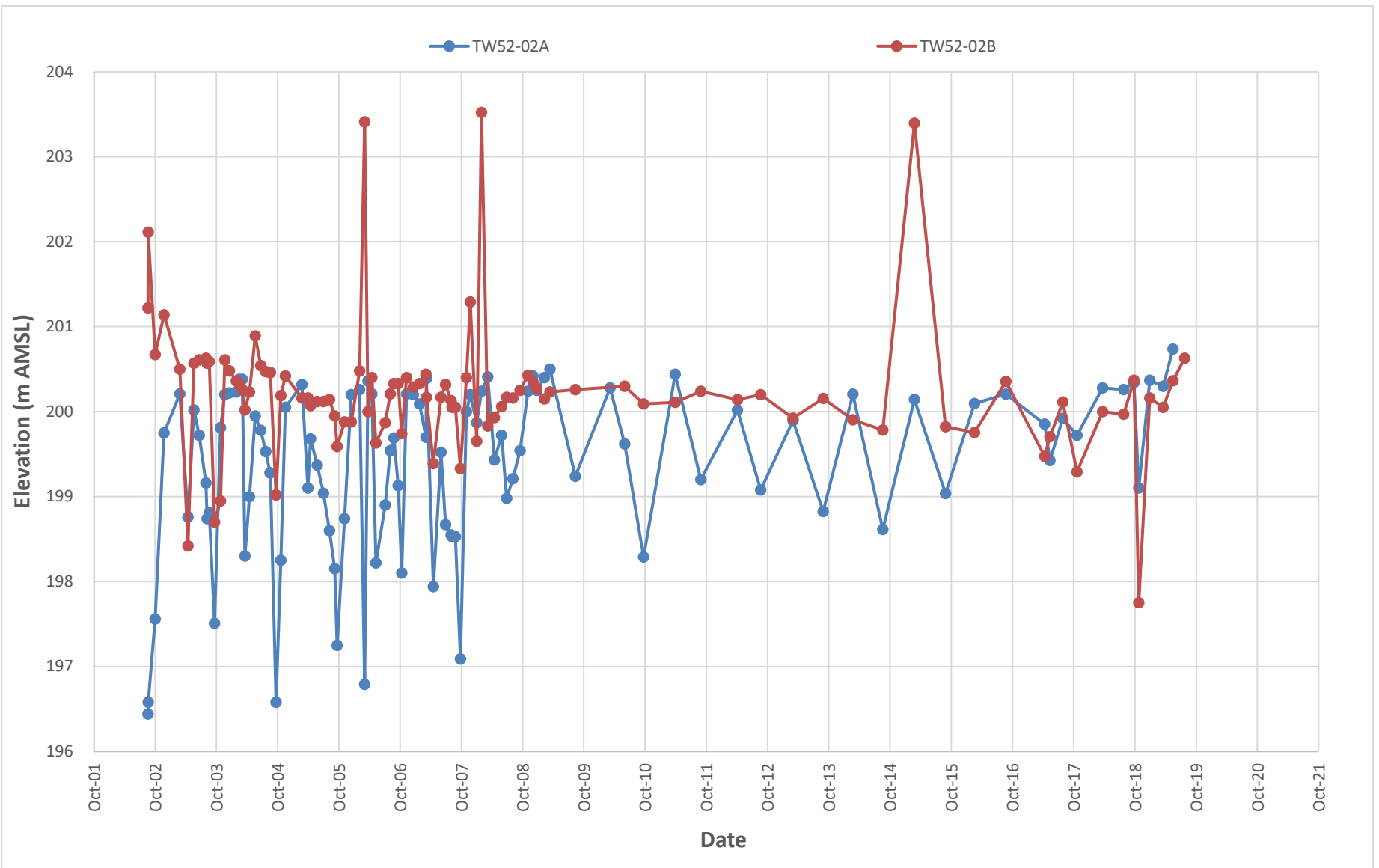


figure C-6

HYDROGRAPHS FOR SHALLOW GROUNDWATER WELLS IN THE VICINITY OF THE FACILITY
SOUTHERN BERM WELL NEST TW52-02
2019 ANNUAL GROUNDWATER MONITORING REPORT
Clean Harbors



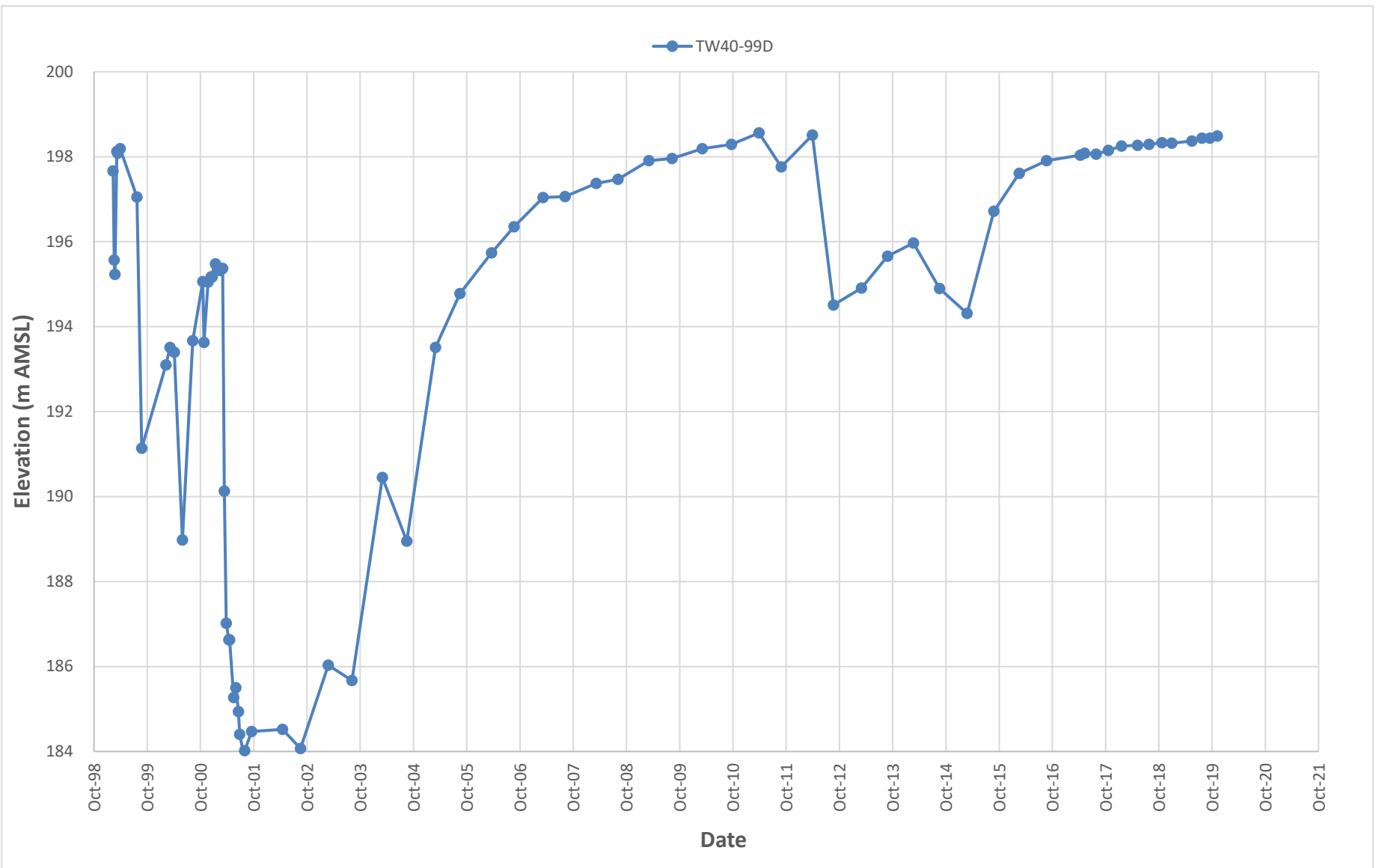


figure C-7
SELECT HYDROGRAPHS - ON-SITE INTERFACE AQUIFER
TW40-99D
2019 ANNUAL GROUNDWATER MONITORING REPORT
Clean Harbors



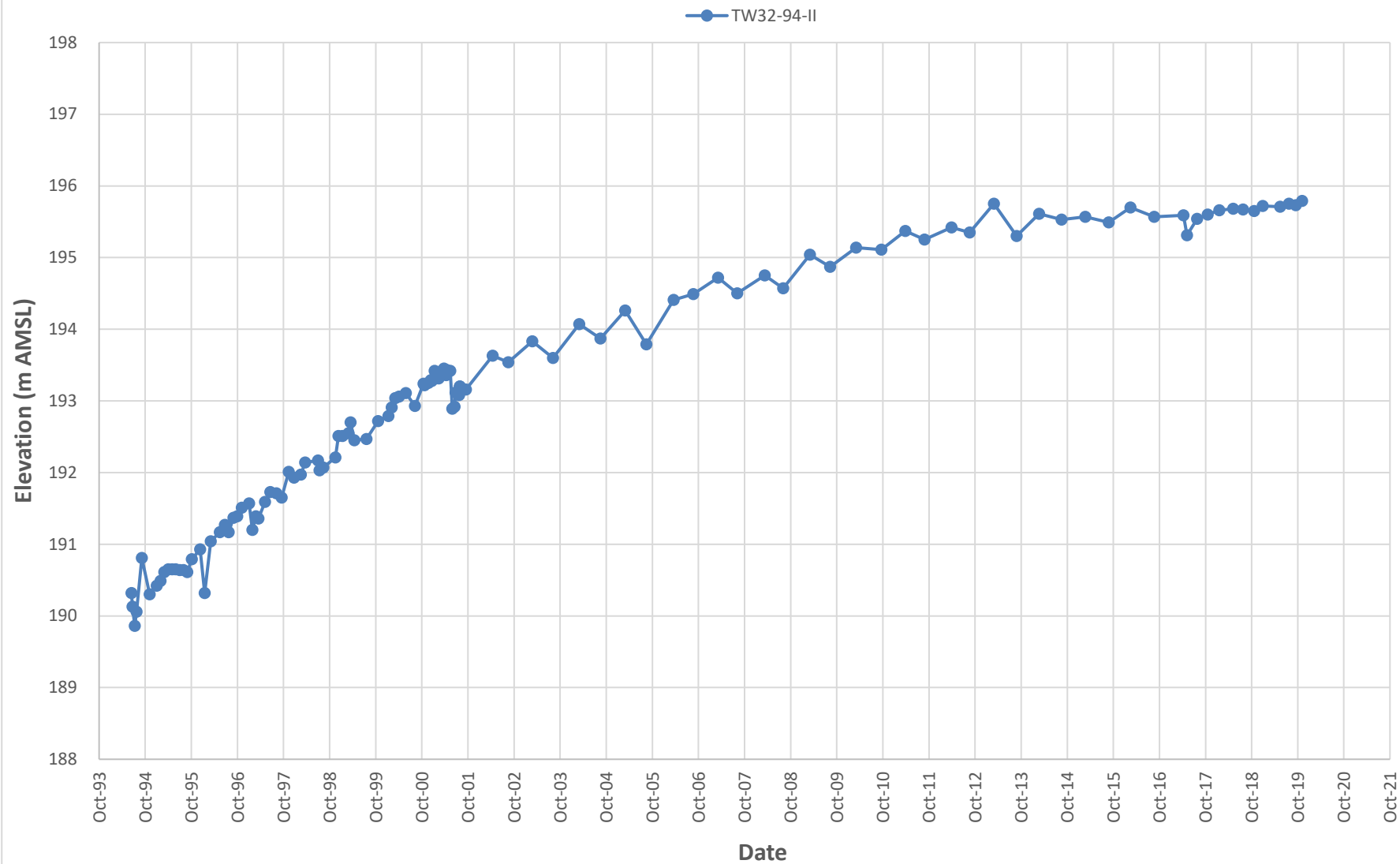


figure C-8
SELECT HYDROGRAPHS - ON-SITE INTERFACE AQUIFER
TW32-94-II
2019 ANNUAL GROUNDWATER MONITORING REPORT
Clean Harbors



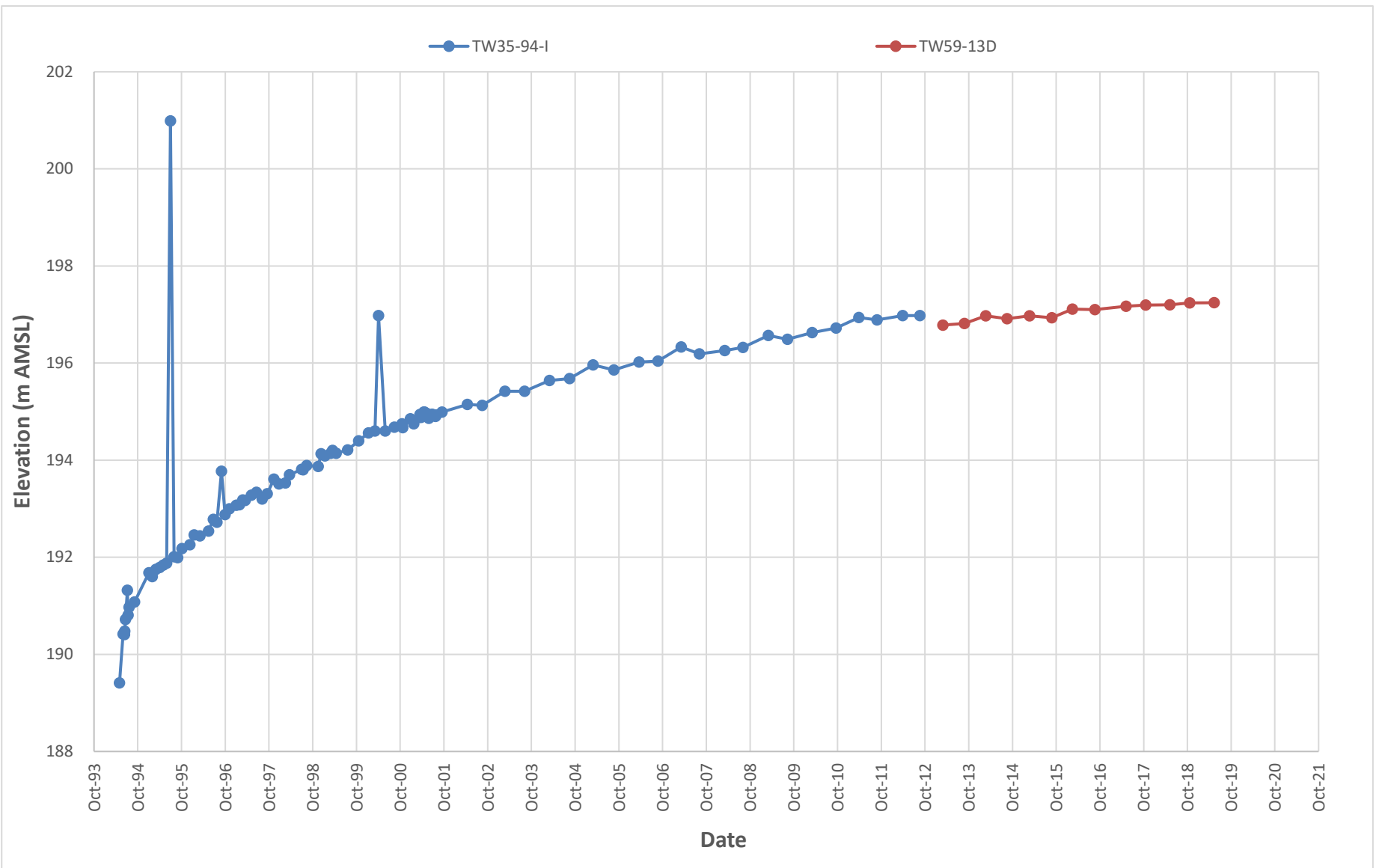


figure C-10
SELECT HYDROGRAPHS - OFF-SITE INTERFACE AQUIFER
TW35-94-I/TW59-13D
2019 ANNUAL GROUNDWATER MONITORING REPORT
Clean Harbors



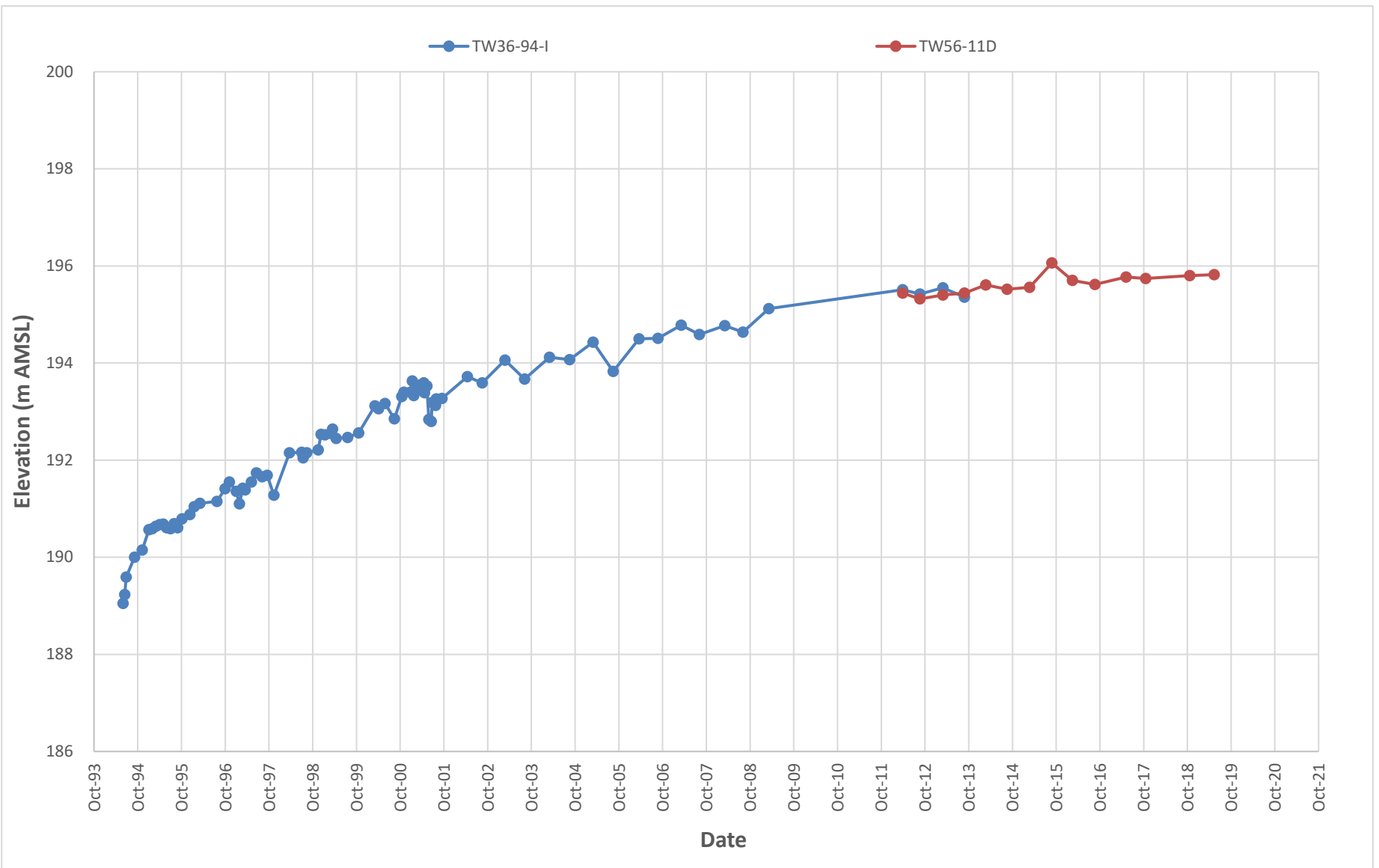


figure C-11
SELECT HYDROGRAPHS - OFF-SITE INTERFACE AQUIFER
TW36-94-I/TW56-11D
2019 ANNUAL GROUNDWATER MONITORING REPORT
Clean Harbors



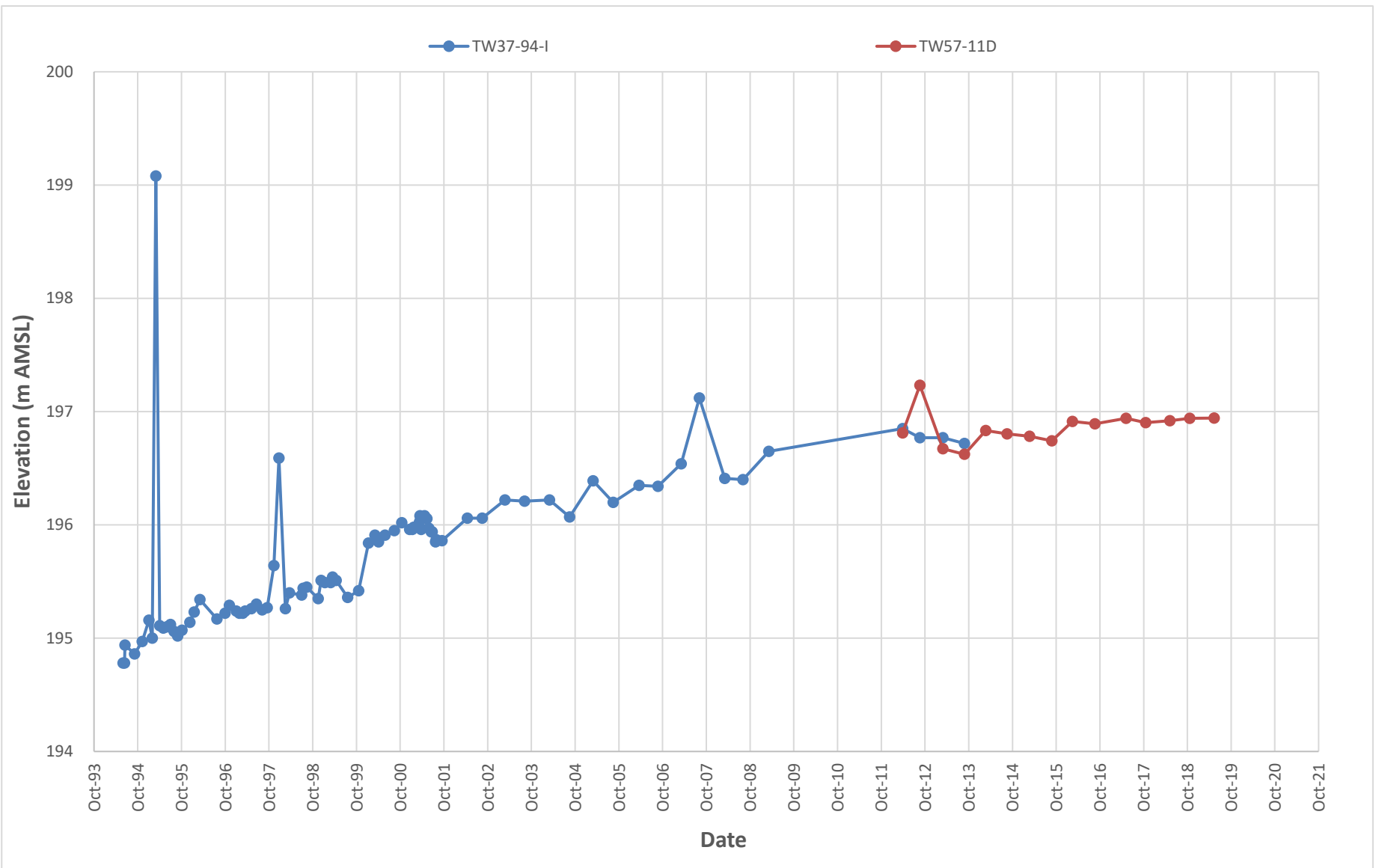


figure C-12
SELECT HYDROGRAPHS - OFF-SITE INTERFACE AQUIFER
TW37-94-I/TW57-11D
2019 ANNUAL GROUNDWATER MONITORING REPORT
Clean Harbors



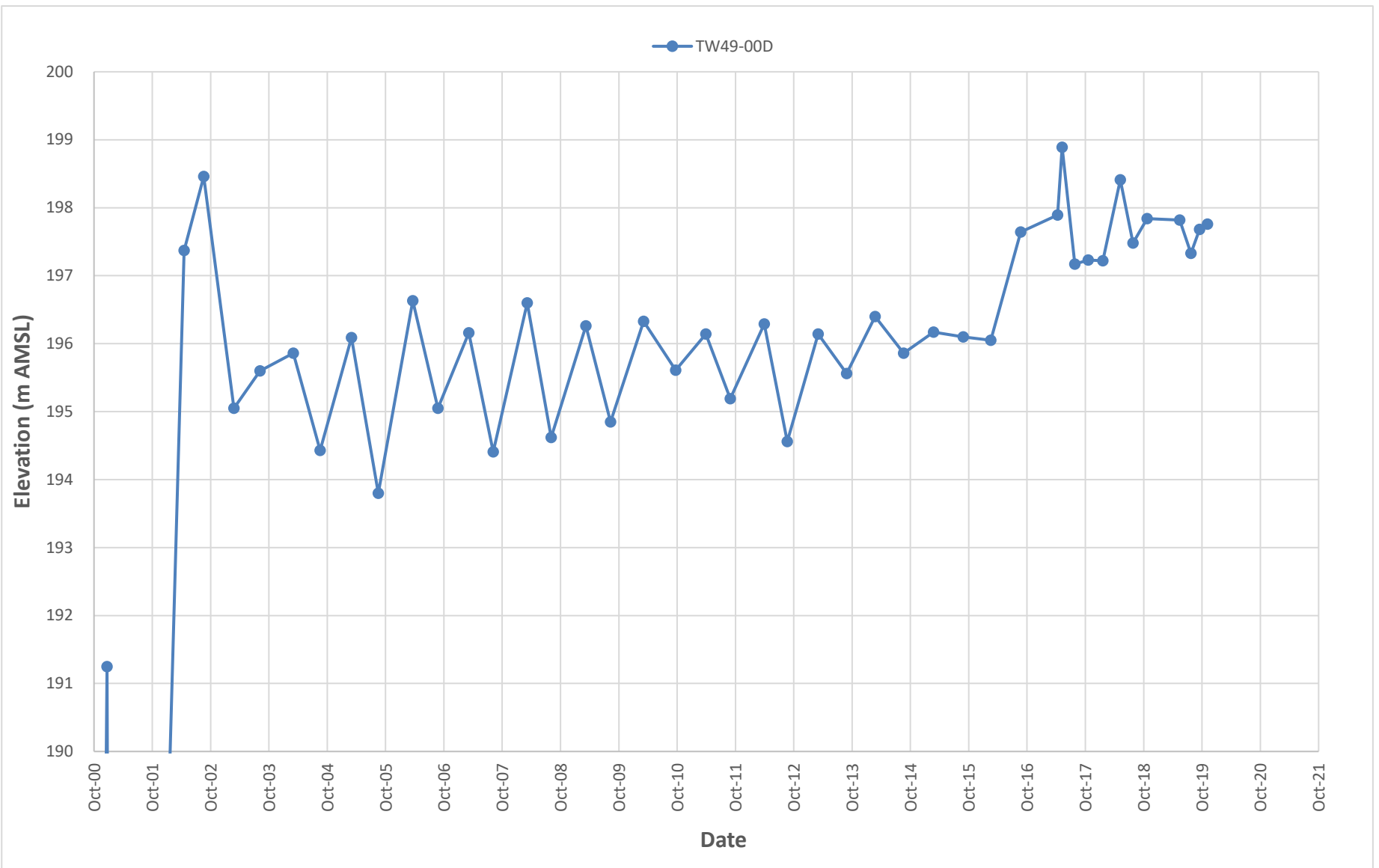
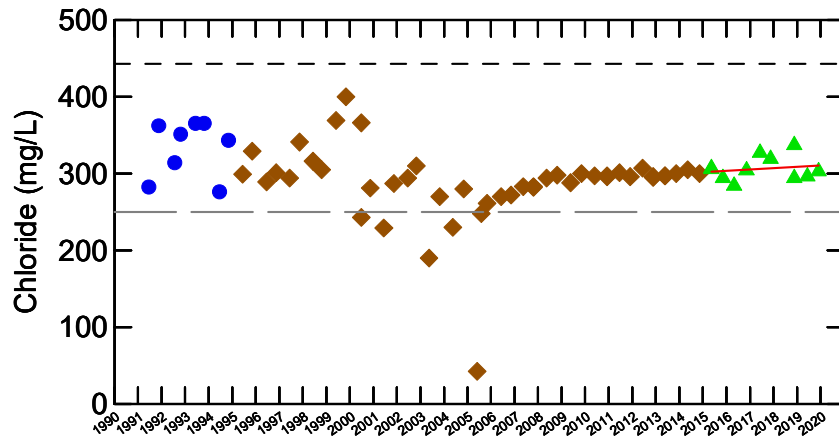


figure C-13
SELECT HYDROGRAPHS - OFF-SITE INTERFACE AQUIFER
TW49-00D
2019 ANNUAL GROUNDWATER MONITORING REPORT
Clean Harbors

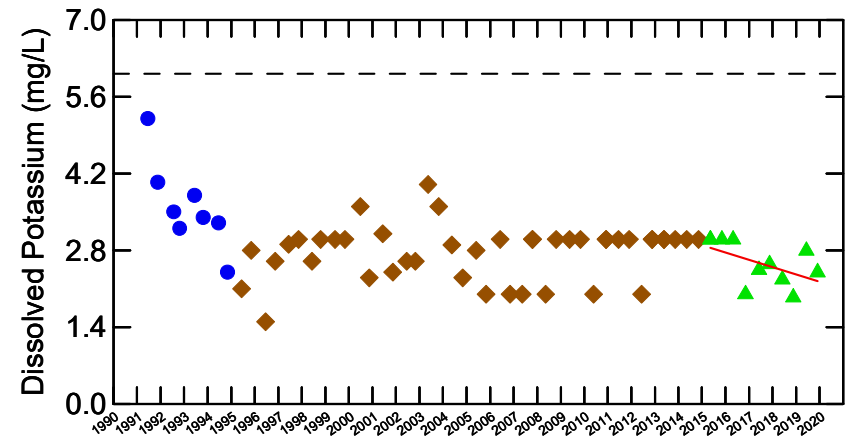


Appendix D

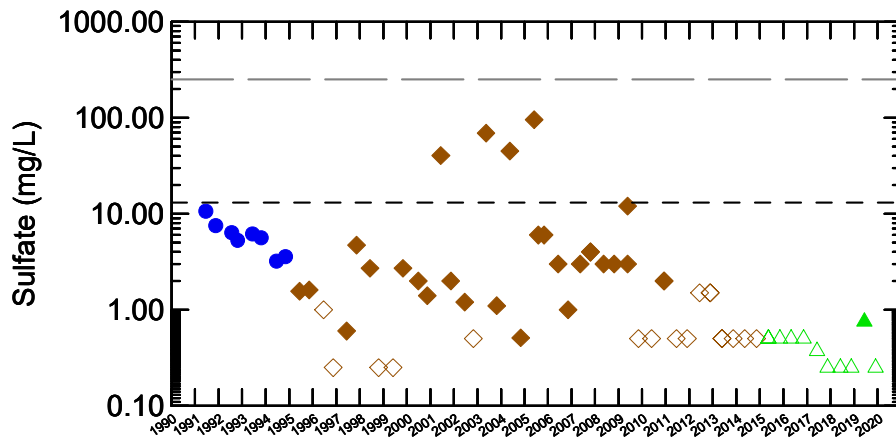
Concentration Versus Time Plots



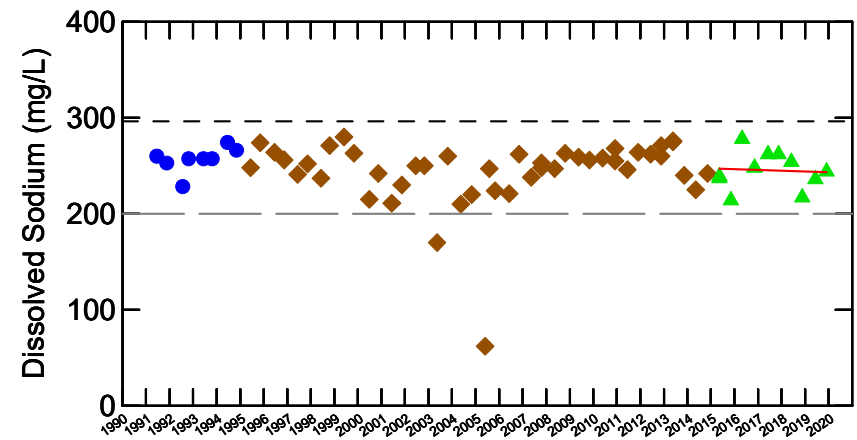
No trend



No trend



Over 50% non-detect



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

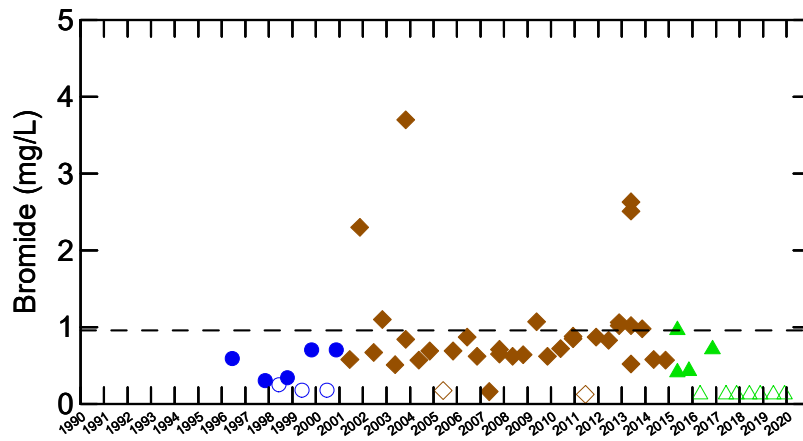
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

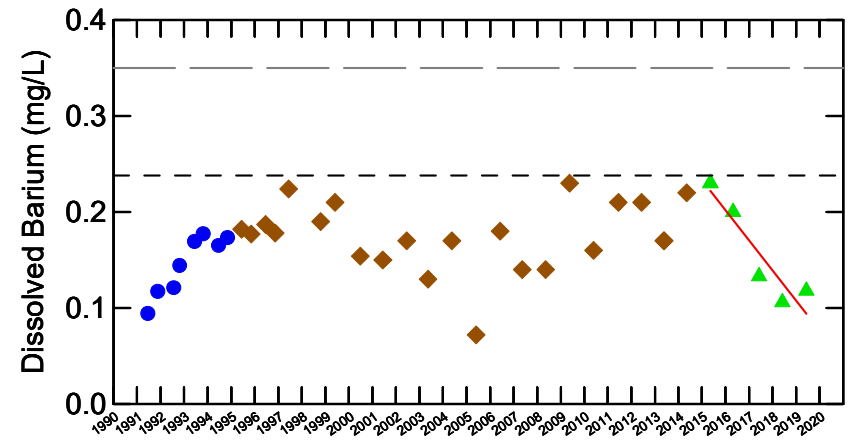
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



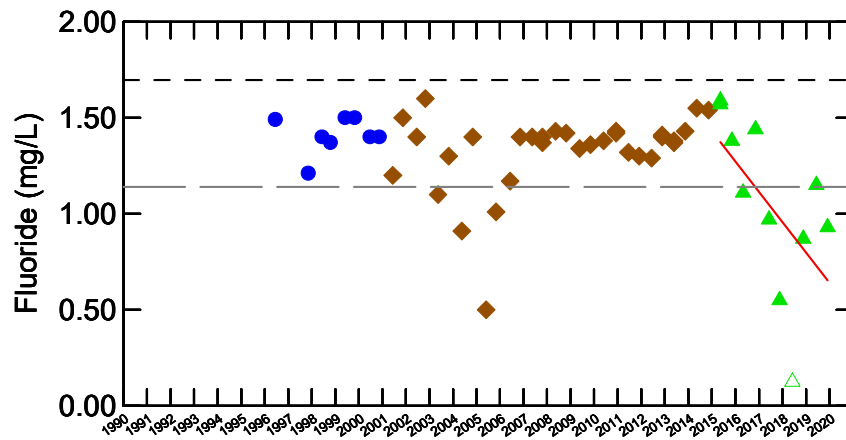
WELL OW32-90D
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



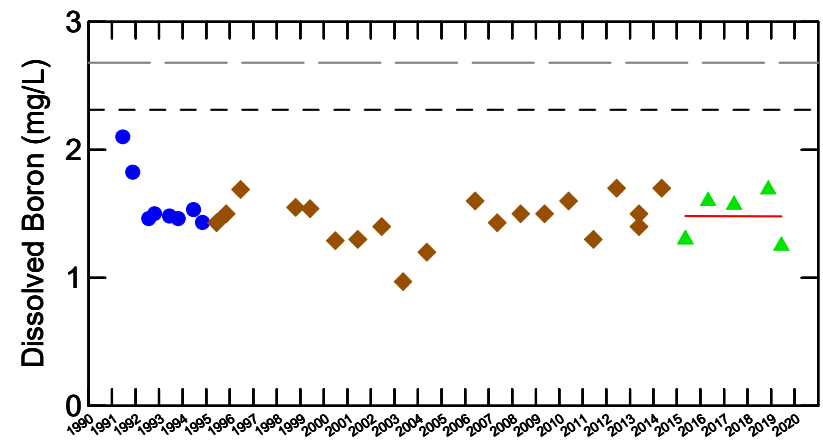
Over 50% non-detect



Decreasing trend



No trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

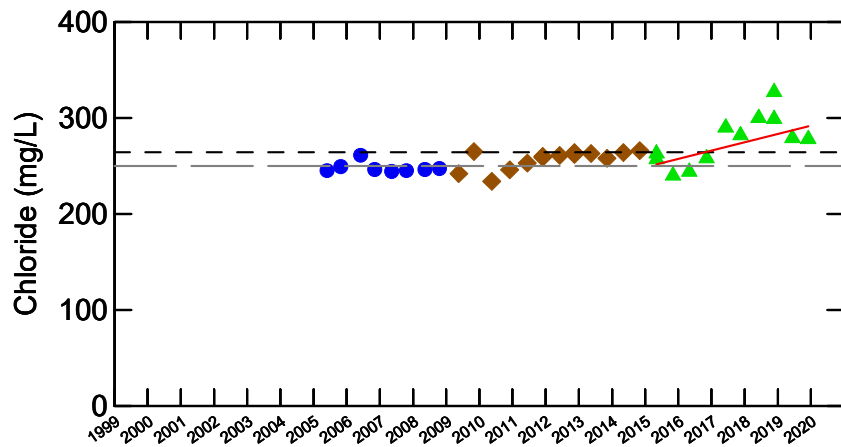
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

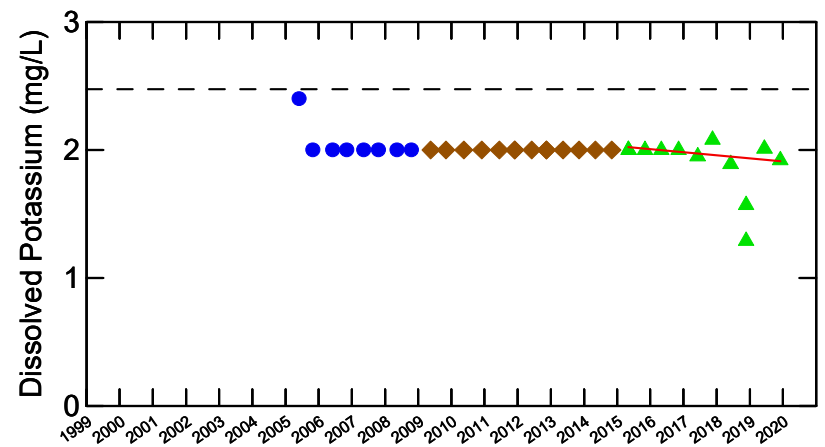
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



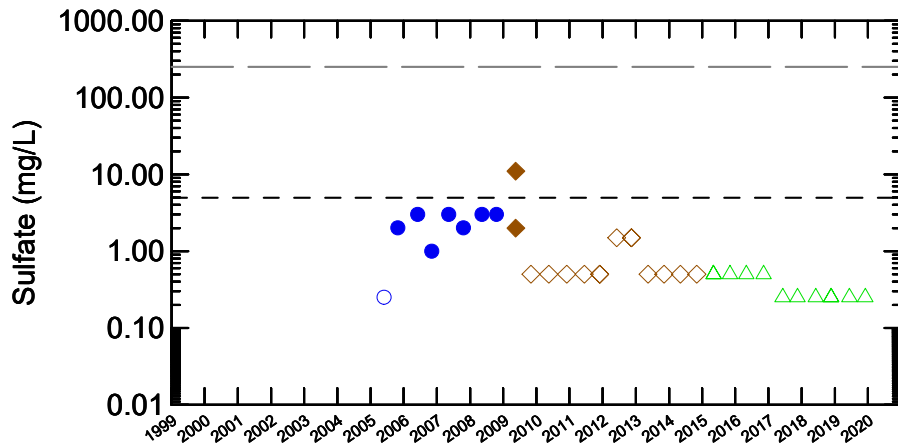
WELL OW32-90D
 DEEP WELL (INTERFACE AQUIFER)
 2018 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



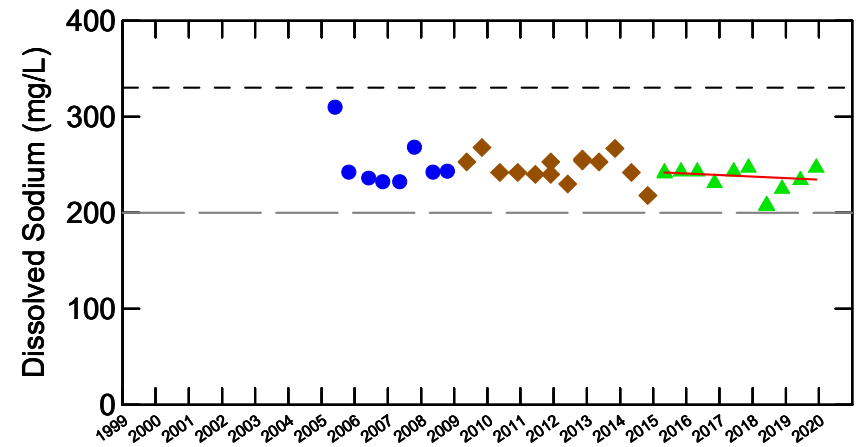
Increasing trend



No trend



No detected results



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

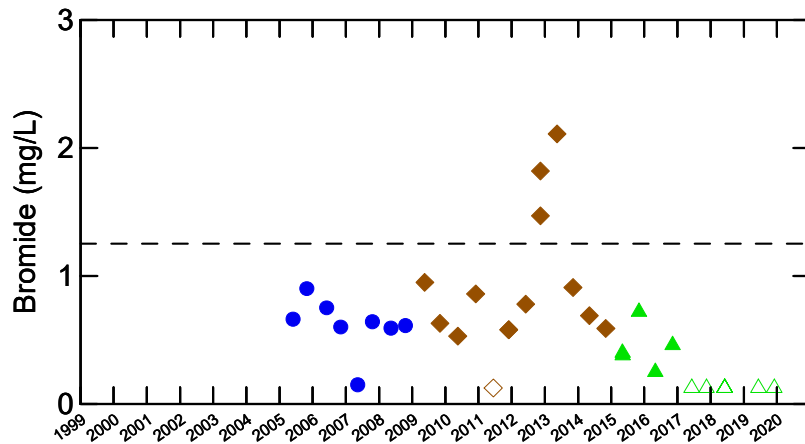
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

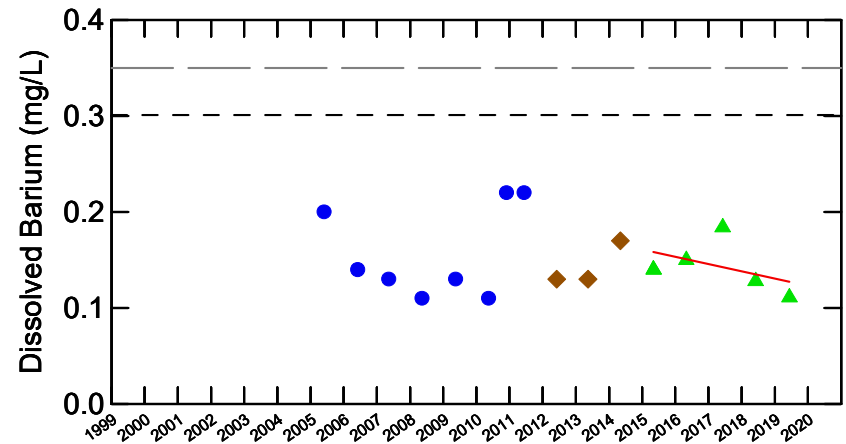
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



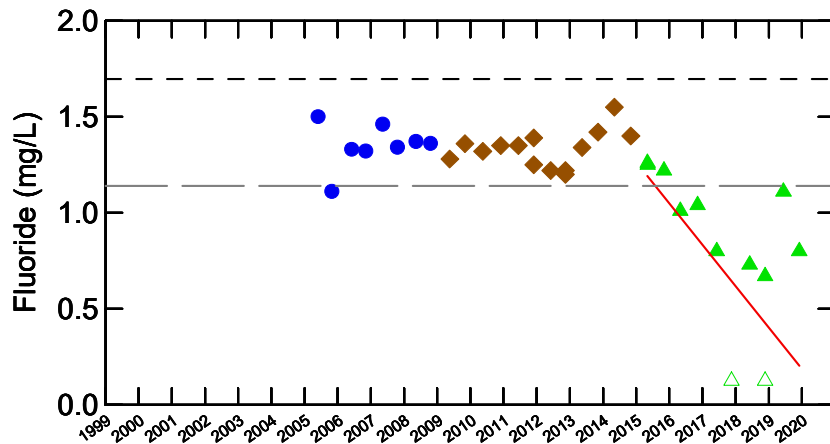
WELL OW35-05D
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



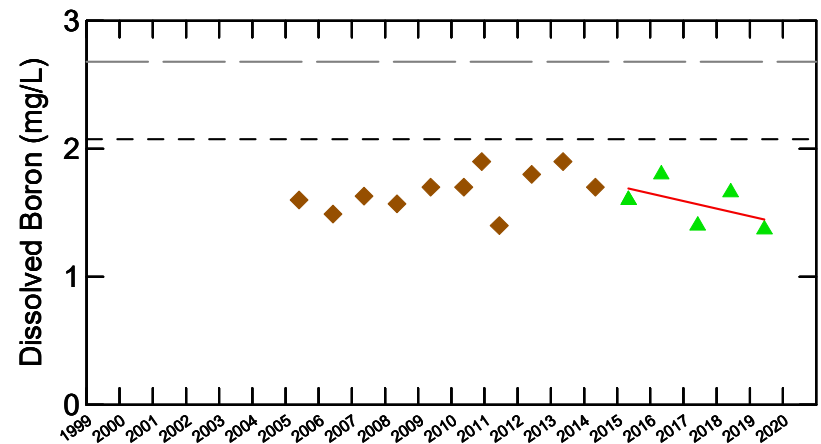
Over 50% non-detect



No trend



Decreasing trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

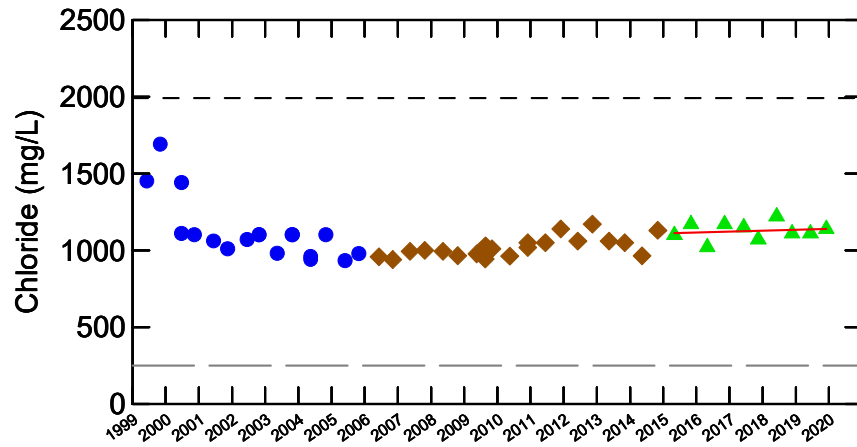
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

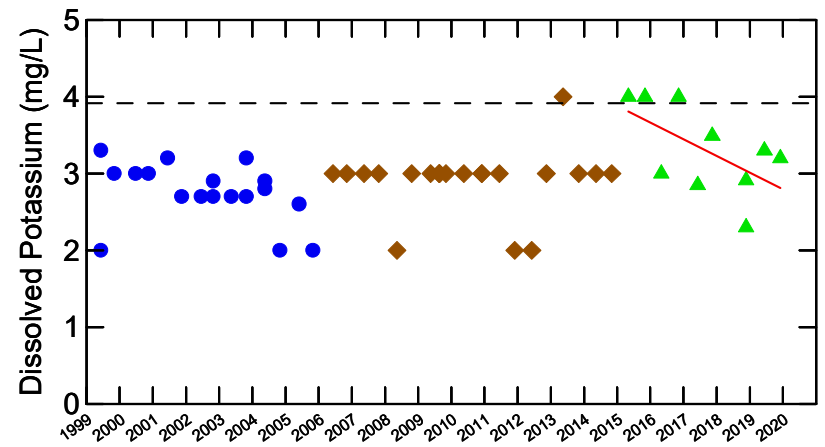
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



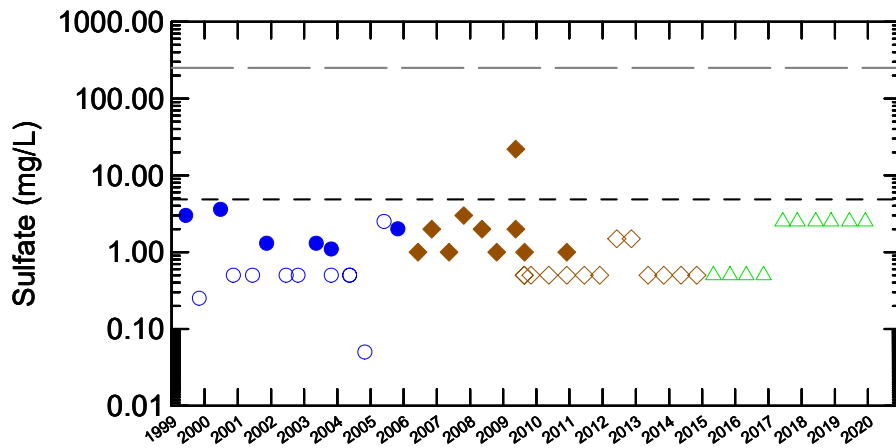
WELL OW35-05D
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



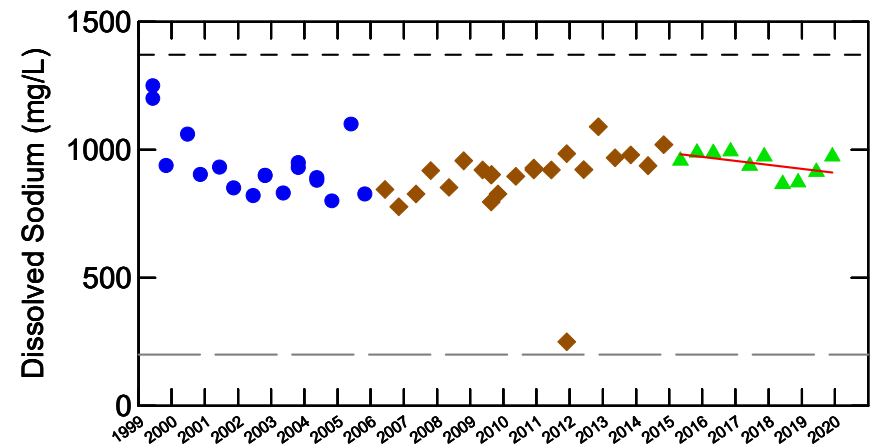
No trend



No trend



No detected results



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

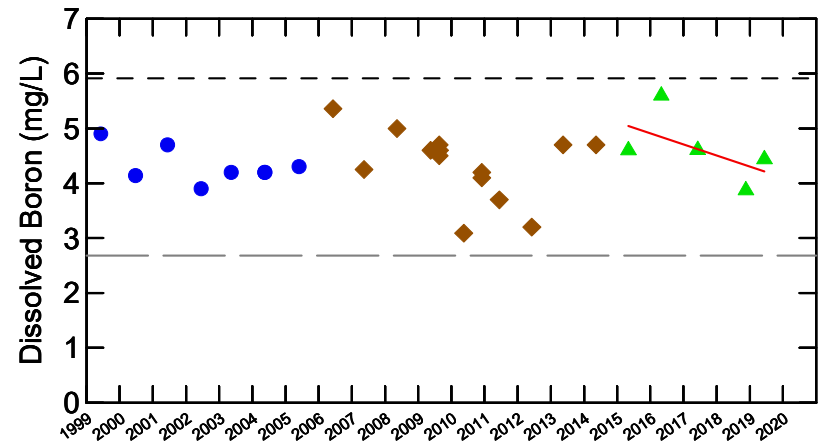
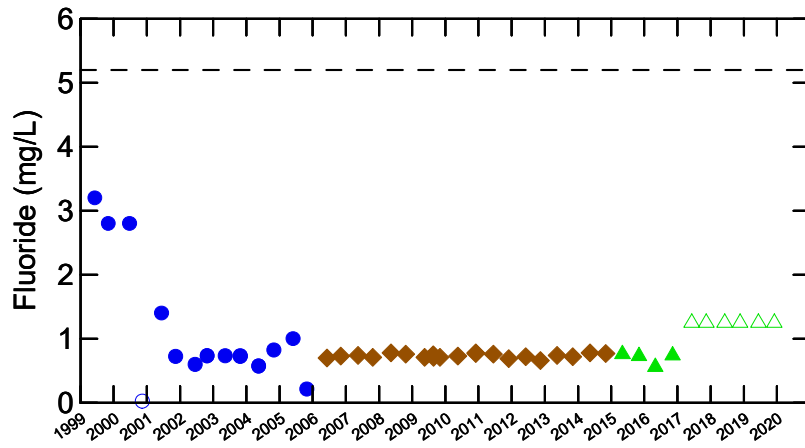
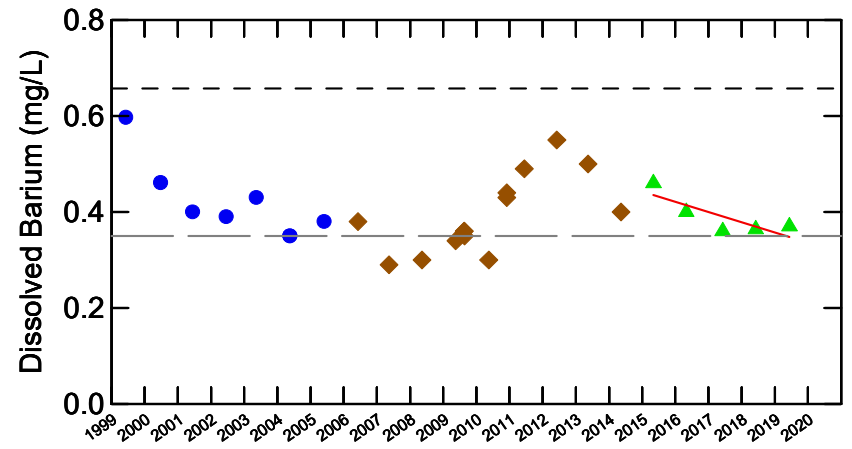
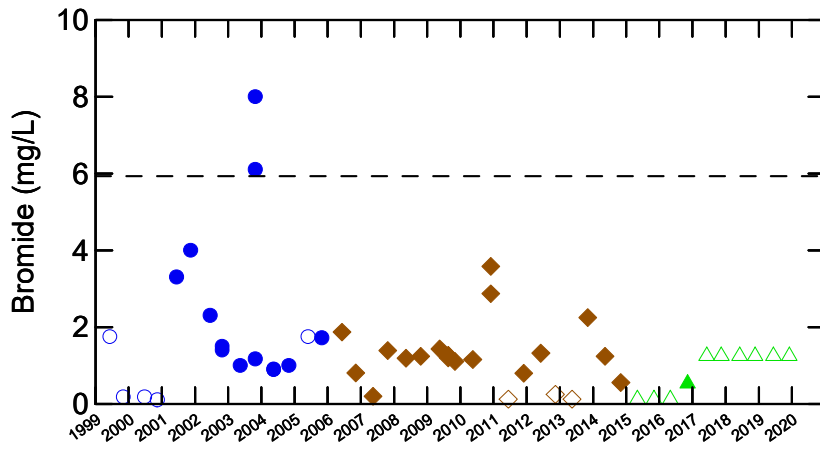
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



WELL TW22-99D
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

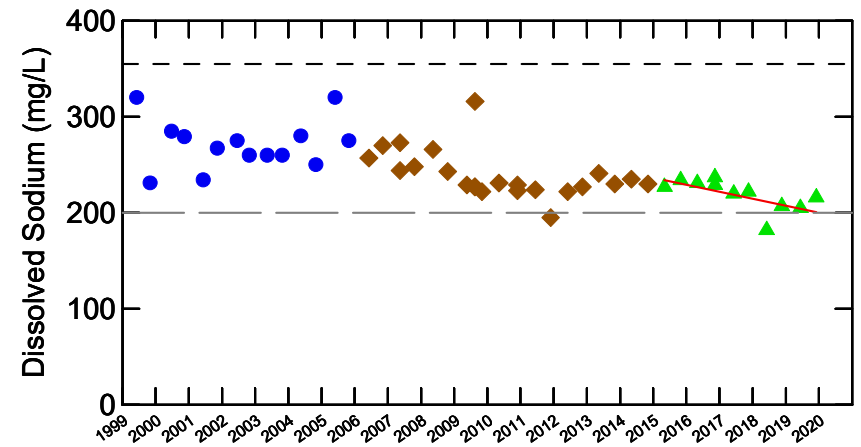
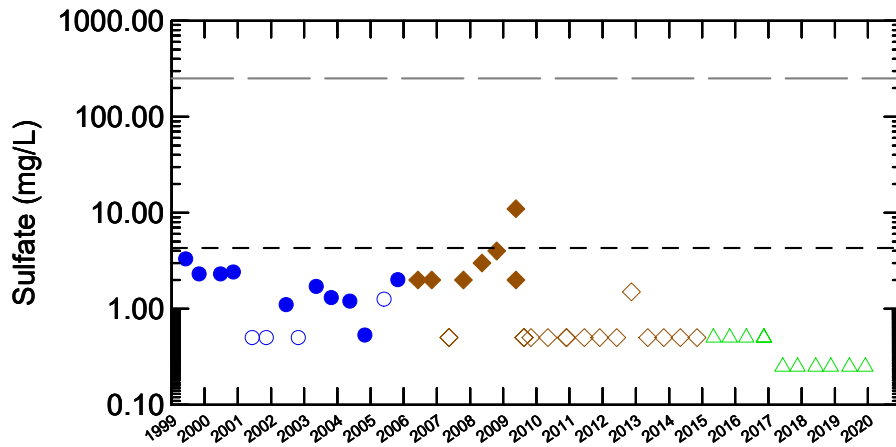
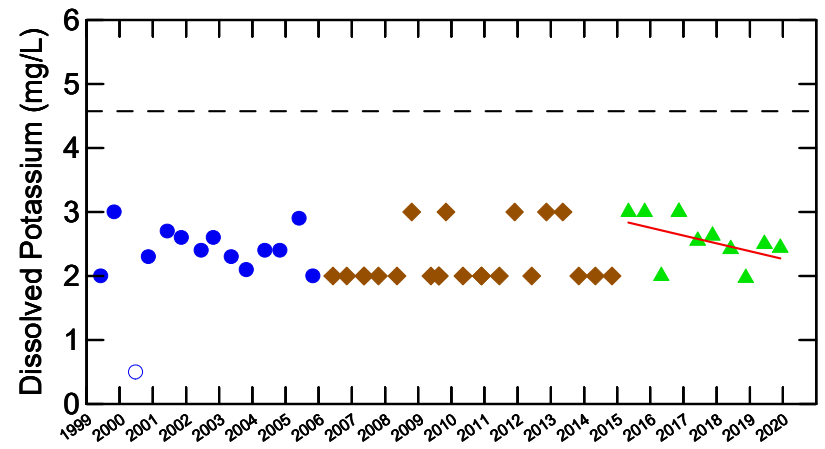
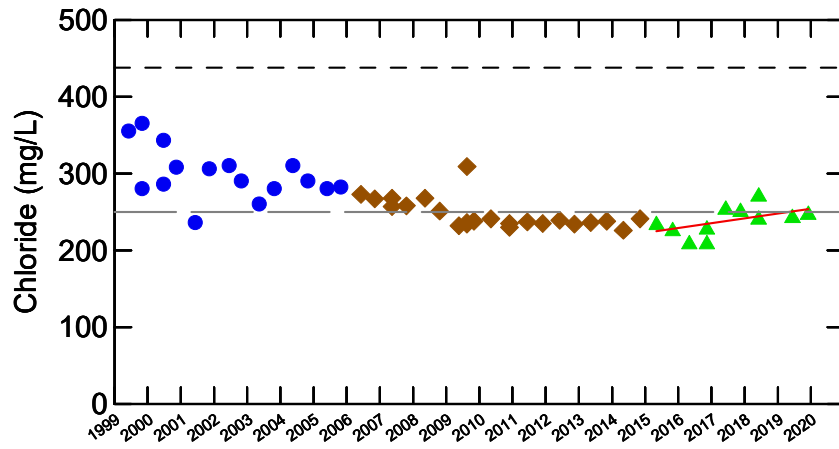
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



WELL TW22-99D
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

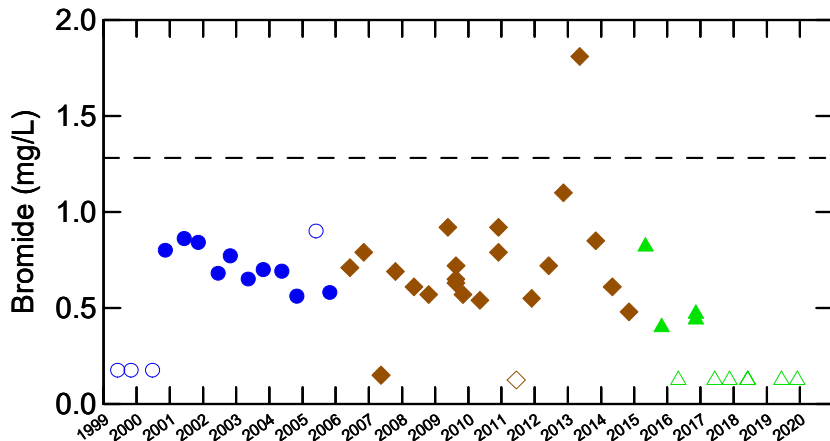
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

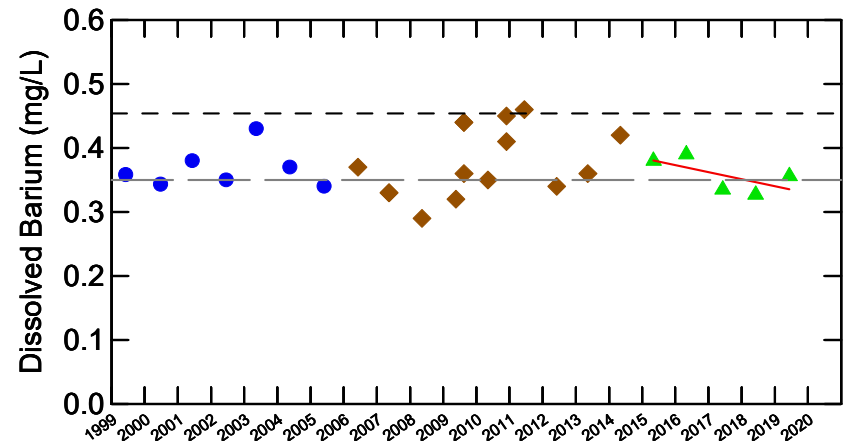
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



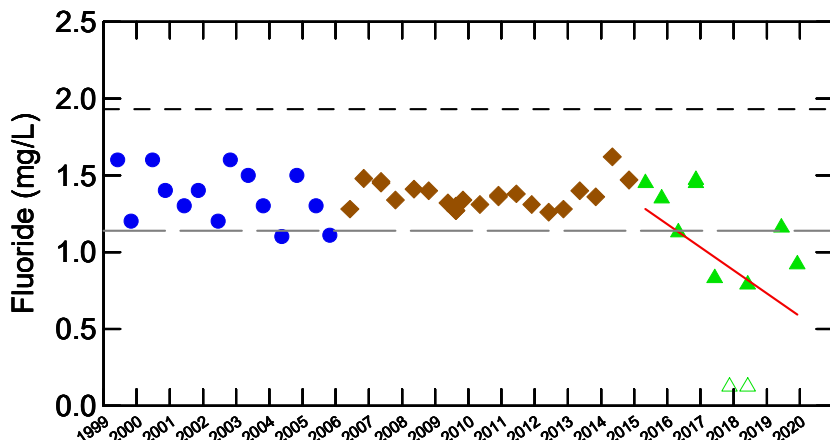
WELL TW30-99D
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



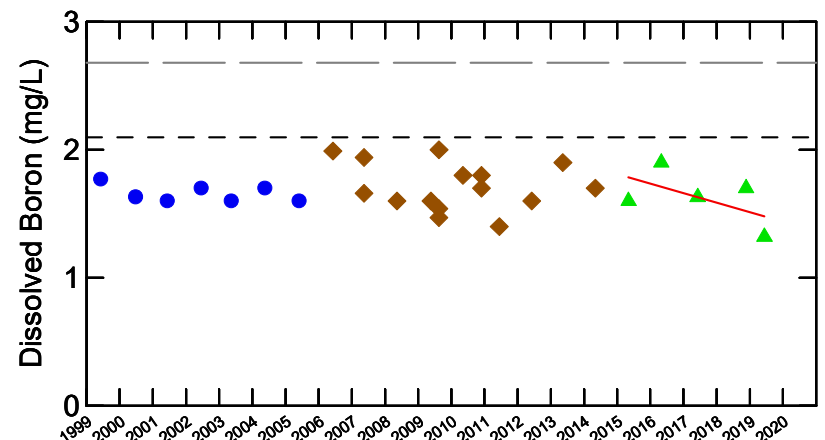
Over 50% non-detect



No trend



No trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

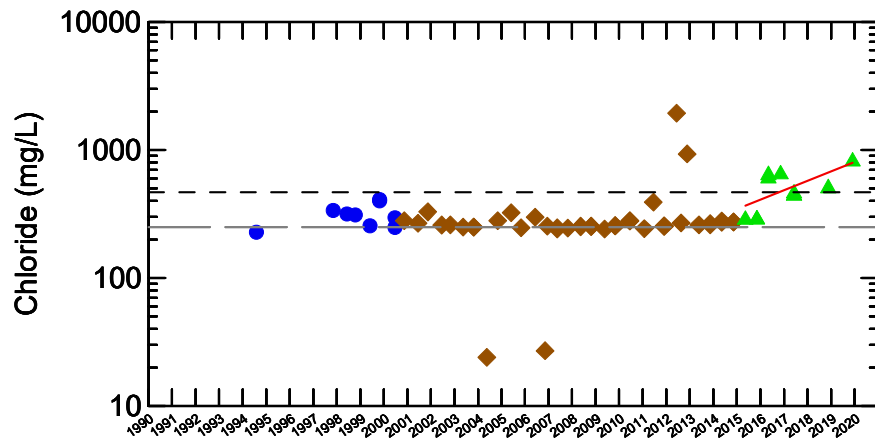
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

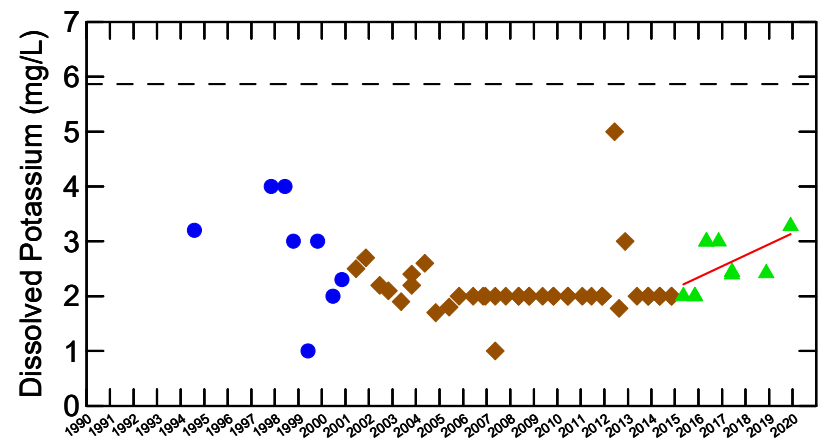
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



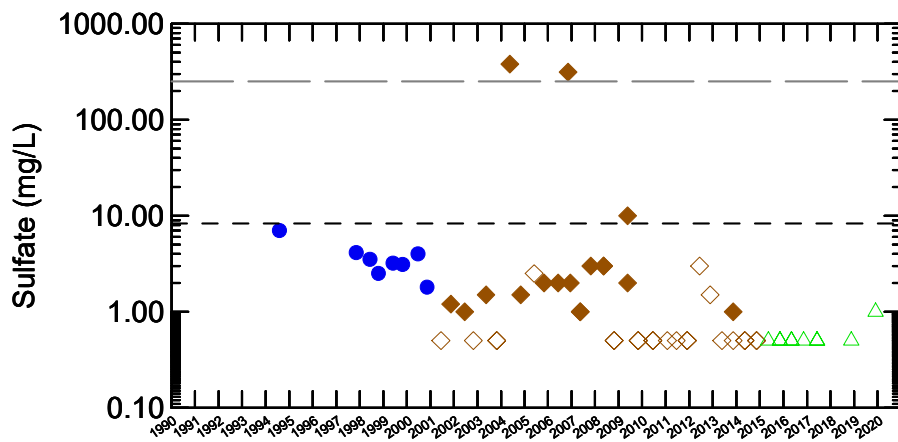
WELL TW30-99D
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



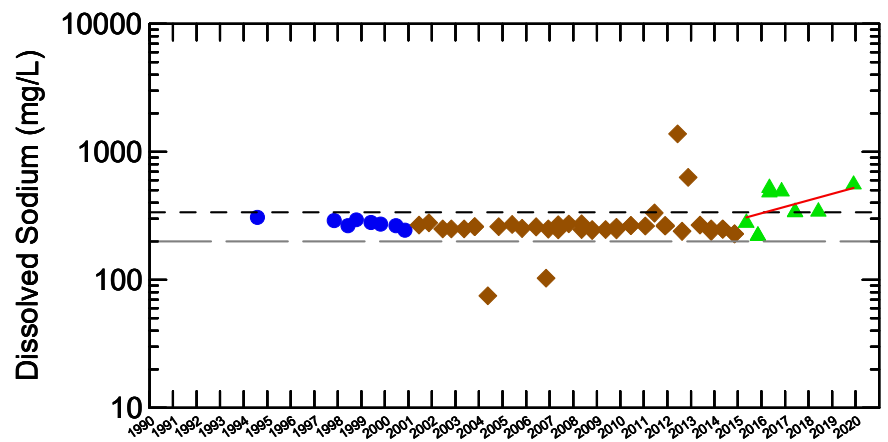
No trend



No trend



No detected results



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

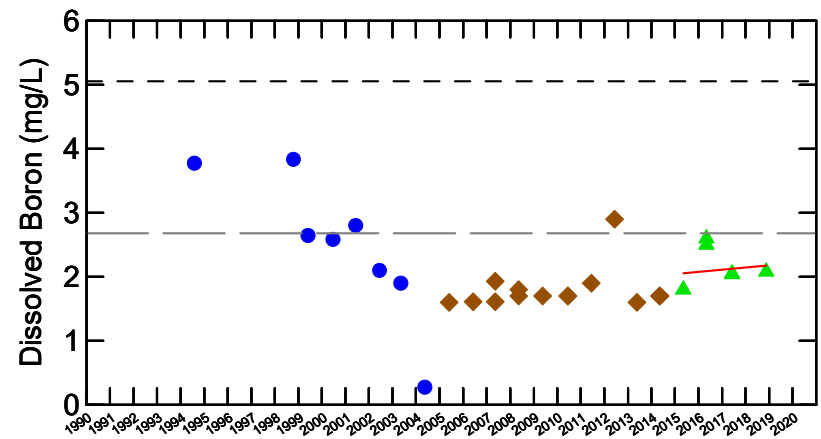
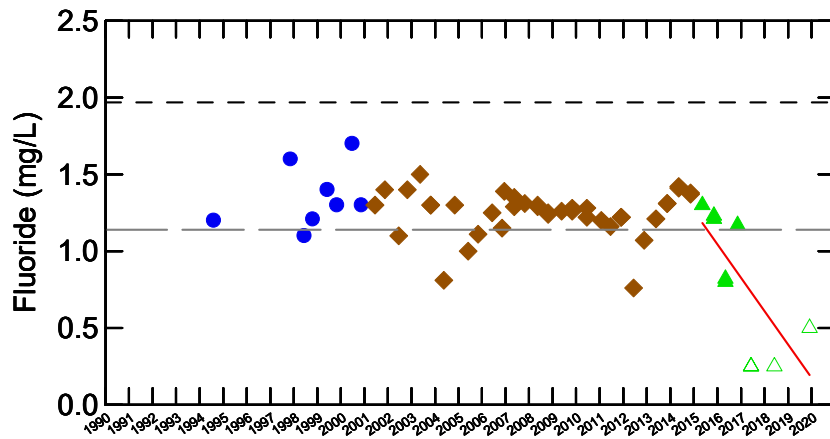
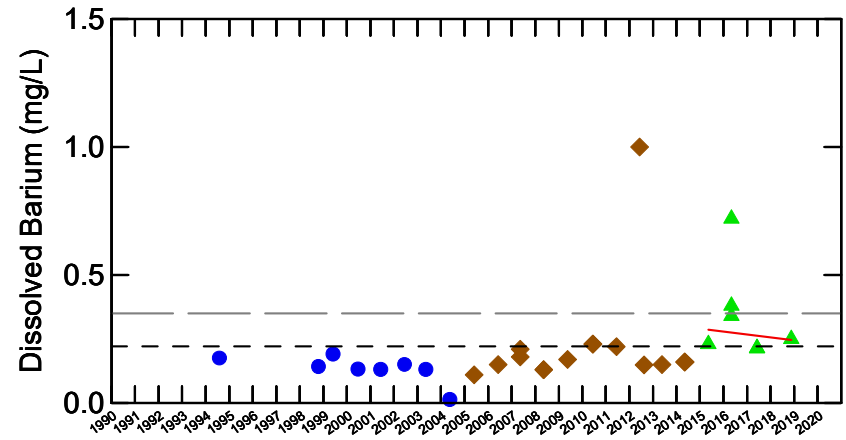
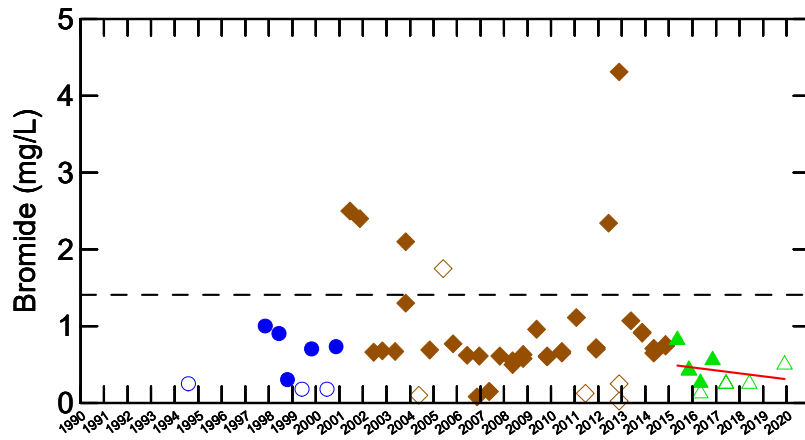
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



WELL TW32-94-II
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

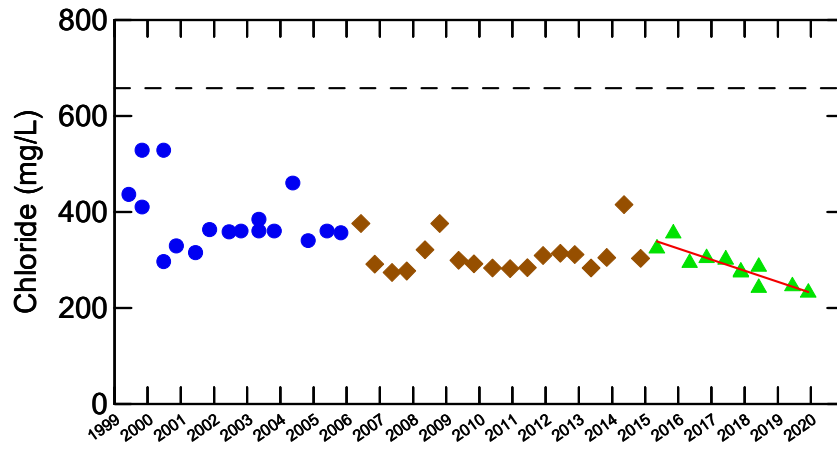
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

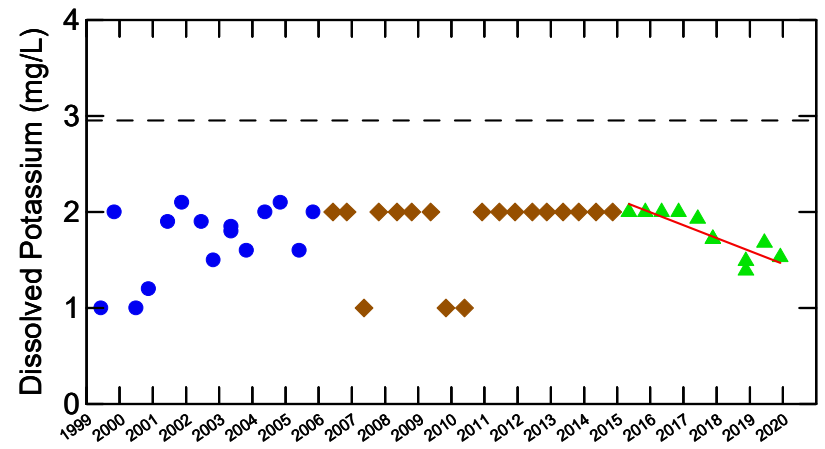
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



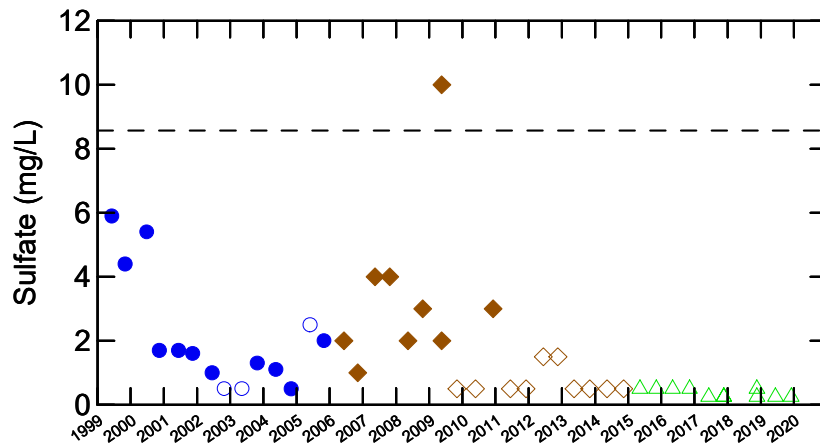
WELL TW32-94-II
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



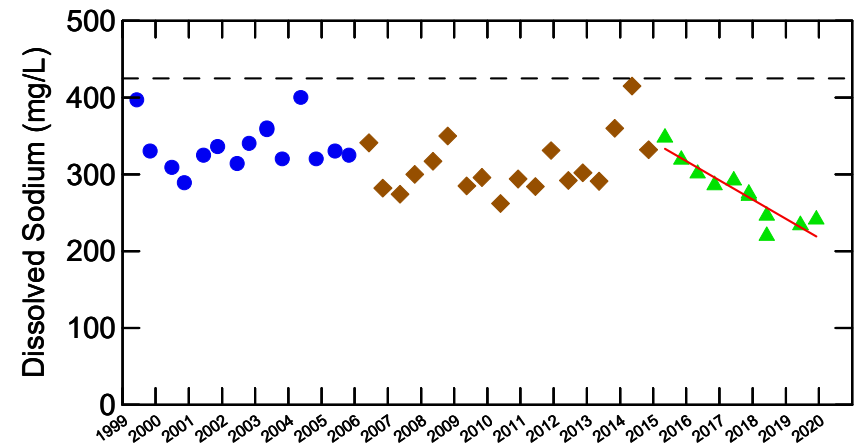
Decreasing trend



Decreasing trend



No detected results



Decreasing trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

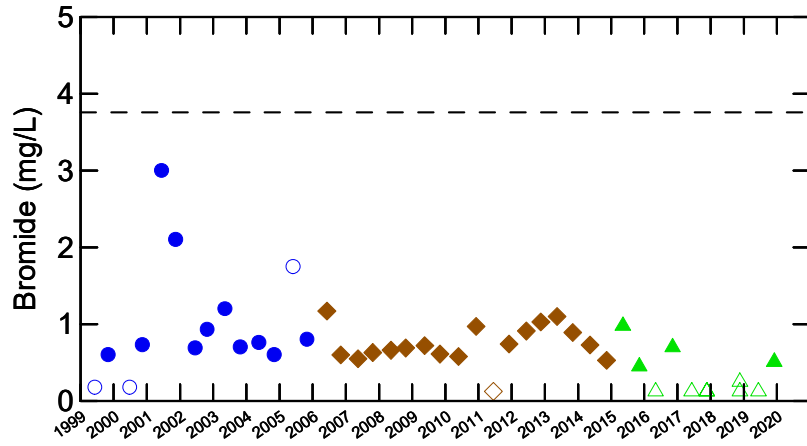
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

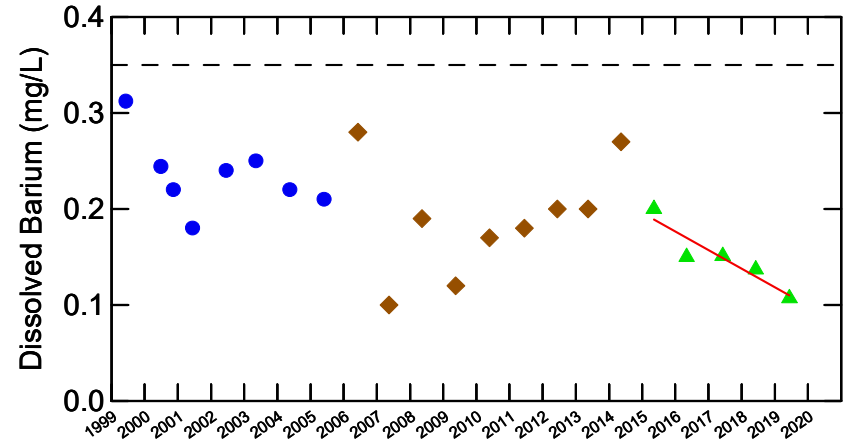
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



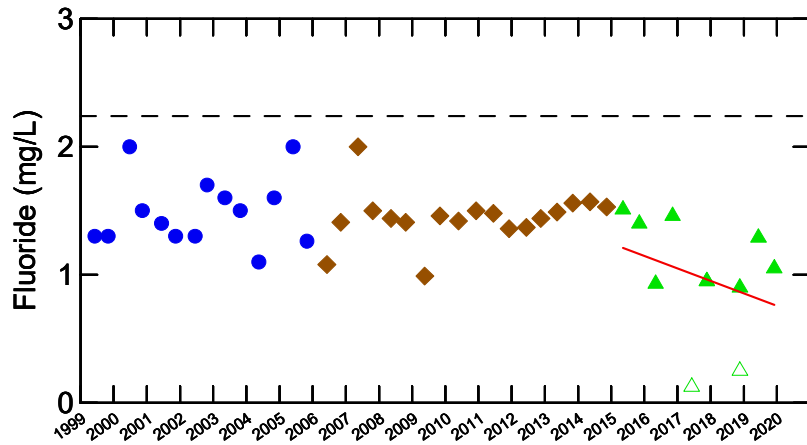
WELL TW39-99D
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



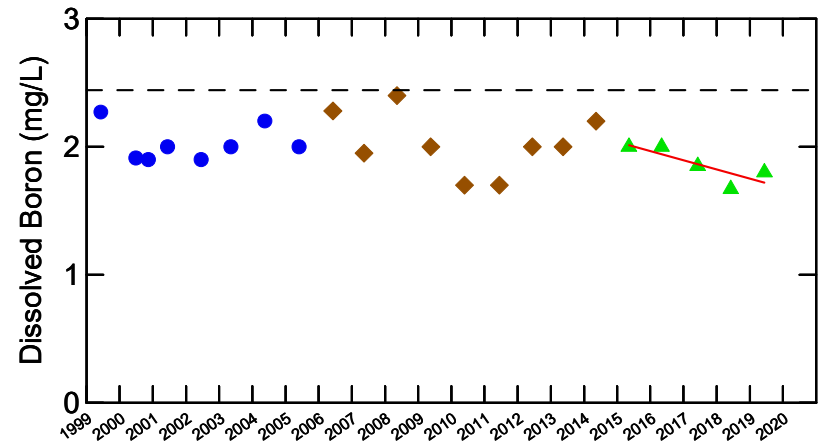
Over 50% non-detect



Decreasing trend



No trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

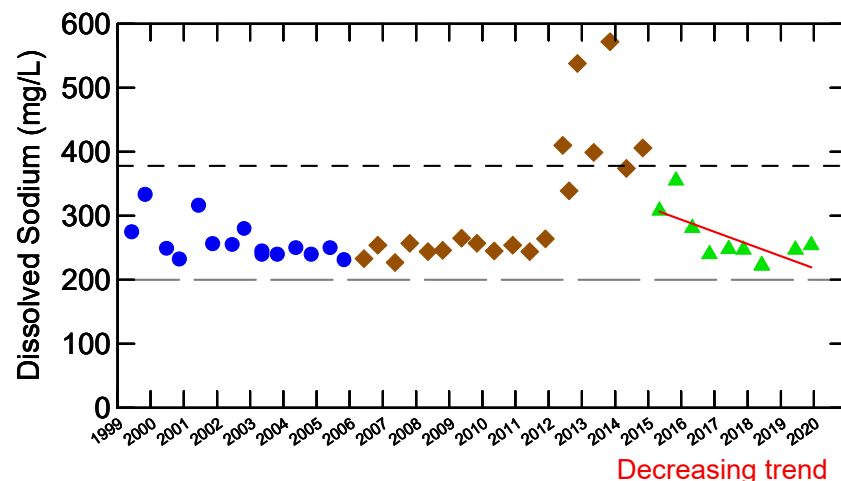
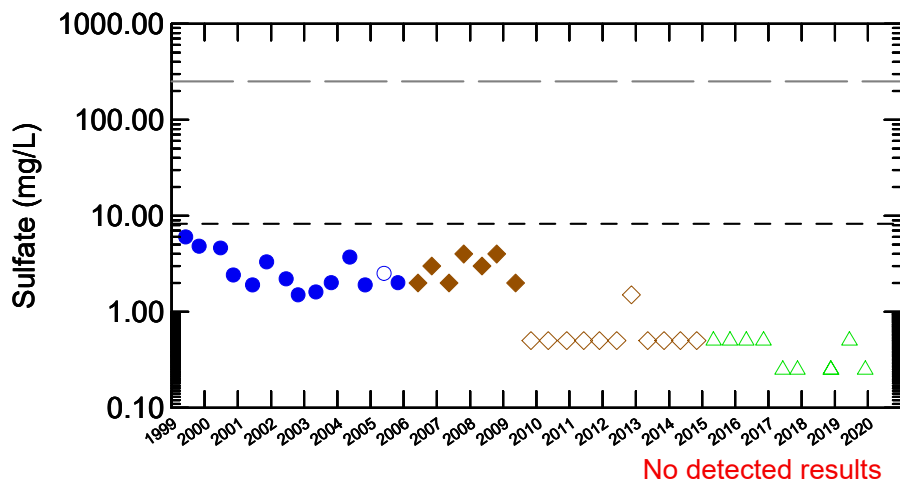
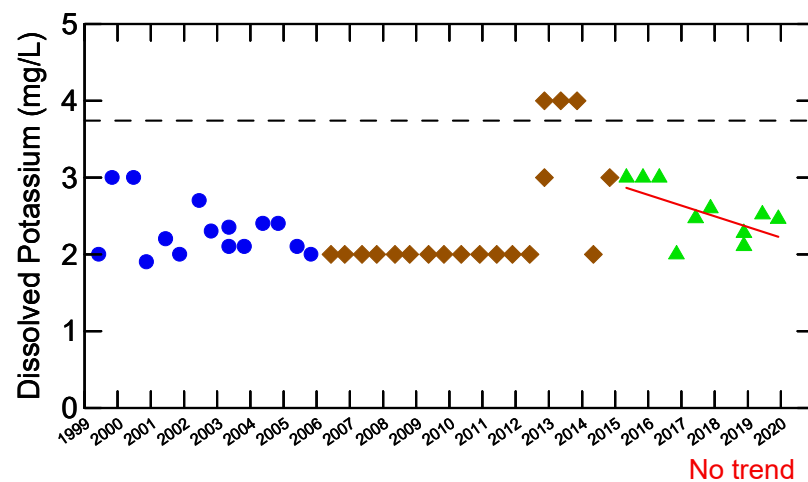
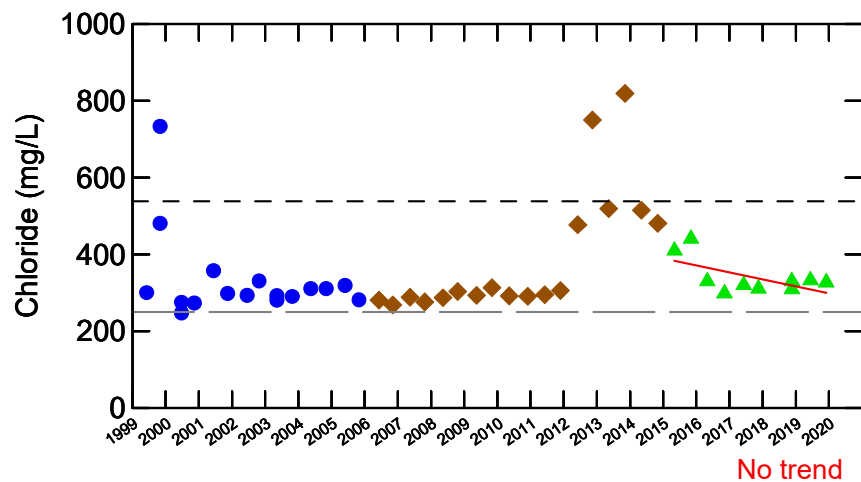
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



WELL TW39-99D
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

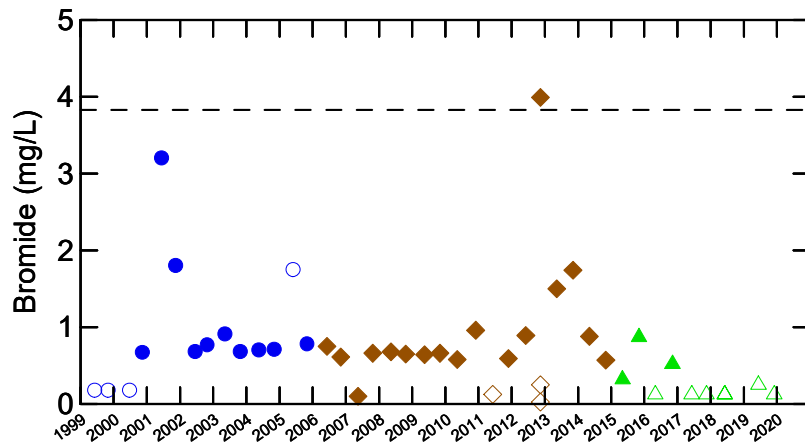
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

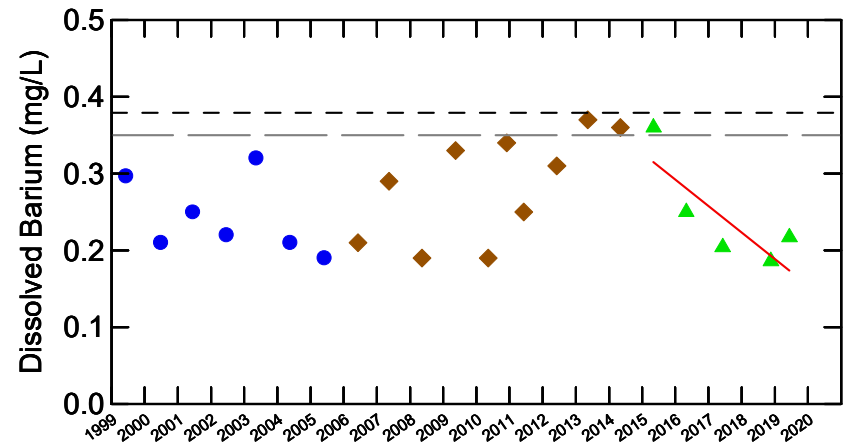
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



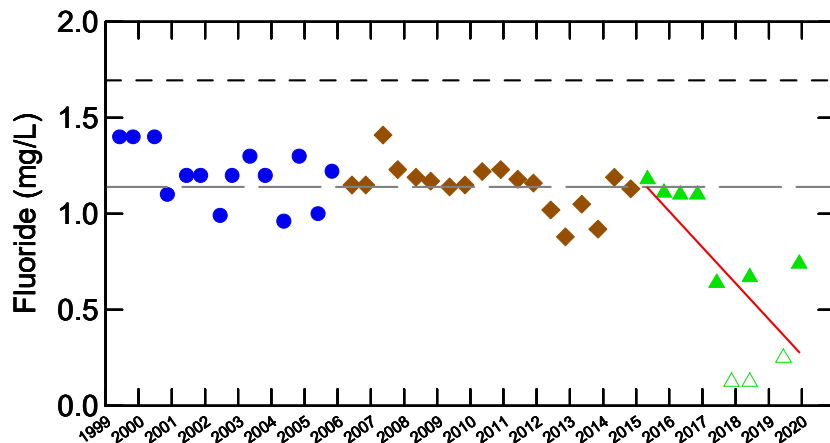
WELL TW40-99D
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



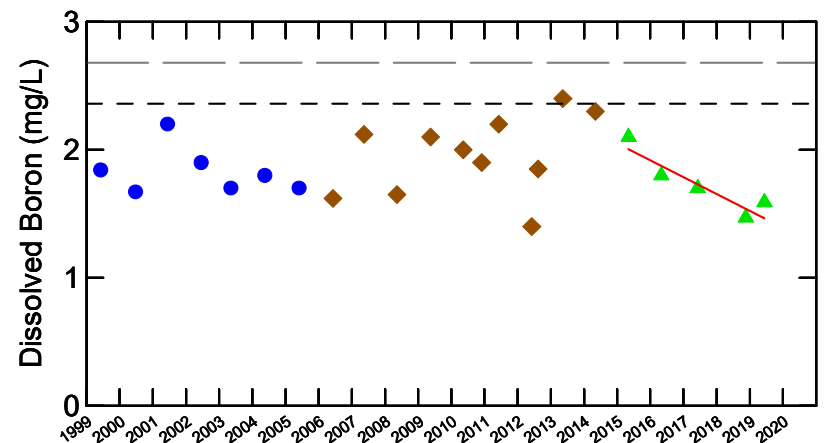
Over 50% non-detect



No trend



Decreasing trend



Decreasing trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

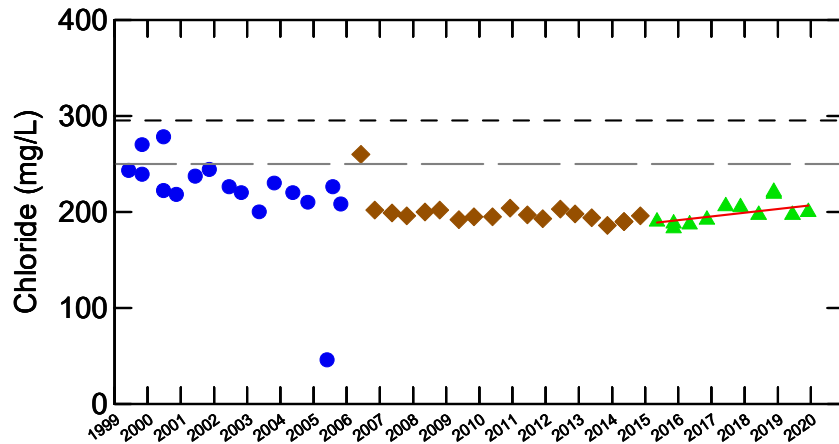
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

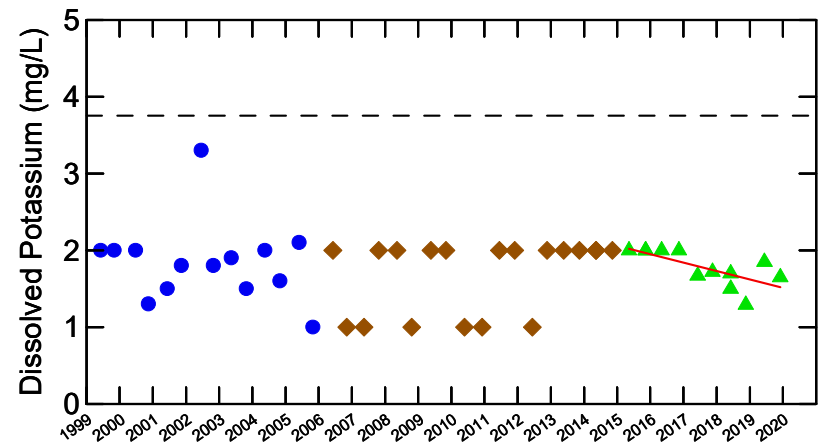
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



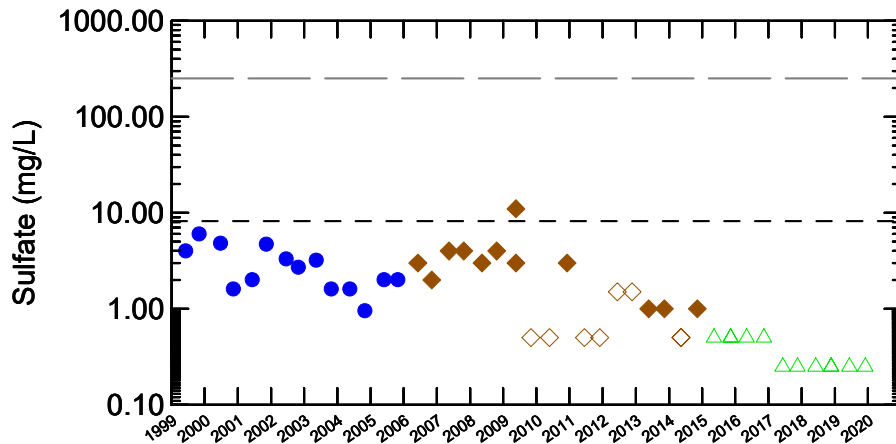
WELL TW40-99D
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



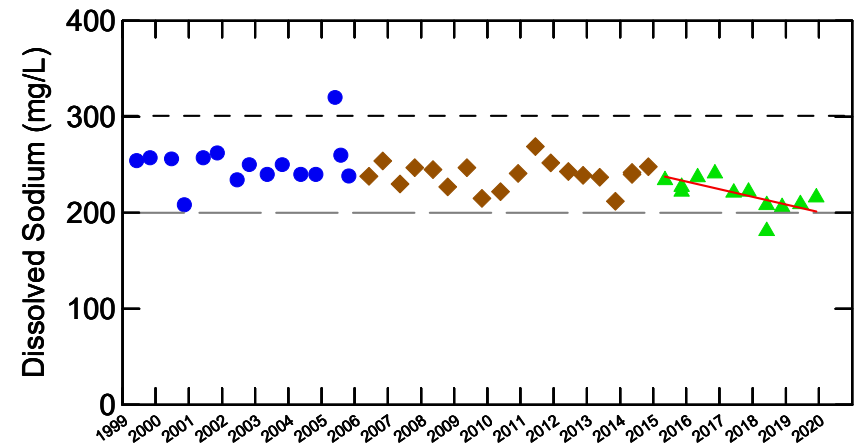
No trend



Decreasing trend



No detected results



Decreasing trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

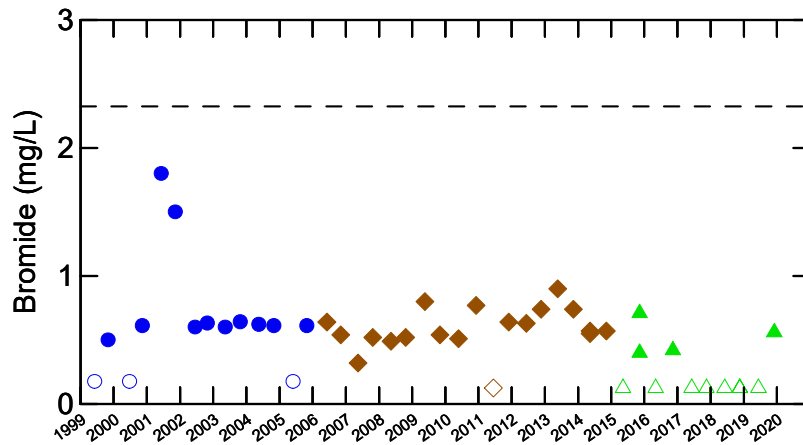
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

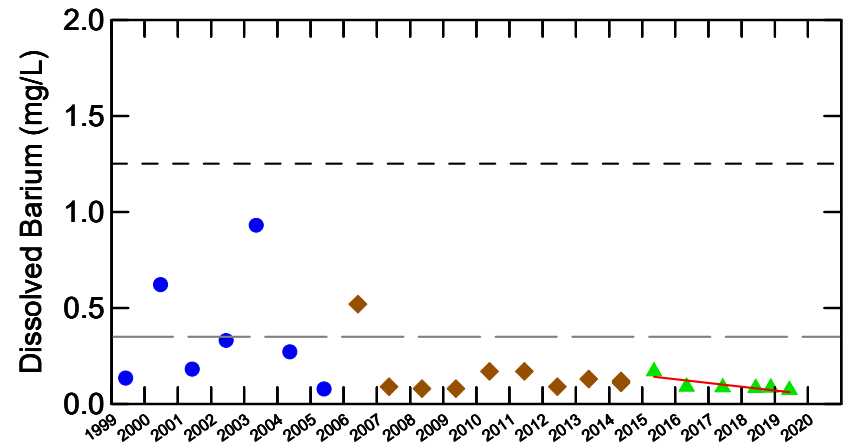
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



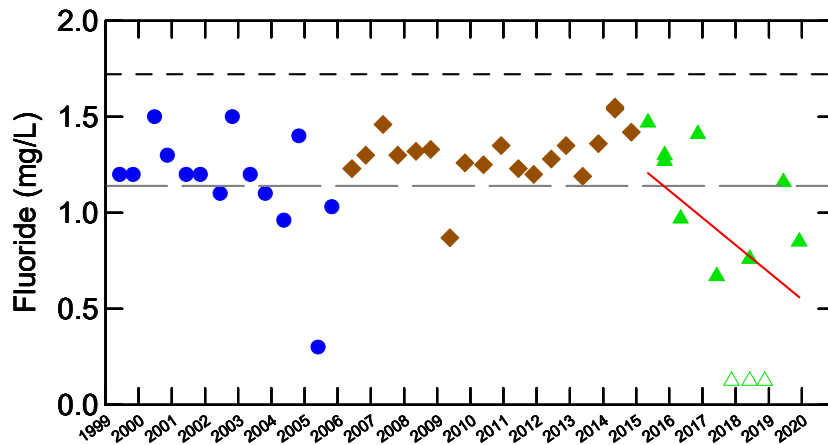
WELL TW41-99D
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



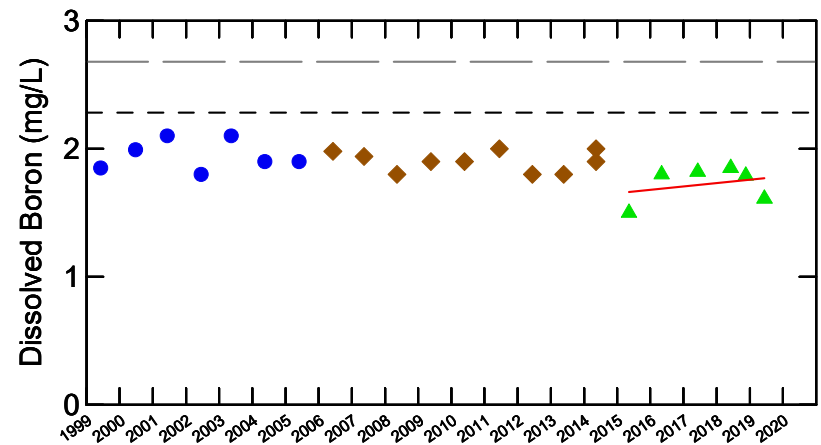
Over 50% non-detect



No trend



No trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

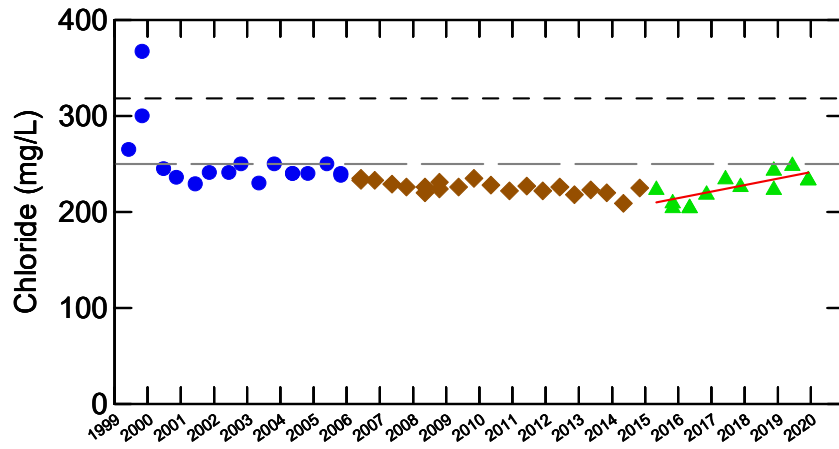
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

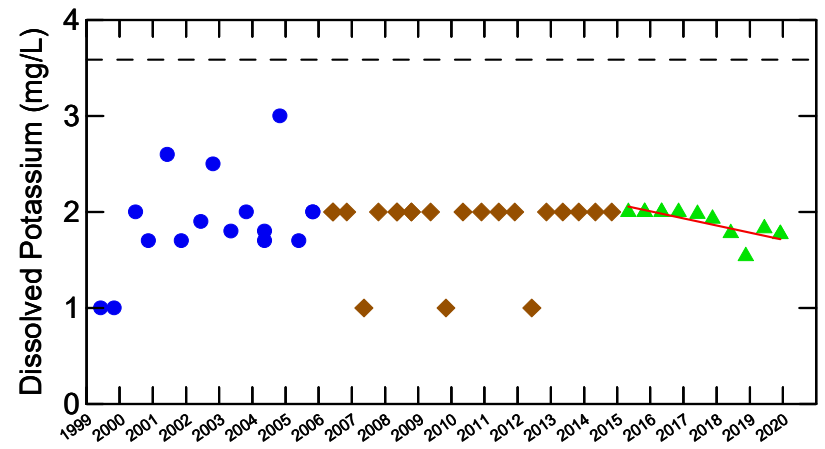
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



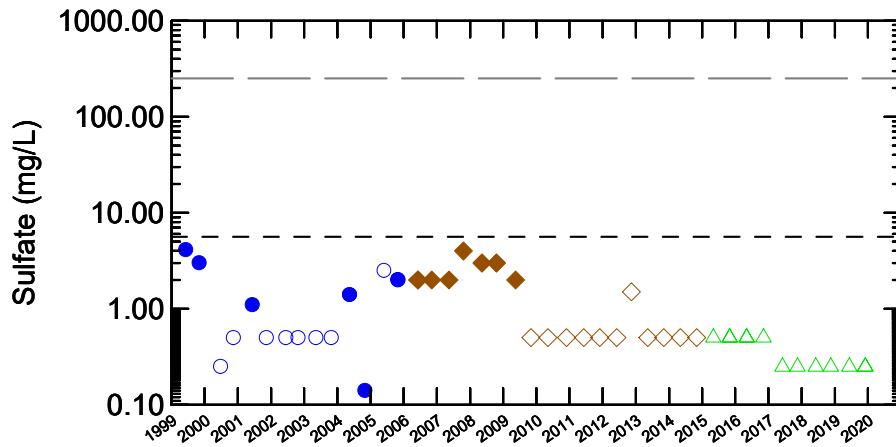
WELL TW41-99D
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



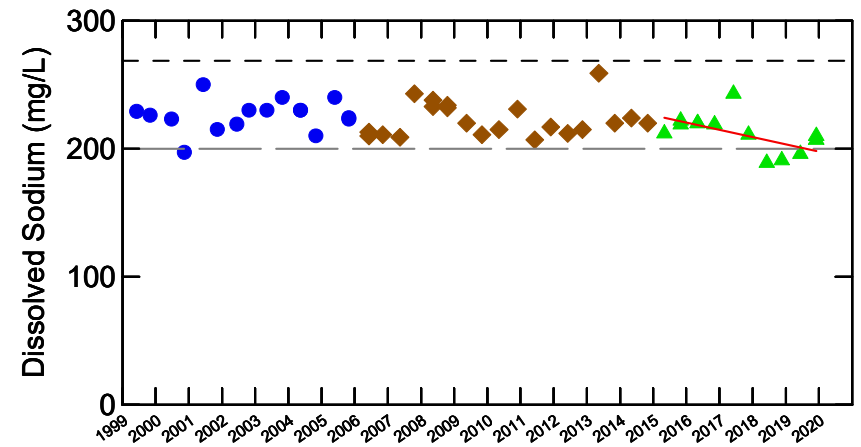
Increasing trend



Decreasing trend



No detected results



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

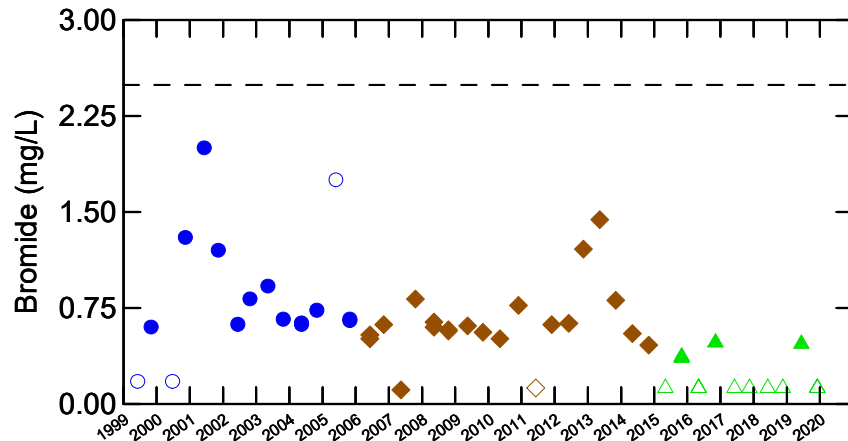
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

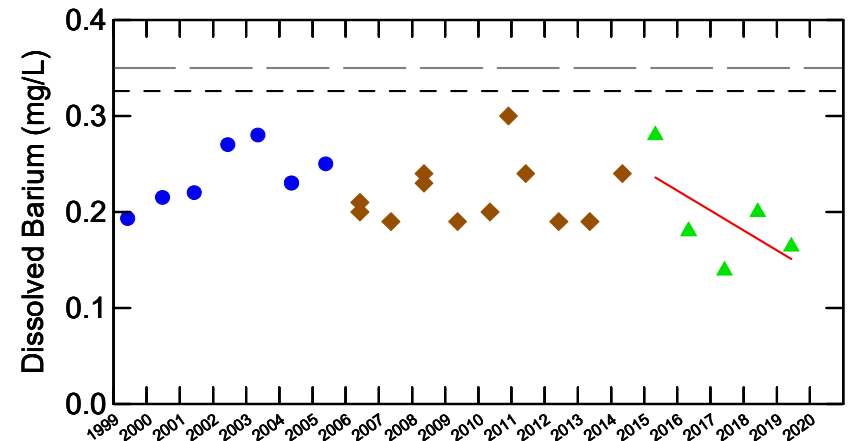
- (1) Non-detects (indicated by empty symbols) are plotted at one half the detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years (2014 - 2018), using a 95 percent confidence level.



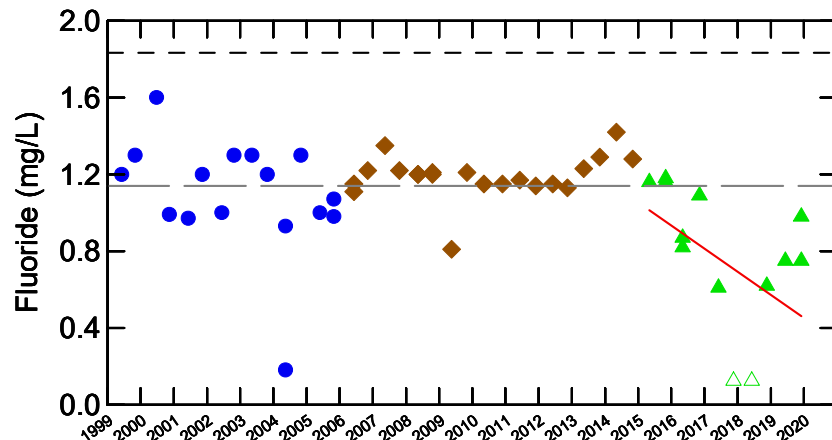
WELL TW43-99D
 DEEP WELL (INTERFACE AQUIFER)
 2018 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



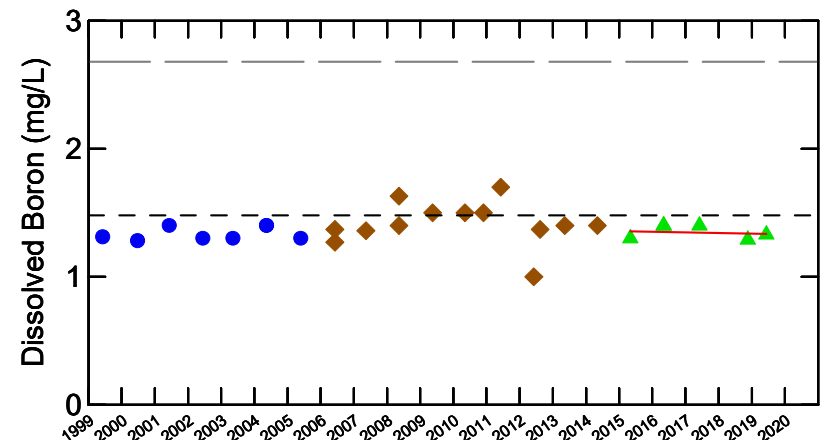
Over 50% non-detect



No trend



No trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

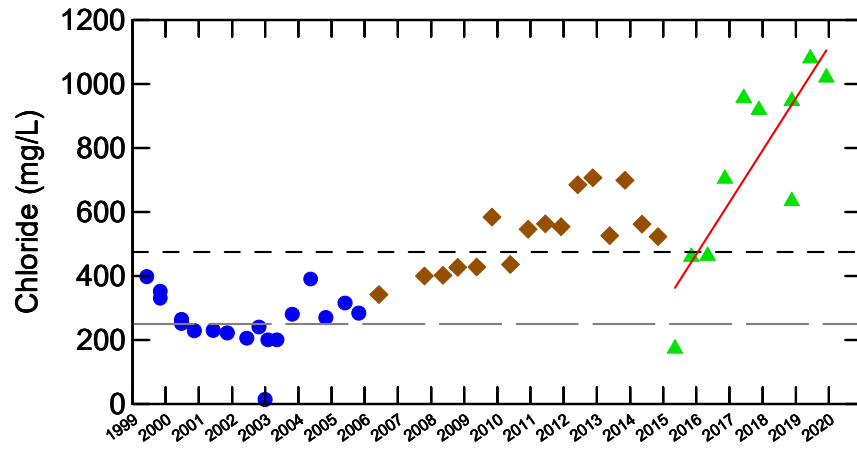
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

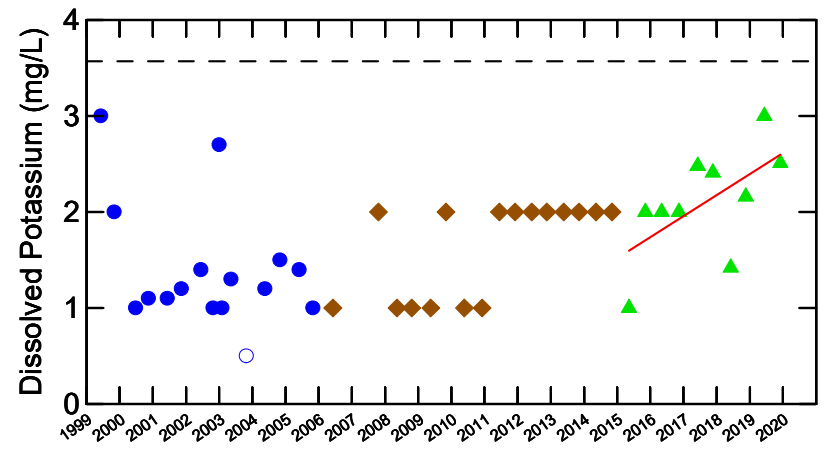
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



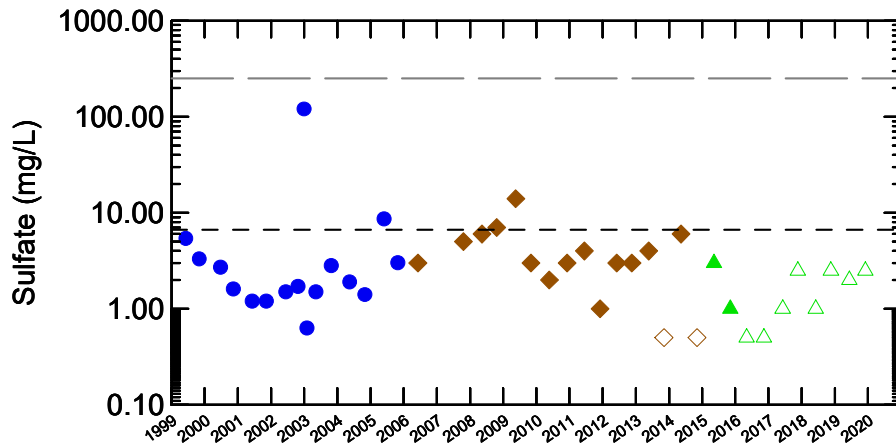
WELL TW43-99D
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



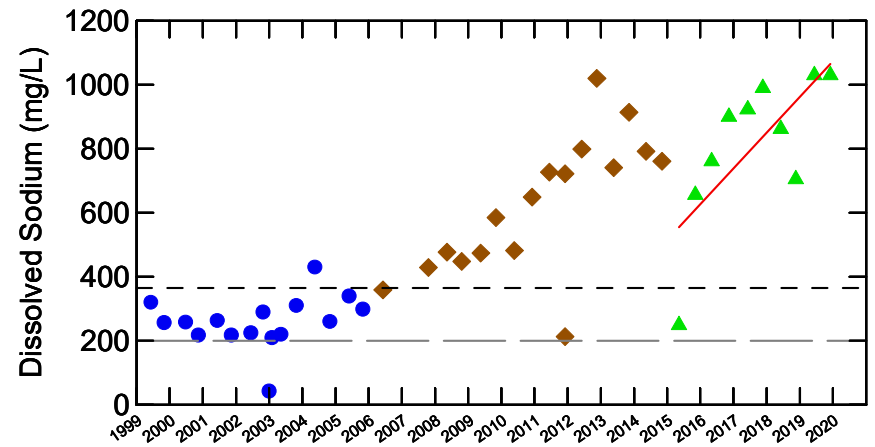
Increasing trend



No trend



Over 50% non-detect



Increasing trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

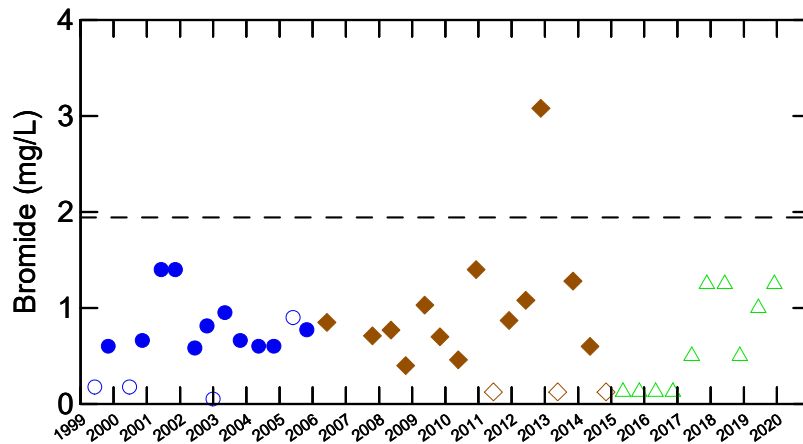
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

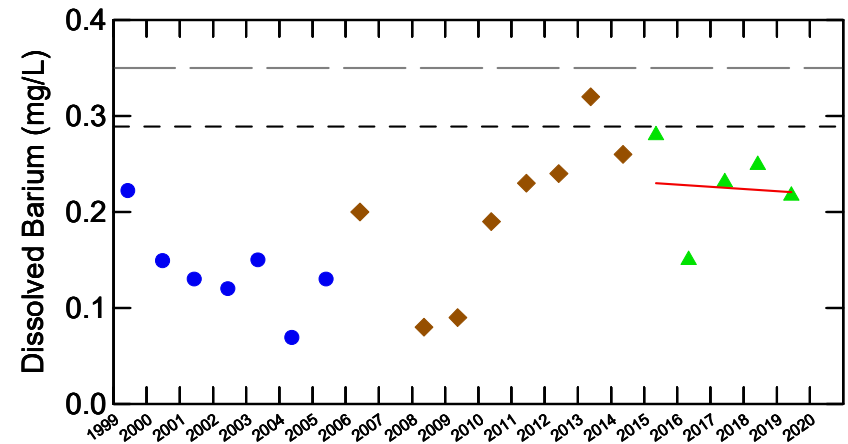
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



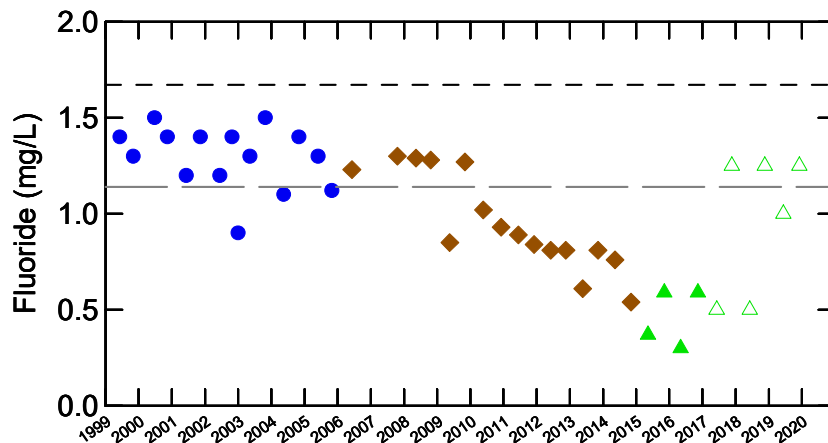
WELL TW45-99D
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



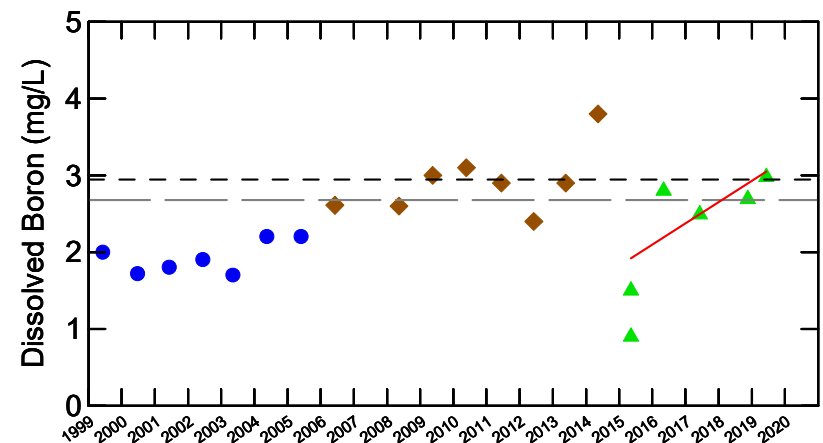
No detected results



No trend



Over 50% non-detect



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

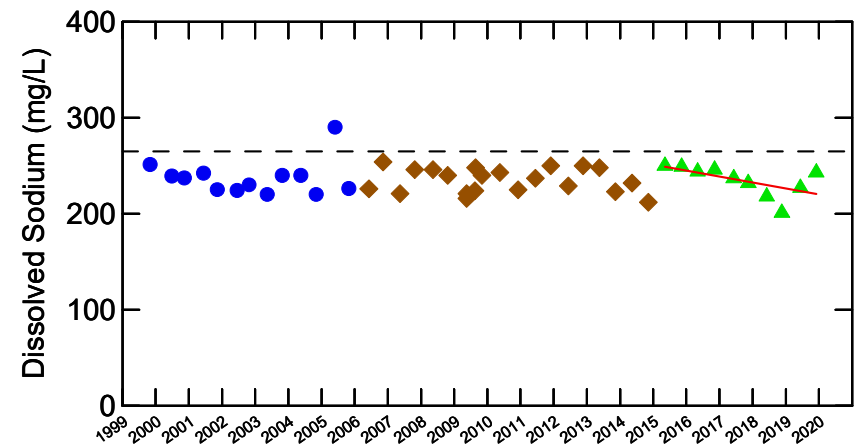
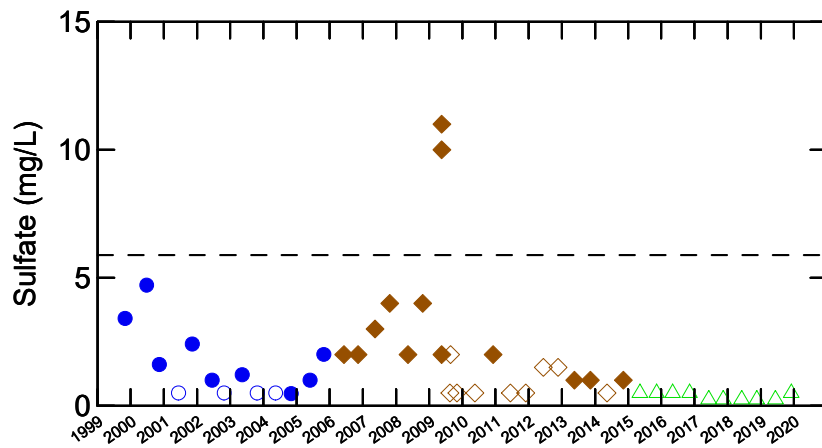
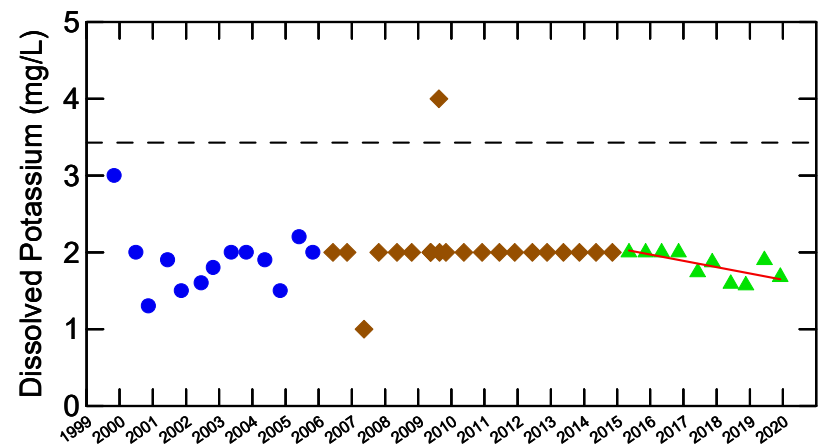
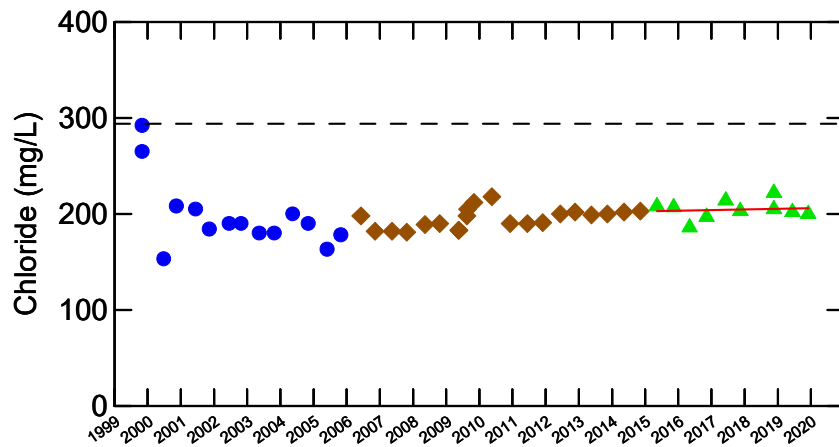
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



WELL TW45-99D
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

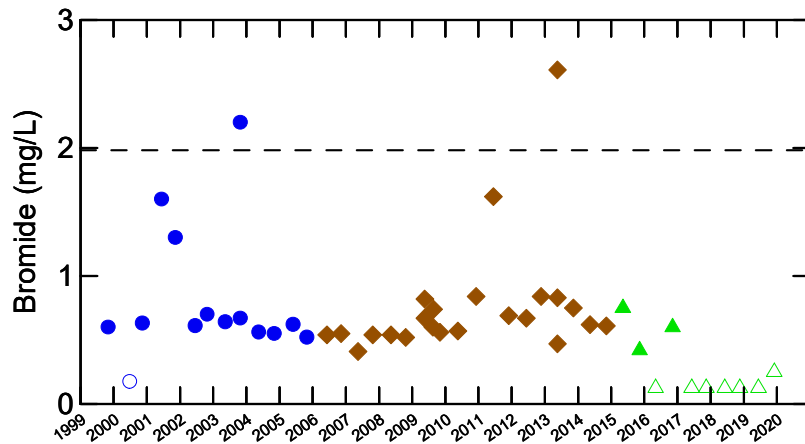
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

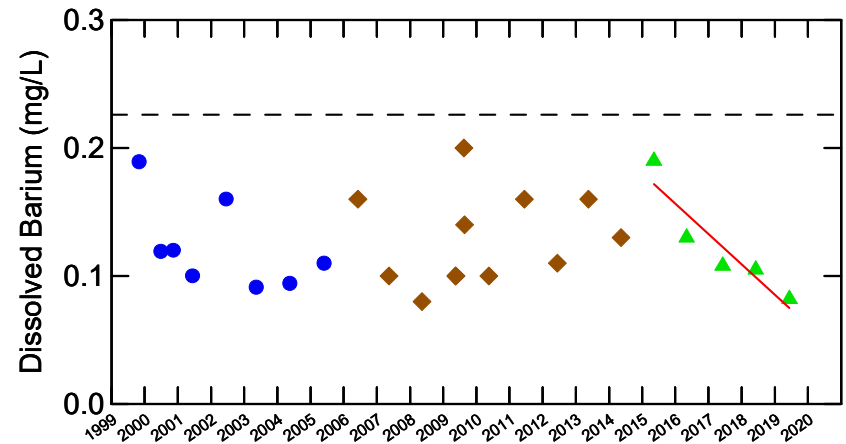
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



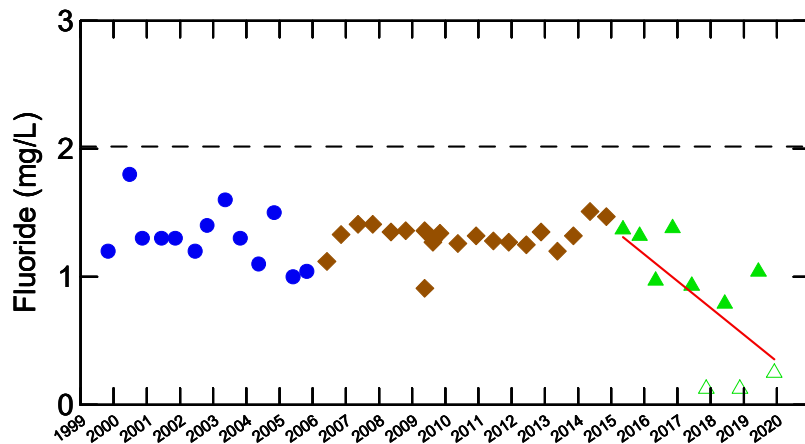
WELL TW46-99D
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



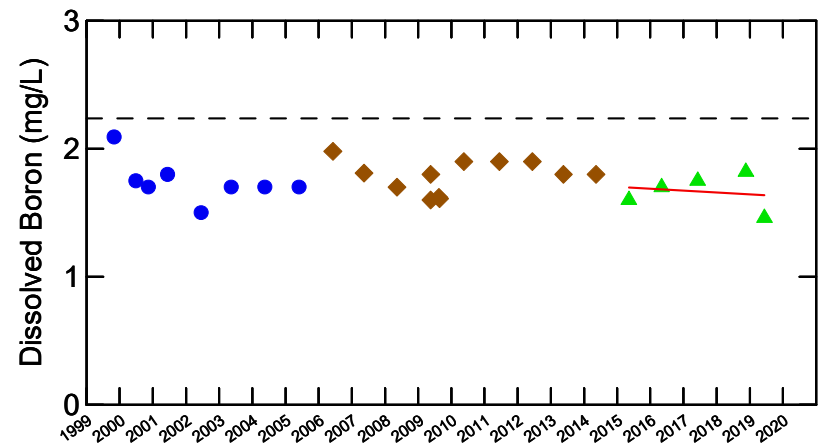
Over 50% non-detect



Decreasing trend



Decreasing trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

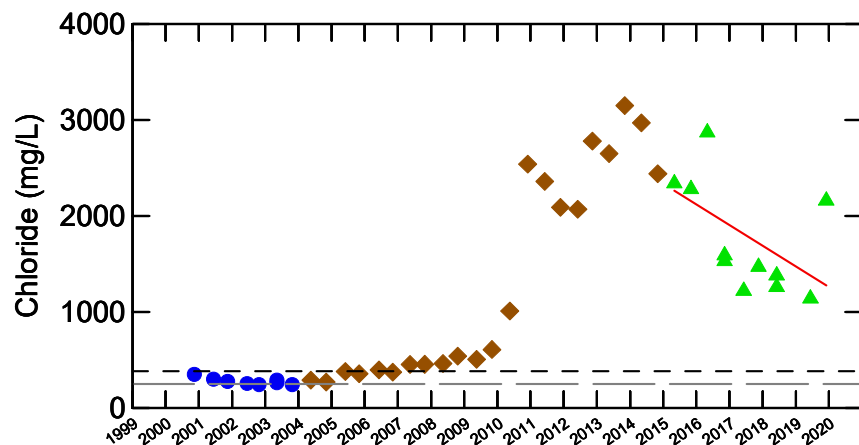
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

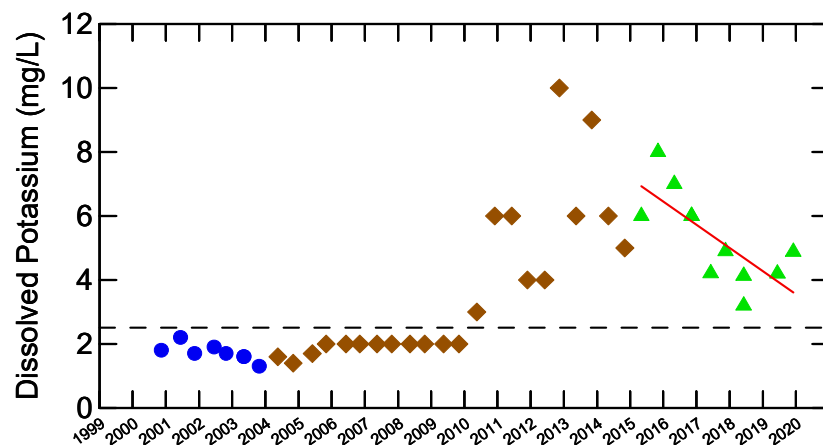
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



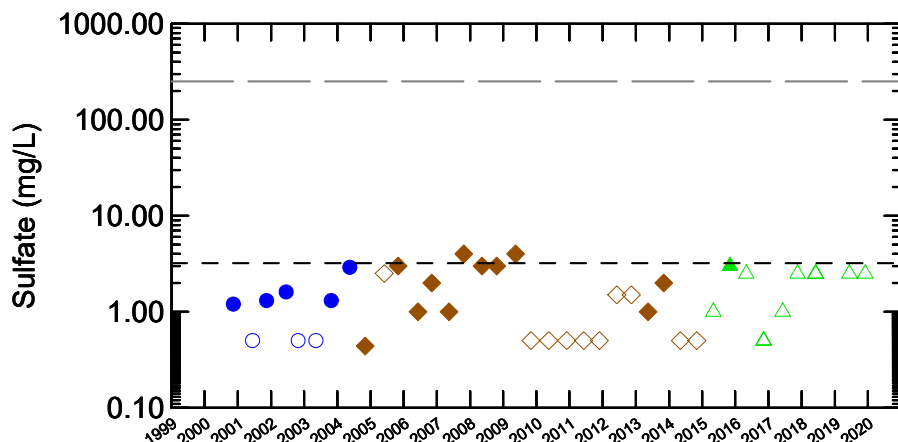
WELL TW46-99D
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



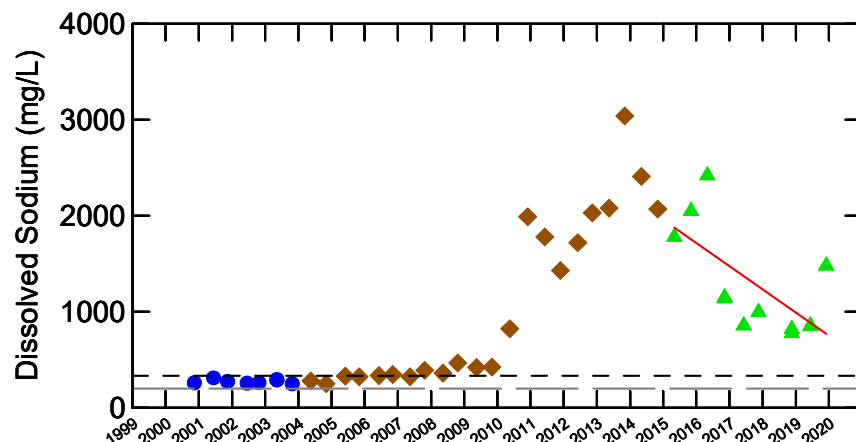
No trend



Decreasing trend



Over 50% non-detect



Decreasing trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

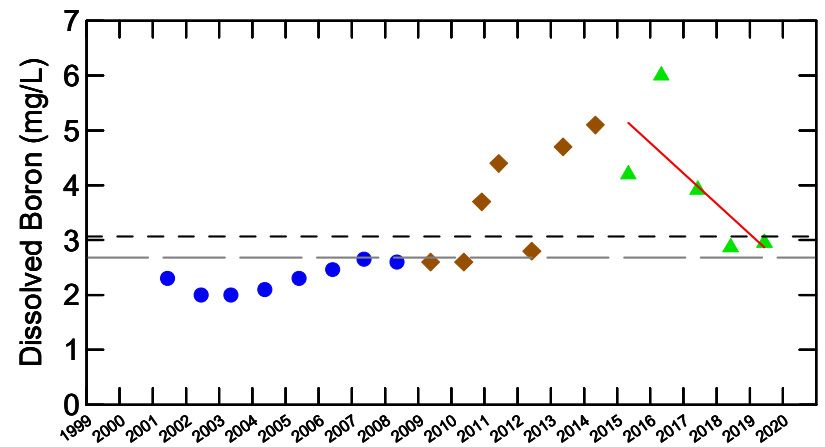
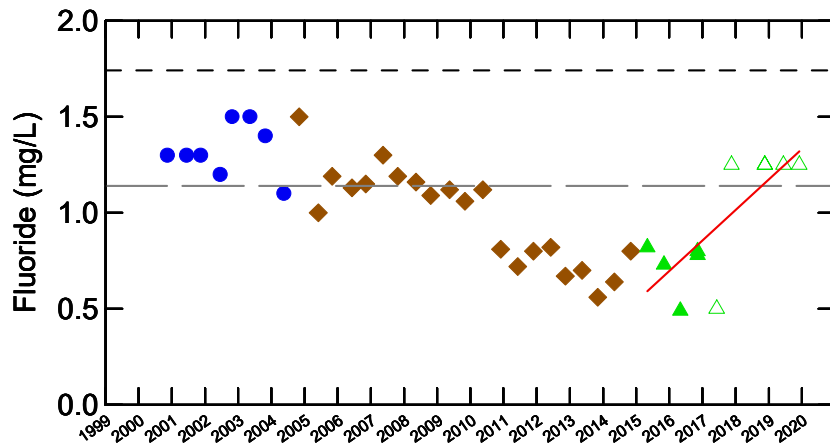
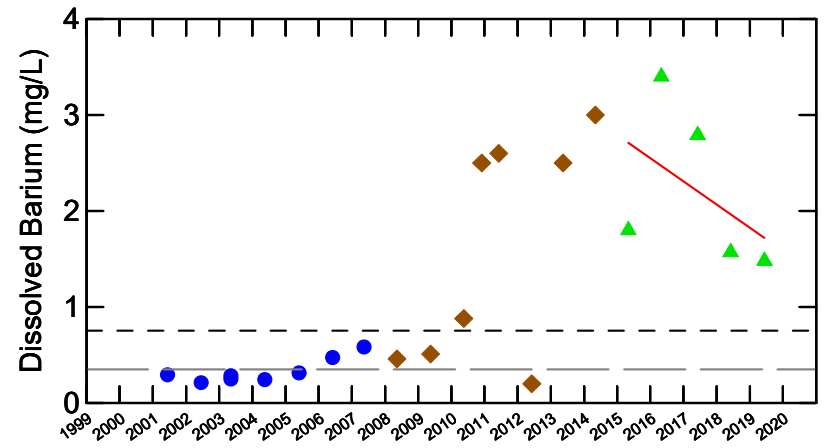
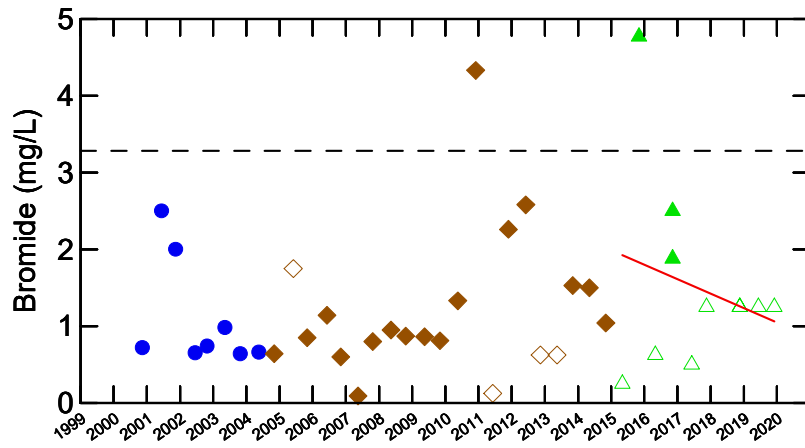
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



WELL TW47-00D
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

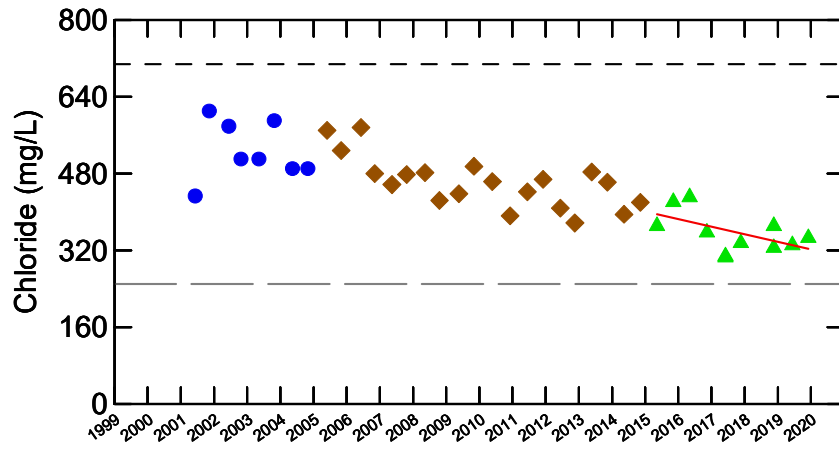
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

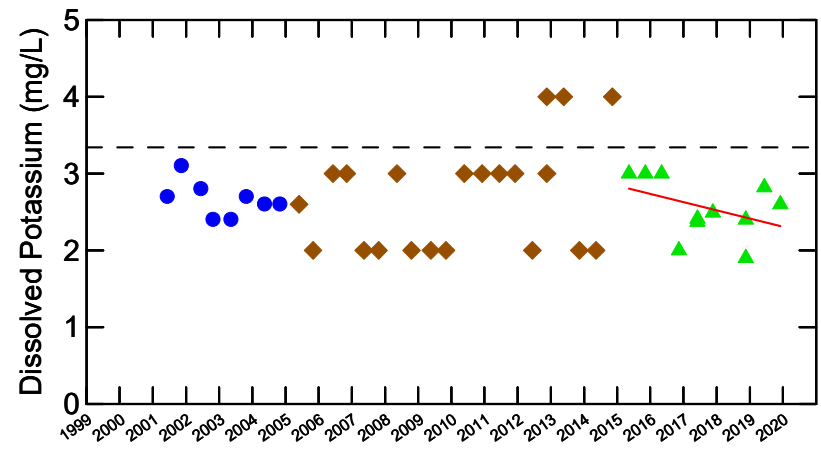
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



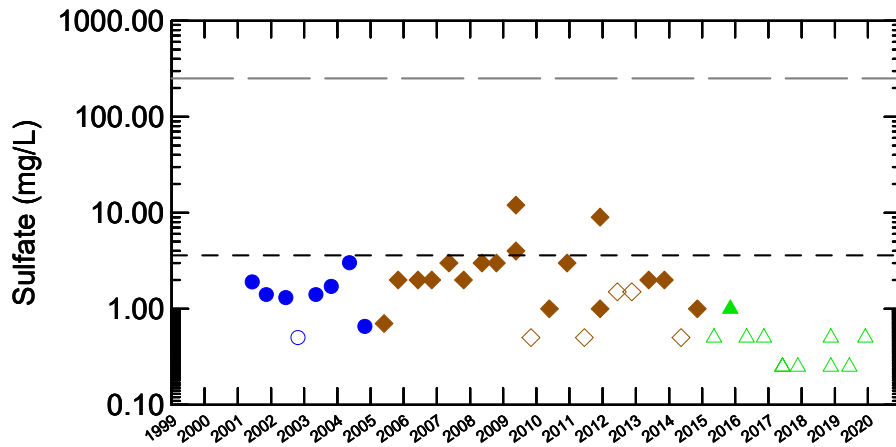
WELL TW47-00D
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



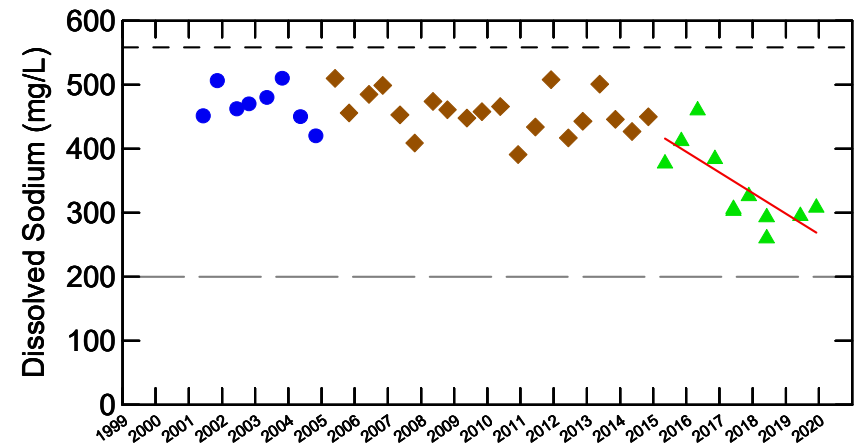
No trend



No trend



Over 50% non-detect



Decreasing trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

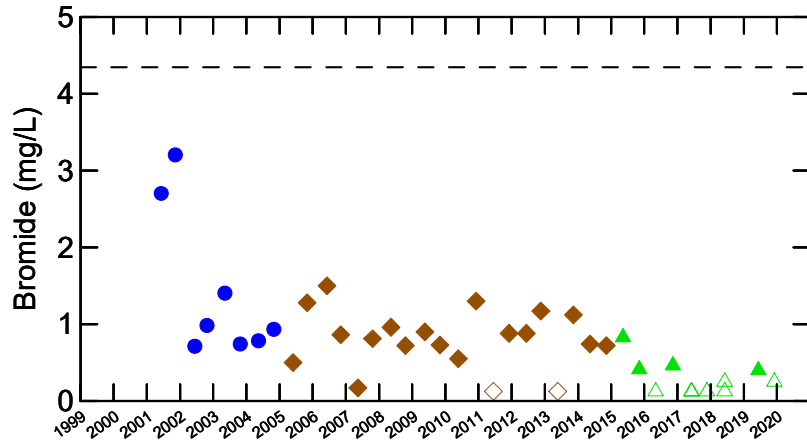
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

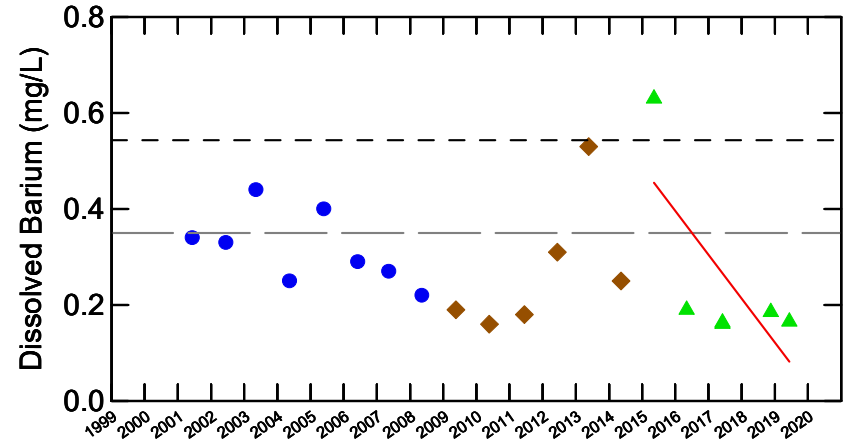
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



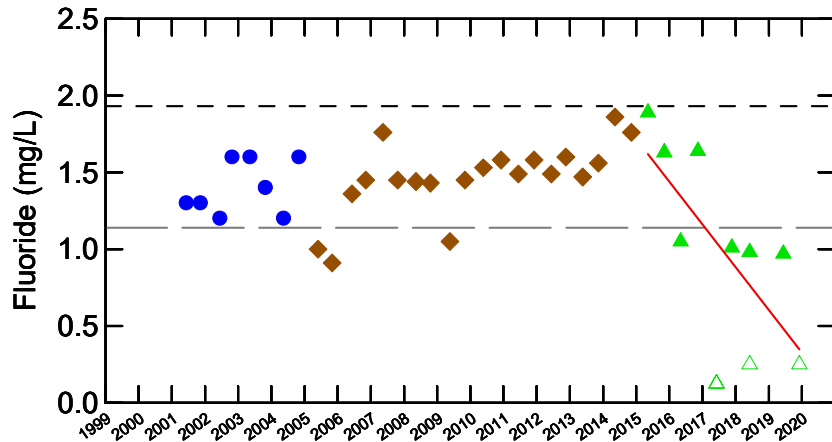
WELL TW48-00D
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



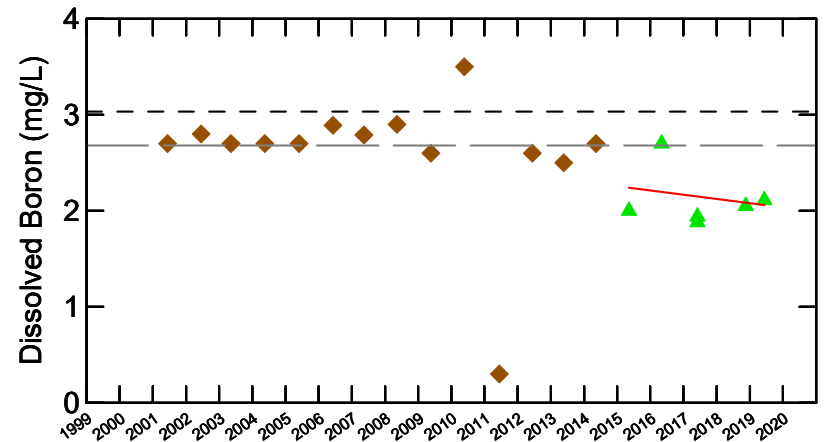
Over 50% non-detect



No trend



Decreasing trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

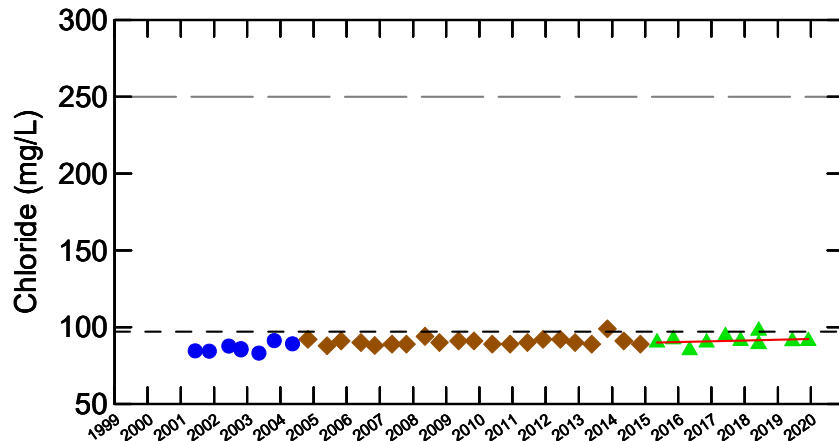
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

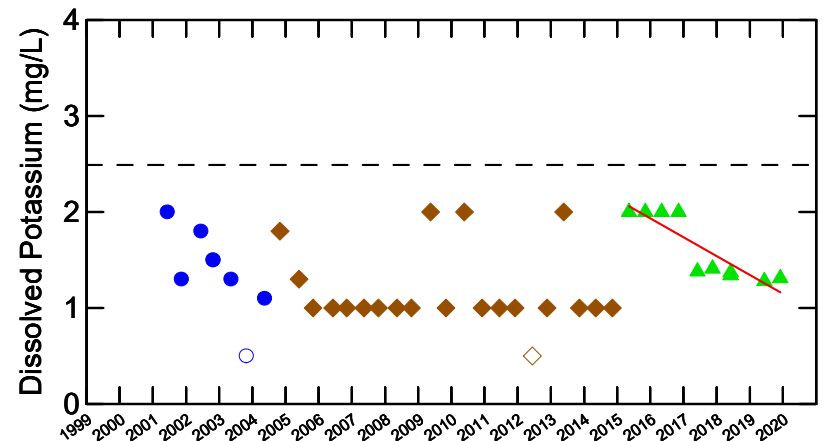
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



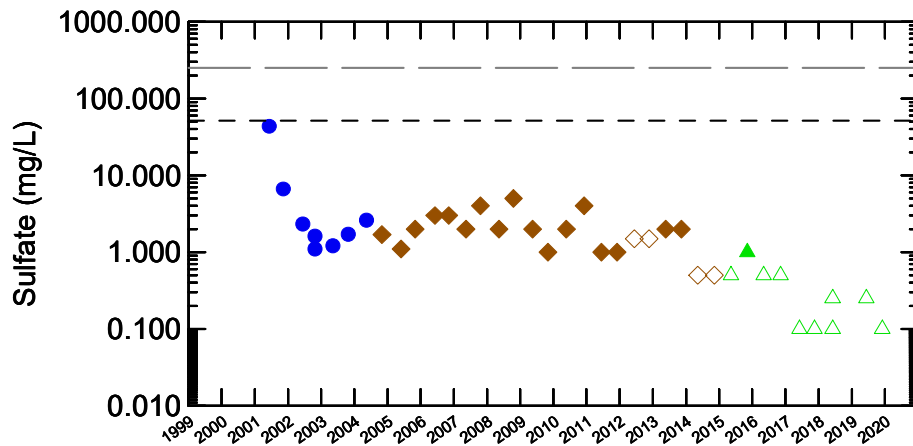
WELL TW48-00D
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



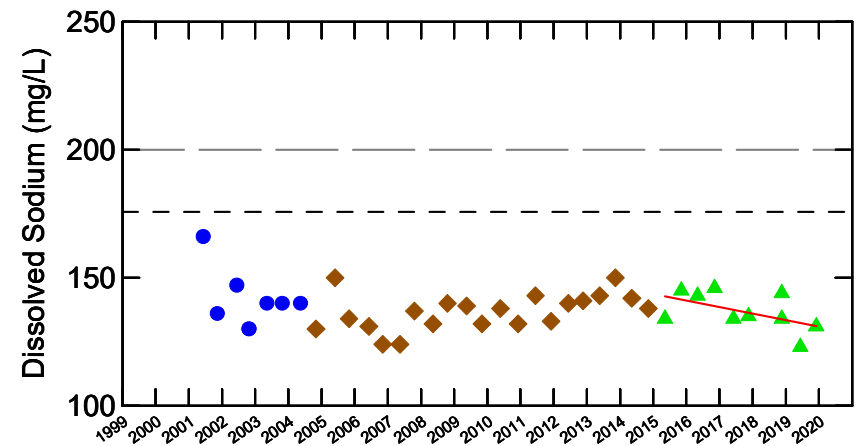
No trend



Decreasing trend



Over 50% non-detect



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

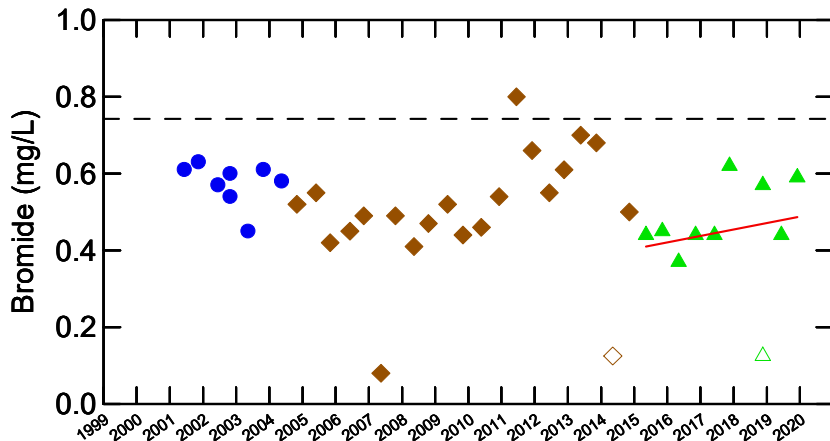
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

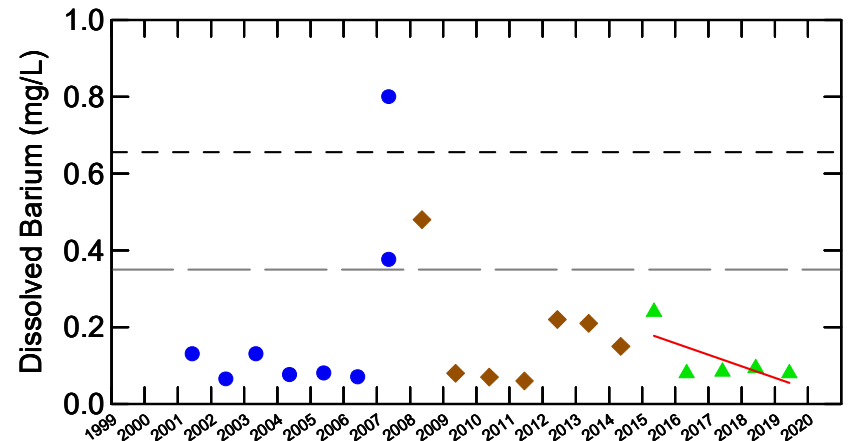
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



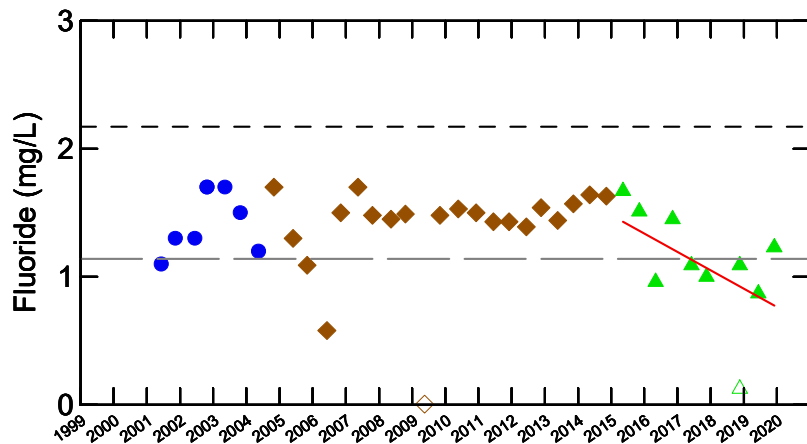
WELL TW49-00D
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



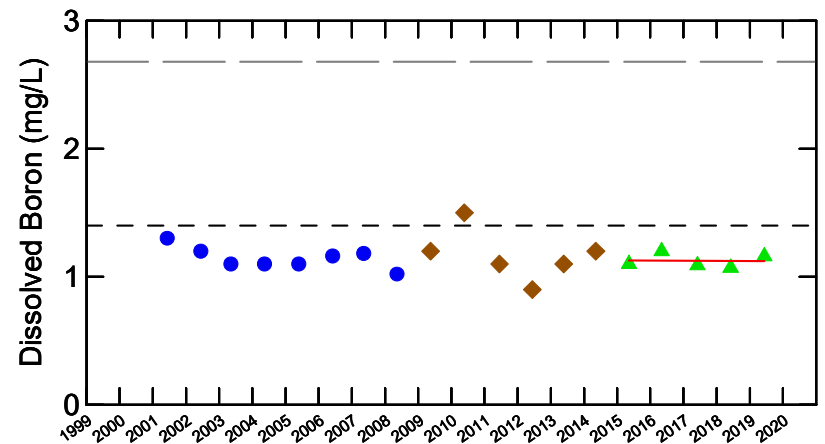
No trend



No trend



No trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

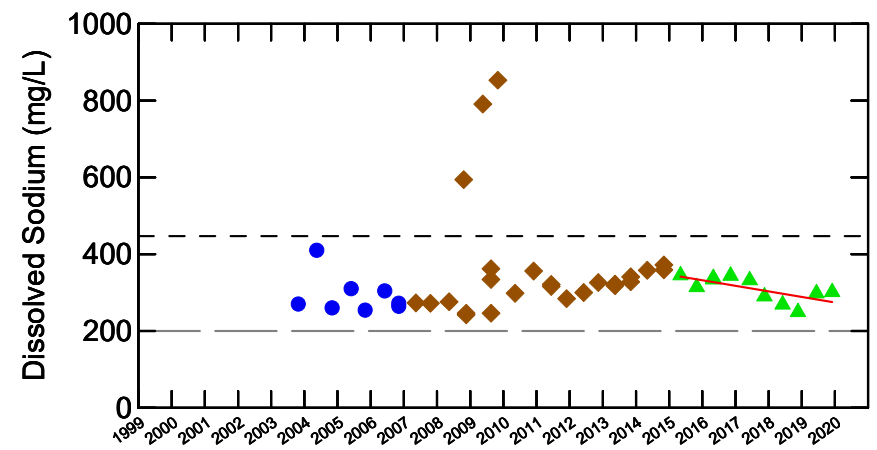
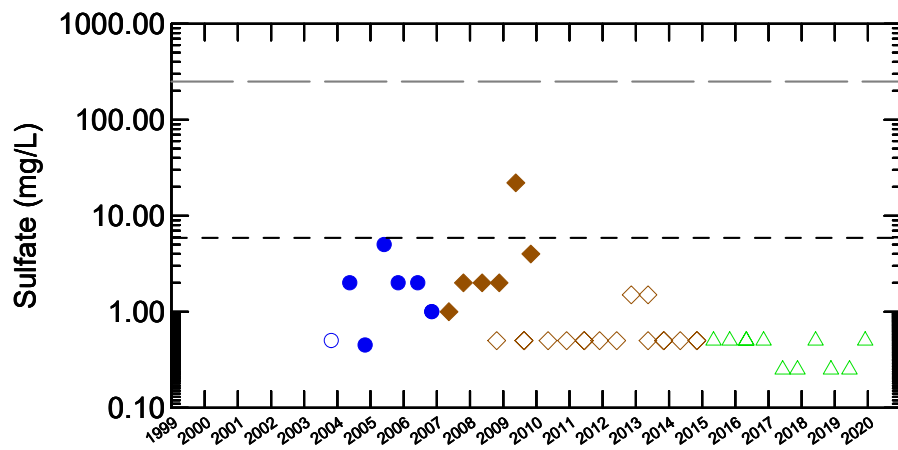
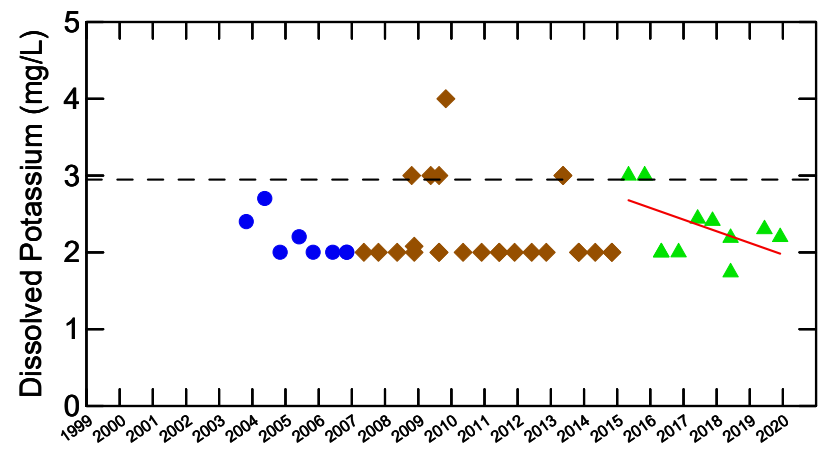
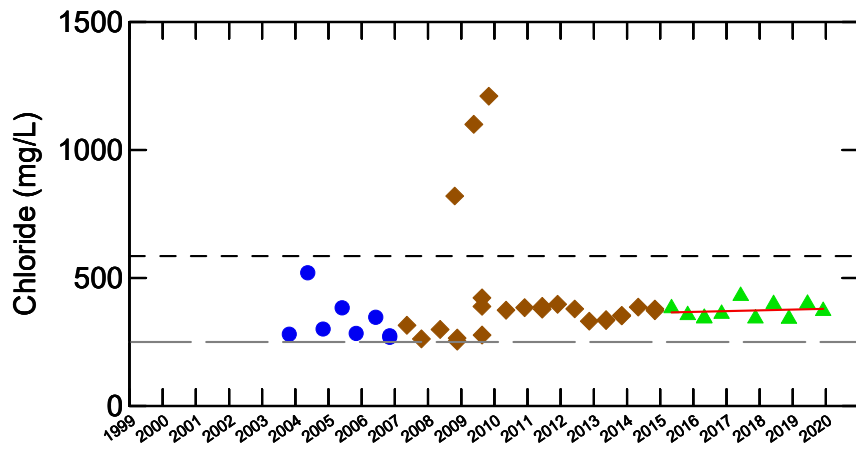
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



WELL TW49-00D
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



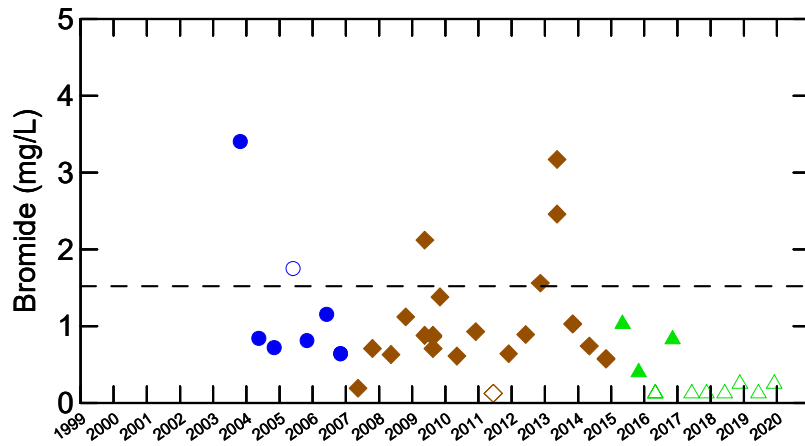
- Legend:
- Baseline result
 - ◆ Post-Baseline result
 - ▲ Last 5 years (for trend)

- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

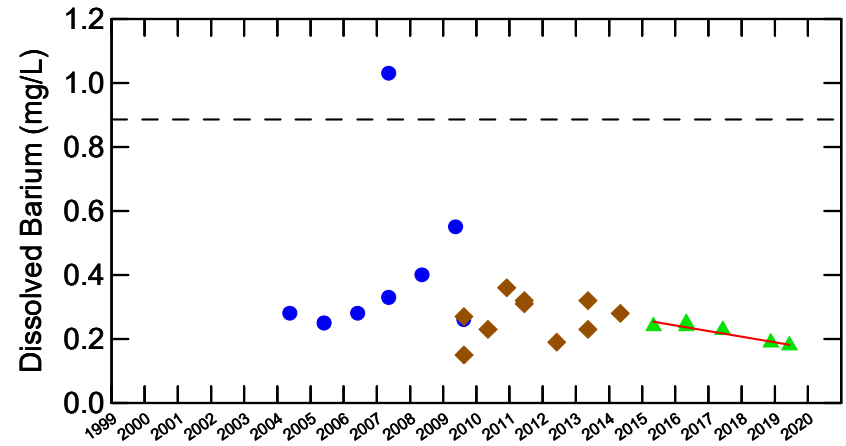
- Notes:
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
 - (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
 - (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



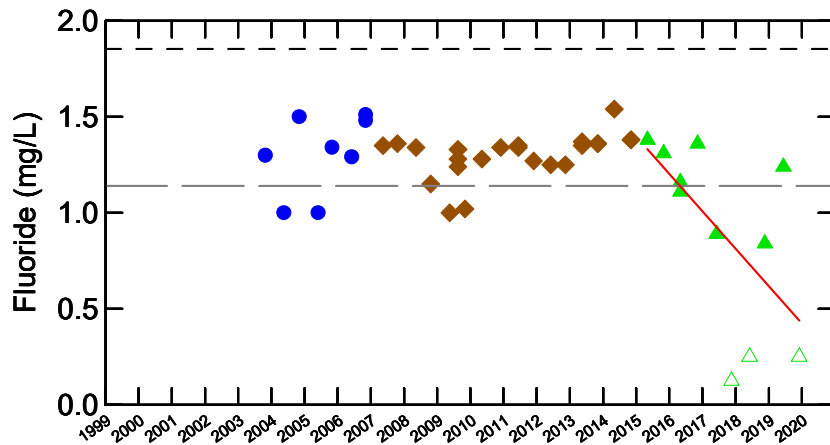
WELL TW53-03D
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



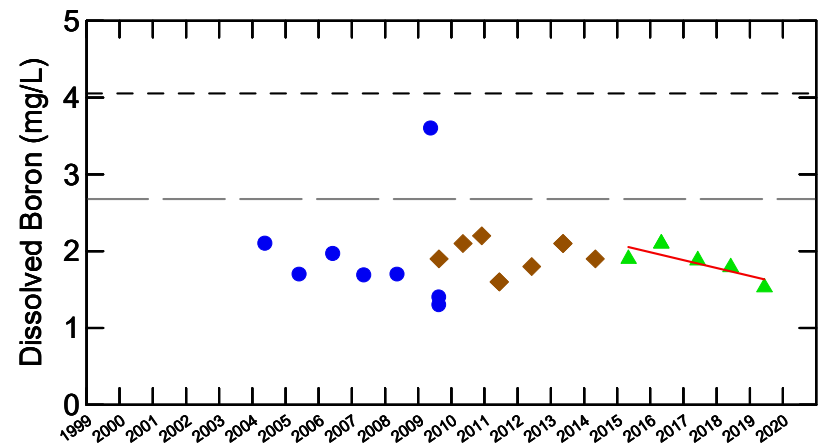
Over 50% non-detect



Decreasing trend



No trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

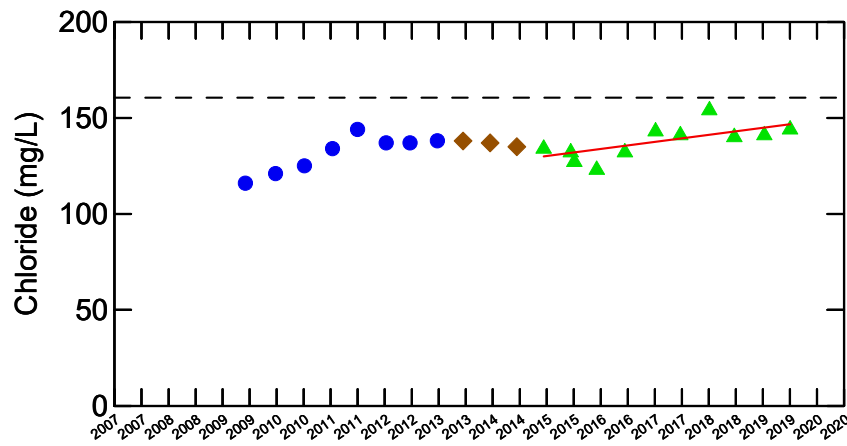
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

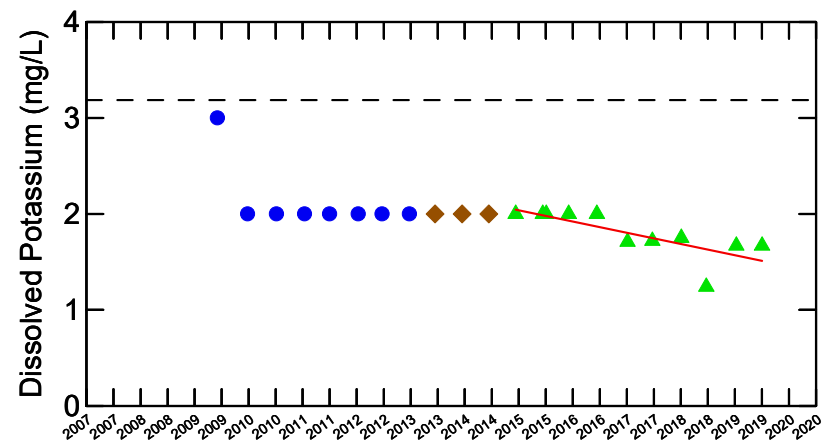
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



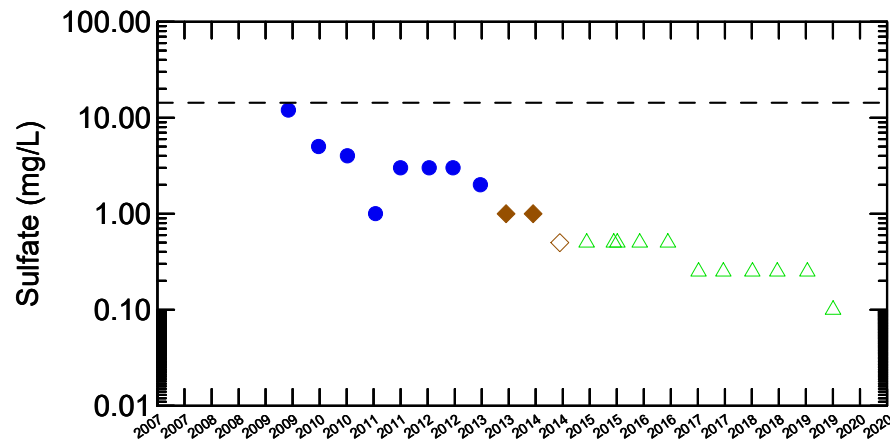
WELL TW53-03D
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



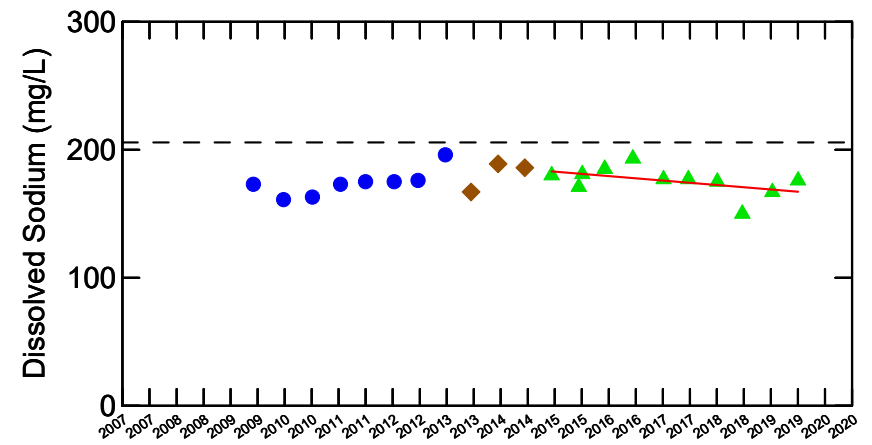
Increasing trend



Decreasing trend



No detected results



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

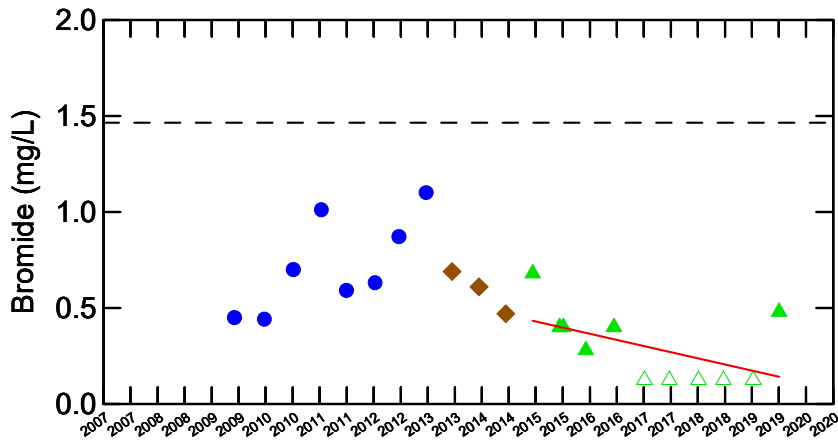
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

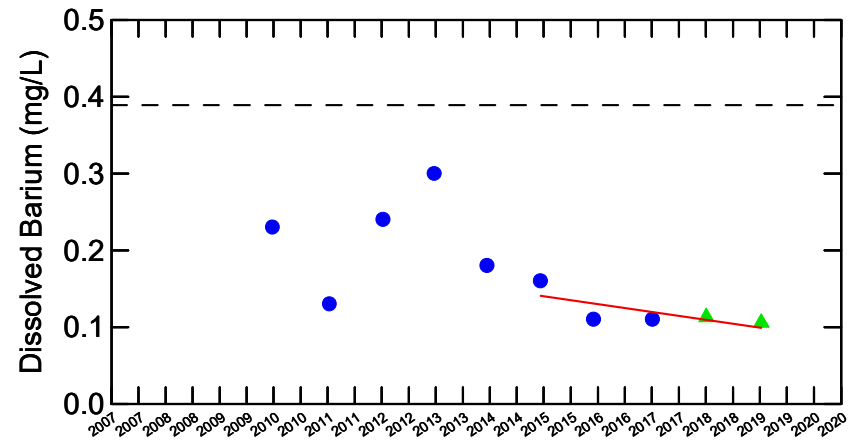
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



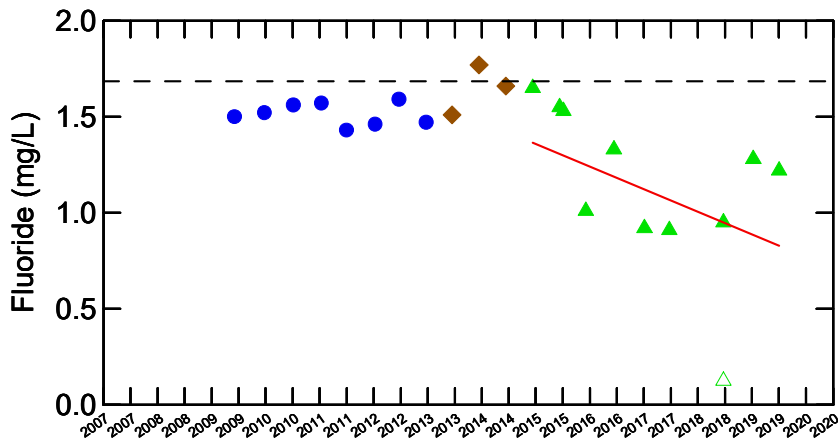
WELL TW54-09D
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



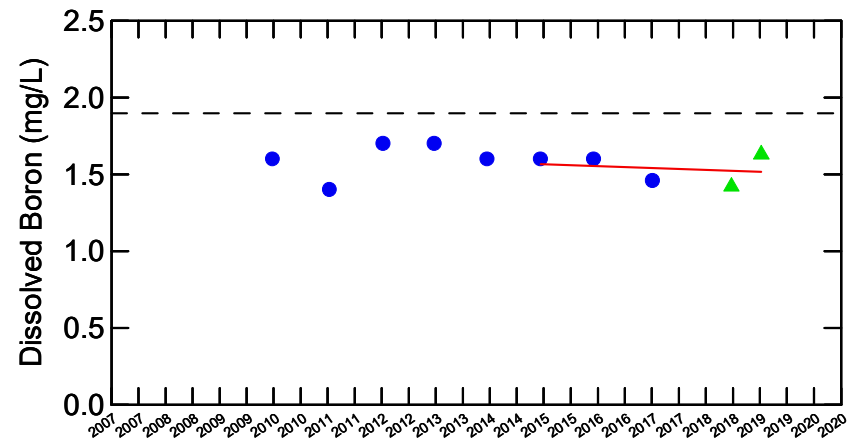
No trend



No trend



No trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

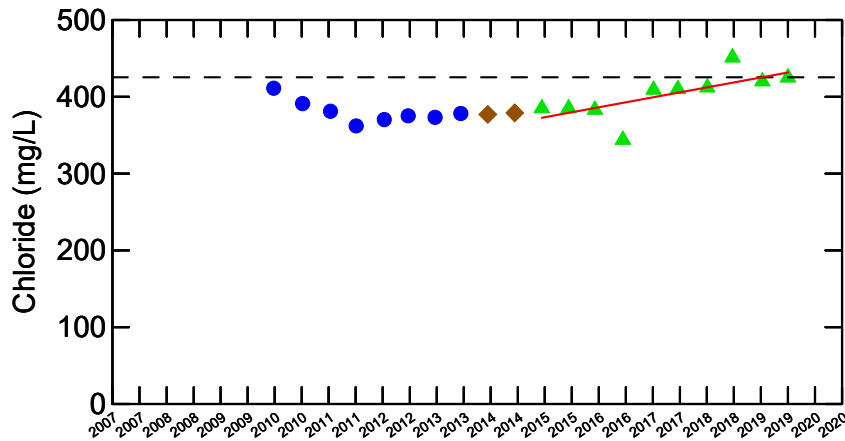
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

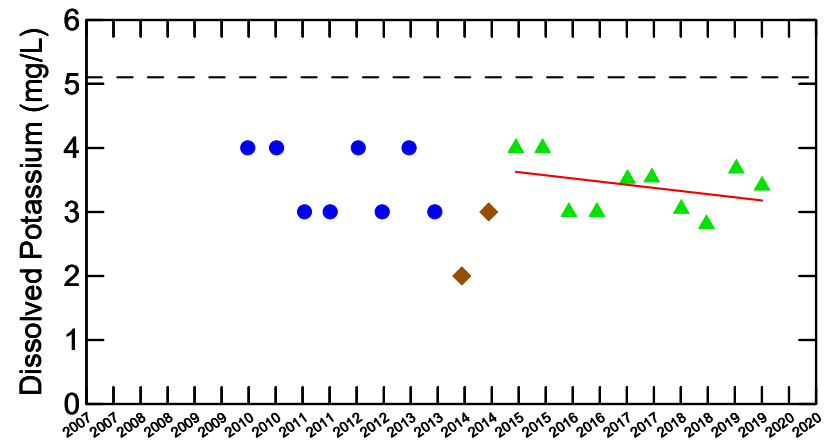
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



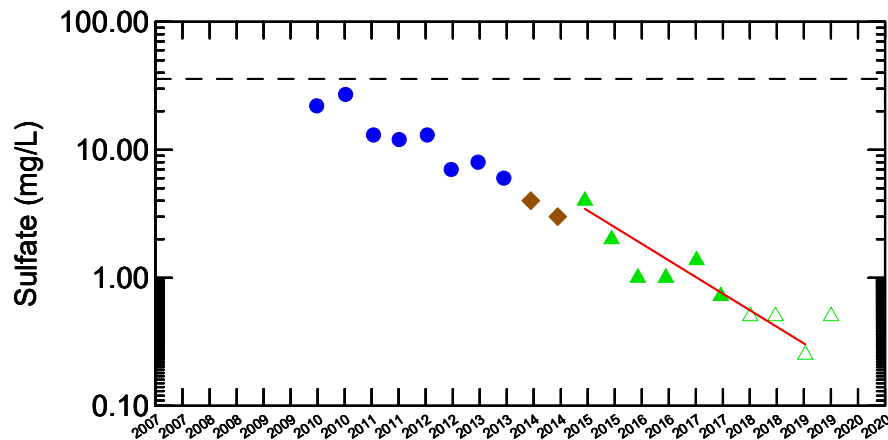
WELL TW54-09D
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



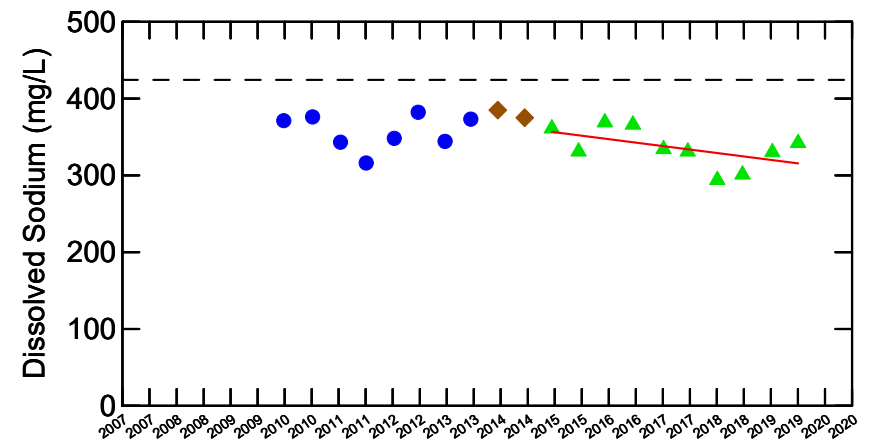
Increasing trend



No trend



Decreasing trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

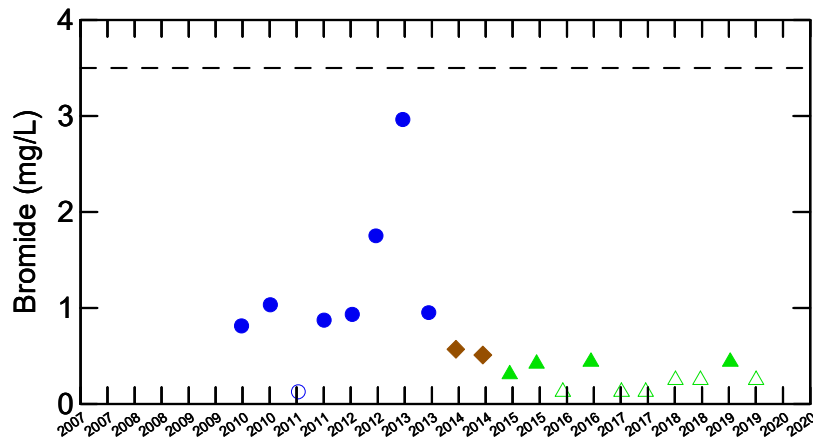
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

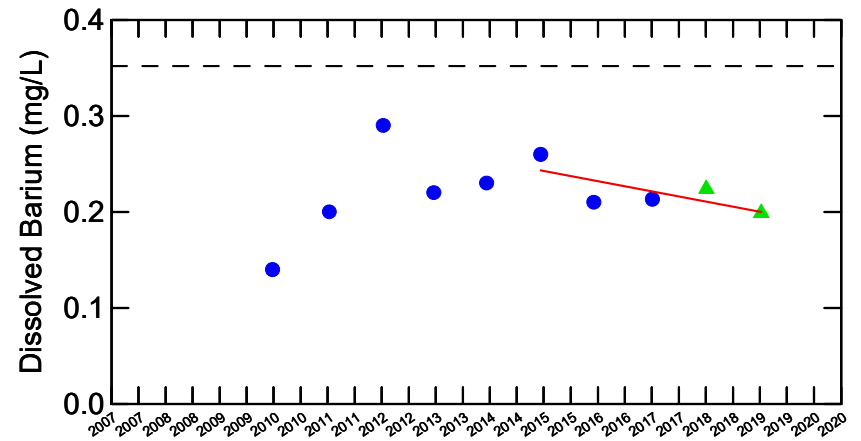
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



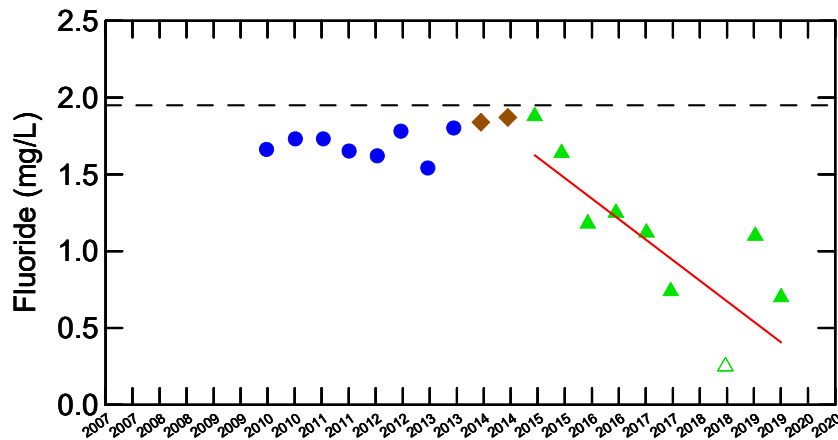
WELL TW55-09D
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



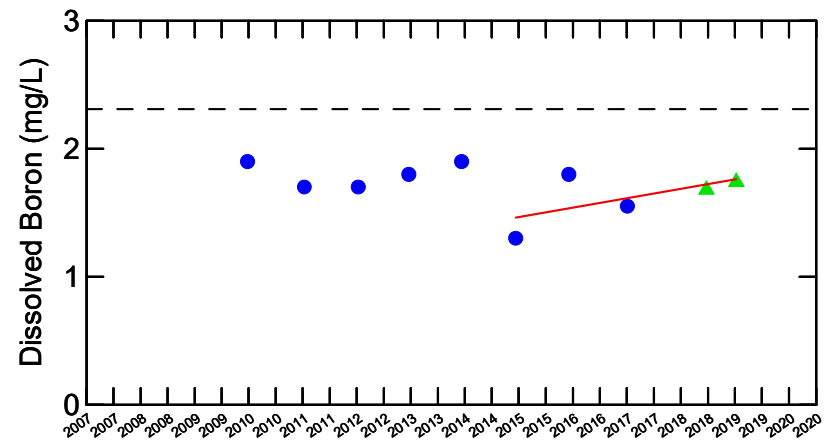
Over 50% non-detect



No trend



Decreasing trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

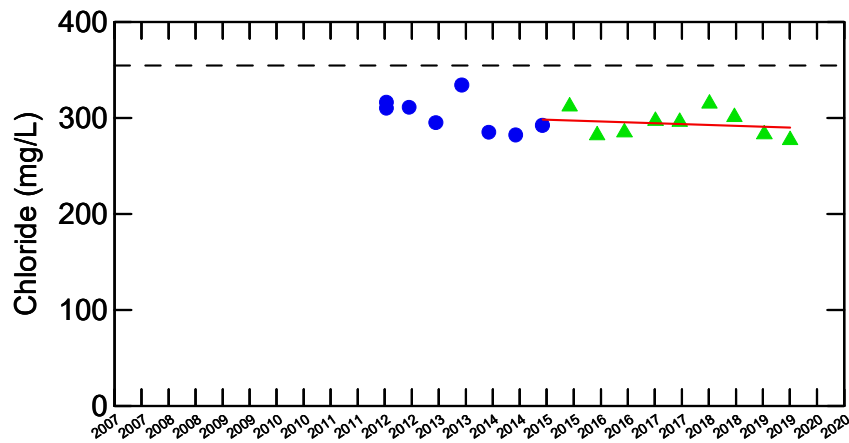
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

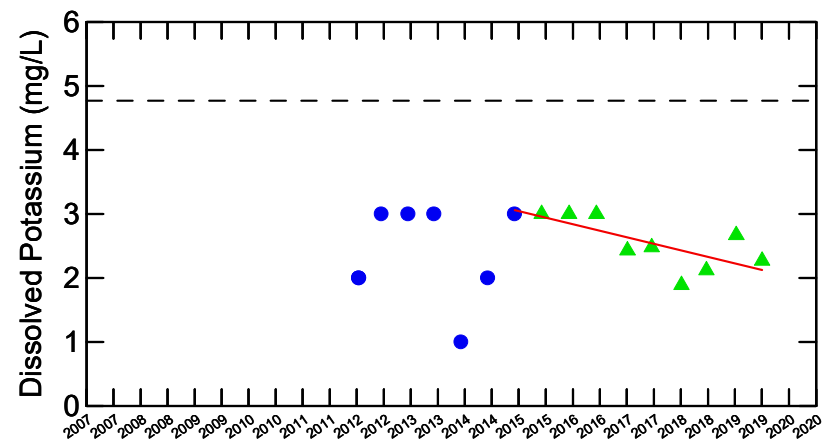
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



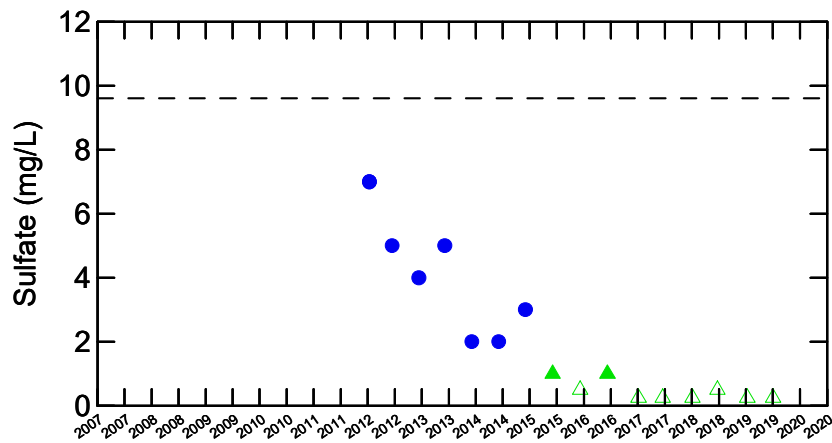
WELL TW55-09D
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



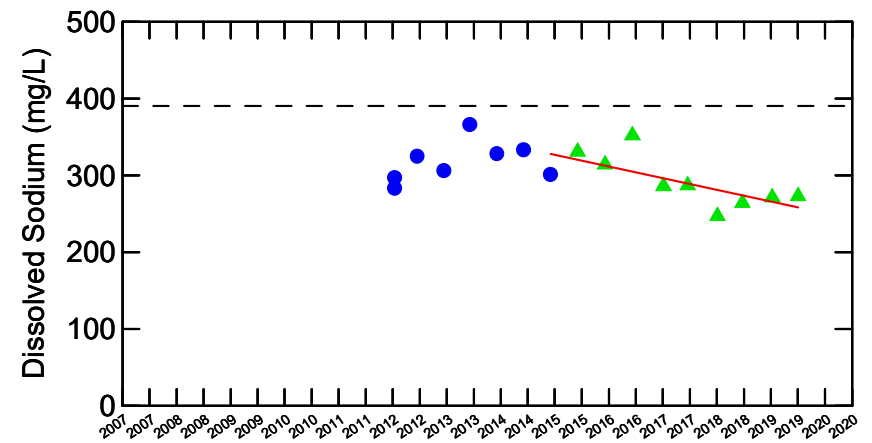
No trend



Decreasing trend



Over 50% non-detect



Decreasing trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

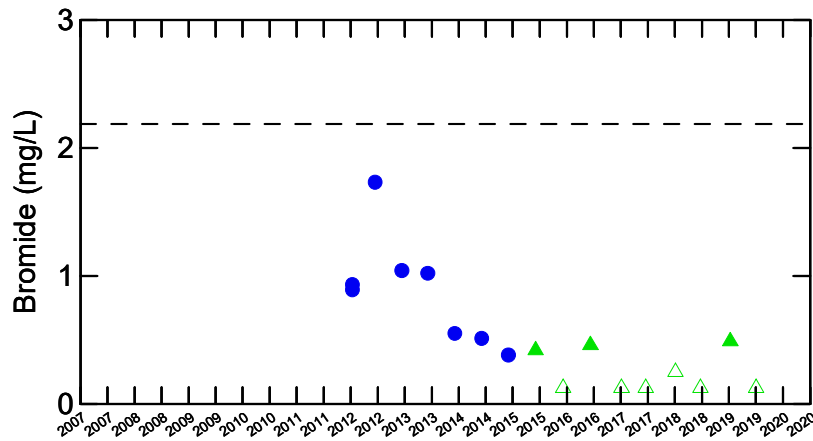
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

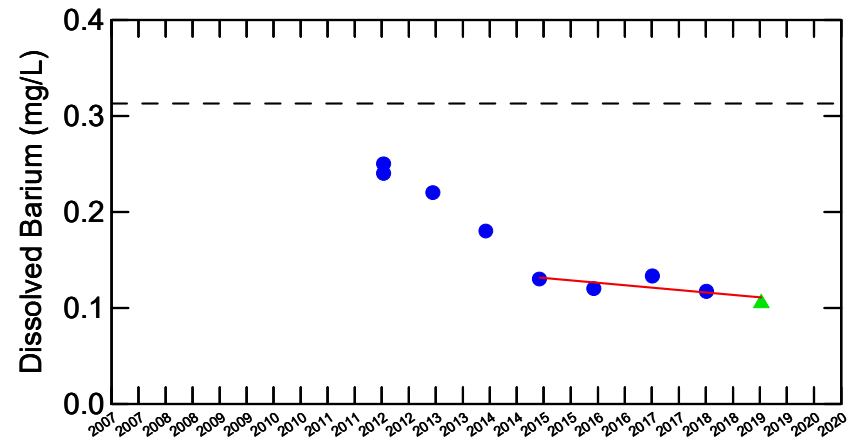
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



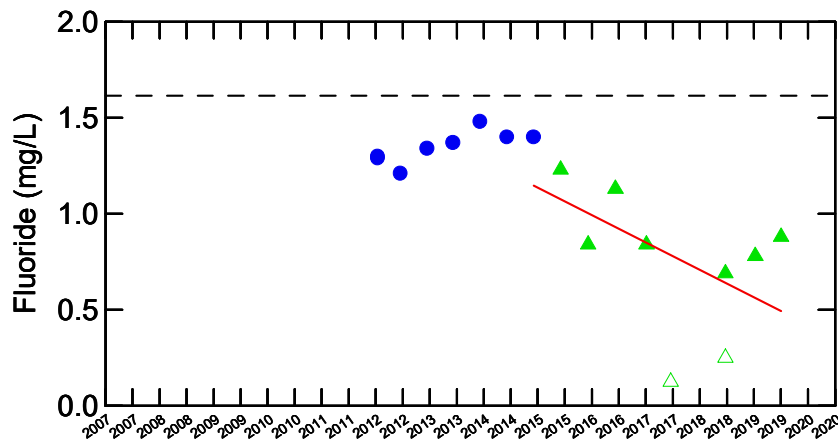
WELL TW56-11D
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



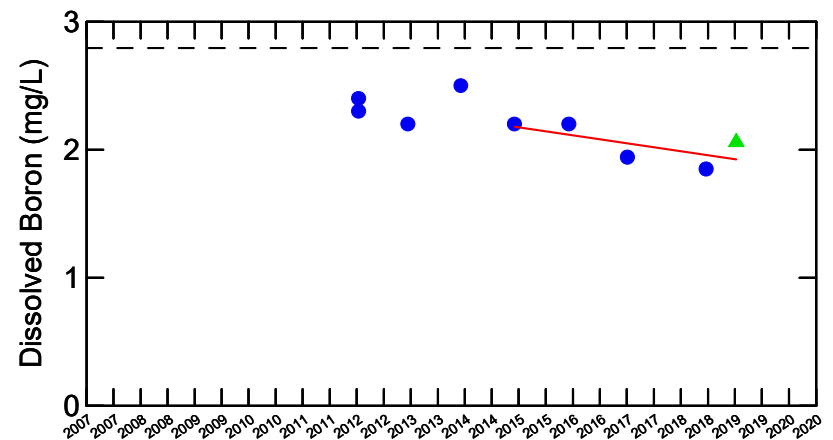
Over 50% non-detect



No trend



No trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

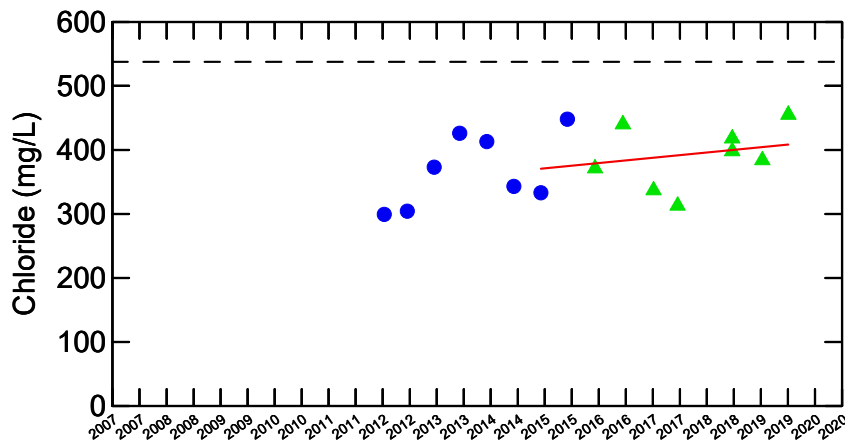
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

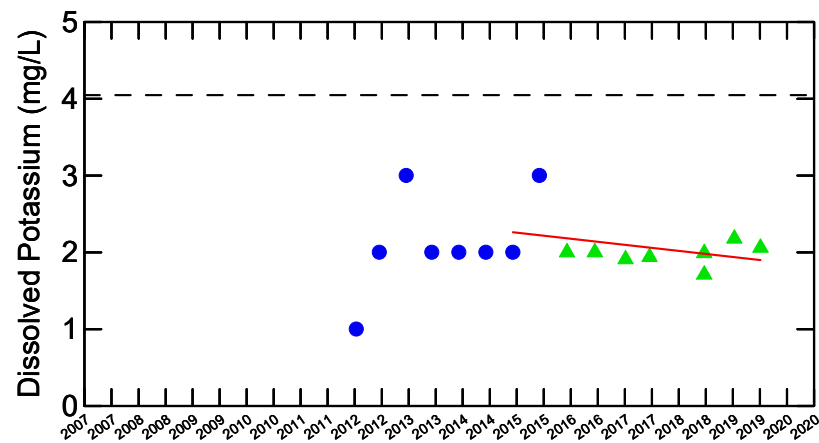
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



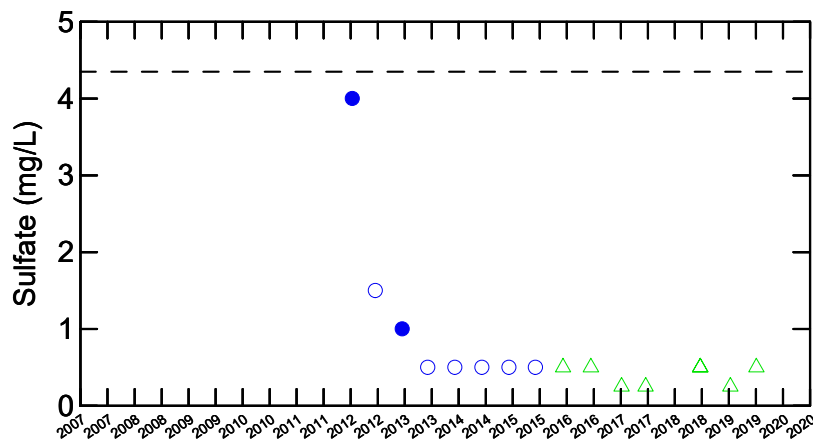
WELL TW56-11D
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



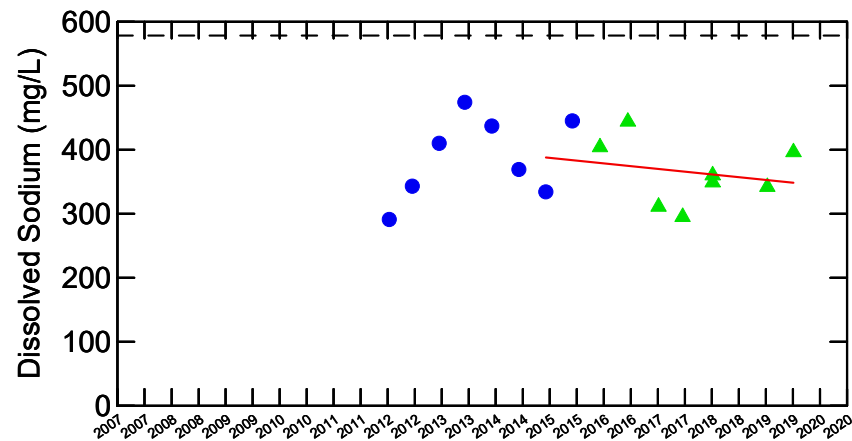
No trend



No trend



No detected results



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

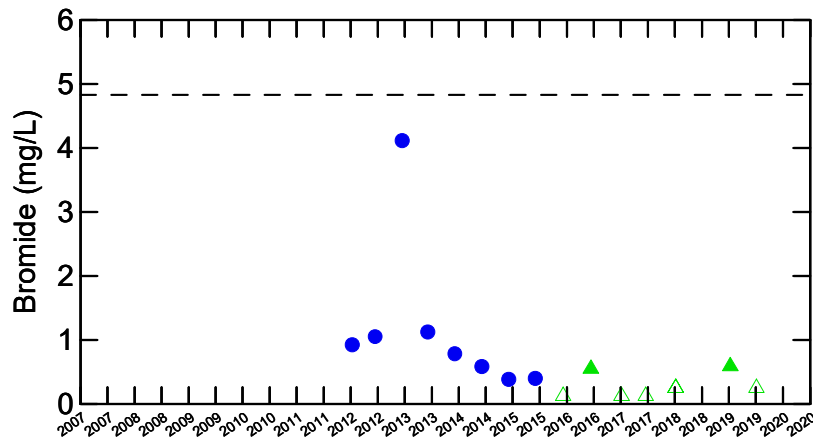
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

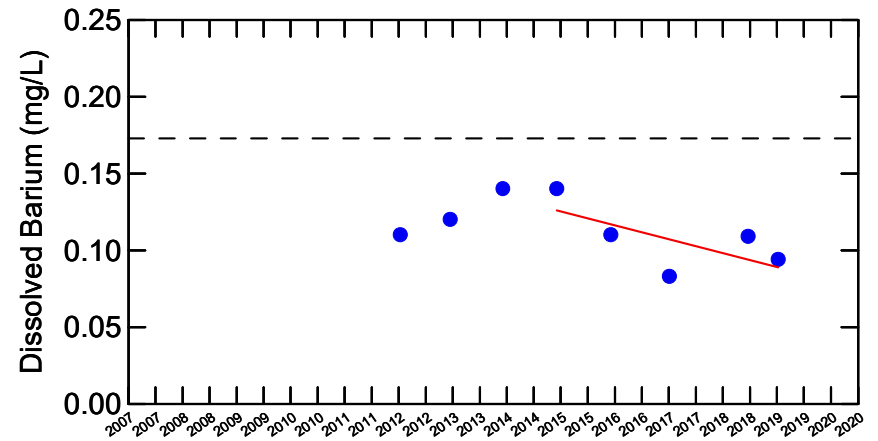
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



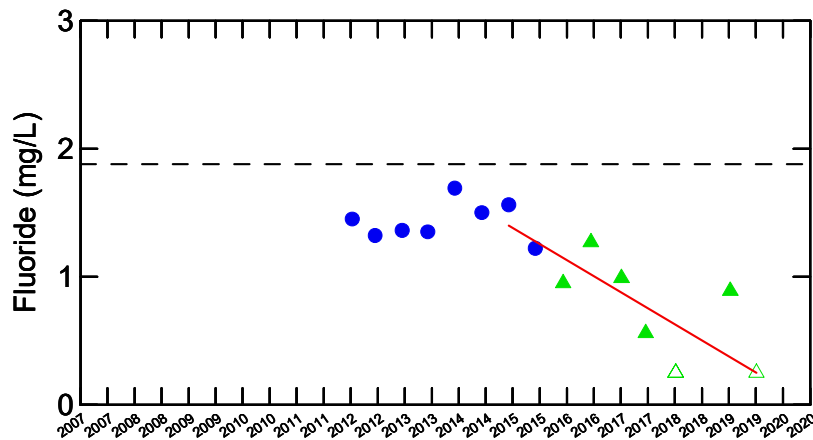
WELL TW57-11D
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



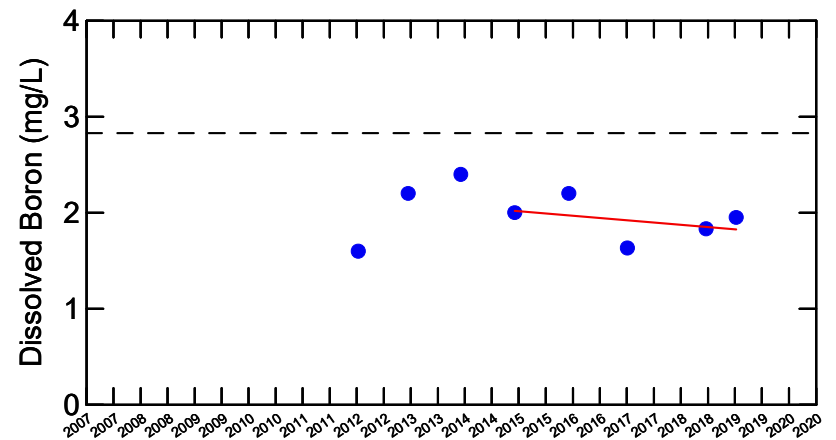
Over 50% non-detect



No trend



Decreasing trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

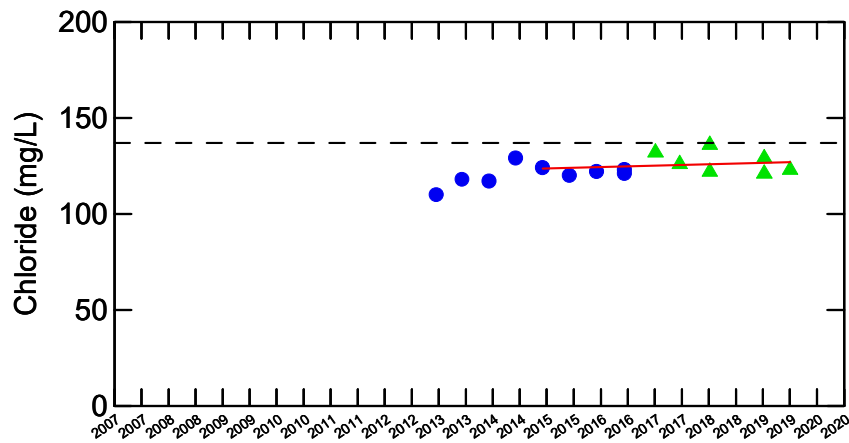
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

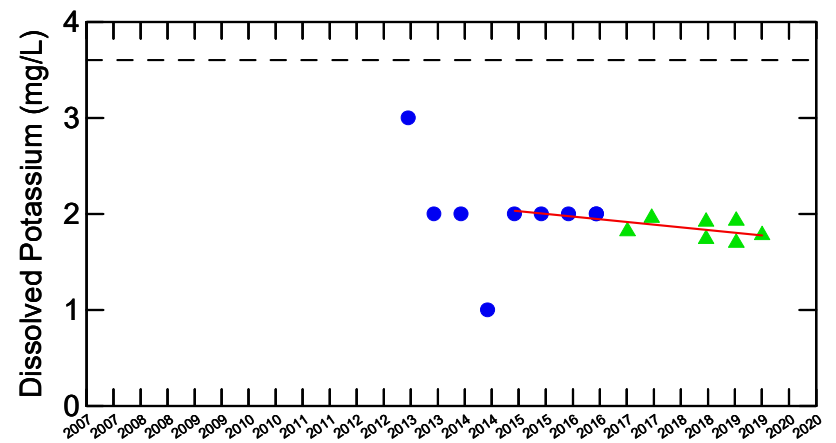
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



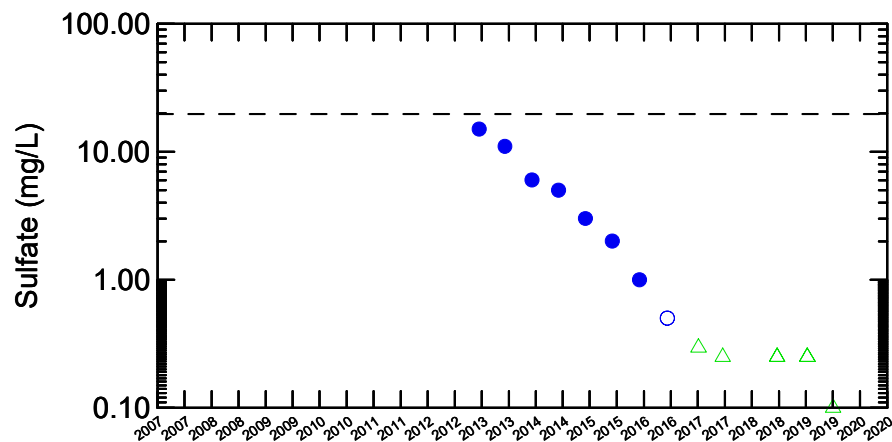
WELL TW57-11D
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



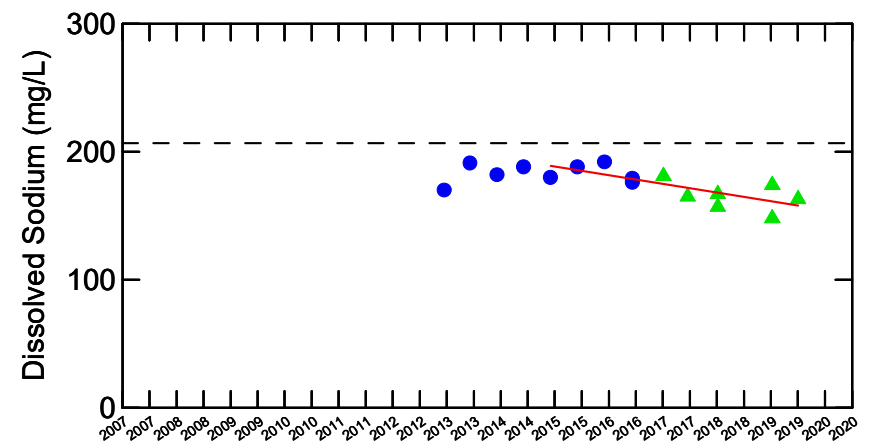
No trend



Decreasing trend



Over 50% non-detect



Decreasing trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

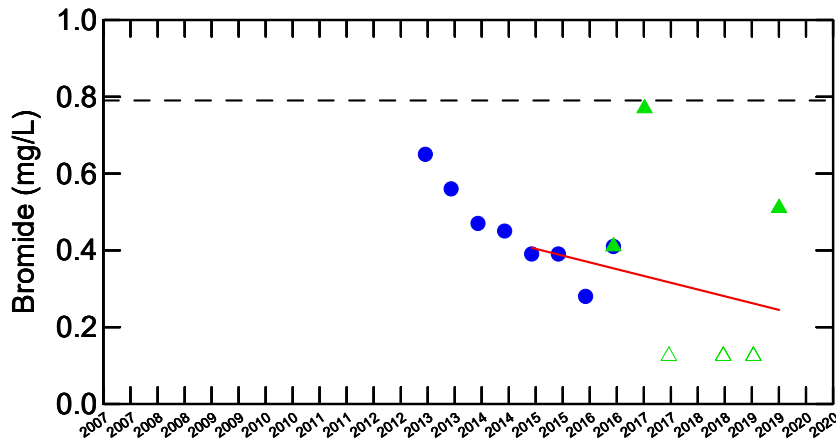
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

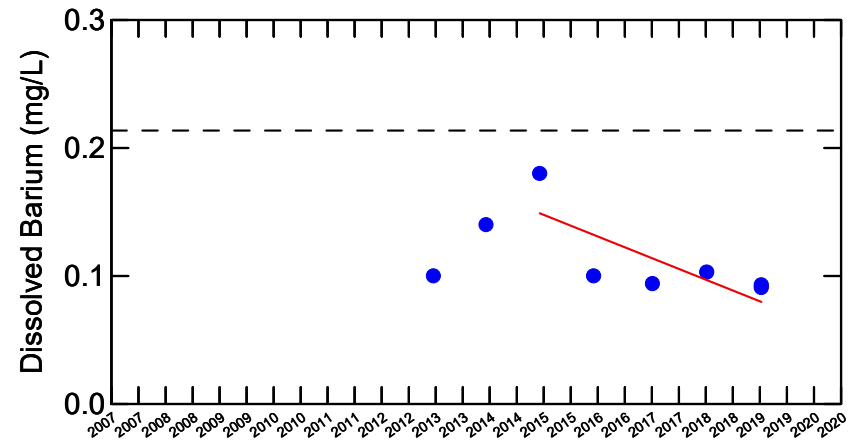
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



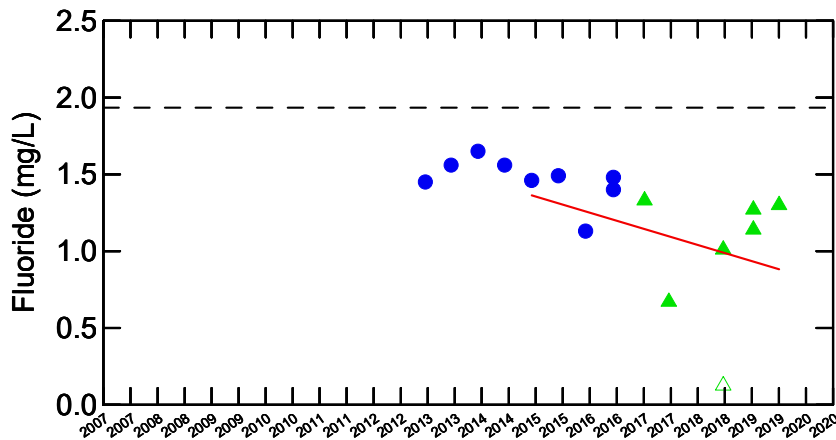
WELL TW59-13D
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



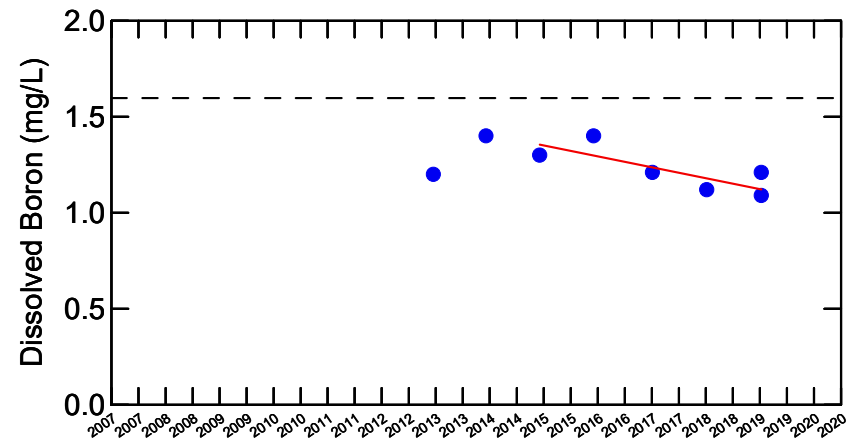
No trend



No trend



No trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

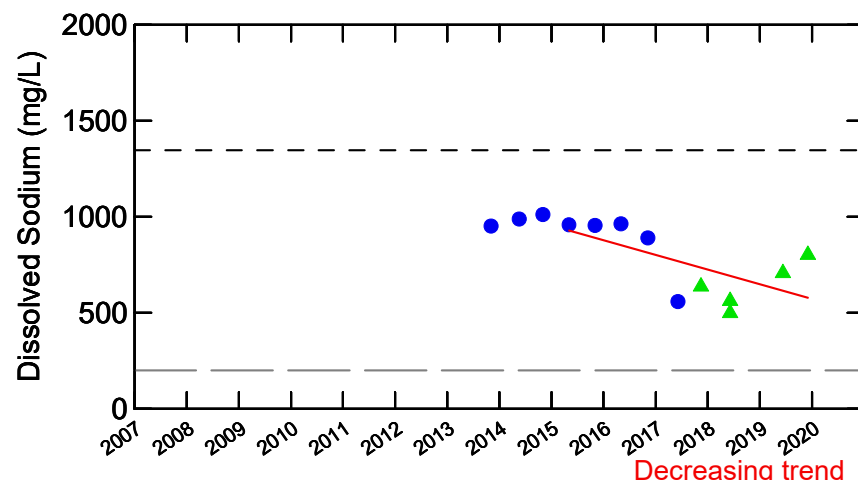
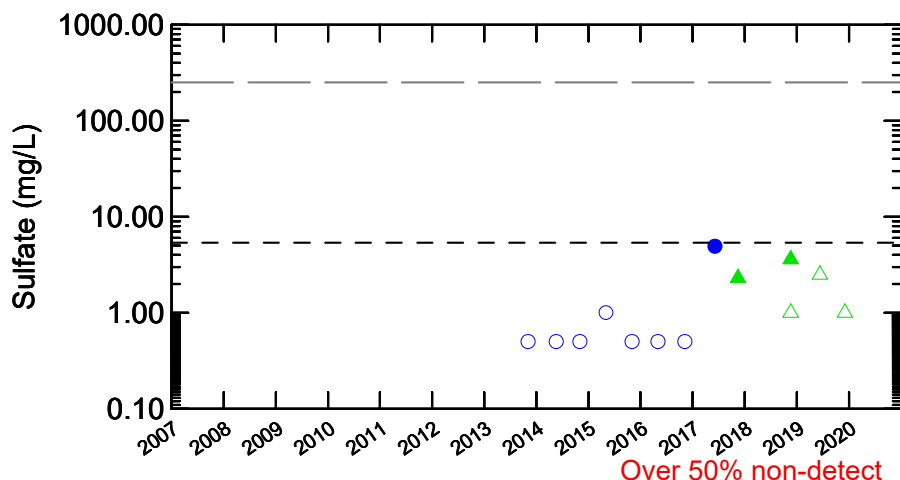
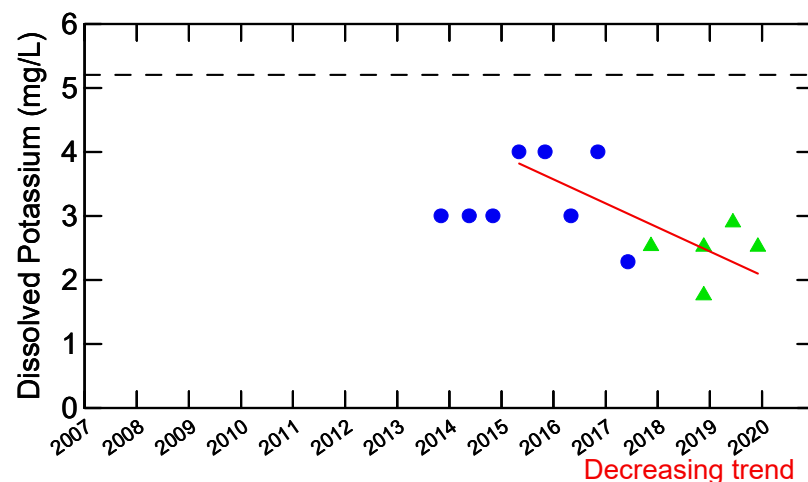
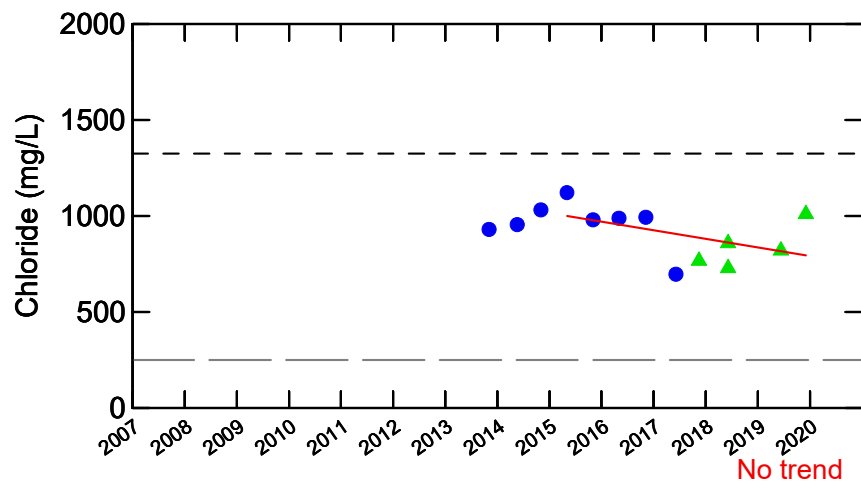
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



WELL TW59-13D
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

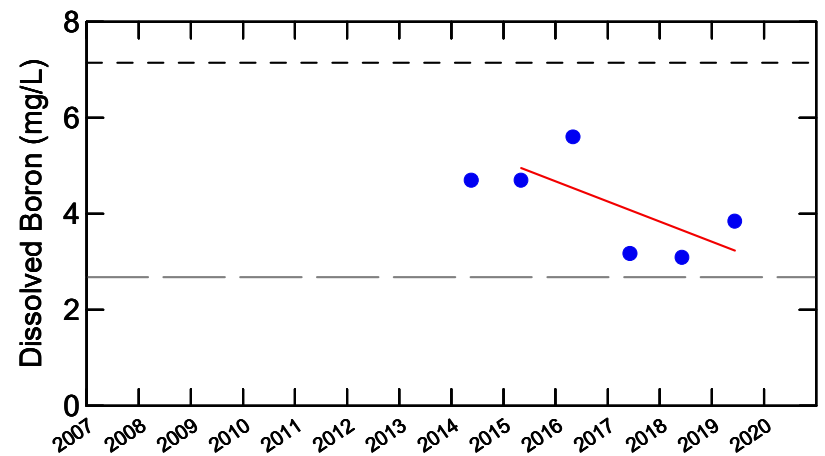
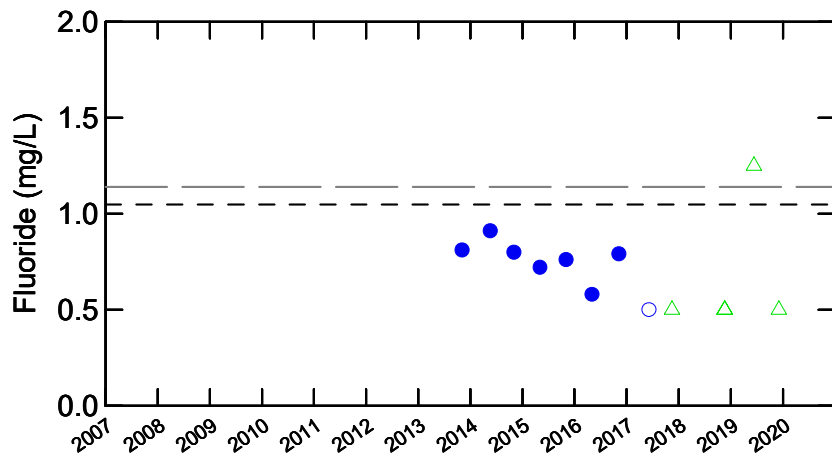
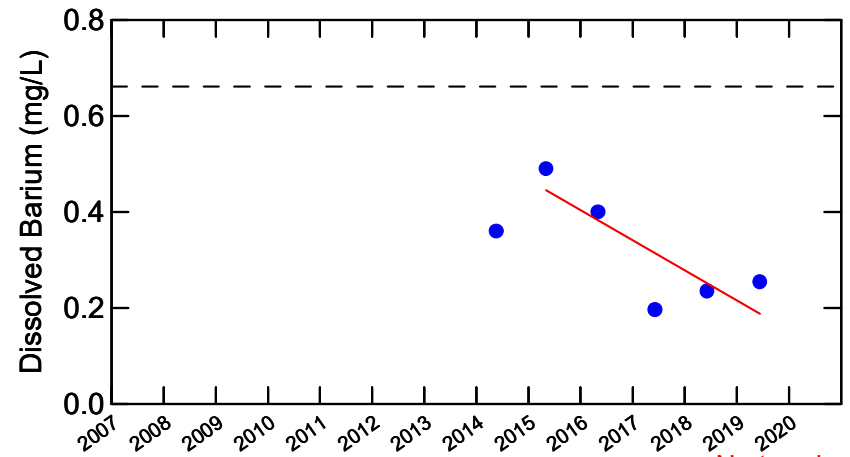
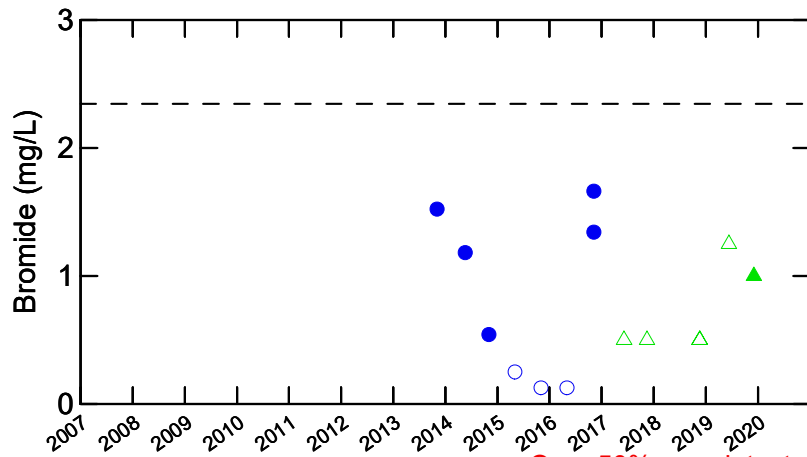
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



WELL TW60-13D
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

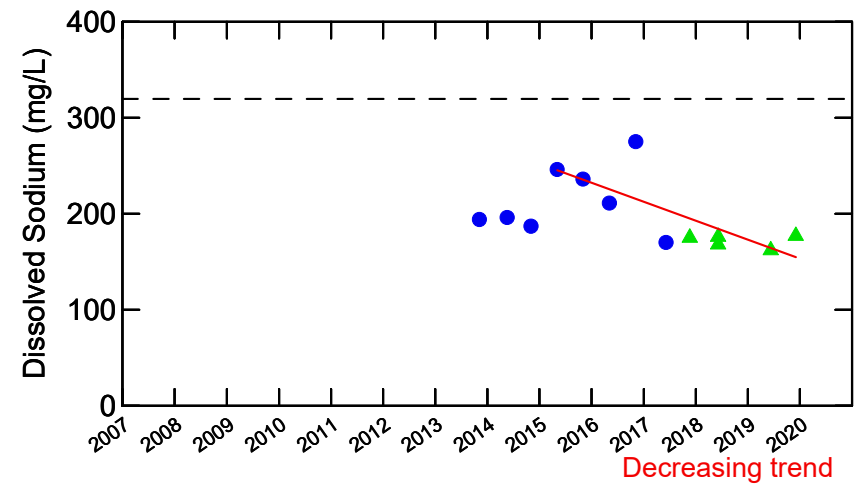
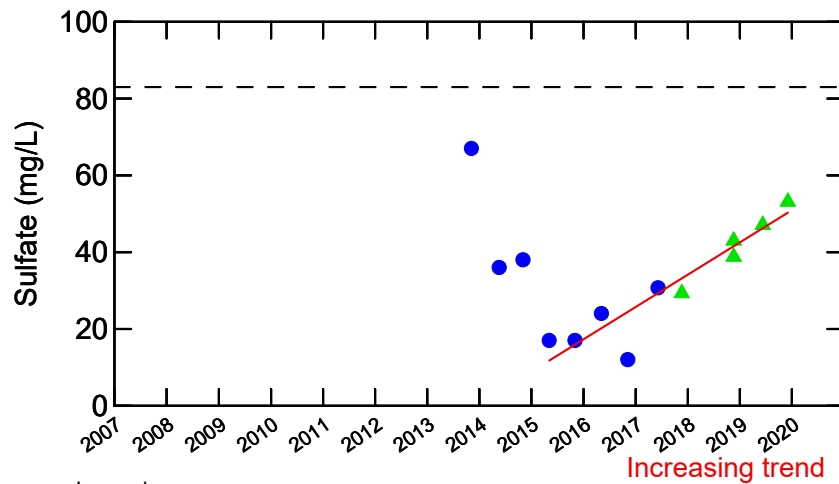
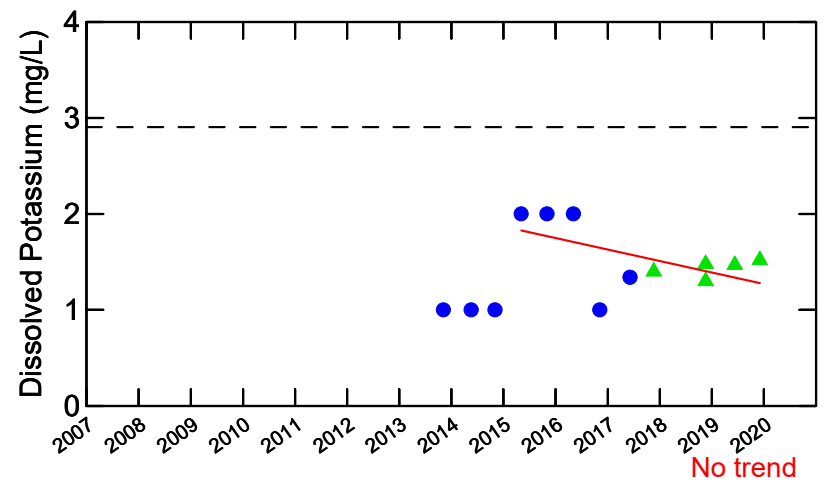
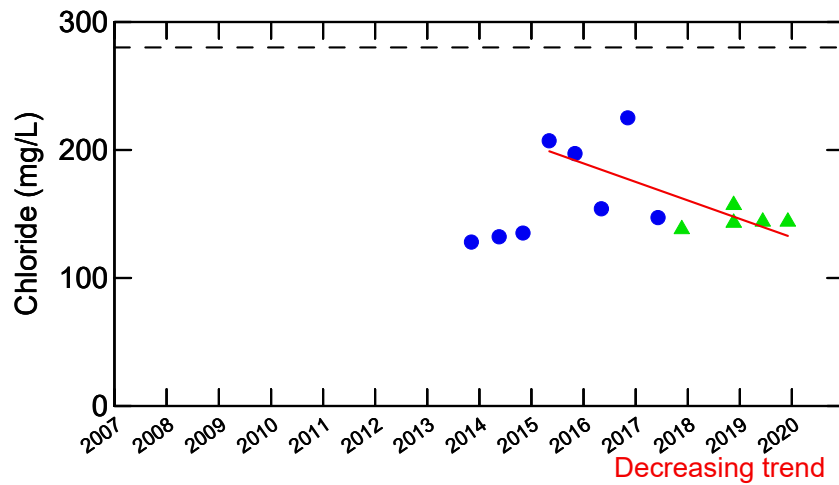
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



WELL TW60-13D
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



Legend:

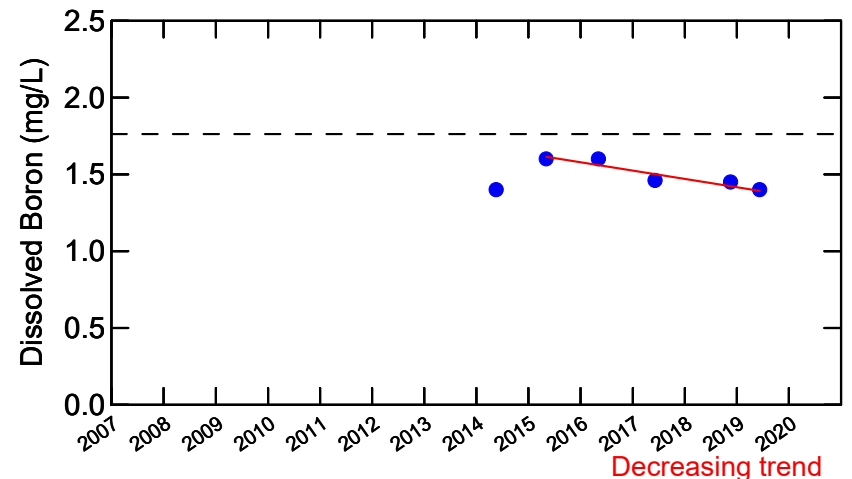
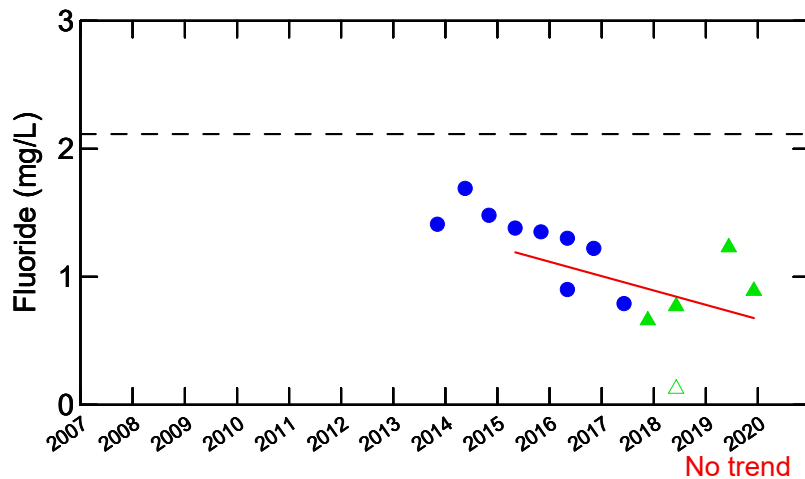
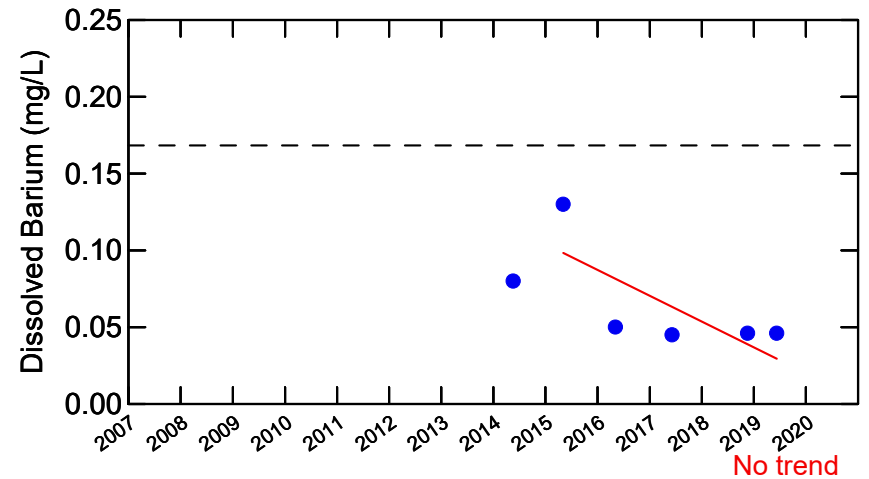
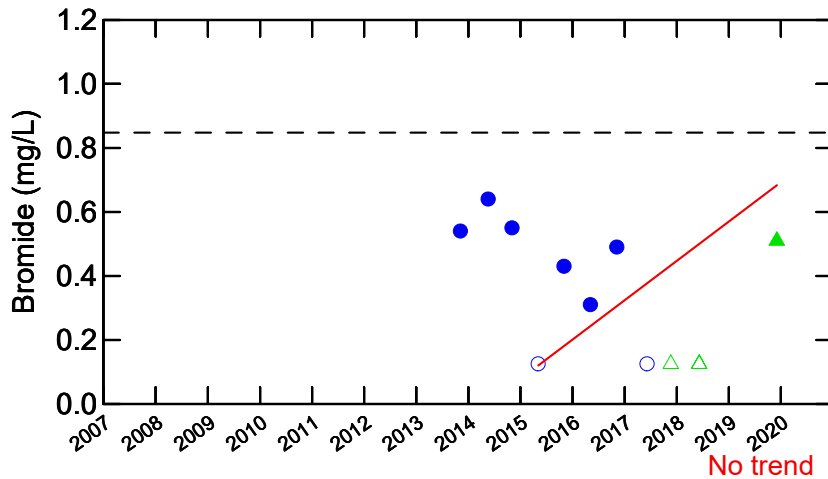
- Baseline result
- ◆ Post-Baseline result ▲ Last 5 years (for trend)
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



WELL TW61-13D
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



Legend:

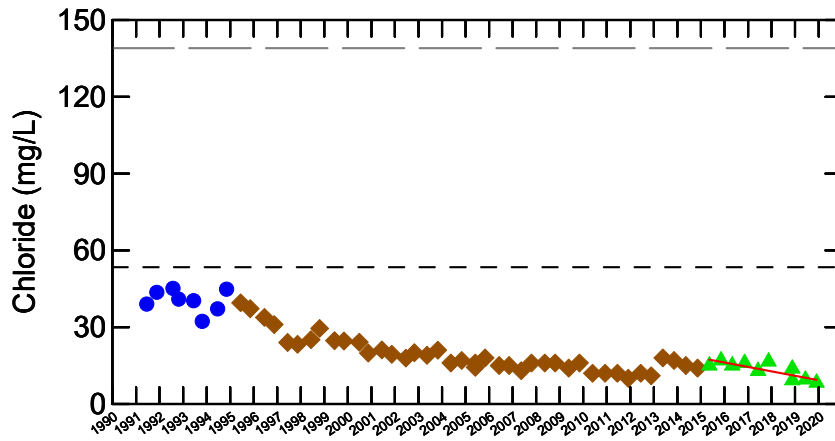
- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

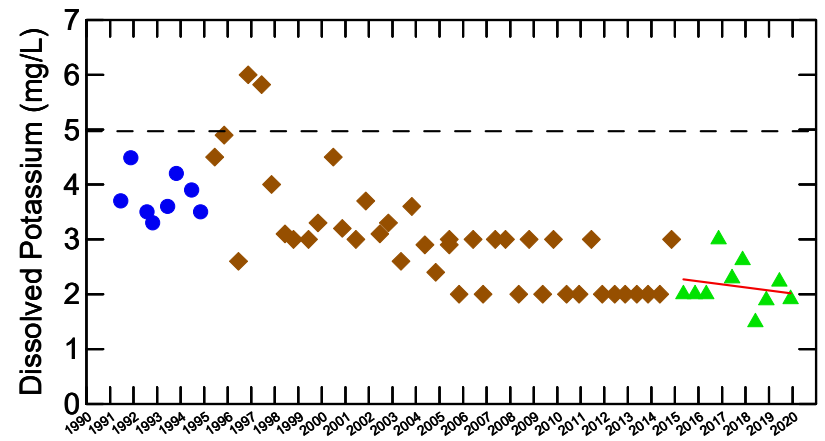
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



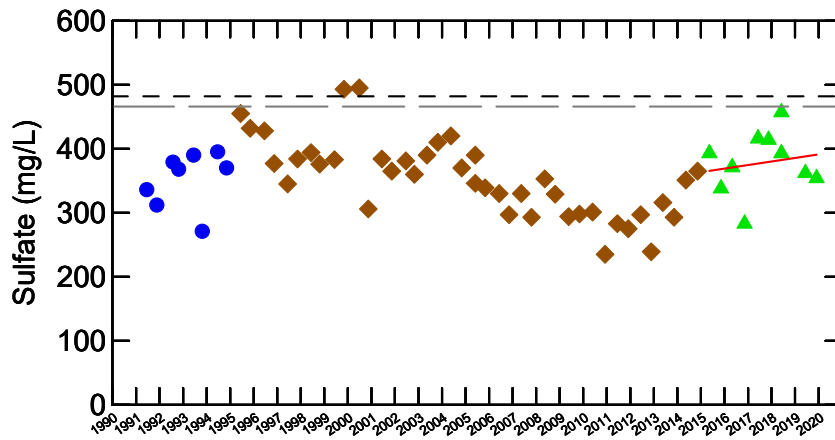
WELL TW61-13D
 DEEP WELL (INTERFACE AQUIFER)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



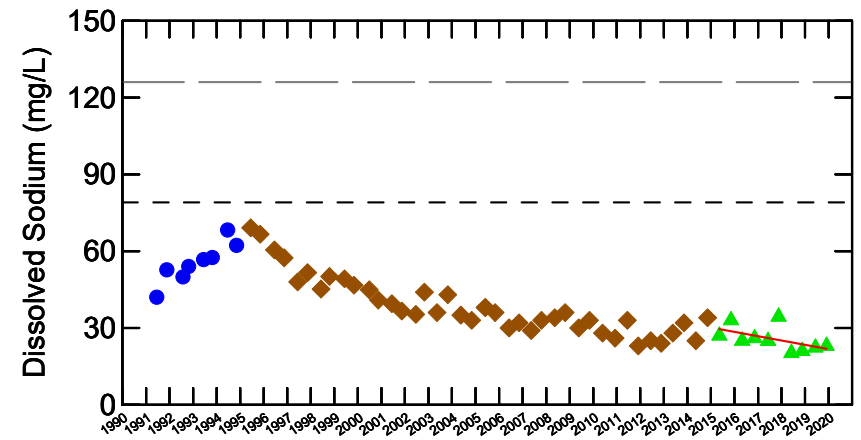
Decreasing trend



No trend



No trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

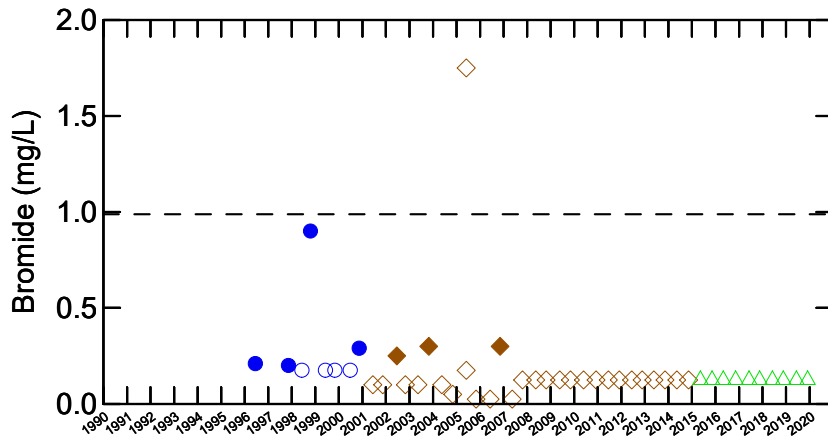
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

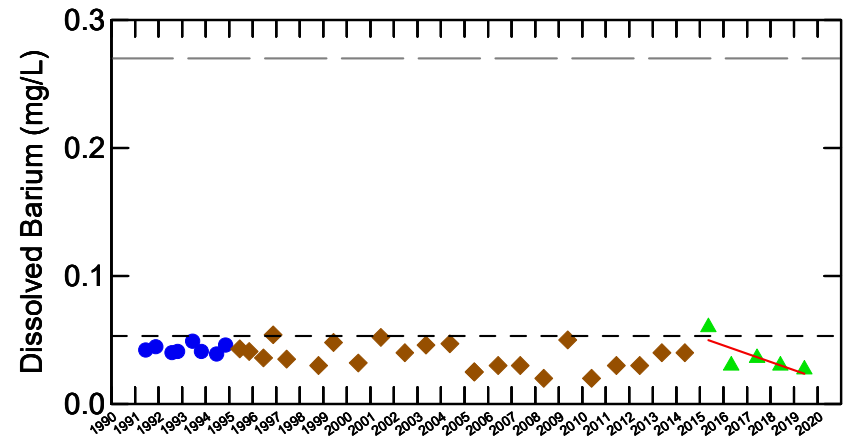
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



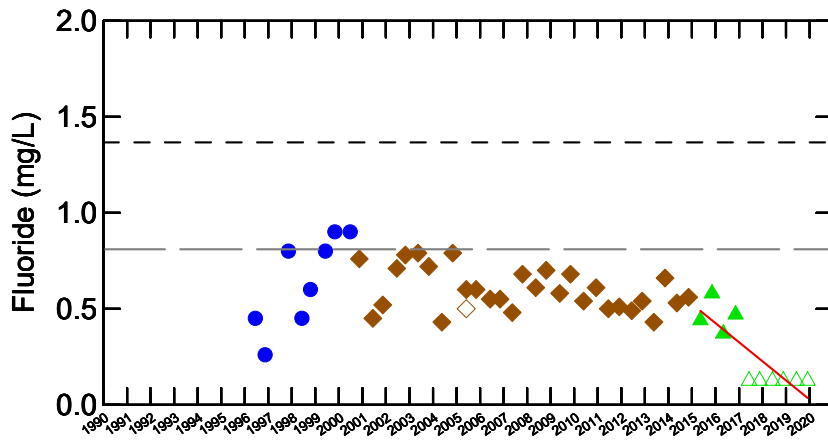
WELL OW32-90S
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



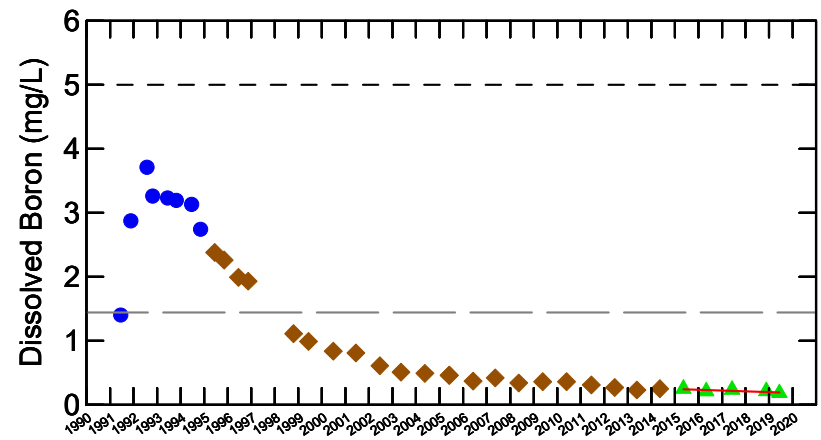
No detected results



No trend



Decreasing trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

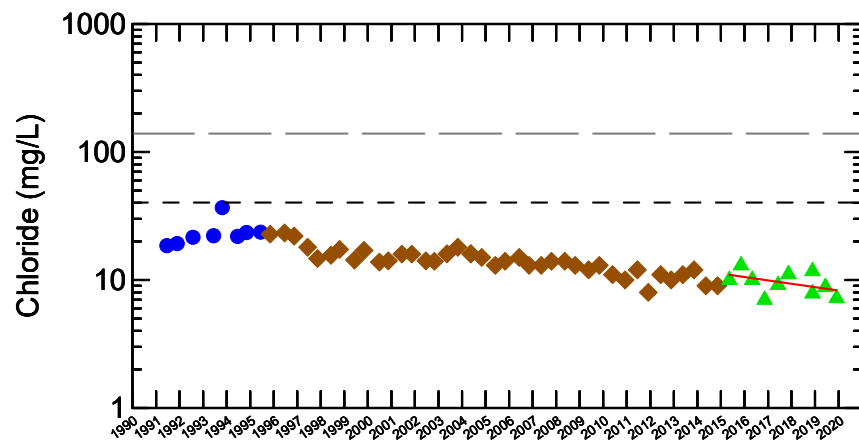
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

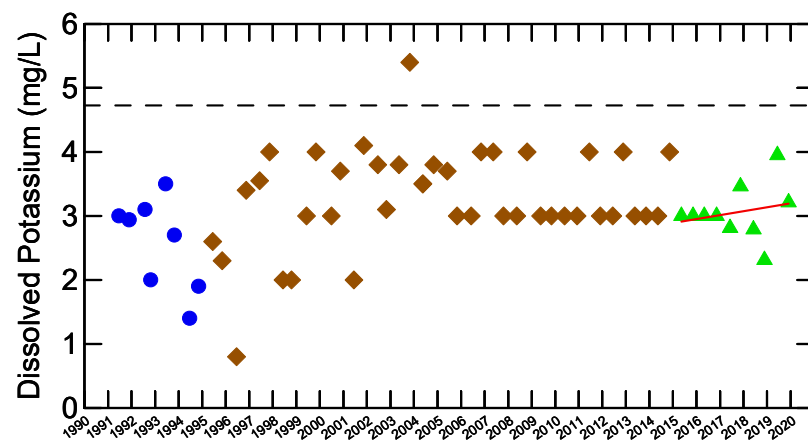
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



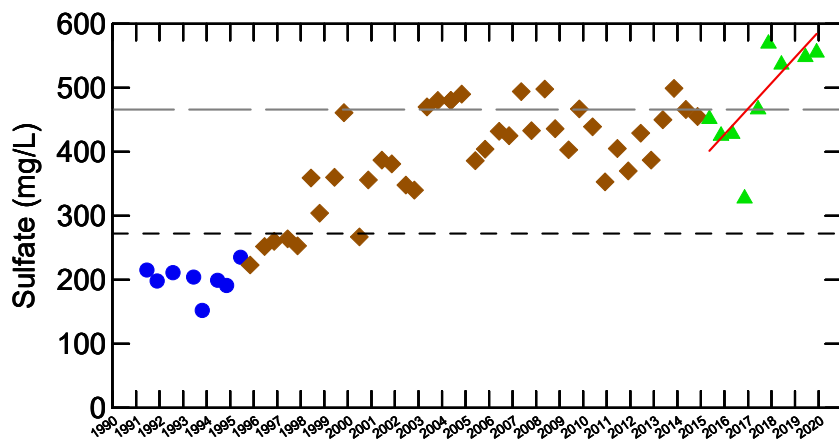
WELL OW32-90S
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



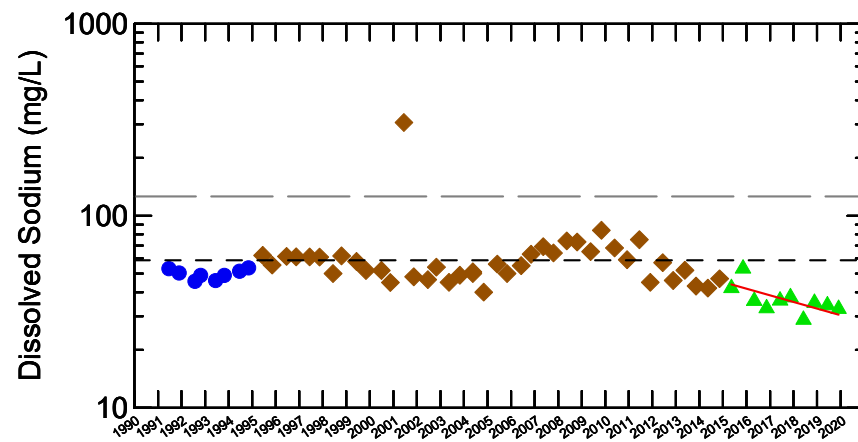
No trend



No trend



Increasing trend



Decreasing trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

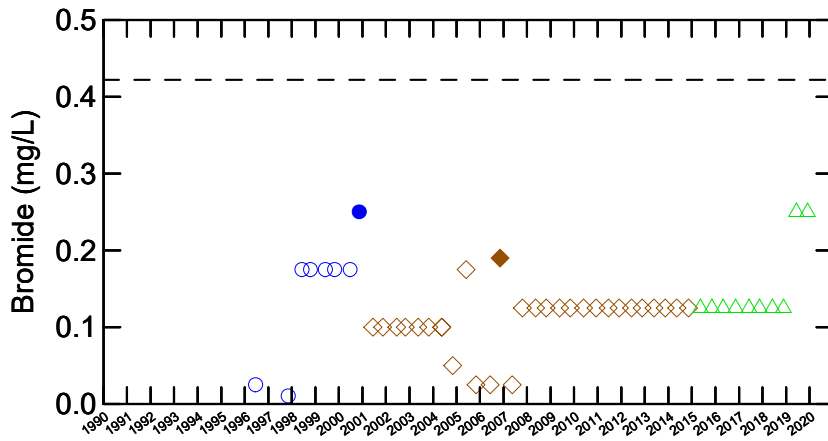
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

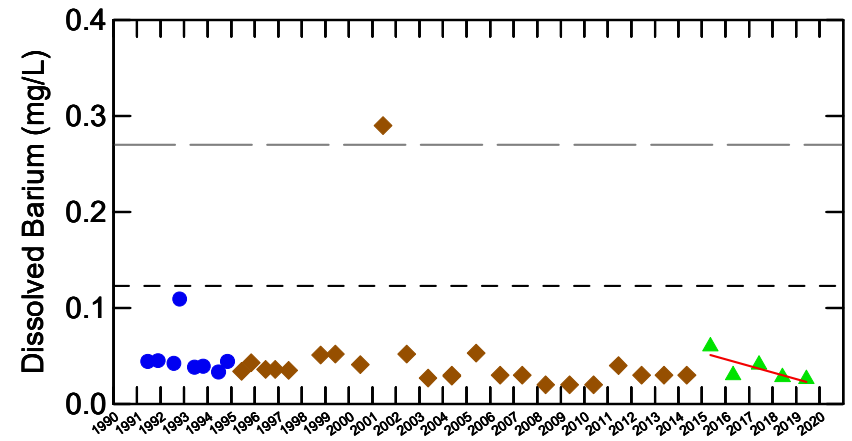
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



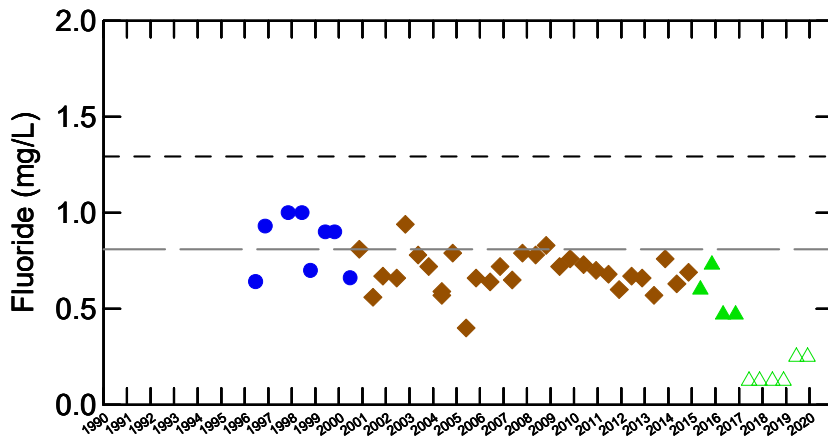
WELL OW35-90S
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



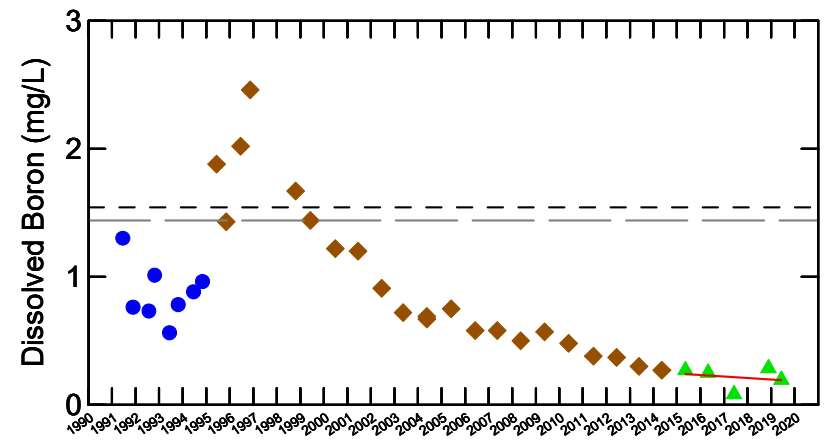
No detected results



No trend



Over 50% non-detect



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

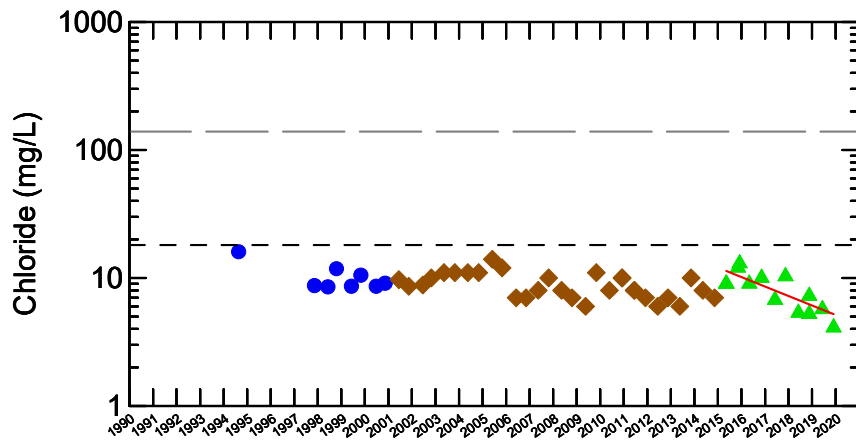
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

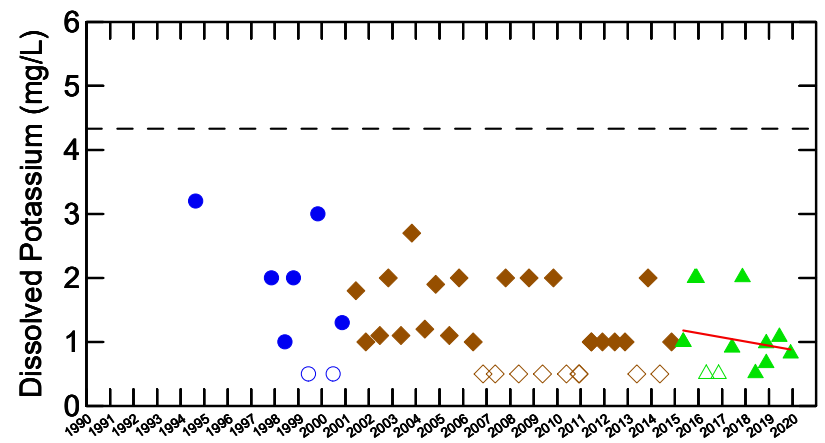
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



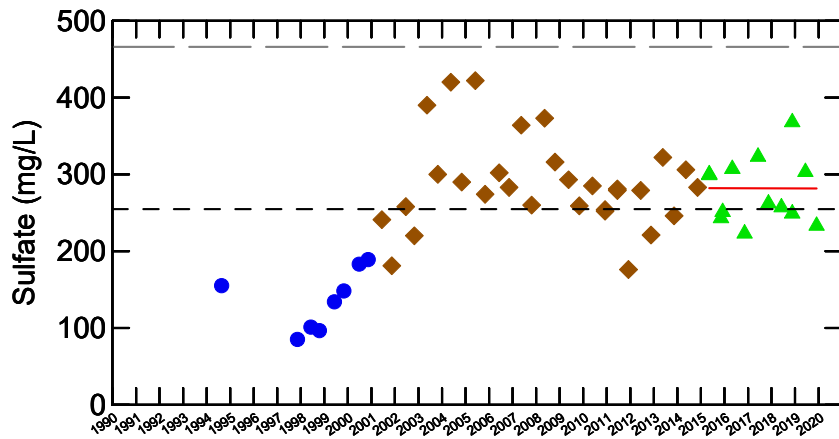
WELL OW35-90S
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



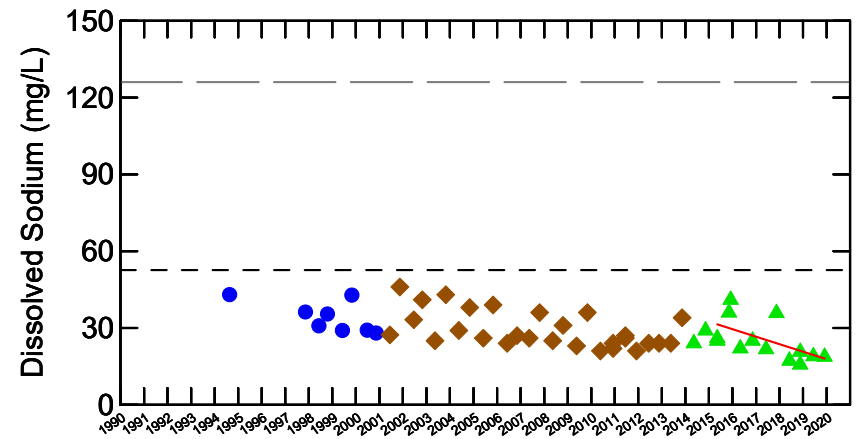
Decreasing trend



No trend



No trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

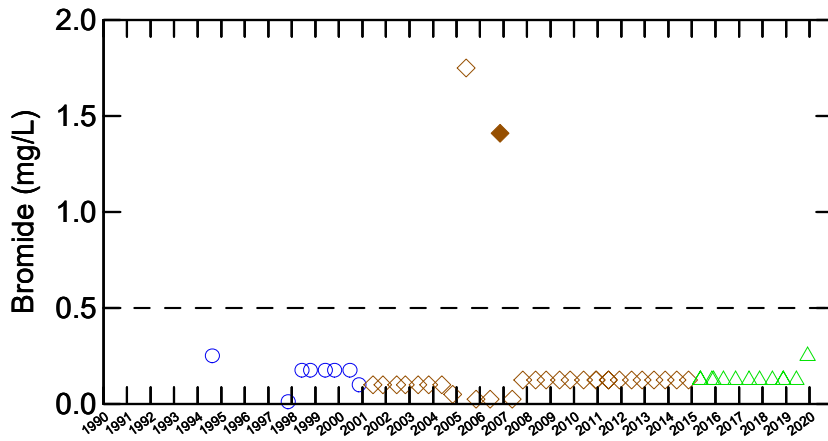
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

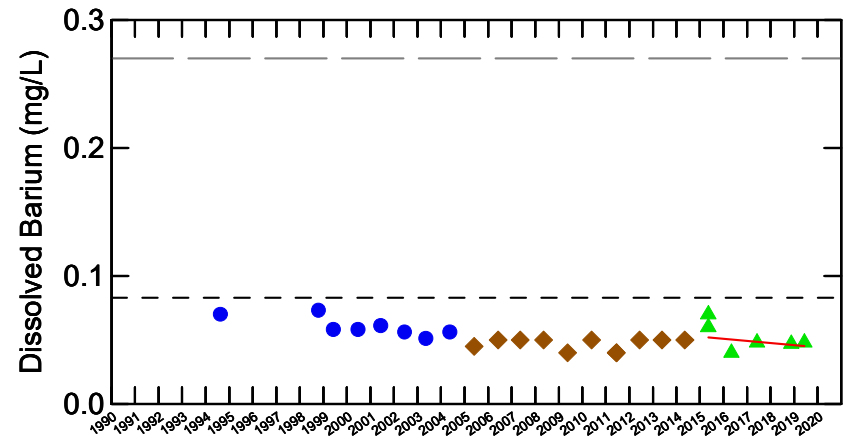
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



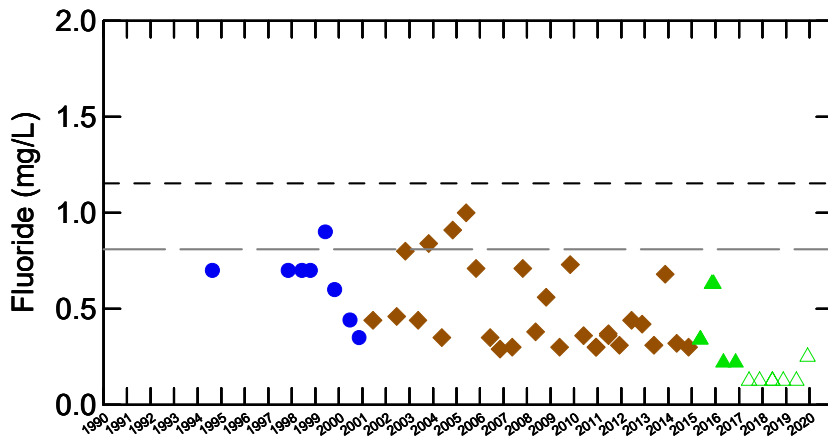
WELL TW21-94-II
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



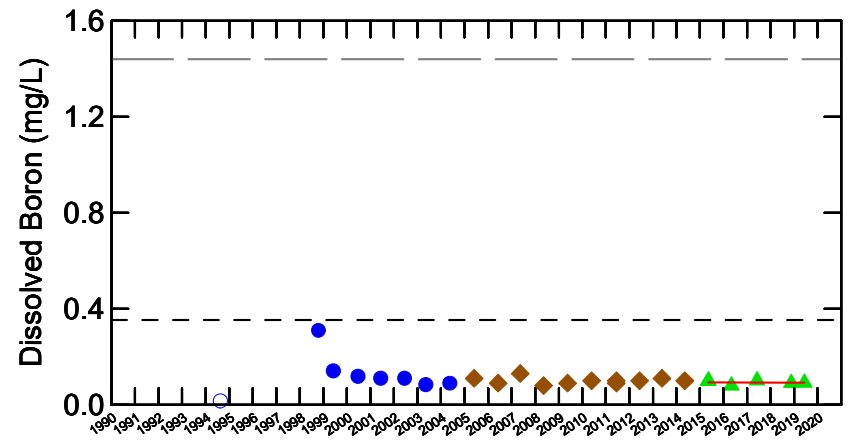
No detected results



No trend



Over 50% non-detect



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

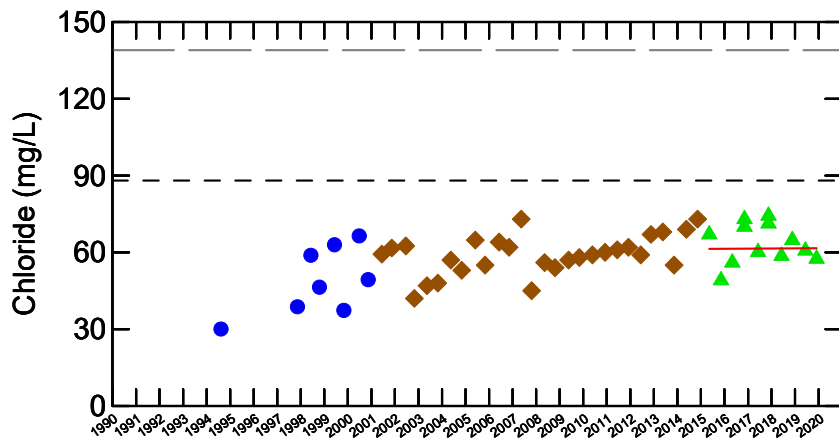
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

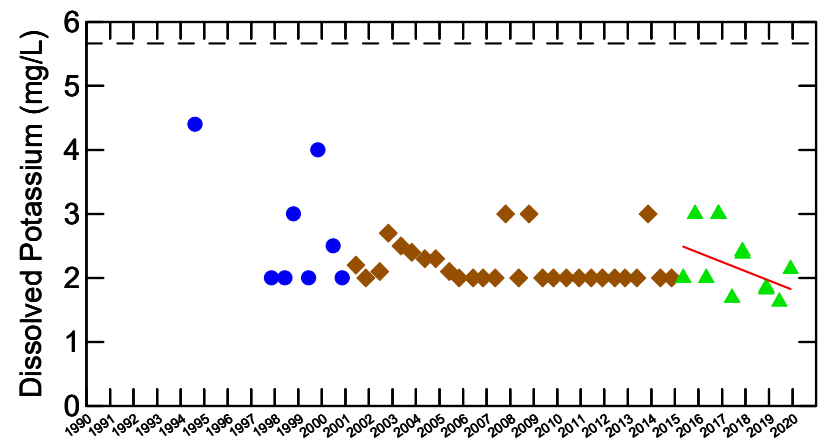
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



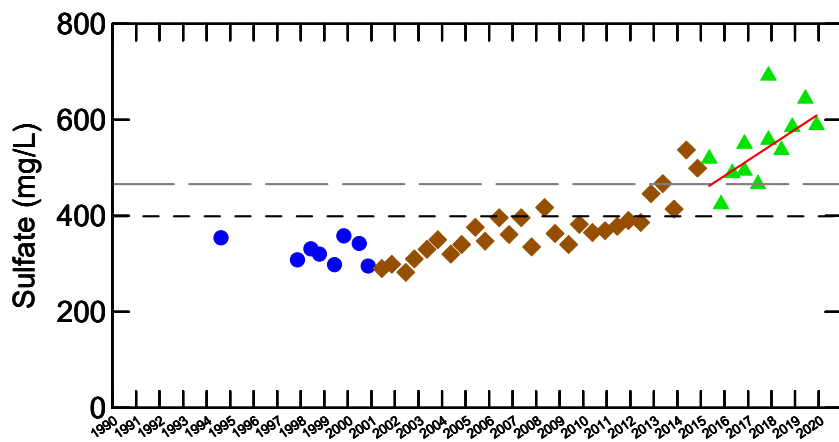
WELL TW21-94-II
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



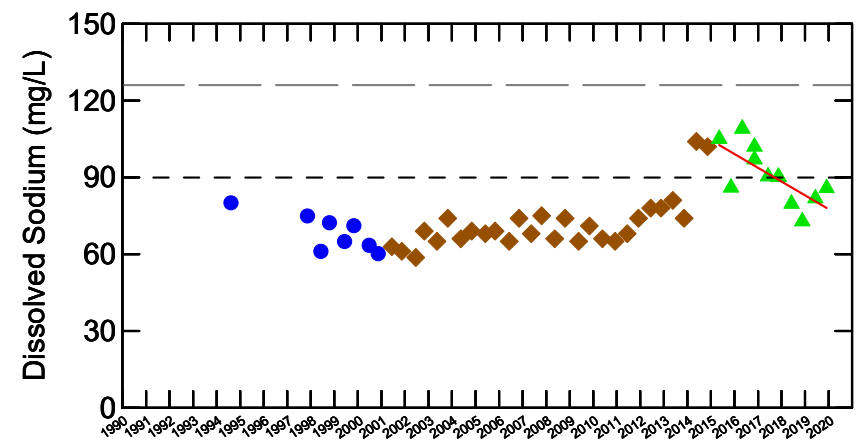
No trend



No trend



Increasing trend



Decreasing trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

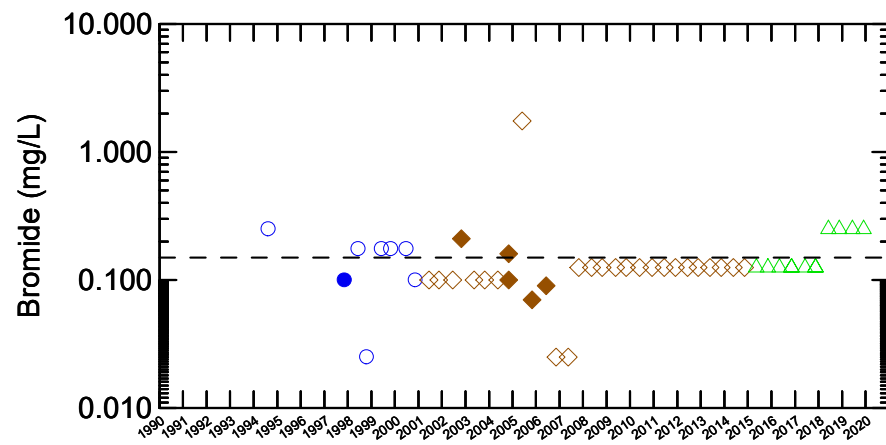
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

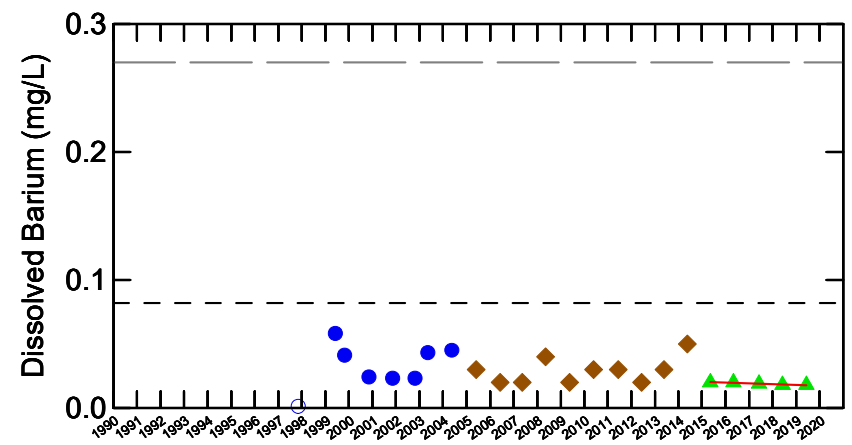
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



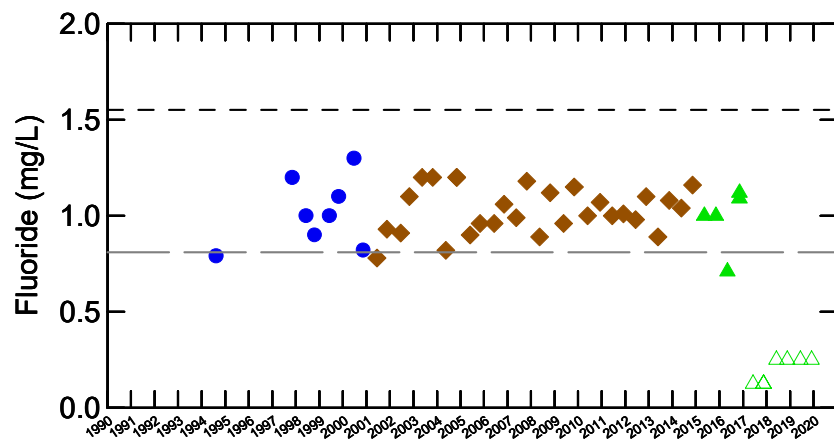
WELL TW22-94
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



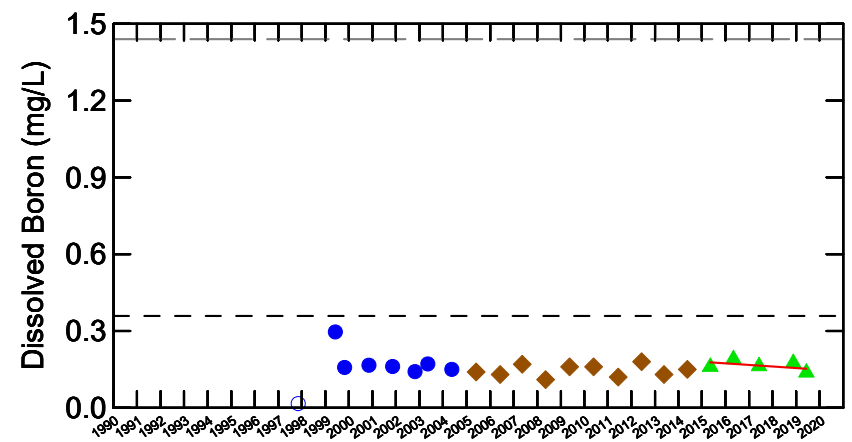
No detected results



Decreasing trend



Over 50% non-detect



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

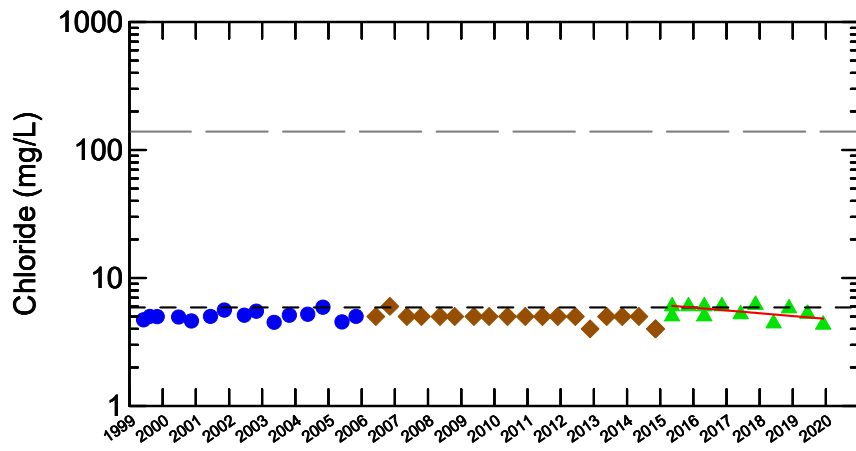
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

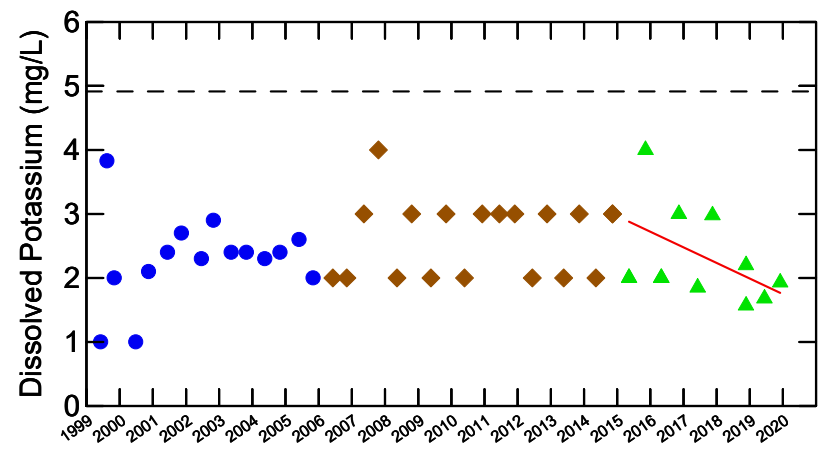
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



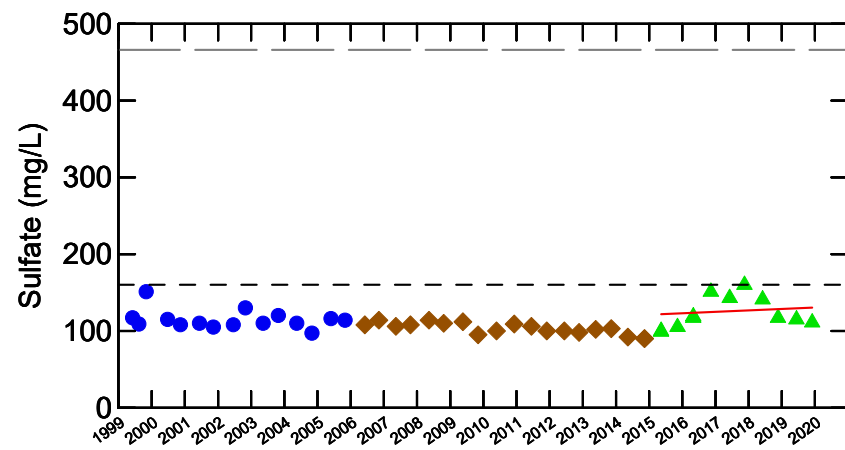
WELL TW22-94
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



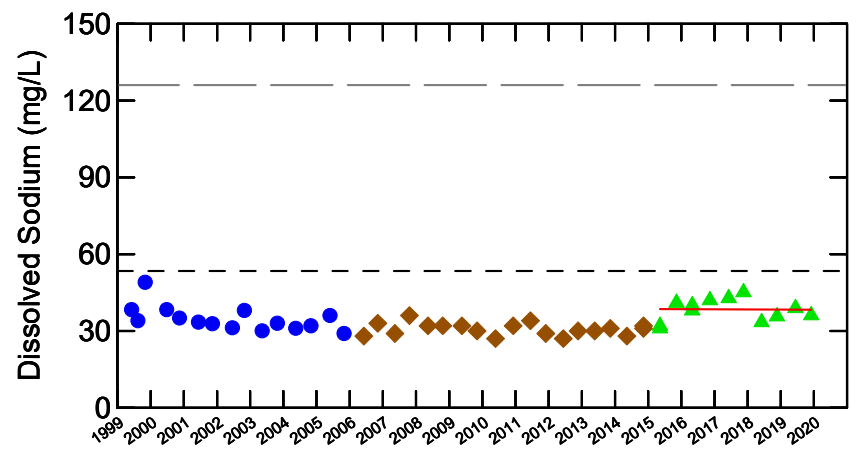
No trend



No trend



No trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

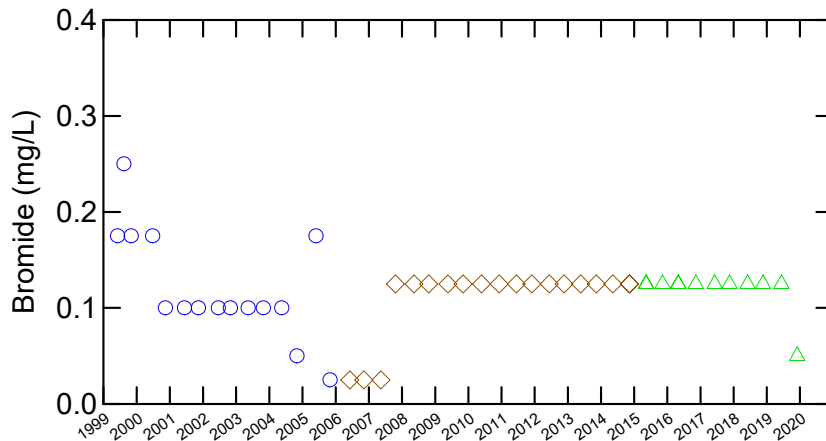
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

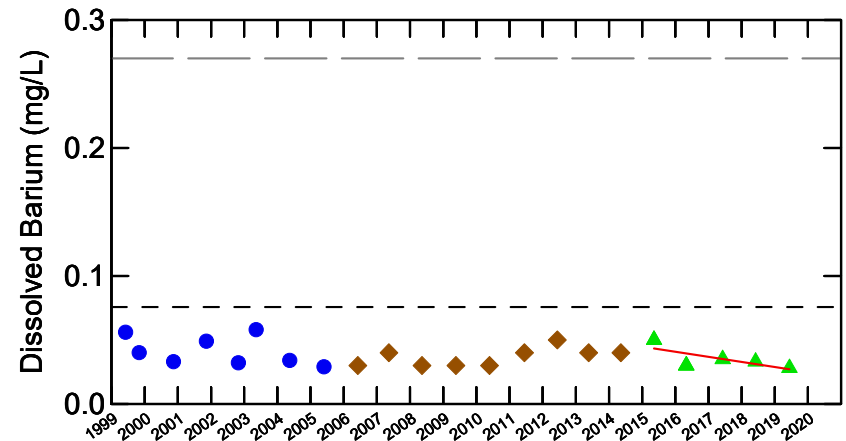
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



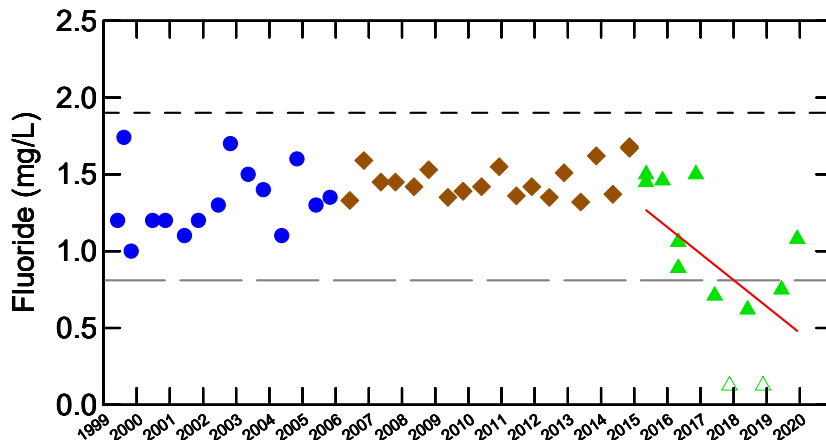
WELL TW30-94
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



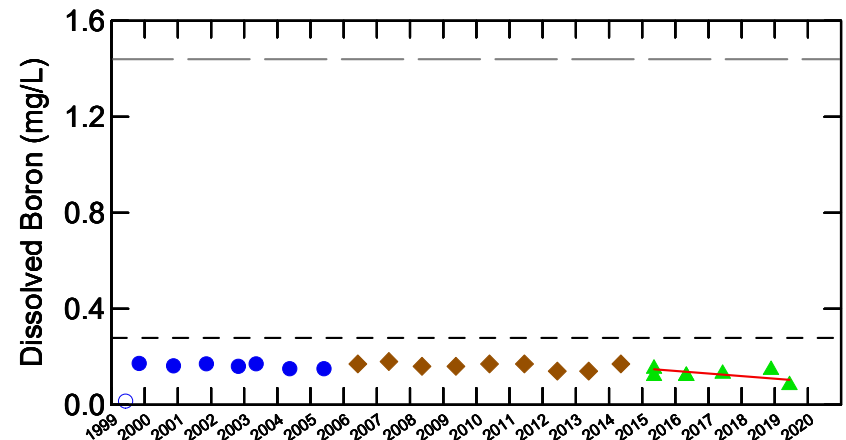
No detected results



No trend



No trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

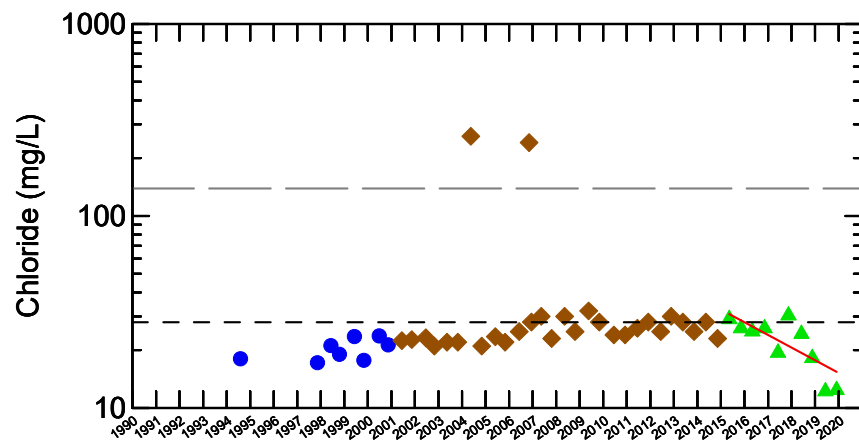
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

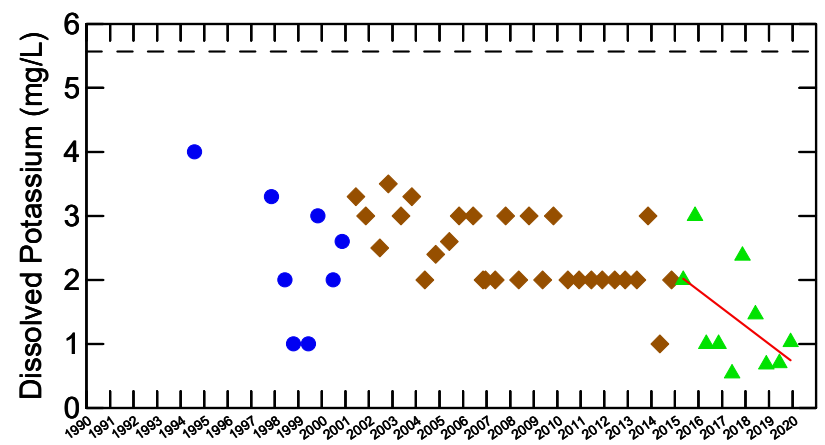
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



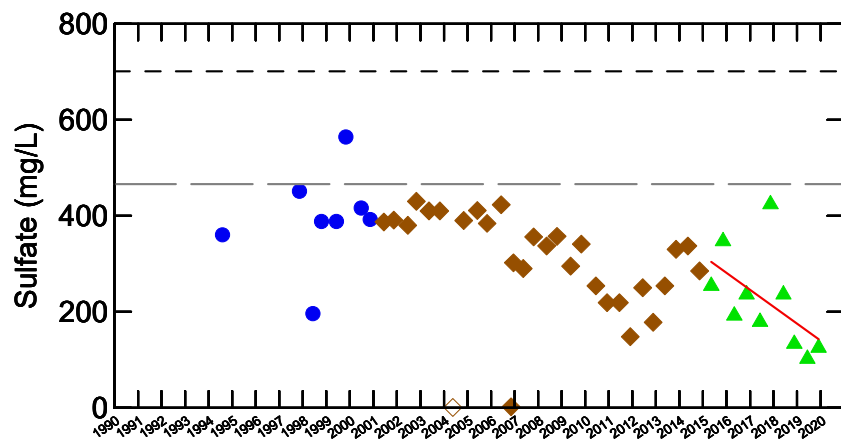
WELL TW30-94
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



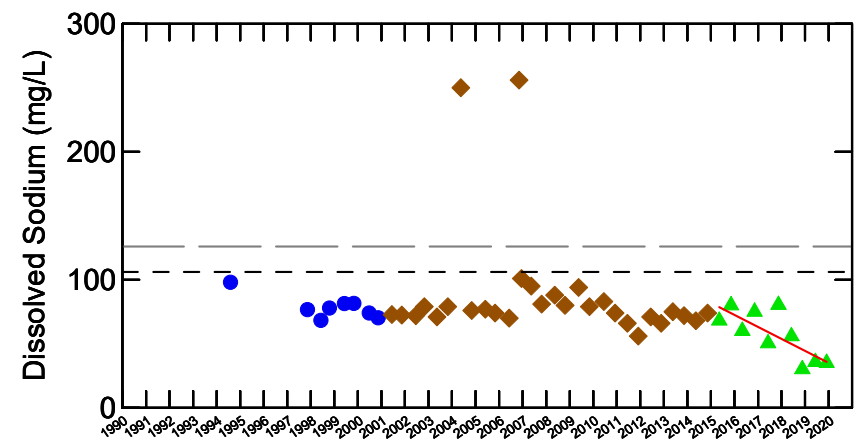
Decreasing trend



No trend



No trend



Decreasing trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

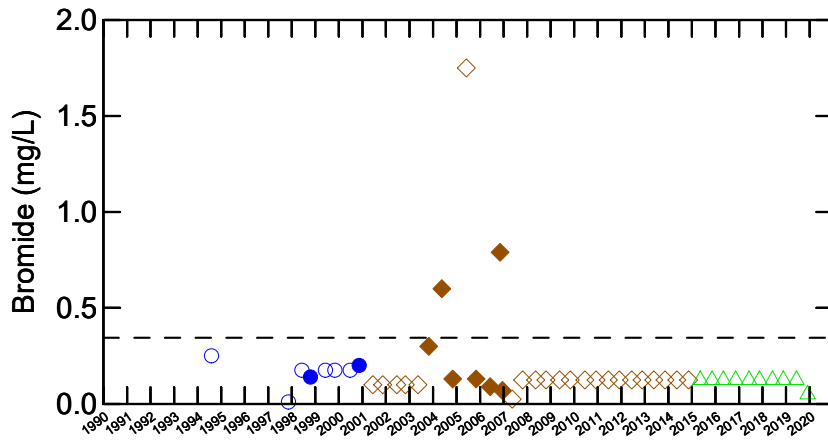
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

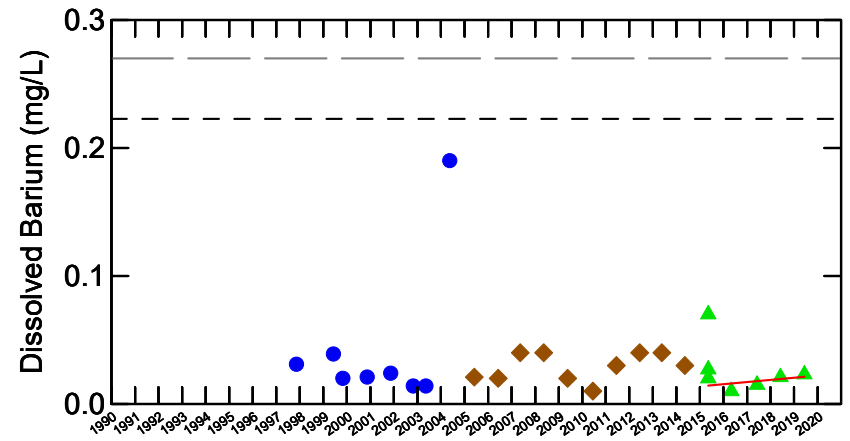
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



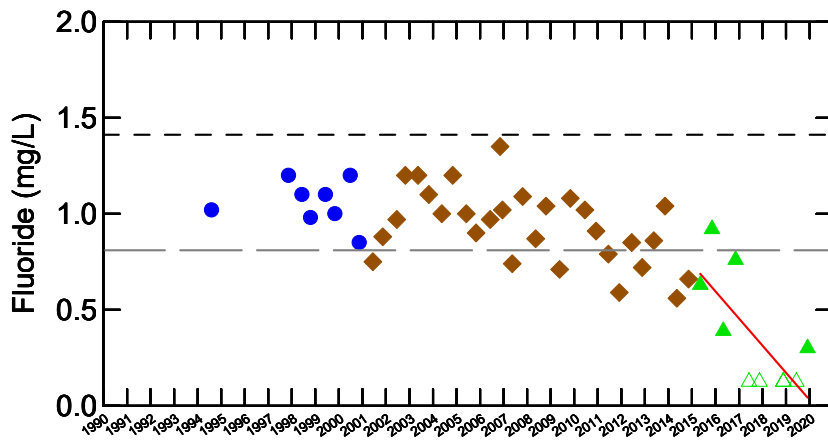
WELL TW32-94-IV
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



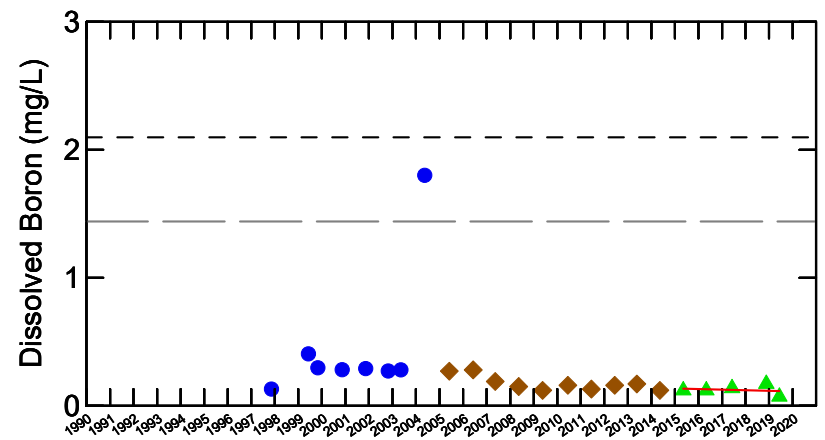
No detected results



No trend



Decreasing trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

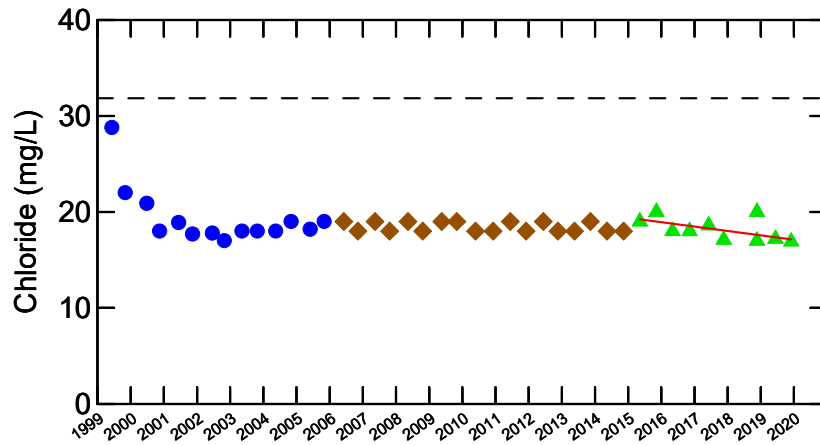
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

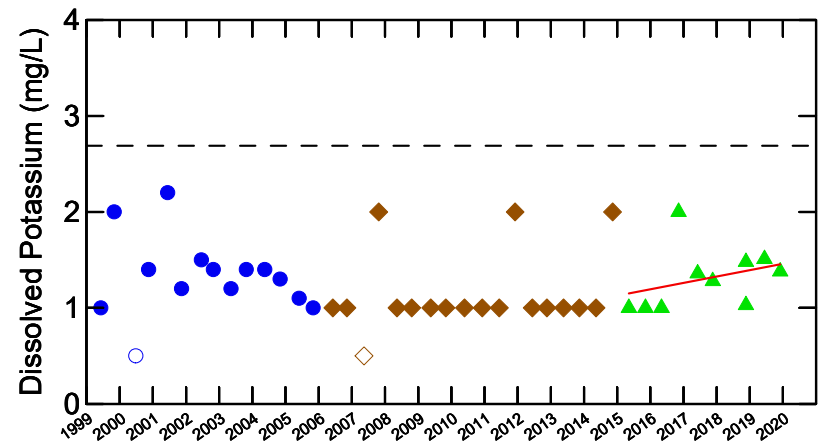
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



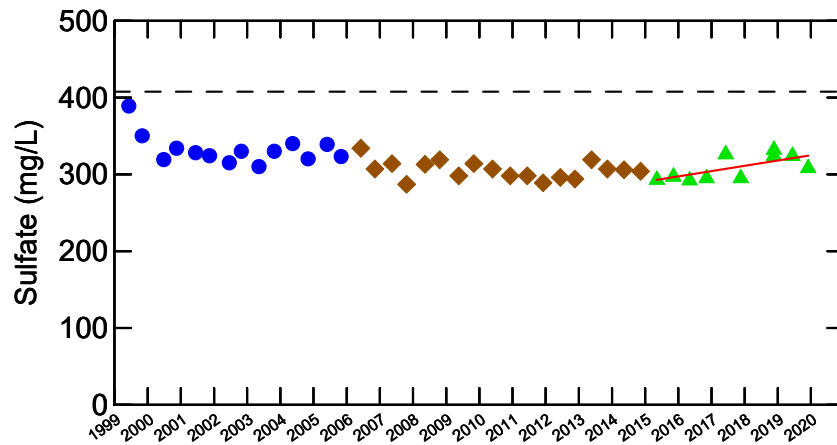
WELL TW32-94-IV
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



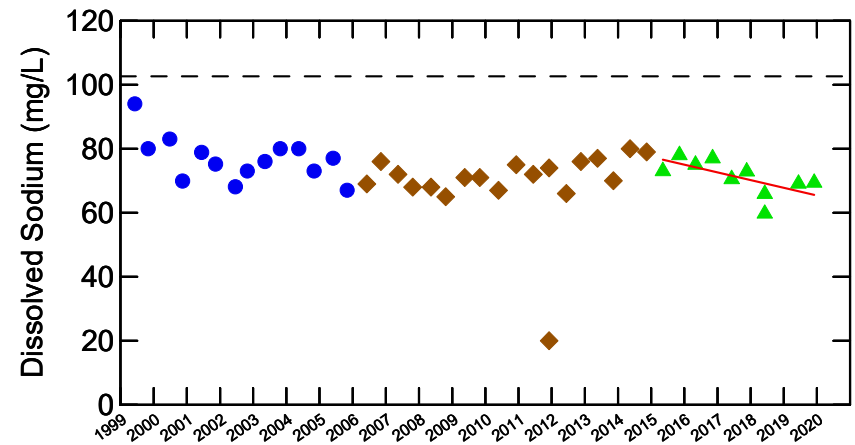
No trend



No trend



Increasing trend



Decreasing trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

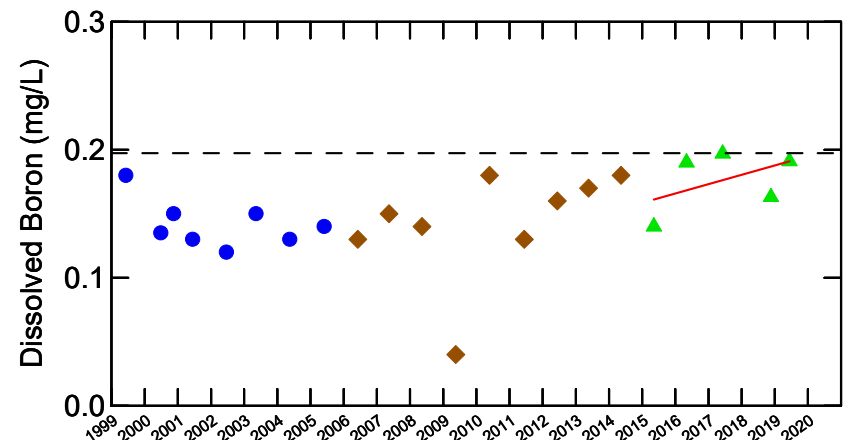
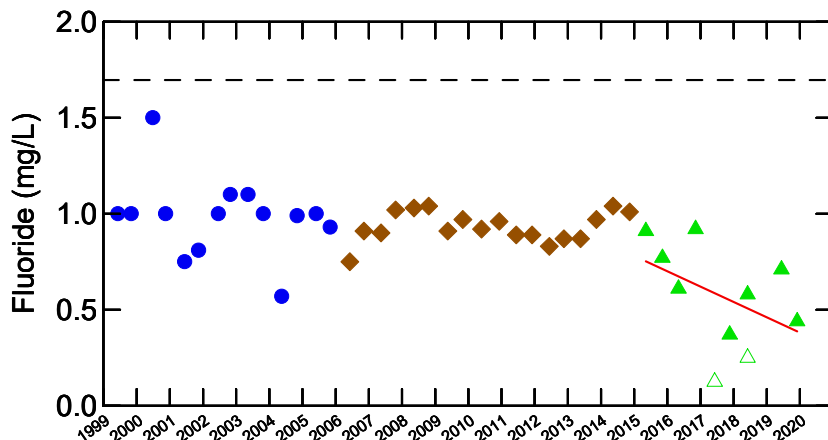
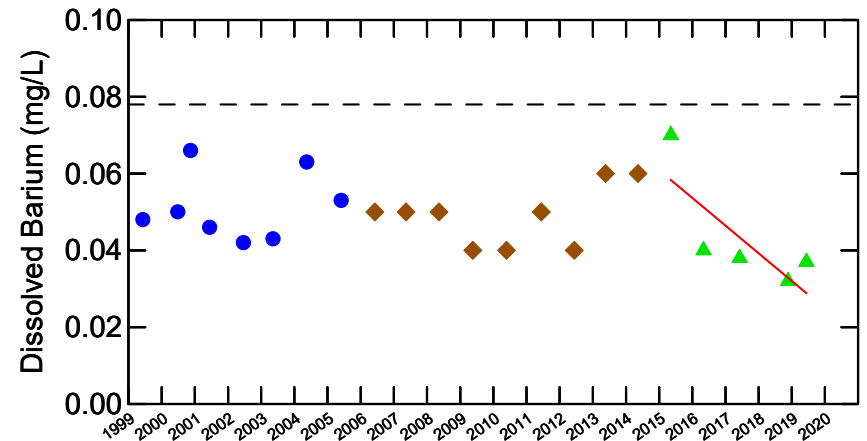
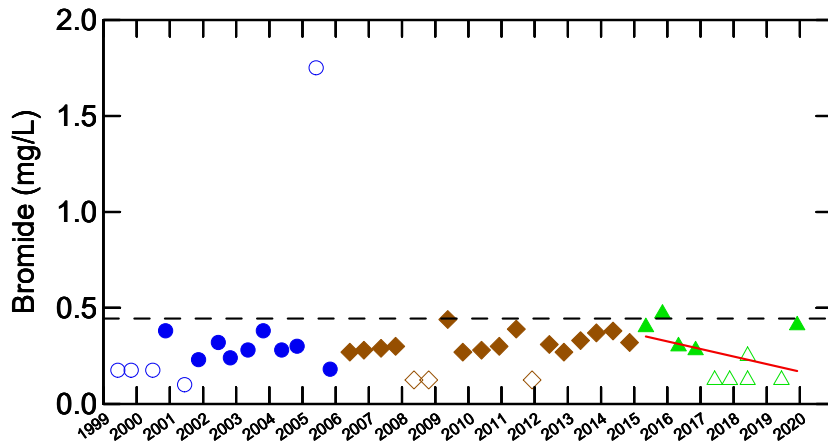
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



WELL TW39-991
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

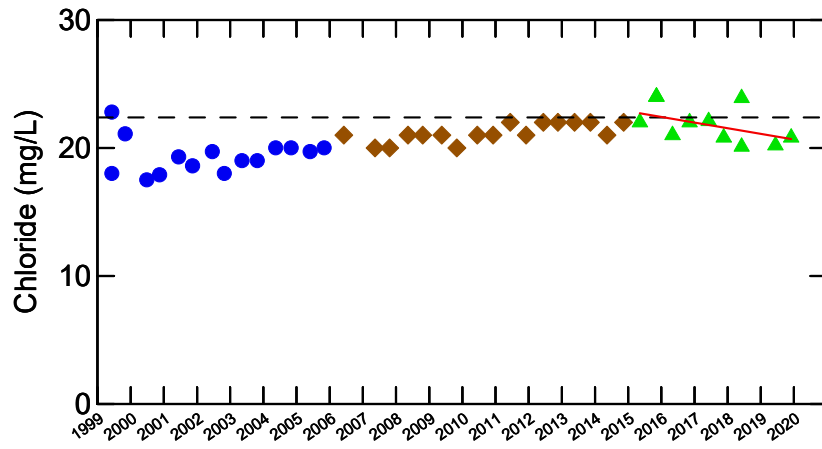
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

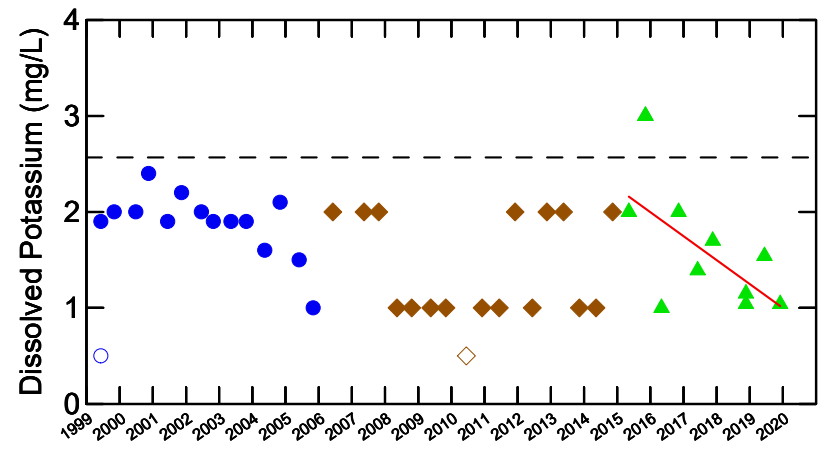
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



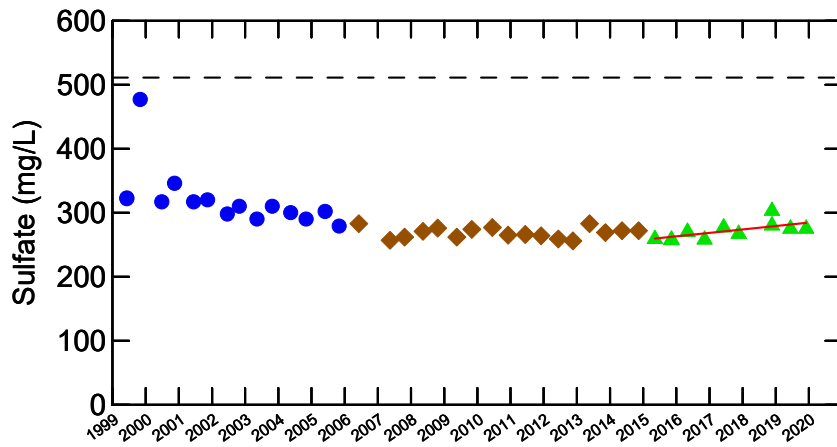
WELL TW39-991
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



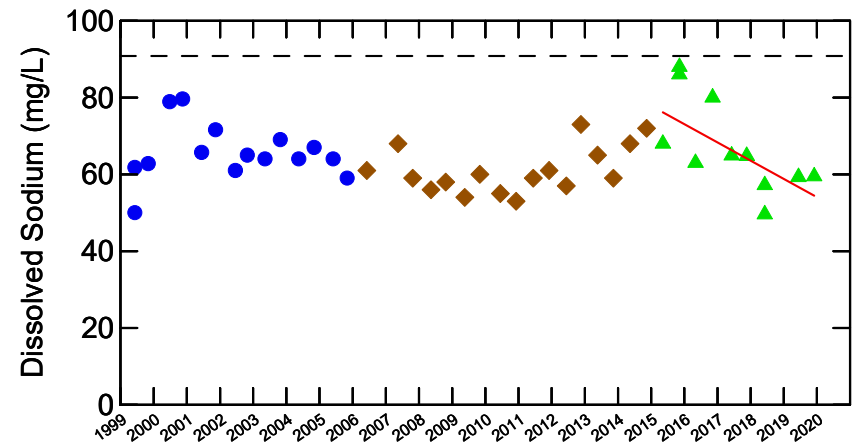
No trend



No trend



No trend



Decreasing trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

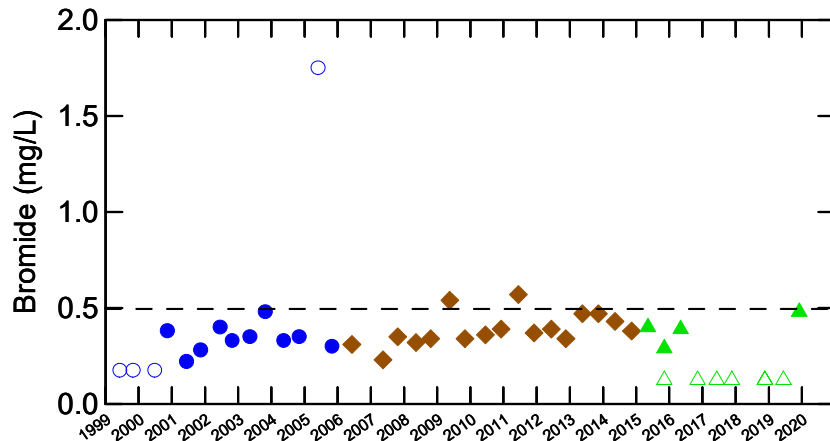
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

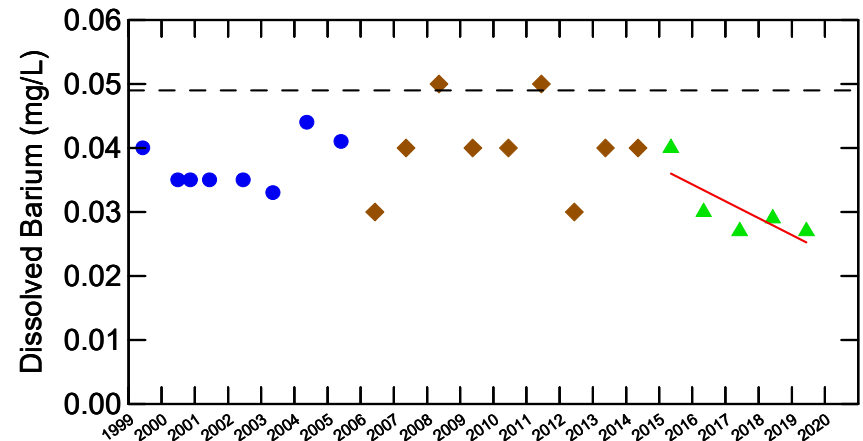
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



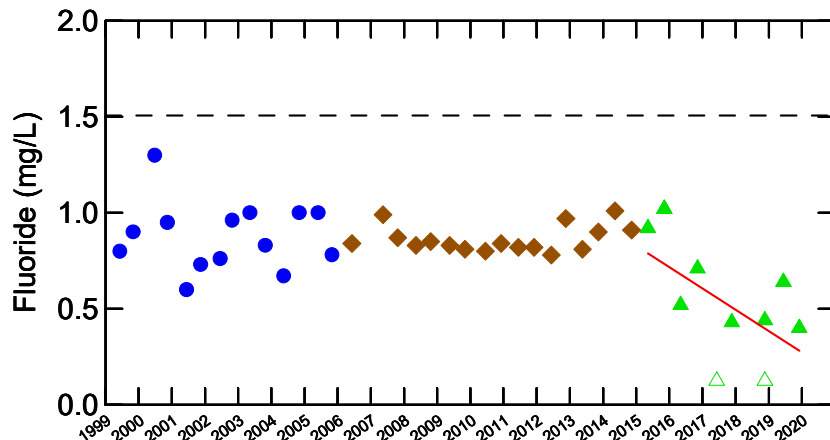
WELL TW39-99S
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



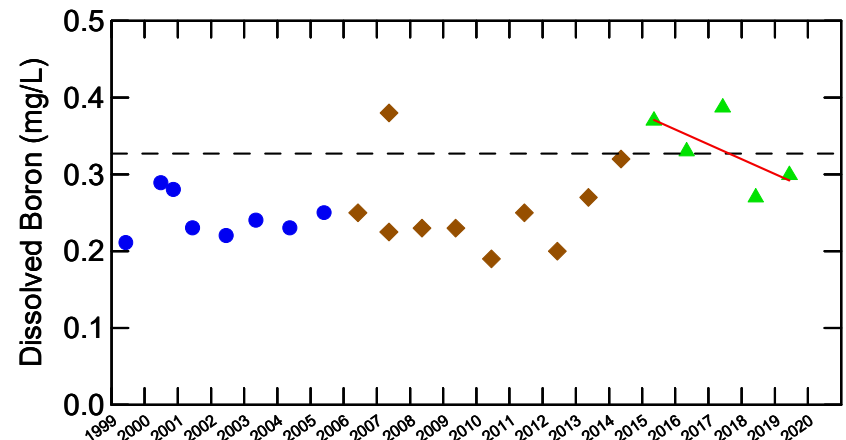
Over 50% non-detect



No trend



No trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

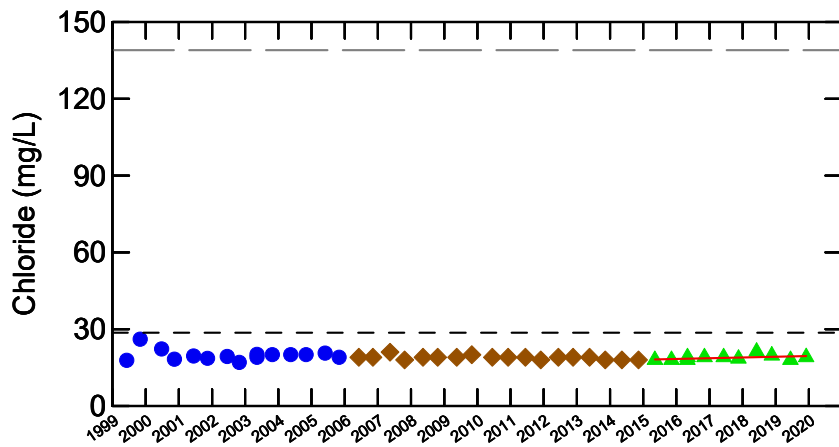
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

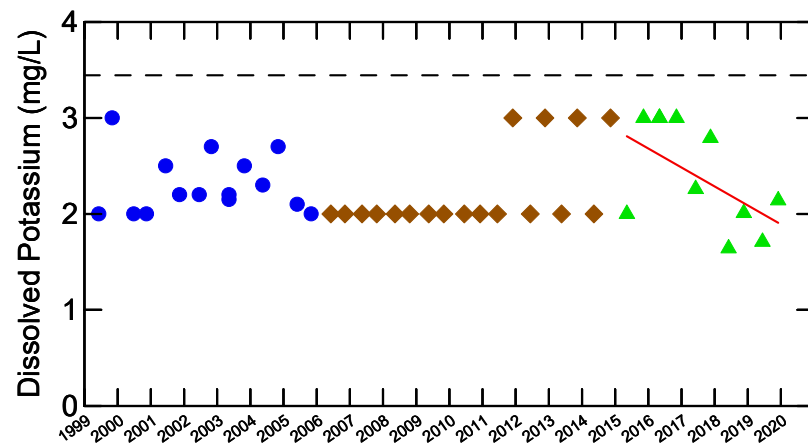
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



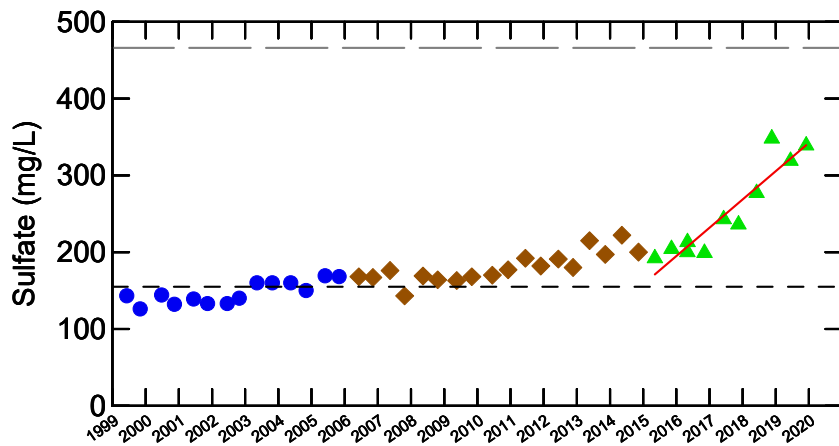
WELL TW39-99S
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



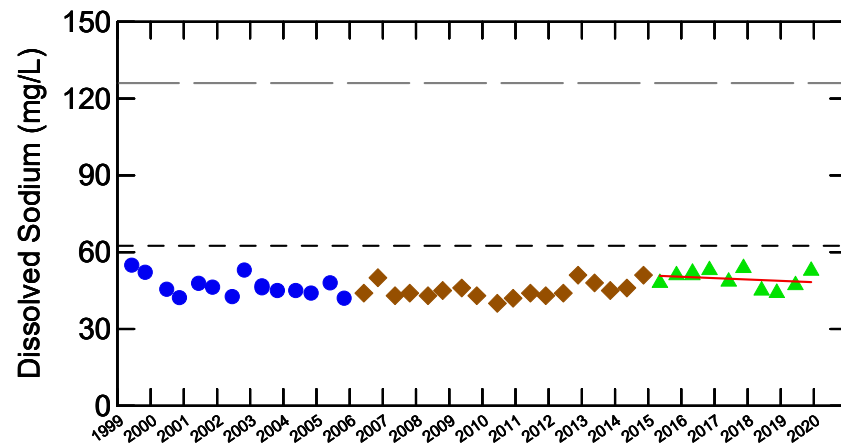
No trend



No trend



Increasing trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

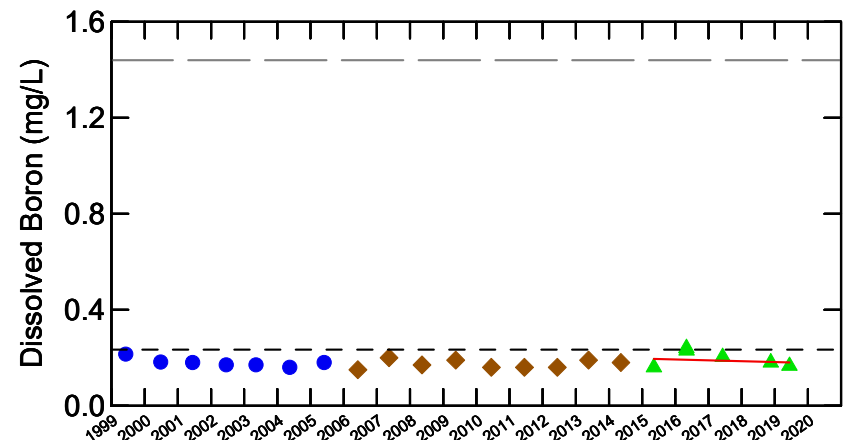
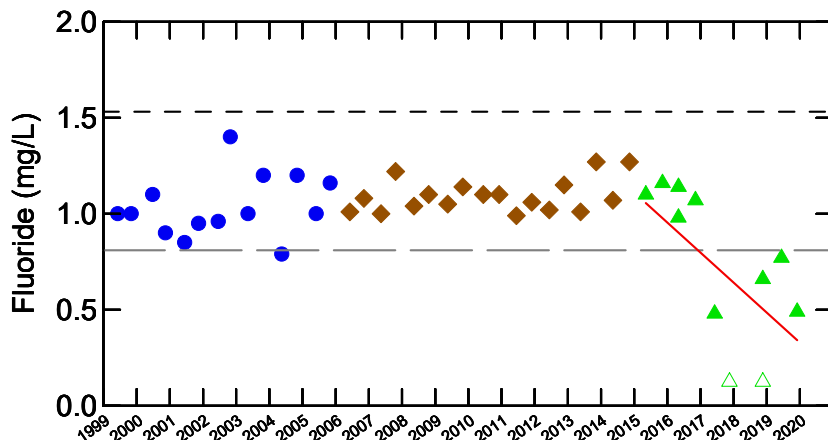
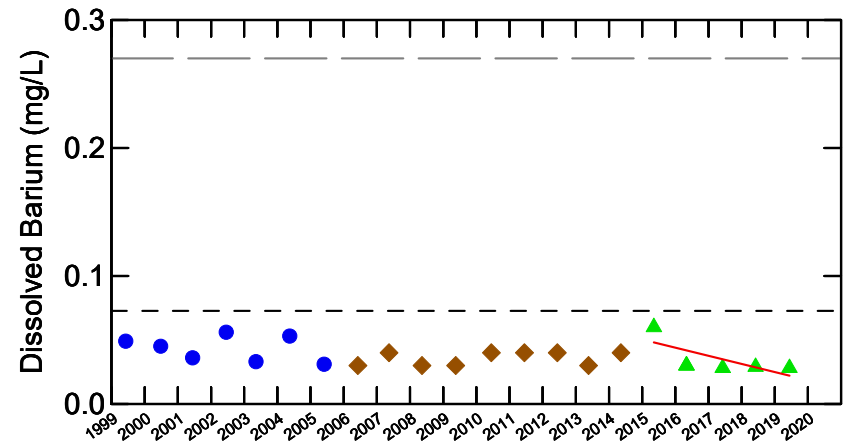
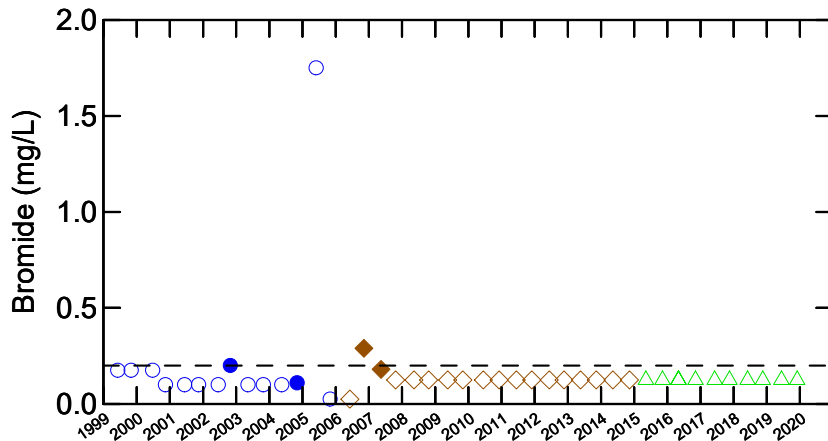
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



WELL TW40-99S
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

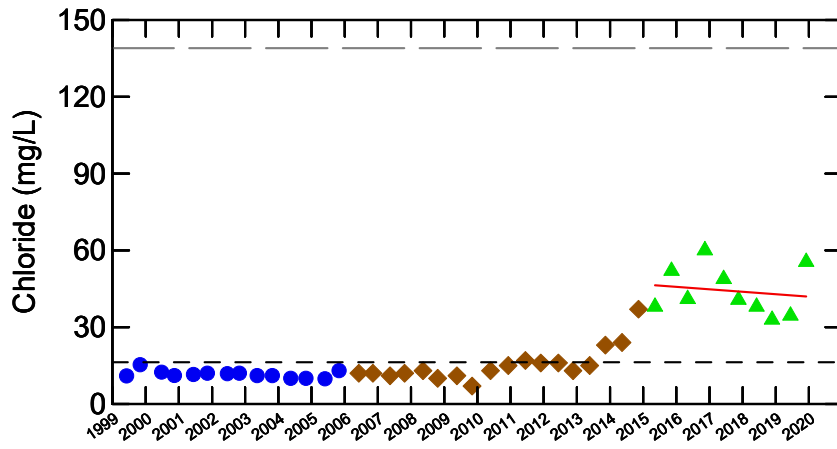
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

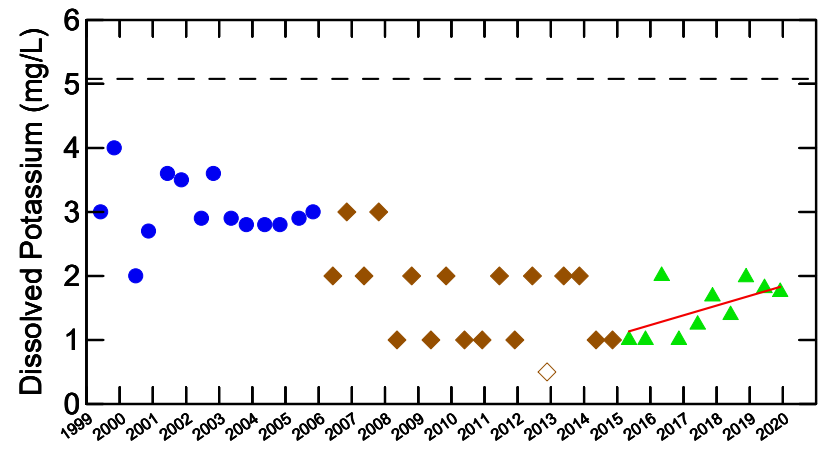
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



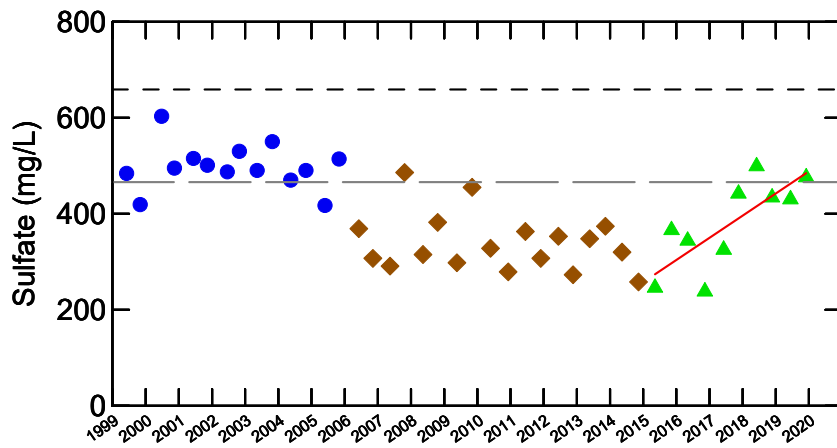
WELL TW40-99S
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



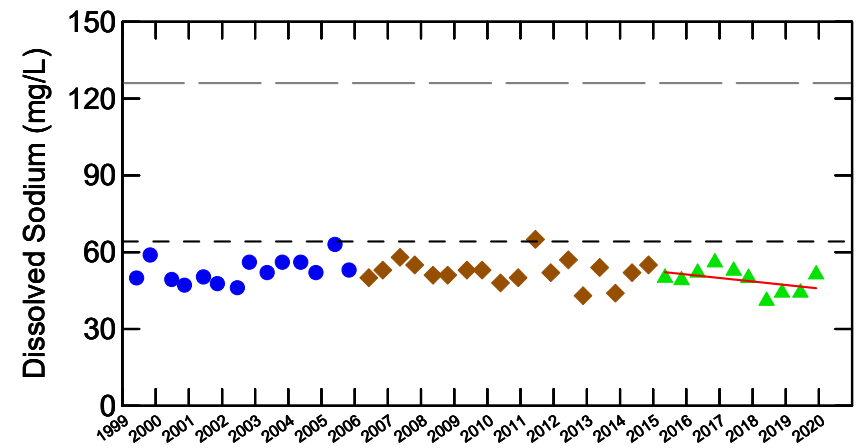
No trend



No trend



Increasing trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

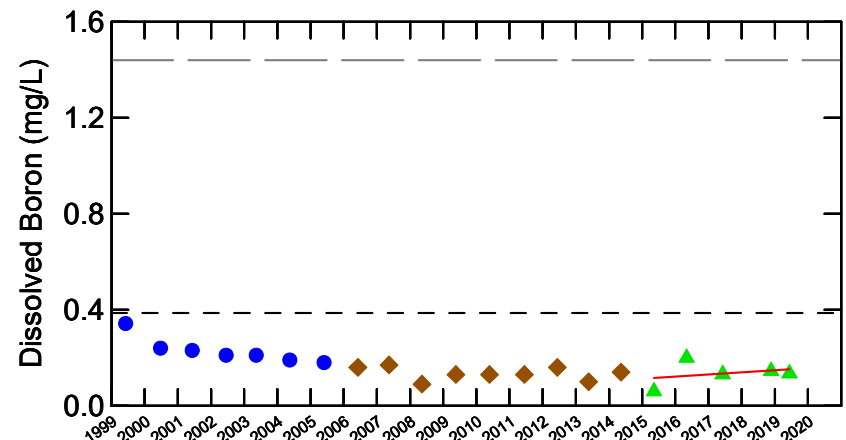
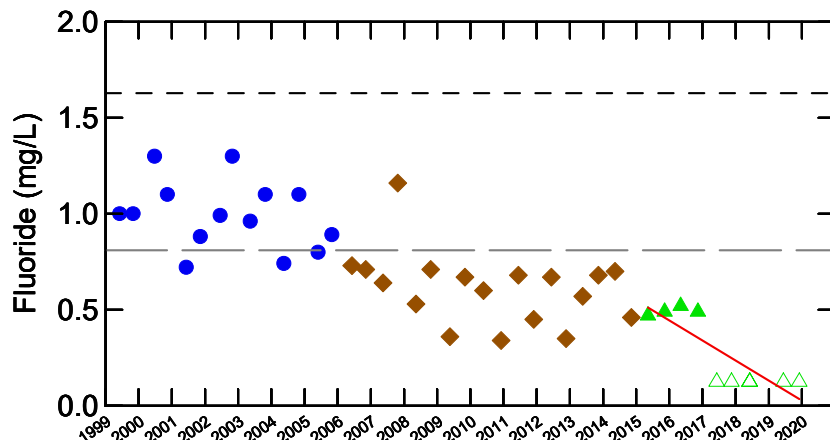
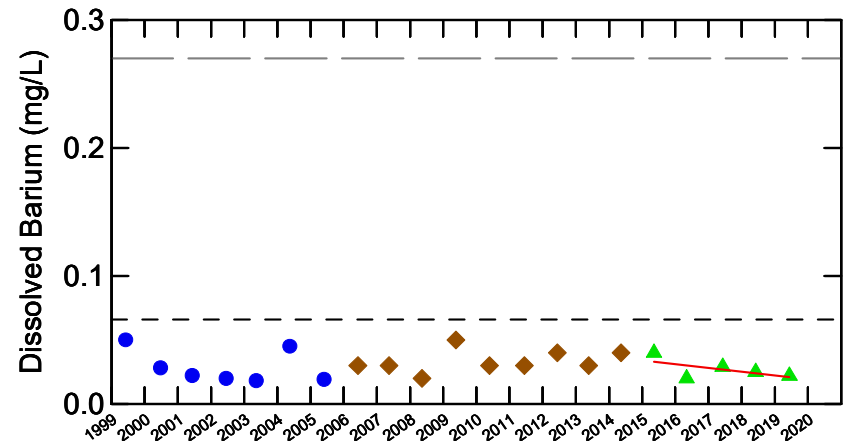
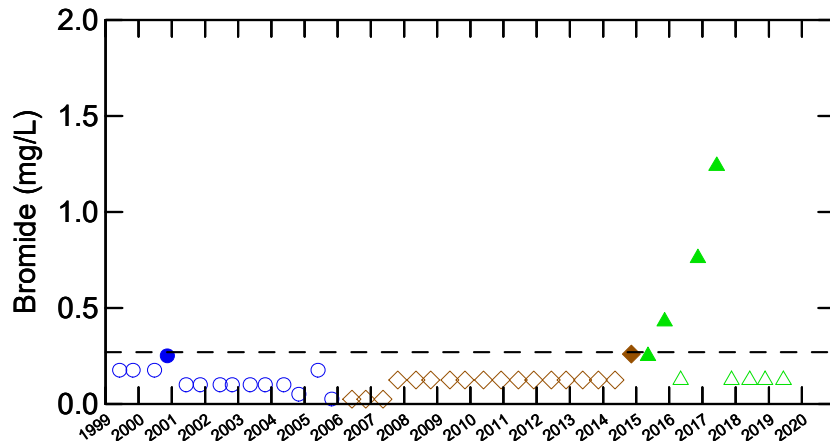
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



WELL TW41-99S
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

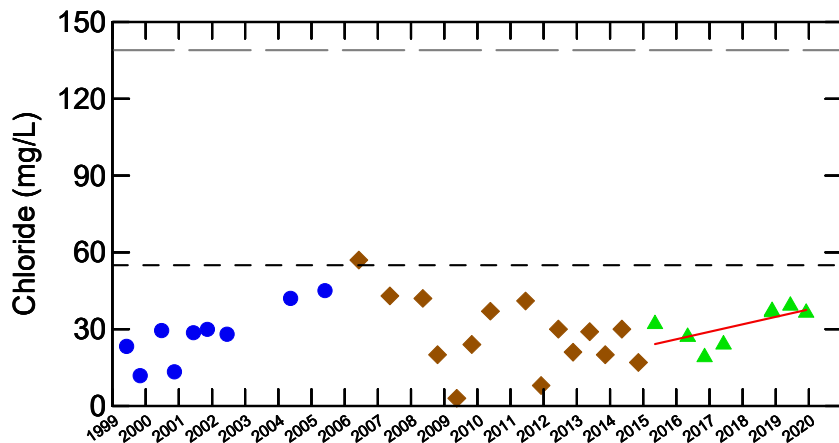
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

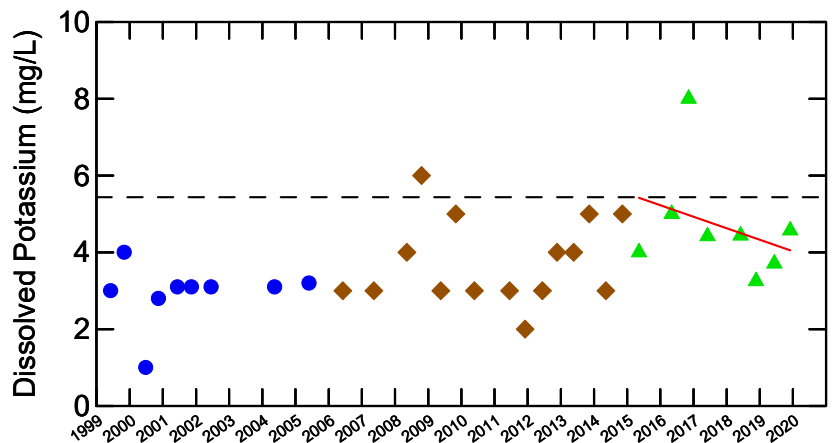
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



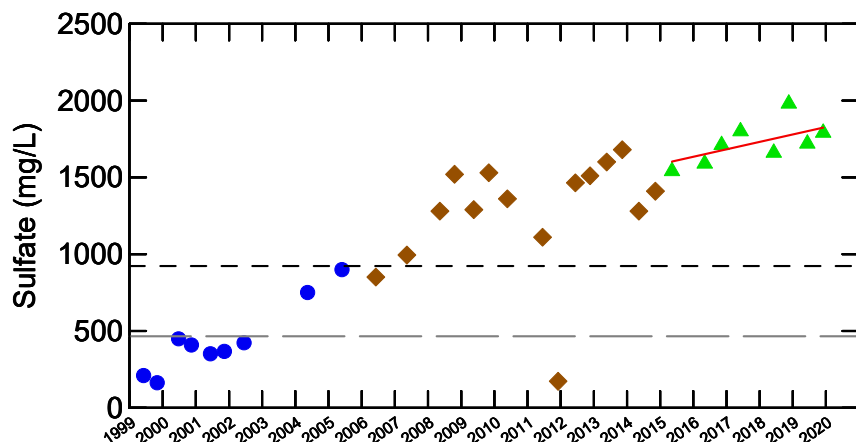
WELL TW41-99S
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



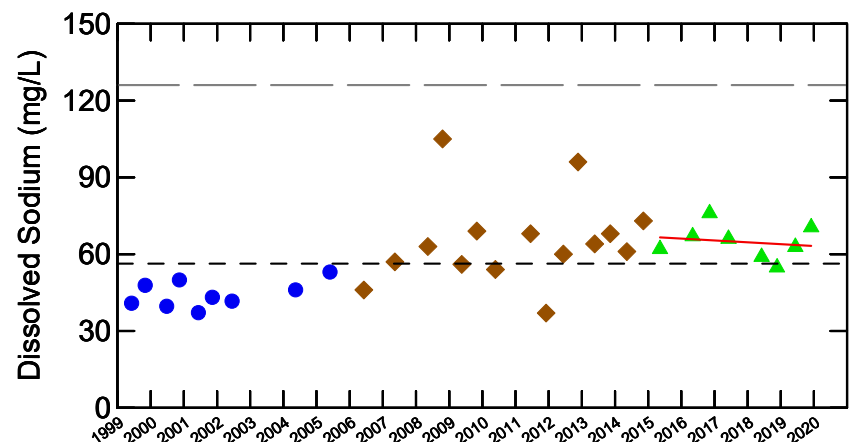
No trend



No trend



No trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

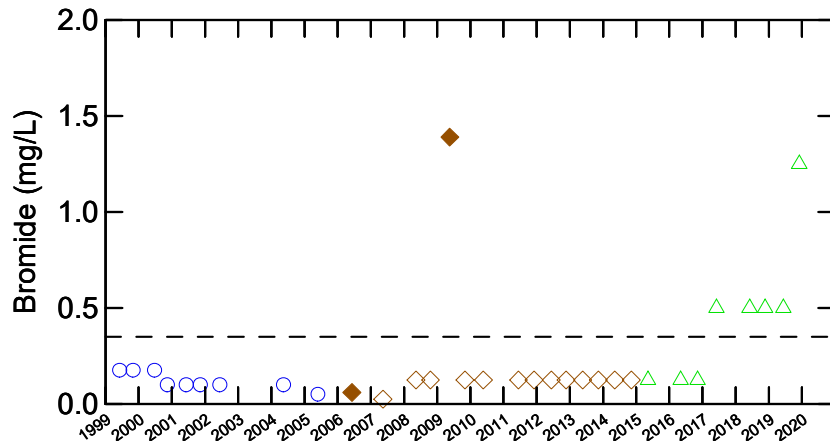
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

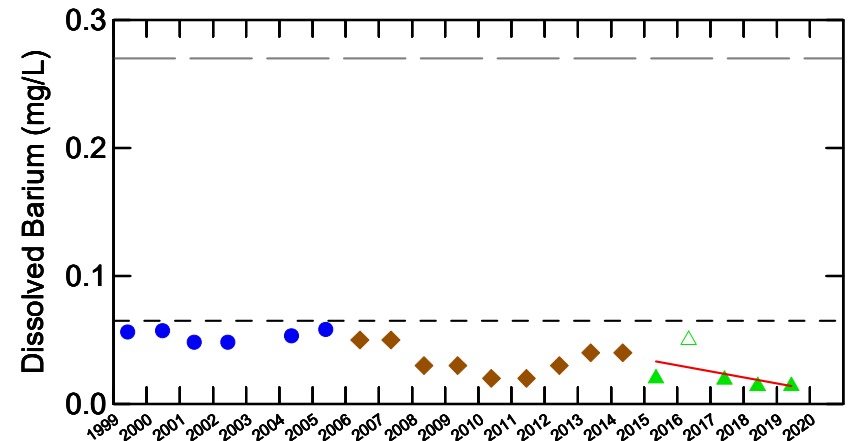
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



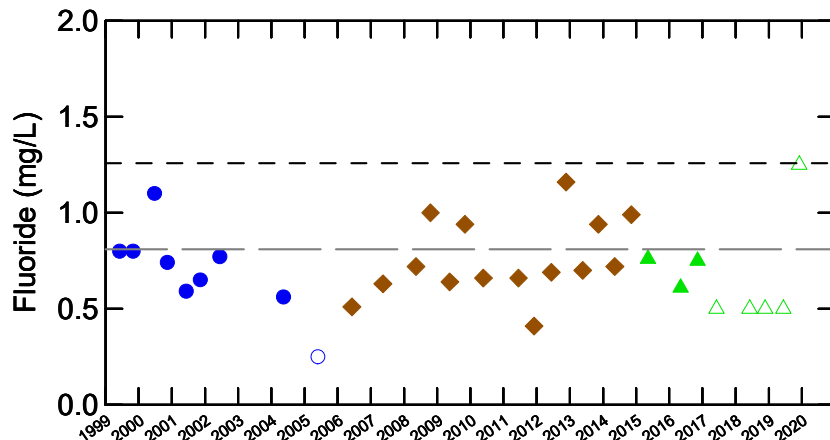
WELL TW42-99S
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



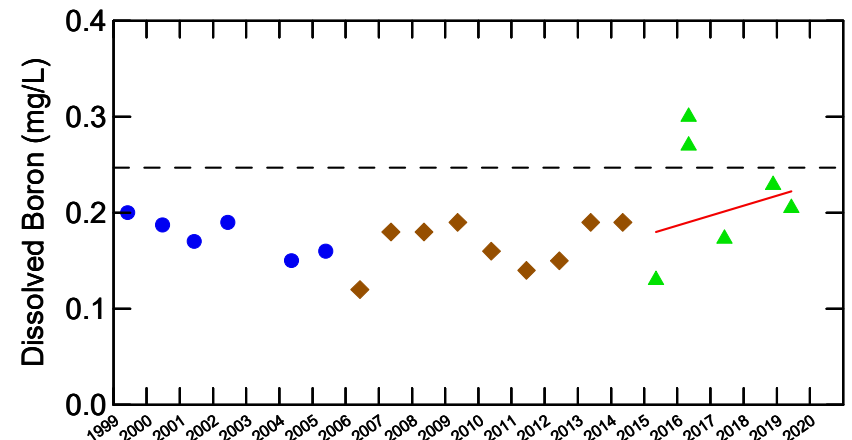
No detected results



No trend



Over 50% non-detect



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

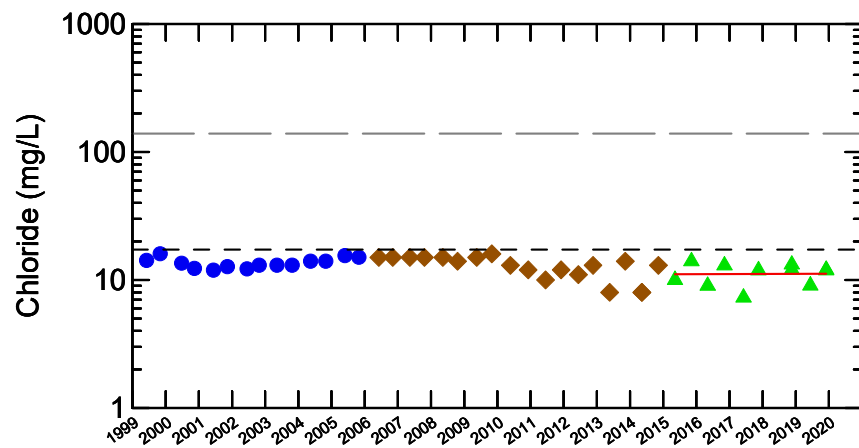
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

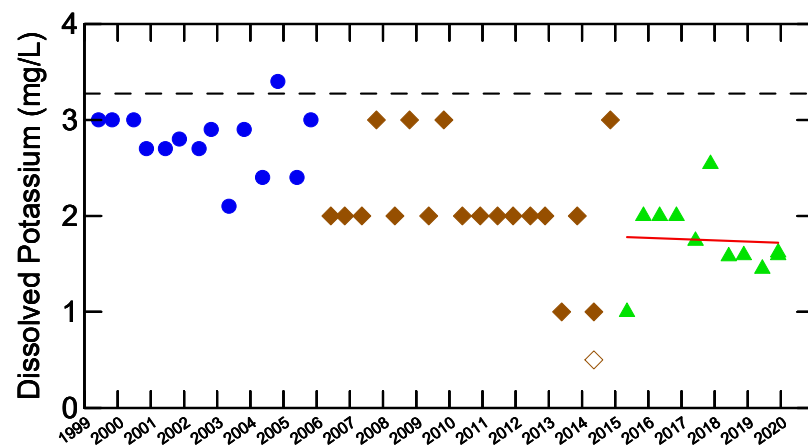
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



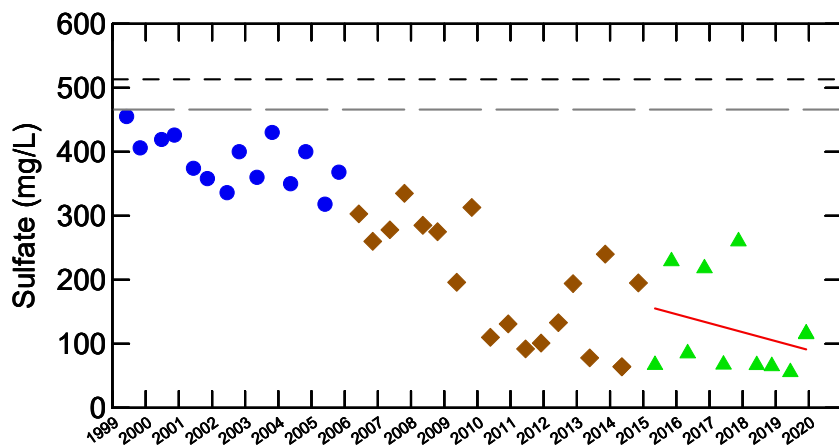
WELL TW42-99S
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



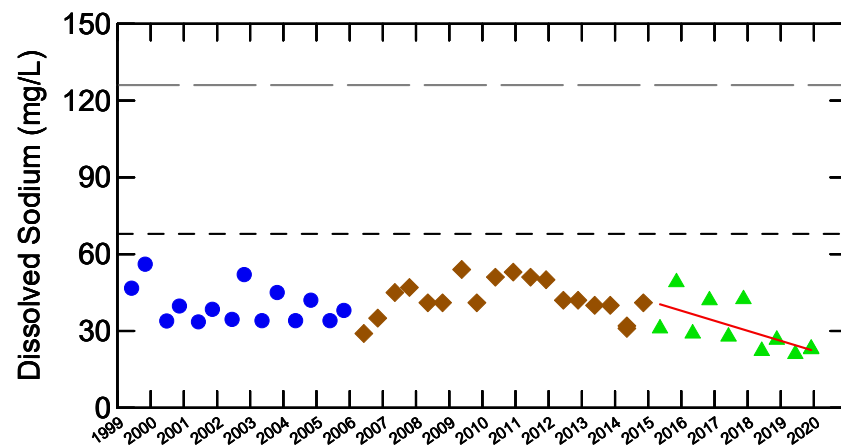
No trend



No trend



No trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

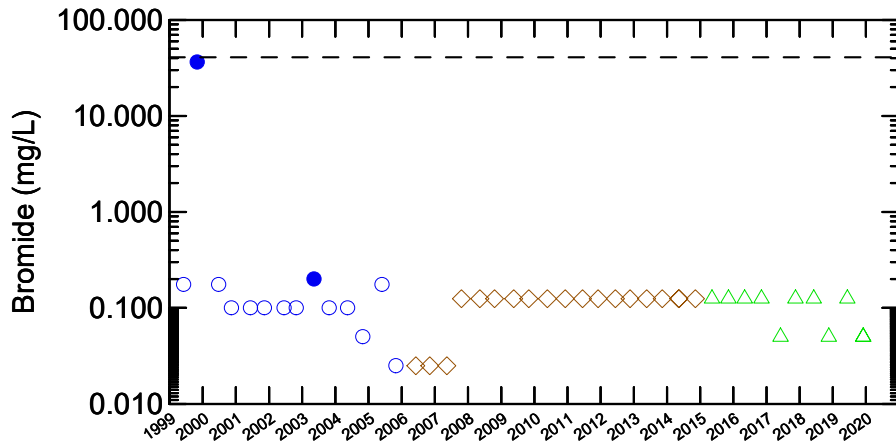
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

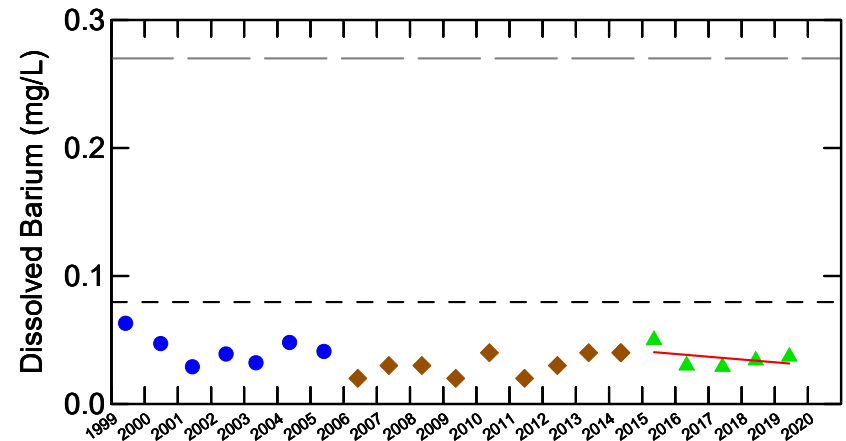
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



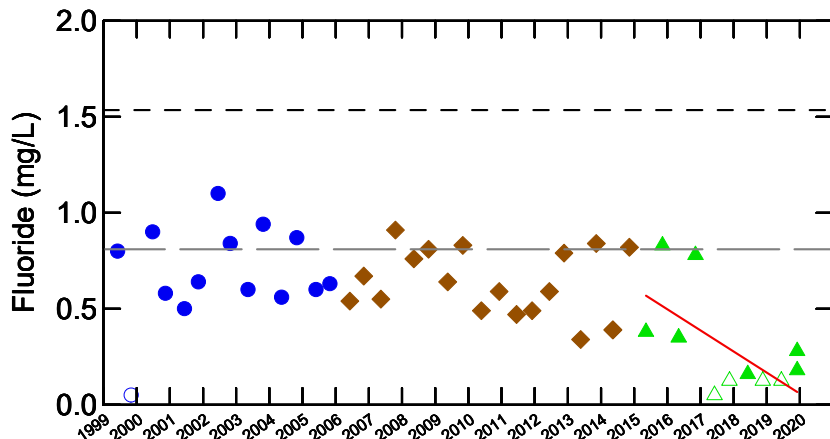
WELL TW43-99S
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



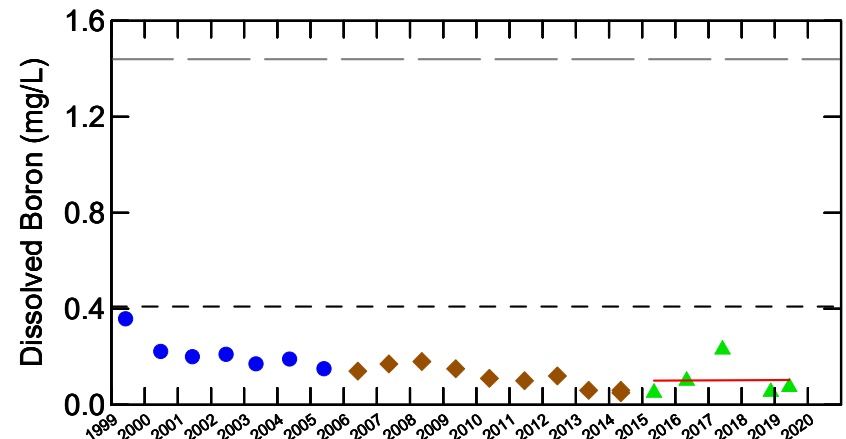
No detected results



No trend



No trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

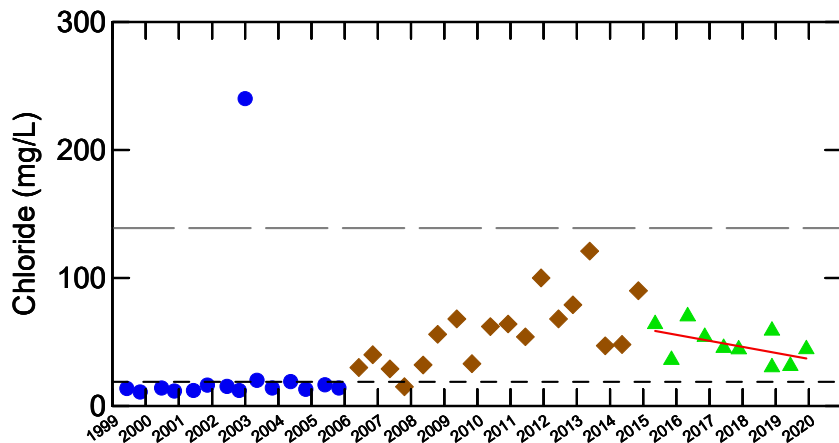
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

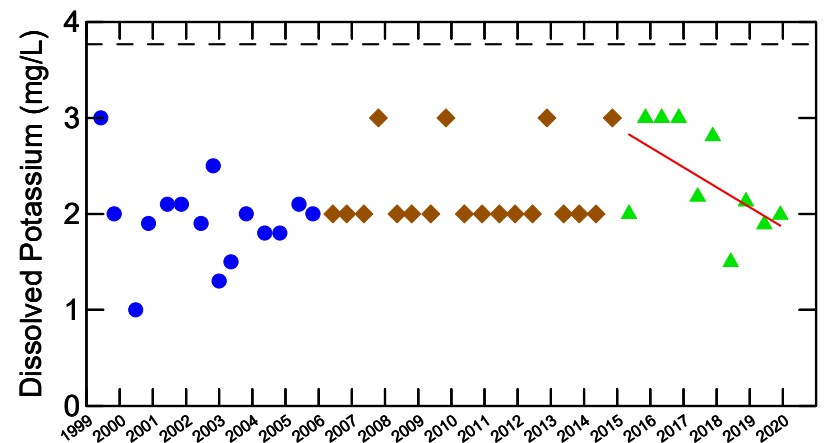
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



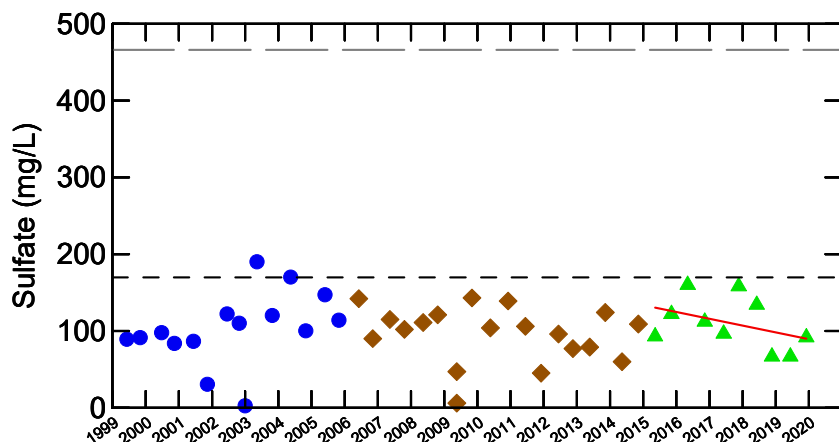
WELL TW43-99S
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



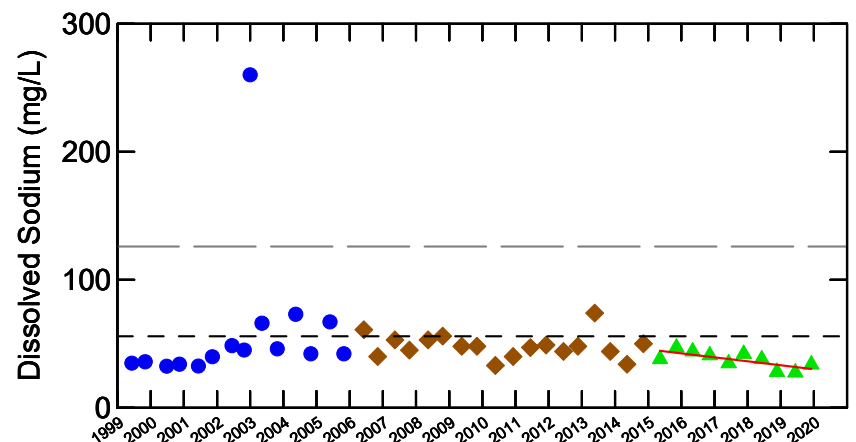
No trend



No trend



No trend



Decreasing trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

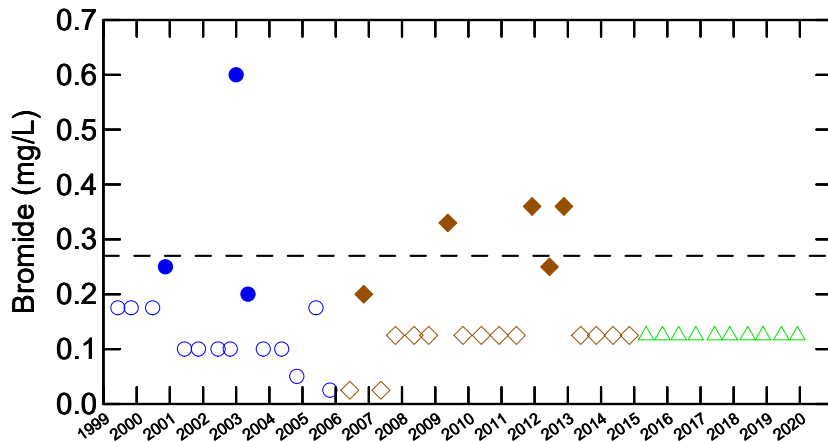
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

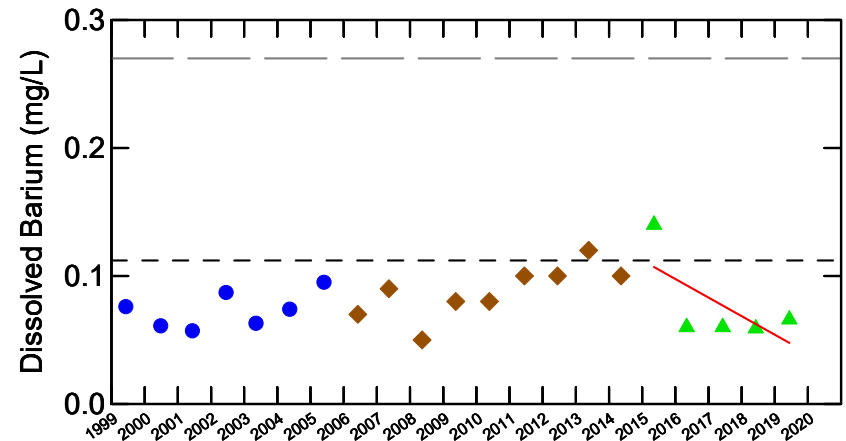
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



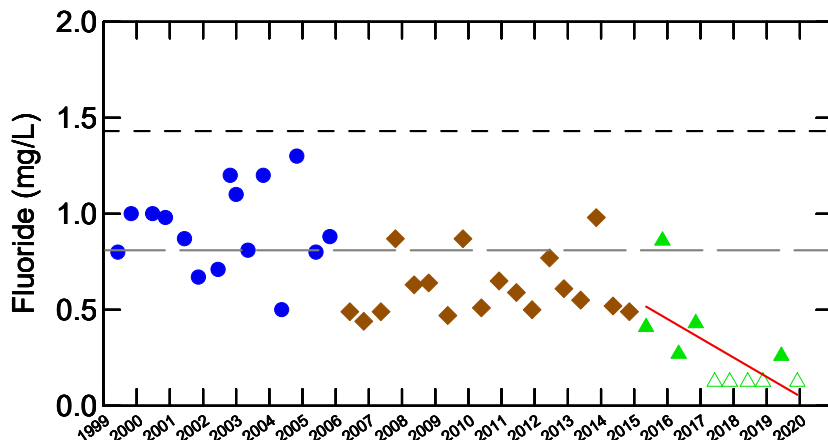
WELL TW45-99S
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



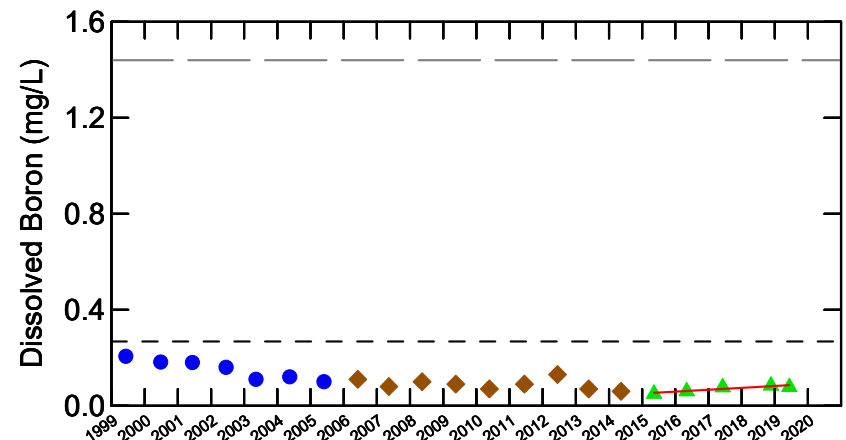
No detected results



No trend



Decreasing trend



Increasing trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

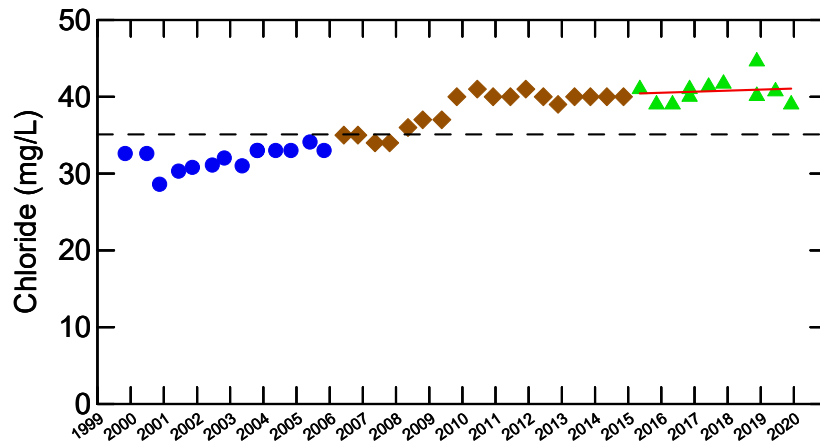
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

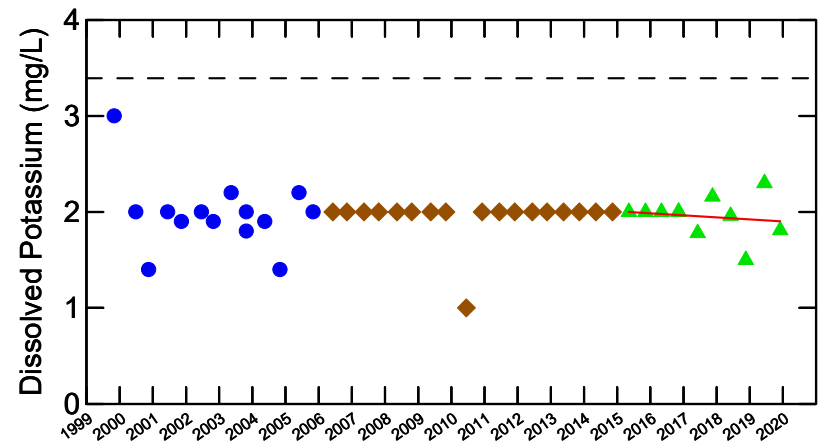
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



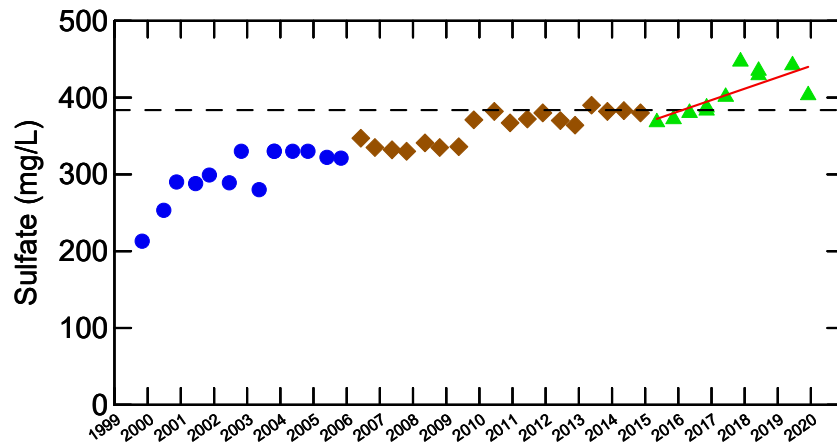
WELL TW45-99S
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



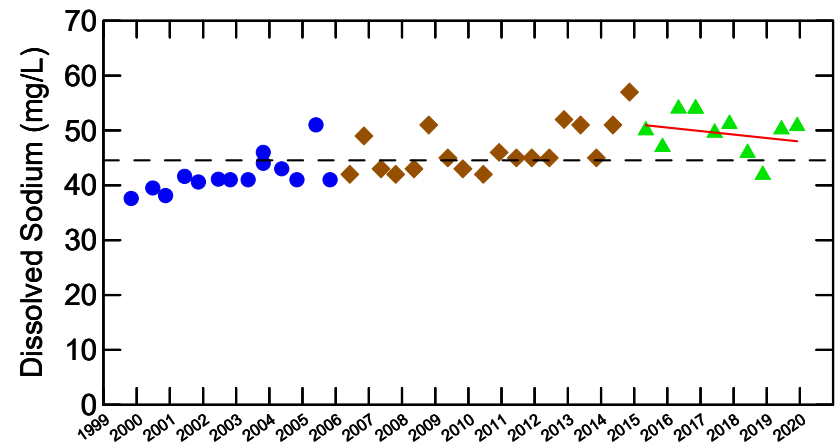
No trend



No trend



Increasing trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

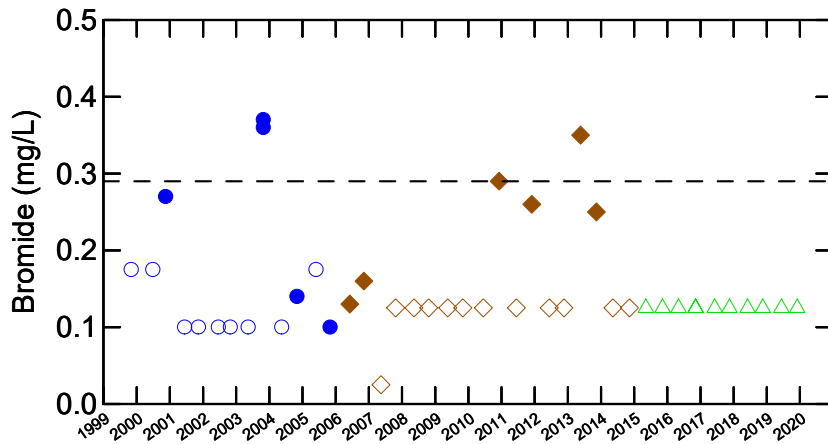
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

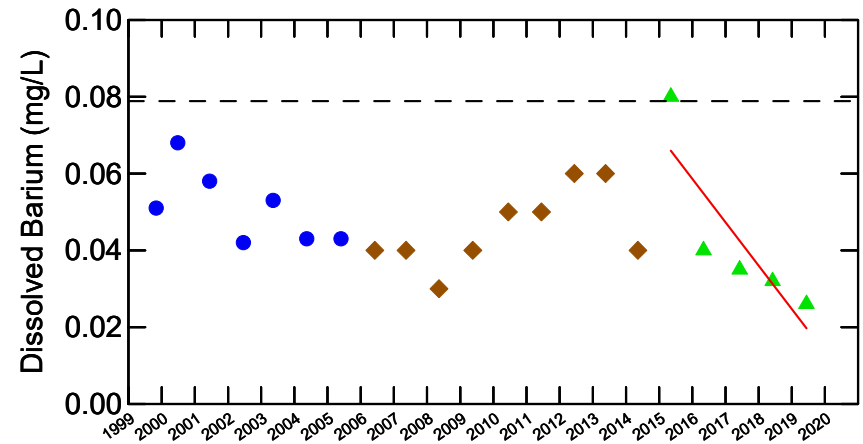
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



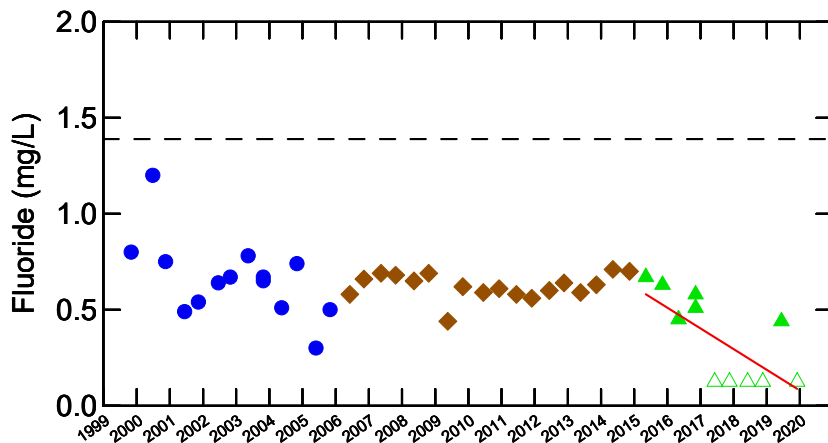
WELL TW46-991
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



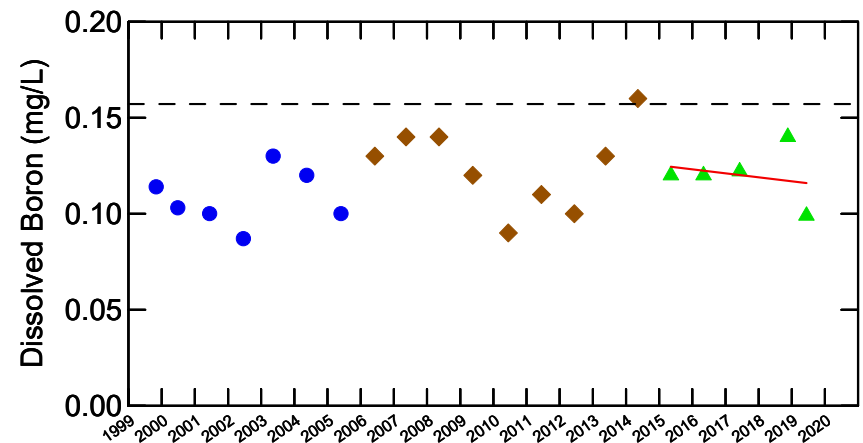
No detected results



No trend



Decreasing trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

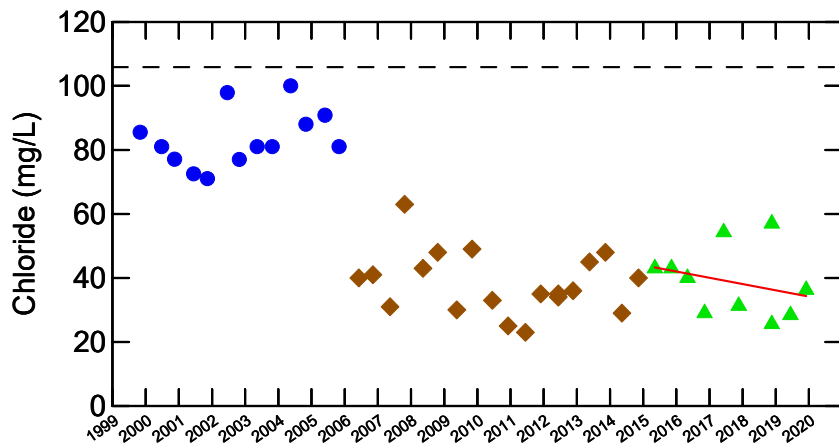
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

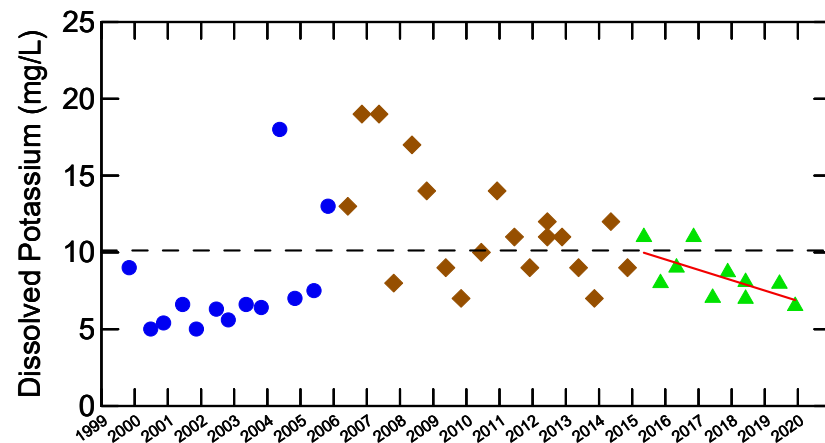
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



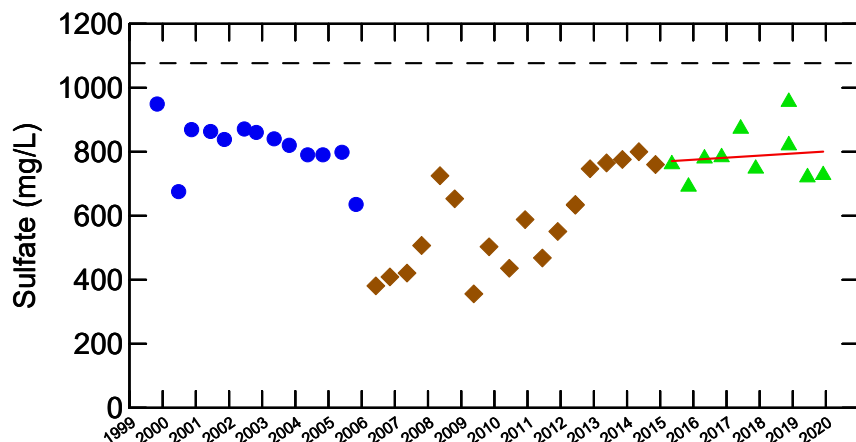
WELL TW46-991
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



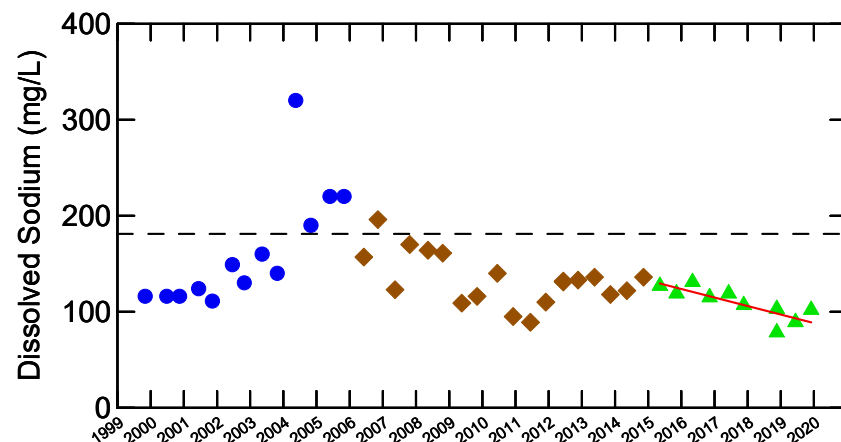
No trend



Decreasing trend



No trend



Decreasing trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

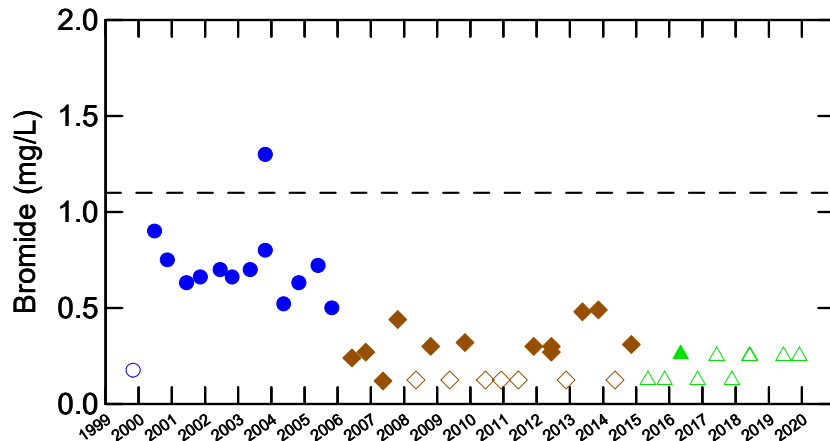
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

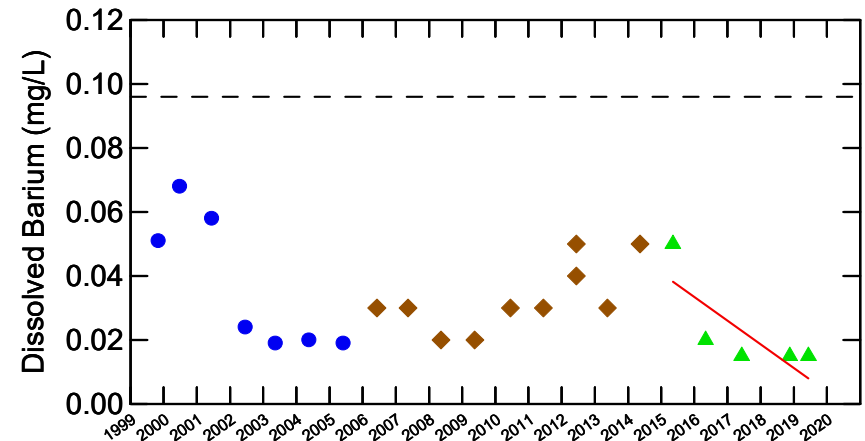
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



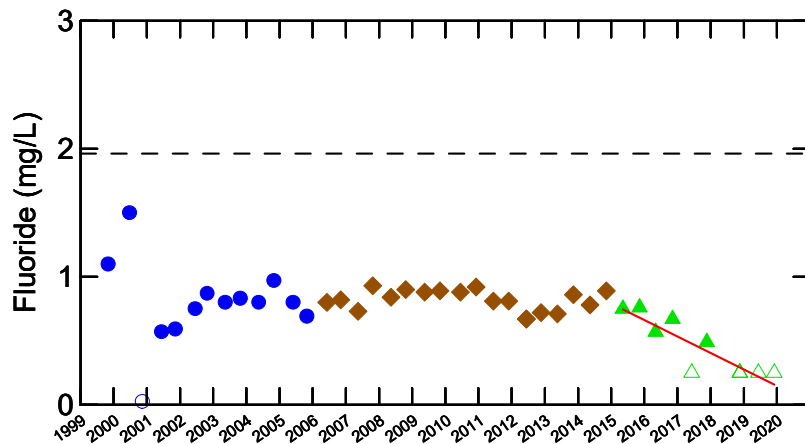
WELL TW46-99S
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



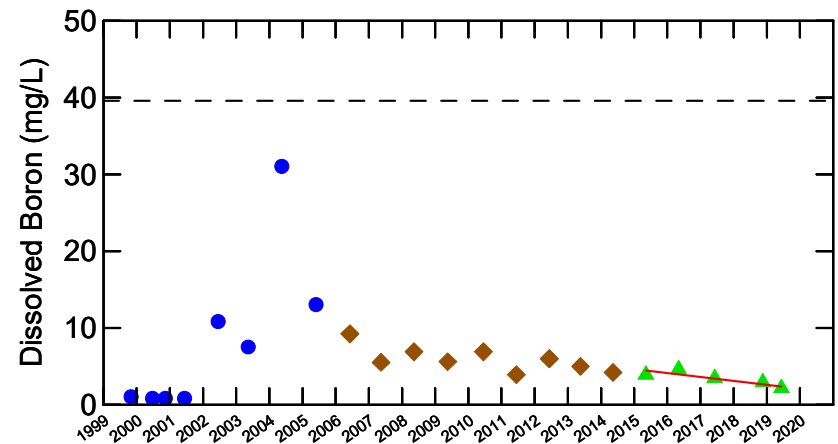
Over 50% non-detect



No trend



Decreasing trend



Decreasing trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

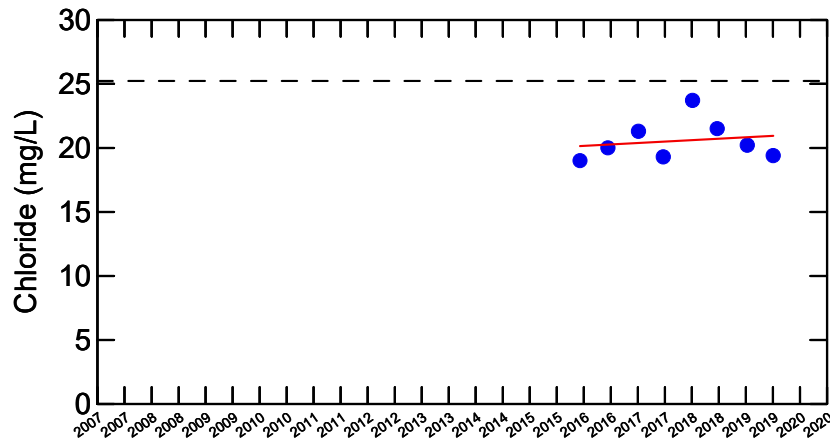
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

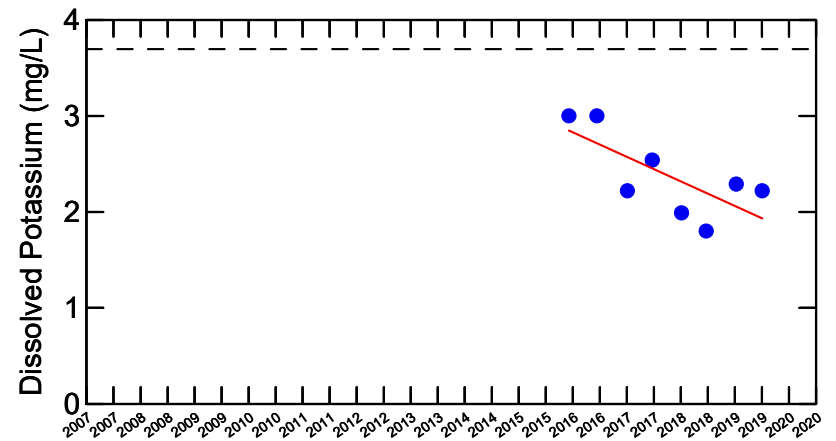
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



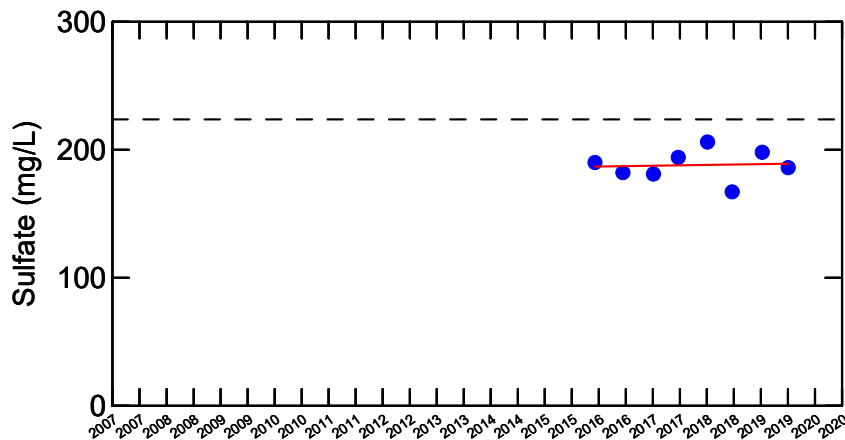
WELL TW46-99S
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



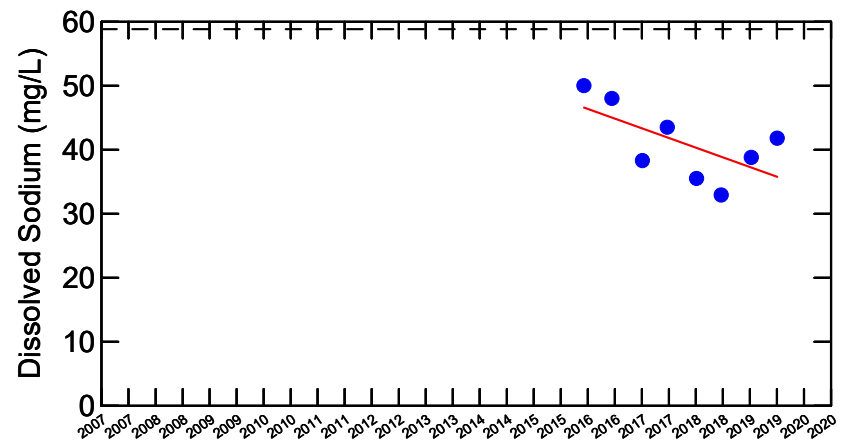
No trend



Decreasing trend



No trend



No trend

Legend:

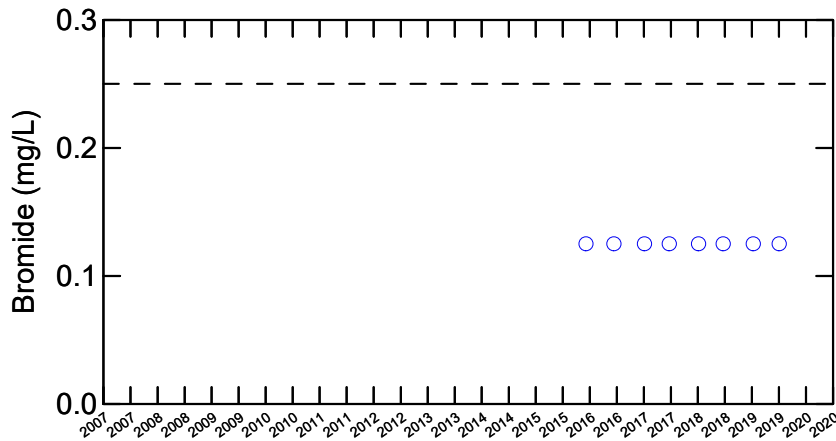
- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

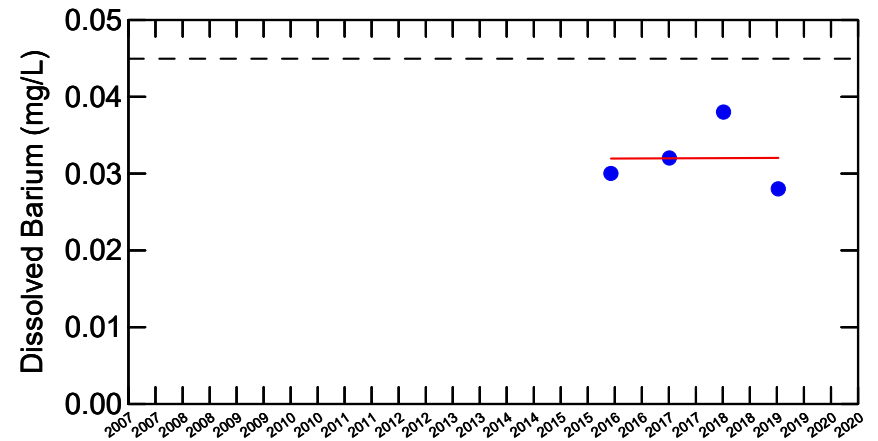
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



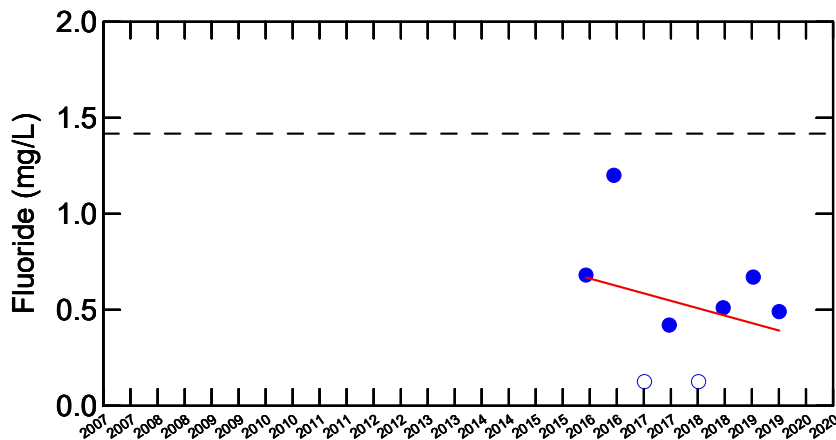
WELL TW48-16S
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



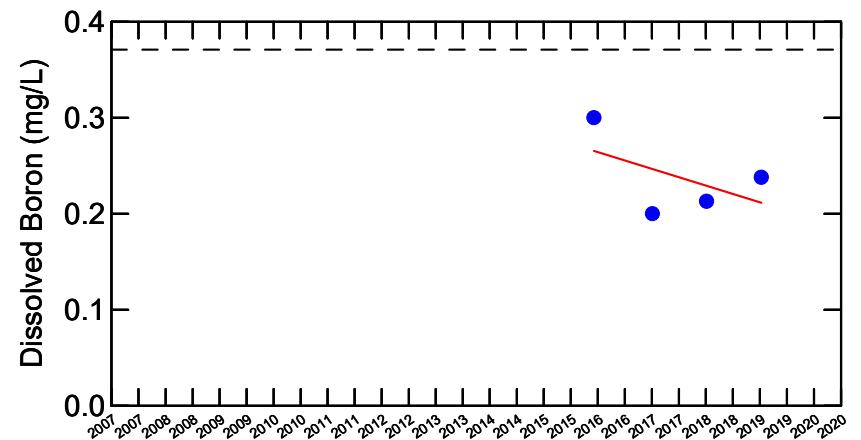
No detected results



No trend



No trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

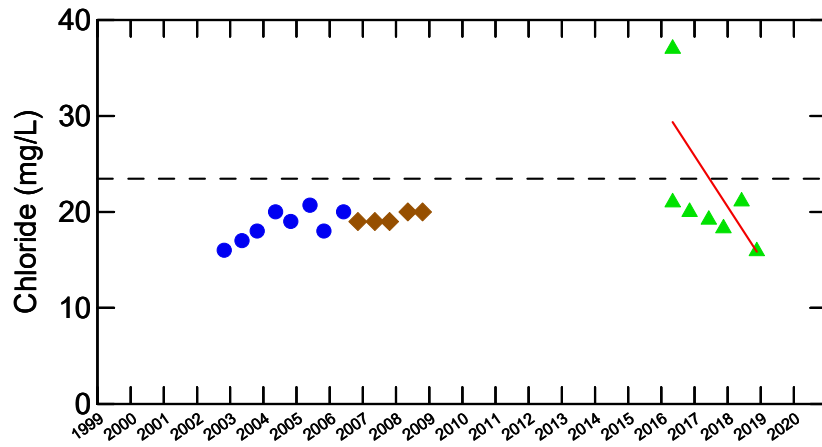
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

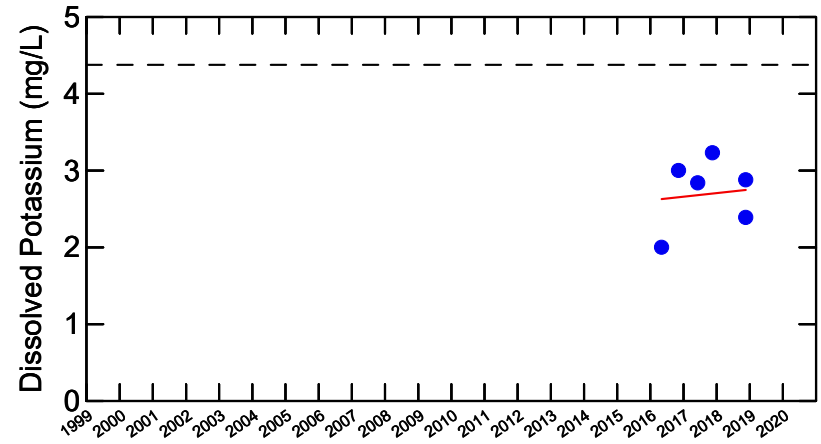
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



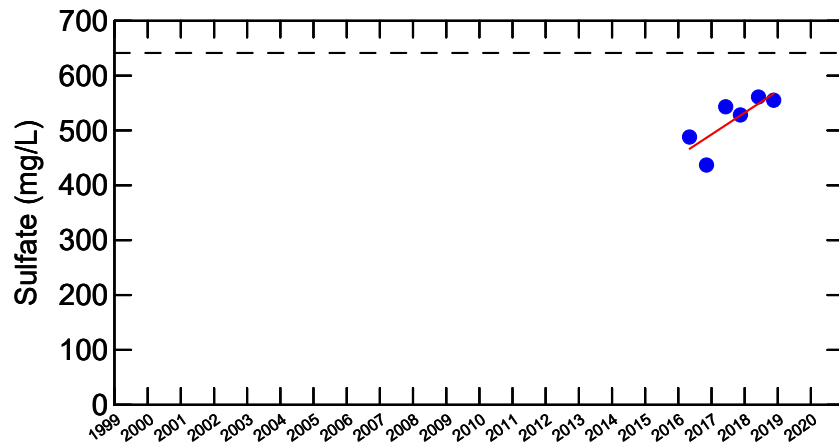
WELL TW48-16S
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



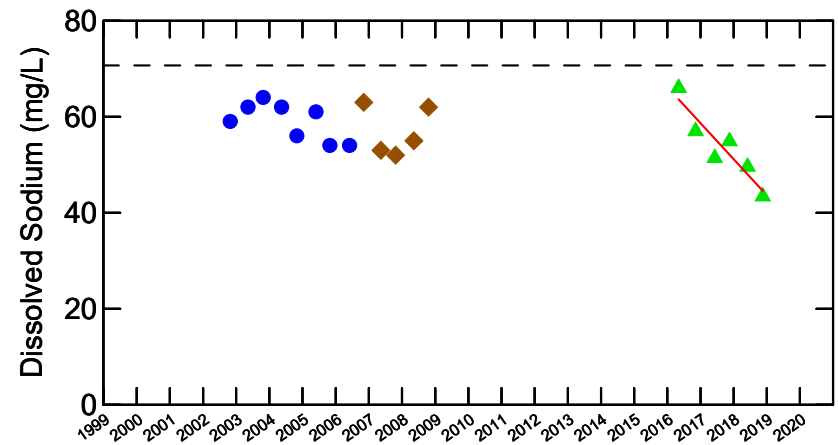
Decreasing trend



No trend



Increasing trend



Decreasing trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

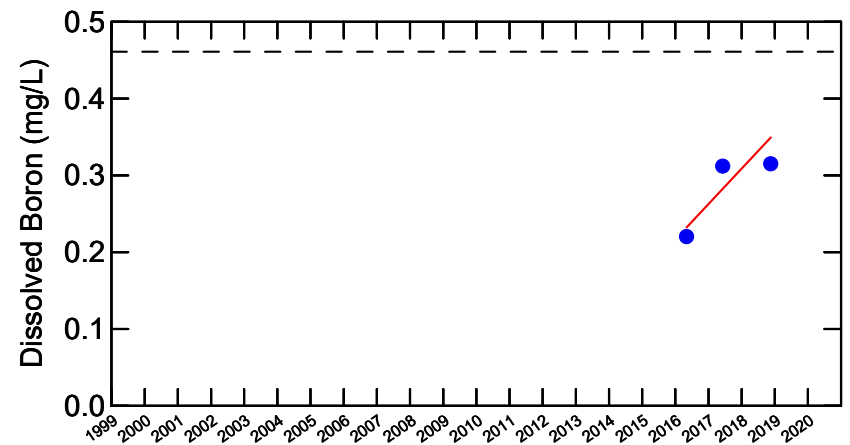
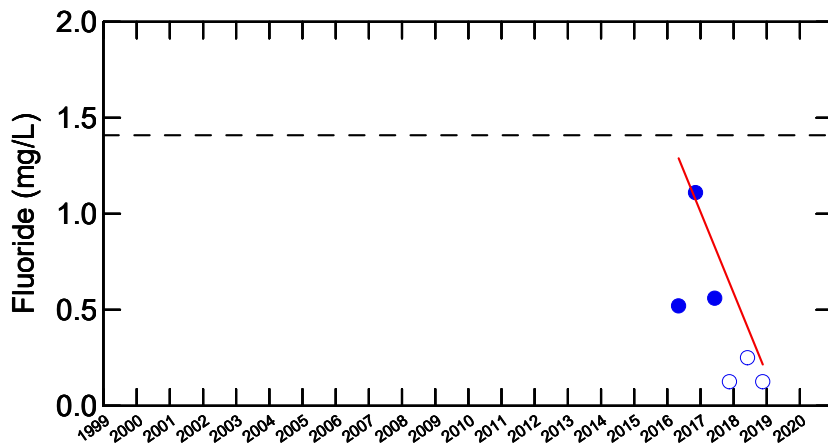
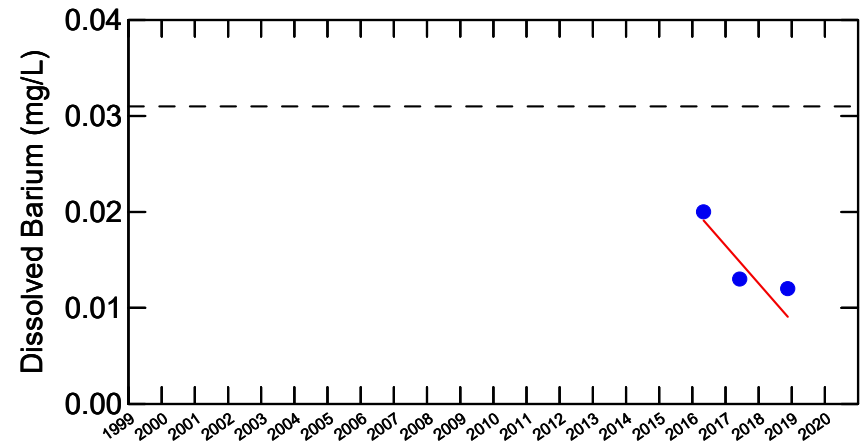
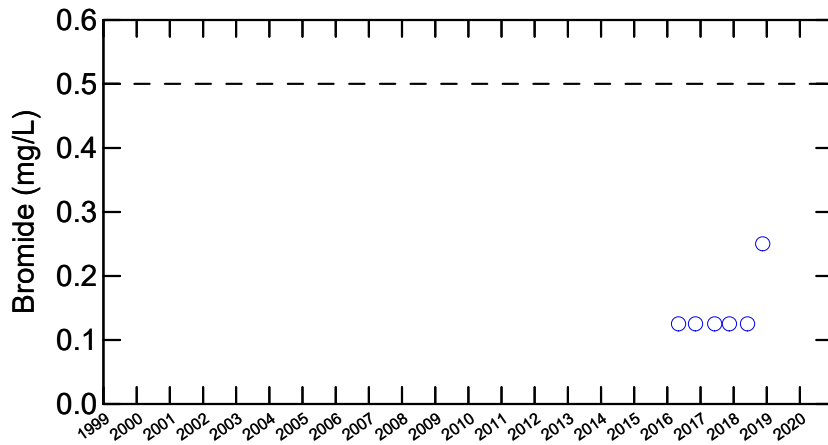
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



WELL TW50-02A
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

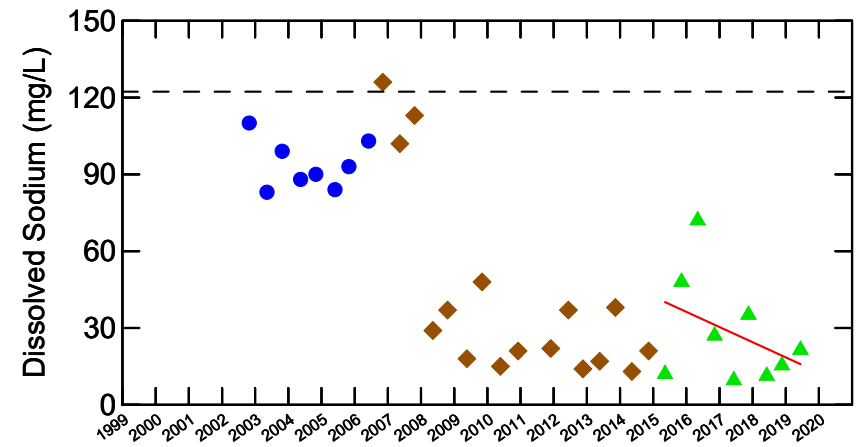
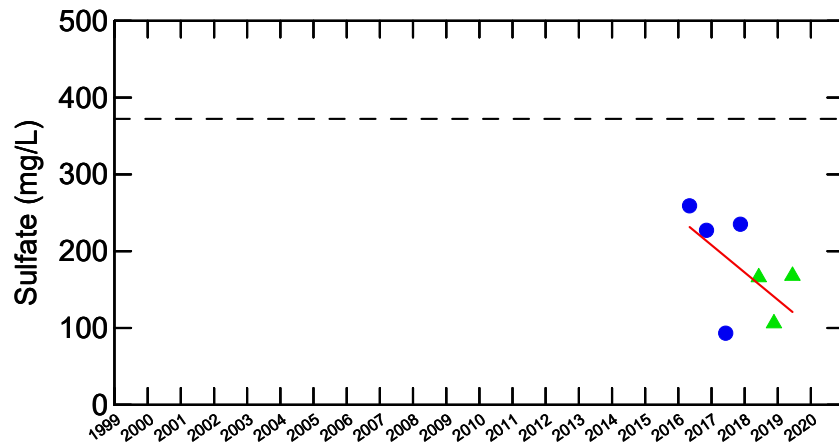
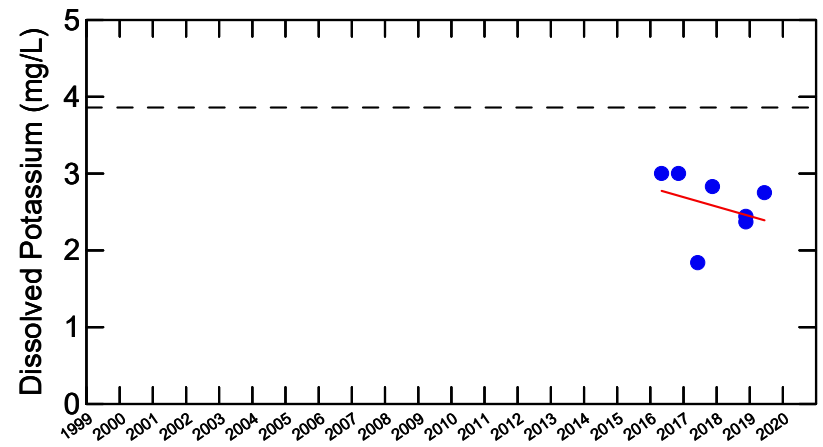
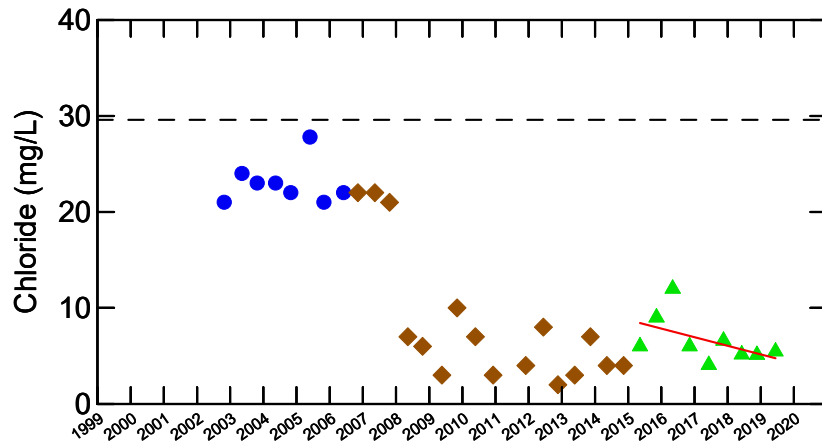
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



WELL TW50-02A
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

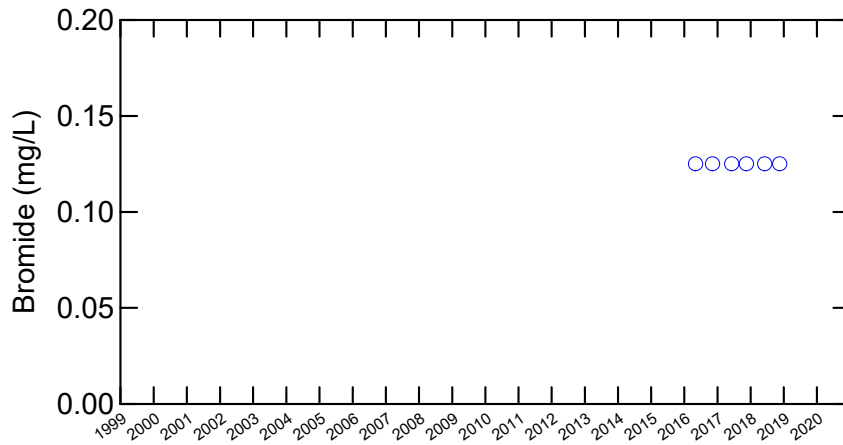
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

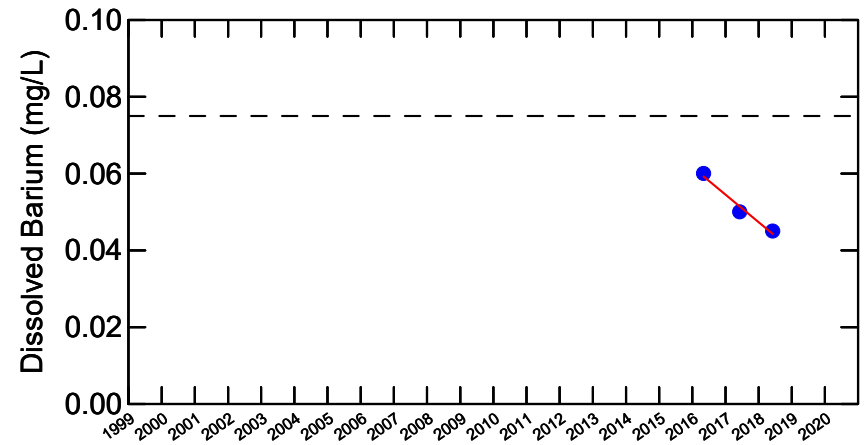
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



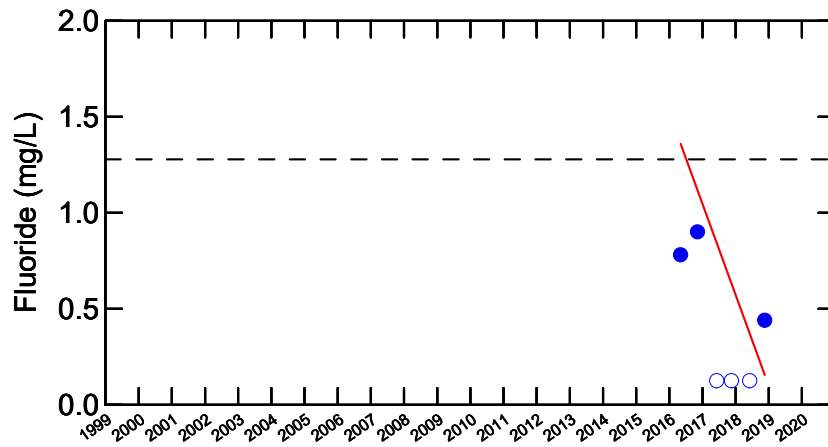
WELL TW50-02B
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



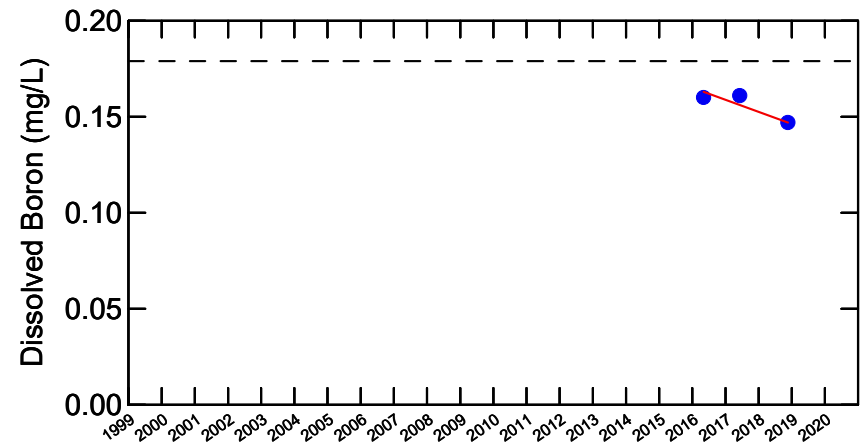
No detected results



No trend



No trend



No trend

Legend:

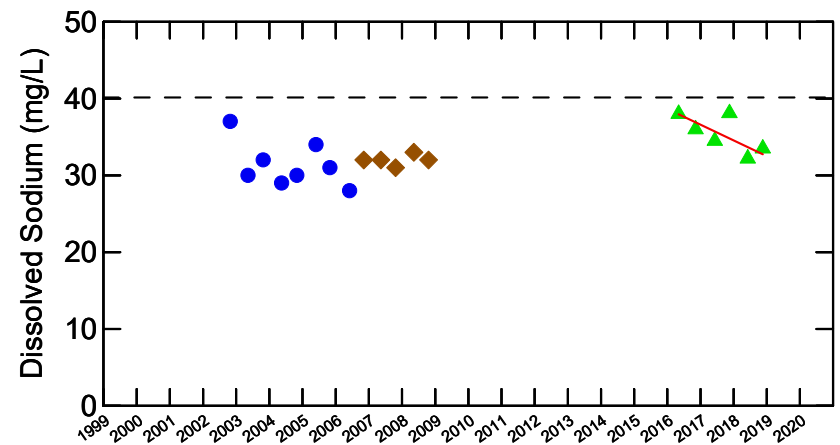
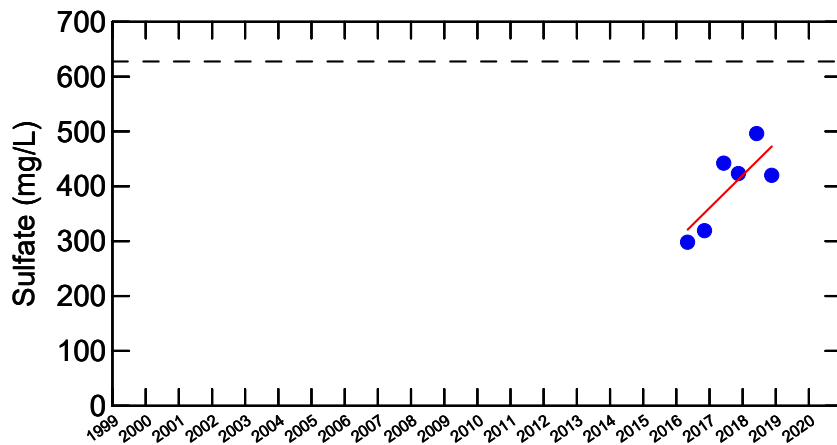
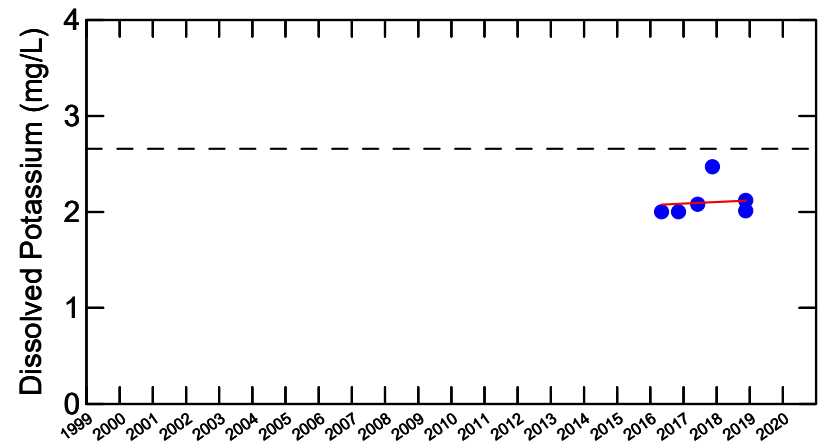
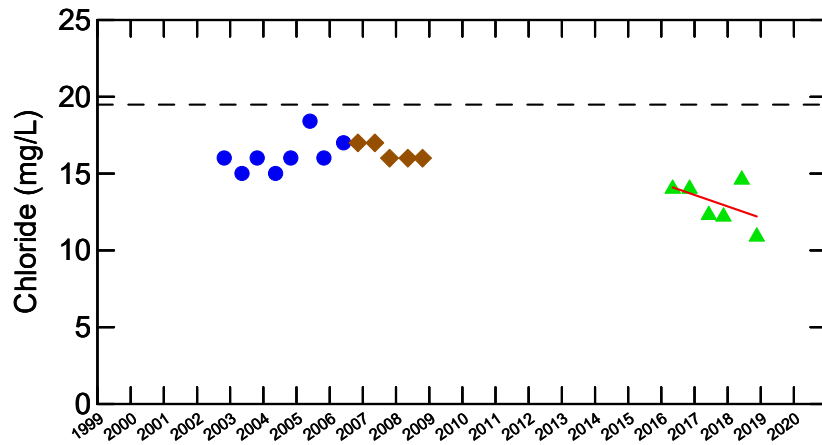
- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

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WELL TW51-02A
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

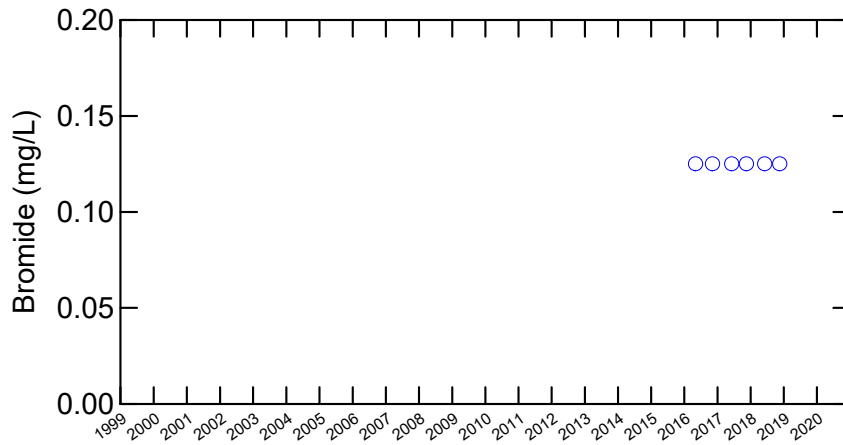
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

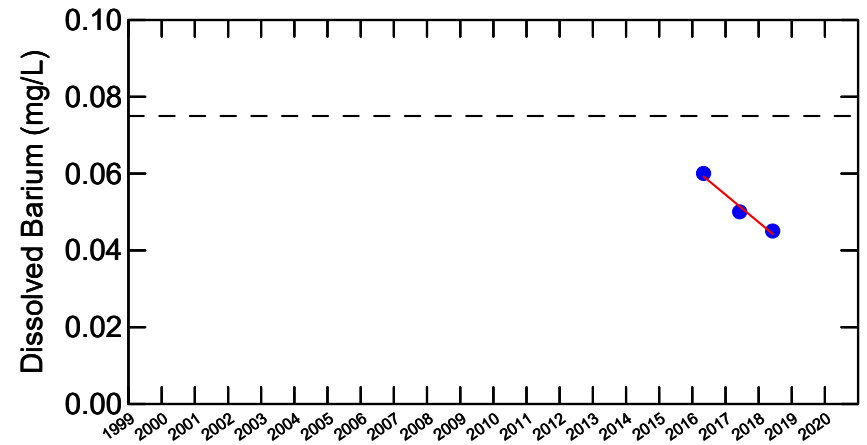
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



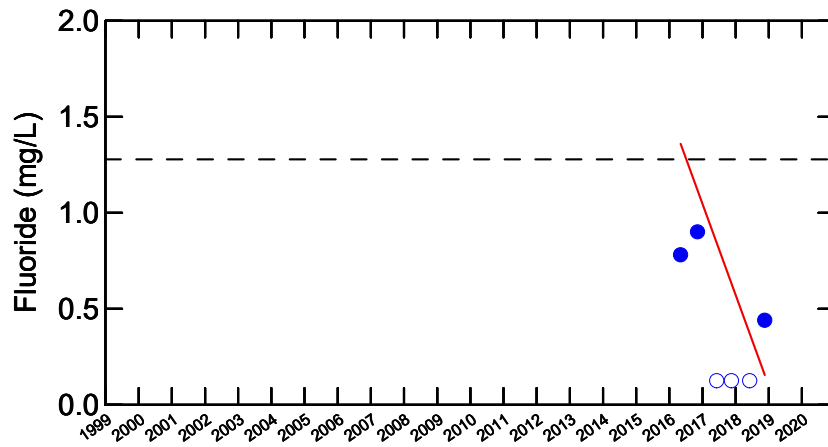
WELL TW51-02A
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



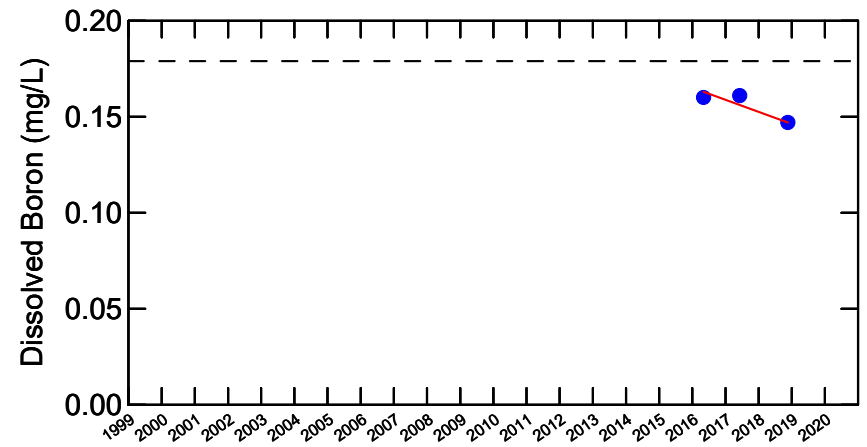
No detected results



No trend



No trend



No trend

Legend:

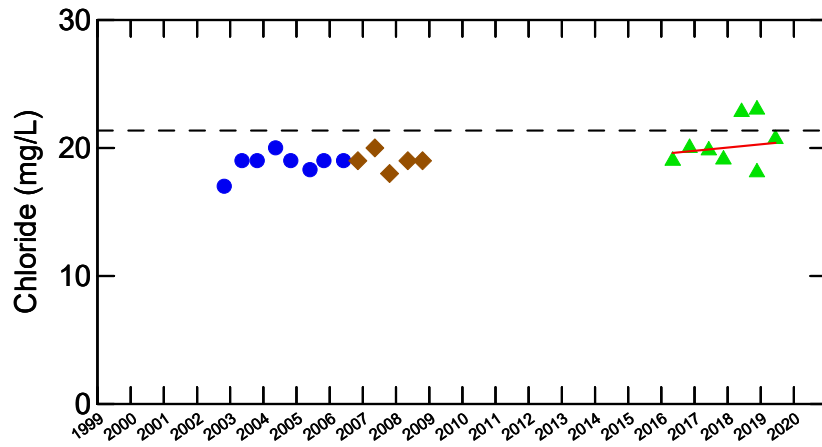
- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

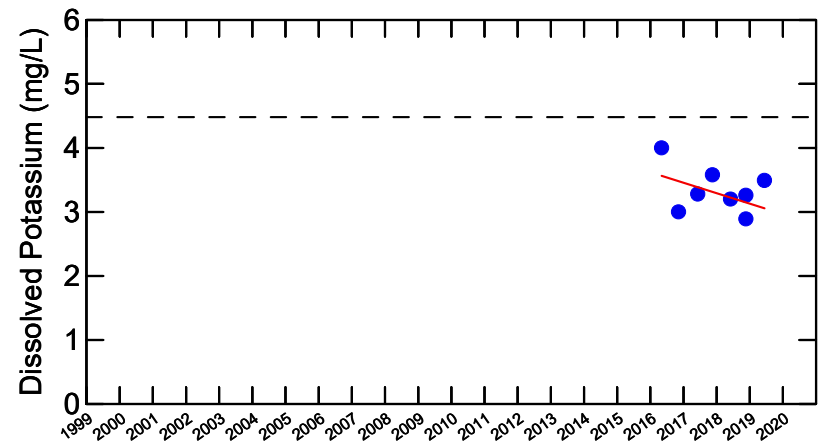
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



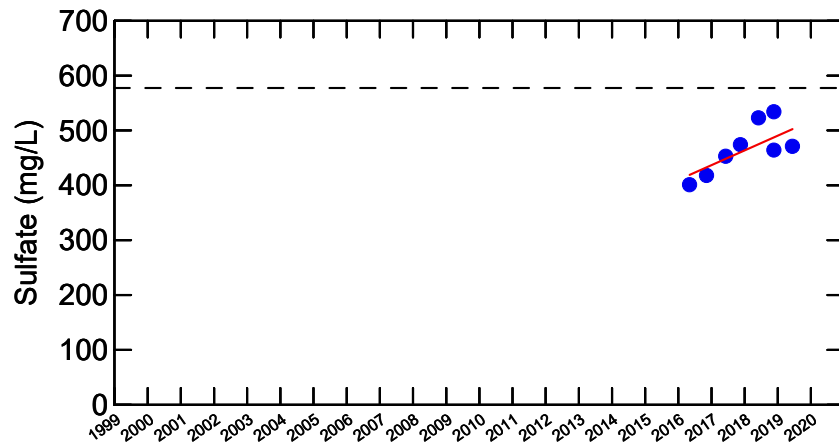
WELL TW51-02A
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



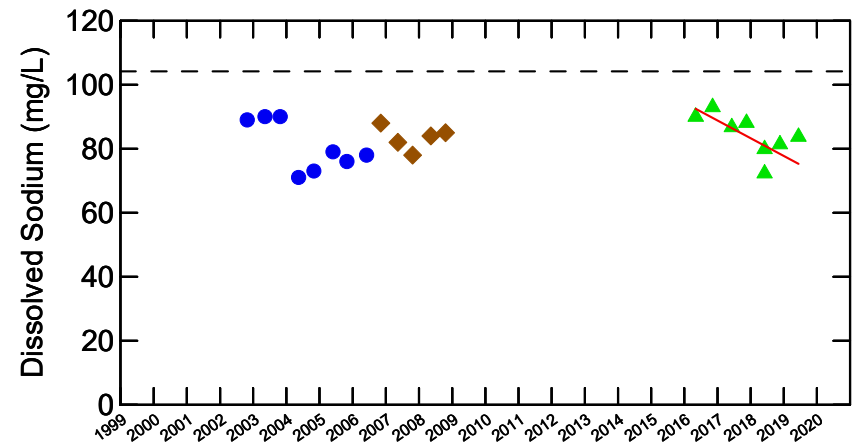
No trend



No trend



Increasing trend



Decreasing trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

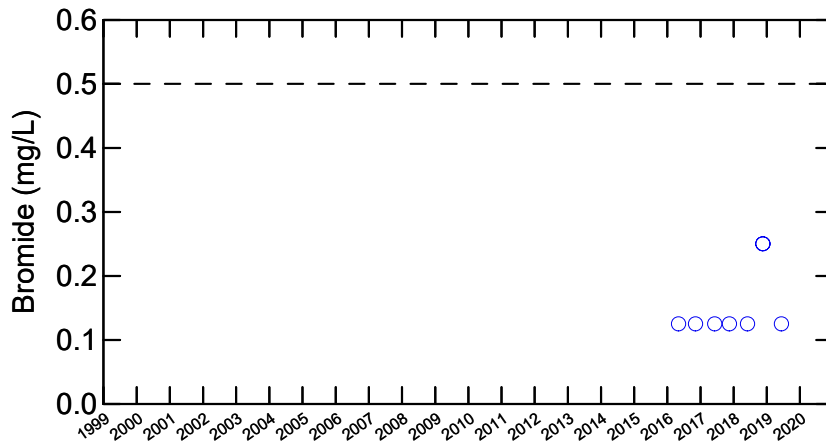
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

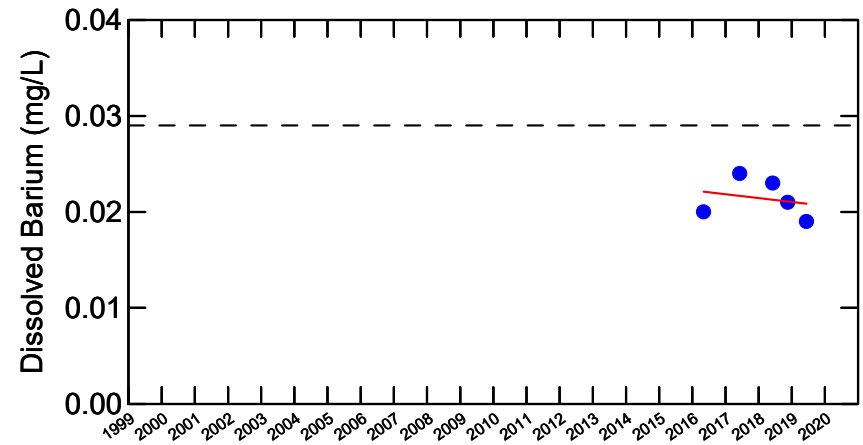
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



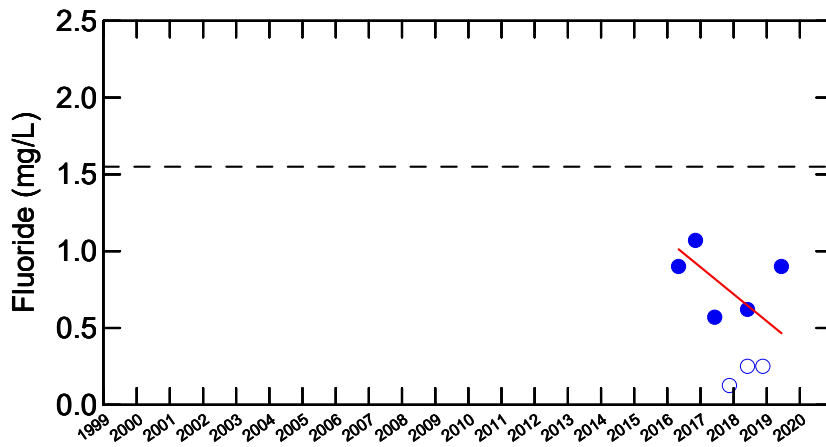
WELL TW51-02B
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



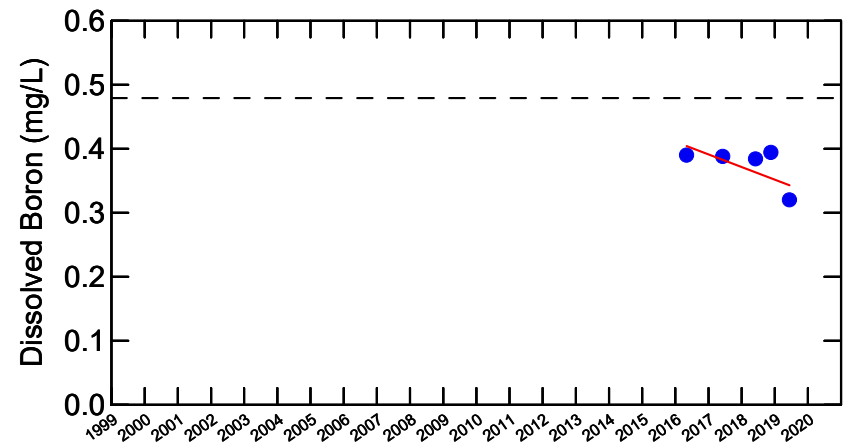
No detected results



No trend



No trend



No trend

Legend:

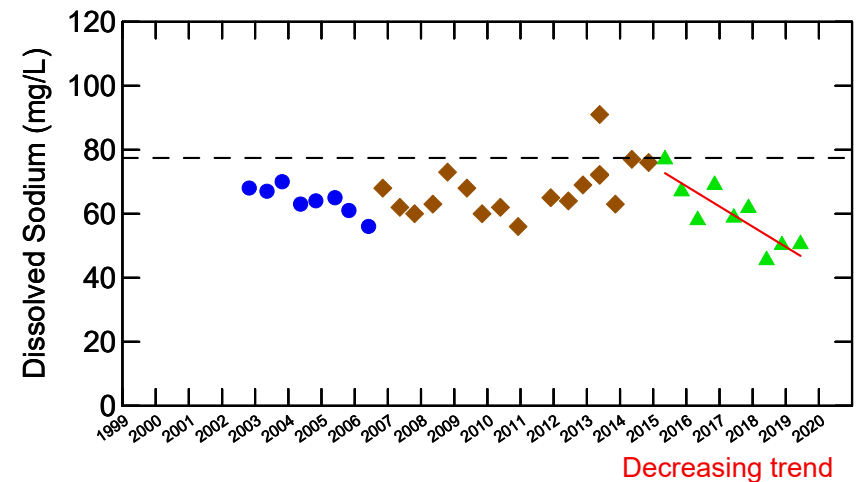
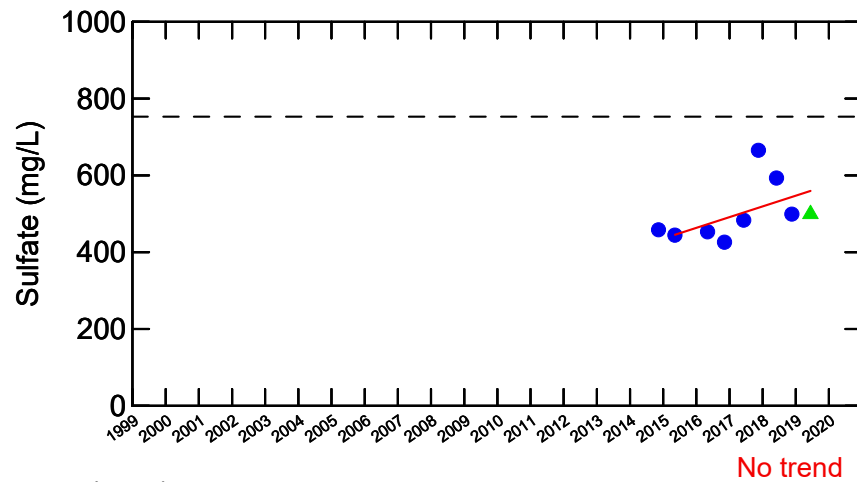
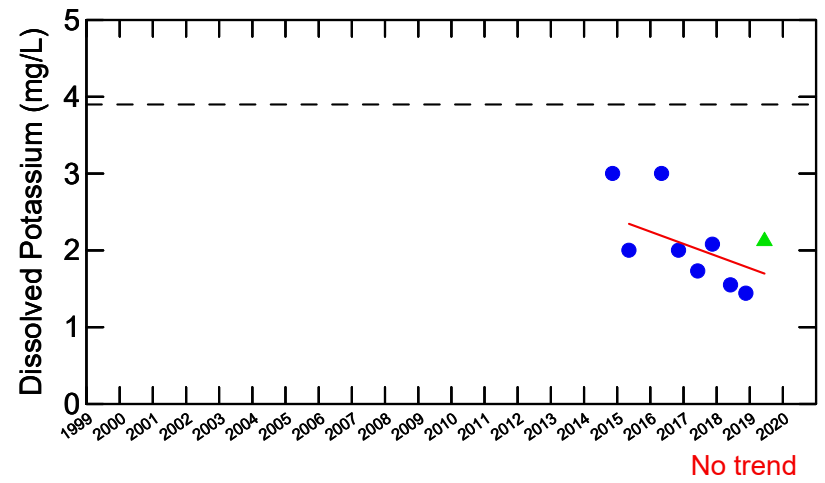
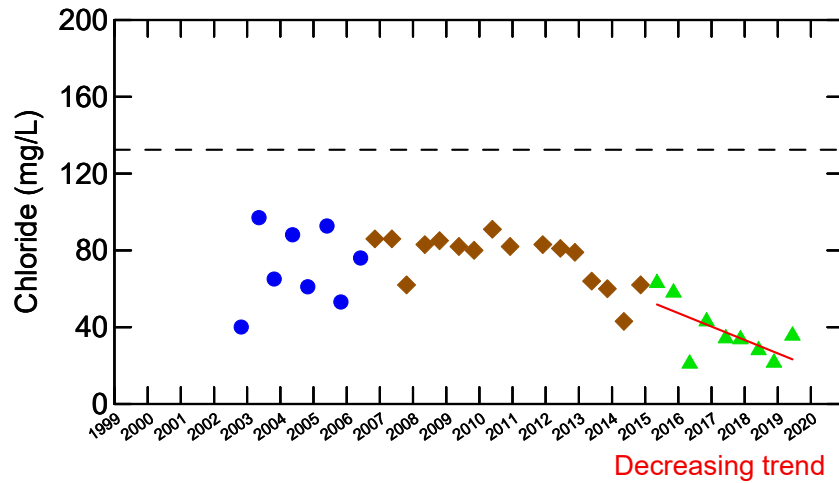
- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

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WELL TW51-02B
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

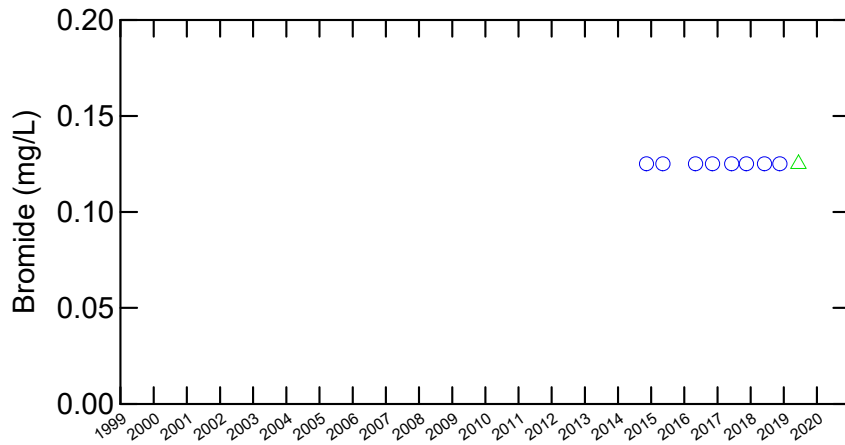
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

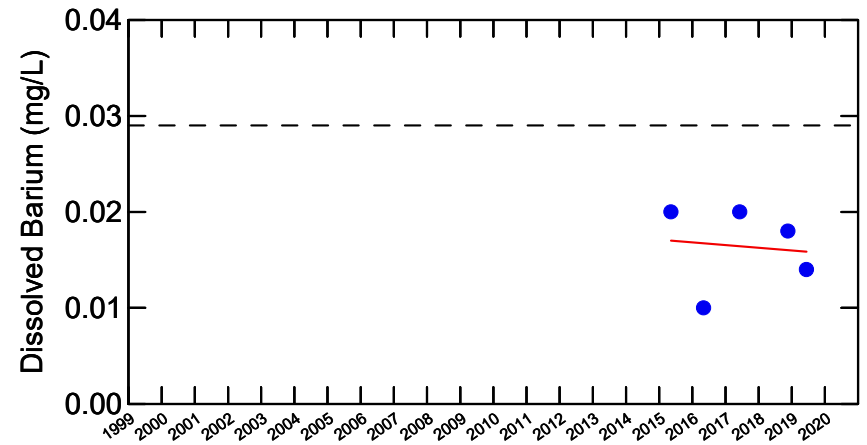
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



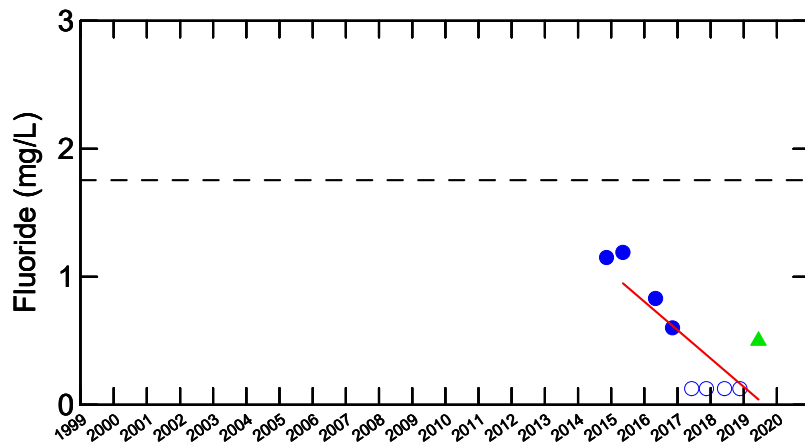
WELL TW52-02A
SHALLOW WELL (ACTIVE AQUITARD)
2019 GROUNDWATER MONITORING REPORT
CLEAN HARBORS CANADA, INC.
Lambton County, Ontario



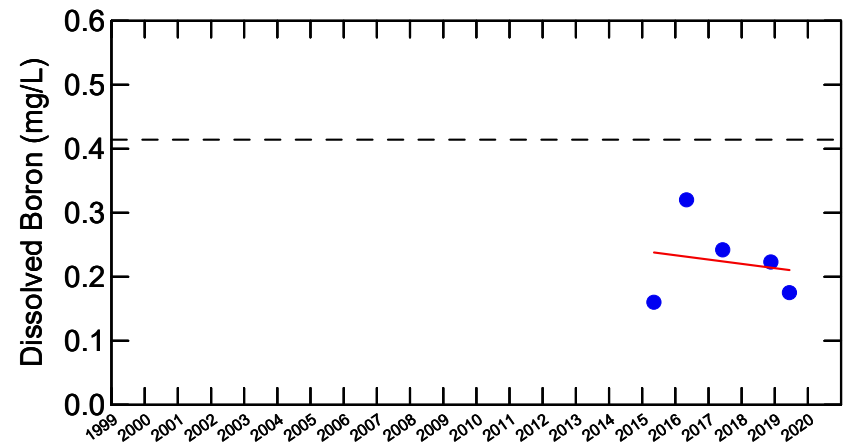
No detected results



No trend



Decreasing trend



No trend

Legend:

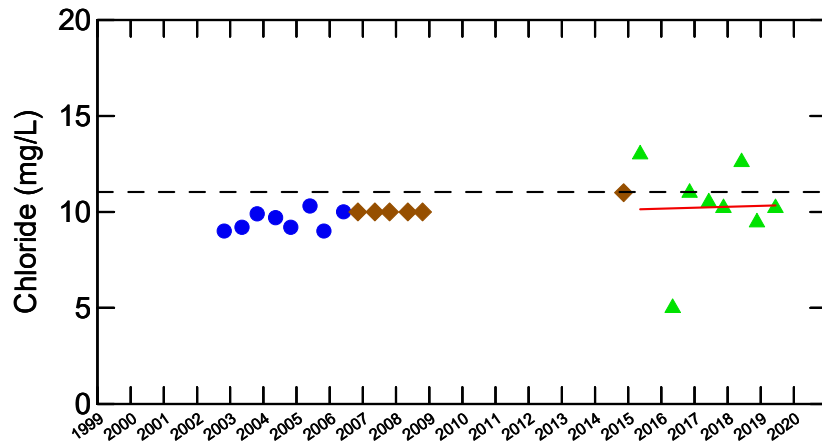
- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

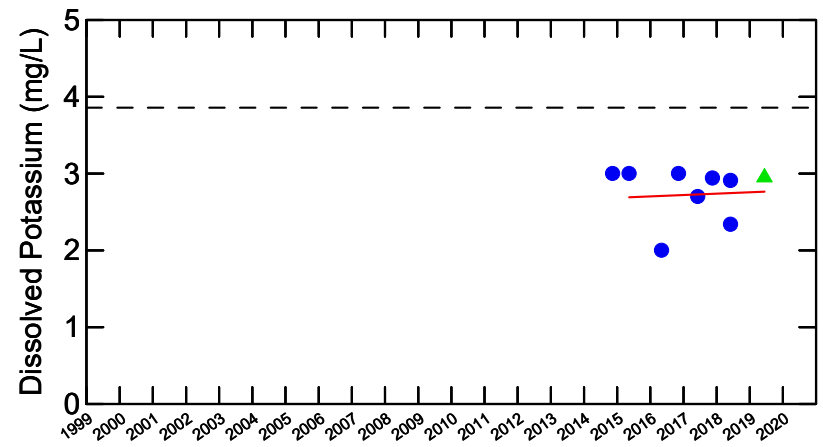
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
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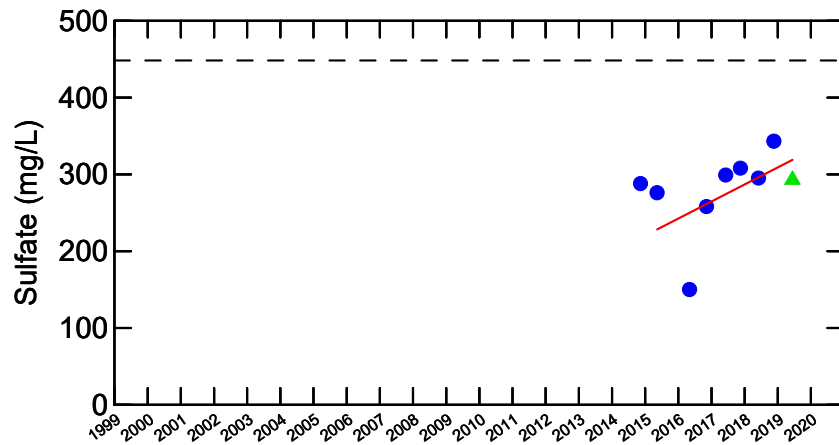
WELL TW52-02A
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



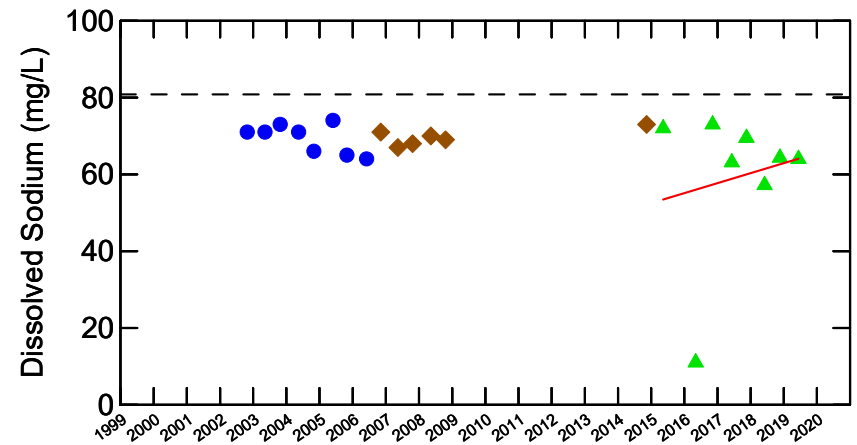
No trend



No trend



No trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

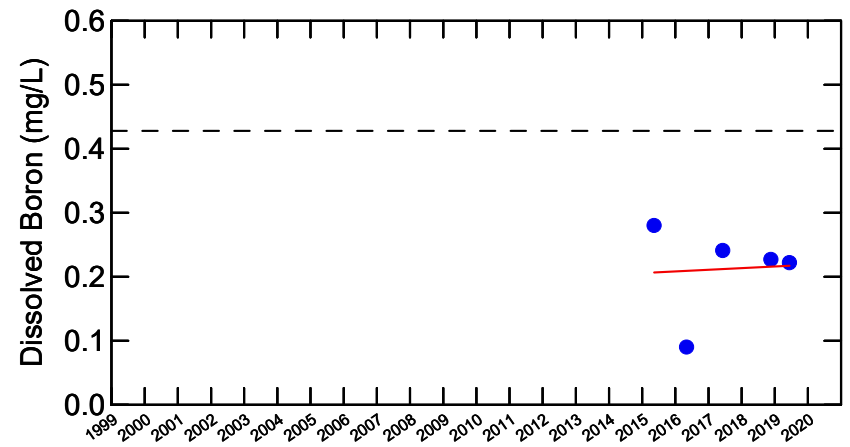
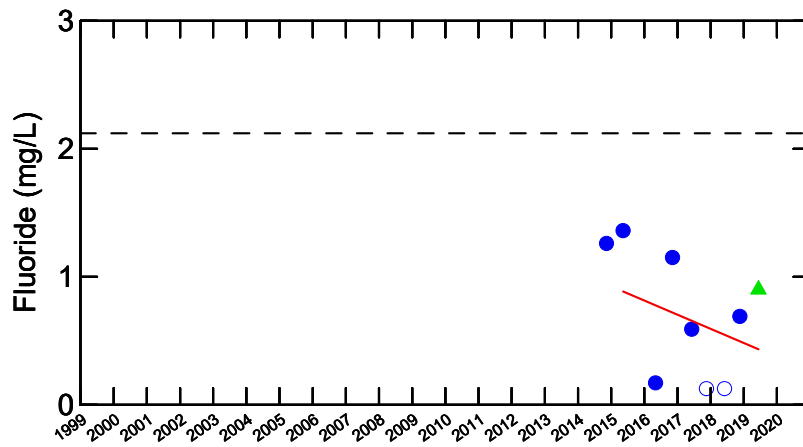
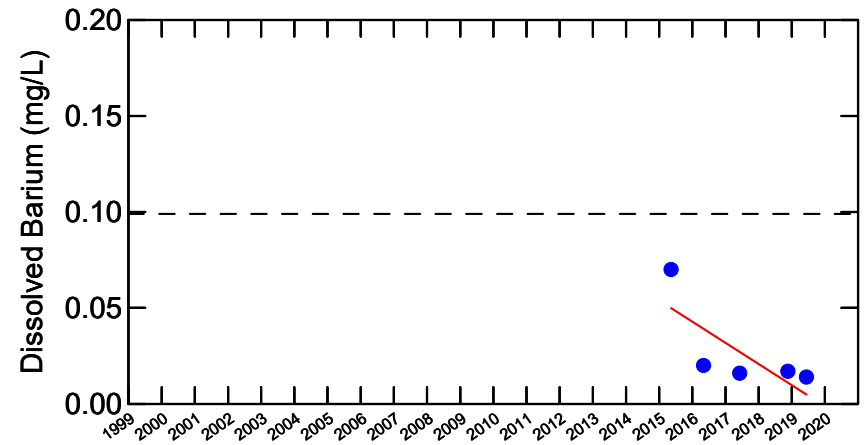
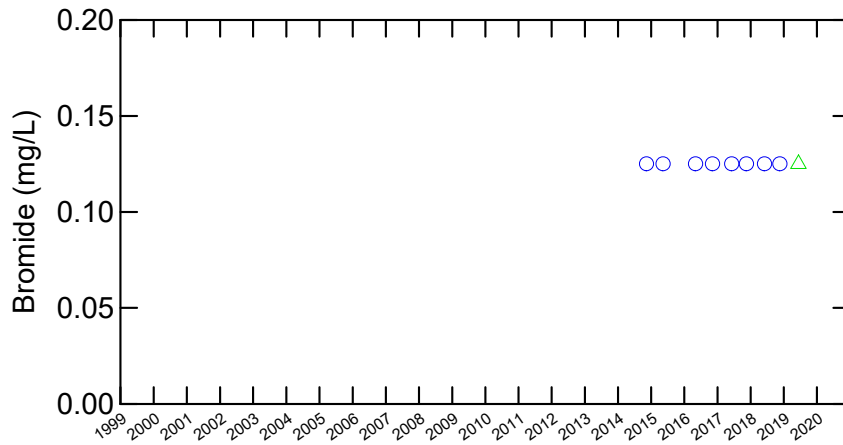
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

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WELL TW52-02B
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

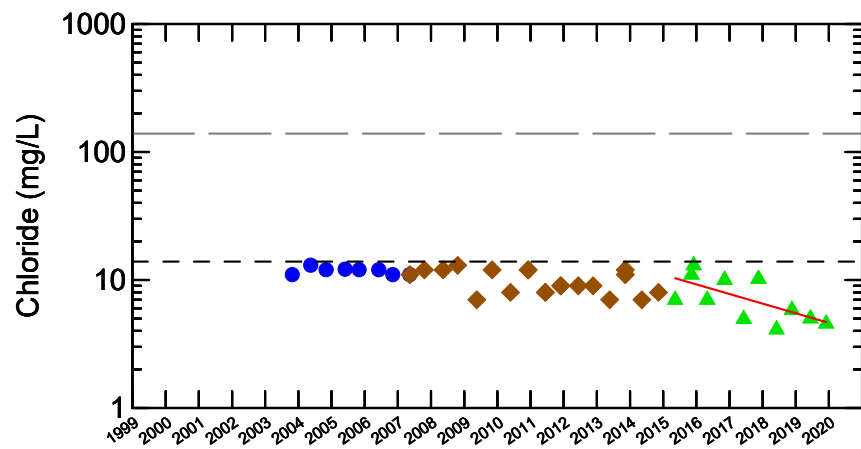
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

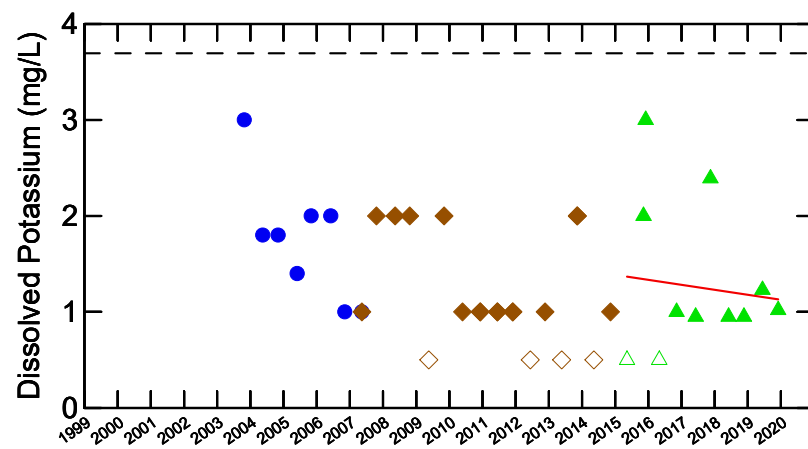
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
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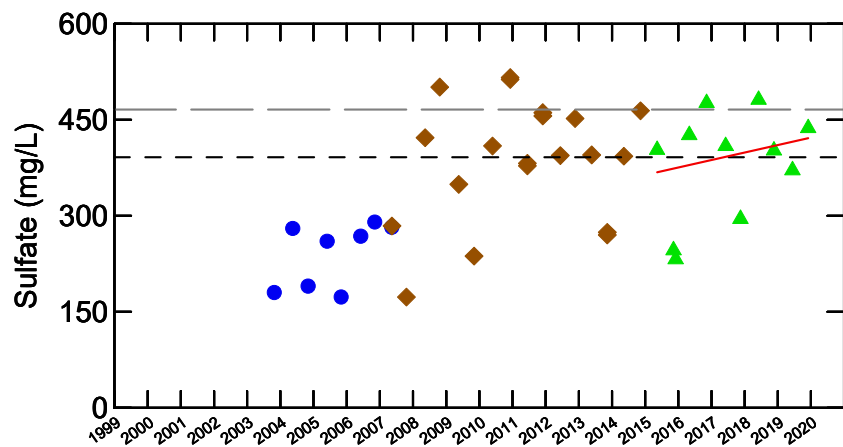
WELL TW52-02B
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



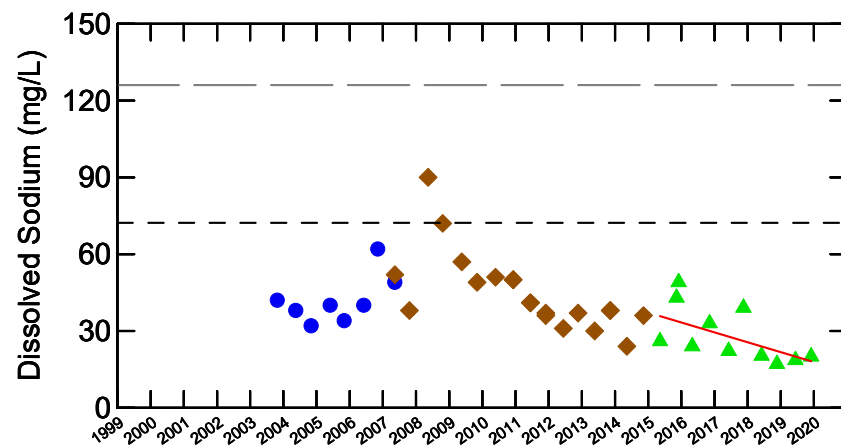
Decreasing trend



No trend



No trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

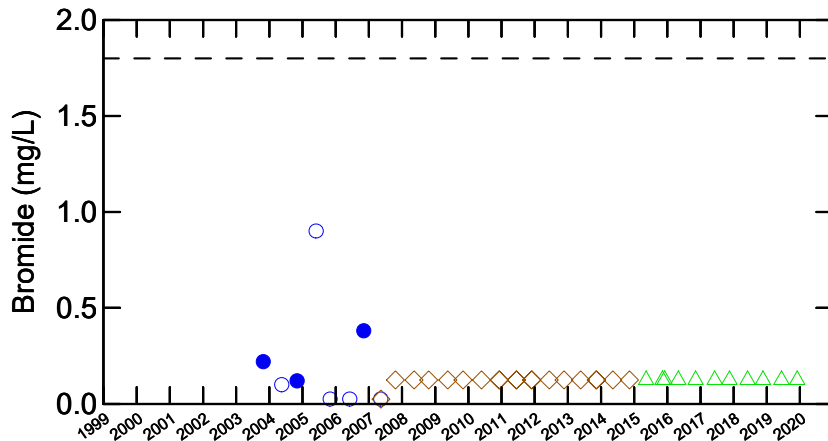
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

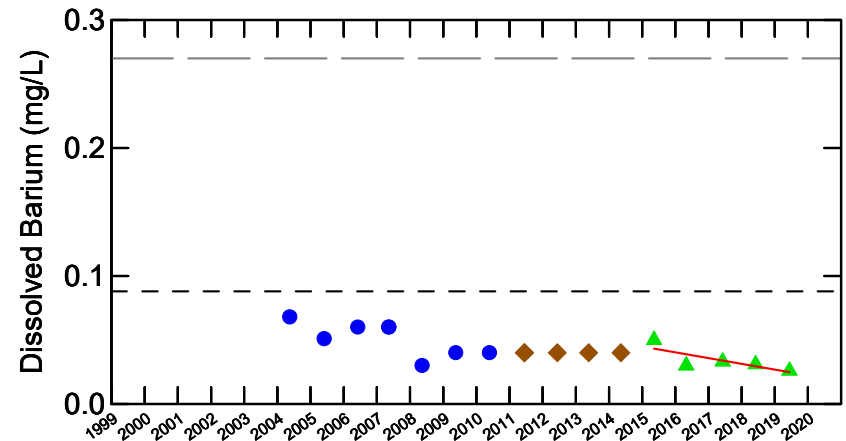
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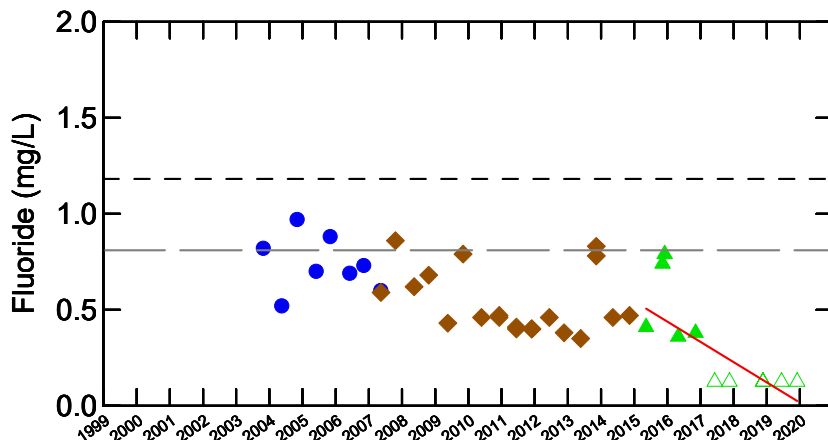
WELL TW53-03S
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



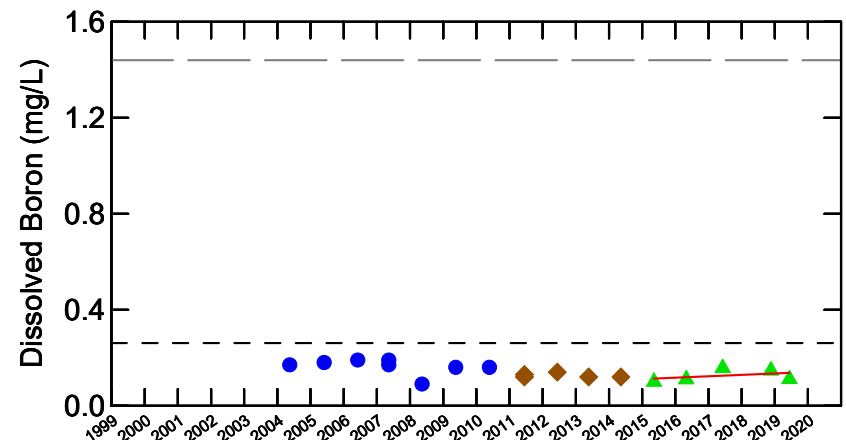
No detected results



No trend



Decreasing trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

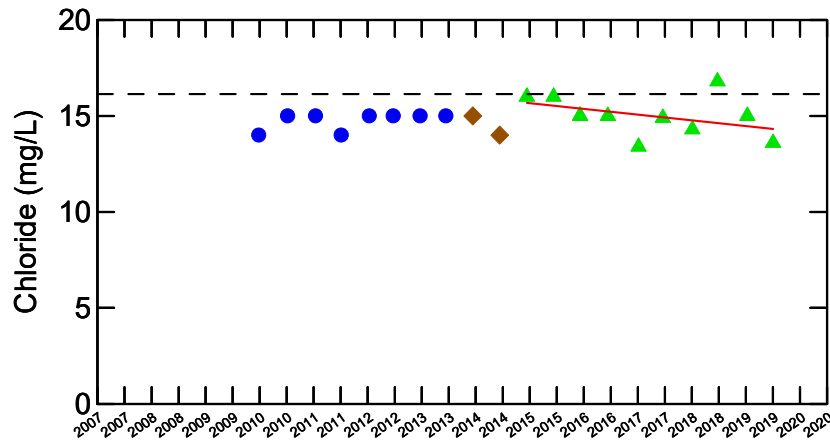
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

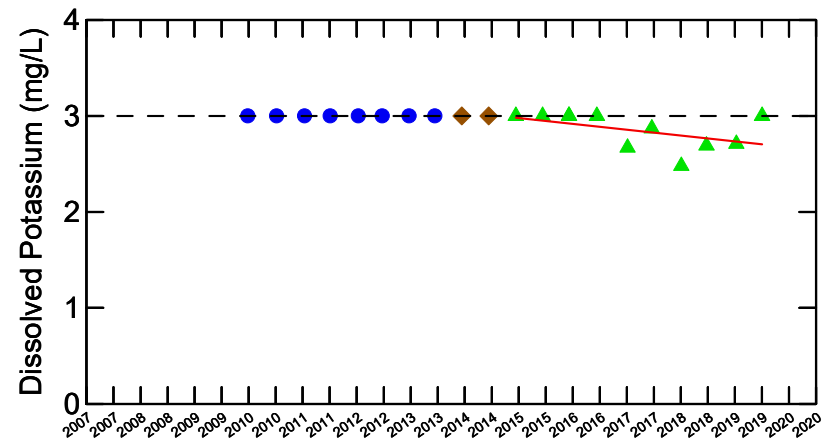
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



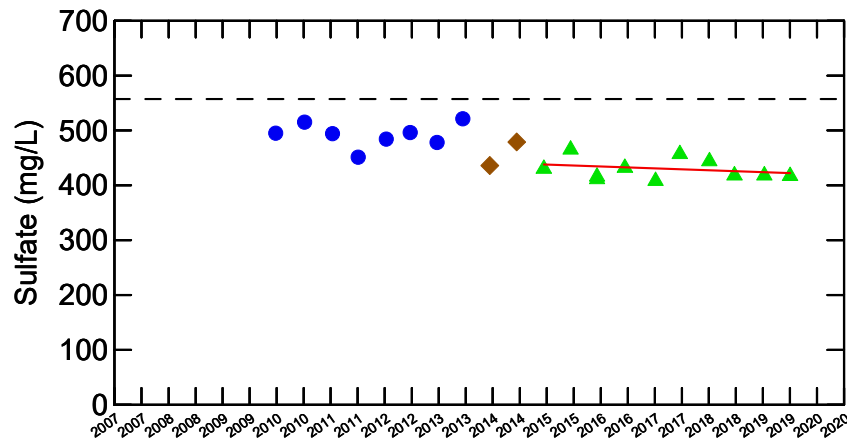
WELL TW53-03S
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



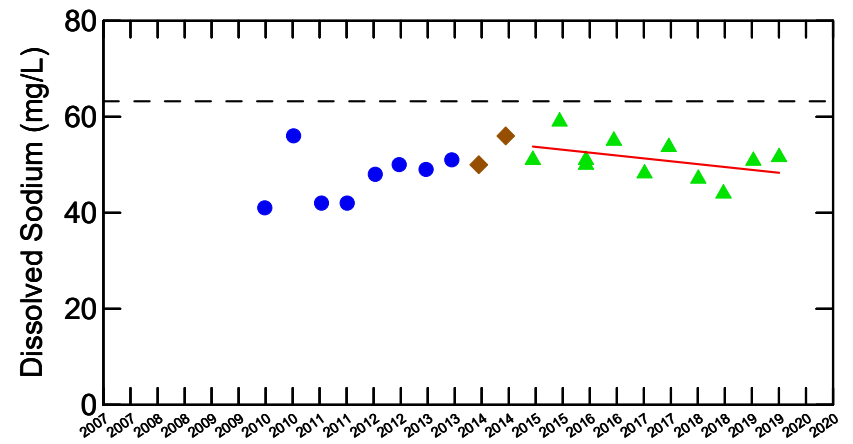
No trend



No trend



No trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

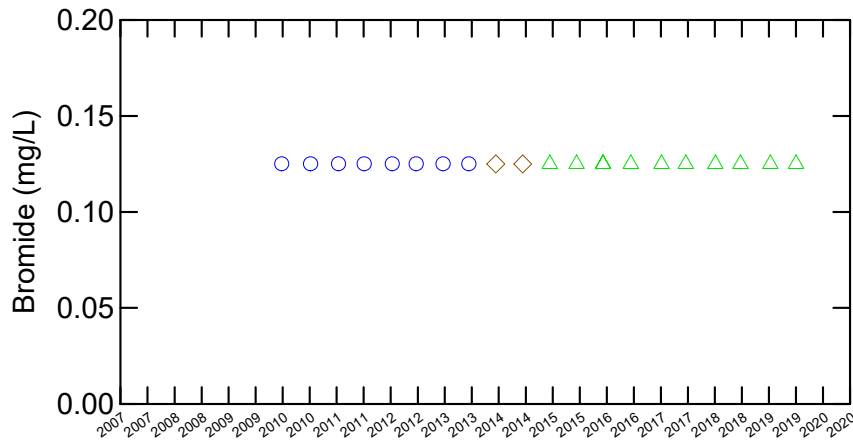
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

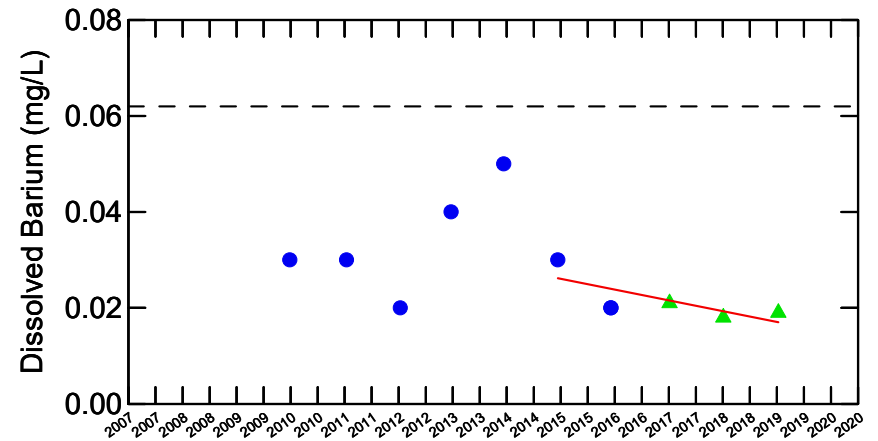
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



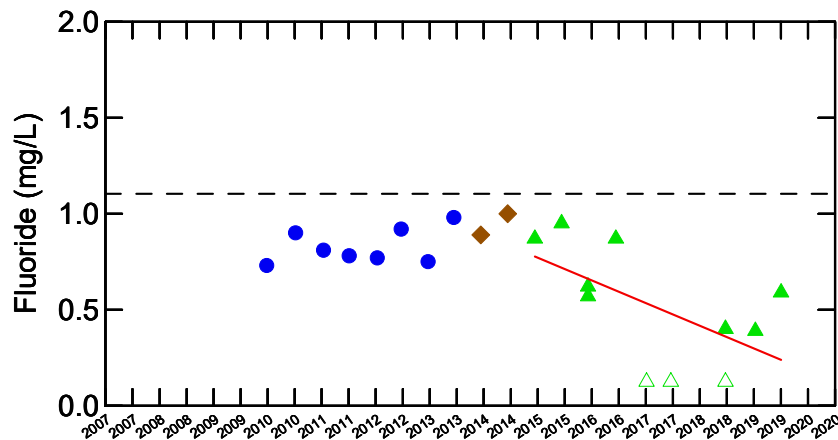
WELL TW55-09S
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



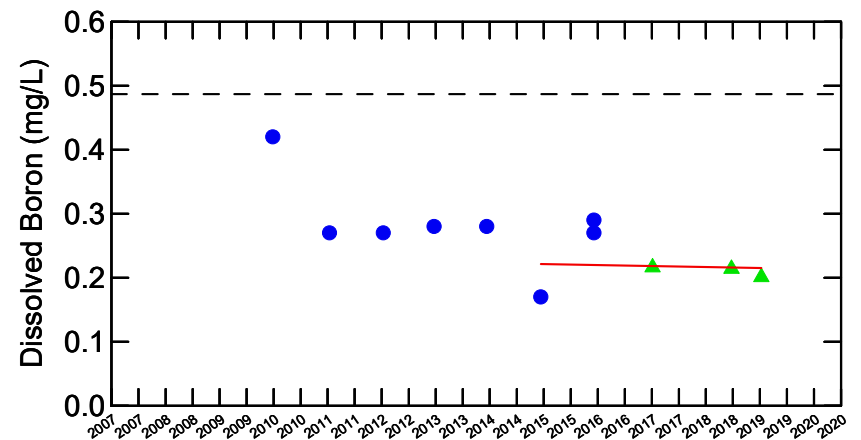
No detected results



No trend



No trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

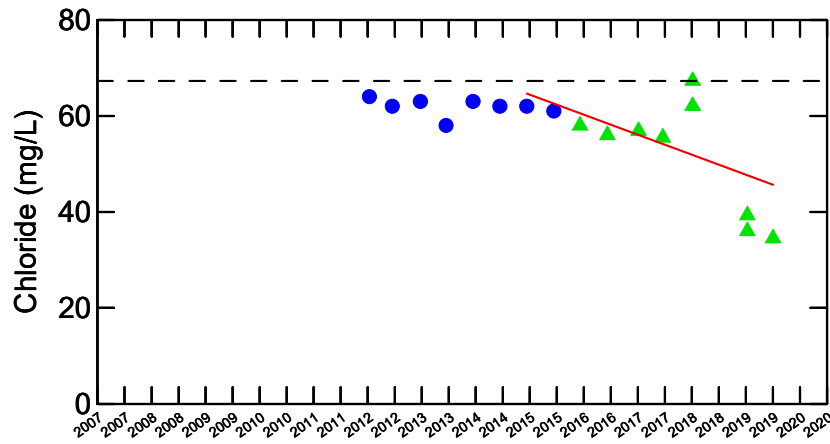
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

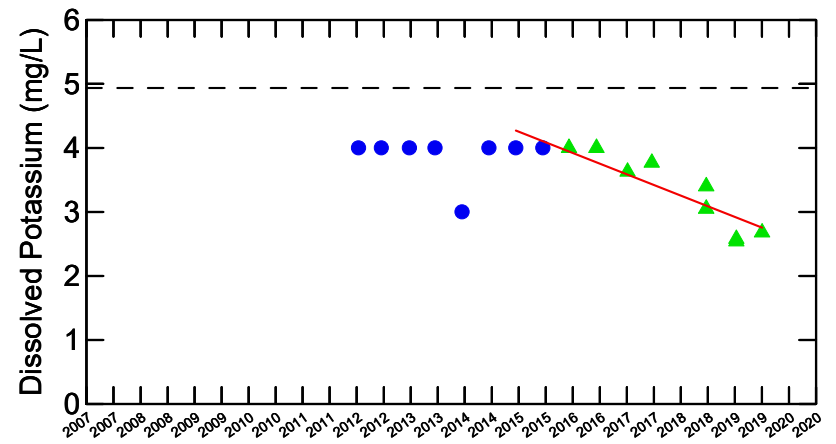
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



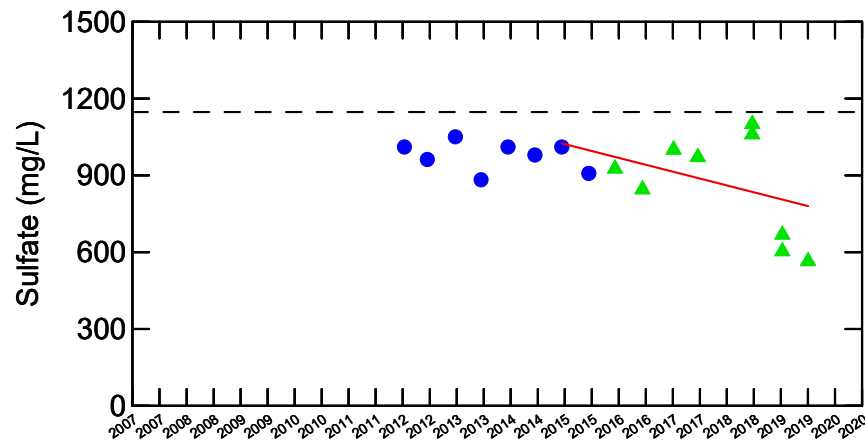
WELL TW55-09S
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



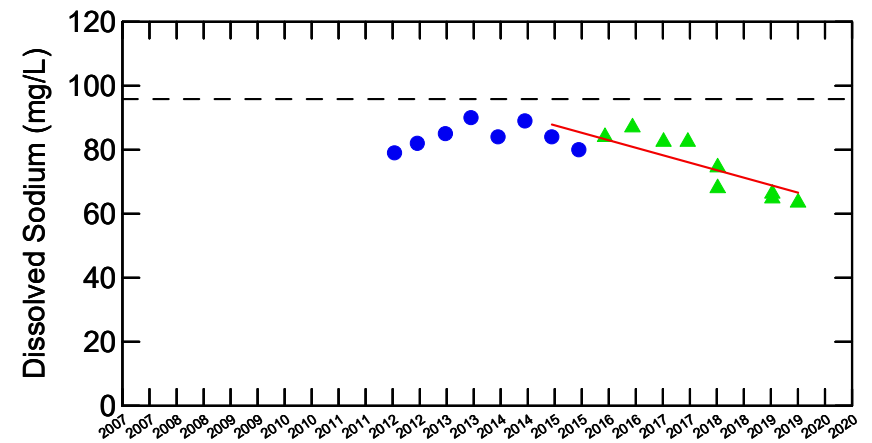
No trend



Decreasing trend



No trend



Decreasing trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

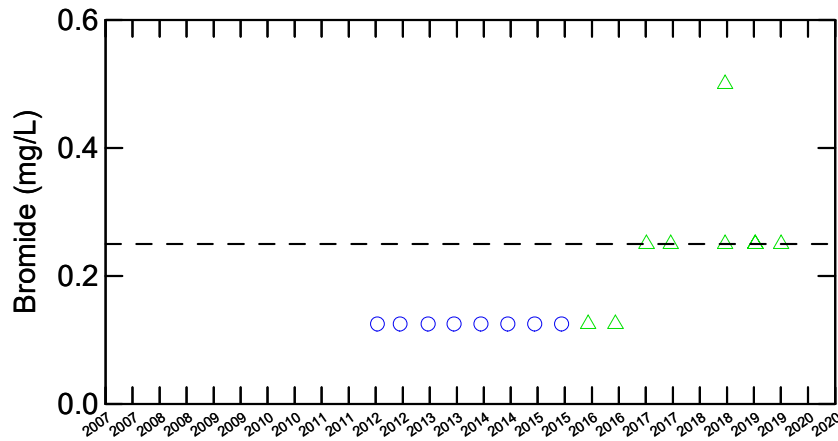
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

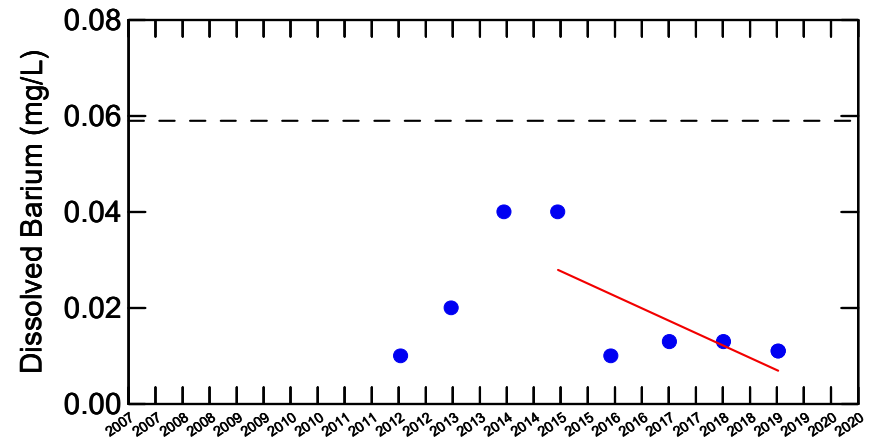
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
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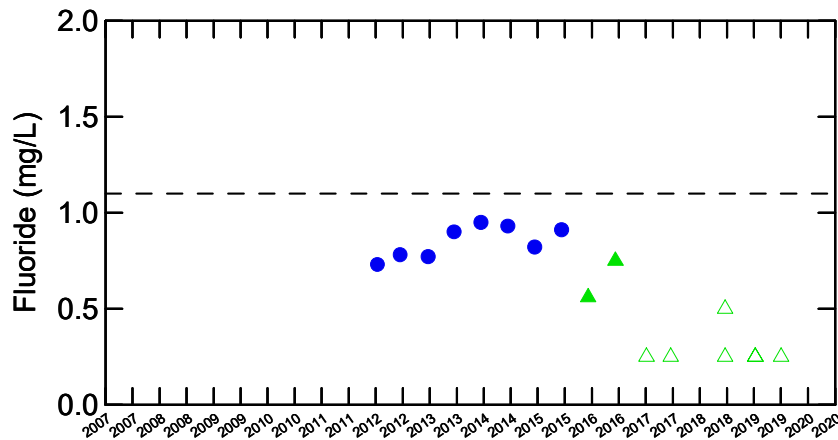
WELL TW56-11S
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



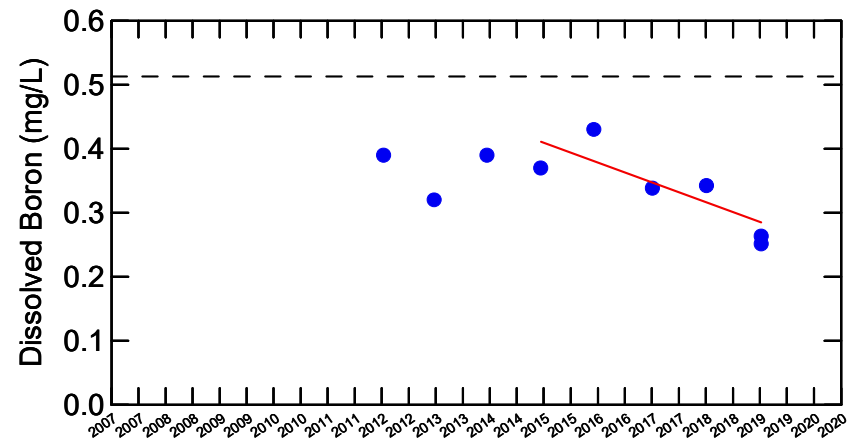
No detected results



No trend



Over 50% non-detect



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

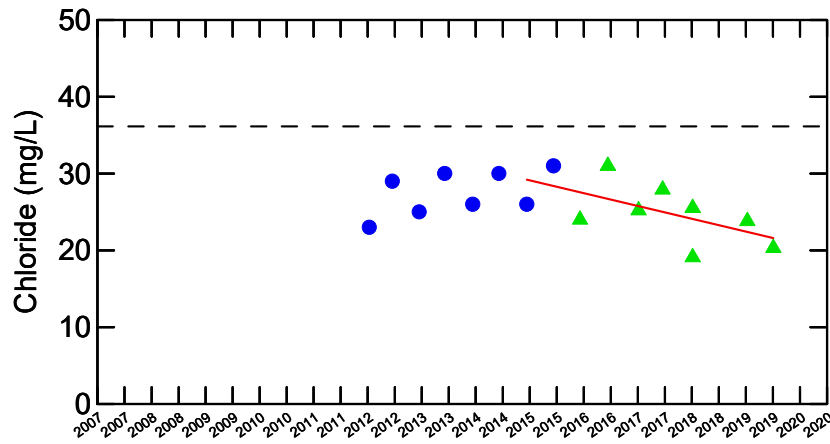
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

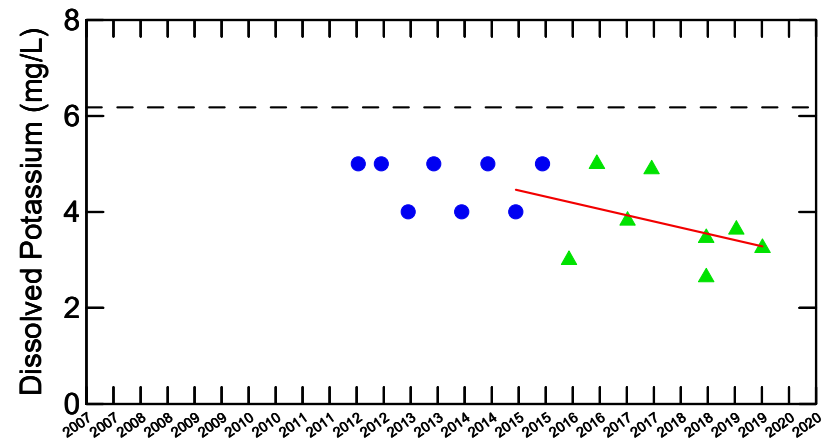
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



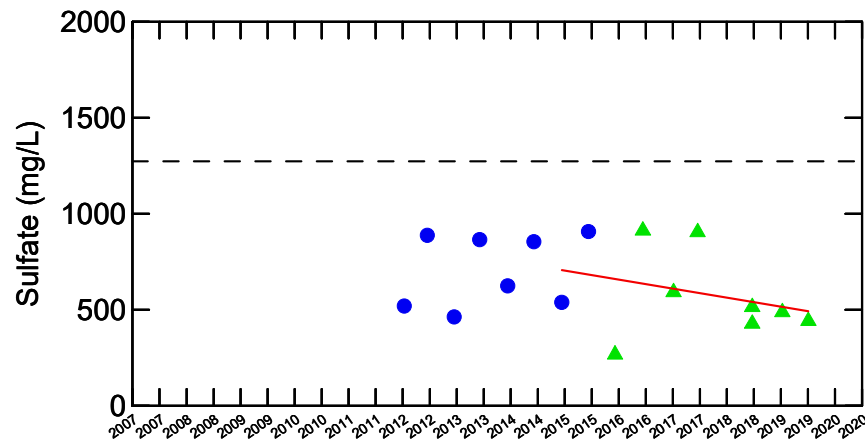
WELL TW56-11S
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



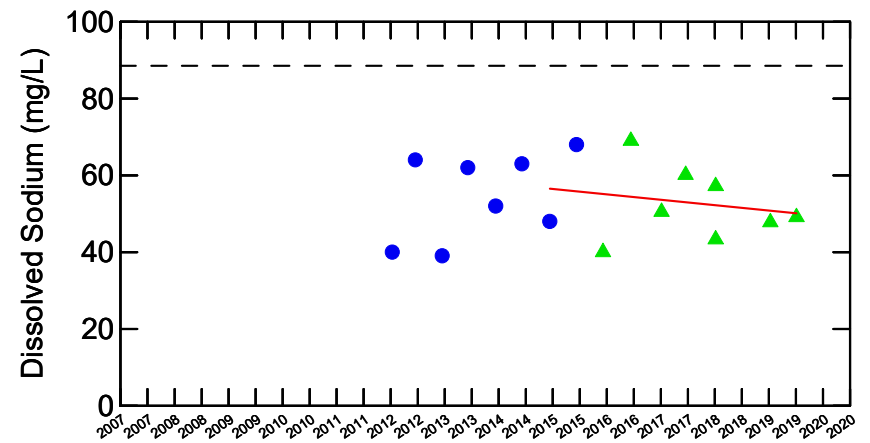
Decreasing trend



No trend



No trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

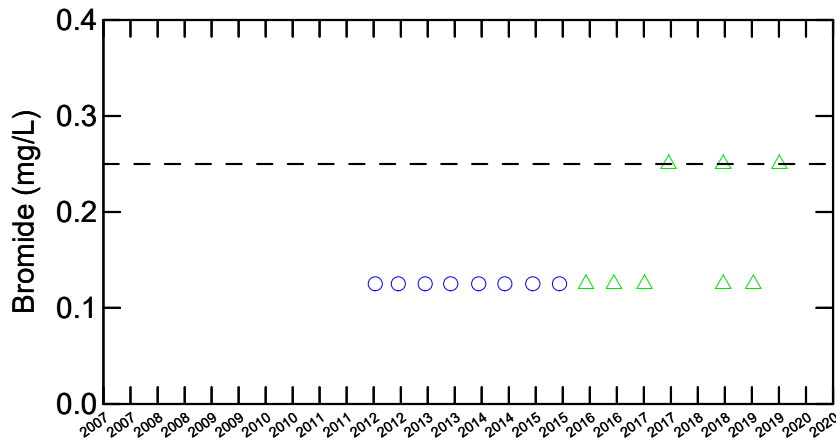
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

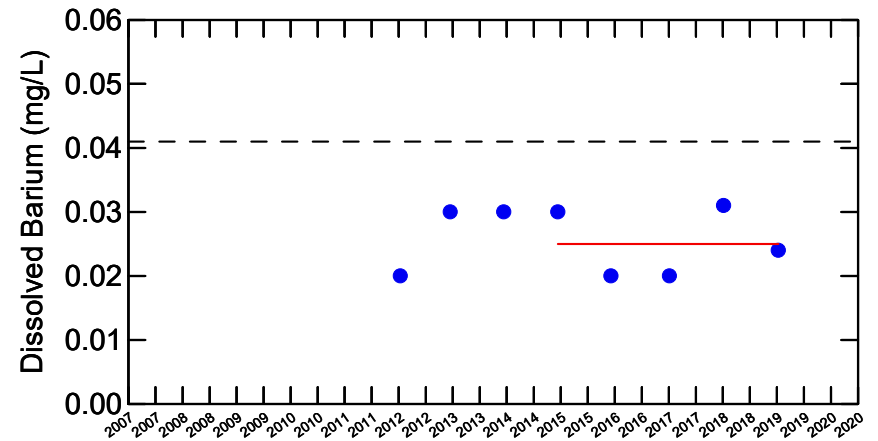
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



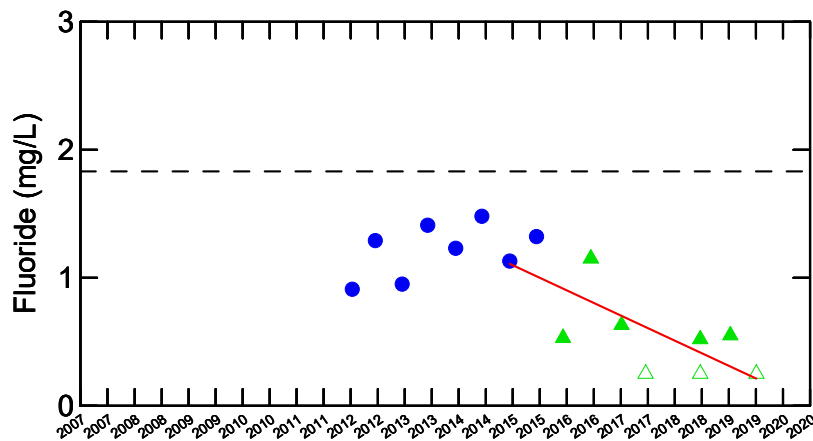
WELL TW57-11S
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



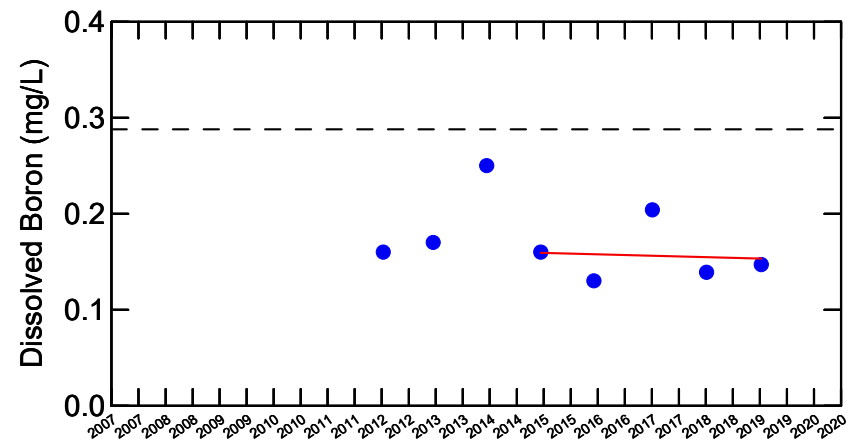
No detected results



No trend



Decreasing trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

— — Baseline Upper Confidence Limit (UCL)

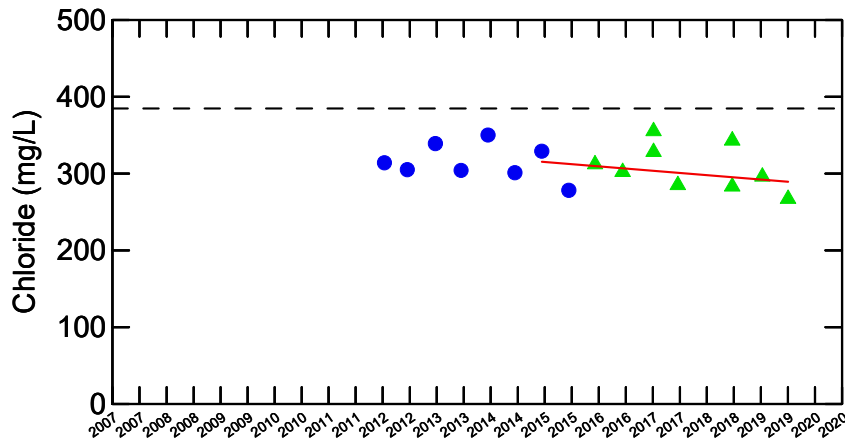
— Linear Regression line

Notes:

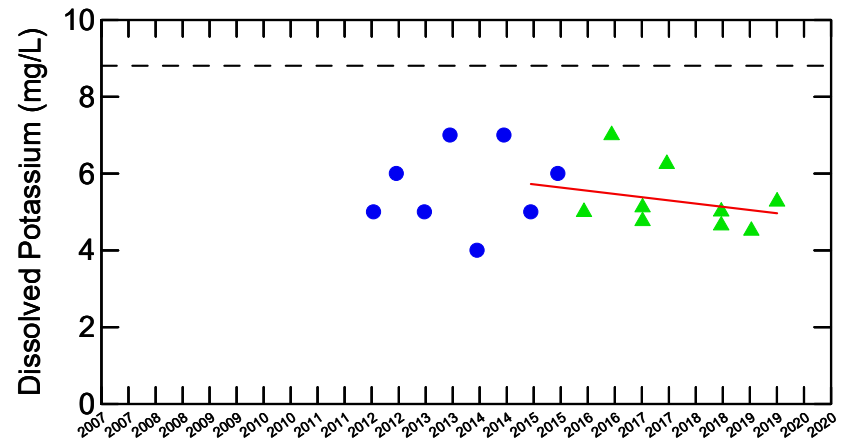
- (1) Non-detects (indicated by empty symbols) are plotted at one half the detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years (2014 - 2018), using a 95 percent confidence level.



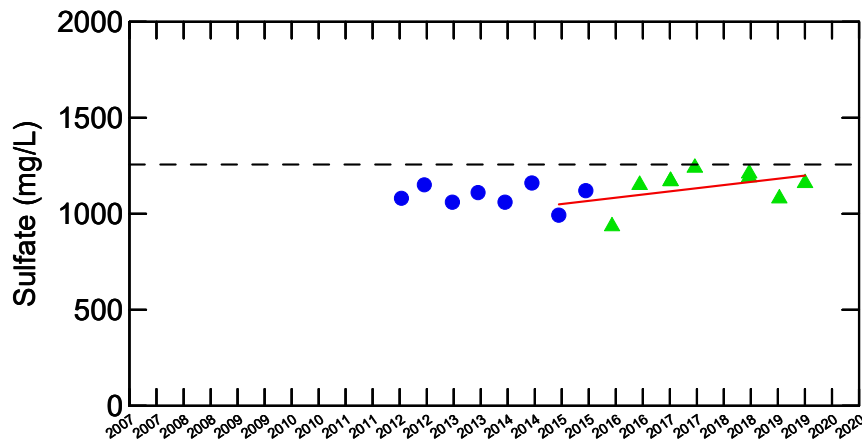
WELL TW57-11S
 SHALLOW WELL (ACTIVE AQUITARD)
 2018 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



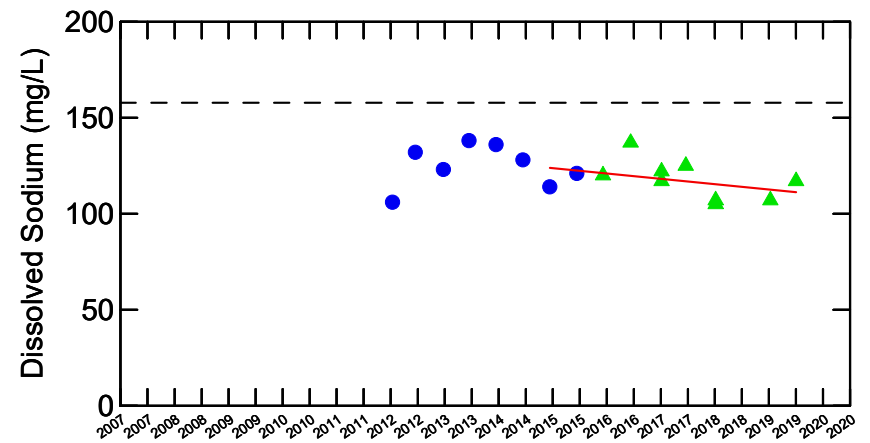
No trend



No trend



No trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

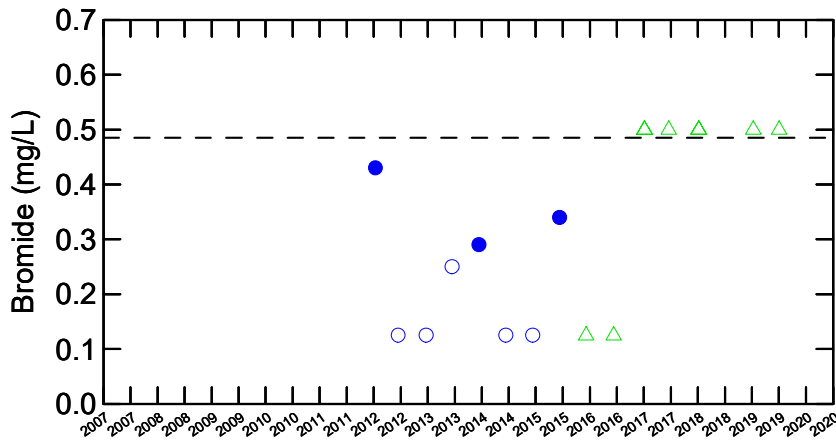
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

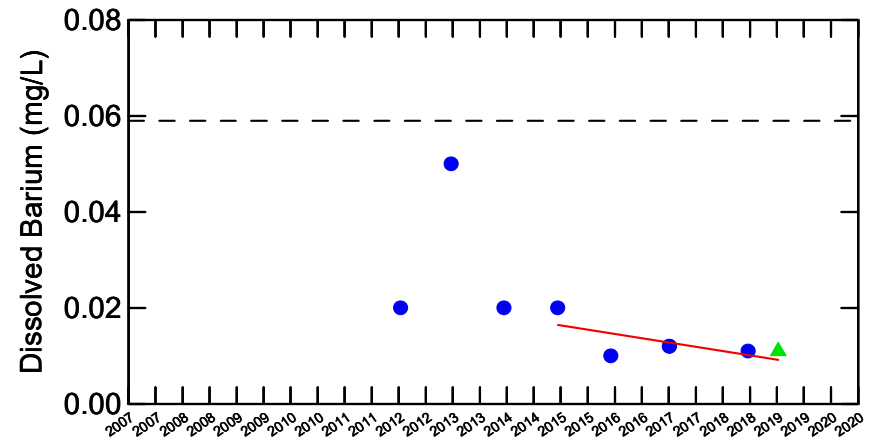
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



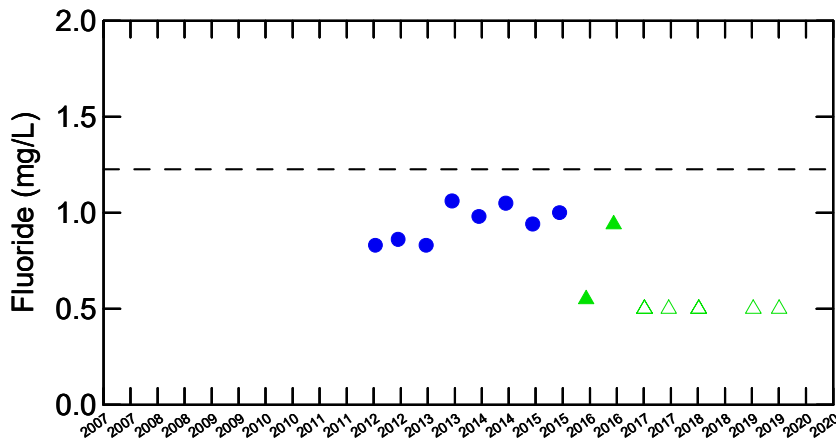
WELL TW58-11S
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



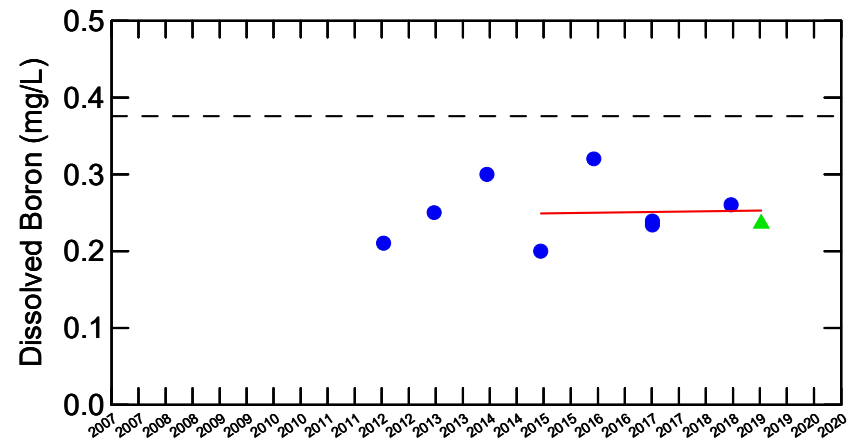
Over 50% non-detect



No trend



Over 50% non-detect



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

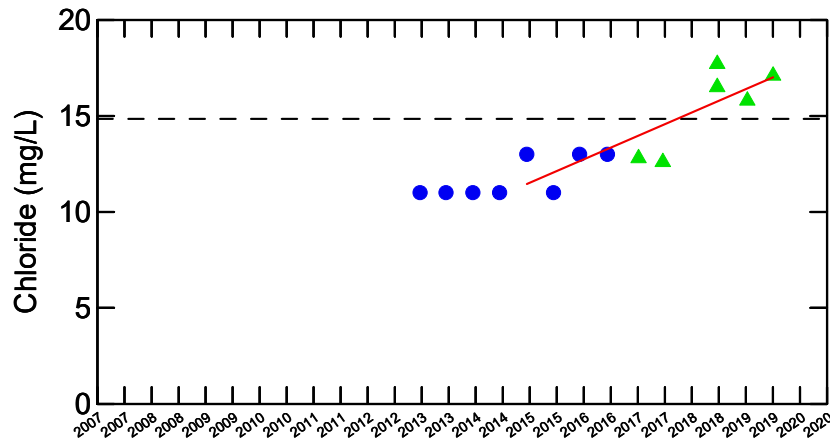
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

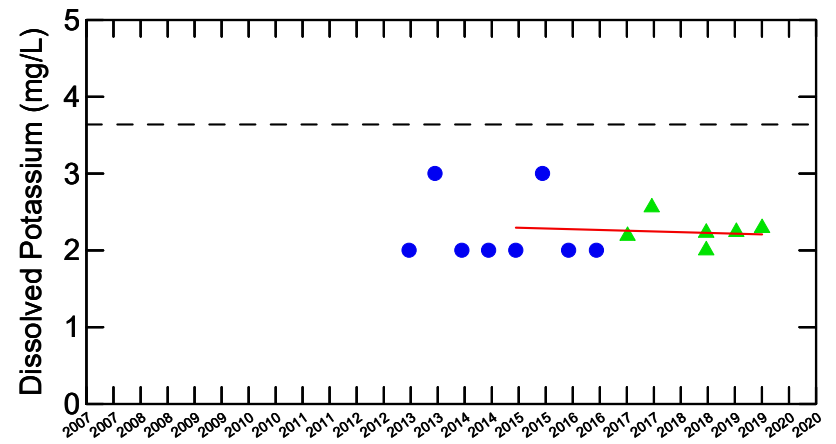
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



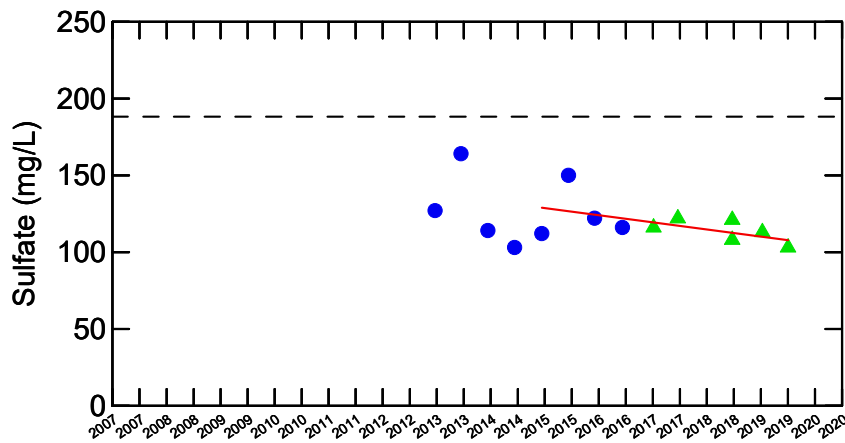
WELL TW58-11S
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



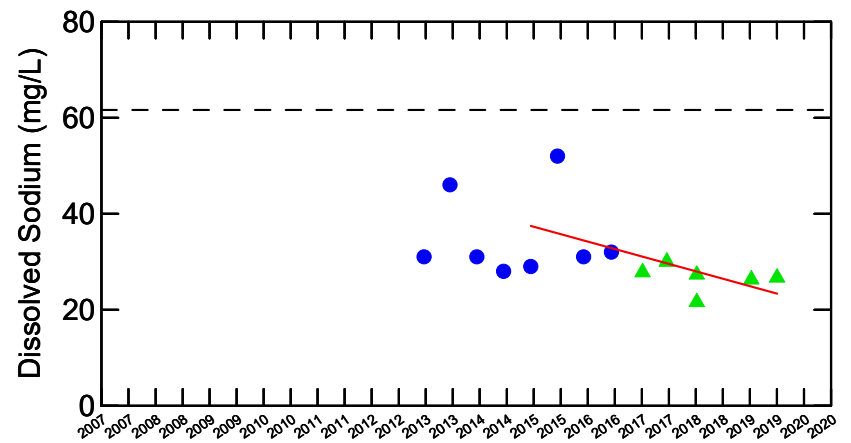
Increasing trend



No trend



No trend



No trend

Legend:

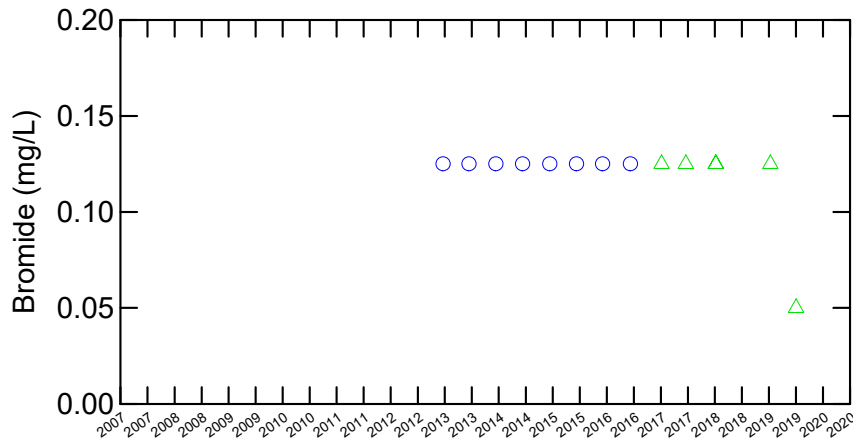
- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

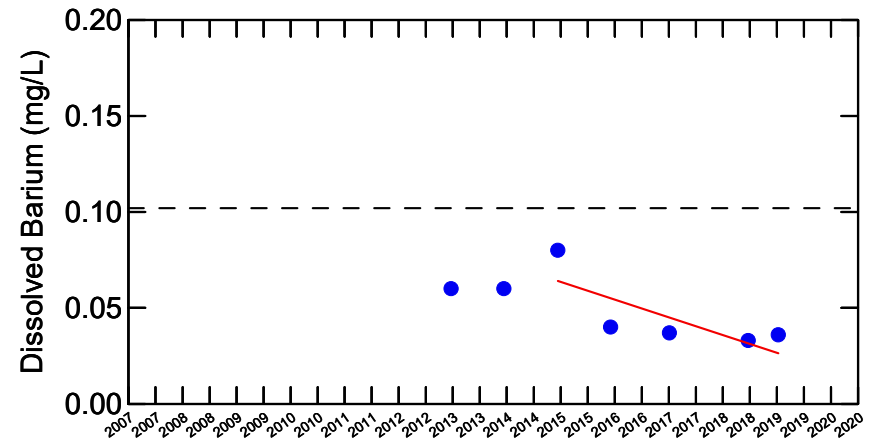
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



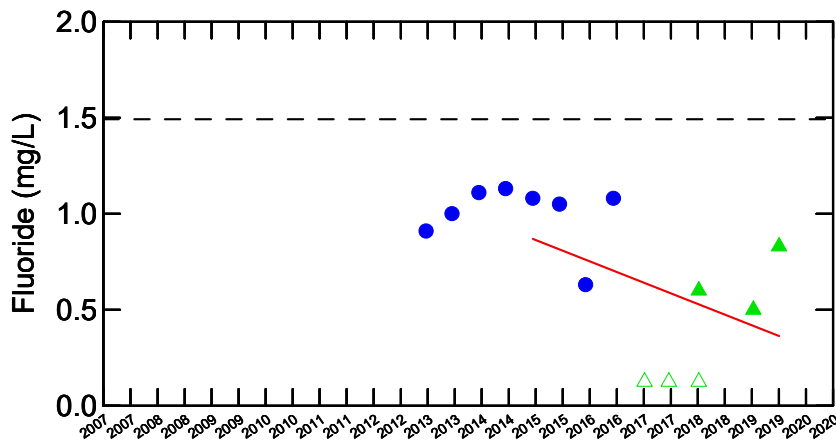
WELL TW59-13S
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



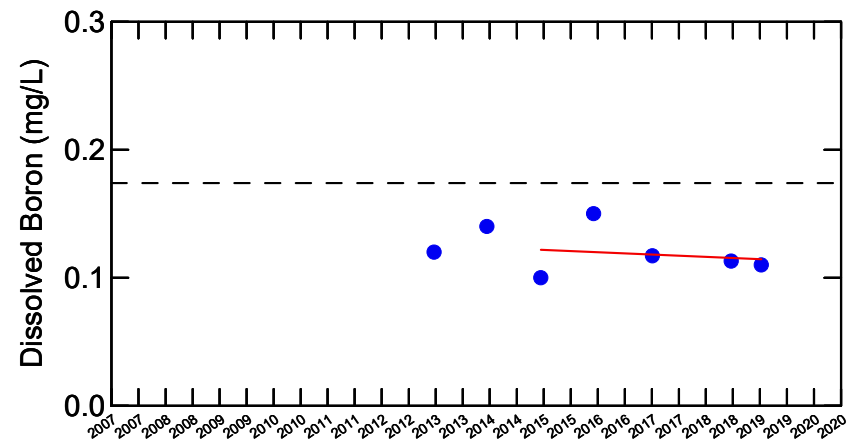
No detected results



No trend



No trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

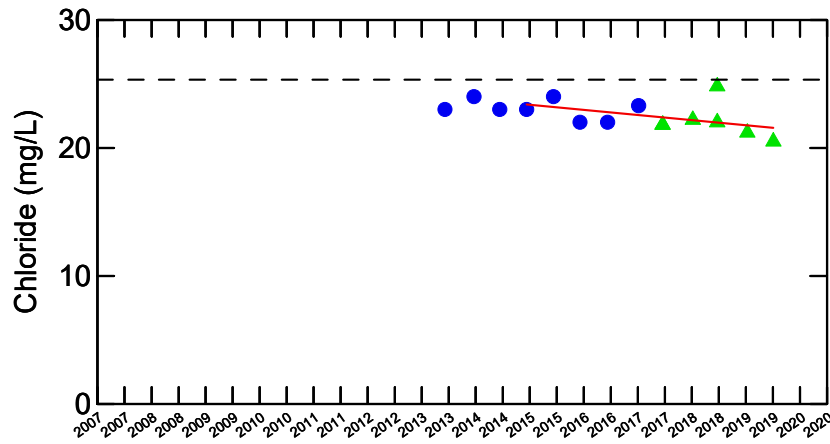
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

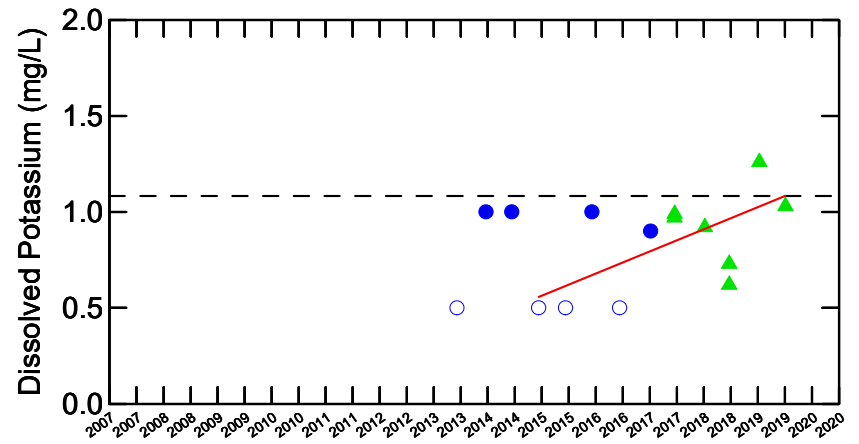
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



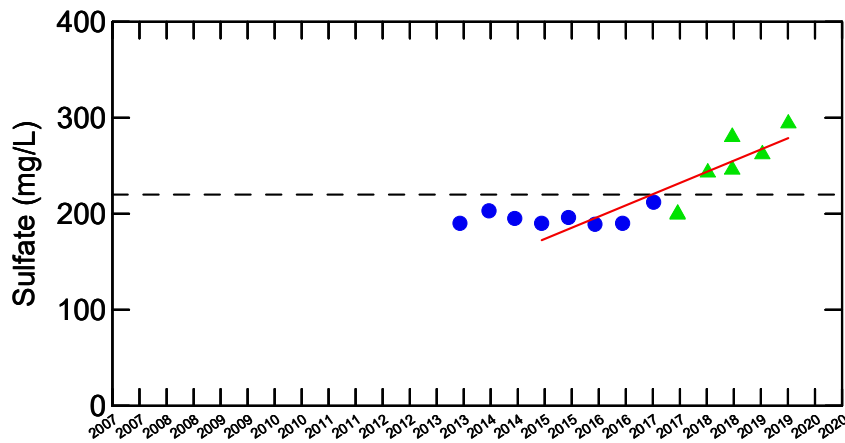
WELL TW59-13S
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



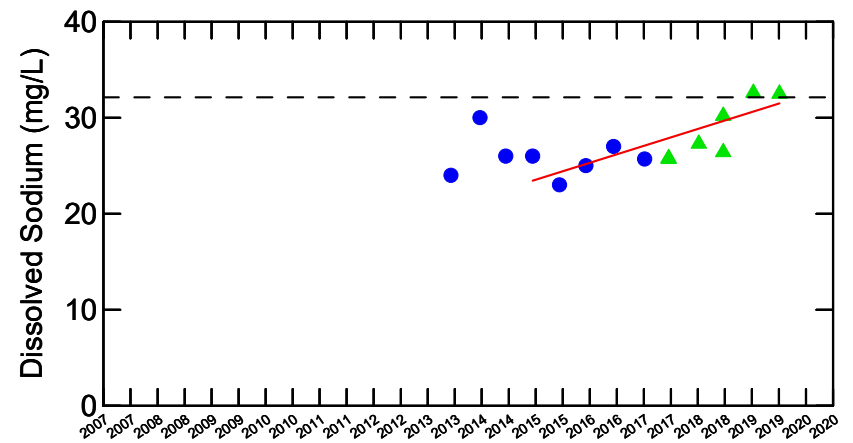
No trend



Increasing trend



Increasing trend



Increasing trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

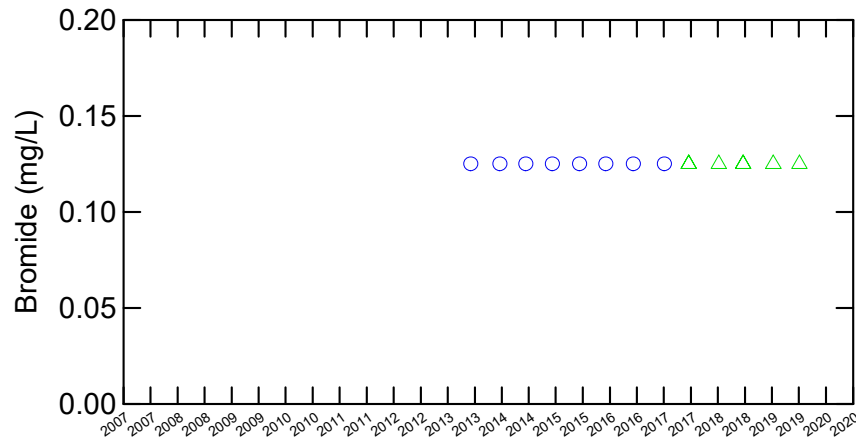
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

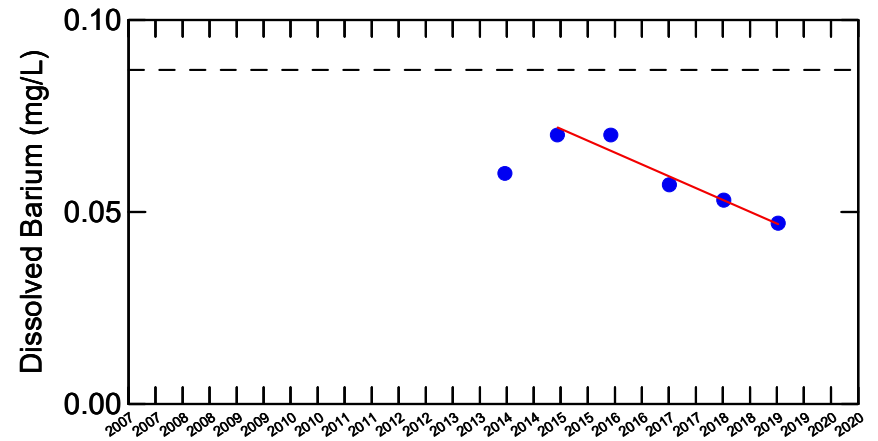
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



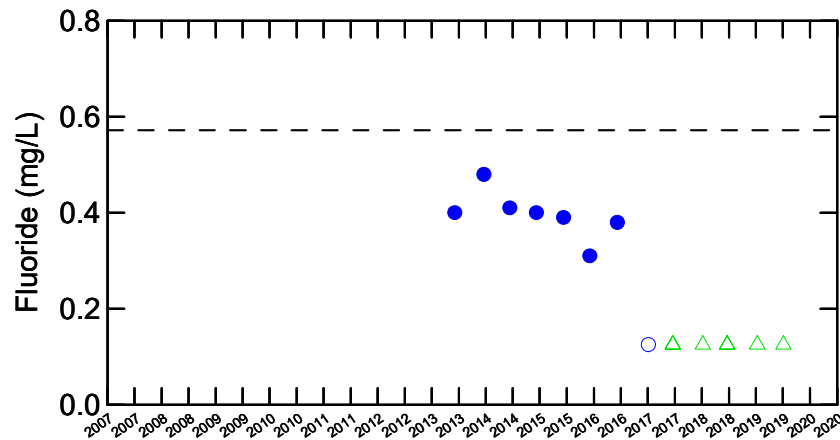
WELL TW61-131
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



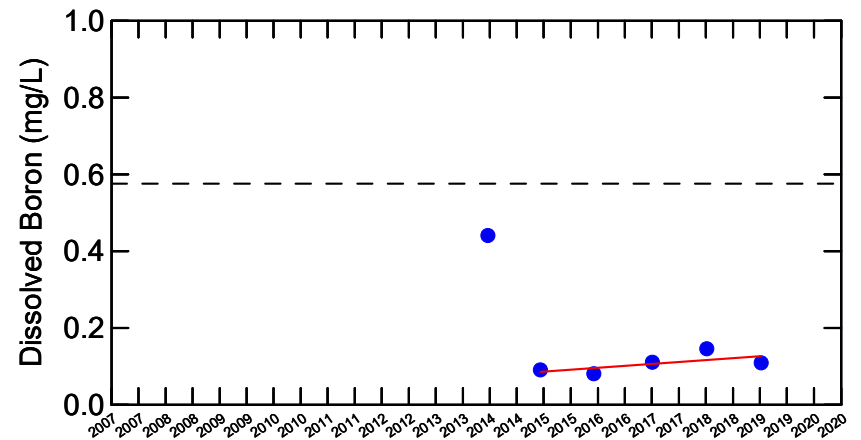
No detected results



Decreasing trend



Over 50% non-detect



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

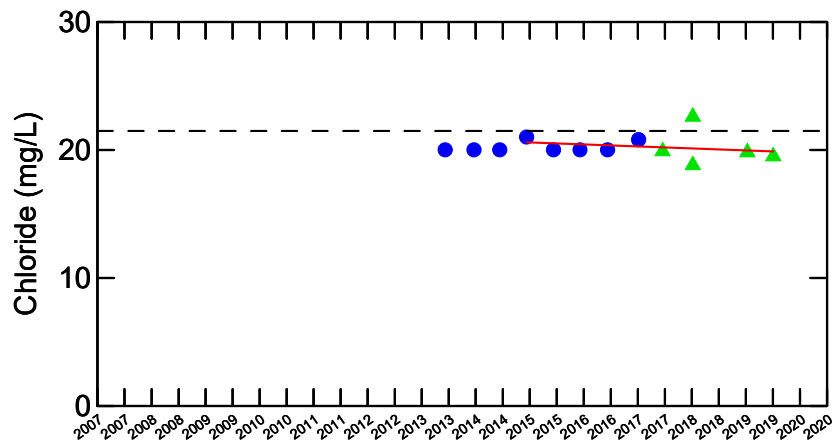
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

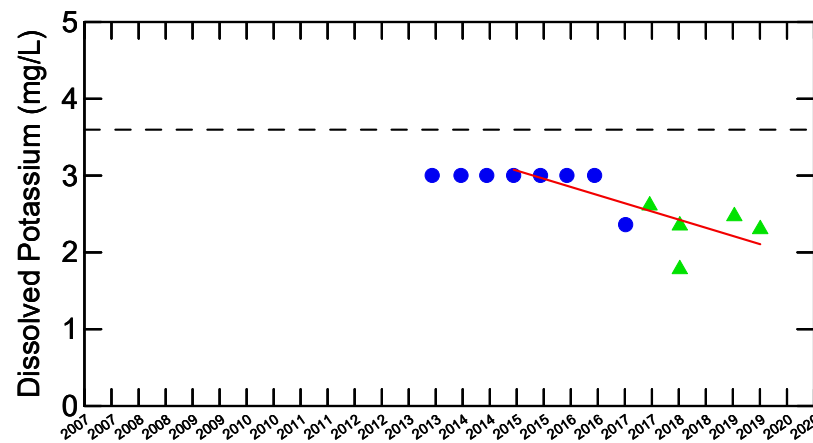
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



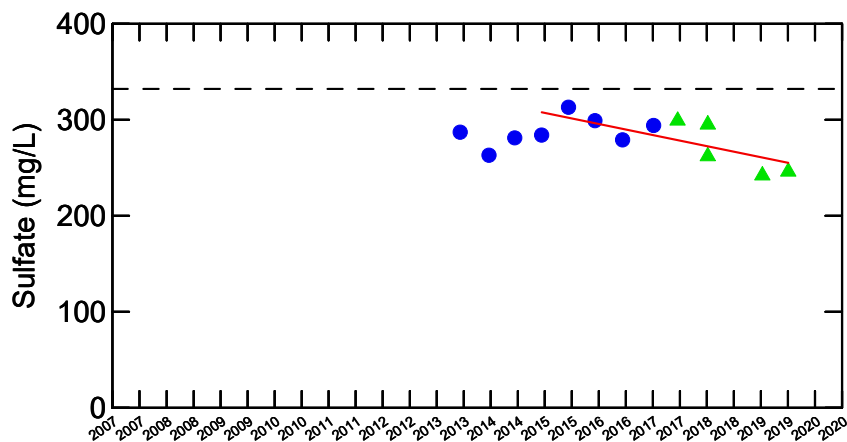
WELL TW61-131
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



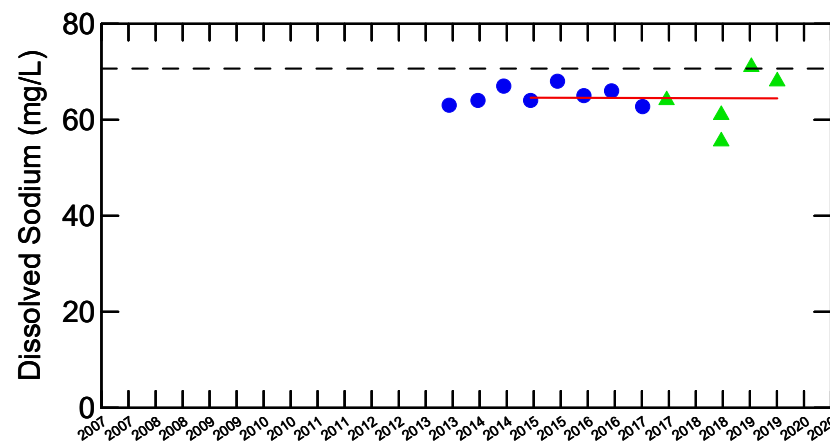
No trend



Decreasing trend



Decreasing trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

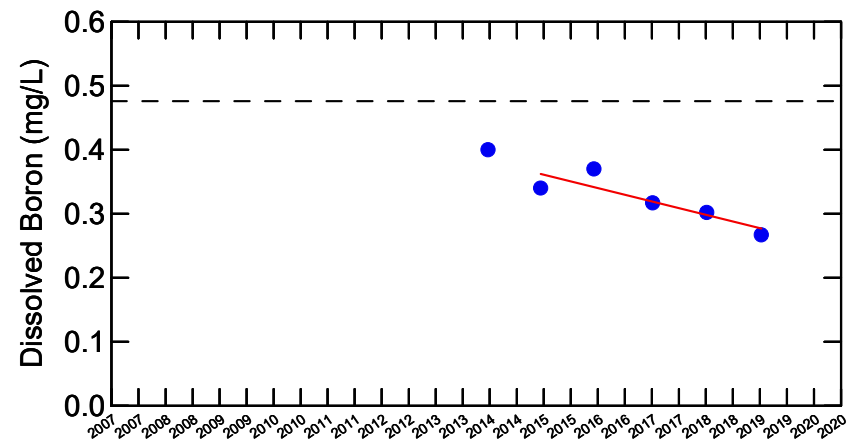
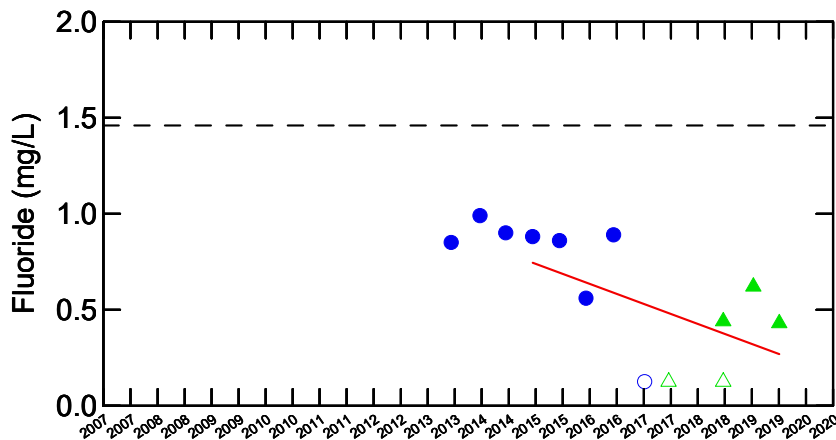
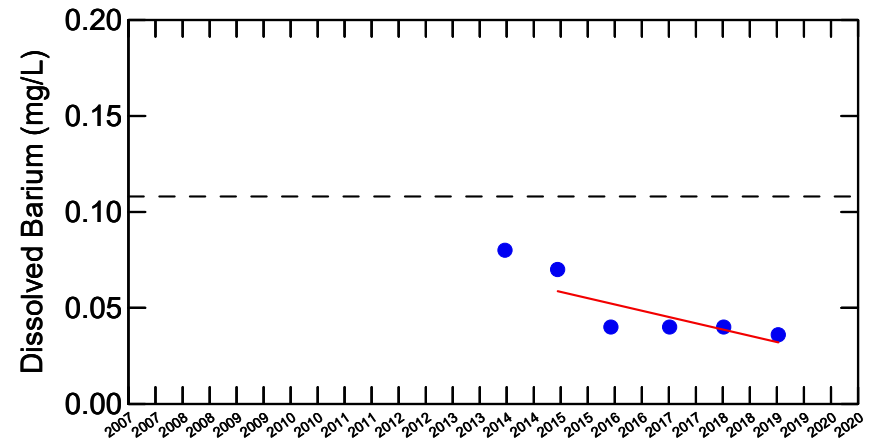
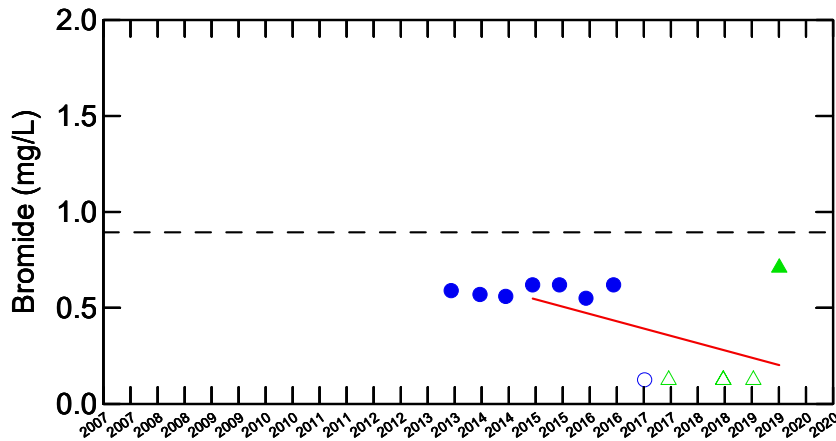
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



WELL TW61-13S
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

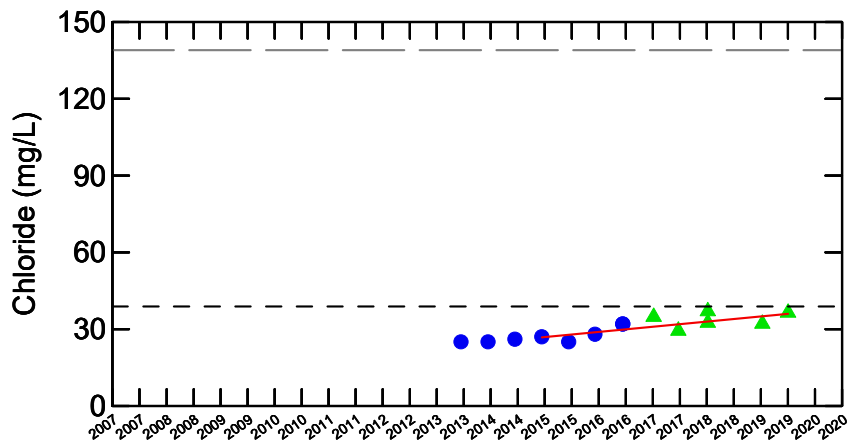
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

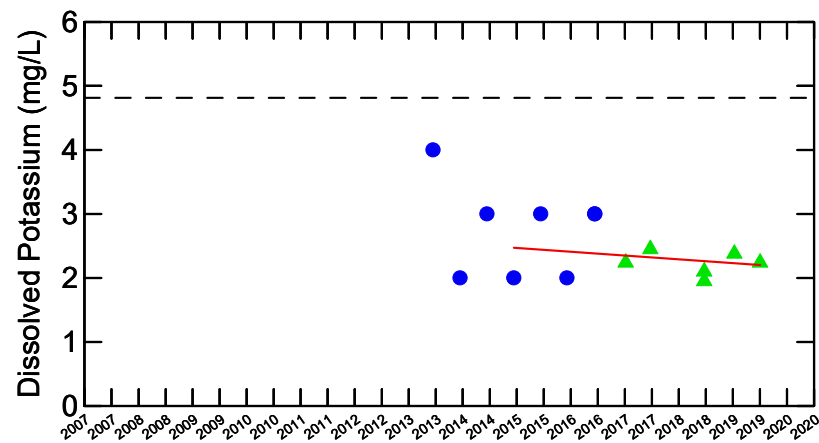
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



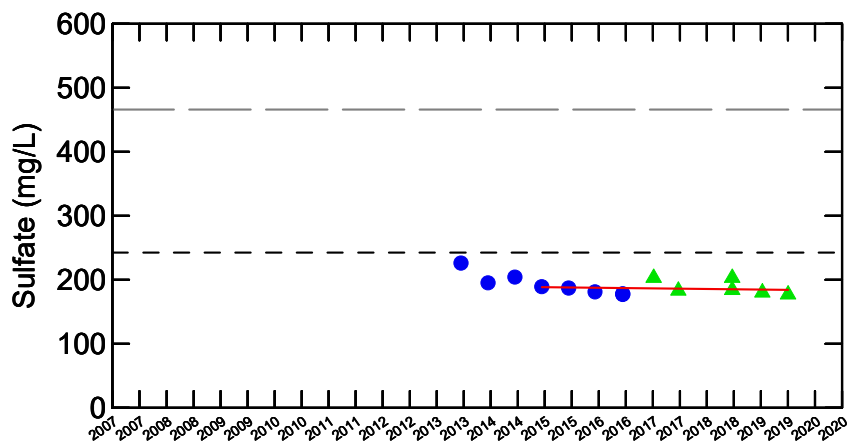
WELL TW61-13S
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



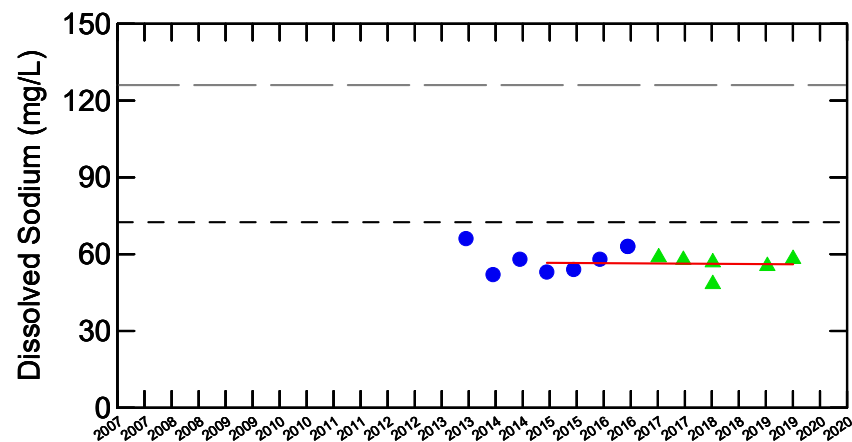
Increasing trend



No trend



No trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

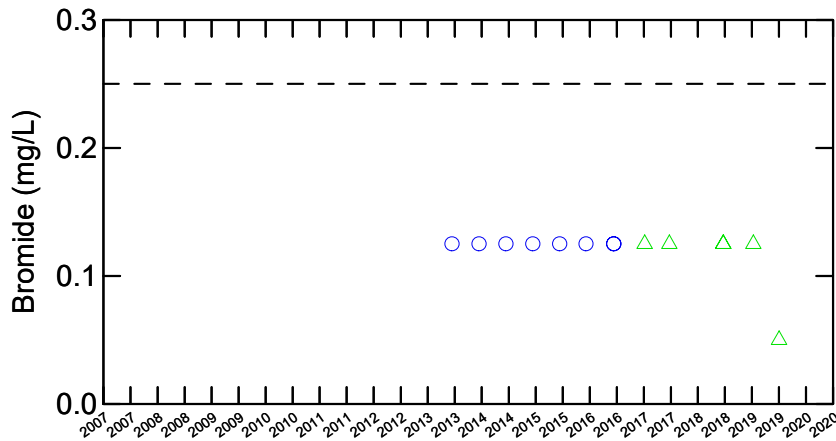
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

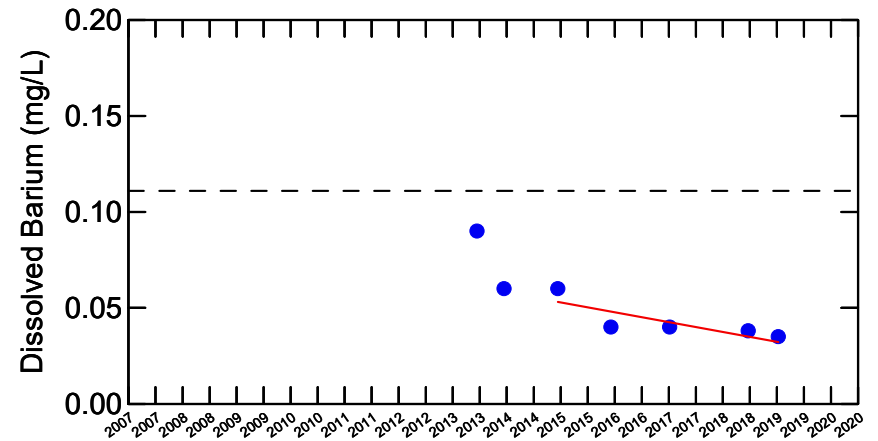
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



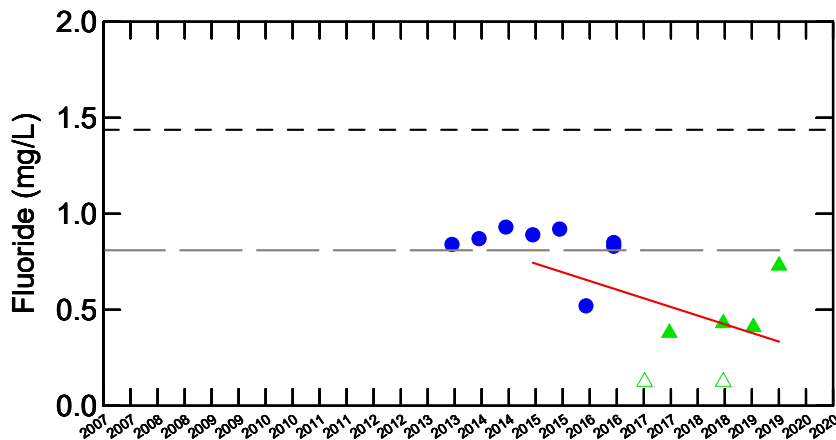
WELL TW62-13S
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



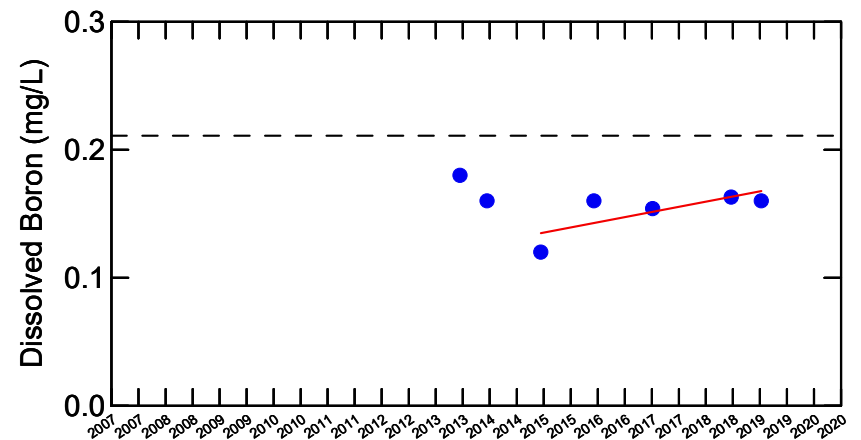
No detected results



No trend



No trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

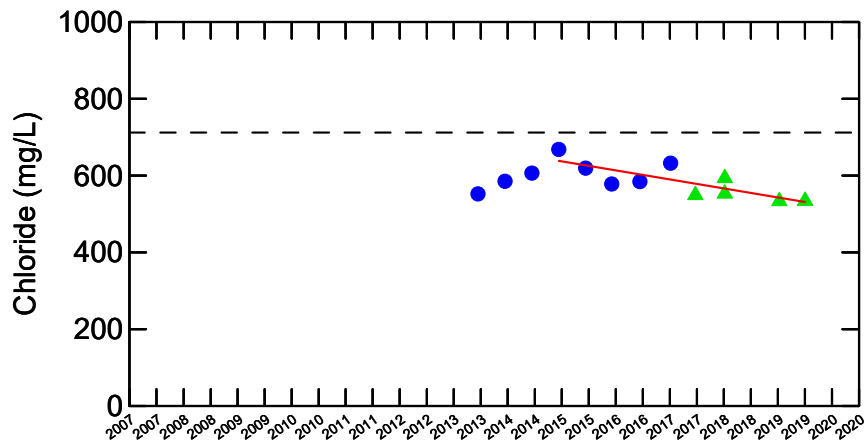
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

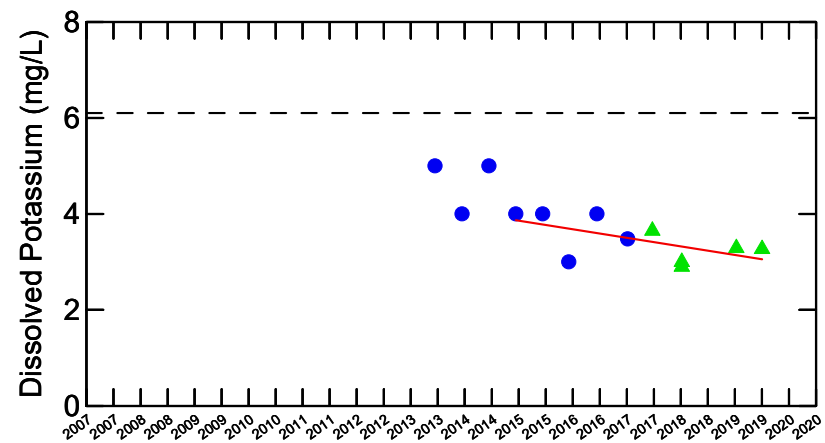
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



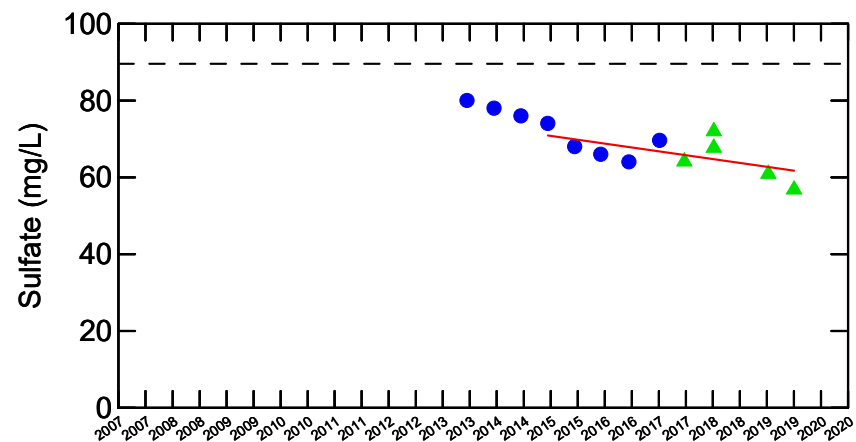
WELL TW62-13S
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



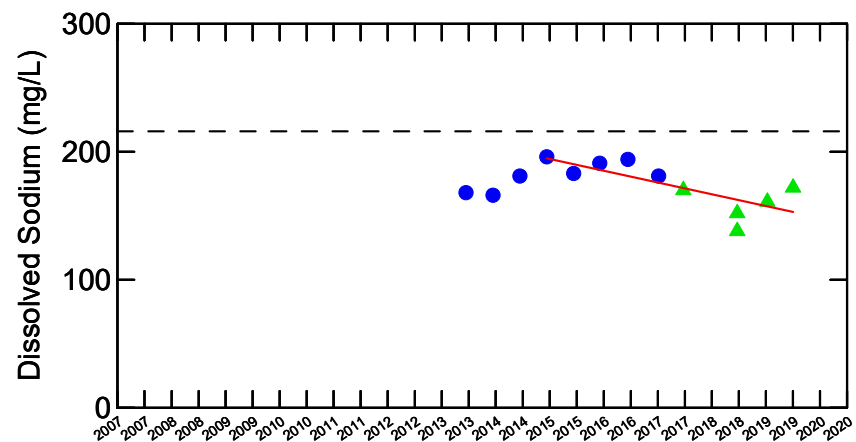
Decreasing trend



Decreasing trend



No trend



Decreasing trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

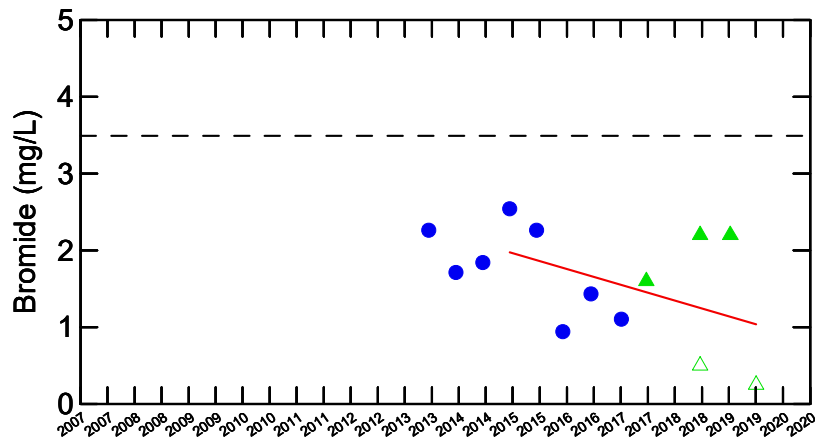
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

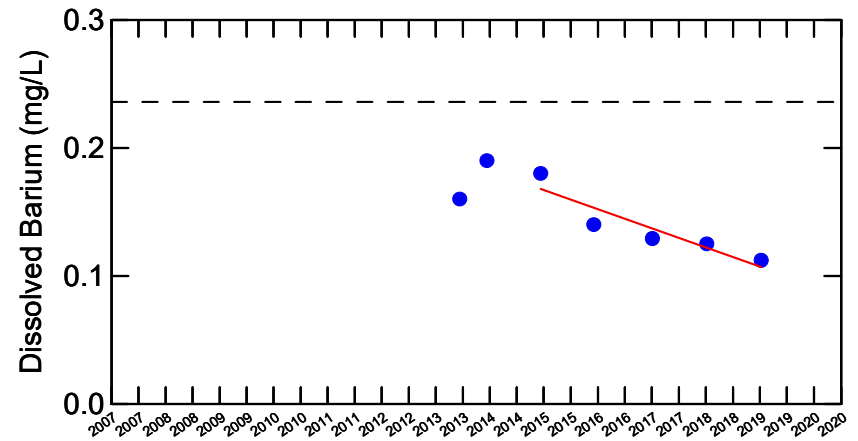
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



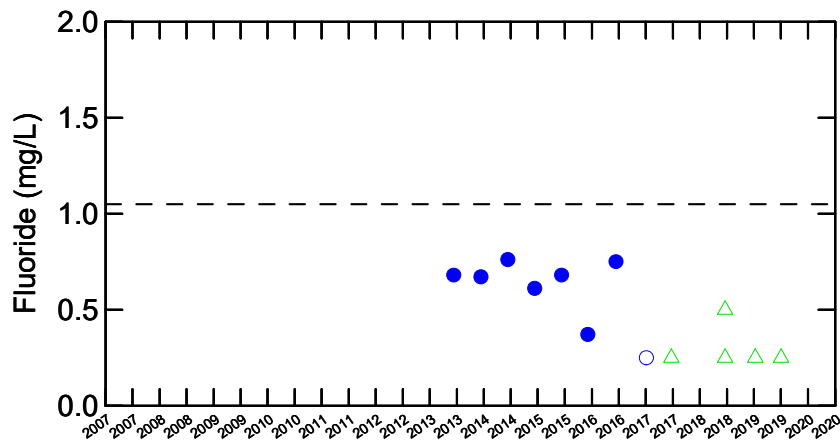
WELL TW63-13S
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



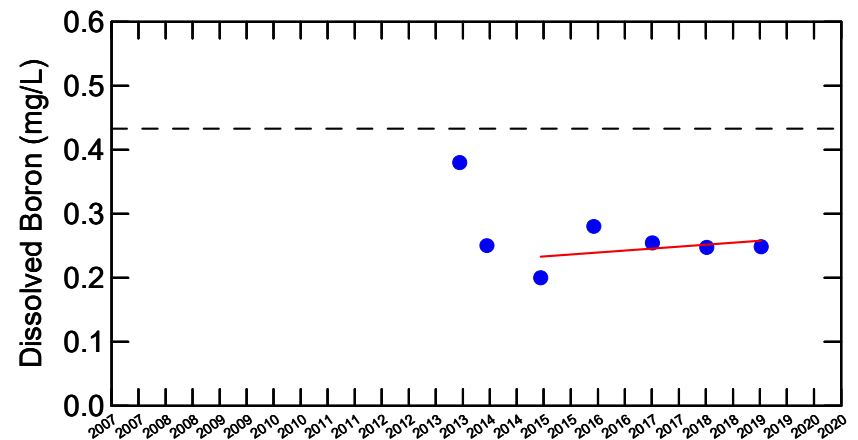
No trend



Decreasing trend



Over 50% non-detect



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

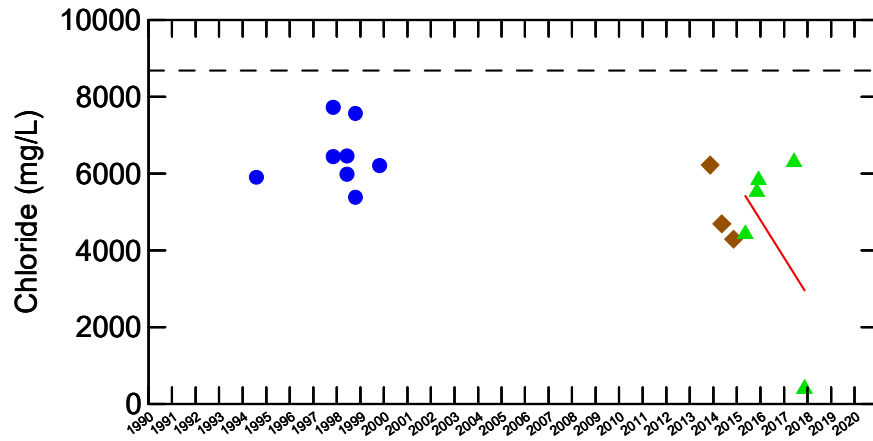
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

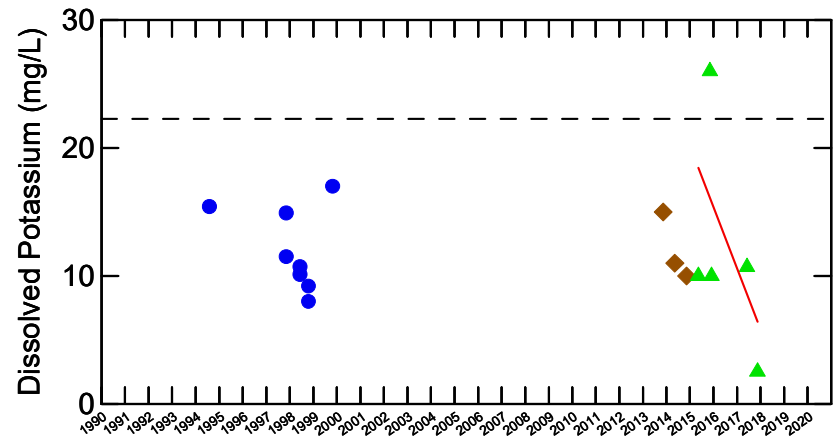
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



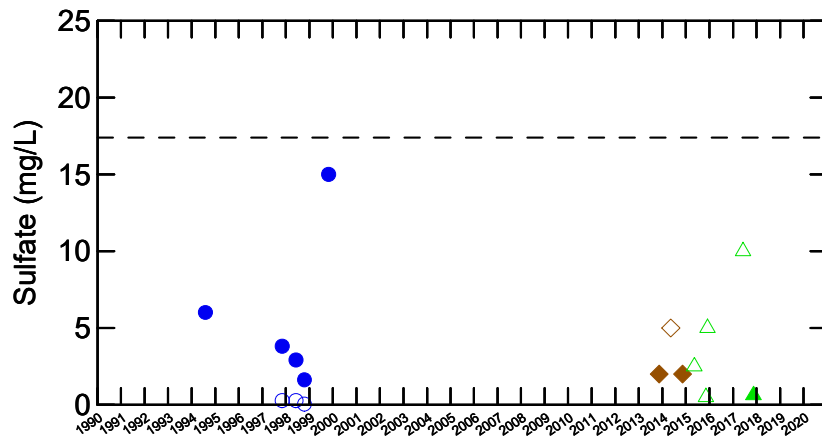
WELL TW63-13S
 SHALLOW WELL (ACTIVE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



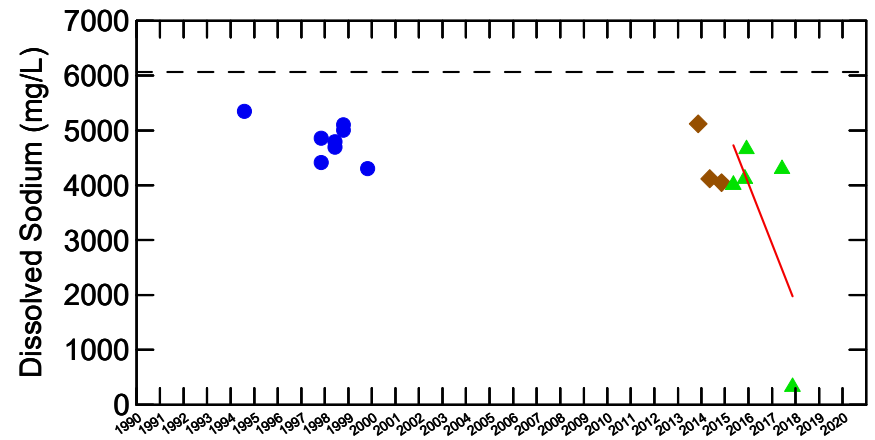
No trend



No trend



Over 50% non-detect



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

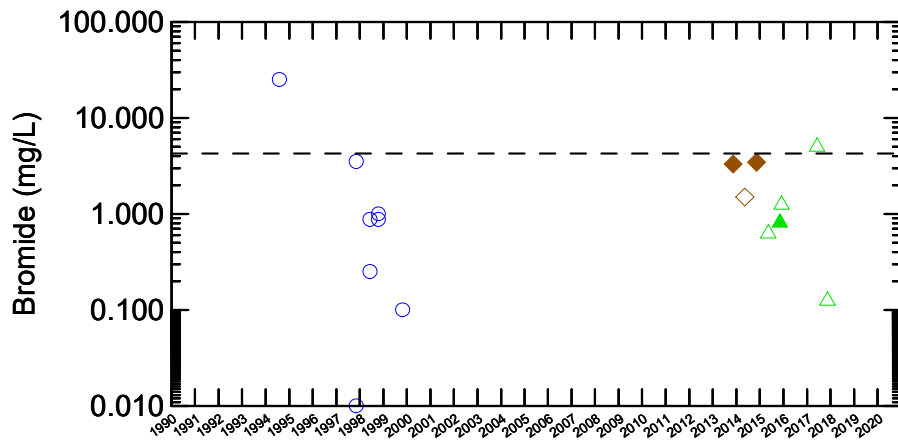
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

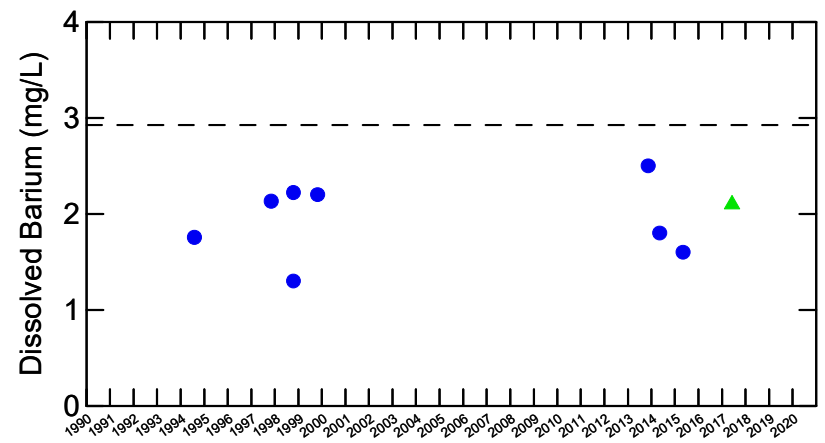
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



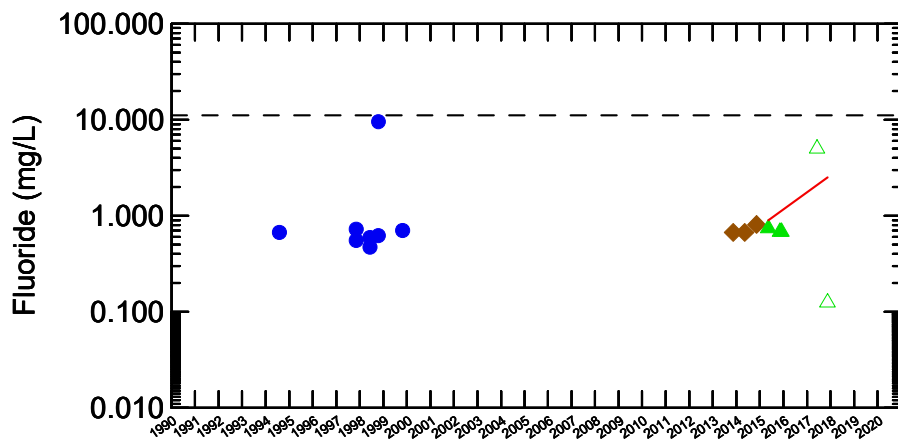
WELL TW32-94-I
 DEEP SHALE WELL (SHALE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



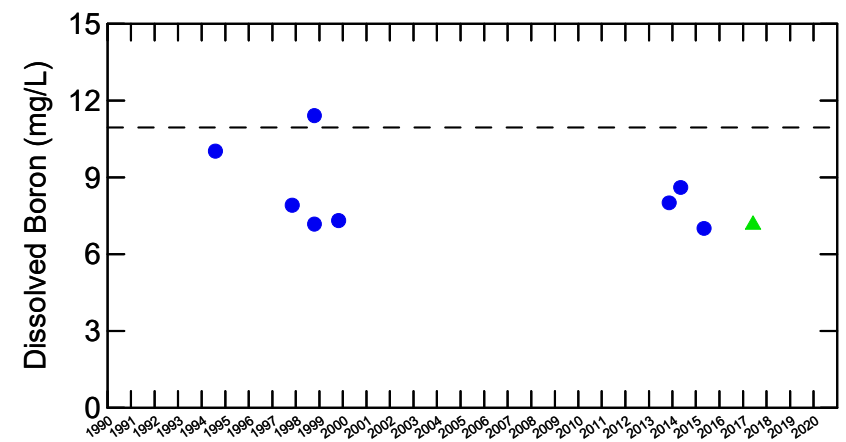
Over 50% non-detect



Insufficient data



No trend



Insufficient data

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

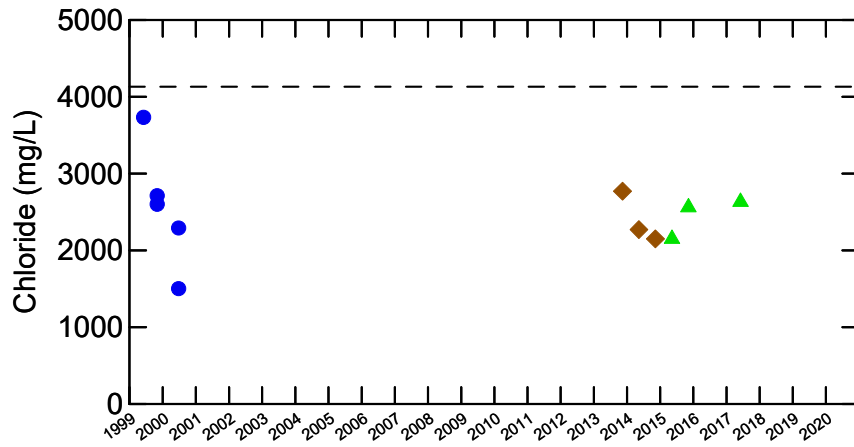
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

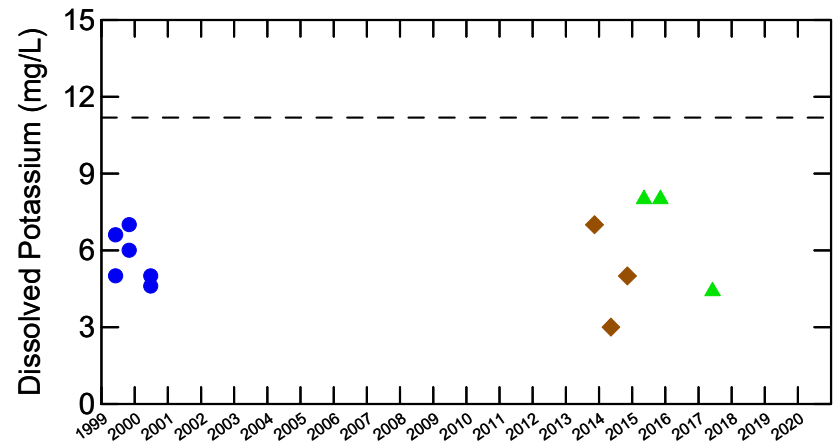
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



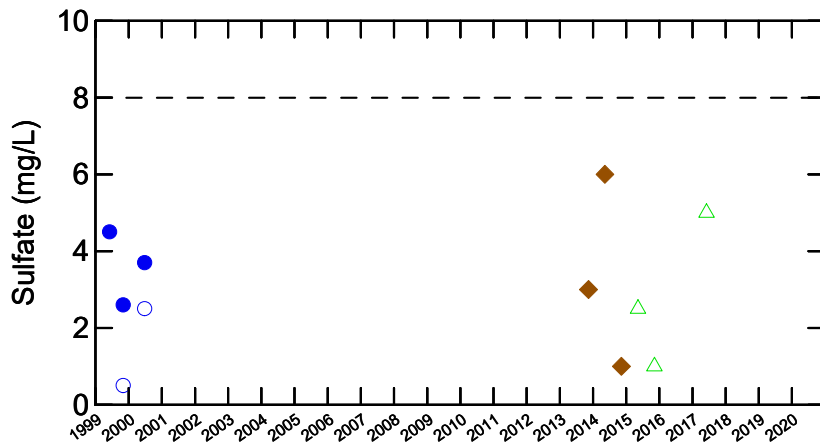
WELL TW32-94-I
 DEEP SHALE WELL (SHALE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



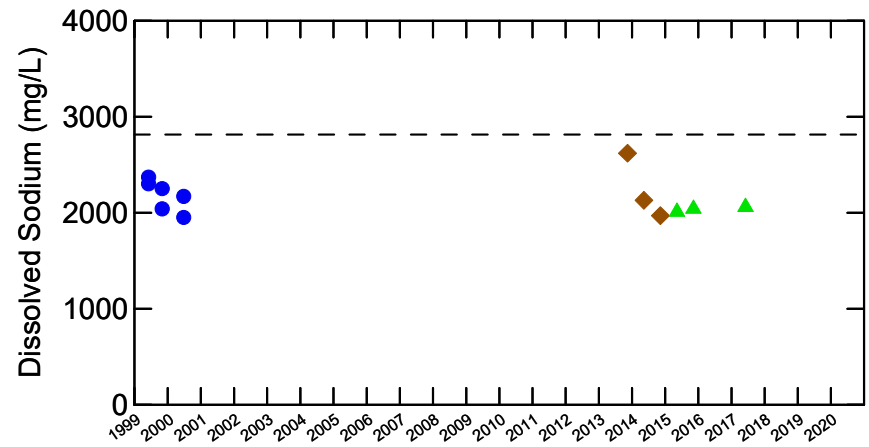
Insufficient data



Insufficient data



No detected results



Insufficient data

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

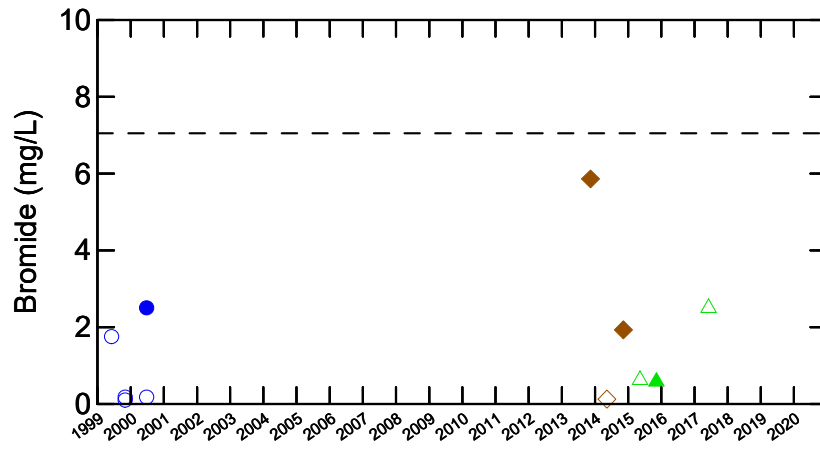
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

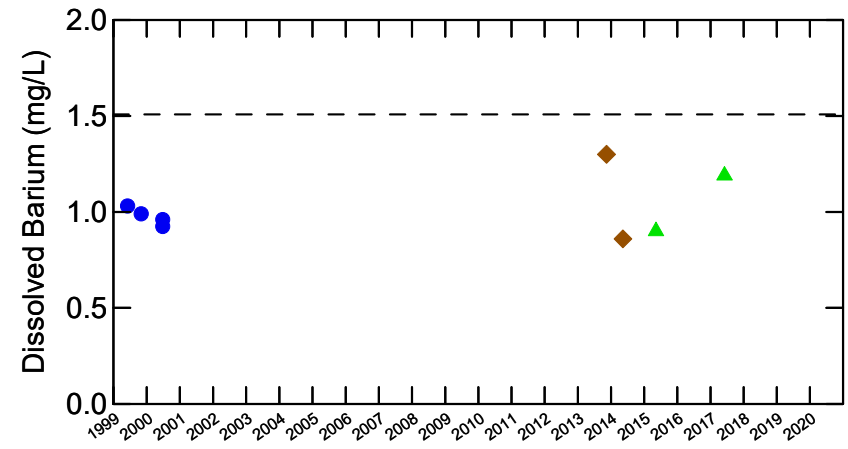
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



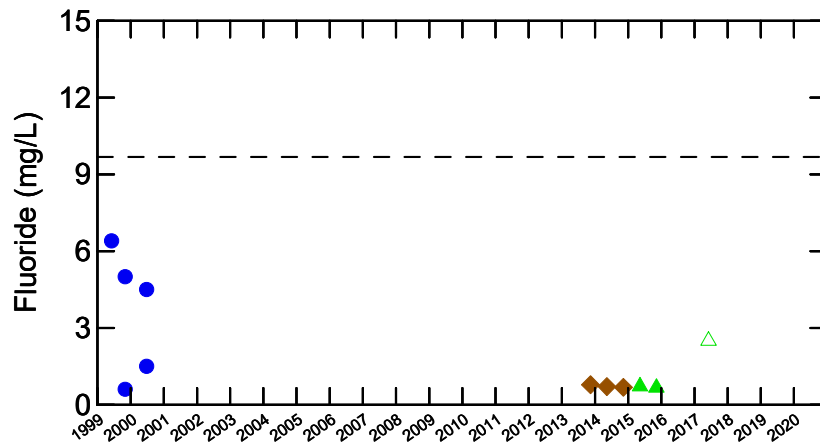
WELL TW42-99D
 DEEP SHALE WELL (SHALE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



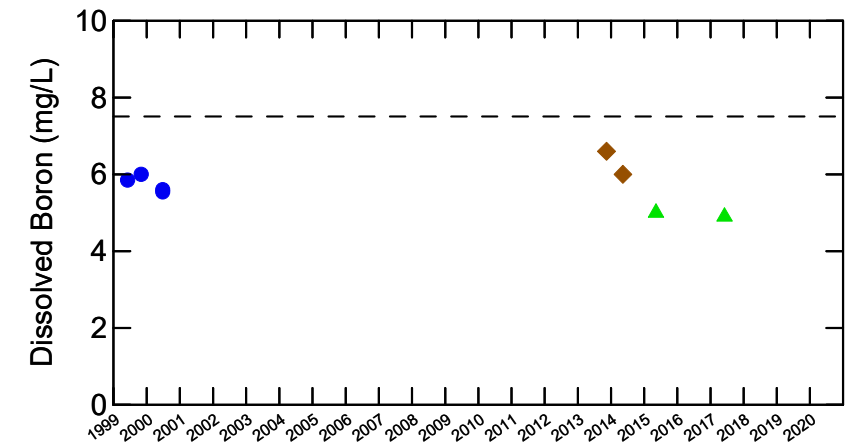
Insufficient data



Insufficient data



N/A (see Table)



Insufficient data

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

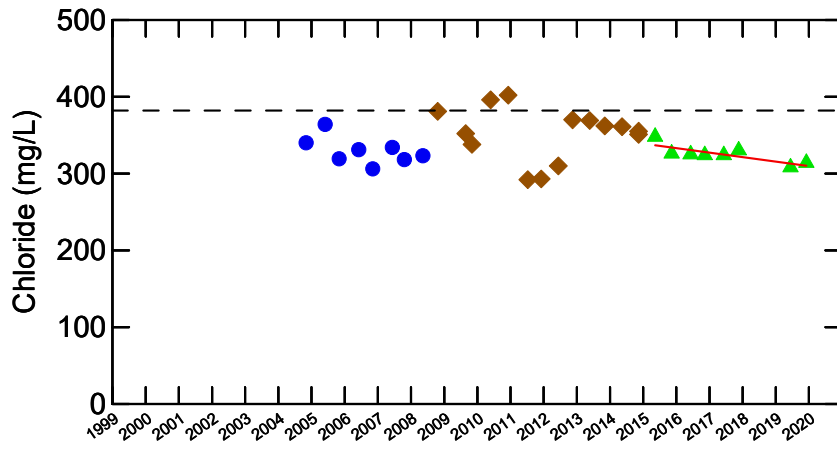
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

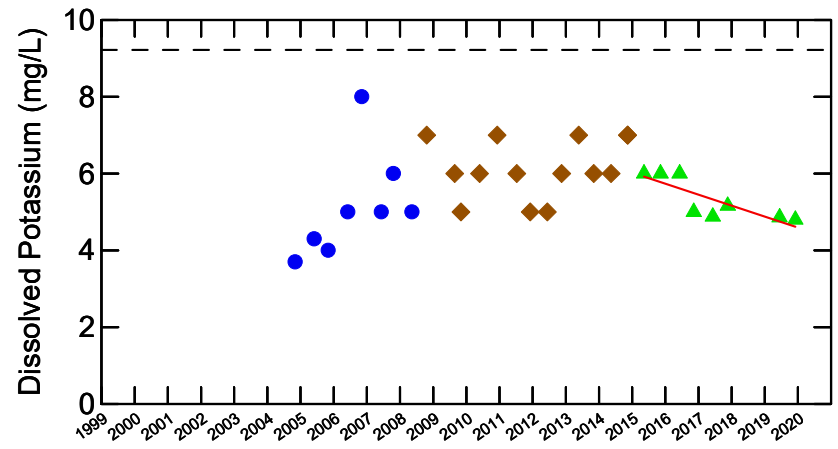
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



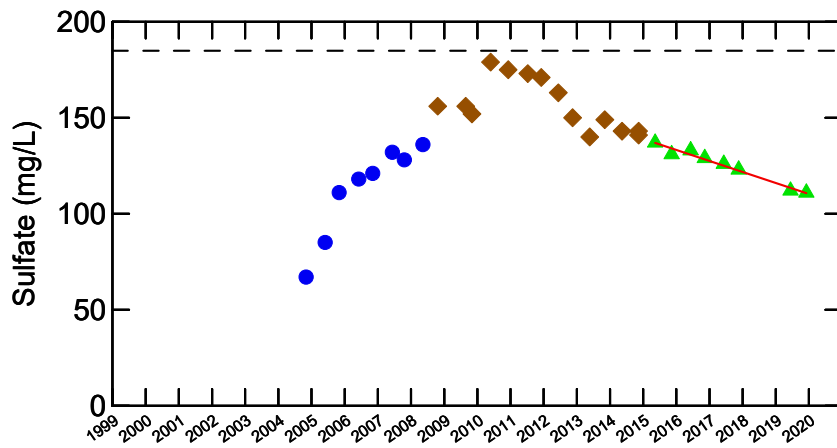
WELL TW42-99D
 DEEP SHALE WELL (SHALE AQUITARD)
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



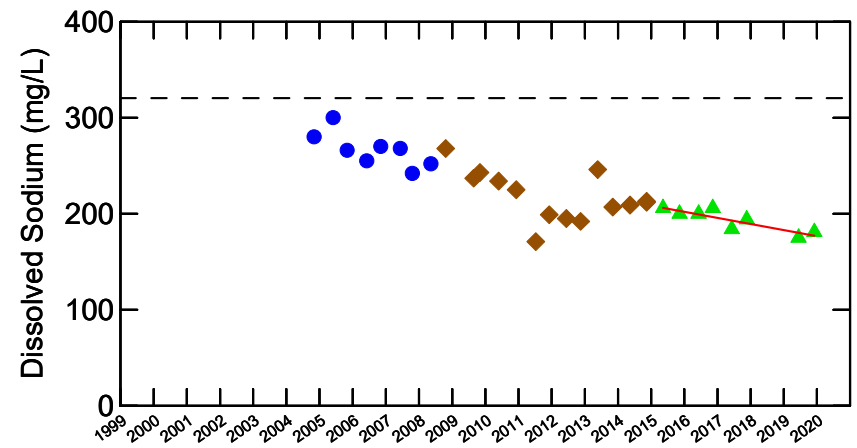
Decreasing trend



Decreasing trend



Decreasing trend



Decreasing trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

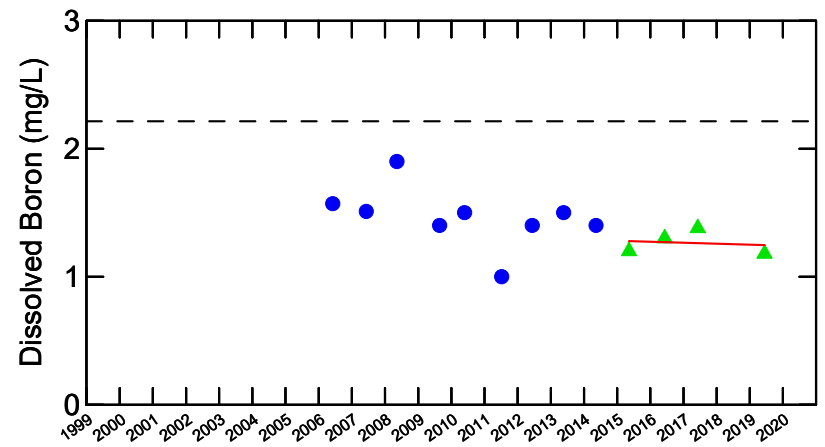
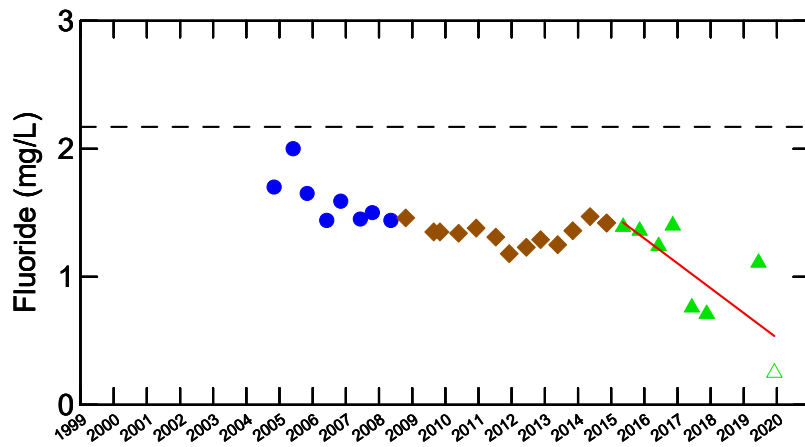
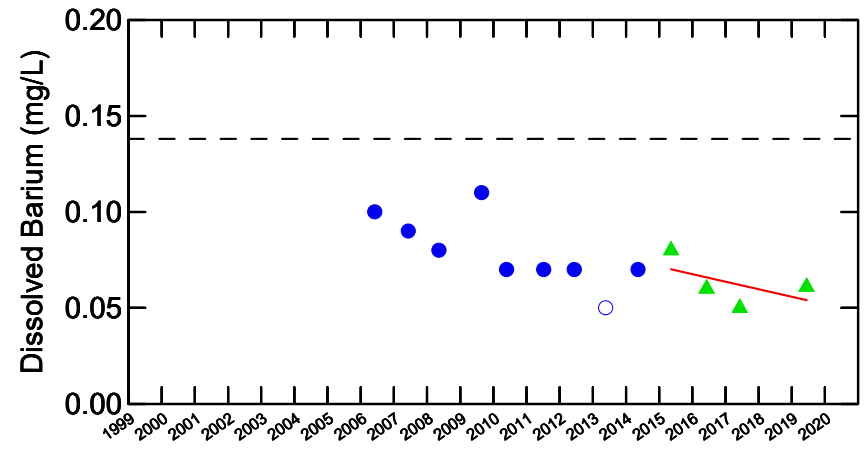
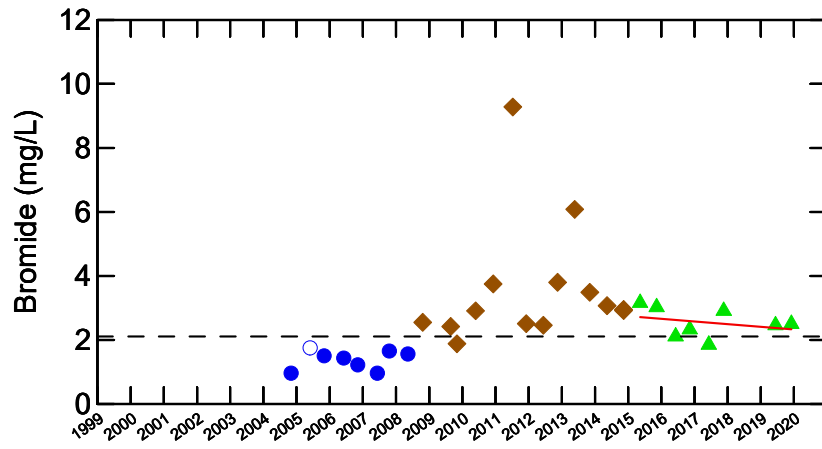
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



WELL EW1a-01
 SUB-CELL 3
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

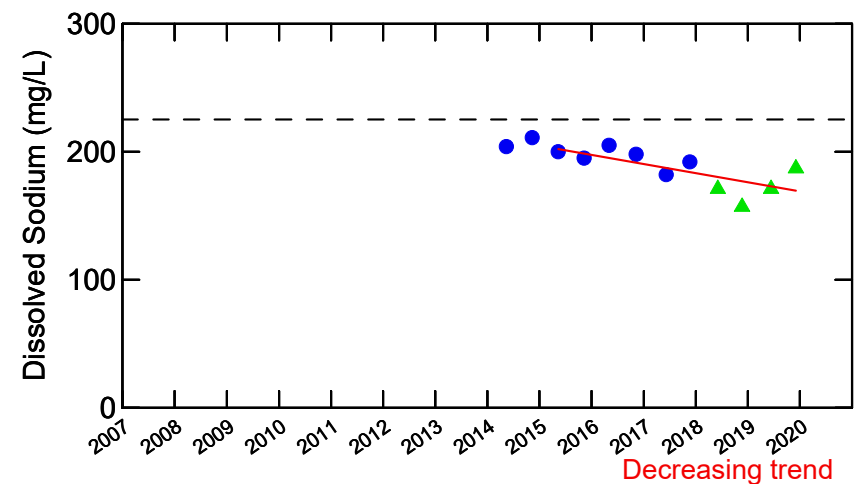
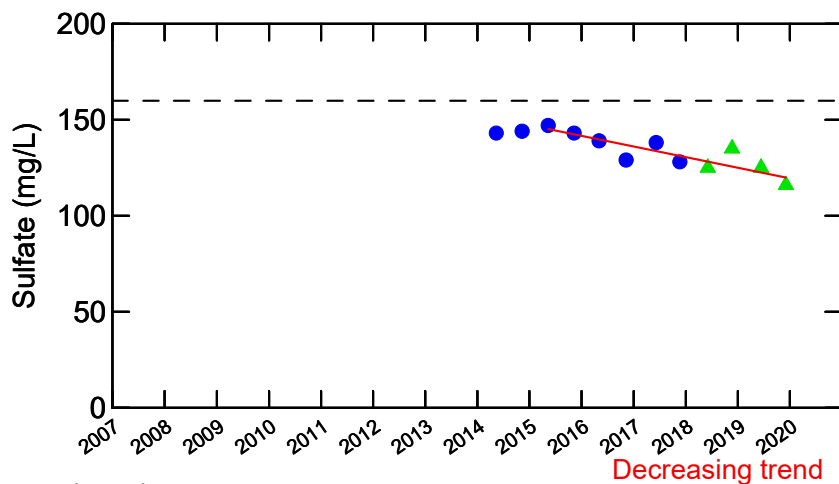
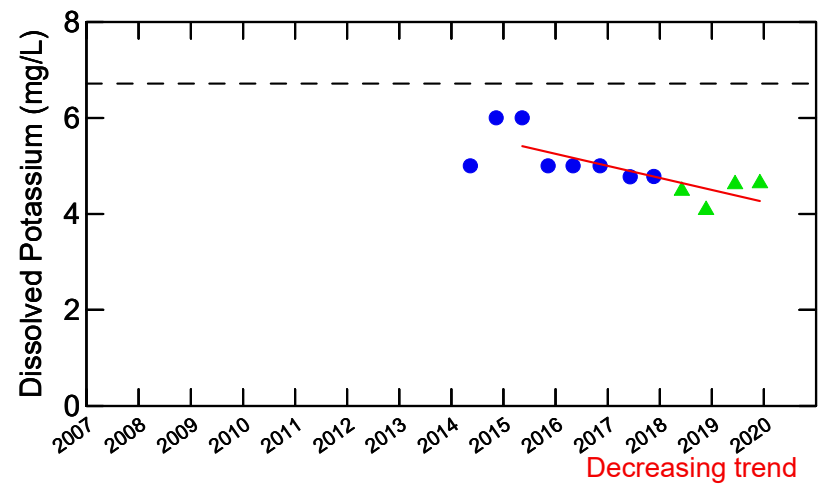
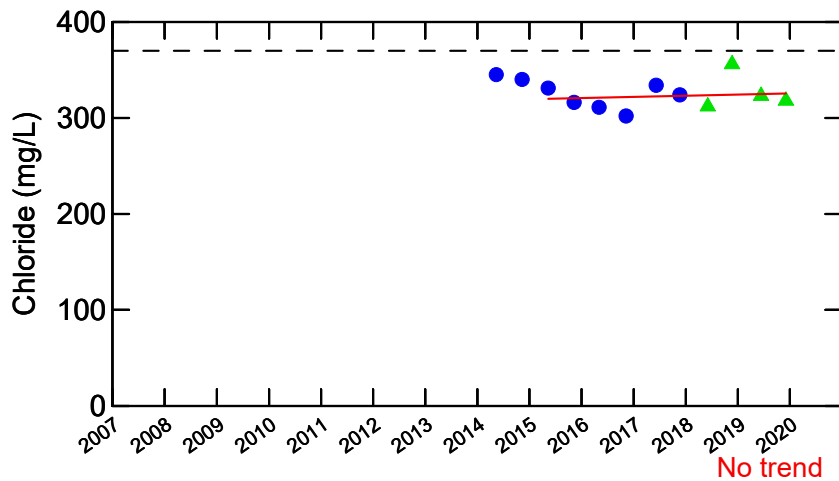
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



WELL EW1a-01
 SUB-CELL 3
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



Legend:

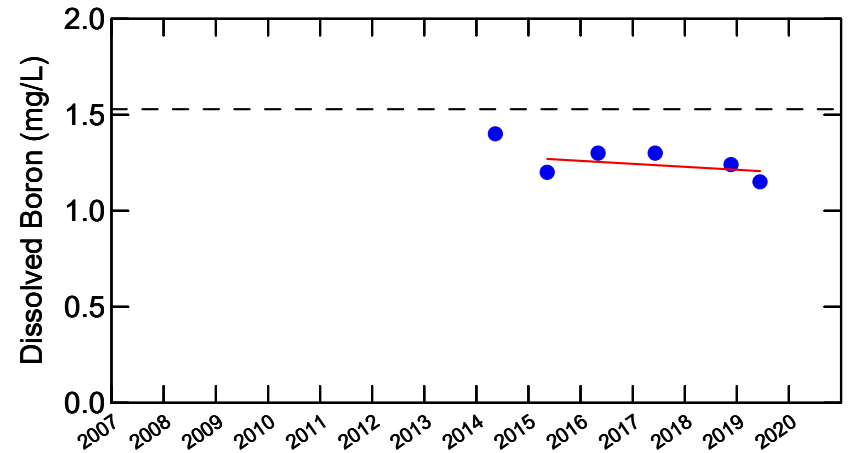
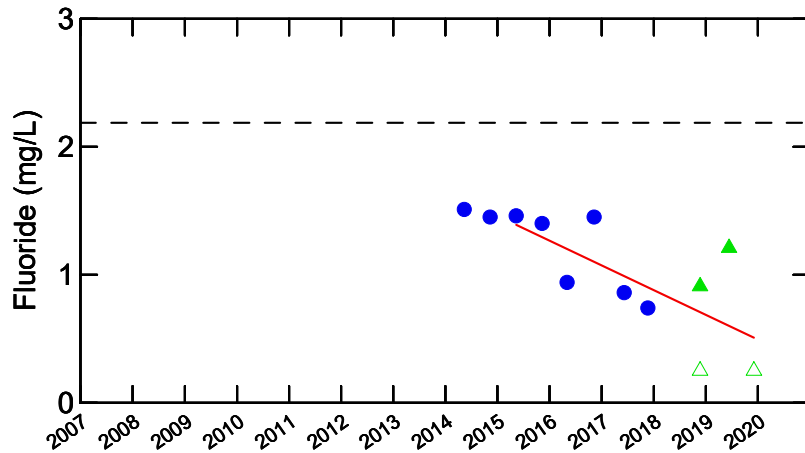
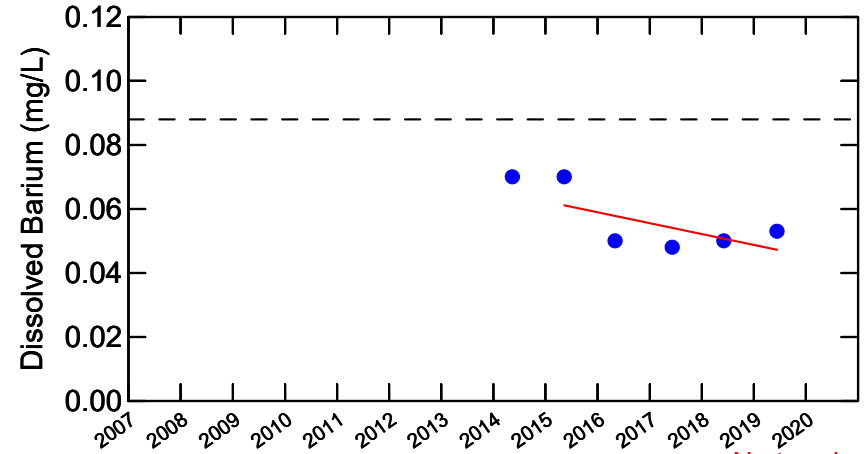
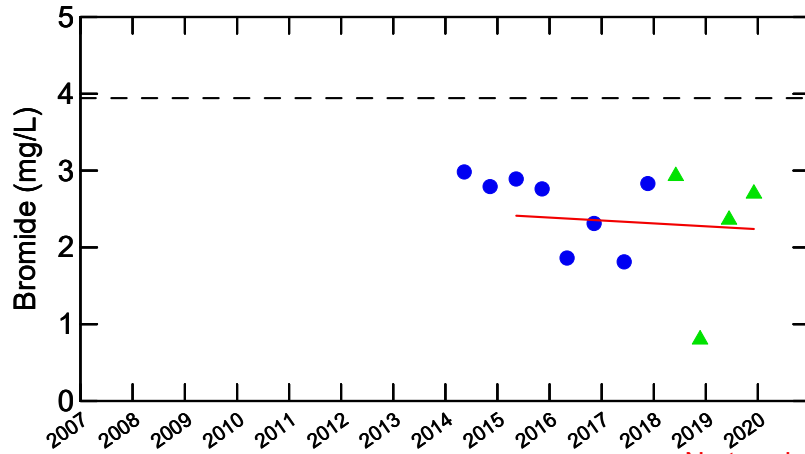
- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



WELL EW1b-13
 SUB-CELL 3
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



Legend:

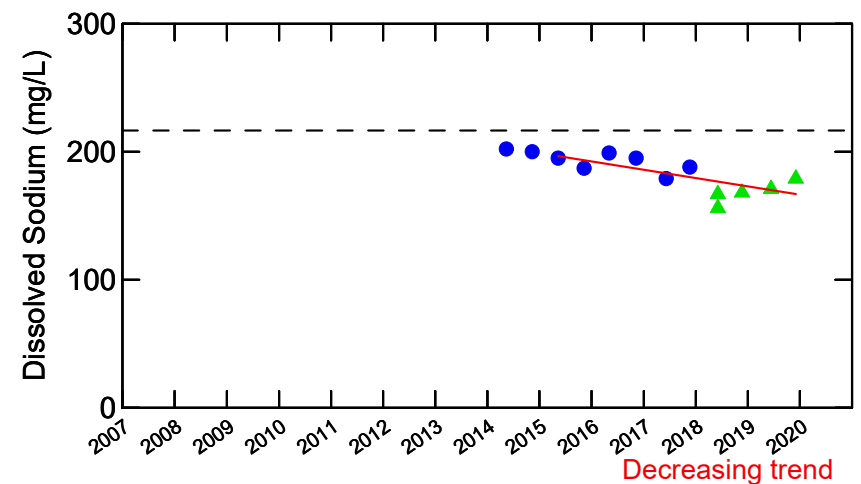
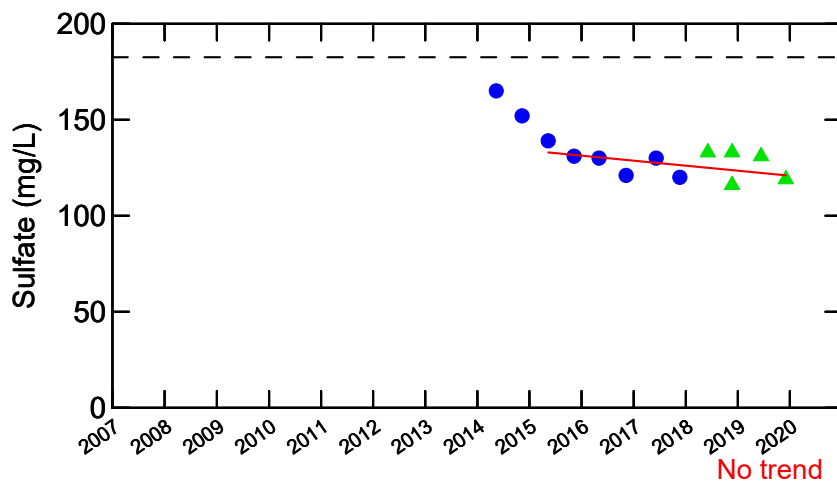
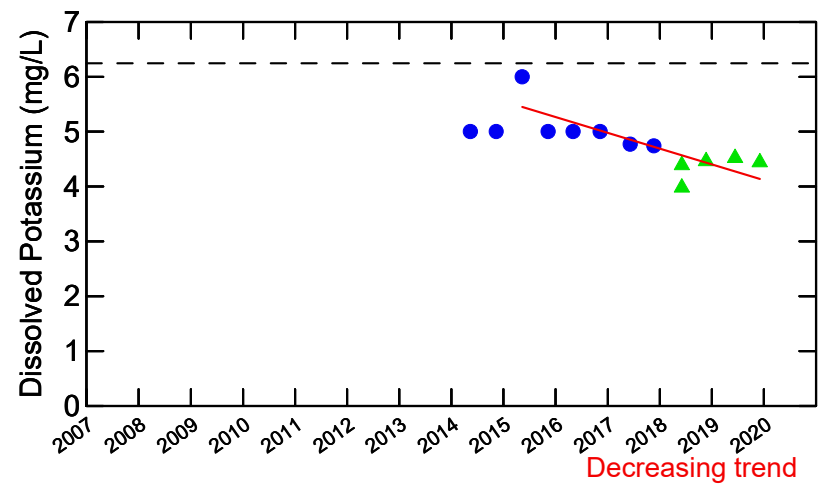
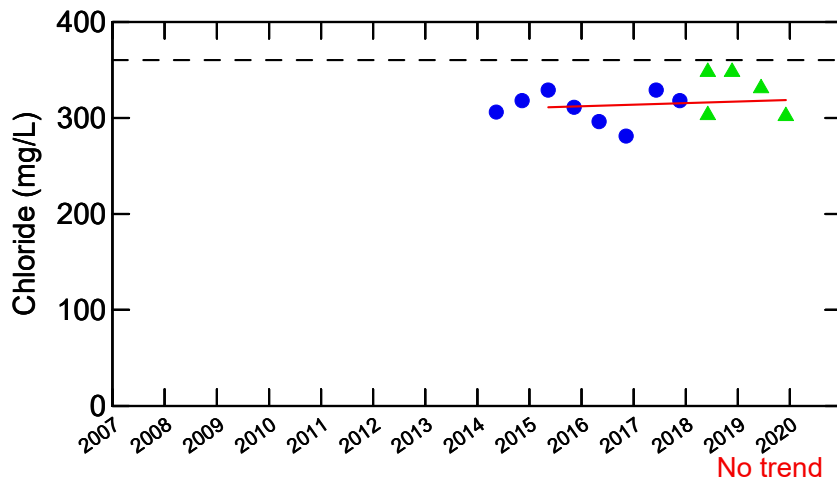
- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



WELL EW1b-13
 SUB-CELL 3
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

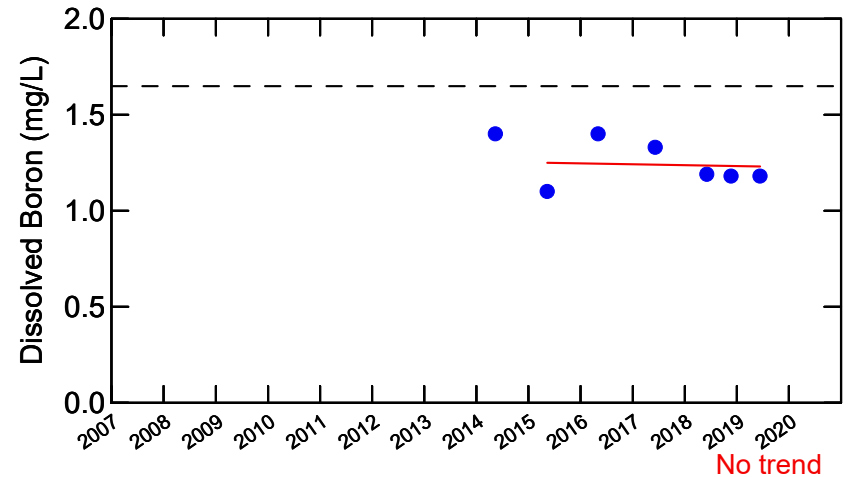
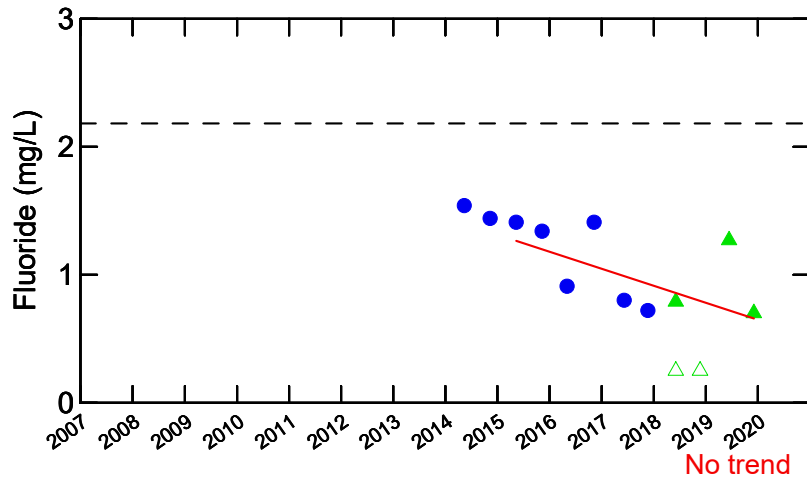
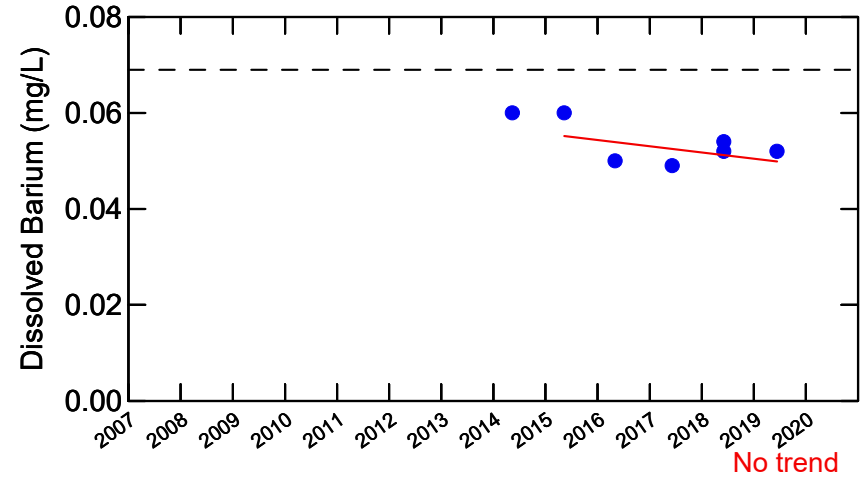
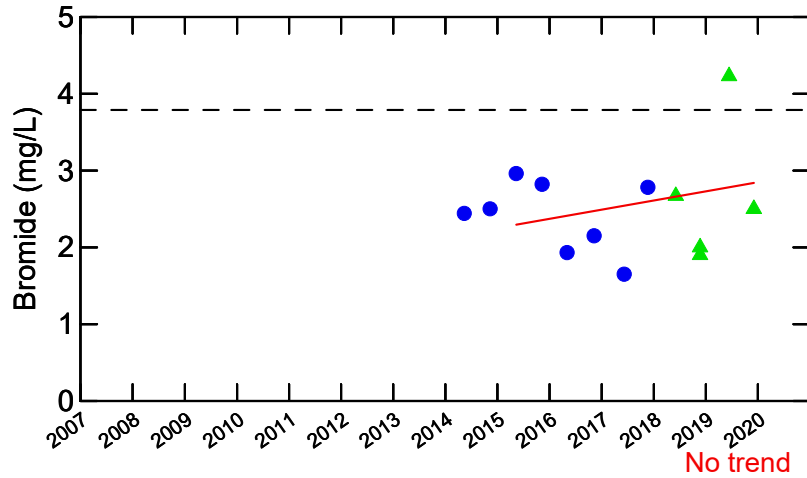
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



WELL EW1c-13
 SUB-CELL 3
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



Legend:

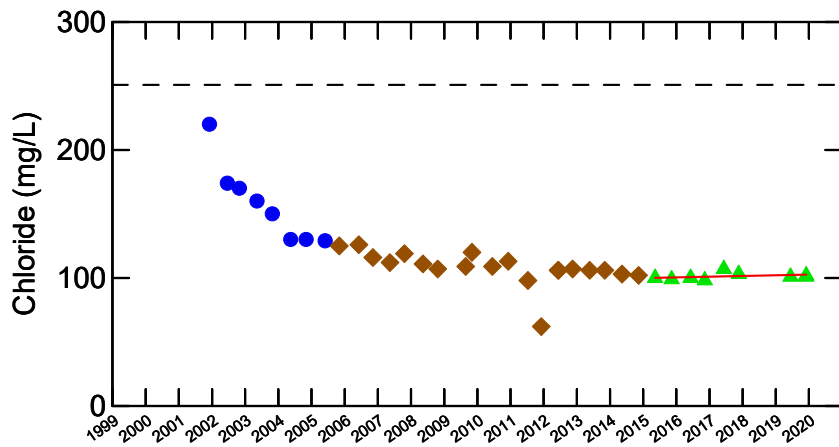
- Baseline result
- ◆ Post-Baseline result ▲ Last 5 years (for trend)
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

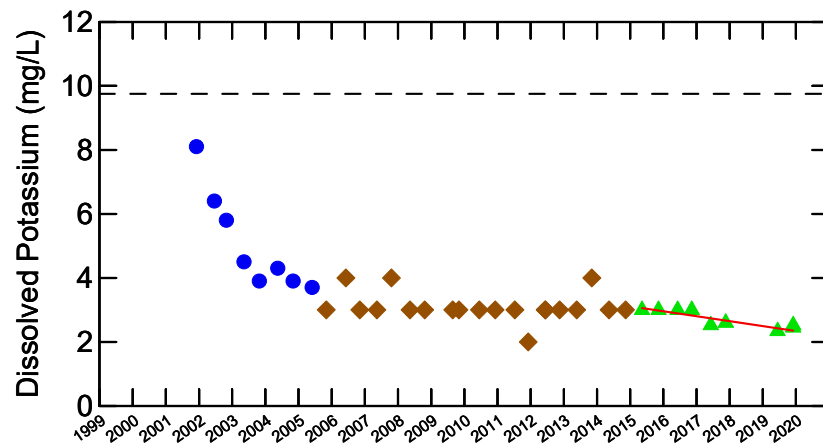
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



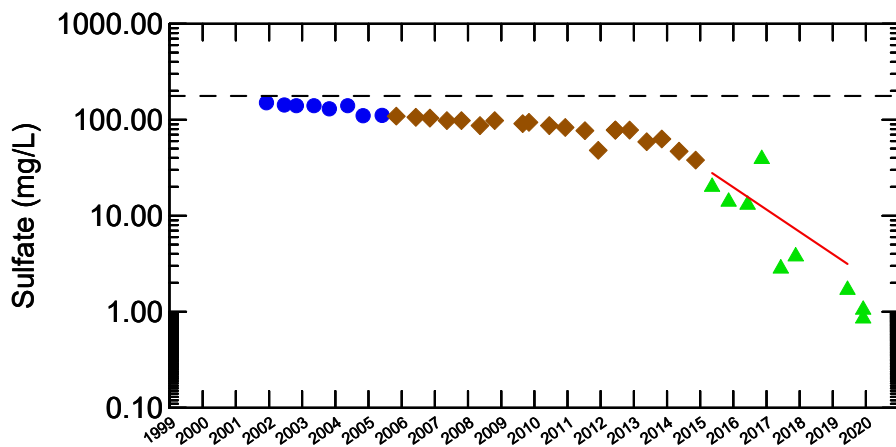
WELL EW1c-13
 SUB-CELL 3
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



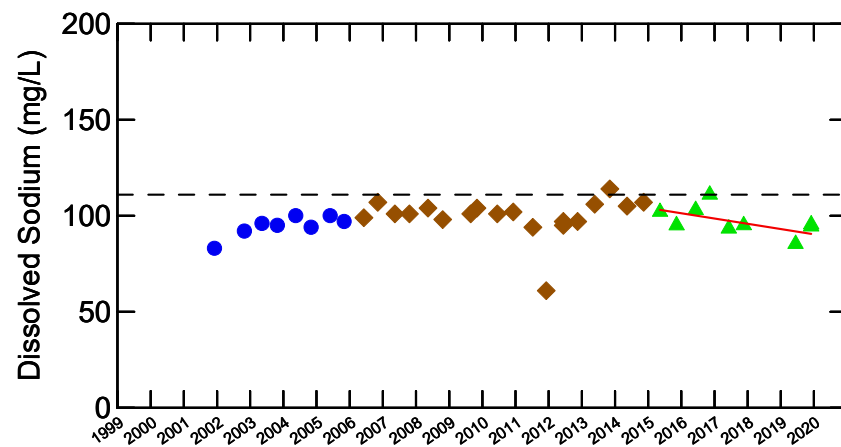
No trend



Decreasing trend



No trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

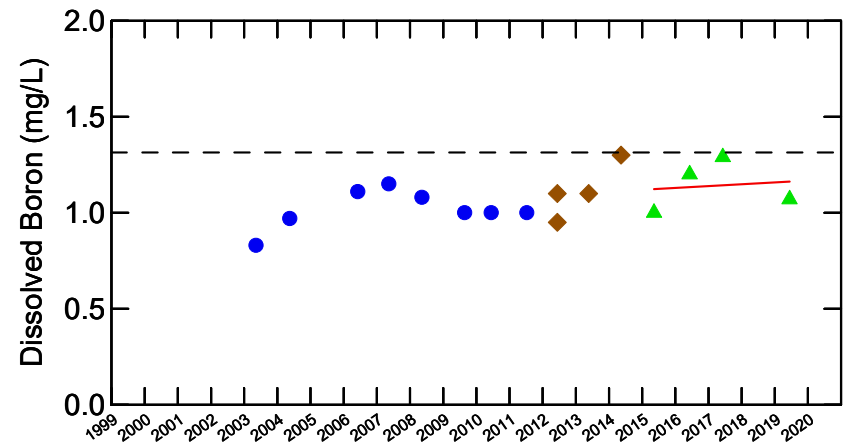
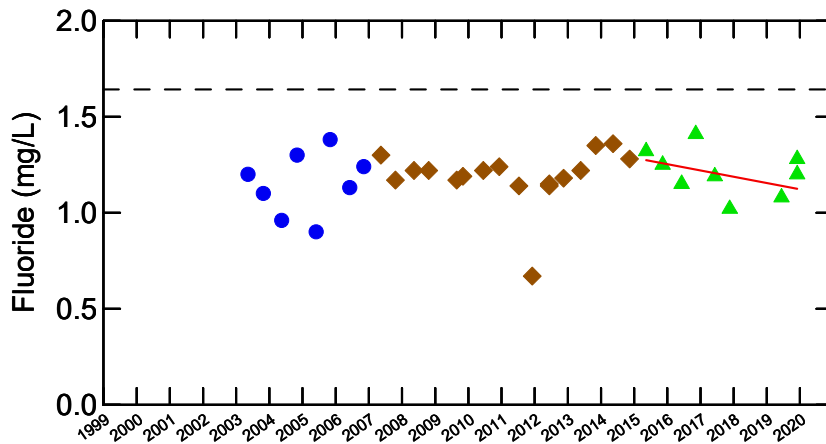
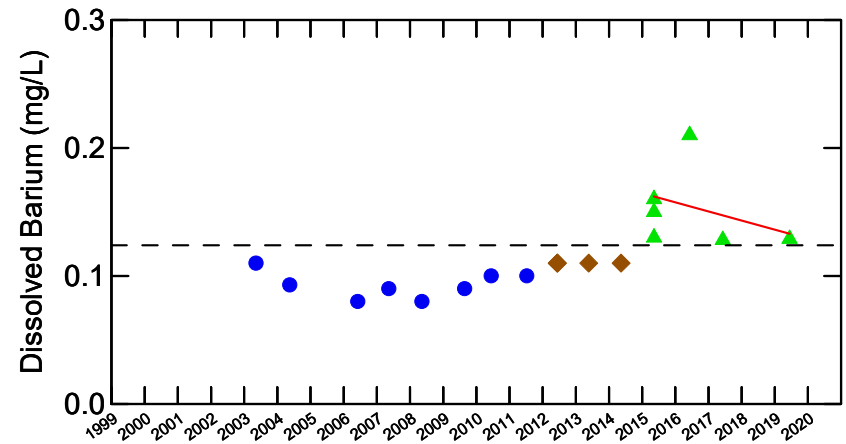
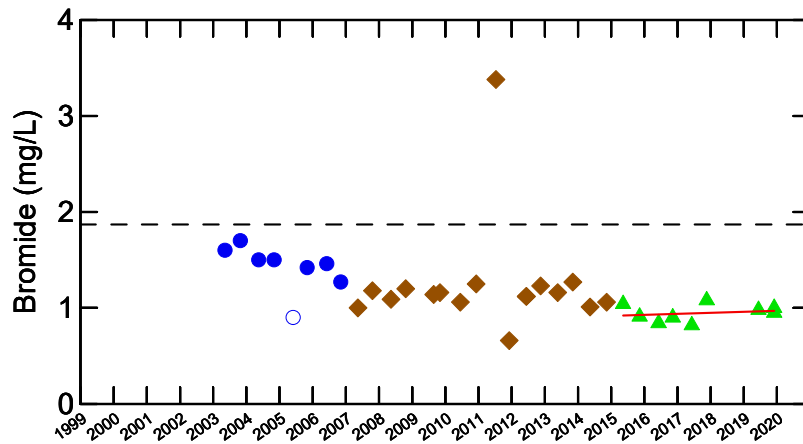
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



WELL EW2a-01
 SUB-CELL 3
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

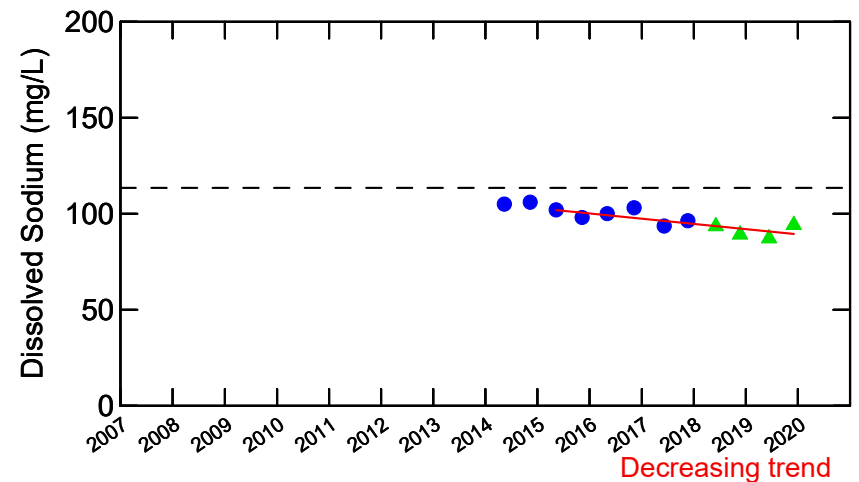
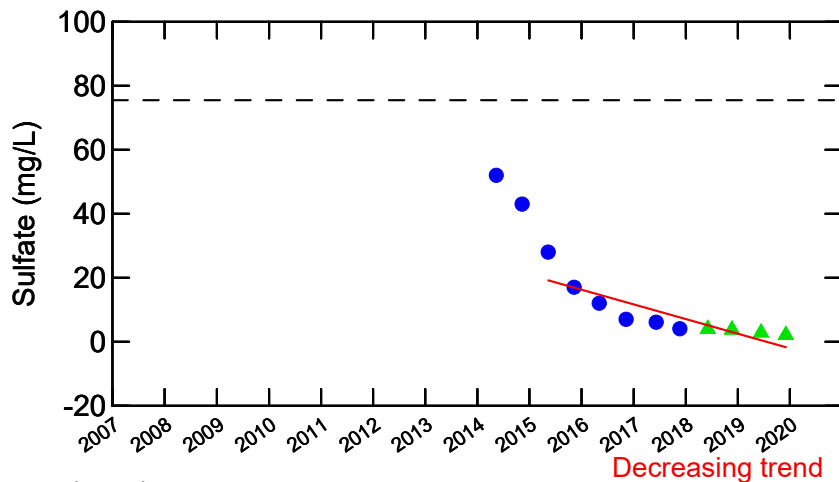
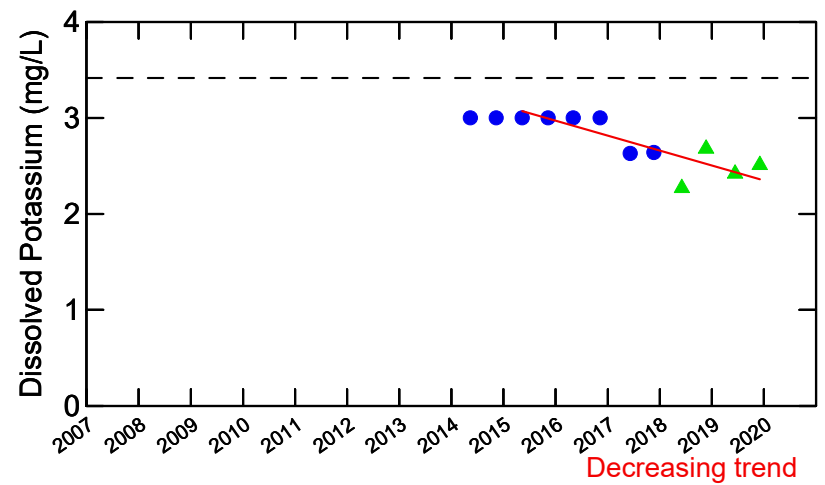
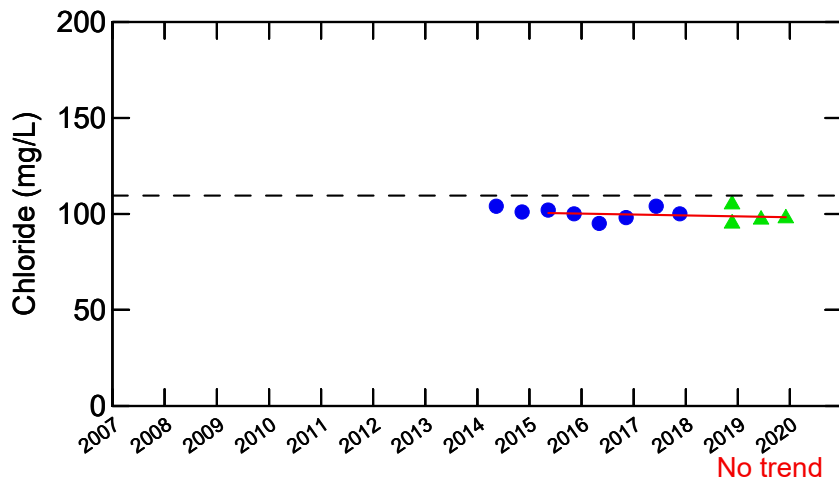
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



WELL EW2a-01
 SUB-CELL 3
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

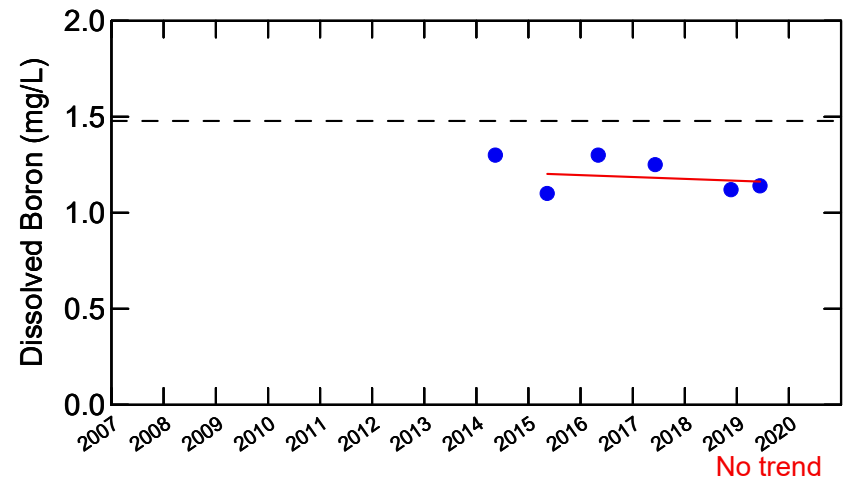
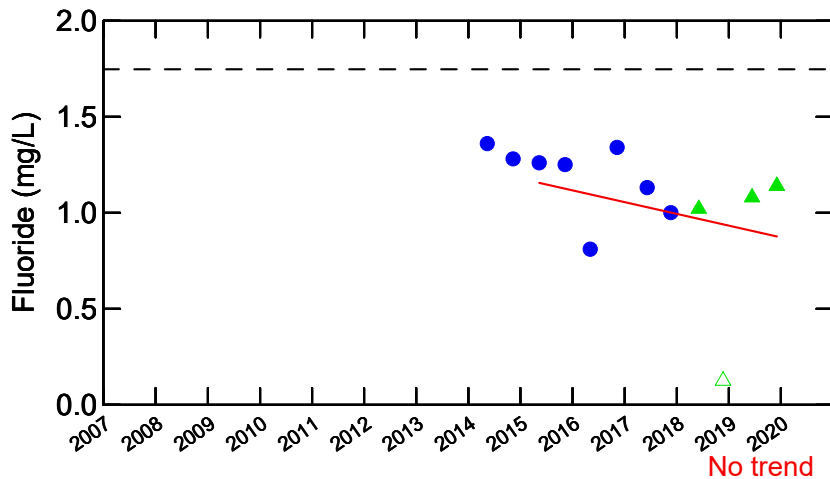
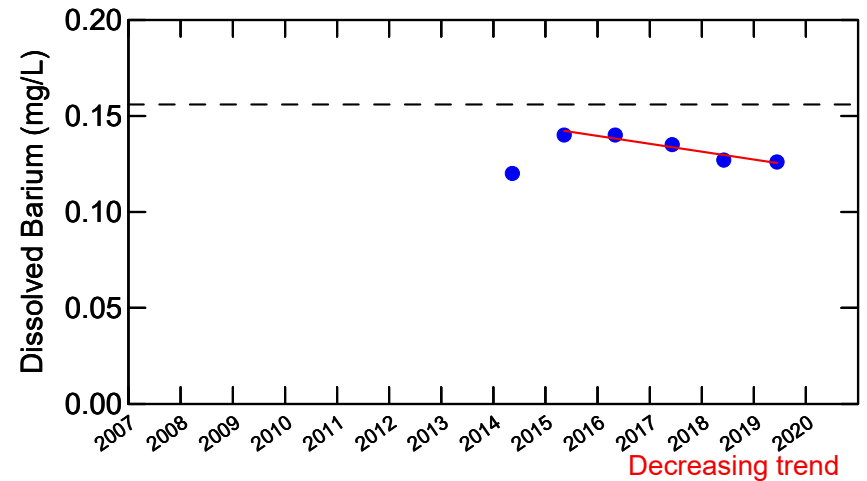
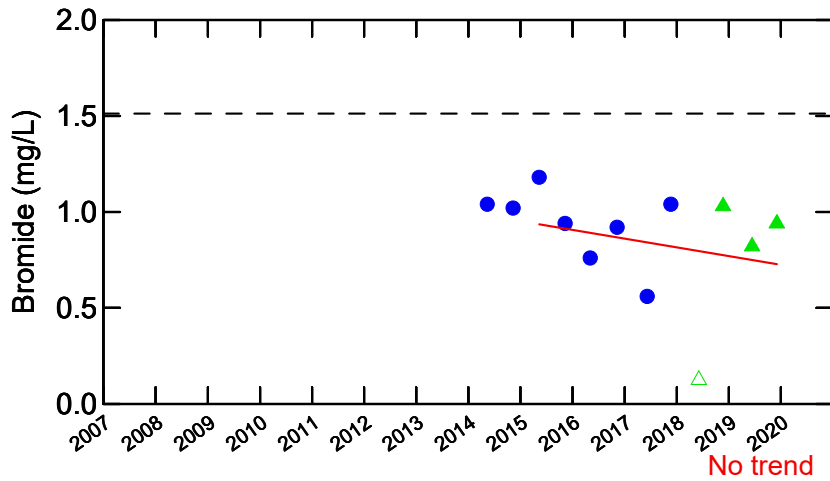
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



WELL EW2b-13
 SUB-CELL 3
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



Legend:

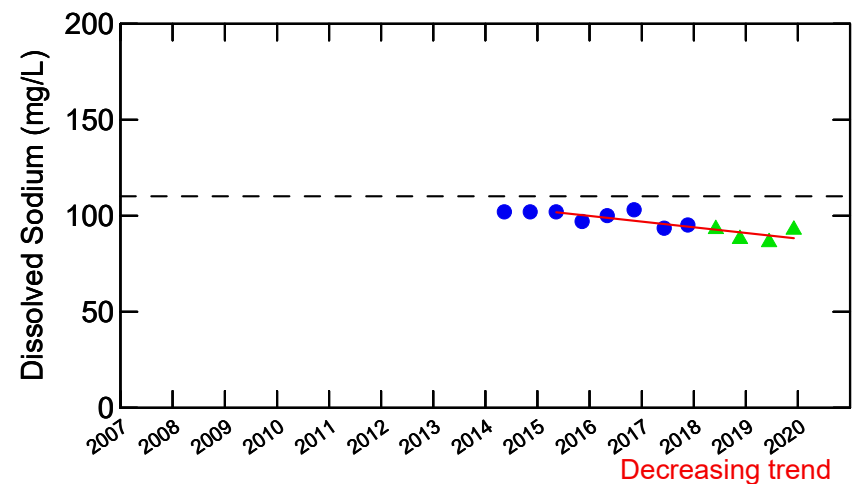
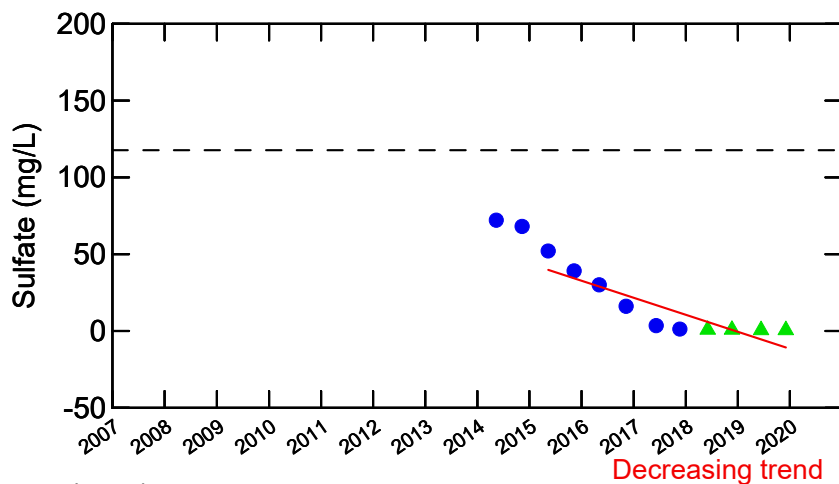
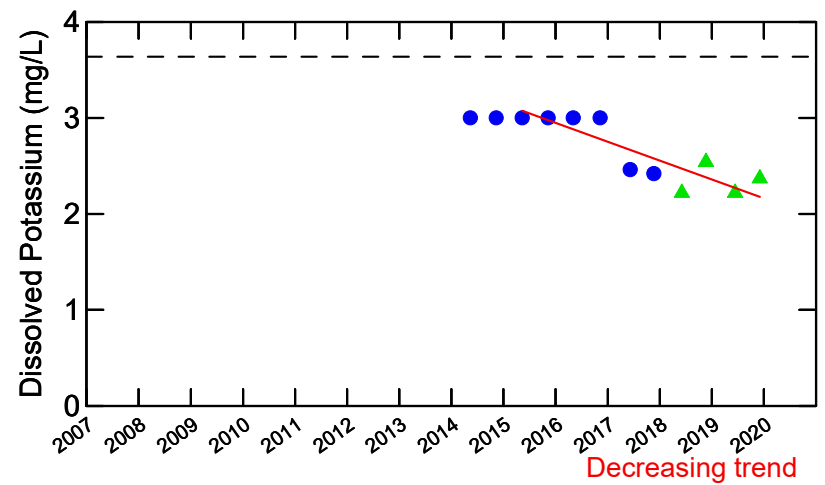
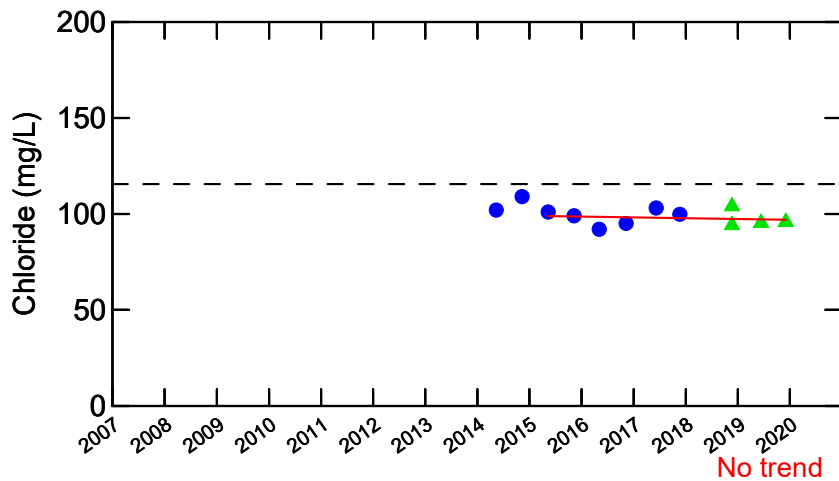
- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



WELL EW2b-13
 SUB-CELL 3
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



Legend:

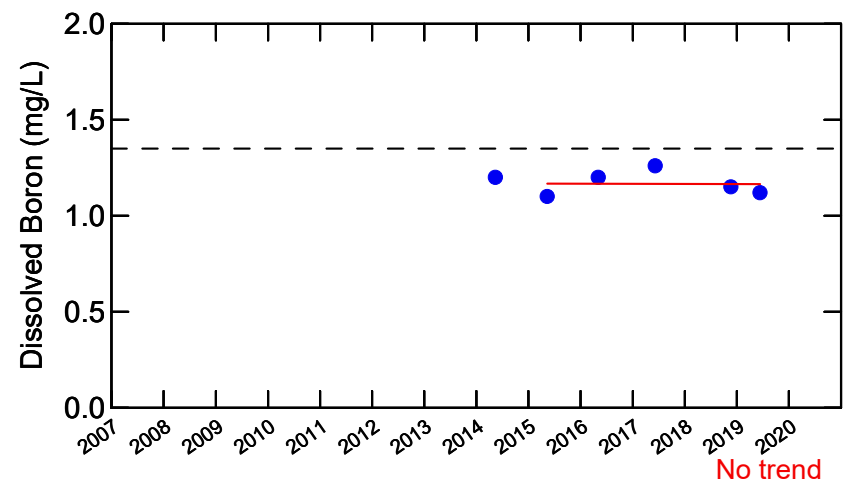
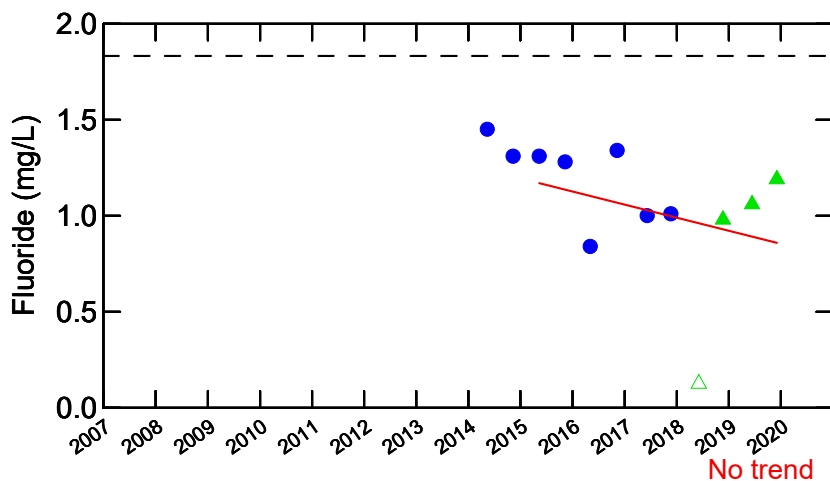
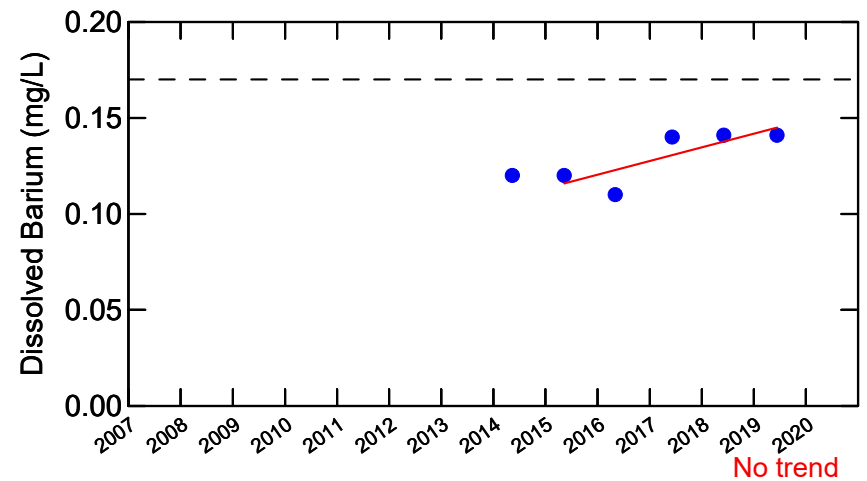
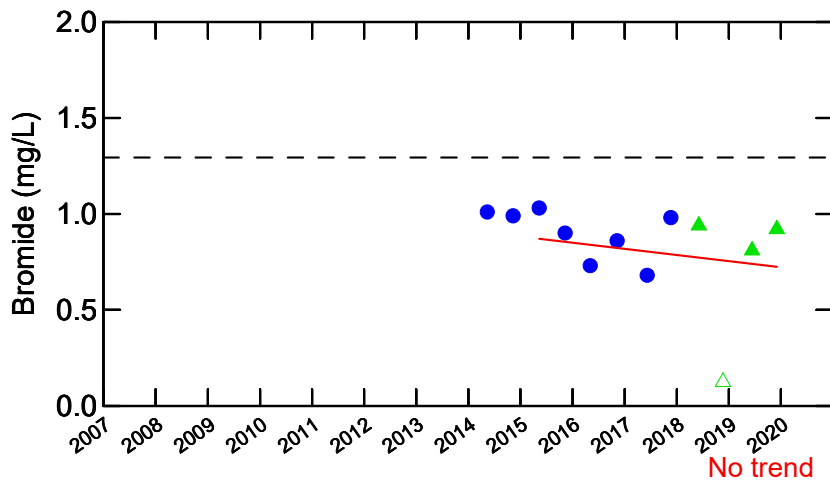
- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



WELL EW2c-13
 SUB-CELL 3
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



Legend:

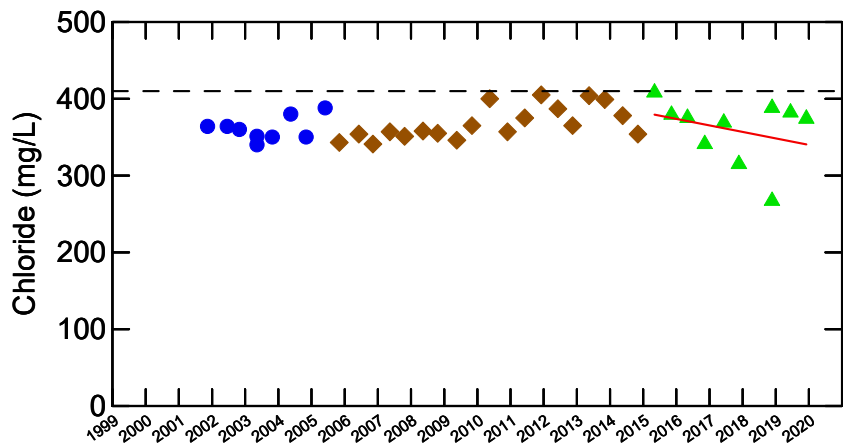
- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

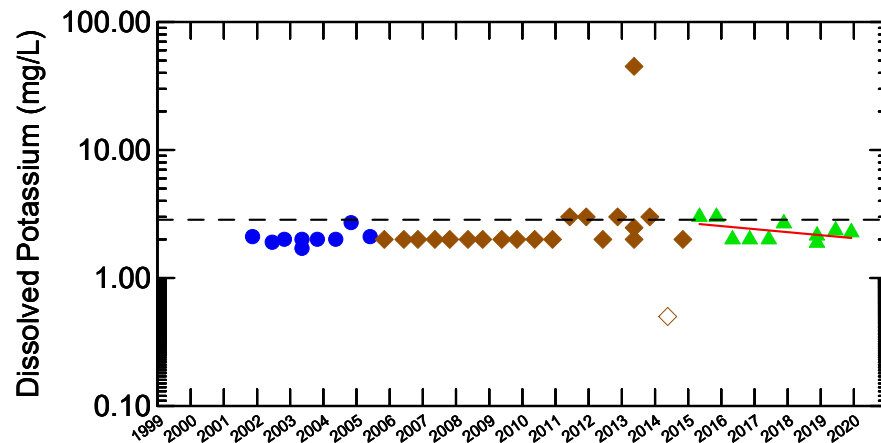
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



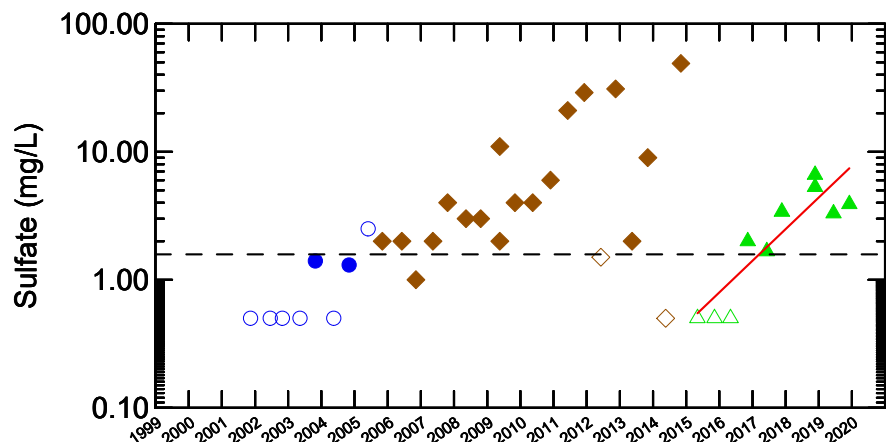
WELL EW2c-13
SUB-CELL 3
2019 GROUNDWATER MONITORING REPORT
CLEAN HARBORS CANADA, INC.
Lambton County, Ontario



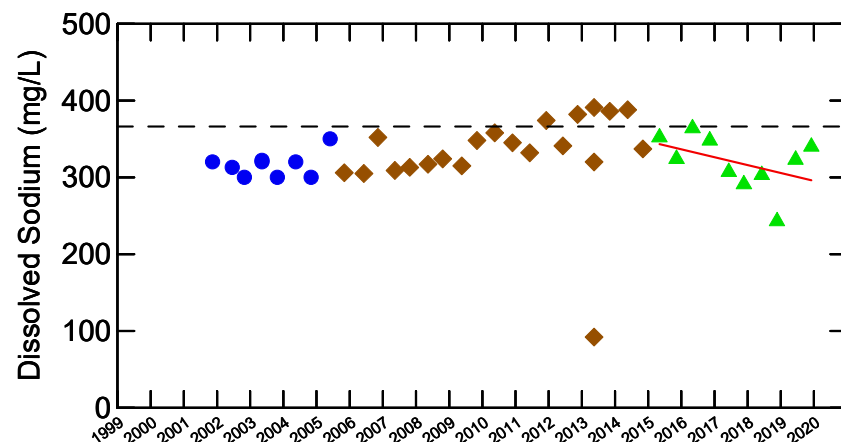
No trend



No trend



Increasing trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

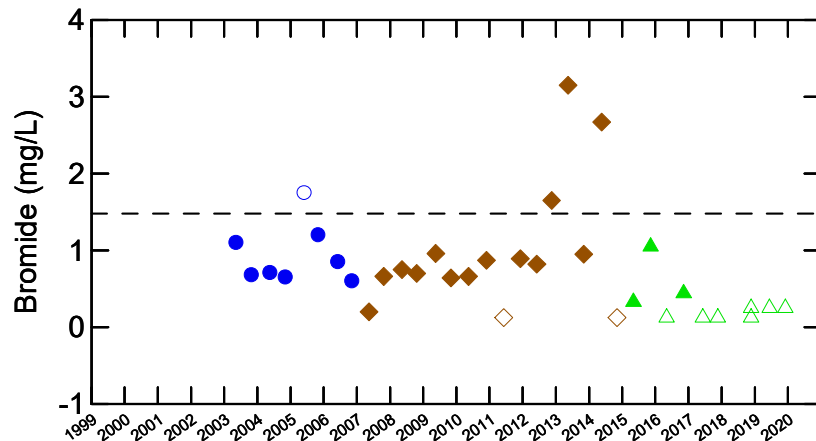
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

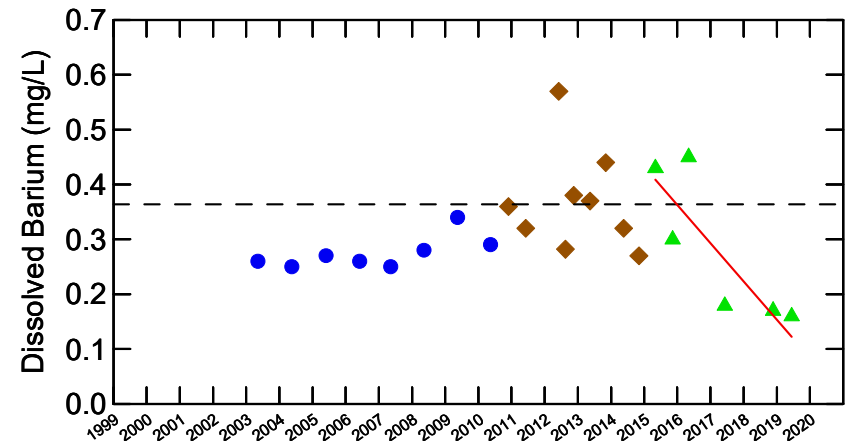
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



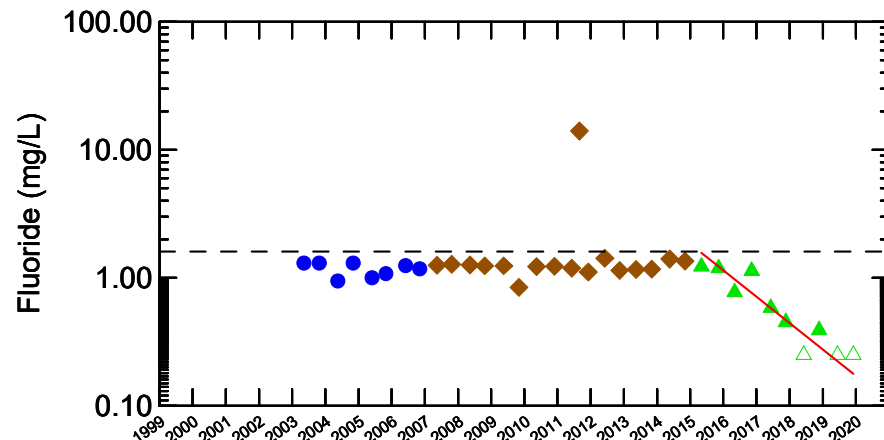
WELL PW1-N
 SUB-CELL 3
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



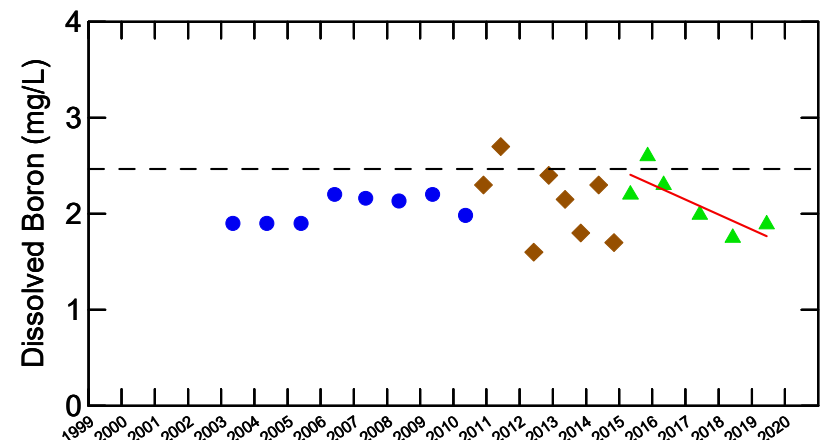
Over 50% non-detect



Decreasing trend



Decreasing trend



No trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

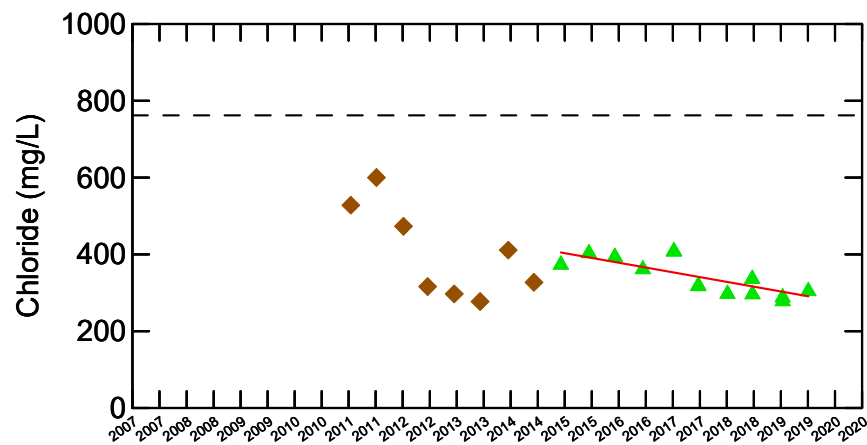
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

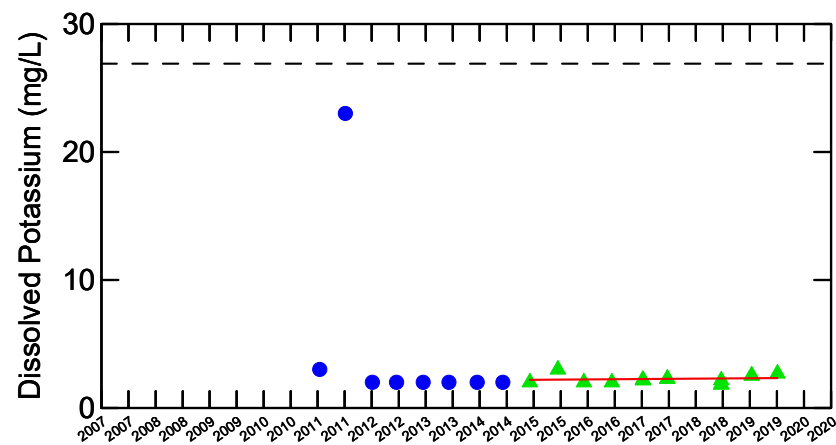
- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



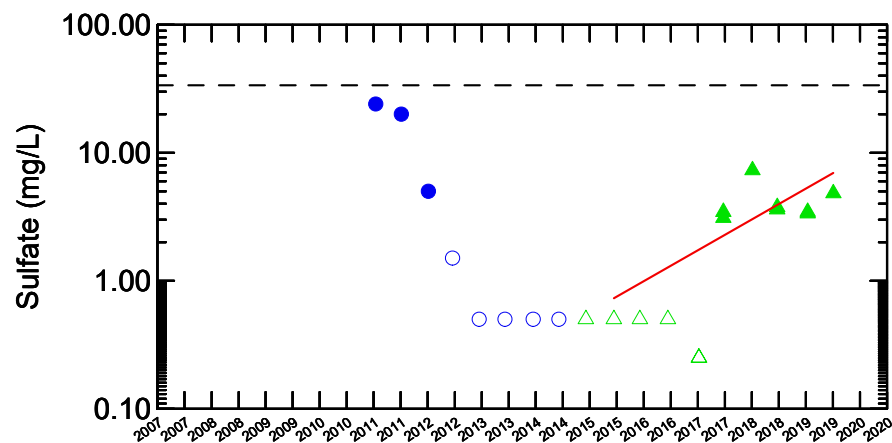
WELL PW1-N
 SUB-CELL 3
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



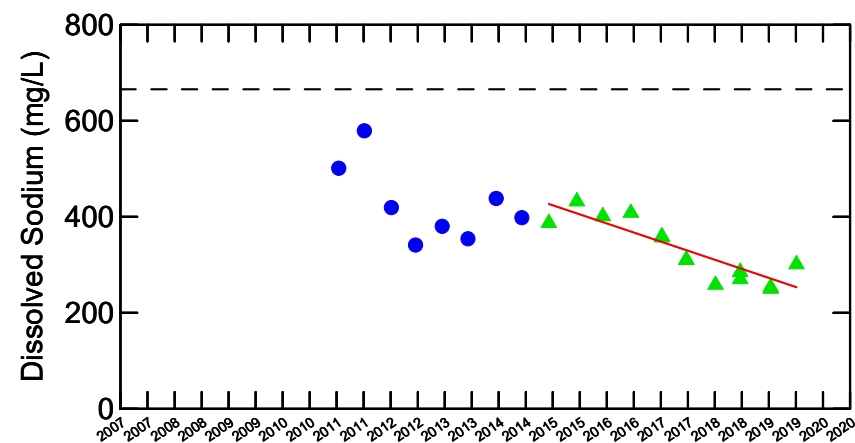
Decreasing trend



No trend



Increasing trend



Decreasing trend

Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

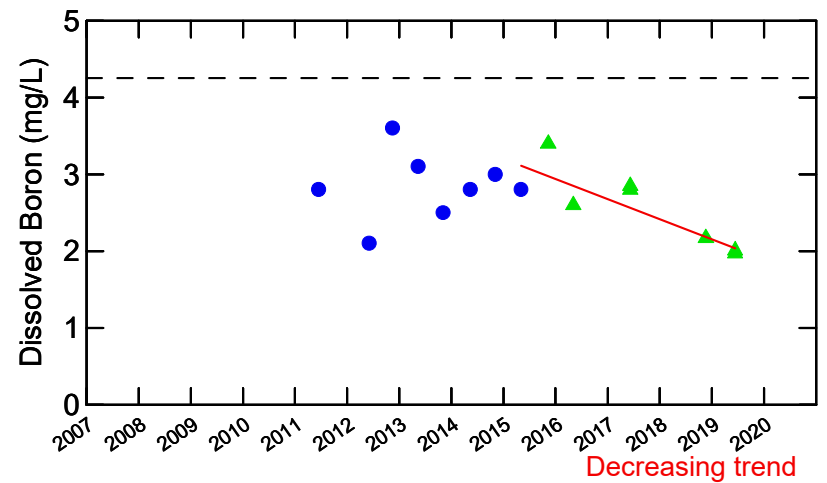
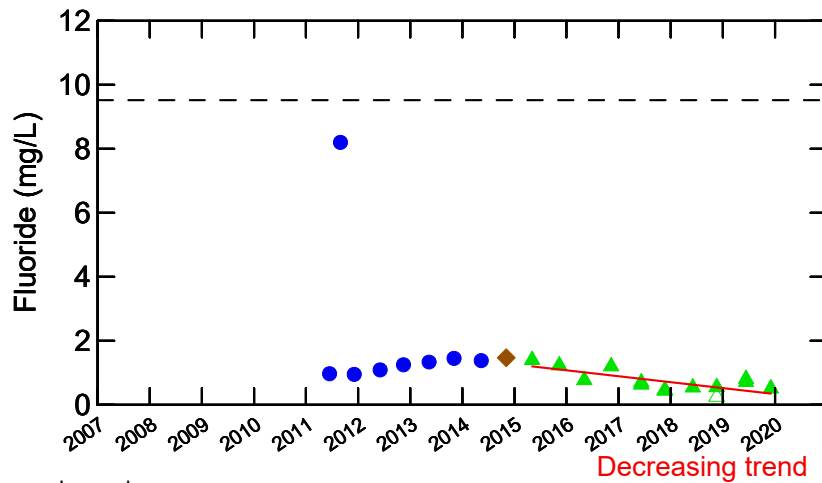
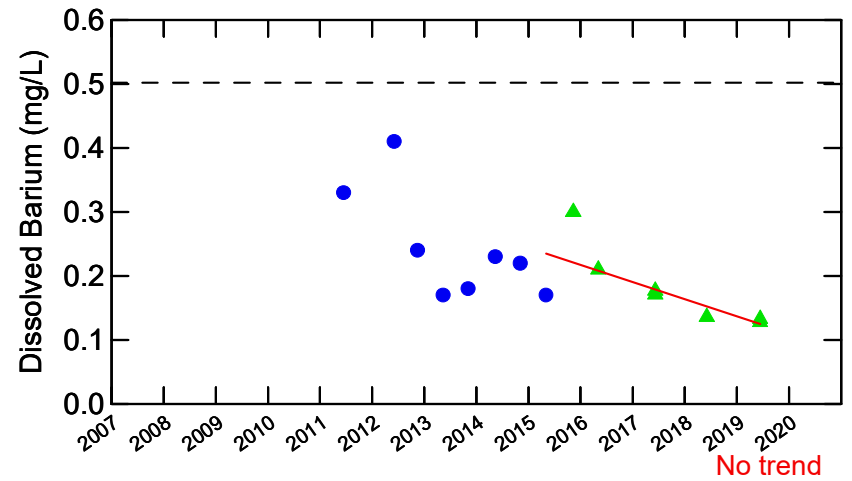
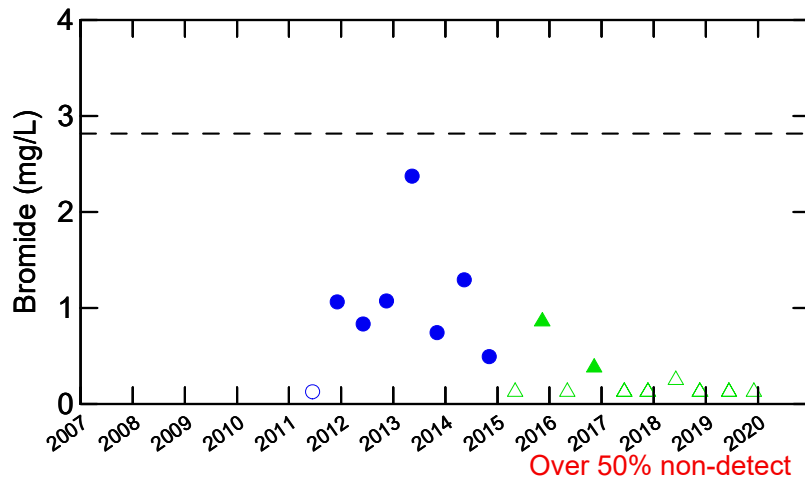
- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
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WELL PW2-S(R11)
 SUB-CELL 3
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario



Legend:

- Baseline result
- ◆ Post-Baseline result
- ▲ Last 5 years (for trend)

- Reasonable Use Criteria (RUC)
- - Baseline Upper Confidence Limit (UCL)
- Linear Regression line

Notes:

- (1) Non-detects (indicated by empty symbols) are plotted at full detection limit.
- (2) Baseline UCLs were calculated using data from the initial 8 sampling events.
- (3) Trends were evaluated considering linear regression on data from the last 5 years, using a 95 percent confidence level.



WELL PW2-S(R11)
 SUB-CELL 3
 2019 GROUNDWATER MONITORING REPORT
 CLEAN HARBORS CANADA, INC.
 Lambton County, Ontario

Appendix E

Laboratory Analytical Reports



CLIENT NAME: GHD LIMITED
455 Phillip St
WATERLOO, ON N2V1C2
(519) 884-0510

ATTENTION TO: Laura Ermeta

PROJECT: 44985 (PO73507870-2)

AGAT WORK ORDER: 19L552742

WATER ANALYSIS REVIEWED BY: Jacky Zhu, Spectroscopy Technician

DATE REPORTED: Dec 13, 2019

PAGES (INCLUDING COVER): 34

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

***NOTES**

Empty box for notes.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



Certificate of Analysis

AGAT WORK ORDER: 19L552742

PROJECT: 44985 (PO73507870-2)

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Ammonia (Water)											
DATE RECEIVED: 2019-12-06						DATE REPORTED: 2019-12-13					
						GW-44985-120219-DD-43S		GW-44985-120219-DD-42S		GW-44985-120219-DD-55S	
						SAMPLE DESCRIPTION:		SAMPLE DESCRIPTION:		SAMPLE DESCRIPTION:	
						SAMPLE TYPE: Water		SAMPLE TYPE: Water		SAMPLE TYPE: Water	
						DATE SAMPLED: 2019-12-02		DATE SAMPLED: 2019-12-02		DATE SAMPLED: 2019-12-02	
Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	777120	777125	777126	777128	777129	777132
Ammonia as N	mg/L		0.02	2019-12-09	2019-12-09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
						GW-44985-120219-DD-59S		GW-44985-120219-DD-63S		GW-44985-120219-DD-41S	
						SAMPLE DESCRIPTION:		SAMPLE DESCRIPTION:		SAMPLE DESCRIPTION:	
						SAMPLE TYPE: Water		SAMPLE TYPE: Water		SAMPLE TYPE: Water	
						DATE SAMPLED: 2019-12-02		DATE SAMPLED: 2019-12-02		DATE SAMPLED: 2019-12-02	
Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	777133	777135	777139	777142	777145	777148
Ammonia as N	mg/L		0.02	2019-12-09	2019-12-09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
						GW-44985-120219-DD-35S		GW-44985-120219-DD-43S-98		GW-44985-120219-DD-B1	
						SAMPLE DESCRIPTION:		SAMPLE DESCRIPTION:		SAMPLE DESCRIPTION:	
						SAMPLE TYPE: Water		SAMPLE TYPE: Water		SAMPLE TYPE: Water	
						DATE SAMPLED: 2019-12-02		DATE SAMPLED: 2019-12-02		DATE SAMPLED: 2019-12-02	
Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	777151	777153	777155	777158	777161	777165
Ammonia as N	mg/L		0.02	2019-12-09	2019-12-09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
						GW-44985-120319-DD-39S		GW-44985-120319-DD-21II		GW-44985-120319-DD-40S	
						SAMPLE DESCRIPTION:		SAMPLE DESCRIPTION:		SAMPLE DESCRIPTION:	
						SAMPLE TYPE: Water		SAMPLE TYPE: Water		SAMPLE TYPE: Water	
						DATE SAMPLED: 2019-12-03		DATE SAMPLED: 2019-12-03		DATE SAMPLED: 2019-12-03	
Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	777168	777169	777173	777176	777182	777183
Ammonia as N	mg/L		0.02	2019-12-09	2019-12-09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 19L552742
PROJECT: 44985 (PO73507870-2)

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
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FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GHD LIMITED
SAMPLING SITE:

ATTENTION TO: Laura Ermeta
SAMPLED BY:

Ammonia (Water)

DATE RECEIVED: 2019-12-06

DATE REPORTED: 2019-12-13

Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	GW-44985-	GW-44985-	GW-44985-	GW-44985-
						120319-DD-48S	120419-DD-61I	120419-DD-45S	120419-DD-57S
SAMPLE DESCRIPTION:						Water	Water	Water	Water
SAMPLE TYPE:						2019-12-03	2019-12-04	2019-12-04	2019-12-04
DATE SAMPLED:						777184	777210	777219	777222
Ammonia as N	mg/L		0.02	2019-12-10	2019-12-10	<0.02	<0.02	<0.02	<0.02

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 19L552742

PROJECT: 44985 (PO73507870-2)

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Groundwater Parameters

DATE RECEIVED: 2019-12-06

DATE REPORTED: 2019-12-13

Parameter	Unit	GW-44985-120219-DD-43S				GW-44985-120219-DD-43D			GW-44985-120219-DD-49D	
		SAMPLE DESCRIPTION: 120219-DD-43S				SAMPLE DESCRIPTION: 120219-DD-43D			SAMPLE DESCRIPTION: 120219-DD-49D	
		SAMPLE TYPE: Water				SAMPLE TYPE: Water			SAMPLE TYPE: Water	
		DATE SAMPLED: 2019-12-02				DATE SAMPLED: 2019-12-02			DATE SAMPLED: 2019-12-02	
		G / S	RDL	Date Prepared	Date Analyzed	777120	RDL	777122	RDL	777123
Electrical Conductivity	µS/cm		2	2019-12-06	2019-12-06	597	2	952	2	586
pH	pH Units		NA	2019-12-06	2019-12-06	7.82	NA	7.85	NA	7.81
Total Dissolved Solids	mg/L		20	2019-12-09	2019-12-10	448	20	640	20	368
Alkalinity (as CaCO3)	mg/L		5	2019-12-06	2019-12-06	278	5	259	5	238
Fluoride	mg/L	1.5	0.10	2019-12-09	2019-12-09	0.28	0.25	0.98	0.10	1.23
Chloride	mg/L		0.20	2019-12-09	2019-12-09	11.9	0.50	233	0.20	91.0
Nitrate as N	mg/L	10.0	0.10	2019-12-09	2019-12-09	<0.10	0.25	<0.25	0.10	<0.10
Nitrite as N	mg/L	1.0	0.10	2019-12-09	2019-12-09	<0.10	0.25	<0.25	0.10	<0.10
Bromide	mg/L		0.10	2019-12-09	2019-12-09	<0.10	0.25	<0.25	0.10	0.59
Sulphate	mg/L		0.20	2019-12-09	2019-12-09	115	0.50	<0.50	0.20	<0.20
Cyanide, Free	mg/L	0.2	0.002	2019-12-10	2019-12-10	<0.002	0.002	<0.002	0.002	<0.002
Calcium	mg/L		0.05	2019-12-12	2019-12-12	96.1	0.10	25.1	0.05	19.0
Magnesium	mg/L		0.05	2019-12-12	2019-12-12	26.6	0.10	8.63	0.05	5.03
Sodium	mg/L	20	0.05	2019-12-12	2019-12-12	23.1	0.10	210	0.05	131
Potassium	mg/L		0.05	2019-12-12	2019-12-12	1.59	0.10	1.77	0.05	1.31

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 19L552742

PROJECT: 44985 (PO73507870-2)

5835 COOPERS AVENUE
 MISSISSAUGA, ONTARIO
 CANADA L4Z 1Y2
 TEL (905)712-5100
 FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Groundwater Parameters

DATE RECEIVED: 2019-12-06

DATE REPORTED: 2019-12-13

Parameter	Unit	G / S	RDL	GW-44985- SAMPLE DESCRIPTION: 120219-DD-42S			GW-44985- 120219-DD-55S			
				Date Prepared	Date Analyzed	777125	RDL	Date Prepared	Date Analyzed	777126
Electrical Conductivity	µS/cm		2	2019-12-06	2019-12-06	2460	2	2019-12-06	2019-12-06	1020
pH	pH Units		NA	2019-12-06	2019-12-06	7.57	NA	2019-12-06	2019-12-06	7.71
Total Dissolved Solids	mg/L		20	2019-12-09	2019-12-10	2580	20	2019-12-09	2019-12-10	850
Alkalinity (as CaCO3)	mg/L		5	2019-12-06	2019-12-06	360	5	2019-12-06	2019-12-06	305
Fluoride	mg/L	1.5	2.5	2019-12-09	2019-12-09	<2.5	0.25	2019-12-09	2019-12-09	0.59
Chloride	mg/L		5.0	2019-12-09	2019-12-09	36.4	0.50	2019-12-09	2019-12-09	13.6
Nitrate as N	mg/L	10.0	2.5	2019-12-09	2019-12-09	<2.5	0.25	2019-12-09	2019-12-09	<0.25
Nitrite as N	mg/L	1.0	2.5	2019-12-09	2019-12-09	<2.5	0.25	2019-12-09	2019-12-09	<0.25
Bromide	mg/L		2.5	2019-12-09	2019-12-09	<2.5	0.25	2019-12-09	2019-12-09	<0.25
Sulphate	mg/L		5.0	2019-12-09	2019-12-09	1790	0.50	2019-12-09	2019-12-09	417
Cyanide, Free	mg/L	0.2	0.002	2019-12-10	2019-12-10	<0.002	0.002	2019-12-11	2019-12-11	<0.002
Calcium	mg/L		0.25	2019-12-12	2019-12-12	449	0.10	2019-12-12	2019-12-12	139
Magnesium	mg/L		0.25	2019-12-12	2019-12-12	198	0.10	2019-12-12	2019-12-12	60.3
Sodium	mg/L	20	0.25	2019-12-12	2019-12-12	70.5	0.10	2019-12-12	2019-12-12	51.6
Potassium	mg/L		0.25	2019-12-12	2019-12-12	4.57	0.10	2019-12-12	2019-12-12	3.00

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 19L552742

PROJECT: 44985 (PO73507870-2)

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Groundwater Parameters

DATE RECEIVED: 2019-12-06

DATE REPORTED: 2019-12-13

Parameter	Unit	GW-44985-									
		SAMPLE DESCRIPTION: 120219-DD-55D					GW-44985-120219-DD-58S		GW-44985-120219-DD-56S		
		G / S		RDL		SAMPLE TYPE: Water		Water		Water	
		DATE SAMPLED: 2019-12-02		DATE SAMPLED: 2019-12-02		DATE SAMPLED: 2019-12-02		DATE SAMPLED: 2019-12-02		DATE SAMPLED: 2019-12-02	
				Date Prepared	Date Analyzed	777127	RDL	777128	RDL	777129	
Electrical Conductivity	µS/cm		2	2019-12-06	2019-12-06	1480	2	2510	2	1340	
pH	pH Units		NA	2019-12-06	2019-12-06	7.87	NA	7.64	NA	7.70	
Total Dissolved Solids	mg/L		20	2019-12-09	2019-12-10	954	20	2390	20	1290	
Alkalinity (as CaCO3)	mg/L		5	2019-12-06	2019-12-06	283	5	463	5	398	
Fluoride	mg/L	1.5	0.5	2019-12-09	2019-12-09	0.7	1.0	<1.0	0.5	<0.5	
Chloride	mg/L		1.0	2019-12-09	2019-12-09	425	2.0	267	1.0	34.5	
Nitrate as N	mg/L	10.0	0.5	2019-12-09	2019-12-09	<0.5	1.0	<1.0	0.5	0.7	
Nitrite as N	mg/L	1.0	0.5	2019-12-09	2019-12-09	<0.5	1.0	<1.0	0.5	<0.5	
Bromide	mg/L		0.5	2019-12-09	2019-12-09	<0.5	1.0	<1.0	0.5	<0.5	
Sulphate	mg/L		1.0	2019-12-09	2019-12-09	<1.0	2.0	1160	1.0	564	
Cyanide, Free	mg/L	0.2	0.002	2019-12-11	2019-12-11	<0.002	0.002	<0.002	0.002	<0.002	
Calcium	mg/L		0.10	2019-12-12	2019-12-12	20.6	0.25	291	0.10	189	
Magnesium	mg/L		0.10	2019-12-12	2019-12-12	6.72	0.25	208	0.10	81.9	
Sodium	mg/L	20	0.10	2019-12-12	2019-12-12	342	0.25	117	0.10	63.5	
Potassium	mg/L		0.10	2019-12-12	2019-12-12	3.41	0.25	5.27	0.10	2.68	

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 19L552742

PROJECT: 44985 (PO73507870-2)

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Groundwater Parameters

DATE RECEIVED: 2019-12-06

DATE REPORTED: 2019-12-13

Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	GW-44985-	RDL	GW-44985-	GW-44985-	GW-44985-
						120219-DD-56D		120219-DD-62S	120219-DD-59S	120219-DD-59D
						SAMPLE DESCRIPTION:		Water	Water	Water
						DATE SAMPLED:		2019-12-02	2019-12-02	2019-12-02
						777130		777132	777133	777134
Electrical Conductivity	µS/cm		2	2019-12-06	2019-12-06	1160	2	794	755	684
pH	pH Units		NA	2019-12-06	2019-12-06	7.88	NA	7.80	7.83	7.78
Total Dissolved Solids	mg/L		20	2019-12-09	2019-12-10	722	20	570	522	434
Alkalinity (as CaCO3)	mg/L		5	2019-12-06	2019-12-06	328	5	316	409	249
Fluoride	mg/L	1.5	0.25	2019-12-09	2019-12-09	0.88	0.10	0.73	0.83	1.30
Chloride	mg/L		0.50	2019-12-09	2019-12-09	277	0.20	36.4	17.1	123
Nitrate as N	mg/L	10.0	0.25	2019-12-09	2019-12-09	<0.25	0.10	<0.10	<0.10	<0.10
Nitrite as N	mg/L	1.0	0.25	2019-12-09	2019-12-09	<0.25	0.10	<0.10	<0.10	<0.10
Bromide	mg/L		0.25	2019-12-09	2019-12-09	<0.25	0.10	<0.10	<0.10	0.51
Sulphate	mg/L		0.50	2019-12-09	2019-12-09	<0.50	0.20	177	103	<0.20
Cyanide, Free	mg/L	0.2	0.002	2019-12-11	2019-12-11	<0.002	0.002	<0.002	<0.002	<0.002
Calcium	mg/L		0.10	2019-12-12	2019-12-12	21.4	0.05	95.6	93.0	14.9
Magnesium	mg/L		0.10	2019-12-12	2019-12-12	7.38	0.05	37.2	48.8	4.69
Sodium	mg/L	20	0.10	2019-12-12	2019-12-12	273	0.05	58.1	26.7	163
Potassium	mg/L		0.10	2019-12-12	2019-12-12	2.27	0.05	2.24	2.29	1.78

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AGAT WORK ORDER: 19L552742

PROJECT: 44985 (PO73507870-2)

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

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Groundwater Parameters

DATE RECEIVED: 2019-12-06

DATE REPORTED: 2019-12-13

Parameter	Unit	G / S	RDL	GW-44985-120219-DD-63S		GW-44985-120219-DD-54D		GW-44985-120219-DD-41S		
				SAMPLE DESCRIPTION:		SAMPLE DESCRIPTION:		SAMPLE DESCRIPTION:		
				SAMPLE TYPE: Water		SAMPLE TYPE: Water		SAMPLE TYPE: Water		
				DATE SAMPLED: 2019-12-02		DATE SAMPLED: 2019-12-02		DATE SAMPLED: 2019-12-02		
				Date Prepared	Date Analyzed	RDL	RDL	RDL	RDL	
Electrical Conductivity	µS/cm		2	2019-12-06	2019-12-06	1930	2	753	2	1350
pH	pH Units		NA	2019-12-06	2019-12-06	7.72	NA	7.79	NA	7.64
Total Dissolved Solids	mg/L		20	2019-12-09	2019-12-10	1370	20	504	20	1250
Alkalinity (as CaCO3)	mg/L		5	2019-12-06	2019-12-06	435	5	259	5	461
Fluoride	mg/L	1.5	0.5	2019-12-09	2019-12-09	<0.5	0.10	1.22	0.25	<0.25
Chloride	mg/L		1.0	2019-12-09	2019-12-09	534	0.20	144	0.50	55.5
Nitrate as N	mg/L	10.0	0.5	2019-12-09	2019-12-09	<0.5	0.10	<0.10	0.25	<0.25
Nitrite as N	mg/L	1.0	0.5	2019-12-09	2019-12-09	<0.5	0.10	<0.10	0.25	<0.25
Bromide	mg/L		0.5	2019-12-09	2019-12-09	<0.5	0.10	0.48	0.25	2.23
Sulphate	mg/L		1.0	2019-12-09	2019-12-09	56.8	0.20	<0.20	0.50	476
Cyanide, Free	mg/L	0.2	0.002	2019-12-11	2019-12-11	<0.002	0.002	<0.002	0.002	<0.002
Calcium	mg/L		0.25	2019-12-12	2019-12-12	181	0.05	16.4	0.10	218
Magnesium	mg/L		0.25	2019-12-12	2019-12-12	74.5	0.05	5.20	0.10	72.0
Sodium	mg/L	20	0.25	2019-12-12	2019-12-12	172	0.05	176	0.10	51.3
Potassium	mg/L		0.25	2019-12-12	2019-12-12	3.27	0.05	1.67	0.10	1.75

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AGAT WORK ORDER: 19L552742

PROJECT: 44985 (PO73507870-2)

5835 COOPERS AVENUE
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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

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Groundwater Parameters

DATE RECEIVED: 2019-12-06

DATE REPORTED: 2019-12-13

Parameter	Unit	GW-44985-120219-DD-41D				GW-44985-120219-DD-30S			GW-44985-120219-DD-30D		GW-44985-120219-DD-32S	
		G / S	RDL	Date Prepared	Date Analyzed	SAMPLE DESCRIPTION: 120219-DD-41D		SAMPLE DESCRIPTION: 120219-DD-30S		SAMPLE DESCRIPTION: 120219-DD-30D		SAMPLE DESCRIPTION: 120219-DD-32S
						SAMPLE TYPE: Water		SAMPLE TYPE: Water		SAMPLE TYPE: Water		SAMPLE TYPE: Water
						DATE SAMPLED: 2019-12-02		DATE SAMPLED: 2019-12-02		DATE SAMPLED: 2019-12-02		DATE SAMPLED: 2019-12-02
					777140	RDL	777142	RDL	777144	777145		
Electrical Conductivity	µS/cm		2	2019-12-06	2019-12-06	917	2	722	2	968	939	
pH	pH Units		NA	2019-12-06	2019-12-06	7.74	NA	7.84	NA	7.75	7.77	
Total Dissolved Solids	mg/L		20	2019-12-09	2019-12-10	556	20	510	20	596	780	
Alkalinity (as CaCO3)	mg/L		5	2019-12-06	2019-12-06	284	5	396	5	245	323	
Fluoride	mg/L	1.5	0.25	2019-12-09	2019-12-09	0.85	0.10	1.08	0.25	0.92	<0.25	
Chloride	mg/L		0.50	2019-12-09	2019-12-09	200	0.20	4.31	0.50	246	8.30	
Nitrate as N	mg/L	10.0	0.25	2019-12-09	2019-12-09	<0.25	0.10	<0.10	0.25	<0.25	<0.25	
Nitrite as N	mg/L	1.0	0.25	2019-12-09	2019-12-09	<0.25	0.10	<0.10	0.25	<0.25	<0.25	
Bromide	mg/L		0.25	2019-12-09	2019-12-09	0.56	0.10	<0.10	0.25	<0.25	<0.25	
Sulphate	mg/L		0.50	2019-12-09	2019-12-09	<0.50	0.20	111	0.50	<0.50	354	
Cyanide, Free	mg/L	0.2	0.002	2019-12-11	2019-12-11	<0.002	0.002	<0.002	0.002	<0.002	<0.002	
Calcium	mg/L		0.05	2019-12-12	2019-12-12	15.3	0.05	81.3	0.10	21.0	158	
Magnesium	mg/L		0.05	2019-12-12	2019-12-12	5.05	0.05	49.7	0.10	7.20	51.5	
Sodium	mg/L	20	0.05	2019-12-12	2019-12-12	216	0.05	36.1	0.10	216	23.0	
Potassium	mg/L		0.05	2019-12-12	2019-12-12	1.65	0.05	1.93	0.10	2.44	1.91	

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ATTENTION TO: Laura Ermeta

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Groundwater Parameters

DATE RECEIVED: 2019-12-06

DATE REPORTED: 2019-12-13

Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	SAMPLE DESCRIPTION:		RDL	DATE REPORTED:	
						120219-DD-32D	120219-DD-53S		120219-DD-53D	120219-DD-35S
						SAMPLE TYPE: Water			Water	
						DATE SAMPLED: 2019-12-02			2019-12-02	
						777147	777148		777150	777151
Electrical Conductivity	µS/cm		2	2019-12-06	2019-12-06	1110	1100	2	1360	1160
pH	pH Units		NA	2019-12-06	2019-12-06	7.88	7.71	NA	7.80	7.73
Total Dissolved Solids	mg/L		20	2019-12-09	2019-12-10	680	954	20	902	1070
Alkalinity (as CaCO3)	mg/L		5	2019-12-06	2019-12-06	234	391	5	283	314
Fluoride	mg/L	1.5	0.25	2019-12-09	2019-12-09	0.93	<0.25	0.5	<0.5	<0.5
Chloride	mg/L		0.50	2019-12-09	2019-12-09	303	4.56	1.0	371	7.2
Nitrate as N	mg/L	10.0	0.25	2019-12-09	2019-12-09	<0.25	<0.25	0.5	<0.5	<0.5
Nitrite as N	mg/L	1.0	0.25	2019-12-09	2019-12-09	<0.25	<0.25	0.5	<0.5	<0.5
Bromide	mg/L		0.25	2019-12-09	2019-12-09	<0.25	<0.25	0.5	<0.5	<0.5
Sulphate	mg/L		0.50	2019-12-09	2019-12-09	<0.50	437	1.0	<1.0	555
Cyanide, Free	mg/L	0.2	0.002	2019-12-11	2019-12-11	<0.002	<0.002	0.002	<0.002	<0.002
Calcium	mg/L		0.10	2019-12-12	2019-12-12	21.8	199	0.10	27.2	186
Magnesium	mg/L		0.10	2019-12-12	2019-12-12	7.10	64.8	0.10	9.21	74.2
Sodium	mg/L	20	0.10	2019-12-12	2019-12-12	244	20.0	0.10	301	32.7
Potassium	mg/L		0.10	2019-12-12	2019-12-12	2.40	1.02	0.10	2.20	3.21

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PROJECT: 44985 (PO73507870-2)

5835 COOPERS AVENUE
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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

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Groundwater Parameters

DATE RECEIVED: 2019-12-06

DATE REPORTED: 2019-12-13

Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	GW-44985-120219-DD-35D		GW-44985-120219-DD-43S-98		GW-44985-120219-DD-43D-98			
						SAMPLE DESCRIPTION:		SAMPLE TYPE:		SAMPLE TYPE:		SAMPLE TYPE:	
						2019-12-02		Water		Water		Water	
						777152	RDL	777153	RDL	777154	RDL		
Electrical Conductivity	µS/cm		2	2019-12-06	2019-12-06	1070	2	609	2	961			
pH	pH Units		NA	2019-12-06	2019-12-06	7.82	NA	7.79	NA	7.86			
Total Dissolved Solids	mg/L		20	2019-12-09	2019-12-10	672	20	418	20	624			
Alkalinity (as CaCO3)	mg/L		5	2019-12-06	2019-12-06	256	5	282	5	260			
Fluoride	mg/L	1.5	0.25	2019-12-09	2019-12-09	0.80	0.10	0.18	0.25	0.75			
Chloride	mg/L		0.50	2019-12-09	2019-12-09	278	0.20	12.0	0.50	233			
Nitrate as N	mg/L	10.0	0.25	2019-12-09	2019-12-09	<0.25	0.10	<0.10	0.25	<0.25			
Nitrite as N	mg/L	1.0	0.25	2019-12-09	2019-12-09	<0.25	0.10	<0.10	0.25	<0.25			
Bromide	mg/L		0.25	2019-12-09	2019-12-09	<0.25	0.10	<0.10	0.25	<0.25			
Sulphate	mg/L		0.50	2019-12-09	2019-12-09	<0.50	0.20	116	0.50	<0.50			
Cyanide, Free	mg/L	0.2	0.002	2019-12-11	2019-12-11	<0.002	0.002	<0.002	0.002	<0.002			
Calcium	mg/L		0.10	2019-12-12	2019-12-12	21.5	0.05	95.4	0.10	24.4			
Magnesium	mg/L		0.10	2019-12-12	2019-12-12	7.19	0.05	26.9	0.10	8.49			
Sodium	mg/L	20	0.10	2019-12-12	2019-12-12	247	0.05	22.9	0.10	207			
Potassium	mg/L		0.10	2019-12-12	2019-12-12	1.92	0.05	1.62	0.10	1.77			

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AGAT WORK ORDER: 19L552742

PROJECT: 44985 (PO73507870-2)

5835 COOPERS AVENUE
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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

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Groundwater Parameters

DATE RECEIVED: 2019-12-06

DATE REPORTED: 2019-12-13

Parameter	Unit	G / S	RDL	SAMPLE DESCRIPTION: 120219-DD-B1		SAMPLE TYPE: Water		DATE SAMPLING: 2019-12-02		RDL	Date Prepared	Date Analyzed	777155	SAMPLE DESCRIPTION: 120319-DD-61D		SAMPLE TYPE: Water		DATE SAMPLING: 2019-12-03		RDL	Date Prepared	Date Analyzed	777156	
Electrical Conductivity	µS/cm		2	2019-12-06	2019-12-06	<2	2	2019-12-07	2019-12-07	812														
pH	pH Units		NA	2019-12-06	2019-12-06	5.52	NA	2019-12-07	2019-12-07	7.99														
Total Dissolved Solids	mg/L		20	2019-12-09	2019-12-10	<20	20	2019-12-09	2019-12-10	526														
Alkalinity (as CaCO3)	mg/L		5	2019-12-06	2019-12-06	<5	5	2019-12-07	2019-12-07	242														
Fluoride	mg/L	1.5	0.05	2019-12-09	2019-12-09	<0.05	0.25	2019-12-09	2019-12-09	0.89														
Chloride	mg/L		0.10	2019-12-09	2019-12-09	<0.10	0.50	2019-12-09	2019-12-09	144														
Nitrate as N	mg/L	10.0	0.05	2019-12-09	2019-12-09	<0.05	0.25	2019-12-09	2019-12-09	<0.25														
Nitrite as N	mg/L	1.0	0.05	2019-12-09	2019-12-09	<0.05	0.25	2019-12-09	2019-12-09	<0.25														
Bromide	mg/L		0.05	2019-12-09	2019-12-09	<0.05	0.25	2019-12-09	2019-12-09	0.51														
Sulphate	mg/L		0.10	2019-12-09	2019-12-09	<0.10	0.50	2019-12-09	2019-12-09	53.1														
Cyanide, Free	mg/L	0.2	0.002	2019-12-11	2019-12-11	<0.002	0.002	2019-12-11	2019-12-11	<0.002														
Calcium	mg/L		0.05	2019-12-12	2019-12-12	<0.05	0.05	2019-12-12	2019-12-12	25.1														
Magnesium	mg/L		0.05	2019-12-12	2019-12-12	<0.05	0.05	2019-12-12	2019-12-12	8.69														
Sodium	mg/L	20	0.05	2019-12-12	2019-12-12	<0.05	0.05	2019-12-12	2019-12-12	177														
Potassium	mg/L		0.05	2019-12-12	2019-12-12	<0.05	0.05	2019-12-12	2019-12-12	1.52														

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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

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Groundwater Parameters

DATE RECEIVED: 2019-12-06

DATE REPORTED: 2019-12-13

Parameter	Unit	GW-44985-120319-DD-61S				GW-44985-120319-DD-22S			GW-44985-120319-DD-60D	
		SAMPLE DESCRIPTION: 120319-DD-61S				SAMPLE DESCRIPTION: 120319-DD-22S			SAMPLE DESCRIPTION: 120319-DD-60D	
		SAMPLE TYPE: Water				SAMPLE TYPE: Water			SAMPLE TYPE: Water	
		DATE SAMPLED: 2019-12-03				DATE SAMPLED: 2019-12-03			DATE SAMPLED: 2019-12-03	
		G / S	RDL	Date Prepared	Date Analyzed	777158	RDL	777161	RDL	777162
Electrical Conductivity	µS/cm		2	2019-12-07	2019-12-07	1010	2	1500	2	3200
pH	pH Units		NA	2019-12-07	2019-12-07	7.81	NA	7.74	NA	7.97
Total Dissolved Solids	mg/L		20	2019-12-09	2019-12-10	738	20	1300	20	2020
Alkalinity (as CaCO3)	mg/L		5	2019-12-07	2019-12-07	453	5	459	5	619
Fluoride	mg/L	1.5	0.25	2019-12-09	2019-12-09	0.43	0.5	<0.5	1.0	<1.0
Chloride	mg/L		0.50	2019-12-09	2019-12-09	19.5	1.0	57.5	2.0	1010
Nitrate as N	mg/L	10.0	0.25	2019-12-09	2019-12-09	<0.25	0.5	<0.5	1.0	<1.0
Nitrite as N	mg/L	1.0	0.25	2019-12-09	2019-12-09	<0.25	0.5	<0.5	1.0	<1.0
Bromide	mg/L		0.25	2019-12-09	2019-12-09	0.71	0.5	<0.5	1.0	1.0
Sulphate	mg/L		0.50	2019-12-09	2019-12-09	246	1.0	589	2.0	<2.0
Cyanide, Free	mg/L	0.2	0.002	2019-12-11	2019-12-11	<0.002	0.002	<0.002	0.002	<0.002
Calcium	mg/L		0.10	2019-12-12	2019-12-12	121	0.10	175	0.25	25.6
Magnesium	mg/L		0.10	2019-12-12	2019-12-12	58.3	0.10	105	0.25	9.99
Sodium	mg/L	20	0.10	2019-12-12	2019-12-12	68.0	0.10	85.8	0.25	801
Potassium	mg/L		0.10	2019-12-12	2019-12-12	2.30	0.10	2.14	0.25	2.52

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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

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Groundwater Parameters

DATE RECEIVED: 2019-12-06

DATE REPORTED: 2019-12-13

Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	GW-44985-	GW-44985-	GW-44985-	RDL	Date Prepared
						SAMPLE DESCRIPTION: 120319-DD-39D 120319-DD-39I 120319-DD-39S				
						SAMPLE TYPE: Water Water Water				
						DATE SAMPLED: 2019-12-03 2019-12-03 2019-12-03				
						777163	777165	777168		
Electrical Conductivity	µS/cm		2	2019-12-07	2019-12-07	1030	1170	1030	2	2019-12-07
pH	pH Units		NA	2019-12-07	2019-12-07	7.64	7.74	7.74	NA	2019-12-07
Total Dissolved Solids	mg/L		20	2019-12-09	2019-12-10	662	916	786	20	2019-12-09
Alkalinity (as CaCO3)	mg/L		5	2019-12-07	2019-12-07	306	546	450	5	2019-12-07
Fluoride	mg/L	1.5	0.25	2019-12-09	2019-12-09	1.05	0.44	0.40	0.5	2019-12-10
Chloride	mg/L		0.50	2019-12-09	2019-12-09	232	16.9	20.8	1.0	2019-12-10
Nitrate as N	mg/L	10.0	0.25	2019-12-09	2019-12-09	<0.25	<0.25	<0.25	0.5	2019-12-10
Nitrite as N	mg/L	1.0	0.25	2019-12-09	2019-12-09	<0.25	<0.25	<0.25	0.5	2019-12-10
Bromide	mg/L		0.25	2019-12-09	2019-12-09	0.51	0.41	0.48	0.5	2019-12-10
Sulphate	mg/L		0.50	2019-12-09	2019-12-09	<0.50	308	275	1.0	2019-12-10
Cyanide, Free	mg/L	0.2	0.002	2019-12-11	2019-12-11	<0.002	<0.002	<0.002	0.002	2019-12-11
Calcium	mg/L		0.10	2019-12-12	2019-12-12	22.9	103	106	0.10	2019-12-12
Magnesium	mg/L		0.10	2019-12-12	2019-12-12	6.12	101	76.3	0.10	2019-12-12
Sodium	mg/L	20	0.10	2019-12-12	2019-12-12	241	69.4	59.5	0.10	2019-12-12
Potassium	mg/L		0.10	2019-12-12	2019-12-12	1.53	1.38	1.04	0.10	2019-12-12

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ATTENTION TO: Laura Ermeta

SAMPLING SITE:

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Groundwater Parameters

DATE RECEIVED: 2019-12-06

DATE REPORTED: 2019-12-13

Parameter	Unit	G / S	RDL	GW-44985- SAMPLE DESCRIPTION: 120319-DD-21II			GW-44985- 120319-DD-47D			
				Date Prepared	Date Analyzed	777169	RDL	Date Prepared	Date Analyzed	777172
Electrical Conductivity	µS/cm		2	2019-12-07	2019-12-07	939	2	2019-12-07	2019-12-07	5980
pH	pH Units		NA	2019-12-07	2019-12-07	7.71	NA	2019-12-07	2019-12-07	7.98
Total Dissolved Solids	mg/L		20	2019-12-09	2019-12-10	786	20	2019-12-09	2019-12-10	3270
Alkalinity (as CaCO3)	mg/L		5	2019-12-07	2019-12-07	451	5	2019-12-07	2019-12-07	885
Fluoride	mg/L	1.5	0.5	2019-12-10	2019-12-10	<0.5	2.5	2019-12-09	2019-12-09	<2.5
Chloride	mg/L		1.0	2019-12-10	2019-12-10	4.1	5.0	2019-12-09	2019-12-09	2160
Nitrate as N	mg/L	10.0	0.5	2019-12-10	2019-12-10	<0.5	2.5	2019-12-09	2019-12-09	<2.5
Nitrite as N	mg/L	1.0	0.5	2019-12-10	2019-12-10	<0.5	2.5	2019-12-09	2019-12-09	<2.5
Bromide	mg/L		0.5	2019-12-10	2019-12-10	<0.5	2.5	2019-12-09	2019-12-09	<2.5
Sulphate	mg/L		1.0	2019-12-10	2019-12-10	233	5.0	2019-12-09	2019-12-09	<5.0
Cyanide, Free	mg/L	0.2	0.002	2019-12-11	2019-12-11	<0.002	0.002	2019-12-11	2019-12-11	<0.002
Calcium	mg/L		0.10	2019-12-12	2019-12-12	170	0.10	2019-12-12	2019-12-12	66.3
Magnesium	mg/L		0.10	2019-12-12	2019-12-12	47.7	0.10	2019-12-12	2019-12-12	28.9
Sodium	mg/L	20	0.10	2019-12-12	2019-12-12	18.7	0.10	2019-12-12	2019-12-12	1480
Potassium	mg/L		0.10	2019-12-12	2019-12-12	0.82	0.10	2019-12-12	2019-12-12	4.88

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Certificate of Analysis

AGAT WORK ORDER: 19L552742

PROJECT: 44985 (PO73507870-2)

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
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<http://www.agatlabs.com>

CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Groundwater Parameters

DATE RECEIVED: 2019-12-06

DATE REPORTED: 2019-12-13

Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	SAMPLE DESCRIPTION:		RDL	RDL	RDL	RDL		
						120319-DD-40S	120319-DD-40D					120319-DD-32IV	120319-DD-32II
						Water	Water					Water	Water
						DATE SAMPLED:	2019-12-03					2019-12-03	2019-12-03
Electrical Conductivity	µS/cm		2	2019-12-07	2019-12-07	1050	1180	2	684	2	2330		
pH	pH Units		NA	2019-12-07	2019-12-07	7.67	7.71	NA	7.88	NA	8.15		
Total Dissolved Solids	mg/L		20	2019-12-09	2019-12-10	864	750	20	514	20	1250		
Alkalinity (as CaCO3)	mg/L		5	2019-12-07	2019-12-07	408	245	5	334	5	274		
Fluoride	mg/L	1.5	0.25	2019-12-09	2019-12-09	0.49	0.74	0.10	0.30	1.0	<1.0		
Chloride	mg/L		0.50	2019-12-09	2019-12-09	19.1	327	0.20	12.4	2.0	811		
Nitrate as N	mg/L	10.0	0.25	2019-12-09	2019-12-09	<0.25	<0.25	0.10	<0.10	1.0	<1.0		
Nitrite as N	mg/L	1.0	0.25	2019-12-09	2019-12-09	<0.25	<0.25	0.10	<0.10	1.0	<1.0		
Bromide	mg/L		0.25	2019-12-09	2019-12-09	<0.25	<0.25	0.10	<0.10	1.0	<1.0		
Sulphate	mg/L		0.50	2019-12-09	2019-12-09	339	<0.50	0.20	125	2.0	<2.0		
Cyanide, Free	mg/L	0.2	0.002	2019-12-11	2019-12-11	<0.002	<0.002	0.002	<0.002	0.002	<0.002		
Calcium	mg/L		0.10	2019-12-12	2019-12-12	119	29.3	0.05	86.9	0.25	15.7		
Magnesium	mg/L		0.10	2019-12-12	2019-12-12	78.5	10.2	0.05	40.8	0.25	15.6		
Sodium	mg/L	20	0.10	2019-12-12	2019-12-12	52.7	254	0.05	35.0	0.25	554		
Potassium	mg/L		0.10	2019-12-12	2019-12-12	2.14	2.46	0.05	1.03	0.25	3.28		

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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Groundwater Parameters

DATE RECEIVED: 2019-12-06

DATE REPORTED: 2019-12-13

Parameter	Unit	G / S	RDL	GW-44985- SAMPLE DESCRIPTION: 120319-DD-46D		GW-44985- 120319-DD-46I		GW-44985- 120319-DD-46S		
				Date Prepared	Date Analyzed	RDL	RDL	RDL	RDL	
				SAMPLE TYPE: Water		Water		Water		
				DATE SAMPLED: 2019-12-03		2019-12-03		2019-12-03		
				777179		777182		777183		
Electrical Conductivity	µS/cm		2	2019-12-07	2019-12-07	985	2	1170	2	1480
pH	pH Units		NA	2019-12-07	2019-12-07	7.84	NA	7.76	NA	7.72
Total Dissolved Solids	mg/L		20	2019-12-09	2019-12-10	646	20	978	20	1360
Alkalinity (as CaCO3)	mg/L		5	2019-12-07	2019-12-07	320	5	397	5	335
Fluoride	mg/L	1.5	0.5	2019-12-10	2019-12-10	<0.5	0.25	<0.25	0.5	<0.5
Chloride	mg/L		1.0	2019-12-10	2019-12-10	200	0.50	39.0	1.0	36.3
Nitrate as N	mg/L	10.0	0.5	2019-12-10	2019-12-10	<0.5	0.25	<0.25	0.5	<0.5
Nitrite as N	mg/L	1.0	0.5	2019-12-10	2019-12-10	<0.5	0.25	<0.25	0.5	<0.5
Bromide	mg/L		0.5	2019-12-10	2019-12-10	<0.5	0.25	<0.25	0.5	<0.5
Sulphate	mg/L		1.0	2019-12-10	2019-12-10	<1.0	0.50	403	1.0	727
Cyanide, Free	mg/L	0.2	0.002	2019-12-11	2019-12-11	<0.002	0.002	<0.002	0.002	<0.002
Calcium	mg/L		0.10	2019-12-12	2019-12-12	16.3	0.10	149	0.10	194
Magnesium	mg/L		0.10	2019-12-12	2019-12-12	4.64	0.10	79.5	0.10	79.2
Sodium	mg/L	20	0.10	2019-12-12	2019-12-12	243	0.10	50.8	0.10	102
Potassium	mg/L		0.10	2019-12-12	2019-12-12	1.68	0.10	1.81	0.10	6.50

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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Groundwater Parameters

DATE RECEIVED: 2019-12-06

DATE REPORTED: 2019-12-13

Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	GW-44985-120319-DD-48S		GW-44985-120319-DD-EW2A	GW-44985-120319-DD-EW2A-98	GW-44985-120319-DD-EW2C	GW-44985-120319-DD-EW2B
						SAMPLE DESCRIPTION: 120319-DD-48S		Water	Water	Water	Water
						SAMPLE TYPE: Water		Water	Water	Water	Water
						DATE SAMPLED: 2019-12-03		2019-12-03	2019-12-03	2019-12-03	2019-12-03
						777184	RDL	777194	777196	777197	777198
Electrical Conductivity	µS/cm		2	2019-12-07	2019-12-07	872	2	593	592	565	584
pH	pH Units		NA	2019-12-07	2019-12-07	7.86	NA	7.70	7.83	7.88	7.87
Total Dissolved Solids	mg/L		20	2019-12-09	2019-12-10	660	20	364	370	354	366
Alkalinity (as CaCO3)	mg/L		5	2019-12-07	2019-12-07	403	5	219	221	214	221
Fluoride	mg/L	1.5	0.25	2019-12-10	2019-12-10	0.49	0.10	1.20	1.28	1.19	1.14
Chloride	mg/L		0.50	2019-12-10	2019-12-10	19.4	0.20	101	102	95.8	97.7
Nitrate as N	mg/L	10.0	0.25	2019-12-10	2019-12-10	<0.25	0.10	<0.10	<0.10	<0.10	<0.10
Nitrite as N	mg/L	1.0	0.25	2019-12-10	2019-12-10	<0.25	0.10	<0.10	<0.10	<0.10	<0.10
Bromide	mg/L		0.25	2019-12-10	2019-12-10	<0.25	0.10	0.95	1.00	0.92	0.94
Sulphate	mg/L		0.50	2019-12-10	2019-12-10	186	0.20	1.05	0.85	0.51	2.10
Cyanide, Free	mg/L	0.2	0.002	2019-12-11	2019-12-11	<0.002	0.002	<0.002	<0.002	<0.002	<0.002
Calcium	mg/L		0.05	2019-12-12	2019-12-12	105	0.05	33.2	33.8	31.5	33.8
Magnesium	mg/L		0.05	2019-12-12	2019-12-12	55.0	0.05	13.7	13.9	13.3	13.8
Sodium	mg/L	20	0.05	2019-12-12	2019-12-12	41.8	0.05	94.4	95.5	92.7	94.1
Potassium	mg/L		0.05	2019-12-12	2019-12-12	2.22	0.05	2.45	2.52	2.37	2.51

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ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Groundwater Parameters

DATE RECEIVED: 2019-12-06

DATE REPORTED: 2019-12-13

Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	GW-44985-120319-DD-EW1C		GW-44985-120319-DD-B2		GW-44985-120419-DD-PW2	
						Water	Water	Water	Water		
					DATE SAMPLED: 2019-12-03	777199	RDL	777200	RDL	777201	
Electrical Conductivity	µS/cm		2	2019-12-07	2019-12-07	1320	2	<2	2	1240	
pH	pH Units		NA	2019-12-07	2019-12-07	7.84	NA	5.56	NA	8.15	
Total Dissolved Solids	mg/L		20	2019-12-09	2019-12-10	890	20	<20	20	794	
Alkalinity (as CaCO3)	mg/L		5	2019-12-07	2019-12-07	270	5	<5	5	321	
Fluoride	mg/L	1.5	0.5	2019-12-10	2019-12-10	0.7	0.05	<0.05	0.25	0.51	
Chloride	mg/L		1.0	2019-12-10	2019-12-10	302	0.10	<0.10	0.50	304	
Nitrate as N	mg/L	10.0	0.5	2019-12-10	2019-12-10	<0.5	0.05	<0.05	0.25	<0.25	
Nitrite as N	mg/L	1.0	0.5	2019-12-10	2019-12-10	<0.5	0.05	<0.05	0.25	<0.25	
Bromide	mg/L		0.5	2019-12-10	2019-12-10	2.5	0.05	<0.05	0.25	<0.25	
Sulphate	mg/L		1.0	2019-12-10	2019-12-10	119	0.10	<0.10	0.50	4.83	
Cyanide, Free	mg/L	0.2	0.002	2019-12-11	2019-12-11	<0.002	0.002	<0.002	0.002	<0.002	
Calcium	mg/L		0.10	2019-12-12	2019-12-12	82.5	0.05	<0.05	0.10	12.6	
Magnesium	mg/L		0.10	2019-12-12	2019-12-12	42.7	0.05	<0.05	0.10	6.81	
Sodium	mg/L	20	0.10	2019-12-12	2019-12-12	179	0.05	<0.05	0.10	301	
Potassium	mg/L		0.10	2019-12-12	2019-12-12	4.44	0.05	<0.05	0.10	2.69	

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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Groundwater Parameters

DATE RECEIVED: 2019-12-06

DATE REPORTED: 2019-12-13

Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	GW-44985- SAMPLE DESCRIPTION: 120419-DD-22D		GW-44985- 120419-DD-611		GW-44985- 120419-DD-45S		GW-44985- 120419-DD-48D	
						SAMPLE TYPE: Water	DATE SAMPLED: 2019-12-04	Water	Water	Water	Water		
						777209	RDL	777210	777219	RDL	777221		
Electrical Conductivity	µS/cm		2	2019-12-07	2019-12-07	3790	2	914	792	2	1350		
pH	pH Units		NA	2019-12-07	2019-12-07	8.05	NA	7.69	7.80	NA	7.92		
Total Dissolved Solids	mg/L		20	2019-12-09	2019-12-10	2570	20	762	550	20	856		
Alkalinity (as CaCO3)	mg/L		5	2019-12-07	2019-12-07	717	5	334	388	5	337		
Fluoride	mg/L	1.5	2.5	2019-12-10	2019-12-10	<2.5	0.25	<0.25	<0.25	0.5	<0.5		
Chloride	mg/L		5.0	2019-12-10	2019-12-10	1140	0.50	20.5	44.3	1.0	346		
Nitrate as N	mg/L	10.0	2.5	2019-12-10	2019-12-10	<2.5	0.25	<0.25	<0.25	0.5	<0.5		
Nitrite as N	mg/L	1.0	2.5	2019-12-10	2019-12-10	<2.5	0.25	<0.25	<0.25	0.5	<0.5		
Bromide	mg/L		2.5	2019-12-10	2019-12-10	<2.5	0.25	<0.25	<0.25	0.5	<0.5		
Sulphate	mg/L		5.0	2019-12-10	2019-12-10	<5.0	0.50	294	91.5	1.0	<1.0		
Cyanide, Free	mg/L	0.2	0.002	2019-12-11	2019-12-11	<0.002	0.002	<0.002	<0.002	0.002	0.002		
Calcium	mg/L		0.25	2019-12-12	2019-12-12	33.4	0.05	128	116	0.10	25.5		
Magnesium	mg/L		0.25	2019-12-12	2019-12-12	13.0	0.05	56.9	37.1	0.10	8.65		
Sodium	mg/L	20	0.25	2019-12-12	2019-12-12	974	0.05	32.5	33.8	0.10	308		
Potassium	mg/L		0.25	2019-12-12	2019-12-12	3.20	0.05	1.03	1.99	0.10	2.60		

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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Groundwater Parameters

DATE RECEIVED: 2019-12-06

DATE REPORTED: 2019-12-13

Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	GW-44985-	GW-44985-	GW-44985-	GW-44985-	GW-44985-
						120419-DD-57S	120419-DD-57D	120419-DD-	120419-DD-	120419-DD-
						EW1B	EW1A	EW1B	EW1A	PW1
						Water	Water	Water	Water	Water
DATE SAMPLED:	2019-12-04	2019-12-04	2019-12-04	2019-12-04	2019-12-04	777222	777223	777224	777225	777226
Electrical Conductivity	µS/cm		2	2019-12-07	2019-12-07	1300	1640	1350	1350	1390
pH	pH Units		NA	2019-12-07	2019-12-07	7.85	7.83	7.93	7.86	8.14
Total Dissolved Solids	mg/L		20	2019-12-09	2019-12-10	1370	1080	900	908	908
Alkalinity (as CaCO3)	mg/L		5	2019-12-07	2019-12-07	523	359	276	284	310
Fluoride	mg/L	1.5	0.5	2019-12-10	2019-12-10	<0.5	<0.5	<0.5	<0.5	<0.5
Chloride	mg/L		1.0	2019-12-10	2019-12-10	20.3	455	318	314	374
Nitrate as N	mg/L	10.0	0.5	2019-12-10	2019-12-10	<0.5	<0.5	<0.5	<0.5	<0.5
Nitrite as N	mg/L	1.0	0.5	2019-12-10	2019-12-10	<0.5	<0.5	<0.5	<0.5	<0.5
Bromide	mg/L		0.5	2019-12-10	2019-12-10	<0.5	<0.5	2.7	2.5	<0.5
Sulphate	mg/L		1.0	2019-12-10	2019-12-10	441	<1.0	116	111	3.9
Cyanide, Free	mg/L	0.2	0.002	2019-12-11	2019-12-11	0.003	0.003	0.004	0.004	0.004
Calcium	mg/L		0.10	2019-12-12	2019-12-12	175	18.8	84.5	81.6	12.2
Magnesium	mg/L		0.10	2019-12-12	2019-12-12	93.4	7.08	44.6	43.6	6.87
Sodium	mg/L	20	0.10	2019-12-12	2019-12-12	49.1	396	187	181	340
Potassium	mg/L		0.10	2019-12-12	2019-12-12	3.25	2.06	4.64	4.80	2.27

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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Groundwater Parameters

DATE RECEIVED: 2019-12-06

DATE REPORTED: 2019-12-13

Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	GW-44985-	
						120419-DD-B3	120419-DD-45D
						SAMPLE DESCRIPTION:	
						SAMPLE TYPE:	
						DATE SAMPLED:	
						777271	777272
Electrical Conductivity	µS/cm		2	2019-12-07	2019-12-07	<2	2
pH	pH Units		NA	2019-12-07	2019-12-07	5.54	NA
Total Dissolved Solids	mg/L		20	2019-12-09	2019-12-10	<20	20
Alkalinity (as CaCO3)	mg/L		5	2019-12-07	2019-12-07	<5	5
Fluoride	mg/L	1.5	0.05	2019-12-10	2019-12-10	<0.05	2.5
Chloride	mg/L		0.10	2019-12-10	2019-12-10	<0.10	5.0
Nitrate as N	mg/L	10.0	0.05	2019-12-10	2019-12-10	<0.05	2.5
Nitrite as N	mg/L	1.0	0.05	2019-12-10	2019-12-10	<0.05	2.5
Bromide	mg/L		0.05	2019-12-10	2019-12-10	<0.05	2.5
Sulphate	mg/L		0.10	2019-12-10	2019-12-10	<0.10	5.0
Cyanide, Free	mg/L	0.2	0.002	2019-12-11	2019-12-11	<0.002	0.002
Calcium	mg/L		0.05	2019-12-12	2019-12-12	<0.05	0.25
Magnesium	mg/L		0.05	2019-12-12	2019-12-12	<0.05	0.25
Sodium	mg/L	20	0.05	2019-12-12	2019-12-12	<0.05	0.25
Potassium	mg/L		0.05	2019-12-12	2019-12-12	<0.05	0.25

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Ontario Drinking Water Quality Standards. Na value is derived from O. Reg. 248
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

777120-777272 Elevated RDL indicates the degree of sample dilution prior to the analysis in order to keep analytes within the calibration range of the instrument and to reduce matrix interference.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Guideline Violation

AGAT WORK ORDER: 19L552742

PROJECT: 44985 (PO73507870-2)

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SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
777120	GW-44985-120219-DD-43S	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	23.1
777122	GW-44985-120219-DD-43D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	210
777123	GW-44985-120219-DD-49D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	131
777125	GW-44985-120219-DD-42S	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	70.5
777126	GW-44985-120219-DD-55S	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	51.6
777127	GW-44985-120219-DD-55D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	342
777128	GW-44985-120219-DD-58S	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	117
777129	GW-44985-120219-DD-56S	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	63.5
777130	GW-44985-120219-DD-56D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	273
777132	GW-44985-120219-DD-62S	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	58.1
777133	GW-44985-120219-DD-59S	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	26.7
777134	GW-44985-120219-DD-59D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	163
777135	GW-44985-120219-DD-63S	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	172
777136	GW-44985-120219-DD-54D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	176
777139	GW-44985-120219-DD-41S	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	51.3
777140	GW-44985-120219-DD-41D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	216
777142	GW-44985-120219-DD-30S	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	36.1
777144	GW-44985-120219-DD-30D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	216
777145	GW-44985-120219-DD-32S	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	23.0
777147	GW-44985-120219-DD-32D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	244
777150	GW-44985-120219-DD-53D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	301
777151	GW-44985-120219-DD-35S	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	32.7
777152	GW-44985-120219-DD-35D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	247
777153	GW-44985-120219-DD-43S-98	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	22.9
777154	GW-44985-120219-DD-43D-98	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	207
777156	GW-44985-120319-DD-61D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	177
777158	GW-44985-120319-DD-61S	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	68.0
777161	GW-44985-120319-DD-22S	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	85.8
777162	GW-44985-120319-DD-60D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	801
777163	GW-44985-120319-DD-39D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	241
777165	GW-44985-120319-DD-39I	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	69.4
777168	GW-44985-120319-DD-39S	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	59.5
777172	GW-44985-120319-DD-47D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	1480
777173	GW-44985-120319-DD-40S	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	52.7
777175	GW-44985-120319-DD-40D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	254
777176	GW-44985-120319-DD-32IV	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	35.0
777178	GW-44985-120319-DD-32II	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	554
777179	GW-44985-120319-DD-46D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	243
777182	GW-44985-120319-DD-46I	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	50.8
777183	GW-44985-120319-DD-46S	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	102
777184	GW-44985-120319-DD-48S	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	41.8
777194	GW-44985-120319-DD-EW2A	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	94.4
777196	GW-44985-120319-DD-EW2A-98	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	95.5



Guideline Violation

AGAT WORK ORDER: 19L552742

PROJECT: 44985 (PO73507870-2)

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
777197	GW-44985-120319-DD-EW2C	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	92.7
777198	GW-44985-120319-DD-EW2B	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	94.1
777199	GW-44985-120319-DD-EW1C	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	179
777201	GW-44985-120419-DD-PW2	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	301
777209	GW-44985-120419-DD-22D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	974
777210	GW-44985-120419-DD-61I	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	32.5
777219	GW-44985-120419-DD-45S	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	33.8
777221	GW-44985-120419-DD-48D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	308
777222	GW-44985-120419-DD-57S	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	49.1
777223	GW-44985-120419-DD-57D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	396
777224	GW-44985-120419-DD-EW1B	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	187
777225	GW-44985-120419-DD-EW1A	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	181
777226	GW-44985-120419-DD-PW1	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	340
777272	GW-44985-120419-DD-45D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	1030

Quality Assurance

CLIENT NAME: GHD LIMITED
PROJECT: 44985 (PO73507870-2)
SAMPLING SITE:

AGAT WORK ORDER: 19L552742
ATTENTION TO: Laura Ermeta
SAMPLED BY:

Water Analysis																
RPT Date: Dec 13, 2019			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits		
								Lower	Upper		Lower	Upper		Lower	Upper	

Groundwater Parameters

Electrical Conductivity	777120	777120	597	601	0.7%	< 2	103%	80%	120%						
pH	777120	777120	7.82	7.75	0.9%	NA	100%	90%	110%						
Total Dissolved Solids	777120	777120	448	478	6.5%	< 20	98%	80%	120%						
Alkalinity (as CaCO3)	777120	777120	278	278	0.0%	< 5	101%	80%	120%						
Fluoride	777127	777127	0.7	0.7	0.0%	< 0.05	107%	90%	110%	103%	90%	110%	99%	85%	115%
Chloride	777127	777127	425	414	2.6%	< 0.10	93%	90%	110%	103%	90%	110%	100%	85%	115%
Nitrate as N	777127	777127	<0.5	<0.5	NA	< 0.05	97%	90%	110%	103%	90%	110%	102%	85%	115%
Nitrite as N	777127	777127	<0.5	<0.5	NA	< 0.05	NA	90%	110%	106%	90%	110%	108%	85%	115%
Bromide	777127	777127	<0.5	<0.5	NA	< 0.05	106%	90%	110%	98%	90%	110%	100%	85%	115%
Sulphate	777127	777127	<1.0	<1.0	NA	< 0.10	100%	90%	110%	103%	90%	110%	104%	85%	115%
Cyanide, Free	777120	777120	<0.002	<0.002	NA	< 0.002	100%	90%	110%	102%	90%	110%	102%	70%	130%
Calcium	777120	777120	96.1	95.4	0.7%	< 0.05	98%	90%	110%	97%	90%	110%	95%	70%	130%
Magnesium	777120	777120	26.6	26.4	0.8%	< 0.05	91%	90%	110%	91%	90%	110%	90%	70%	130%
Sodium	777120	777120	23.1	23.0	0.4%	< 0.05	100%	90%	110%	99%	90%	110%	97%	70%	130%
Potassium	777120	777120	1.59	1.61	1.3%	< 0.05	99%	90%	110%	98%	90%	110%	95%	70%	130%

Groundwater Parameters

Electrical Conductivity	777147	777147	1110	1110	0.0%	< 2	97%	80%	120%						
pH	777147	777147	7.88	7.79	1.1%	NA	100%	90%	110%						
Total Dissolved Solids	777147	777147	680	704	3.5%	< 20	98%	80%	120%						
Alkalinity (as CaCO3)	777147	777147	234	234	0.0%	< 5	99%	80%	120%						
Fluoride	777169	777169	<0.5	<0.5	NA	< 0.05	106%	90%	110%	103%	90%	110%	106%	85%	115%
Chloride	777169	777169	4.1	4.0	2.5%	< 0.10	91%	90%	110%	103%	90%	110%	99%	85%	115%
Nitrate as N	777169	777169	<0.5	<0.5	NA	< 0.05	94%	90%	110%	103%	90%	110%	100%	85%	115%
Nitrite as N	777169	777169	<0.5	<0.5	NA	< 0.05	NA	90%	110%	106%	90%	110%	102%	85%	115%
Bromide	777169	777169	<0.5	<0.5	NA	< 0.05	103%	90%	110%	98%	90%	110%	96%	85%	115%
Sulphate	777169	777169	233	231	0.9%	< 0.10	99%	90%	110%	103%	90%	110%	106%	85%	115%
Cyanide, Free	777126	777126	<0.002	<0.002	NA	< 0.002	100%	90%	110%	94%	90%	110%	94%	70%	130%
Calcium	777153	777153	95.4	96.1	0.7%	< 0.05	99%	90%	110%	98%	90%	110%	95%	70%	130%
Magnesium	777153	777153	26.9	26.7	0.7%	< 0.05	91%	90%	110%	91%	90%	110%	90%	70%	130%
Sodium	777153	777153	22.9	23.1	0.9%	< 0.05	100%	90%	110%	100%	90%	110%	98%	70%	130%
Potassium	777153	777153	1.62	1.60	1.2%	< 0.05	100%	90%	110%	99%	90%	110%	96%	70%	130%

Groundwater Parameters

Electrical Conductivity	777176	777176	684	685	0.1%	< 2	102%	80%	120%						
pH	777176	777176	7.88	7.79	1.1%	NA	100%	90%	110%						
Total Dissolved Solids	777176	777176	514	542	5.3%	< 20	98%	80%	120%						
Alkalinity (as CaCO3)	777176	777176	334	334	0.0%	< 5	99%	80%	120%						
Fluoride	777199	777199	0.7	0.8	13.3%	< 0.05	106%	90%	110%	107%	90%	110%	112%	85%	115%
Chloride	777199	777199	302	295	2.3%	< 0.10	91%	90%	110%	101%	90%	110%	100%	85%	115%
Nitrate as N	777199	777199	<0.5	<0.5	NA	< 0.05	94%	90%	110%	102%	90%	110%	100%	85%	115%

Quality Assurance

CLIENT NAME: GHD LIMITED
 PROJECT: 44985 (PO73507870-2)
 SAMPLING SITE:

AGAT WORK ORDER: 19L552742
 ATTENTION TO: Laura Ermeta
 SAMPLED BY:

Water Analysis (Continued)

RPT Date: Dec 13, 2019			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Nitrite as N	777199	777199	<0.5	<0.5	NA	< 0.05	NA	90%	110%	97%	90%	110%	104%	85%	115%
Bromide	777199	777199	2.5	2.3	8.3%	< 0.05	103%	90%	110%	100%	90%	110%	97%	85%	115%
Sulphate	777199	777199	119	116	2.6%	< 0.10	99%	90%	110%	103%	90%	110%	102%	85%	115%
Cyanide, Free	777151	777151	<0.002	<0.002	NA	< 0.002	97%	90%	110%	103%	90%	110%	93%	70%	130%
Calcium	777184	777184	105	106	0.9%	< 0.05	97%	90%	110%	97%	90%	110%	95%	70%	130%
Magnesium	777184	777184	55.0	55.2	0.4%	< 0.05	91%	90%	110%	90%	90%	110%	90%	70%	130%
Sodium	777184	777184	41.8	42.2	1.0%	< 0.05	101%	90%	110%	101%	90%	110%	98%	70%	130%
Potassium	777184	777184	2.22	2.28	2.7%	< 0.05	99%	90%	110%	99%	90%	110%	96%	70%	130%
Groundwater Parameters															
Electrical Conductivity	777224	777224	1350	1360	0.7%	< 2	103%	80%	120%						
pH	777224	777224	7.93	7.85	1.0%	NA	100%	90%	110%						
Total Dissolved Solids	777272	777272	2940	2870	2.4%	< 20	102%	80%	120%						
Alkalinity (as CaCO3)	777224	777224	276	278	0.7%	< 5	100%	80%	120%						
Fluoride	777226	777226	<0.5	<0.5	NA	< 0.05	106%	90%	110%	106%	90%	110%	106%	85%	115%
Chloride	777226	777226	374	368	1.6%	< 0.10	91%	90%	110%	98%	90%	110%	100%	85%	115%
Nitrate as N	777226	777226	<0.5	<0.5	NA	< 0.05	94%	90%	110%	98%	90%	110%	100%	85%	115%
Nitrite as N	777226	777226	<0.5	<0.5	NA	< 0.05	NA	90%	110%	99%	90%	110%	104%	85%	115%
Bromide	777226	777226	<0.5	<0.5	NA	< 0.05	103%	90%	110%	93%	90%	110%	100%	85%	115%
Sulphate	777226	777226	3.9	3.6	8.0%	< 0.10	99%	90%	110%	100%	90%	110%	101%	85%	115%
Cyanide, Free	777183	777183	< 0.002	< 0.002	NA	< 0.002	91%	90%	110%	105%	90%	110%	72%	70%	130%
Calcium	777272	777272	6.21	6.26	0.8%	< 0.05	99%	90%	110%	97%	90%	110%	94%	70%	130%
Magnesium	777272	777272	3.89	3.80	2.3%	< 0.05	91%	90%	110%	90%	90%	110%	90%	70%	130%
Sodium	777272	777272	1030	1050	1.9%	< 0.05	103%	90%	110%	101%	90%	110%	98%	70%	130%
Potassium	777272	777272	2.51	2.45	2.4%	< 0.05	101%	90%	110%	99%	90%	110%	95%	70%	130%
Ammonia (Water)															
Ammonia as N	777120	777120	<0.02	<0.02	NA	< 0.02	101%	90%	110%	98%	90%	110%	88%	70%	130%
Ammonia (Water)															
Ammonia as N	777168	777168	<0.02	<0.02	NA	< 0.02	99%	90%	110%	98%	90%	110%	81%	70%	130%

Comments: NA signifies Not Applicable.

Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By: _____





Method Summary

CLIENT NAME: GHD LIMITED
PROJECT: 44985 (PO73507870-2)
SAMPLING SITE:

AGAT WORK ORDER: 19L552742
ATTENTION TO: Laura Ermeta
SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Ammonia as N	INOR-93-6059	SM 4500-NH3 H	LACHAT FIA
Electrical Conductivity	INOR-93-6000	SM 2510 B	PC TITRATE
pH	INOR-93-6000	SM 4500-H+ B	PC TITRATE
Total Dissolved Solids	INOR-93-6028	SM 2540 C	BALANCE
Alkalinity (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Fluoride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Chloride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrate as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Bromide	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Cyanide, Free	INOR-93-6052	MOE CN-3015 & SM 4500 CN- I	TECHNICON AUTO ANALYZER
Calcium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Magnesium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Sodium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Potassium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES



LABORATORY USE ONLY

Arrival Condition: Good Poor (complete "Notes")

Arrival Temperature: _____

AGAT Job Number: 19L552742

Notes: _____

CHAIN OF CUSTODY RECORD

Client Information

Company: GHD Ltd.

Contact: Laura Ermeta

Address: 651 Colby Drive, Waterloo Ontario

N2V 1C2

Phone: 519-884-0510 Fax: 519-725-1394

PO#: 73507870-2

Client Project #: 44985

AGAT Quotation #: _____

Report Information

1. Name: Laura Ermeta

Email: Laura.Ermeta@ghd.com

2. Name: _____

Email: _____

3. Name: _____

Email: _____

4. Name: _____

Email: _____

Report Format

(Please "x" those that apply)

Single sample per page

Multiple samples per page

Results by Fax

Turnaround Time (TAT)*

(Please "x" the applicable box below)

Regular TAT:

5 to 7 working days

Rush TAT (Rush Surcharges Apply):

3 to 5 days

48 to 72 hours

24 to 48 hours

Date Required (Rush surcharges may apply)

Regulatory Guideline Required: (Please "x" those that apply)

Reg 153 Table Sewer Use PWQO

(Indicate one) Region Reg 558

Ind/Com (Indicate one) CCME

Res/Park Sanitary Other (indicate)

Ag Storm Reg.169/03(mg/L)

Med/Fine Coarse

Is this a drinking water sample (potable water intended for human consumption)?

Yes No

If "Yes" please use the Drinking Water Chain of Custody Record

pH, Conductivity, TDS, Alkalinity, Cations, Anions

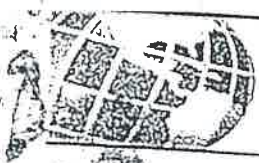
CN

Ammonia

Sample Identification	Date Sampled	Time Sampled	Sample Matrix	# of Containers	Comments - Site/Sample Info, Sample Containment	pH	Conductivity	TDS	Alkalinity	Cations	Anions	Ammonia									
GW-44985-11_19-DD- <u>EW2A</u>	<u>12/19/19</u>	<u>PM</u>	water	5		X	X														
GW-44985-11_19-DD- <u>EW2A-98</u>			water	5		X	X														
GW-44985-11_19-DD- <u>EW2C</u>			water	5		X	X														
GW-44985-11_19-DD- <u>EW2B</u>			water	5		X	X														
GW-44985-11_19-DD- <u>EW2K</u>			water	5		X	X														
GW-44985-11_19-DD- <u>B2</u>			water	5		X	X														
GW-44985-11_19-DD- <u>A12</u>	<u>12/19/19</u>	<u>AM</u>	water	5		X	X														
GW-44985-11_19-DD- <u>220</u>			water	5		X	X														
GW-44985-11_19-DD- <u>61E</u>			water	5		X	X					X									
GW-44985-11_19-DD- <u>453</u>			water	5		X	X					X									
GW-44985-11_19-DD- <u>480</u>			water	5		X	X														

TOTAL # OF CONTAINERS 55 * Samples received after 2:00 PM will be logged in for the next business day. TAT is exclusive of weekends and statutory holidays

Sample Relinquished By (print name & sign)	Date/Time	Samples Received By (print name and sign)	Date/Time	Special Instructions
<u>[Signature]</u>	<u>12/19/19</u>	<u>[Signature]</u>	<u>Dec 6/19</u>	<u>SEE 1</u>
Sample Relinquished By (print name & sign)	Date/Time	Samples Received By (print name and sign)	Date/Time	



AGAT

Laboratories

Sample Temperature Log

Client: GHD

of Coolers: 8

COC# or Work Order #: 191552742

Arrival Temperatures - Branch/Driver

Cooler #1: 2.1 / 2.3 / 2.0
 Cooler #2: 1.2 / 1.8 / 1.6
 Cooler #3: 1.0 / 1.8 / 2.3
 Cooler #4: 2.1 / 1.2 / 2.0
 Cooler #5: 1.3 / 1.8 / 2.1
 Cooler #6: 2.3 / 1.6 / 1.4
 Cooler #7: 1.2 / 2.1 / 1.9
 Cooler #8: 1.7 / 2.1 / 1.6
 Cooler #9: _____ / _____ / _____
 Cooler #10: _____ / _____ / _____

of Submissions: 8

Arrival Temperatures - Laboratory

Cooler #1: 1.8 / 2.0 / 1.6
 Cooler #2: 2.0 / 1.7 / 1.6
 Cooler #3: 1.8 / 1.6 / 2.3
 Cooler #4: 2.1 / 1.8 / 1.7
 Cooler #5: 2.3 / 1.9 / 2.0
 Cooler #6: 1.7 / 1.6 / 2.0
 Cooler #7: 1.3 / 1.9 / 1.8
 Cooler #8: 1.7 / 2.2 / 1.9
 Cooler #9: _____ / _____ / _____
 Cooler #10: _____ / _____ / _____

IR Gun ID: _____

Taken By: Brendan [Signature]

Date (yyyy/mm/dd): Dec 6/19 Time: 9:20 AM / PM

IR Gun ID: _____

Taken By: Brendan [Signature]

Date (yyyy/mm/dd): Dec 6/19 Time: 1:10 AM / PM

Instructions for use of this form: 1) complete all fields of info including total # of coolers and # of submissions rec'd, 2) photocopy and place in each submission prior to giving a WO#, 3) Proceed as normal, write the WO# and scan (please make sure to scan along with the COC)



CLIENT NAME: GHD LIMITED
455 Phillip St
WATERLOO, ON N2V1C2
(519) 884-0510

ATTENTION TO: Laura Ermeta

PROJECT: 44985 (PO#73507870-2)

AGAT WORK ORDER: 19T480053

TRACE ORGANICS REVIEWED BY: Oksana Gushyla, Trace Organics Lab Supervisor

WATER ANALYSIS REVIEWED BY: Parvathi Malemath, Data Reviewer

DATE REPORTED: Jun 28, 2019

PAGES (INCLUDING COVER): 67

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



Certificate of Analysis

AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Volatile Organic Compounds in Water

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	GW-44985-	GW-44985-	GW-44985-	GW-44985-	GW-44985-	GW-44985-						
						SAMPLE DESCRIPTION: 061119-DD-43D 061119-DD-43S 061119-DD-55D 061119-DD-55S 061119-DD-49D 061119-DD-42S											
						SAMPLE TYPE: Water											
						DATE SAMPLED: 2019-06-11						280769	280776	280841	280842	280843	280850
Dichlorodifluoromethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
Chloromethane	µg/L		0.40	2019-06-22	2019-06-24	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40						
Vinyl Chloride	µg/L	1	0.17	2019-06-22	2019-06-24	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17						
Bromomethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
Chloroethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
Trichlorofluoromethane	µg/L		0.40	2019-06-22	2019-06-24	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40						
Acetone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0						
1,1 Dichloroethylene	µg/L	14	0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30						
Methylene Chloride	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30						
trans- 1,2-dichloroethylene	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
Methyl tert-butyl ether	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
1,1-Dichloroethane	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30						
Methyl Ethyl Ketone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0						
cis- 1,2-Dichloroethylene	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
Chloroform	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
1,2 - Dichloroethane	µg/L	5	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
1,1,1-Trichloroethane	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30						
Carbon Tetrachloride	µg/L	2	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
Benzene	µg/L	1	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
1,2-Dichloropropane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
Trichloroethylene	µg/L	5	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
Bromodichloromethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
cis-1,3-Dichloropropene	ug/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
Methyl Isobutyl Ketone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0						
trans-1,3-Dichloropropene	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30						
1,1,2-Trichloroethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
Toluene	µg/L	60	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
2-Hexanone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0						
Dibromochloromethane	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10						

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Volatile Organic Compounds in Water

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	GW-44985-	GW-44985-	GW-44985-	GW-44985-	GW-44985-	GW-44985-						
						061119-DD-43D	061119-DD-43S	061119-DD-55D	061119-DD-55S	061119-DD-49D	061119-DD-42S						
						SAMPLE DESCRIPTION: 061119-DD-43D 061119-DD-43S 061119-DD-55D 061119-DD-55S 061119-DD-49D 061119-DD-42S						Water	Water	Water	Water	Water	Water
						DATE SAMPLED: 2019-06-11 2019-06-11 2019-06-11 2019-06-11 2019-06-11 2019-06-11						280769	280776	280841	280842	280843	280850
Ethylene Dibromide	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10						
Tetrachloroethylene	µg/L	10	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
1,1,1,2-Tetrachloroethane	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10						
Chlorobenzene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10						
Ethylbenzene	µg/L	140	0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10						
m & p-Xylene	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
Bromoform	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10						
Styrene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10						
1,1,2,2-Tetrachloroethane	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10						
o-Xylene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10						
1,3-Dichlorobenzene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10						
1,4-Dichlorobenzene	µg/L	5	0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10						
1,2-Dichlorobenzene	µg/L	200	0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10						
1,2,4-Trichlorobenzene	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30						
1,3-Dichloropropene (Cis + Trans)	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30						
Xylene Mixture (Total)	µg/L	90	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
n-Hexane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
Surrogate	Unit	Acceptable Limits															
Toluene-d8	% Recovery		50-140	2019-06-22	2019-06-24	98	93	90	93	100	91						
4-Bromofluorobenzene	% Recovery		50-140	2019-06-22	2019-06-24	92	89	85	88	78	86						

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
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FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Volatile Organic Compounds in Water

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	SAMPLE DESCRIPTION:									
						GW-44985-061119-DD-57D		GW-44985-061119-DD-57S		GW-44985-061119-DD-58S		GW-44985-061119-DD-56D		GW-44985-061119-DD-56S	
						Water		Water		Water		Water		Water	
						2019-06-11	2019-06-11	2019-06-11	2019-06-11	2019-06-11	2019-06-11	2019-06-11	2019-06-11		
						280852	280853	280854	280855	280856	280857				
Dichlorodifluoromethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20				
Chloromethane	µg/L		0.40	2019-06-22	2019-06-24	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40				
Vinyl Chloride	µg/L	1	0.17	2019-06-22	2019-06-24	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17				
Bromomethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20				
Chloroethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20				
Trichlorofluoromethane	µg/L		0.40	2019-06-22	2019-06-24	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40				
Acetone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0				
1,1 Dichloroethylene	µg/L	14	0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30				
Methylene Chloride	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30				
trans- 1,2-dichloroethylene	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20				
Methyl tert-butyl ether	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20				
1,1-Dichloroethane	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30				
Methyl Ethyl Ketone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0				
cis- 1,2-Dichloroethylene	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20				
Chloroform	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20				
1,2 - Dichloroethane	µg/L	5	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20				
1,1,1-Trichloroethane	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30				
Carbon Tetrachloride	µg/L	2	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20				
Benzene	µg/L	1	0.20	2019-06-22	2019-06-24	5.3	<0.20	<0.20	<0.20	<0.20	<0.20				
1,2-Dichloropropane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20				
Trichloroethylene	µg/L	5	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20				
Bromodichloromethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20				
cis-1,3-Dichloropropene	ug/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20				
Methyl Isobutyl Ketone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0				
trans-1,3-Dichloropropene	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30				
1,1,2-Trichloroethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20				
Toluene	µg/L	60	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20				
2-Hexanone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0				

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Volatile Organic Compounds in Water

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	SAMPLE DESCRIPTION:					GW-44985-	
						061119-DD-57D	061119-DD-57S	061119-DD-58S	061119-DD-56D	061119-DD-56S	061119-DD-56S	061119-DD-56S-
						Water	Water	Water	Water	Water	Water	98
						DATE SAMPLED:	2019-06-11	2019-06-11	2019-06-11	2019-06-11	2019-06-11	2019-06-11
						280852	280853	280854	280855	280856	280857	
Dibromochloromethane	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
Ethylene Dibromide	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
Tetrachloroethylene	µg/L	10	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
1,1,1,2-Tetrachloroethane	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
Chlorobenzene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
Ethylbenzene	µg/L	140	0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
m & p-Xylene	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Bromoform	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
Styrene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
1,1,1,2,2-Tetrachloroethane	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
o-Xylene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
1,3-Dichlorobenzene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
1,4-Dichlorobenzene	µg/L	5	0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
1,2-Dichlorobenzene	µg/L	200	0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
1,2,4-Trichlorobenzene	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	
1,3-Dichloropropene (Cis + Trans)	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	
Xylene Mixture (Total)	µg/L	90	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
n-Hexane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Surrogate	Unit	Acceptable Limits										
Toluene-d8	% Recovery		50-140	2019-06-22	2019-06-24	87	87	95	97	93	105	
4-Bromofluorobenzene	% Recovery		50-140	2019-06-22	2019-06-24	85	88	93	87	86	77	

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

5835 COOPERS AVENUE
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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Volatile Organic Compounds in Water

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	GW-44985-	GW-44985-	GW-44985-	GW-44985-	GW-44985-	
						SAMPLE DESCRIPTION: 061119-DD-59S 061119-DD-59D 061119-DD-48S 061119-DD-48D 061119-DD-45D					
						SAMPLE TYPE: Water Water Water Water Water					
						280858	280870	280871	280872	280873	
Dichlorodifluoromethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80
Chloromethane	µg/L		0.40	2019-06-22	2019-06-24	<0.40	<0.40	<0.40	<0.40	1.60	<1.60
Vinyl Chloride	µg/L	1	0.17	2019-06-22	2019-06-24	<0.17	<0.17	<0.17	<0.17	0.68	<0.68
Bromomethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80
Chloroethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80
Trichlorofluoromethane	µg/L		0.40	2019-06-22	2019-06-24	<0.40	<0.40	<0.40	<0.40	1.60	<1.60
Acetone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0	<1.0	<1.0	4.0	<4.0
1,1 Dichloroethylene	µg/L	14	0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	1.20	<1.20
Methylene Chloride	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	1.20	<1.20
trans- 1,2-dichloroethylene	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80
Methyl tert-butyl ether	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80
1,1-Dichloroethane	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	1.20	<1.20
Methyl Ethyl Ketone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0	<1.0	<1.0	4.0	<4.0
cis- 1,2-Dichloroethylene	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80
Chloroform	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80
1,2 - Dichloroethane	µg/L	5	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80
1,1,1-Trichloroethane	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	1.20	<1.20
Carbon Tetrachloride	µg/L	2	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80
Benzene	µg/L	1	0.20	2019-06-22	2019-06-24	<0.20	1.3	<0.20	<0.20	0.80	<0.80
1,2-Dichloropropane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80
Trichloroethylene	µg/L	5	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80
Bromodichloromethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80
cis-1,3-Dichloropropene	ug/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80
Methyl Isobutyl Ketone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0	<1.0	<1.0	4.0	<4.0
trans-1,3-Dichloropropene	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	1.20	<1.20
1,1,2-Trichloroethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80
Toluene	µg/L	60	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80
2-Hexanone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0	<1.0	<1.0	4.0	<4.0
Dibromochloromethane	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	0.40	<0.40

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Volatile Organic Compounds in Water

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	GW-44985-	GW-44985-	GW-44985-	GW-44985-	RDL	GW-44985-						
						SAMPLE DESCRIPTION:						061119-DD-59S	061119-DD-59D	061119-DD-48S	061119-DD-48D	061119-DD-45D	
						SAMPLE TYPE:						Water	Water	Water	Water	Water	
						DATE SAMPLED:						2019-06-11	2019-06-11	2019-06-11	2019-06-11	2019-06-11	
Ethylene Dibromide	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	0.40	<0.40						
Tetrachloroethylene	µg/L	10	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80						
1,1,1,2-Tetrachloroethane	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	0.40	<0.40						
Chlorobenzene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	0.40	<0.40						
Ethylbenzene	µg/L	140	0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	0.40	<0.40						
m & p-Xylene	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80						
Bromoform	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	0.40	<0.40						
Styrene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	0.40	<0.40						
1,1,2,2-Tetrachloroethane	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	0.40	<0.40						
o-Xylene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	0.40	<0.40						
1,3-Dichlorobenzene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	0.40	<0.40						
1,4-Dichlorobenzene	µg/L	5	0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	0.40	<0.40						
1,2-Dichlorobenzene	µg/L	200	0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	0.40	<0.40						
1,2,4-Trichlorobenzene	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	1.20	<1.20						
1,3-Dichloropropene (Cis + Trans)	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	1.20	<1.20						
Xylene Mixture (Total)	µg/L	90	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80						
n-Hexane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80						
Surrogate	Unit	Acceptable Limits															
Toluene-d8	% Recovery		50-140	2019-06-22	2019-06-24	91	95	90	91		94						
4-Bromofluorobenzene	% Recovery		50-140	2019-06-22	2019-06-24	86	90	83	90		81						

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

5835 COOPERS AVENUE
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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Volatile Organic Compounds in Water

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	GW-44985-	GW-44985-	GW-44985-	GW-44985-	GW-44985-	GW-44985-						
						SAMPLE DESCRIPTION:						061119-DD-45S	061119-DD-62S	061119-DD-63S	061119-DD-54D	061119-DD-61D	061119-DD-611
						SAMPLE TYPE:						Water	Water	Water	Water	Water	Water
						DATE SAMPLED:						2019-06-11	2019-06-11	2019-06-11	2019-06-11	2019-06-11	2019-06-11
						280874	280875	280878	280879	280880	280882						
Dichlorodifluoromethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
Chloromethane	µg/L		0.40	2019-06-22	2019-06-24	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40						
Vinyl Chloride	µg/L	1	0.17	2019-06-22	2019-06-24	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17						
Bromomethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
Chloroethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
Trichlorofluoromethane	µg/L		0.40	2019-06-22	2019-06-24	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40						
Acetone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0						
1,1 Dichloroethylene	µg/L	14	0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30						
Methylene Chloride	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30						
trans- 1,2-dichloroethylene	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
Methyl tert-butyl ether	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
1,1-Dichloroethane	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30						
Methyl Ethyl Ketone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0						
cis- 1,2-Dichloroethylene	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
Chloroform	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
1,2 - Dichloroethane	µg/L	5	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
1,1,1-Trichloroethane	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30						
Carbon Tetrachloride	µg/L	2	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
Benzene	µg/L	1	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	0.35	<0.20	<0.20						
1,2-Dichloropropane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
Trichloroethylene	µg/L	5	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
Bromodichloromethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
cis-1,3-Dichloropropene	ug/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
Methyl Isobutyl Ketone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0						
trans-1,3-Dichloropropene	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30						
1,1,2-Trichloroethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
Toluene	µg/L	60	0.20	2019-06-22	2019-06-24	0.39	<0.20	<0.20	<0.20	<0.20	<0.20						
2-Hexanone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0						
Dibromochloromethane	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10						

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Volatile Organic Compounds in Water

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	GW-44985-	GW-44985-	GW-44985-	GW-44985-	GW-44985-	GW-44985-	
						SAMPLE DESCRIPTION:	061119-DD-45S	061119-DD-62S	061119-DD-63S	061119-DD-54D	061119-DD-61D	061119-DD-61I
						SAMPLE TYPE:	Water	Water	Water	Water	Water	Water
						DATE SAMPLED:	2019-06-11	2019-06-11	2019-06-11	2019-06-11	2019-06-11	2019-06-11
Ethylene Dibromide	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
Tetrachloroethylene	µg/L	10	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
1,1,1,2-Tetrachloroethane	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
Chlorobenzene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
Ethylbenzene	µg/L	140	0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
m & p-Xylene	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Bromoform	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
Styrene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
1,1,2,2-Tetrachloroethane	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
o-Xylene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
1,3-Dichlorobenzene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
1,4-Dichlorobenzene	µg/L	5	0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
1,2-Dichlorobenzene	µg/L	200	0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
1,2,4-Trichlorobenzene	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	
1,3-Dichloropropene (Cis + Trans)	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	
Xylene Mixture (Total)	µg/L	90	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
n-Hexane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Surrogate	Unit	Acceptable Limits										
Toluene-d8	% Recovery		50-140	2019-06-22	2019-06-24	88	91	90	92	93	100	
4-Bromofluorobenzene	% Recovery		50-140	2019-06-22	2019-06-24	87	89	83	84	88	81	

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

5835 COOPERS AVENUE
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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Volatile Organic Compounds in Water

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	GW-44985-	GW-44985-	GW-44985-	GW-44985-	GW-44985-				
						SAMPLE DESCRIPTION: 061119-DD-61S					061119-DD-22	061219-DD-22D	061219-DD-60D	061219-DD-39D
						SAMPLE TYPE: Water					Water	Water	Water	Water
						DATE SAMPLED: 2019-06-11					2019-06-11	2019-06-12	2019-06-12	2019-06-12
					280883	280884	280885	280887	RDL	280888				
Dichlorodifluoromethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80			
Chloromethane	µg/L		0.40	2019-06-22	2019-06-24	<0.40	<0.40	<0.40	<0.40	1.60	<1.60			
Vinyl Chloride	µg/L	1	0.17	2019-06-22	2019-06-24	<0.17	<0.17	<0.17	<0.17	0.68	<0.68			
Bromomethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80			
Chloroethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80			
Trichlorofluoromethane	µg/L		0.40	2019-06-22	2019-06-24	<0.40	<0.40	<0.40	<0.40	1.60	<1.60			
Acetone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0	<1.0	<1.0	4.0	<4.0			
1,1 Dichloroethylene	µg/L	14	0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	1.20	<1.20			
Methylene Chloride	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	1.20	<1.20			
trans- 1,2-dichloroethylene	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80			
Methyl tert-butyl ether	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80			
1,1-Dichloroethane	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	1.20	<1.20			
Methyl Ethyl Ketone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0	<1.0	5.1	4.0	<4.0			
cis- 1,2-Dichloroethylene	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	0.91	<0.20	0.80	<0.80			
Chloroform	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80			
1,2 - Dichloroethane	µg/L	5	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80			
1,1,1-Trichloroethane	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	1.20	<1.20			
Carbon Tetrachloride	µg/L	2	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80			
Benzene	µg/L	1	0.20	2019-06-22	2019-06-24	<0.20	<0.20	1.7	0.30	0.80	<0.80			
1,2-Dichloropropane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80			
Trichloroethylene	µg/L	5	0.20	2019-06-22	2019-06-24	<0.20	<0.20	3.4	<0.20	0.80	<0.80			
Bromodichloromethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80			
cis-1,3-Dichloropropene	ug/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80			
Methyl Isobutyl Ketone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0	<1.0	<1.0	4.0	<4.0			
trans-1,3-Dichloropropene	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	1.20	<1.20			
1,1,2-Trichloroethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80			
Toluene	µg/L	60	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80			
2-Hexanone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0	<1.0	<1.0	4.0	<4.0			
Dibromochloromethane	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	0.40	<0.40			

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AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
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<http://www.agatlabs.com>

CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Volatile Organic Compounds in Water

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	GW-44985-	GW-44985-	GW-44985-	GW-44985-	RDL	GW-44985-
						SAMPLE DESCRIPTION: 061119-DD-61S	061119-DD-22	061219-DD-22D	061219-DD-60D		061219-DD-39D
						SAMPLE TYPE: Water	Water	Water	Water		Water
						DATE SAMPLED: 2019-06-11	2019-06-11	2019-06-12	2019-06-12		2019-06-12
Ethylene Dibromide	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	0.40	<0.40
Tetrachloroethylene	µg/L	10	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80
1,1,1,2-Tetrachloroethane	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	0.40	<0.40
Chlorobenzene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	0.40	<0.40
Ethylbenzene	µg/L	140	0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	0.40	<0.40
m & p-Xylene	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80
Bromoform	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	0.40	<0.40
Styrene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	0.40	<0.40
1,1,2,2-Tetrachloroethane	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	0.40	<0.40
o-Xylene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	0.40	<0.40
1,3-Dichlorobenzene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	0.40	<0.40
1,4-Dichlorobenzene	µg/L	5	0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	0.40	<0.40
1,2-Dichlorobenzene	µg/L	200	0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	0.40	<0.40
1,2,4-Trichlorobenzene	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	1.20	<1.20
1,3-Dichloropropene (Cis + Trans)	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	1.20	<1.20
Xylene Mixture (Total)	µg/L	90	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80
n-Hexane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80
Surrogate	Unit	Acceptable Limits									
Toluene-d8	% Recovery		50-140	2019-06-22	2019-06-24	99	85	89	105		94
4-Bromofluorobenzene	% Recovery		50-140	2019-06-22	2019-06-24	86	85	90	92		85

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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Volatile Organic Compounds in Water

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	GW-44985-	GW-44985-	GW-44985-	GW-44985-	GW-44985-	GW-44985-	
						SAMPLE DESCRIPTION:	061219-DD-39I	061219-DD-39S	061219-DD-21II	061219-DD-47D	061219-DD-40S	061219-DD-40D
						SAMPLE TYPE:	Water	Water	Water	Water	Water	Water
						DATE SAMPLED:	2019-06-12	2019-06-12	2019-06-12	2019-06-12	2019-06-12	2019-06-12
						280889	280890	280891	280911	280912	280913	
Dichlorodifluoromethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Chloromethane	µg/L		0.40	2019-06-22	2019-06-24	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	
Vinyl Chloride	µg/L	1	0.17	2019-06-22	2019-06-24	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	
Bromomethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Chloroethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Trichlorofluoromethane	µg/L		0.40	2019-06-22	2019-06-24	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	
Acetone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
1,1 Dichloroethylene	µg/L	14	0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	
Methylene Chloride	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	
trans- 1,2-dichloroethylene	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Methyl tert-butyl ether	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
1,1-Dichloroethane	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	
Methyl Ethyl Ketone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
cis- 1,2-Dichloroethylene	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Chloroform	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
1,2 - Dichloroethane	µg/L	5	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
1,1,1-Trichloroethane	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	
Carbon Tetrachloride	µg/L	2	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Benzene	µg/L	1	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
1,2-Dichloropropane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Trichloroethylene	µg/L	5	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Bromodichloromethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
cis-1,3-Dichloropropene	ug/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Methyl Isobutyl Ketone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
trans-1,3-Dichloropropene	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	
1,1,2-Trichloroethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Toluene	µg/L	60	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
2-Hexanone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Dibromochloromethane	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	

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AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

5835 COOPERS AVENUE
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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Volatile Organic Compounds in Water

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	GW-44985-	GW-44985-	GW-44985-	GW-44985-	GW-44985-	GW-44985-	
						SAMPLE DESCRIPTION:	061219-DD-39I	061219-DD-39S	061219-DD-21II	061219-DD-47D	061219-DD-40S	061219-DD-40D
						SAMPLE TYPE:	Water	Water	Water	Water	Water	Water
						DATE SAMPLED:	2019-06-12	2019-06-12	2019-06-12	2019-06-12	2019-06-12	2019-06-12
Ethylene Dibromide	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
Tetrachloroethylene	µg/L	10	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
1,1,1,2-Tetrachloroethane	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
Chlorobenzene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
Ethylbenzene	µg/L	140	0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
m & p-Xylene	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Bromoform	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
Styrene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
1,1,2,2-Tetrachloroethane	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
o-Xylene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
1,3-Dichlorobenzene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
1,4-Dichlorobenzene	µg/L	5	0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
1,2-Dichlorobenzene	µg/L	200	0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
1,2,4-Trichlorobenzene	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	
1,3-Dichloropropene (Cis + Trans)	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	
Xylene Mixture (Total)	µg/L	90	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
n-Hexane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Surrogate	Unit	Acceptable Limits										
Toluene-d8	% Recovery		50-140	2019-06-22	2019-06-24	97	100	107	106	103	106	
4-Bromofluorobenzene	% Recovery		50-140	2019-06-22	2019-06-24	91	78	75	75	74	79	

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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Volatile Organic Compounds in Water

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	GW-44985-		GW-44985-		GW-44985-		GW-44985-			
				SAMPLE DESCRIPTION: 061219-DD-32IV				061219-DD-46D		061219-DD-46I		061219-DD-46S	
				SAMPLE TYPE: Water		Water		Water		Water		Water	
				DATE SAMPLED: 2019-06-12		2019-06-12		2019-06-12		2019-06-12		2019-06-12	
				Date Prepared	Date Analyzed	280914	RDL	280915	RDL	280916	280917		
Dichlorodifluoromethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	0.80	<0.80	0.20	<0.20	<0.20		
Chloromethane	µg/L		0.40	2019-06-22	2019-06-24	<0.40	1.60	<1.60	0.40	<0.40	<0.40		
Vinyl Chloride	µg/L	1	0.17	2019-06-22	2019-06-24	<0.17	0.68	<0.68	0.17	<0.17	<0.17		
Bromomethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	0.80	<0.80	0.20	<0.20	<0.20		
Chloroethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	0.80	<0.80	0.20	<0.20	<0.20		
Trichlorofluoromethane	µg/L		0.40	2019-06-22	2019-06-24	<0.40	1.60	<1.60	0.40	<0.40	<0.40		
Acetone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	4.0	<4.0	1.0	<1.0	<1.0		
1,1 Dichloroethylene	µg/L	14	0.30	2019-06-22	2019-06-24	<0.30	1.20	<1.20	0.30	<0.30	<0.30		
Methylene Chloride	µg/L		0.30	2019-06-22	2019-06-24	<0.30	1.20	<1.20	0.30	<0.30	<0.30		
trans- 1,2-dichloroethylene	µg/L		0.20	2019-06-22	2019-06-24	<0.20	0.80	<0.80	0.20	<0.20	<0.20		
Methyl tert-butyl ether	µg/L		0.20	2019-06-22	2019-06-24	<0.20	0.80	<0.80	0.20	<0.20	<0.20		
1,1-Dichloroethane	µg/L		0.30	2019-06-22	2019-06-24	<0.30	1.20	<1.20	0.30	<0.30	<0.30		
Methyl Ethyl Ketone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	4.0	<4.0	1.0	<1.0	<1.0		
cis- 1,2-Dichloroethylene	µg/L		0.20	2019-06-22	2019-06-24	<0.20	0.80	<0.80	0.20	<0.20	<0.20		
Chloroform	µg/L		0.20	2019-06-22	2019-06-24	<0.20	0.80	<0.80	0.20	<0.20	<0.20		
1,2 - Dichloroethane	µg/L	5	0.20	2019-06-22	2019-06-24	<0.20	0.80	<0.80	0.20	<0.20	<0.20		
1,1,1-Trichloroethane	µg/L		0.30	2019-06-22	2019-06-24	<0.30	1.20	<1.20	0.30	<0.30	<0.30		
Carbon Tetrachloride	µg/L	2	0.20	2019-06-22	2019-06-24	<0.20	0.80	<0.80	0.20	<0.20	<0.20		
Benzene	µg/L	1	0.20	2019-06-22	2019-06-24	<0.20	0.80	<0.80	0.20	<0.20	<0.20		
1,2-Dichloropropane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	0.80	<0.80	0.20	<0.20	<0.20		
Trichloroethylene	µg/L	5	0.20	2019-06-22	2019-06-24	<0.20	0.80	<0.80	0.20	<0.20	<0.20		
Bromodichloromethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	0.80	<0.80	0.20	<0.20	<0.20		
cis-1,3-Dichloropropene	ug/L		0.20	2019-06-22	2019-06-24	<0.20	0.80	<0.80	0.20	<0.20	<0.20		
Methyl Isobutyl Ketone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	4.0	<4.0	1.0	<1.0	<1.0		
trans-1,3-Dichloropropene	µg/L		0.30	2019-06-22	2019-06-24	<0.30	1.20	<1.20	0.30	<0.30	<0.30		
1,1,2-Trichloroethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	0.80	<0.80	0.20	<0.20	<0.20		
Toluene	µg/L	60	0.20	2019-06-22	2019-06-24	<0.20	0.80	<0.80	0.20	<0.20	<0.20		
2-Hexanone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	4.0	<4.0	1.0	<1.0	<1.0		
Dibromochloromethane	µg/L		0.10	2019-06-22	2019-06-24	<0.10	0.40	<0.40	0.10	<0.10	<0.10		

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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Volatile Organic Compounds in Water

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	GW-44985-061219-DD-32IV		GW-44985-061219-DD-46D		GW-44985-061219-DD-46I		GW-44985-061219-DD-46S	
				Date Prepared	Date Analyzed	RDL	RDL	RDL	RDL		
Ethylene Dibromide	µg/L		0.10	2019-06-22	2019-06-24	<0.10	0.40	<0.40	0.10	<0.10	<0.10
Tetrachloroethylene	µg/L	10	0.20	2019-06-22	2019-06-24	<0.20	0.80	<0.80	0.20	<0.20	<0.20
1,1,1,2-Tetrachloroethane	µg/L		0.10	2019-06-22	2019-06-24	<0.10	0.40	<0.40	0.10	<0.10	<0.10
Chlorobenzene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	0.40	<0.40	0.10	<0.10	<0.10
Ethylbenzene	µg/L	140	0.10	2019-06-22	2019-06-24	<0.10	0.40	<0.40	0.10	<0.10	<0.10
m & p-Xylene	µg/L		0.20	2019-06-22	2019-06-24	<0.20	0.80	<0.80	0.20	<0.20	<0.20
Bromoform	µg/L		0.10	2019-06-22	2019-06-24	<0.10	0.40	<0.40	0.10	<0.10	<0.10
Styrene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	0.40	<0.40	0.10	<0.10	<0.10
1,1,2,2-Tetrachloroethane	µg/L		0.10	2019-06-22	2019-06-24	<0.10	0.40	<0.40	0.10	<0.10	<0.10
o-Xylene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	0.40	<0.40	0.10	<0.10	<0.10
1,3-Dichlorobenzene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	0.40	<0.40	0.10	<0.10	<0.10
1,4-Dichlorobenzene	µg/L	5	0.10	2019-06-22	2019-06-24	<0.10	0.40	<0.40	0.10	<0.10	<0.10
1,2-Dichlorobenzene	µg/L	200	0.10	2019-06-22	2019-06-24	<0.10	0.40	<0.40	0.10	<0.10	<0.10
1,2,4-Trichlorobenzene	µg/L		0.30	2019-06-22	2019-06-24	<0.30	1.20	<1.20	0.30	<0.30	<0.30
1,3-Dichloropropene (Cis + Trans)	µg/L		0.30	2019-06-22	2019-06-24	<0.30	1.20	<1.20	0.30	<0.30	<0.30
Xylene Mixture (Total)	µg/L	90	0.20	2019-06-22	2019-06-24	<0.20	0.80	<0.80	0.20	<0.20	<0.20
n-Hexane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	0.80	<0.80	0.20	<0.20	<0.20
Surrogate	Unit	Acceptable Limits									
Toluene-d8	% Recovery	50-140		2019-06-22	2019-06-24	102		106		103	104
4-Bromofluorobenzene	% Recovery	50-140		2019-06-22	2019-06-24	77		75		74	76

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
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FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Volatile Organic Compounds in Water

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	GW-44985-	GW-44985-	GW-44985-	GW-44985-	GW-44985-	GW-44985-					
						SAMPLE DESCRIPTION: 061219-DD-35S 061219-DD-35D 061219-DD-53S 061219-DD-53D 061219-DD-32S 061219-DD-32D										
						SAMPLE TYPE: Water Water Water Water Water Water										
						DATE SAMPLED: 2019-06-12 2019-06-12 2019-06-12 2019-06-12 2019-06-12 2019-06-12						280918	280925	280927	280928	280929
Dichlorodifluoromethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20					
Chloromethane	µg/L		0.40	2019-06-22	2019-06-24	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40					
Vinyl Chloride	µg/L	1	0.17	2019-06-22	2019-06-24	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17					
Bromomethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20					
Chloroethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20					
Trichlorofluoromethane	µg/L		0.40	2019-06-22	2019-06-24	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40					
Acetone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0					
1,1 Dichloroethylene	µg/L	14	0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30					
Methylene Chloride	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30					
trans- 1,2-dichloroethylene	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20					
Methyl tert-butyl ether	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20					
1,1-Dichloroethane	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30					
Methyl Ethyl Ketone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0					
cis- 1,2-Dichloroethylene	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20					
Chloroform	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20					
1,2 - Dichloroethane	µg/L	5	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20					
1,1,1-Trichloroethane	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30					
Carbon Tetrachloride	µg/L	2	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20					
Benzene	µg/L	1	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20					
1,2-Dichloropropane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20					
Trichloroethylene	µg/L	5	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20					
Bromodichloromethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20					
cis-1,3-Dichloropropene	ug/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20					
Methyl Isobutyl Ketone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0					
trans-1,3-Dichloropropene	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30					
1,1,2-Trichloroethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20					
Toluene	µg/L	60	0.20	2019-06-22	2019-06-24	0.43	<0.20	<0.20	<0.20	<0.20	<0.20					
2-Hexanone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0					
Dibromochloromethane	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10					

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Volatile Organic Compounds in Water

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	GW-44985-	GW-44985-	GW-44985-	GW-44985-	GW-44985-	GW-44985-						
						061219-DD-35S	061219-DD-35D	061219-DD-53S	061219-DD-53D	061219-DD-32S	061219-DD-32D						
						SAMPLE DESCRIPTION:						Water	Water	Water	Water	Water	Water
						DATE SAMPLED:						2019-06-12	2019-06-12	2019-06-12	2019-06-12	2019-06-12	2019-06-12
Ethylene Dibromide	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10						
Tetrachloroethylene	µg/L	10	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
1,1,1,2-Tetrachloroethane	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10						
Chlorobenzene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10						
Ethylbenzene	µg/L	140	0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10						
m & p-Xylene	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
Bromoform	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10						
Styrene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10						
1,1,2,2-Tetrachloroethane	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10						
o-Xylene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10						
1,3-Dichlorobenzene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10						
1,4-Dichlorobenzene	µg/L	5	0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10						
1,2-Dichlorobenzene	µg/L	200	0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10						
1,2,4-Trichlorobenzene	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30						
1,3-Dichloropropene (Cis + Trans)	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30						
Xylene Mixture (Total)	µg/L	90	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
n-Hexane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
Surrogate	Unit	Acceptable Limits															
Toluene-d8	% Recovery		50-140	2019-06-22	2019-06-24	105	103	105	103	101	105						
4-Bromofluorobenzene	% Recovery		50-140	2019-06-22	2019-06-24	80	77	75	75	74	78						

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Volatile Organic Compounds in Water

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	GW-44985-	GW-44985-	GW-44985-	GW-44985-	GW-44985-	GW-44985-						
						SAMPLE DESCRIPTION: 061219-DD-30D 061219-DD-30S 061219-DD-41D 061219-DD-41S 061219-DD-52B 061219-DD-50B											
						SAMPLE TYPE: Water											
						DATE SAMPLED: 2019-06-12						280931	280932	280933	280934	280935	280936
Dichlorodifluoromethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
Chloromethane	µg/L		0.40	2019-06-22	2019-06-24	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40						
Vinyl Chloride	µg/L	1	0.17	2019-06-22	2019-06-24	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17						
Bromomethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
Chloroethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
Trichlorofluoromethane	µg/L		0.40	2019-06-22	2019-06-24	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40						
Acetone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0						
1,1 Dichloroethylene	µg/L	14	0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30						
Methylene Chloride	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30						
trans- 1,2-dichloroethylene	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
Methyl tert-butyl ether	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
1,1-Dichloroethane	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30						
Methyl Ethyl Ketone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0						
cis- 1,2-Dichloroethylene	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
Chloroform	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
1,2 - Dichloroethane	µg/L	5	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
1,1,1-Trichloroethane	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30						
Carbon Tetrachloride	µg/L	2	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
Benzene	µg/L	1	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
1,2-Dichloropropane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
Trichloroethylene	µg/L	5	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
Bromodichloromethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
cis-1,3-Dichloropropene	ug/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
Methyl Isobutyl Ketone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0						
trans-1,3-Dichloropropene	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30						
1,1,2-Trichloroethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
Toluene	µg/L	60	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
2-Hexanone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0						
Dibromochloromethane	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10						

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Volatile Organic Compounds in Water

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	GW-44985-	GW-44985-	GW-44985-	GW-44985-	GW-44985-	GW-44985-						
						061219-DD-30D	061219-DD-30S	061219-DD-41D	061219-DD-41S	061219-DD-52B	061219-DD-50B						
						SAMPLE DESCRIPTION:						Water	Water	Water	Water	Water	Water
						DATE SAMPLED:						2019-06-12	2019-06-12	2019-06-12	2019-06-12	2019-06-12	2019-06-12
Ethylene Dibromide	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10						
Tetrachloroethylene	µg/L	10	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
1,1,1,2-Tetrachloroethane	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10						
Chlorobenzene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10						
Ethylbenzene	µg/L	140	0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10						
m & p-Xylene	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
Bromoform	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10						
Styrene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10						
1,1,2,2-Tetrachloroethane	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10						
o-Xylene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10						
1,3-Dichlorobenzene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10						
1,4-Dichlorobenzene	µg/L	5	0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10						
1,2-Dichlorobenzene	µg/L	200	0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10						
1,2,4-Trichlorobenzene	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30						
1,3-Dichloropropene (Cis + Trans)	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30						
Xylene Mixture (Total)	µg/L	90	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
n-Hexane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
Surrogate	Unit	Acceptable Limits															
Toluene-d8	% Recovery		50-140	2019-06-22	2019-06-24	105	105	107	104	105	106						
4-Bromofluorobenzene	% Recovery		50-140	2019-06-22	2019-06-24	76	74	76	71	74	74						

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Volatile Organic Compounds in Water

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	GW-44985-		GW-44985-		GW-44985-		GW-44985-							
						SAMPLE DESCRIPTION:		061219-DD-51B		061219-DD-52A		061119-DD-59D-		061319-DD-PW2		061319-DD-PW2			
						SAMPLE TYPE:		Water		Water		Water		Water		Water		Water	
						DATE SAMPLED:		2019-06-12		2019-06-12		2019-06-11		2019-06-13		2019-06-13		2019-06-13	
						280937	280938	280941	280944	RDL	280945								
Dichlorodifluoromethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80								
Chloromethane	µg/L		0.40	2019-06-22	2019-06-24	<0.40	<0.40	<0.40	<0.40	1.60	<1.60								
Vinyl Chloride	µg/L	1	0.17	2019-06-22	2019-06-24	<0.17	<0.17	<0.17	<0.17	0.68	<0.68								
Bromomethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80								
Chloroethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80								
Trichlorofluoromethane	µg/L		0.40	2019-06-22	2019-06-24	<0.40	<0.40	<0.40	<0.40	1.60	<1.60								
Acetone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0	<1.0	<1.0	4.0	<4.0								
1,1 Dichloroethylene	µg/L	14	0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	1.20	<1.20								
Methylene Chloride	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	1.20	<1.20								
trans- 1,2-dichloroethylene	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80								
Methyl tert-butyl ether	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80								
1,1-Dichloroethane	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	1.20	<1.20								
Methyl Ethyl Ketone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0	<1.0	<1.0	4.0	<4.0								
cis- 1,2-Dichloroethylene	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80								
Chloroform	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80								
1,2 - Dichloroethane	µg/L	5	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80								
1,1,1-Trichloroethane	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	1.20	<1.20								
Carbon Tetrachloride	µg/L	2	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80								
Benzene	µg/L	1	0.20	2019-06-22	2019-06-24	<0.20	<0.20	1.1	<0.20	0.80	<0.80								
1,2-Dichloropropane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80								
Trichloroethylene	µg/L	5	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80								
Bromodichloromethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80								
cis-1,3-Dichloropropene	ug/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80								
Methyl Isobutyl Ketone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0	<1.0	<1.0	4.0	<4.0								
trans-1,3-Dichloropropene	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	1.20	<1.20								
1,1,2-Trichloroethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80								
Toluene	µg/L	60	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	1.7								
2-Hexanone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0	<1.0	<1.0	4.0	<4.0								

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

5835 COOPERS AVENUE
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 CANADA L4Z 1Y2
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<http://www.agatlabs.com>

CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Volatile Organic Compounds in Water

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	GW-44985-		GW-44985-		GW-44985-	
						061219-DD-51B	061219-DD-52A	061119-DD-59D-	061319-DD-PW2	GW-44985-	
						98	98	98	061319-DD-PW2	GW-44985-	
						Water	Water	Water	Water	GW-44985-	
						2019-06-12	2019-06-12	2019-06-11	2019-06-13	RDL	2019-06-13
Dibromochloromethane	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	0.40	<0.40
Ethylene Dibromide	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	0.40	<0.40
Tetrachloroethylene	µg/L	10	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80
1,1,1,2-Tetrachloroethane	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	0.40	<0.40
Chlorobenzene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	0.40	<0.40
Ethylbenzene	µg/L	140	0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	0.40	<0.40
m & p-Xylene	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80
Bromoform	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	0.40	<0.40
Styrene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	0.40	<0.40
1,1,1,2,2-Tetrachloroethane	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	0.40	<0.40
o-Xylene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	0.40	<0.40
1,3-Dichlorobenzene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	0.40	<0.40
1,4-Dichlorobenzene	µg/L	5	0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	0.40	<0.40
1,2-Dichlorobenzene	µg/L	200	0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	0.40	<0.40
1,2,4-Trichlorobenzene	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	1.20	<1.20
1,3-Dichloropropene (Cis + Trans)	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	1.20	<1.20
Xylene Mixture (Total)	µg/L	90	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80
n-Hexane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	0.80	<0.80
Surrogate	Unit	Acceptable Limits									
Toluene-d8	% Recovery		50-140	2019-06-22	2019-06-24	109	106	109	105		113
4-Bromofluorobenzene	% Recovery		50-140	2019-06-22	2019-06-24	76	73	78	73		79

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Certificate of Analysis

AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

5835 COOPERS AVENUE
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CANADA L4Z 1Y2
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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Volatile Organic Compounds in Water

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	GW-44985-	GW-44985-	GW-44985-	GW-44985-	GW-44985-	GW-44985-	
						061319-DD-	061319-DD-	061319-DD-	061319-DD-	061319-DD-	061319-DD-	
						SAMPLE DESCRIPTION:	EW2A	EW2C	EW2B	EW1C	EW1B	EW1A
						SAMPLE TYPE:	Water	Water	Water	Water	Water	Water
DATE SAMPLED:	2019-06-13	2019-06-13	2019-06-13	2019-06-13	2019-06-13	2019-06-13						
						280948	280949	280950	280951	280952	280953	
Dichlorodifluoromethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Chloromethane	µg/L		0.40	2019-06-22	2019-06-24	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	
Vinyl Chloride	µg/L	1	0.17	2019-06-22	2019-06-24	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	
Bromomethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Chloroethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Trichlorofluoromethane	µg/L		0.40	2019-06-22	2019-06-24	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	
Acetone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
1,1 Dichloroethylene	µg/L	14	0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	
Methylene Chloride	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	
trans- 1,2-dichloroethylene	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Methyl tert-butyl ether	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
1,1-Dichloroethane	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	
Methyl Ethyl Ketone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
cis- 1,2-Dichloroethylene	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Chloroform	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
1,2 - Dichloroethane	µg/L	5	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
1,1,1-Trichloroethane	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	
Carbon Tetrachloride	µg/L	2	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Benzene	µg/L	1	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
1,2-Dichloropropane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Trichloroethylene	µg/L	5	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Bromodichloromethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
cis-1,3-Dichloropropene	ug/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Methyl Isobutyl Ketone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
trans-1,3-Dichloropropene	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	
1,1,2-Trichloroethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	1.3	
Toluene	µg/L	60	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	0.88	
2-Hexanone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

5835 COOPERS AVENUE
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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Volatile Organic Compounds in Water

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	GW-44985-	GW-44985-	GW-44985-	GW-44985-	GW-44985-	GW-44985-	
						061319-DD-	061319-DD-	061319-DD-	061319-DD-	061319-DD-	061319-DD-	
						SAMPLE DESCRIPTION:	EW2A	EW2C	EW2B	EW1C	EW1B	EW1A
						SAMPLE TYPE:	Water	Water	Water	Water	Water	Water
DATE SAMPLED:	2019-06-13	2019-06-13	2019-06-13	2019-06-13	2019-06-13	2019-06-13						
						280948	280949	280950	280951	280952	280953	
Dibromochloromethane	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
Ethylene Dibromide	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
Tetrachloroethylene	µg/L	10	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
1,1,1,2-Tetrachloroethane	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
Chlorobenzene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
Ethylbenzene	µg/L	140	0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
m & p-Xylene	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Bromoform	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
Styrene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
1,1,1,2,2-Tetrachloroethane	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
o-Xylene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
1,3-Dichlorobenzene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
1,4-Dichlorobenzene	µg/L	5	0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
1,2-Dichlorobenzene	µg/L	200	0.10	2019-06-22	2019-06-24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
1,2,4-Trichlorobenzene	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	
1,3-Dichloropropene (Cis + Trans)	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	
Xylene Mixture (Total)	µg/L	90	0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
n-Hexane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Surrogate	Unit	Acceptable Limits										
Toluene-d8	% Recovery		50-140	2019-06-22	2019-06-24	100	104	109	103	102	102	
4-Bromofluorobenzene	% Recovery		50-140	2019-06-22	2019-06-24	78	83	77	73	76	77	

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Volatile Organic Compounds in Water

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	GW-44985-	
						SAMPLE DESCRIPTION: 061319-DD-PW1	Trip Blank
				SAMPLE TYPE: Water		Water	
				DATE SAMPLED: 2019-06-13		2019-06-13	
						280954	281348
Dichlorodifluoromethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20
Chloromethane	µg/L		0.40	2019-06-22	2019-06-24	<0.40	<0.40
Vinyl Chloride	µg/L	1	0.17	2019-06-22	2019-06-24	<0.17	<0.17
Bromomethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20
Chloroethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20
Trichlorofluoromethane	µg/L		0.40	2019-06-22	2019-06-24	<0.40	<0.40
Acetone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0
1,1 Dichloroethylene	µg/L	14	0.30	2019-06-22	2019-06-24	<0.30	<0.30
Methylene Chloride	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30
trans- 1,2-dichloroethylene	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20
Methyl tert-butyl ether	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20
1,1-Dichloroethane	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30
Methyl Ethyl Ketone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0
cis- 1,2-Dichloroethylene	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20
Chloroform	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20
1,2 - Dichloroethane	µg/L	5	0.20	2019-06-22	2019-06-24	<0.20	<0.20
1,1,1-Trichloroethane	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30
Carbon Tetrachloride	µg/L	2	0.20	2019-06-22	2019-06-24	<0.20	<0.20
Benzene	µg/L	1	0.20	2019-06-22	2019-06-24	<0.20	<0.20
1,2-Dichloropropane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20
Trichloroethylene	µg/L	5	0.20	2019-06-22	2019-06-24	<0.20	<0.20
Bromodichloromethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20
cis-1,3-Dichloropropene	ug/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20
Methyl Isobutyl Ketone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0
trans-1,3-Dichloropropene	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30
1,1,2-Trichloroethane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20
Toluene	µg/L	60	0.20	2019-06-22	2019-06-24	<0.20	<0.20
2-Hexanone	µg/L		1.0	2019-06-22	2019-06-24	<1.0	<1.0
Dibromochloromethane	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10

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Certificate of Analysis

AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Volatile Organic Compounds in Water

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

GW-44985-							
SAMPLE DESCRIPTION: 061319-DD-PW1						Trip Blank	
SAMPLE TYPE: Water						Water	
DATE SAMPLED: 2019-06-13						2019-06-13	
Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	280954	281348
Ethylene Dibromide	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10
Tetrachloroethylene	µg/L	10	0.20	2019-06-22	2019-06-24	<0.20	<0.20
1,1,1,2-Tetrachloroethane	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10
Chlorobenzene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10
Ethylbenzene	µg/L	140	0.10	2019-06-22	2019-06-24	<0.10	<0.10
m & p-Xylene	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20
Bromoform	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10
Styrene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10
1,1,2,2-Tetrachloroethane	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10
o-Xylene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10
1,3-Dichlorobenzene	µg/L		0.10	2019-06-22	2019-06-24	<0.10	<0.10
1,4-Dichlorobenzene	µg/L	5	0.10	2019-06-22	2019-06-24	<0.10	<0.10
1,2-Dichlorobenzene	µg/L	200	0.10	2019-06-22	2019-06-24	<0.10	<0.10
1,2,4-Trichlorobenzene	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30
1,3-Dichloropropene (Cis + Trans)	µg/L		0.30	2019-06-22	2019-06-24	<0.30	<0.30
Xylene Mixture (Total)	µg/L	90	0.20	2019-06-22	2019-06-24	<0.20	<0.20
n-Hexane	µg/L		0.20	2019-06-22	2019-06-24	<0.20	<0.20
Surrogate	Unit	Acceptable Limits					
Toluene-d8	% Recovery	50-140		2019-06-22	2019-06-24	100	104
4-Bromofluorobenzene	% Recovery	50-140		2019-06-22	2019-06-24	78	83

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AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

5835 COOPERS AVENUE
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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Volatile Organic Compounds in Water

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

- Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Ontario Drinking Water Quality Standards. Na value is derived from O. Reg. 248
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.
- 280769-280872 Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene + o-Xylene.
1,3-Dichloropropene total is a calculated parameter. The calculated value is the sum of Cis-1,3-Dichloropropene and Trans-1,3-Dichloropropene.
 - 280873 Dilution factor=4
The sample was diluted because it was foamy. The reporting detection limit has been corrected for the dilution factor used.
Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene + o-Xylene.
1,3-Dichloropropene total is a calculated parameter. The calculated value is the sum of Cis-1,3-Dichloropropene and Trans-1,3-Dichloropropene.
 - 280874-280887 Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene + o-Xylene.
1,3-Dichloropropene total is a calculated parameter. The calculated value is the sum of Cis-1,3-Dichloropropene and Trans-1,3-Dichloropropene.
 - 280888 Dilution factor=4
The sample was diluted because it was foamy. The reporting detection limit has been corrected for the dilution factor used.
Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene + o-Xylene.
1,3-Dichloropropene total is a calculated parameter. The calculated value is the sum of Cis-1,3-Dichloropropene and Trans-1,3-Dichloropropene.
 - 280889-280914 Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene + o-Xylene.
1,3-Dichloropropene total is a calculated parameter. The calculated value is the sum of Cis-1,3-Dichloropropene and Trans-1,3-Dichloropropene.
 - 280915 Dilution factor=4
The sample was diluted because it was foamy. The reporting detection limit has been corrected for the dilution factor used.
Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene + o-Xylene.
1,3-Dichloropropene total is a calculated parameter. The calculated value is the sum of Cis-1,3-Dichloropropene and Trans-1,3-Dichloropropene.
 - 280916-280944 Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene + o-Xylene.
1,3-Dichloropropene total is a calculated parameter. The calculated value is the sum of Cis-1,3-Dichloropropene and Trans-1,3-Dichloropropene.
 - 280945 Dilution factor=4
The sample was diluted because it was foamy. The reporting detection limit has been corrected for the dilution factor used.
Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene + o-Xylene.
1,3-Dichloropropene total is a calculated parameter. The calculated value is the sum of Cis-1,3-Dichloropropene and Trans-1,3-Dichloropropene.
 - 280948-281348 Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene + o-Xylene.
1,3-Dichloropropene total is a calculated parameter. The calculated value is the sum of Cis-1,3-Dichloropropene and Trans-1,3-Dichloropropene.

Analysis performed at AGAT Toronto (unless marked by *)

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PROJECT: 44985 (PO#73507870-2)

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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Ammonia (Water)											
DATE RECEIVED: 2019-06-14					DATE REPORTED: 2019-06-28						
						GW-44985-061119-DD-43S	GW-44985-061119-DD-55S	GW-44985-061119-DD-42S	GW-44985-061119-DD-57S	GW-44985-061119-DD-58S	GW-44985-061119-DD-56S
						SAMPLE DESCRIPTION:	Water	Water	Water	Water	Water
						SAMPLE TYPE:	Water	Water	Water	Water	Water
						DATE SAMPLED:	2019-06-11	2019-06-11	2019-06-11	2019-06-11	2019-06-11
Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	280776	280842	280850	280853	280854	280856
Ammonia as N	mg/L		0.02	2019-06-18	2019-06-18	0.03	<0.02	<0.02	<0.02	0.05	<0.02
						GW-44985-061119-DD-56S-98	GW-44985-061119-DD-59S	GW-44985-061119-DD-48S	GW-44985-061119-DD-45S	GW-44985-061119-DD-62S	GW-44985-061119-DD-63S
						SAMPLE DESCRIPTION:	Water	Water	Water	Water	Water
						SAMPLE TYPE:	Water	Water	Water	Water	Water
						DATE SAMPLED:	2019-06-11	2019-06-11	2019-06-11	2019-06-11	2019-06-11
Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	280857	280858	280871	280874	280875	280878
Ammonia as N	mg/L		0.02	2019-06-18	2019-06-18	0.02	<0.02	0.04	0.09	0.02	<0.02
						GW-44985-061119-DD-61I	GW-44985-061119-DD-61S	GW-44985-061119-DD-22	GW-44985-061219-DD-39I	GW-44985-061219-DD-39S	GW-44985-061219-DD-21II
						SAMPLE DESCRIPTION:	Water	Water	Water	Water	Water
						SAMPLE TYPE:	Water	Water	Water	Water	Water
						DATE SAMPLED:	2019-06-11	2019-06-11	2019-06-11	2019-06-12	2019-06-12
Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	280882	280883	280884	280889	280890	280891
Ammonia as N	mg/L		0.02	2019-06-18	2019-06-18	<0.02	0.08	0.02	<0.02	0.05	0.02
						GW-44985-061219-DD-40S	GW-44985-061219-DD-32IV	GW-44985-061219-DD-46I	GW-44985-061219-DD-46S	GW-44985-061219-DD-35S	GW-44985-061219-DD-53S
						SAMPLE DESCRIPTION:	Water	Water	Water	Water	Water
						SAMPLE TYPE:	Water	Water	Water	Water	Water
						DATE SAMPLED:	2019-06-12	2019-06-12	2019-06-12	2019-06-12	2019-06-12
Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	280912	280914	280916	280917	280918	280927
Ammonia as N	mg/L		0.02	2019-06-18	2019-06-18	<0.02	<0.02	0.05	<0.02	0.52	0.02

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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Ammonia (Water)

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	Date Prepared	SAMPLE DESCRIPTION:		Date Analyzed	RDL	Date Prepared	Date Analyzed	RDL
					GW-44985-061219-DD-32S	GW-44985-061219-DD-30S					
Ammonia as N	mg/L		0.02	2019-06-18	2019-06-18	<0.02	<0.02	0.08	0.02	0.04	<0.02

Parameter	Unit	G / S	RDL	Date Prepared	SAMPLE DESCRIPTION:		Date Analyzed	RDL
					GW-44985-061219-DD-52A	GW-44985-061319-DD-B1		
Ammonia as N	mg/L		0.02	2019-06-18	2019-06-18	<0.02	<0.02	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

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AGAT WORK ORDER: 19T480053

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SAMPLING SITE:

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Groundwater Parameters

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	GW-44985- SAMPLE DESCRIPTION: 061119-DD-43D			GW-44985- SAMPLE DESCRIPTION: 061119-DD-43S			
				Date Prepared	Date Analyzed	280769	RDL	280776	RDL	Date Prepared
Electrical Conductivity	µS/cm		2	2019-06-18	2019-06-18	1140	2	681	2	2019-06-18
pH	pH Units		NA	2019-06-18	2019-06-18	7.77	NA	7.81	NA	2019-06-18
Total Dissolved Solids	mg/L		20	2019-06-18	2019-06-19	598	20	418	20	2019-06-18
Alkalinity (as CaCO3)	mg/L		5	2019-06-18	2019-06-18	237	5	301	5	2019-06-18
Fluoride	mg/L	1.5	0.25	2019-06-18	2019-06-18	0.75	0.25	<0.25	0.25	2019-06-18
Chloride	mg/L		0.50	2019-06-18	2019-06-18	248	0.50	9.04	1.0	2019-06-20
Nitrate as N	mg/L	10.0	0.25	2019-06-18	2019-06-18	<0.25	0.25	<0.25	0.25	2019-06-18
Nitrite as N	mg/L	1.0	0.25	2019-06-18	2019-06-18	<0.25	0.25	<0.25	0.25	2019-06-18
Bromide	mg/L		0.25	2019-06-18	2019-06-18	0.47	0.25	<0.25	0.25	2019-06-18
Sulphate	mg/L		0.50	2019-06-18	2019-06-18	<0.50	0.50	55.6	0.50	2019-06-18
Cyanide, Free	mg/L	0.2	0.002	2019-06-19	2019-06-19	<0.002	0.002	<0.002	0.002	2019-06-19
Calcium	mg/L		0.10	2019-06-19	2019-06-19	24.7	0.05	88.8	0.25	2019-06-19
Magnesium	mg/L		0.10	2019-06-19	2019-06-19	8.62	0.05	25.7	0.25	2019-06-19
Sodium	mg/L	20	0.10	2019-06-19	2019-06-19	196	0.05	21.0	0.25	2019-06-19
Potassium	mg/L		0.10	2019-06-19	2019-06-19	1.83	0.05	1.45	0.25	2019-06-19
Arsenic	mg/L	0.010	0.003	2019-06-19	2019-06-19	<0.003	0.003	<0.003	0.003	2019-06-19
Barium	mg/L	1	0.002	2019-06-19	2019-06-19	0.164	0.002	0.037	0.002	2019-06-19
Boron	mg/L	5	0.010	2019-06-19	2019-06-19	1.33	0.010	0.074	0.010	2019-06-19
Cadmium	mg/L	0.005	0.001	2019-06-19	2019-06-19	<0.001	0.001	<0.001	0.001	2019-06-19
Chromium	mg/L	0.05	0.003	2019-06-19	2019-06-19	<0.003	0.003	<0.003	0.003	2019-06-19
Iron	mg/L		0.010	2019-06-19	2019-06-19	0.480	0.010	<0.010	0.010	2019-06-19
Lead	mg/L	0.01	0.001	2019-06-19	2019-06-19	<0.001	0.001	<0.001	0.001	2019-06-19
Mercury	mg/L	0.001	0.0001	2019-06-18	2019-06-18	<0.0001	0.0001	<0.0001	0.0001	2019-06-18
Nickel	mg/L		0.003	2019-06-19	2019-06-19	<0.003	0.003	<0.003	0.003	2019-06-19
Zinc	mg/L		0.005	2019-06-19	2019-06-19	<0.005	0.005	<0.005	0.005	2019-06-19

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AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Groundwater Parameters

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	GW-44985-061119-DD-55D			GW-44985-061119-DD-55S			
				Date Prepared	Date Analyzed	RDL	Date Prepared	Date Analyzed	RDL	
Electrical Conductivity	µS/cm		2	2019-06-18	2019-06-18	1740	2	2019-06-18	2019-06-18	1180
pH	pH Units		NA	2019-06-18	2019-06-18	7.83	NA	2019-06-18	2019-06-18	7.80
Total Dissolved Solids	mg/L		20	2019-06-18	2019-06-19	854	20	2019-06-18	2019-06-19	752
Alkalinity (as CaCO3)	mg/L		5	2019-06-18	2019-06-18	260	5	2019-06-18	2019-06-18	287
Fluoride	mg/L	1.5	0.25	2019-06-18	2019-06-18	1.10	0.25	2019-06-18	2019-06-18	0.39
Chloride	mg/L		1.0	2019-06-20	2019-06-20	420	0.50	2019-06-18	2019-06-18	15.0
Nitrate as N	mg/L	10.0	0.25	2019-06-18	2019-06-18	<0.25	0.25	2019-06-18	2019-06-18	<0.25
Nitrite as N	mg/L	1.0	0.25	2019-06-18	2019-06-18	<0.25	0.25	2019-06-18	2019-06-18	<0.25
Bromide	mg/L		0.25	2019-06-18	2019-06-18	0.44	0.25	2019-06-18	2019-06-18	<0.25
Sulphate	mg/L		0.50	2019-06-18	2019-06-18	<0.50	0.50	2019-06-18	2019-06-18	418
Cyanide, Free	mg/L	0.2	0.002	2019-06-19	2019-06-19	<0.002	0.002	2019-06-19	2019-06-19	<0.002
Calcium	mg/L		0.25	2019-06-19	2019-06-19	21.3	0.10	2019-06-19	2019-06-19	129
Magnesium	mg/L		0.25	2019-06-19	2019-06-19	7.00	0.10	2019-06-19	2019-06-19	59.4
Sodium	mg/L	20	0.25	2019-06-19	2019-06-19	330	0.10	2019-06-19	2019-06-19	50.8
Potassium	mg/L		0.25	2019-06-19	2019-06-19	3.68	0.10	2019-06-19	2019-06-19	2.71
Arsenic	mg/L	0.010	0.003	2019-06-19	2019-06-19	<0.003	0.003	2019-06-19	2019-06-19	<0.003
Barium	mg/L	1	0.002	2019-06-19	2019-06-19	0.199	0.002	2019-06-19	2019-06-19	0.019
Boron	mg/L	5	0.010	2019-06-19	2019-06-19	1.74	0.010	2019-06-19	2019-06-19	0.201
Cadmium	mg/L	0.005	0.001	2019-06-19	2019-06-19	<0.001	0.001	2019-06-19	2019-06-19	<0.001
Chromium	mg/L	0.05	0.003	2019-06-19	2019-06-19	<0.003	0.003	2019-06-19	2019-06-19	<0.003
Iron	mg/L		0.010	2019-06-19	2019-06-19	0.251	0.010	2019-06-19	2019-06-19	<0.010
Lead	mg/L	0.01	0.001	2019-06-19	2019-06-19	<0.001	0.001	2019-06-19	2019-06-19	<0.001
Mercury	mg/L	0.001	0.0001	2019-06-18	2019-06-18	<0.0001	0.0001	2019-06-18	2019-06-18	<0.0001
Nickel	mg/L		0.003	2019-06-19	2019-06-19	<0.003	0.003	2019-06-19	2019-06-19	<0.003
Zinc	mg/L		0.005	2019-06-19	2019-06-19	<0.005	0.005	2019-06-19	2019-06-19	<0.005

Certified By:





Certificate of Analysis

AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Groundwater Parameters

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	GW-44985-		GW-44985-		RDL	RDL	Date Prepared
				061119-DD-49D	061119-DD-49D	061119-DD-42S	061119-DD-42S			
				SAMPLE DESCRIPTION: 061119-DD-49D		SAMPLE DESCRIPTION: 061119-DD-42S				
				SAMPLE TYPE: Water		SAMPLE TYPE: Water				
				DATE SAMPLED: 2019-06-11		DATE SAMPLED: 2019-06-11				
					280843		280850			
Electrical Conductivity	µS/cm		2	2019-06-18	2019-06-18	705	2830	2	2	2019-06-18
pH	pH Units		NA	2019-06-18	2019-06-18	7.78	7.69	NA	NA	2019-06-18
Total Dissolved Solids	mg/L		20	2019-06-18	2019-06-19	368	2780	20	20	2019-06-18
Alkalinity (as CaCO3)	mg/L		5	2019-06-18	2019-06-18	220	311	5	5	2019-06-18
Fluoride	mg/L	1.5	0.25	2019-06-18	2019-06-18	0.87	<1.0	1.0	0.25	2019-06-18
Chloride	mg/L		0.50	2019-06-18	2019-06-18	90.7	39.2	2.0	1.0	2019-06-20
Nitrate as N	mg/L	10.0	0.25	2019-06-18	2019-06-18	<0.25	<1.0	1.0	0.25	2019-06-18
Nitrite as N	mg/L	1.0	0.25	2019-06-18	2019-06-18	<0.25	<1.0	1.0	0.25	2019-06-18
Bromide	mg/L		0.25	2019-06-18	2019-06-18	0.44	<1.0	1.0	0.25	2019-06-18
Sulphate	mg/L		0.50	2019-06-18	2019-06-18	<0.50	1720	2.0	0.50	2019-06-18
Cyanide, Free	mg/L	0.2	0.002	2019-06-19	2019-06-19	<0.002	<0.002	0.002	0.002	2019-06-19
Calcium	mg/L		0.05	2019-06-19	2019-06-19	19.7	427	0.25	0.25	2019-06-19
Magnesium	mg/L		0.05	2019-06-19	2019-06-19	5.17	202	0.25	0.25	2019-06-19
Sodium	mg/L	20	0.05	2019-06-19	2019-06-19	123	62.8	0.25	0.25	2019-06-19
Potassium	mg/L		0.05	2019-06-19	2019-06-19	1.28	3.71	0.25	0.25	2019-06-19
Arsenic	mg/L	0.010	0.003	2019-06-19	2019-06-19	<0.003	<0.003	0.003	0.003	2019-06-19
Barium	mg/L	1	0.002	2019-06-19	2019-06-19	0.080	0.014	0.002	0.002	2019-06-19
Boron	mg/L	5	0.010	2019-06-19	2019-06-19	1.16	0.205	0.010	0.010	2019-06-19
Cadmium	mg/L	0.005	0.001	2019-06-19	2019-06-19	<0.001	<0.001	0.001	0.001	2019-06-19
Chromium	mg/L	0.05	0.003	2019-06-19	2019-06-19	<0.003	<0.003	0.003	0.003	2019-06-19
Iron	mg/L		0.010	2019-06-19	2019-06-19	0.036	<0.010	0.010	0.010	2019-06-19
Lead	mg/L	0.01	0.001	2019-06-19	2019-06-19	<0.001	<0.001	0.001	0.001	2019-06-19
Mercury	mg/L	0.001	0.0001	2019-06-18	2019-06-18	<0.0001	<0.0001	0.0001	0.0001	2019-06-18
Nickel	mg/L		0.003	2019-06-19	2019-06-19	<0.003	0.011	0.003	0.003	2019-06-19
Zinc	mg/L		0.005	2019-06-19	2019-06-19	<0.005	0.007	0.005	0.005	2019-06-19

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Certificate of Analysis

AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

5835 COOPERS AVENUE
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<http://www.agatlabs.com>

CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Groundwater Parameters

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	GW-44985-061119-DD-57D			GW-44985-061119-DD-57S			
				Date Prepared	Date Analyzed	280852	RDL	Date Prepared	Date Analyzed	280853
Electrical Conductivity	µS/cm		2	2019-06-18	2019-06-18	1770	2	2019-06-18	2019-06-18	1530
pH	pH Units		NA	2019-06-18	2019-06-18	7.96	NA	2019-06-18	2019-06-18	7.83
Total Dissolved Solids	mg/L		20	2019-06-18	2019-06-19	928	20	2019-06-18	2019-06-19	1030
Alkalinity (as CaCO3)	mg/L		5	2019-06-18	2019-06-18	317	5	2019-06-18	2019-06-18	485
Fluoride	mg/L	1.5	0.25	2019-06-18	2019-06-18	0.89	0.25	2019-06-18	2019-06-18	0.55
Chloride	mg/L		1.0	2019-06-20	2019-06-20	384	0.50	2019-06-18	2019-06-18	23.8
Nitrate as N	mg/L	10.0	0.25	2019-06-18	2019-06-18	<0.25	0.25	2019-06-18	2019-06-18	<0.25
Nitrite as N	mg/L	1.0	0.25	2019-06-18	2019-06-18	<0.25	0.25	2019-06-18	2019-06-18	<0.25
Bromide	mg/L		0.25	2019-06-18	2019-06-18	0.59	0.25	2019-06-18	2019-06-18	<0.25
Sulphate	mg/L		0.50	2019-06-18	2019-06-18	<0.50	0.50	2019-06-18	2019-06-18	487
Cyanide, Free	mg/L	0.2	0.002	2019-06-19	2019-06-19	<0.002	0.002	2019-06-19	2019-06-19	<0.002
Calcium	mg/L		0.25	2019-06-19	2019-06-19	19.5	0.25	2019-06-19	2019-06-19	174
Magnesium	mg/L		0.25	2019-06-19	2019-06-19	7.25	0.25	2019-06-19	2019-06-19	101
Sodium	mg/L	20	0.25	2019-06-19	2019-06-19	342	0.25	2019-06-19	2019-06-19	47.8
Potassium	mg/L		0.25	2019-06-19	2019-06-19	2.18	0.25	2019-06-19	2019-06-19	3.63
Arsenic	mg/L	0.010	0.003	2019-06-19	2019-06-19	<0.003	0.003	2019-06-19	2019-06-19	<0.003
Barium	mg/L	1	0.002	2019-06-19	2019-06-19	0.094	0.002	2019-06-19	2019-06-19	0.024
Boron	mg/L	5	0.010	2019-06-19	2019-06-19	1.95	0.010	2019-06-19	2019-06-19	0.147
Cadmium	mg/L	0.005	0.001	2019-06-19	2019-06-19	<0.001	0.001	2019-06-19	2019-06-19	<0.001
Chromium	mg/L	0.05	0.003	2019-06-19	2019-06-19	0.003	0.003	2019-06-19	2019-06-19	<0.003
Iron	mg/L		0.010	2019-06-19	2019-06-19	1.83	0.010	2019-06-19	2019-06-19	<0.010
Lead	mg/L	0.01	0.001	2019-06-19	2019-06-19	<0.001	0.001	2019-06-19	2019-06-19	<0.001
Mercury	mg/L	0.001	0.0001	2019-06-18	2019-06-18	<0.0001	0.0001	2019-06-18	2019-06-18	<0.0001
Nickel	mg/L		0.003	2019-06-19	2019-06-19	<0.003	0.003	2019-06-19	2019-06-19	0.004
Zinc	mg/L		0.005	2019-06-19	2019-06-19	<0.005	0.005	2019-06-19	2019-06-19	<0.005

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Certificate of Analysis

AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Groundwater Parameters

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	SAMPLE DESCRIPTION:		GW-44985-061119-DD-58S		GW-44985-061119-DD-56D		GW-44985-061119-DD-56S		GW-44985-061119-DD-56S-98		
				SAMPLE TYPE:		Water		Water		Water		Water		
				DATE SAMPLED:		2019-06-11		2019-06-11		2019-06-11		2019-06-11		2019-06-11
								RDL		RDL		RDL		RDL
Electrical Conductivity	µS/cm		2	2019-06-18	2019-06-18	3030	2	1400	2	1640	1710			
pH	pH Units		NA	2019-06-18	2019-06-18	7.71	NA	7.86	NA	7.80	7.78			
Total Dissolved Solids	mg/L		20	2019-06-18	2019-06-19	2340	20	764	20	1410	1440			
Alkalinity (as CaCO3)	mg/L		5	2019-06-18	2019-06-18	466	5	300	5	354	343			
Fluoride	mg/L	1.5	1.0	2019-06-18	2019-06-18	<1.0	0.25	0.78	0.5	<0.5	<0.5			
Chloride	mg/L		2.0	2019-06-18	2019-06-18	296	0.50	283	1.0	36.0	39.3			
Nitrate as N	mg/L	10.0	1.0	2019-06-18	2019-06-18	<1.0	0.25	<0.25	0.5	<0.5	<0.5			
Nitrite as N	mg/L	1.0	1.0	2019-06-18	2019-06-18	<1.0	0.25	<0.25	0.5	<0.5	<0.5			
Bromide	mg/L		1.0	2019-06-18	2019-06-18	<1.0	0.25	0.49	0.5	<0.5	<0.5			
Sulphate	mg/L		2.0	2019-06-18	2019-06-18	1080	0.50	<0.50	1.0	603	668			
Cyanide, Free	mg/L	0.2	0.002	2019-06-19	2019-06-19	<0.002	0.002	<0.002	0.002	<0.002	<0.002			
Calcium	mg/L		0.25	2019-06-19	2019-06-19	294	0.25	23.9	0.25	201	207			
Magnesium	mg/L		0.25	2019-06-19	2019-06-19	230	0.25	8.66	0.25	89.5	94.0			
Sodium	mg/L	20	0.25	2019-06-19	2019-06-19	107	0.25	271	0.25	64.8	66.3			
Potassium	mg/L		0.25	2019-06-19	2019-06-19	4.51	0.25	2.67	0.25	2.54	2.58			
Arsenic	mg/L	0.010	0.003	2019-06-19	2019-06-19	<0.003	0.003	<0.003	0.003	<0.003	<0.003			
Barium	mg/L	1	0.002	2019-06-19	2019-06-19	0.011	0.002	0.105	0.002	0.011	0.011			
Boron	mg/L	5	0.010	2019-06-19	2019-06-19	0.236	0.010	2.06	0.010	0.251	0.263			
Cadmium	mg/L	0.005	0.001	2019-06-19	2019-06-19	<0.001	0.001	<0.001	0.001	<0.001	<0.001			
Chromium	mg/L	0.05	0.003	2019-06-19	2019-06-19	0.004	0.003	<0.003	0.003	<0.003	<0.003			
Iron	mg/L		0.010	2019-06-19	2019-06-19	<0.010	0.010	1.10	0.010	0.011	0.014			
Lead	mg/L	0.01	0.001	2019-06-19	2019-06-19	<0.001	0.001	<0.001	0.001	<0.001	<0.001			
Mercury	mg/L	0.001	0.0001	2019-06-18	2019-06-18	<0.0001	0.0001	<0.0001	0.0001	<0.0001	<0.0001			
Nickel	mg/L		0.003	2019-06-19	2019-06-19	0.007	0.003	<0.003	0.003	0.004	0.005			
Zinc	mg/L		0.005	2019-06-19	2019-06-19	<0.005	0.005	<0.005	0.005	<0.005	<0.005			

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Certificate of Analysis

AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

5835 COOPERS AVENUE
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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Groundwater Parameters

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	SAMPLE DESCRIPTION: 061119-DD-59S		GW-44985-061119-DD-59D		GW-44985-061119-DD-48S		
				Date Prepared	Date Analyzed	RDL	RDL	RDL	RDL	
				SAMPLE TYPE: Water		Water		Water		
				DATE SAMPLED: 2019-06-11		2019-06-11		2019-06-11		
Electrical Conductivity	µS/cm		2	2019-06-18	2019-06-18	907	2	826	2	1050
pH	pH Units		NA	2019-06-18	2019-06-18	7.84	NA	7.82	NA	7.87
Total Dissolved Solids	mg/L		20	2019-06-18	2019-06-19	556	20	450	20	622
Alkalinity (as CaCO3)	mg/L		5	2019-06-18	2019-06-18	369	5	227	5	370
Fluoride	mg/L	1.5	0.25	2019-06-18	2019-06-18	0.50	0.25	1.14	0.25	0.67
Chloride	mg/L		0.50	2019-06-18	2019-06-18	15.8	0.50	129	0.50	20.2
Nitrate as N	mg/L	10.0	0.25	2019-06-18	2019-06-18	<0.25	0.25	<0.25	0.25	<0.25
Nitrite as N	mg/L	1.0	0.25	2019-06-18	2019-06-18	<0.25	0.25	<0.25	0.25	<0.25
Bromide	mg/L		0.25	2019-06-18	2019-06-18	<0.25	0.25	<0.25	0.25	<0.25
Sulphate	mg/L		0.50	2019-06-18	2019-06-18	113	0.50	<0.50	0.50	198
Cyanide, Free	mg/L	0.2	0.002	2019-06-19	2019-06-19	<0.002	0.002	<0.002	0.002	<0.002
Calcium	mg/L		0.10	2019-06-19	2019-06-19	98.0	0.05	17.2	0.10	106
Magnesium	mg/L		0.10	2019-06-19	2019-06-19	52.6	0.05	5.51	0.10	59.1
Sodium	mg/L	20	0.10	2019-06-19	2019-06-19	26.3	0.05	174	0.10	38.8
Potassium	mg/L		0.10	2019-06-19	2019-06-19	2.24	0.05	1.93	0.10	2.29
Arsenic	mg/L	0.010	0.003	2019-06-19	2019-06-19	<0.003	0.003	<0.003	0.003	<0.003
Barium	mg/L	1	0.002	2019-06-19	2019-06-19	0.036	0.002	0.091	0.002	0.028
Boron	mg/L	5	0.010	2019-06-19	2019-06-19	0.110	0.010	1.21	0.010	0.238
Cadmium	mg/L	0.005	0.001	2019-06-19	2019-06-19	<0.001	0.001	<0.001	0.001	<0.001
Chromium	mg/L	0.05	0.003	2019-06-19	2019-06-19	<0.003	0.003	<0.003	0.003	<0.003
Iron	mg/L		0.010	2019-06-19	2019-06-19	<0.010	0.010	0.405	0.010	0.047
Lead	mg/L	0.01	0.001	2019-06-19	2019-06-19	<0.001	0.001	<0.001	0.001	<0.001
Mercury	mg/L	0.001	0.0001	2019-06-18	2019-06-18	<0.0001	0.0001	<0.0001	0.0001	<0.0001
Nickel	mg/L		0.003	2019-06-19	2019-06-19	<0.003	0.003	<0.003	0.003	<0.003
Zinc	mg/L		0.005	2019-06-19	2019-06-19	<0.005	0.005	<0.005	0.005	<0.005

Certified By:





Certificate of Analysis

AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

5835 COOPERS AVENUE
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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Groundwater Parameters

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	SAMPLE DESCRIPTION: 061119-DD-48D		SAMPLE DESCRIPTION: 061119-DD-45D		SAMPLE DESCRIPTION: 061119-DD-45S		
				Date Prepared	Date Analyzed	Date Prepared	Date Analyzed	Date Prepared	Date Analyzed	
Electrical Conductivity	µS/cm		2	2019-06-18	2019-06-18	1590	2	4660	2	898
pH	pH Units		NA	2019-06-18	2019-06-18	7.90	NA	8.15	NA	7.65
Total Dissolved Solids	mg/L		20	2019-06-18	2019-06-19	796	20	2590	20	602
Alkalinity (as CaCO3)	mg/L		5	2019-06-18	2019-06-18	308	5	921	5	363
Fluoride	mg/L	1.5	0.25	2019-06-18	2019-06-18	0.97	2.0	<2.0	0.25	0.26
Chloride	mg/L		0.50	2019-06-18	2019-06-18	331	4.0	1080	0.50	31.3
Nitrate as N	mg/L	10.0	0.25	2019-06-18	2019-06-18	<0.25	2.0	<2.0	0.25	<0.25
Nitrite as N	mg/L	1.0	0.25	2019-06-18	2019-06-18	<0.25	2.0	<2.0	0.25	<0.25
Bromide	mg/L		0.25	2019-06-18	2019-06-18	0.40	2.0	<2.0	0.25	<0.25
Sulphate	mg/L		0.50	2019-06-18	2019-06-18	<0.50	4.0	<4.0	0.50	66.5
Cyanide, Free	mg/L	0.2	0.002	2019-06-19	2019-06-19	<0.002	0.002	<0.002	0.002	<0.002
Calcium	mg/L		0.25	2019-06-19	2019-06-19	26.2	0.5	7.6	0.05	113
Magnesium	mg/L		0.25	2019-06-19	2019-06-19	9.08	0.5	4.3	0.05	36.2
Sodium	mg/L	20	0.25	2019-06-19	2019-06-19	295	0.5	1030	0.05	27.5
Potassium	mg/L		0.25	2019-06-19	2019-06-19	2.82	0.5	3.0	0.05	1.89
Arsenic	mg/L	0.010	0.003	2019-06-19	2019-06-19	<0.003	0.003	0.007	0.003	<0.003
Barium	mg/L	1	0.002	2019-06-19	2019-06-19	0.165	0.002	0.217	0.002	0.066
Boron	mg/L	5	0.010	2019-06-19	2019-06-19	2.11	0.010	2.98	0.010	0.078
Cadmium	mg/L	0.005	0.001	2019-06-19	2019-06-19	<0.001	0.001	<0.001	0.001	<0.001
Chromium	mg/L	0.05	0.003	2019-06-19	2019-06-19	<0.003	0.003	0.004	0.003	<0.003
Iron	mg/L		0.010	2019-06-19	2019-06-19	0.543	0.010	<0.010	0.010	<0.010
Lead	mg/L	0.01	0.001	2019-06-19	2019-06-19	<0.001	0.001	<0.001	0.001	<0.001
Mercury	mg/L	0.001	0.0001	2019-06-18	2019-06-18	<0.0001	0.0001	<0.0001	0.0001	<0.0001
Nickel	mg/L		0.003	2019-06-19	2019-06-19	<0.003	0.003	0.007	0.003	<0.003
Zinc	mg/L		0.005	2019-06-19	2019-06-19	<0.005	0.005	0.005	0.005	<0.005

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Certificate of Analysis

AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

5835 COOPERS AVENUE
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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Groundwater Parameters

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	GW-44985-061119-DD-62S			GW-44985-061119-DD-63S			
				Date Prepared	Date Analyzed	RDL	Date Prepared	Date Analyzed	RDL	
Electrical Conductivity	µS/cm		2	2019-06-18	2019-06-18	938	2	2019-06-18	2019-06-18	2280
pH	pH Units		NA	2019-06-18	2019-06-18	7.80	NA	2019-06-18	2019-06-18	7.81
Total Dissolved Solids	mg/L		20	2019-06-18	2019-06-19	584	20	2019-06-18	2019-06-19	1250
Alkalinity (as CaCO3)	mg/L		5	2019-06-18	2019-06-18	281	5	2019-06-18	2019-06-18	384
Fluoride	mg/L	1.5	0.25	2019-06-18	2019-06-18	0.41	0.5	2019-06-18	2019-06-18	<0.5
Chloride	mg/L		0.50	2019-06-18	2019-06-18	32.1	1.0	2019-06-18	2019-06-18	533
Nitrate as N	mg/L	10.0	0.25	2019-06-18	2019-06-18	<0.25	0.5	2019-06-18	2019-06-18	<0.5
Nitrite as N	mg/L	1.0	0.25	2019-06-18	2019-06-18	<0.25	0.5	2019-06-18	2019-06-18	<0.5
Bromide	mg/L		0.25	2019-06-18	2019-06-18	<0.25	0.5	2019-06-18	2019-06-18	2.2
Sulphate	mg/L		0.50	2019-06-18	2019-06-18	180	1.0	2019-06-18	2019-06-18	60.9
Cyanide, Free	mg/L	0.2	0.002	2019-06-19	2019-06-19	<0.002	0.002	2019-06-20	2019-06-20	<0.002
Calcium	mg/L		0.10	2019-06-19	2019-06-19	105	0.25	2019-06-19	2019-06-19	188
Magnesium	mg/L		0.10	2019-06-19	2019-06-19	41.5	0.25	2019-06-19	2019-06-19	81.5
Sodium	mg/L	20	0.10	2019-06-19	2019-06-19	55.4	0.25	2019-06-19	2019-06-19	161
Potassium	mg/L		0.10	2019-06-19	2019-06-19	2.38	0.25	2019-06-19	2019-06-19	3.29
Arsenic	mg/L	0.010	0.003	2019-06-19	2019-06-19	<0.003	0.003	2019-06-19	2019-06-19	<0.003
Barium	mg/L	1	0.002	2019-06-19	2019-06-19	0.035	0.002	2019-06-19	2019-06-19	0.112
Boron	mg/L	5	0.010	2019-06-19	2019-06-19	0.160	0.010	2019-06-19	2019-06-19	0.248
Cadmium	mg/L	0.005	0.001	2019-06-19	2019-06-19	<0.001	0.001	2019-06-19	2019-06-19	<0.001
Chromium	mg/L	0.05	0.003	2019-06-19	2019-06-19	<0.003	0.003	2019-06-19	2019-06-19	<0.003
Iron	mg/L		0.010	2019-06-19	2019-06-19	<0.010	0.010	2019-06-19	2019-06-19	<0.010
Lead	mg/L	0.01	0.001	2019-06-19	2019-06-19	<0.001	0.001	2019-06-19	2019-06-19	<0.001
Mercury	mg/L	0.001	0.0001	2019-06-18	2019-06-18	<0.0001	0.0001	2019-06-18	2019-06-18	<0.0001
Nickel	mg/L		0.003	2019-06-19	2019-06-19	<0.003	0.003	2019-06-19	2019-06-19	0.077
Zinc	mg/L		0.005	2019-06-19	2019-06-19	<0.005	0.005	2019-06-19	2019-06-19	<0.005

Certified By:





Certificate of Analysis

AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
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<http://www.agatlabs.com>

CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Groundwater Parameters

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	SAMPLE DESCRIPTION:		RDL	RDL	RDL	RDL		
						061119-DD-54D	061119-DD-61D					061119-DD-61I	061119-DD-61S
						SAMPLE TYPE:						SAMPLE TYPE:	
						DATE SAMPLED:						DATE SAMPLED:	
Electrical Conductivity	µS/cm		2	2019-06-18	2019-06-18	900	971	2	1060	1230			
pH	pH Units		NA	2019-06-18	2019-06-18	8.09	7.85	NA	7.85	7.84			
Total Dissolved Solids	mg/L		20	2019-06-18	2019-06-19	520	540	20	700	776			
Alkalinity (as CaCO3)	mg/L		5	2019-06-18	2019-06-18	238	214	5	309	430			
Fluoride	mg/L	1.5	0.25	2019-06-18	2019-06-18	1.28	1.23	0.25	<0.25	0.62			
Chloride	mg/L		0.50	2019-06-18	2019-06-18	141	144	0.50	21.2	19.8			
Nitrate as N	mg/L	10.0	0.25	2019-06-18	2019-06-18	<0.25	<0.25	0.25	<0.25	<0.25			
Nitrite as N	mg/L	1.0	0.25	2019-06-18	2019-06-18	<0.25	<0.25	0.25	<0.25	<0.25			
Bromide	mg/L		0.25	2019-06-18	2019-06-18	<0.25	1.68	0.25	<0.25	<0.25			
Sulphate	mg/L		0.50	2019-06-18	2019-06-18	<0.50	47.1	0.50	262	242			
Cyanide, Free	mg/L	0.2	0.002	2019-06-20	2019-06-20	<0.002	<0.002	0.002	<0.002	<0.002			
Calcium	mg/L		0.10	2019-06-19	2019-06-19	17.0	23.4	0.25	124	128			
Magnesium	mg/L		0.10	2019-06-19	2019-06-19	5.46	7.96	0.25	57.1	63.9			
Sodium	mg/L	20	0.10	2019-06-19	2019-06-19	167	162	0.25	32.6	71.0			
Potassium	mg/L		0.10	2019-06-19	2019-06-19	1.67	1.47	0.25	1.26	2.47			
Arsenic	mg/L	0.010	0.003	2019-06-19	2019-06-19	<0.003	<0.003	0.003	<0.003	<0.003			
Barium	mg/L	1	0.002	2019-06-19	2019-06-19	0.106	0.046	0.002	0.047	0.036			
Boron	mg/L	5	0.010	2019-06-19	2019-06-19	1.63	1.40	0.010	0.109	0.267			
Cadmium	mg/L	0.005	0.001	2019-06-19	2019-06-19	<0.001	<0.001	0.001	<0.001	<0.001			
Chromium	mg/L	0.05	0.003	2019-06-19	2019-06-19	<0.003	<0.003	0.003	<0.003	<0.003			
Iron	mg/L		0.010	2019-06-19	2019-06-19	0.131	<0.010	0.010	<0.010	<0.010			
Lead	mg/L	0.01	0.001	2019-06-19	2019-06-19	<0.001	<0.001	0.001	<0.001	<0.001			
Mercury	mg/L	0.001	0.0001	2019-06-18	2019-06-18	<0.0001	<0.0001	0.0001	<0.0001	<0.0001			
Nickel	mg/L		0.003	2019-06-19	2019-06-19	<0.003	<0.003	0.003	<0.003	<0.003			
Zinc	mg/L		0.005	2019-06-19	2019-06-19	0.006	<0.005	0.005	<0.005	<0.005			

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Certificate of Analysis

AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

5835 COOPERS AVENUE
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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Groundwater Parameters

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	SAMPLE DESCRIPTION: 061119-DD-22		GW-44985-061219-DD-22D		GW-44985-061219-DD-60D		GW-44985-061219-DD-39D	
				Date Prepared	Date Analyzed	Water	RDL	Water	RDL	Water	RDL
				2019-06-18	2019-06-18	2019-06-12	2019-06-12	2019-06-12	2019-06-12	2019-06-12	2019-06-12
Electrical Conductivity	µS/cm		2	2019-06-18	2019-06-18	1850	2	4510	3480	2	1270
pH	pH Units		NA	2019-06-18	2019-06-18	7.87	NA	8.03	8.09	NA	7.70
Total Dissolved Solids	mg/L		20	2019-06-18	2019-06-19	1360	20	2440	1870	20	676
Alkalinity (as CaCO3)	mg/L		5	2019-06-18	2019-06-18	438	5	652	512	5	283
Fluoride	mg/L	1.5	0.5	2019-06-18	2019-06-18	<0.5	2.5	<2.5	<2.5	0.25	1.29
Chloride	mg/L		1.0	2019-06-18	2019-06-18	60.7	5.0	1110	820	0.50	245
Nitrate as N	mg/L	10.0	0.5	2019-06-18	2019-06-18	<0.5	2.5	<2.5	<2.5	0.25	<0.25
Nitrite as N	mg/L	1.0	0.5	2019-06-18	2019-06-18	<0.5	2.5	<2.5	<2.5	0.25	<0.25
Bromide	mg/L		0.5	2019-06-18	2019-06-18	<0.5	2.5	<2.5	<2.5	0.25	<0.25
Sulphate	mg/L		1.0	2019-06-18	2019-06-18	644	5.0	<5.0	<5.0	0.50	<0.50
Cyanide, Free	mg/L	0.2	0.002	2019-06-20	2019-06-20	<0.002	0.002	<0.002	<0.002	0.002	<0.002
Calcium	mg/L		0.25	2019-06-19	2019-06-19	178	0.5	33.0	27.0	0.25	24.1
Magnesium	mg/L		0.25	2019-06-19	2019-06-19	115	0.5	13.4	10.1	0.25	6.62
Sodium	mg/L	20	0.25	2019-06-19	2019-06-19	81.8	0.5	913	707	0.25	234
Potassium	mg/L		0.25	2019-06-19	2019-06-19	1.63	0.5	3.3	2.9	0.25	1.68
Arsenic	mg/L	0.010	0.003	2019-06-19	2019-06-19	<0.003	0.003	<0.003	<0.003	0.003	<0.003
Barium	mg/L	1	0.002	2019-06-19	2019-06-19	0.018	0.002	0.370	0.254	0.002	0.107
Boron	mg/L	5	0.010	2019-06-19	2019-06-19	0.137	0.010	4.44	3.84	0.010	1.80
Cadmium	mg/L	0.005	0.001	2019-06-19	2019-06-19	<0.001	0.001	<0.001	<0.001	0.001	<0.001
Chromium	mg/L	0.05	0.003	2019-06-19	2019-06-19	<0.003	0.003	0.003	0.004	0.003	<0.003
Iron	mg/L		0.010	2019-06-19	2019-06-19	<0.010	0.010	1.23	<0.010	0.010	0.302
Lead	mg/L	0.01	0.001	2019-06-19	2019-06-19	<0.001	0.001	<0.001	<0.001	0.001	<0.001
Mercury	mg/L	0.001	0.0001	2019-06-18	2019-06-18	<0.0001	0.0001	<0.0001	<0.0001	0.0001	<0.0001
Nickel	mg/L		0.003	2019-06-19	2019-06-19	0.004	0.003	<0.003	<0.003	0.003	<0.003
Zinc	mg/L		0.005	2019-06-19	2019-06-19	<0.005	0.005	<0.005	0.006	0.005	<0.005

Certified By:





Certificate of Analysis

AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

5835 COOPERS AVENUE
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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Groundwater Parameters

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	GW-44985-	GW-44985-	GW-44985-	RDL	GW-44985-				
						061219-DD-39I	061219-DD-39S	061219-DD-21II		061219-DD-47D				
						SAMPLE DESCRIPTION:				Water	Water	Water	Water	
						DATE SAMPLED:				2019-06-12	2019-06-12	2019-06-12	2019-06-12	
Electrical Conductivity	µS/cm		2	2019-06-18	2019-06-18	1420	1250	1210	2	4520				
pH	pH Units		NA	2019-06-18	2019-06-18	7.81	7.80	7.80	NA	8.00				
Total Dissolved Solids	mg/L		20	2019-06-18	2019-06-19	942	800	872	20	2460				
Alkalinity (as CaCO3)	mg/L		5	2019-06-18	2019-06-18	491	405	401	5	549				
Fluoride	mg/L	1.5	0.25	2019-06-18	2019-06-18	0.71	0.64	<0.25	2.5	<2.5				
Chloride	mg/L		0.50	2019-06-18	2019-06-18	17.2	20.2	5.69	5.0	1140				
Nitrate as N	mg/L	10.0	0.25	2019-06-18	2019-06-18	<0.25	<0.25	<0.25	2.5	<2.5				
Nitrite as N	mg/L	1.0	0.25	2019-06-18	2019-06-18	<0.25	<0.25	<0.25	2.5	<2.5				
Bromide	mg/L		0.25	2019-06-18	2019-06-18	<0.25	<0.25	<0.25	2.5	<2.5				
Sulphate	mg/L		0.50	2019-06-18	2019-06-18	324	275	303	5.0	<5.0				
Cyanide, Free	mg/L	0.2	0.002	2019-06-20	2019-06-20	<0.002	<0.002	<0.002	0.002	<0.002				
Calcium	mg/L		0.25	2019-06-19	2019-06-19	108	111	181	0.5	56.3				
Magnesium	mg/L		0.25	2019-06-19	2019-06-19	109	80.7	55.2	0.5	23.5				
Sodium	mg/L	20	0.25	2019-06-19	2019-06-19	69.1	59.3	18.9	0.5	855				
Potassium	mg/L		0.25	2019-06-19	2019-06-19	1.51	1.54	1.08	0.5	4.2				
Arsenic	mg/L	0.010	0.003	2019-06-19	2019-06-19	<0.003	<0.003	<0.003	0.003	<0.003				
Barium	mg/L	1	0.002	2019-06-19	2019-06-19	0.037	0.027	0.048	0.002	1.48				
Boron	mg/L	5	0.010	2019-06-19	2019-06-19	0.191	0.299	0.092	0.010	2.95				
Cadmium	mg/L	0.005	0.001	2019-06-19	2019-06-19	<0.001	<0.001	<0.001	0.001	<0.001				
Chromium	mg/L	0.05	0.003	2019-06-19	2019-06-19	<0.003	<0.003	<0.003	0.003	0.004				
Iron	mg/L		0.010	2019-06-19	2019-06-19	<0.010	<0.010	<0.010	0.010	2.47				
Lead	mg/L	0.01	0.001	2019-06-19	2019-06-19	<0.001	<0.001	<0.001	0.001	<0.001				
Mercury	mg/L	0.001	0.0001	2019-06-18	2019-06-18	<0.0001	<0.0001	<0.0001	0.0001	<0.0001				
Nickel	mg/L		0.003	2019-06-19	2019-06-19	<0.003	<0.003	<0.003	0.003	<0.003				
Zinc	mg/L		0.005	2019-06-19	2019-06-19	<0.005	0.008	<0.005	0.005	<0.005				

Certified By:





Certificate of Analysis

AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

5835 COOPERS AVENUE
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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Groundwater Parameters

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	SAMPLE DESCRIPTION: 061219-DD-40S		GW-44985-061219-DD-40D		GW-44985-061219-DD-32IV		
				Date Prepared	Date Analyzed	280912	RDL	280913	RDL	280914
Electrical Conductivity	µS/cm		2	2019-06-18	2019-06-18	1230	2	1460	2	859
pH	pH Units		NA	2019-06-18	2019-06-18	7.83	NA	7.82	NA	7.87
Total Dissolved Solids	mg/L		20	2019-06-18	2019-06-19	848	20	810	20	546
Alkalinity (as CaCO3)	mg/L		5	2019-06-18	2019-06-18	358	5	224	5	345
Fluoride	mg/L	1.5	0.25	2019-06-18	2019-06-18	0.77	0.5	<0.5	0.25	<0.25
Chloride	mg/L		0.50	2019-06-18	2019-06-18	18.0	1.0	332	0.50	12.2
Nitrate as N	mg/L	10.0	0.25	2019-06-18	2019-06-18	<0.25	0.5	<0.5	0.25	<0.25
Nitrite as N	mg/L	1.0	0.25	2019-06-18	2019-06-18	<0.25	0.5	<0.5	0.25	<0.25
Bromide	mg/L		0.25	2019-06-18	2019-06-18	<0.25	0.5	<0.5	0.25	<0.25
Sulphate	mg/L		0.50	2019-06-18	2019-06-18	319	1.0	<1.0	0.50	102
Cyanide, Free	mg/L	0.2	0.002	2019-06-20	2019-06-20	<0.002	0.002	<0.002	0.002	<0.002
Calcium	mg/L		0.25	2019-06-19	2019-06-19	113	0.25	31.4	0.10	87.7
Magnesium	mg/L		0.25	2019-06-19	2019-06-19	77.5	0.25	11.1	0.10	45.8
Sodium	mg/L	20	0.25	2019-06-19	2019-06-19	47.1	0.25	247	0.10	35.8
Potassium	mg/L		0.25	2019-06-19	2019-06-19	1.71	0.25	2.52	0.10	0.70
Arsenic	mg/L	0.010	0.003	2019-06-19	2019-06-19	<0.003	0.003	<0.003	0.003	<0.003
Barium	mg/L	1	0.002	2019-06-19	2019-06-19	0.028	0.002	0.217	0.002	0.023
Boron	mg/L	5	0.010	2019-06-19	2019-06-19	0.166	0.010	1.59	0.010	0.071
Cadmium	mg/L	0.005	0.001	2019-06-19	2019-06-19	<0.001	0.001	<0.001	0.001	<0.001
Chromium	mg/L	0.05	0.003	2019-06-19	2019-06-19	<0.003	0.003	<0.003	0.003	<0.003
Iron	mg/L		0.010	2019-06-19	2019-06-19	<0.010	0.010	1.92	0.010	<0.010
Lead	mg/L	0.01	0.001	2019-06-19	2019-06-19	<0.001	0.001	<0.001	0.001	0.002
Mercury	mg/L	0.001	0.0001	2019-06-18	2019-06-18	<0.0001	0.0001	<0.0001	0.0001	<0.0001
Nickel	mg/L		0.003	2019-06-19	2019-06-19	<0.003	0.003	<0.003	0.003	<0.003
Zinc	mg/L		0.005	2019-06-19	2019-06-19	<0.005	0.005	<0.005	0.005	0.055

Certified By:





Certificate of Analysis

AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

5835 COOPERS AVENUE
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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Groundwater Parameters

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	SAMPLE DESCRIPTION: 061219-DD-46D		SAMPLE DESCRIPTION: 061219-DD-46S		SAMPLE DESCRIPTION: 061219-DD-35S			
						GW-44985-		GW-44985-		GW-44985-			
						061219-DD-46D		061219-DD-46I		061219-DD-46S		061219-DD-35S	
						Water		Water		Water		Water	
DATE SAMPLED:		DATE SAMPLED:		DATE SAMPLED:		DATE SAMPLED:							
2019-06-12		2019-06-12		2019-06-12		2019-06-12							
280915		280916		280917		280918							
Electrical Conductivity	µS/cm		2	2019-06-18	2019-06-18	1190	1410	2	1760	1490			
pH	pH Units		NA	2019-06-18	2019-06-18	7.93	7.83	NA	7.78	7.80			
Total Dissolved Solids	mg/L		20	2019-06-18	2019-06-19	632	1010	20	1380	1160			
Alkalinity (as CaCO3)	mg/L		5	2019-06-18	2019-06-18	290	365	5	327	349			
Fluoride	mg/L	1.5	0.25	2019-06-18	2019-06-18	1.04	0.44	0.5	<0.5	<0.5			
Chloride	mg/L		0.50	2019-06-18	2019-06-18	202	40.7	1.0	28.4	8.8			
Nitrate as N	mg/L	10.0	0.25	2019-06-18	2019-06-18	<0.25	<0.25	0.5	<0.5	<0.5			
Nitrite as N	mg/L	1.0	0.25	2019-06-18	2019-06-18	<0.25	<0.25	0.5	<0.5	<0.5			
Bromide	mg/L		0.25	2019-06-18	2019-06-18	<0.25	<0.25	0.5	<0.5	<0.5			
Sulphate	mg/L		0.50	2019-06-18	2019-06-18	<0.50	442	1.0	720	548			
Cyanide, Free	mg/L	0.2	0.002	2019-06-20	2019-06-20	<0.002	<0.002	0.002	<0.002	<0.002			
Calcium	mg/L		0.25	2019-06-19	2019-06-19	16.4	157	0.25	206	204			
Magnesium	mg/L		0.25	2019-06-19	2019-06-19	4.93	87.7	0.25	86.7	85.9			
Sodium	mg/L	20	0.25	2019-06-19	2019-06-19	227	50.2	0.25	89.2	34.1			
Potassium	mg/L		0.25	2019-06-19	2019-06-19	1.90	2.30	0.25	7.95	3.95			
Arsenic	mg/L	0.010	0.003	2019-06-19	2019-06-19	<0.003	<0.003	0.003	<0.003	0.003			
Barium	mg/L	1	0.002	2019-06-19	2019-06-19	0.082	0.026	0.002	0.015	0.026			
Boron	mg/L	5	0.010	2019-06-19	2019-06-19	1.46	0.099	0.010	2.18	0.195			
Cadmium	mg/L	0.005	0.001	2019-06-19	2019-06-19	<0.001	<0.001	0.001	<0.001	<0.001			
Chromium	mg/L	0.05	0.003	2019-06-19	2019-06-19	0.003	<0.003	0.003	<0.003	<0.003			
Iron	mg/L		0.010	2019-06-19	2019-06-19	0.755	<0.010	0.010	<0.010	1.83			
Lead	mg/L	0.01	0.001	2019-06-19	2019-06-19	<0.001	<0.001	0.001	<0.001	<0.001			
Mercury	mg/L	0.001	0.0001	2019-06-18	2019-06-18	<0.0001	<0.0001	0.0001	<0.0001	<0.0001			
Nickel	mg/L		0.003	2019-06-19	2019-06-19	<0.003	0.003	0.003	0.005	0.007			
Zinc	mg/L		0.005	2019-06-19	2019-06-19	<0.005	<0.005	0.005	<0.005	<0.005			

Certified By:





Certificate of Analysis

AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
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<http://www.agatlabs.com>

CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Groundwater Parameters

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	SAMPLE DESCRIPTION:		RDL	RDL	RDL	RDL		
						061219-DD-35D	061219-DD-53S					061219-DD-53D	061219-DD-32S
						SAMPLE TYPE:						SAMPLE TYPE:	
						DATE SAMPLED:						DATE SAMPLED:	
Electrical Conductivity	µS/cm		2	2019-06-18	2019-06-18	1310	1190	2	1690	2	1200		
pH	pH Units		NA	2019-06-18	2019-06-18	7.83	7.85	NA	7.89	NA	7.88		
Total Dissolved Solids	mg/L		20	2019-06-18	2019-06-19	686	872	20	836	20	894		
Alkalinity (as CaCO3)	mg/L		5	2019-06-18	2019-06-18	234	342	5	266	5	325		
Fluoride	mg/L	1.5	0.25	2019-06-19	2019-06-19	1.11	<0.25	0.25	1.24	0.25	<0.25		
Chloride	mg/L		0.50	2019-06-19	2019-06-19	279	4.99	1.0	399	0.50	9.52		
Nitrate as N	mg/L	10.0	0.25	2019-06-19	2019-06-19	<0.25	<0.25	0.25	<0.25	0.25	<0.25		
Nitrite as N	mg/L	1.0	0.25	2019-06-19	2019-06-19	<0.25	<0.25	0.25	<0.25	0.25	<0.25		
Bromide	mg/L		0.25	2019-06-19	2019-06-19	<0.25	<0.25	0.25	<0.25	0.25	<0.25		
Sulphate	mg/L		0.50	2019-06-19	2019-06-19	<0.50	371	0.50	<0.50	0.50	362		
Cyanide, Free	mg/L	0.2	0.002	2019-06-20	2019-06-20	<0.002	<0.002	0.002	<0.002	0.002	<0.002		
Calcium	mg/L		0.25	2019-06-19	2019-06-19	22.7	173	0.25	29.3	0.25	173		
Magnesium	mg/L		0.25	2019-06-19	2019-06-19	7.58	59.5	0.25	10.0	0.25	58.8		
Sodium	mg/L	20	0.25	2019-06-19	2019-06-19	234	18.6	0.25	298	0.25	22.3		
Potassium	mg/L		0.25	2019-06-19	2019-06-19	2.01	1.23	0.25	2.30	0.25	2.23		
Arsenic	mg/L	0.010	0.003	2019-06-19	2019-06-19	<0.003	<0.003	0.003	<0.003	0.003	<0.003		
Barium	mg/L	1	0.002	2019-06-19	2019-06-19	0.111	0.026	0.002	0.180	0.002	0.027		
Boron	mg/L	5	0.010	2019-06-19	2019-06-19	1.37	0.111	0.010	1.53	0.010	0.183		
Cadmium	mg/L	0.005	0.001	2019-06-19	2019-06-19	<0.001	<0.001	0.001	<0.001	0.001	<0.001		
Chromium	mg/L	0.05	0.003	2019-06-19	2019-06-19	<0.003	<0.003	0.003	0.003	0.003	<0.003		
Iron	mg/L		0.010	2019-06-19	2019-06-19	0.571	<0.010	0.010	0.509	0.010	<0.010		
Lead	mg/L	0.01	0.001	2019-06-19	2019-06-19	<0.001	<0.001	0.001	<0.001	0.001	<0.001		
Mercury	mg/L	0.001	0.0001	2019-06-18	2019-06-18	<0.0001	<0.0001	0.0001	<0.0001	0.0001	<0.0001		
Nickel	mg/L		0.003	2019-06-19	2019-06-19	<0.003	0.003	0.003	<0.003	0.003	<0.003		
Zinc	mg/L		0.005	2019-06-19	2019-06-19	<0.005	<0.005	0.005	0.008	0.005	<0.005		

Certified By:





Certificate of Analysis

AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

5835 COOPERS AVENUE
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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Groundwater Parameters

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	GW-44985-		RDL	GW-44985-		RDL		
						061219-DD-32D	061219-DD-30D		061219-DD-30S	061219-DD-41D			
						SAMPLE DESCRIPTION:			SAMPLE TYPE:			DATE SAMPLED:	
						Water	Water		Water	Water			
Electrical Conductivity	µS/cm		2	2019-06-18	2019-06-18	1370	1180	2	898	2	1120		
pH	pH Units		NA	2019-06-18	2019-06-18	7.84	7.93	NA	8.02	NA	7.86		
Total Dissolved Solids	mg/L		20	2019-06-18	2019-06-19	704	620	20	530	20	584		
Alkalinity (as CaCO3)	mg/L		5	2019-06-18	2019-06-18	226	225	5	372	5	258		
Fluoride	mg/L	1.5	0.25	2019-06-19	2019-06-19	1.15	1.16	0.25	0.75	0.25	1.16		
Chloride	mg/L		0.50	2019-06-19	2019-06-19	296	242	0.50	5.25	0.50	197		
Nitrate as N	mg/L	10.0	0.25	2019-06-19	2019-06-19	<0.25	<0.25	0.25	<0.25	0.25	<0.25		
Nitrite as N	mg/L	1.0	0.25	2019-06-19	2019-06-19	<0.25	<0.25	0.25	<0.25	0.25	<0.25		
Bromide	mg/L		0.25	2019-06-19	2019-06-19	<0.25	<0.25	0.25	<0.25	0.25	<0.25		
Sulphate	mg/L		0.50	2019-06-19	2019-06-19	0.75	<0.50	0.50	115	0.50	<0.50		
Cyanide, Free	mg/L	0.2	0.002	2019-06-20	2019-06-20	<0.002	<0.002	0.002	<0.002	0.002	<0.002		
Calcium	mg/L		0.25	2019-06-19	2019-06-19	26.2	22.1	0.05	81.7	0.25	15.9		
Magnesium	mg/L		0.25	2019-06-19	2019-06-19	8.35	7.73	0.05	52.8	0.25	5.34		
Sodium	mg/L	20	0.25	2019-06-19	2019-06-19	236	205	0.05	38.9	0.25	209		
Potassium	mg/L		0.25	2019-06-19	2019-06-19	2.79	2.50	0.05	1.68	0.25	1.85		
Arsenic	mg/L	0.010	0.003	2019-06-20	2019-06-20	<0.003	<0.003	0.003	<0.003	0.003	<0.003		
Barium	mg/L	1	0.002	2019-06-20	2019-06-20	0.118	0.356	0.002	0.028	0.002	0.074		
Boron	mg/L	5	0.010	2019-06-20	2019-06-20	1.25	1.32	0.010	0.082	0.010	1.61		
Cadmium	mg/L	0.005	0.001	2019-06-20	2019-06-20	<0.001	<0.001	0.001	<0.001	0.001	<0.001		
Chromium	mg/L	0.05	0.003	2019-06-20	2019-06-20	<0.003	<0.003	0.003	<0.003	0.003	<0.003		
Iron	mg/L		0.010	2019-06-20	2019-06-20	1.02	0.292	0.010	<0.010	0.010	0.038		
Lead	mg/L	0.01	0.001	2019-06-20	2019-06-20	<0.001	<0.001	0.001	<0.001	0.001	<0.001		
Mercury	mg/L	0.001	0.0001	2019-06-18	2019-06-18	<0.0001	<0.0001	0.0001	<0.0001	0.0001	<0.0001		
Nickel	mg/L		0.003	2019-06-20	2019-06-20	<0.003	<0.003	0.003	<0.003	0.003	<0.003		
Zinc	mg/L		0.005	2019-06-20	2019-06-20	<0.005	<0.005	0.005	<0.005	0.005	<0.005		

Certified By:





Certificate of Analysis

AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Groundwater Parameters

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	GW-44985-	GW-44985-	GW-44985-	RDL	Date Prepared
						SAMPLE DESCRIPTION: 061219-DD-41S 061219-DD-52B 061219-DD-50B				
						SAMPLE TYPE: Water Water Water				
						DATE SAMPLED: 2019-06-12 2019-06-12 2019-06-12				
						280934	280935	280936		
Electrical Conductivity	µS/cm		2	2019-06-18	2019-06-18	1540	1220	1020	2	2019-06-18
pH	pH Units		NA	2019-06-18	2019-06-18	7.77	7.83	7.79	NA	2019-06-18
Total Dissolved Solids	mg/L		20	2019-06-18	2019-06-19	1140	768	654	20	2019-06-18
Alkalinity (as CaCO3)	mg/L		5	2019-06-18	2019-06-18	459	388	402	5	2019-06-18
Fluoride	mg/L	1.5	0.25	2019-06-19	2019-06-19	<0.25	0.90	<0.25	0.25	2019-06-19
Chloride	mg/L		0.50	2019-06-19	2019-06-19	34.5	10.2	5.46	0.50	2019-06-19
Nitrate as N	mg/L	10.0	0.25	2019-06-19	2019-06-19	<0.25	<0.25	<0.25	0.25	2019-06-19
Nitrite as N	mg/L	1.0	0.25	2019-06-19	2019-06-19	<0.25	<0.25	<0.25	0.25	2019-06-19
Bromide	mg/L		0.25	2019-06-19	2019-06-19	<0.25	<0.25	<0.25	0.25	2019-06-19
Sulphate	mg/L		0.50	2019-06-19	2019-06-19	430	293	168	1.0	2019-06-20
Cyanide, Free	mg/L	0.2	0.002	2019-06-20	2019-06-20	<0.002	<0.002	<0.002	0.002	2019-06-20
Calcium	mg/L		0.25	2019-06-19	2019-06-19	204	112	139	0.25	2019-06-19
Magnesium	mg/L		0.25	2019-06-19	2019-06-19	72.1	66.8	45.5	0.25	2019-06-19
Sodium	mg/L	20	0.25	2019-06-19	2019-06-19	44.2	64.0	21.4	0.25	2019-06-19
Potassium	mg/L		0.25	2019-06-19	2019-06-19	1.81	2.95	2.75	0.25	2019-06-19
Arsenic	mg/L	0.010	0.003	2019-06-20	2019-06-20	<0.003	<0.003	<0.003	0.003	2019-06-20
Barium	mg/L	1	0.002	2019-06-20	2019-06-20	0.022	0.014	0.028	0.002	2019-06-20
Boron	mg/L	5	0.010	2019-06-20	2019-06-20	0.134	0.222	0.119	0.010	2019-06-20
Cadmium	mg/L	0.005	0.001	2019-06-20	2019-06-20	<0.001	<0.001	<0.001	0.001	2019-06-20
Chromium	mg/L	0.05	0.003	2019-06-20	2019-06-20	<0.003	<0.003	<0.003	0.003	2019-06-20
Iron	mg/L		0.010	2019-06-20	2019-06-20	<0.010	<0.010	0.059	0.010	2019-06-20
Lead	mg/L	0.01	0.001	2019-06-20	2019-06-20	<0.001	<0.001	<0.001	0.001	2019-06-20
Mercury	mg/L	0.001	0.0001	2019-06-18	2019-06-18	<0.0001	<0.0001	<0.0001	0.0001	2019-06-18
Nickel	mg/L		0.003	2019-06-20	2019-06-20	0.004	<0.003	<0.003	0.003	2019-06-20
Zinc	mg/L		0.005	2019-06-20	2019-06-20	<0.005	<0.005	<0.005	0.005	2019-06-20

Certified By:





Certificate of Analysis

AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

5835 COOPERS AVENUE
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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Groundwater Parameters

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	GW-44985- SAMPLE DESCRIPTION: 061219-DD-51B			GW-44985- 061219-DD-52A			
				Date Prepared	Date Analyzed	RDL	Date Prepared	Date Analyzed	RDL	
Electrical Conductivity	µS/cm		2	2019-06-18	2019-06-18	1520	2	2019-06-18	2019-06-18	1590
pH	pH Units		NA	2019-06-18	2019-06-18	7.87	NA	2019-06-18	2019-06-18	7.85
Total Dissolved Solids	mg/L		20	2019-06-18	2019-06-19	1110	20	2019-06-18	2019-06-19	1140
Alkalinity (as CaCO3)	mg/L		5	2019-06-18	2019-06-18	400	5	2019-06-18	2019-06-18	447
Fluoride	mg/L	1.5	0.25	2019-06-19	2019-06-19	0.90	0.25	2019-06-19	2019-06-19	0.50
Chloride	mg/L		0.50	2019-06-19	2019-06-19	20.7	0.50	2019-06-19	2019-06-19	35.6
Nitrate as N	mg/L	10.0	0.25	2019-06-19	2019-06-19	<0.25	0.25	2019-06-19	2019-06-19	<0.25
Nitrite as N	mg/L	1.0	0.25	2019-06-19	2019-06-19	<0.25	0.25	2019-06-19	2019-06-19	<0.25
Bromide	mg/L		0.25	2019-06-19	2019-06-19	<0.25	0.25	2019-06-19	2019-06-19	<0.25
Sulphate	mg/L		1.0	2019-06-20	2019-06-20	471	0.50	2019-06-19	2019-06-19	499
Cyanide, Free	mg/L	0.2	0.002	2019-06-20	2019-06-20	<0.002	0.002	2019-06-20	2019-06-20	<0.002
Calcium	mg/L		0.25	2019-06-19	2019-06-19	140	0.25	2019-06-19	2019-06-19	157
Magnesium	mg/L		0.25	2019-06-19	2019-06-19	85.7	0.25	2019-06-19	2019-06-19	102
Sodium	mg/L	20	0.25	2019-06-19	2019-06-19	83.7	0.25	2019-06-19	2019-06-19	50.5
Potassium	mg/L		0.25	2019-06-19	2019-06-19	3.49	0.25	2019-06-19	2019-06-19	2.12
Arsenic	mg/L	0.010	0.003	2019-06-20	2019-06-20	<0.003	0.003	2019-06-20	2019-06-20	<0.003
Barium	mg/L	1	0.002	2019-06-20	2019-06-20	0.019	0.002	2019-06-20	2019-06-20	0.014
Boron	mg/L	5	0.010	2019-06-20	2019-06-20	0.320	0.010	2019-06-20	2019-06-20	0.175
Cadmium	mg/L	0.005	0.001	2019-06-20	2019-06-20	<0.001	0.001	2019-06-20	2019-06-20	<0.001
Chromium	mg/L	0.05	0.003	2019-06-20	2019-06-20	<0.003	0.003	2019-06-20	2019-06-20	<0.003
Iron	mg/L		0.010	2019-06-20	2019-06-20	<0.010	0.010	2019-06-20	2019-06-20	<0.010
Lead	mg/L	0.01	0.001	2019-06-20	2019-06-20	<0.001	0.001	2019-06-20	2019-06-20	<0.001
Mercury	mg/L	0.001	0.0001	2019-06-18	2019-06-18	<0.0001	0.0001	2019-06-18	2019-06-18	<0.0001
Nickel	mg/L		0.003	2019-06-20	2019-06-20	<0.003	0.003	2019-06-20	2019-06-20	<0.003
Zinc	mg/L		0.005	2019-06-20	2019-06-20	<0.005	0.005	2019-06-20	2019-06-20	<0.005

Certified By:





Certificate of Analysis

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PROJECT: 44985 (PO#73507870-2)

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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Groundwater Parameters

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	GW-44985-061119-DD-59D-98				GW-44985-061319-DD-PW2-98			
				Date Prepared	Date Analyzed	RDL	Date Prepared	Date Analyzed	RDL	Date Prepared	Date Analyzed
Electrical Conductivity	µS/cm		2	2019-06-18	2019-06-18	839	2	2019-06-18	2019-06-18	1420	1430
pH	pH Units		NA	2019-06-18	2019-06-18	7.79	NA	2019-06-18	2019-06-18	7.97	7.97
Total Dissolved Solids	mg/L		20	2019-06-18	2019-06-19	460	20	2019-06-18	2019-06-19	700	704
Alkalinity (as CaCO3)	mg/L		5	2019-06-18	2019-06-18	229	5	2019-06-18	2019-06-18	280	281
Fluoride	mg/L	1.5	0.25	2019-06-18	2019-06-18	1.27	0.25	2019-06-19	2019-06-19	0.71	0.81
Chloride	mg/L		0.50	2019-06-18	2019-06-18	121	0.50	2019-06-19	2019-06-19	288	278
Nitrate as N	mg/L	10.0	0.25	2019-06-18	2019-06-18	<0.25	0.25	2019-06-19	2019-06-19	<0.25	<0.25
Nitrite as N	mg/L	1.0	0.25	2019-06-18	2019-06-18	<0.25	0.25	2019-06-19	2019-06-19	<0.25	<0.25
Bromide	mg/L		0.25	2019-06-18	2019-06-18	<0.25	0.25	2019-06-19	2019-06-19	<0.25	<0.25
Sulphate	mg/L		0.50	2019-06-18	2019-06-18	<0.50	0.50	2019-06-19	2019-06-19	3.46	3.36
Cyanide, Free	mg/L	0.2	0.002	2019-06-20	2019-06-20	<0.002	0.002	2019-06-20	2019-06-20	<0.002	<0.002
Calcium	mg/L		0.10	2019-06-19	2019-06-19	14.7	0.25	2019-06-19	2019-06-19	14.3	14.3
Magnesium	mg/L		0.10	2019-06-19	2019-06-19	4.72	0.25	2019-06-19	2019-06-19	6.49	6.44
Sodium	mg/L	20	0.10	2019-06-19	2019-06-19	148	0.25	2019-06-19	2019-06-19	250	253
Potassium	mg/L		0.10	2019-06-19	2019-06-19	1.70	0.25	2019-06-19	2019-06-19	2.53	2.52
Arsenic	mg/L	0.010	0.003	2019-06-20	2019-06-20	<0.003	0.003	2019-06-20	2019-06-20	<0.003	<0.003
Barium	mg/L	1	0.002	2019-06-20	2019-06-20	0.093	0.002	2019-06-20	2019-06-20	0.128	0.133
Boron	mg/L	5	0.010	2019-06-20	2019-06-20	1.09	0.010	2019-06-20	2019-06-20	2.01	1.97
Cadmium	mg/L	0.005	0.001	2019-06-20	2019-06-20	<0.001	0.001	2019-06-20	2019-06-20	<0.001	<0.001
Chromium	mg/L	0.05	0.003	2019-06-20	2019-06-20	0.003	0.003	2019-06-20	2019-06-20	<0.003	<0.003
Iron	mg/L		0.010	2019-06-20	2019-06-20	0.344	0.010	2019-06-20	2019-06-20	0.085	0.086
Lead	mg/L	0.01	0.001	2019-06-20	2019-06-20	<0.001	0.001	2019-06-20	2019-06-20	<0.001	<0.001
Mercury	mg/L	0.001	0.0001	2019-06-18	2019-06-18	<0.0001	0.0001	2019-06-18	2019-06-18	<0.0001	<0.0001
Nickel	mg/L		0.003	2019-06-20	2019-06-20	<0.003	0.003	2019-06-20	2019-06-20	<0.003	<0.003
Zinc	mg/L		0.005	2019-06-20	2019-06-20	<0.005	0.005	2019-06-20	2019-06-20	0.005	<0.005

Certified By:





Certificate of Analysis

AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Groundwater Parameters

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	SAMPLE DESCRIPTION:		GW-44985-	GW-44985-	GW-44985-	RDL	Date Prepared	GW-44985-
				061319-DD- EW2A	061319-DD- EW2C	061319-DD- EW2B	061319-DD- EW1C				
				SAMPLE TYPE:		Water		Water		Water	
				DATE SAMPLED:		2019-06-13	2019-06-13	2019-06-13	2019-06-13		
						280948	280949	280950	280951		
Electrical Conductivity	µS/cm		2	2019-06-18	2019-06-18	718	692	712	2	2019-06-18	1610
pH	pH Units		NA	2019-06-18	2019-06-18	7.86	7.94	7.95	NA	2019-06-18	7.94
Total Dissolved Solids	mg/L		20	2019-06-18	2019-06-19	370	382	368	20	2019-06-19	916
Alkalinity (as CaCO3)	mg/L		5	2019-06-18	2019-06-18	201	199	204	5	2019-06-18	252
Fluoride	mg/L	1.5	0.10	2019-06-19	2019-06-19	1.08	1.06	1.08	0.25	2019-06-19	1.27
Chloride	mg/L		0.20	2019-06-19	2019-06-19	101	95.3	97.0	0.50	2019-06-19	331
Nitrate as N	mg/L	10.0	0.10	2019-06-19	2019-06-19	<0.10	<0.10	<0.10	0.25	2019-06-19	<0.25
Nitrite as N	mg/L	1.0	0.10	2019-06-19	2019-06-19	<0.10	<0.10	<0.10	0.25	2019-06-19	<0.25
Bromide	mg/L		0.10	2019-06-19	2019-06-19	0.98	0.81	0.82	0.25	2019-06-19	4.23
Sulphate	mg/L		0.20	2019-06-19	2019-06-19	1.69	0.57	2.84	0.50	2019-06-19	131
Cyanide, Free	mg/L	0.2	0.002	2019-06-20	2019-06-20	<0.002	<0.002	<0.002	0.002	2019-06-20	<0.002
Calcium	mg/L		0.05	2019-06-19	2019-06-19	32.2	32.2	34.3	0.25	2019-06-19	86.7
Magnesium	mg/L		0.05	2019-06-19	2019-06-19	13.6	13.5	14.1	0.25	2019-06-19	45.3
Sodium	mg/L	20	0.05	2019-06-19	2019-06-19	85.3	86.2	87.2	0.25	2019-06-19	171
Potassium	mg/L		0.05	2019-06-19	2019-06-19	2.34	2.22	2.42	0.25	2019-06-19	4.52
Arsenic	mg/L	0.010	0.003	2019-06-20	2019-06-20	<0.003	<0.003	<0.003	0.003	2019-06-20	0.003
Barium	mg/L	1	0.002	2019-06-20	2019-06-20	0.129	0.141	0.126	0.002	2019-06-20	0.052
Boron	mg/L	5	0.010	2019-06-20	2019-06-20	1.07	1.12	1.14	0.010	2019-06-20	1.18
Cadmium	mg/L	0.005	0.001	2019-06-20	2019-06-20	<0.001	<0.001	<0.001	0.001	2019-06-20	<0.001
Chromium	mg/L	0.05	0.003	2019-06-20	2019-06-20	<0.003	<0.003	<0.003	0.003	2019-06-20	<0.003
Iron	mg/L		0.010	2019-06-20	2019-06-20	<0.010	0.051	0.024	0.010	2019-06-20	0.467
Lead	mg/L	0.01	0.001	2019-06-20	2019-06-20	<0.001	<0.001	<0.001	0.001	2019-06-20	<0.001
Mercury	mg/L	0.001	0.0001	2019-06-18	2019-06-18	<0.0001	<0.0001	<0.0001	0.0001	2019-06-18	<0.0001
Nickel	mg/L		0.003	2019-06-20	2019-06-20	<0.003	<0.003	<0.003	0.003	2019-06-20	<0.003
Zinc	mg/L		0.005	2019-06-20	2019-06-20	<0.005	<0.005	<0.005	0.005	2019-06-20	0.013

Certified By:





Certificate of Analysis

AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

5835 COOPERS AVENUE
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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Groundwater Parameters

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	GW-44985-061319-DD-EW1B	GW-44985-061319-DD-EW1A	RDL	GW-44985-061319-DD-PW1	RDL	GW-44985-061319-DD-B1
						Water	Water		Water	Water	
						2019-06-13	2019-06-13		2019-06-13		2019-06-13
						280952	280953		280954		281335
Electrical Conductivity	µS/cm		2	2019-06-18	2019-06-18	1640	1620	2	1710	2	<2
pH	pH Units		NA	2019-06-18	2019-06-18	7.91	7.93	NA	8.13	NA	5.49
Total Dissolved Solids	mg/L		20	2019-06-19	2019-06-19	958	976	20	898	20	<20
Alkalinity (as CaCO3)	mg/L		5	2019-06-18	2019-06-18	254	257	5	281	5	<5
Fluoride	mg/L	1.5	0.25	2019-06-19	2019-06-19	1.21	1.11	0.5	<0.5	0.05	<0.05
Chloride	mg/L		0.50	2019-06-19	2019-06-19	323	308	1.0	382	0.10	<0.10
Nitrate as N	mg/L	10.0	0.25	2019-06-19	2019-06-19	<0.25	<0.25	0.5	<0.5	0.05	<0.05
Nitrite as N	mg/L	1.0	0.25	2019-06-19	2019-06-19	<0.25	<0.25	0.5	<0.5	0.05	<0.05
Bromide	mg/L		0.25	2019-06-19	2019-06-19	2.36	2.46	0.5	<0.5	0.05	<0.05
Sulphate	mg/L		0.50	2019-06-19	2019-06-19	125	112	1.0	3.3	0.10	<0.10
Cyanide, Free	mg/L	0.2	0.002	2019-06-20	2019-06-20	<0.002	<0.002	0.002	<0.002	0.002	<0.002
Calcium	mg/L		0.25	2019-06-19	2019-06-19	85.8	87.2	0.25	14.3	0.05	<0.05
Magnesium	mg/L		0.25	2019-06-19	2019-06-19	45.4	46.6	0.25	7.67	0.05	<0.05
Sodium	mg/L	20	0.25	2019-06-19	2019-06-19	171	175	0.25	323	0.05	<0.05
Potassium	mg/L		0.25	2019-06-19	2019-06-19	4.62	4.86	0.25	2.35	0.05	<0.05
Arsenic	mg/L	0.010	0.003	2019-06-20	2019-06-20	<0.003	<0.003	0.003	<0.003	0.003	<0.003
Barium	mg/L	1	0.002	2019-06-20	2019-06-20	0.053	0.061	0.002	0.160	0.002	<0.002
Boron	mg/L	5	0.010	2019-06-20	2019-06-20	1.15	1.18	0.010	1.89	0.010	0.012
Cadmium	mg/L	0.005	0.001	2019-06-20	2019-06-20	<0.001	<0.001	0.001	<0.001	0.001	<0.001
Chromium	mg/L	0.05	0.003	2019-06-20	2019-06-20	<0.003	<0.003	0.003	<0.003	0.003	<0.003
Iron	mg/L		0.010	2019-06-20	2019-06-20	0.625	1.58	0.010	0.013	0.010	<0.010
Lead	mg/L	0.01	0.001	2019-06-20	2019-06-20	<0.001	<0.001	0.001	<0.001	0.001	<0.001
Mercury	mg/L	0.001	0.0001	2019-06-18	2019-06-18	<0.0001	<0.0001	0.0001	<0.0001	0.0001	<0.0001
Nickel	mg/L		0.003	2019-06-20	2019-06-20	<0.003	<0.003	0.003	<0.003	0.003	<0.003
Zinc	mg/L		0.005	2019-06-20	2019-06-20	<0.005	<0.005	0.005	<0.005	0.005	<0.005

Certified By:





Certificate of Analysis

AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

5835 COOPERS AVENUE
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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLING SITE:

SAMPLED BY:

Groundwater Parameters

DATE RECEIVED: 2019-06-14

DATE REPORTED: 2019-06-28

Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	GW-44985-	GW-44985-
						061319-DD-B2	061319-DD-B3
				SAMPLE DESCRIPTION:		Water	Water
				SAMPLE TYPE:		2019-06-13	2019-06-13
				DATE SAMPLED:		281342	281344
Electrical Conductivity	µS/cm		2	2019-06-18	2019-06-18	<2	<2
pH	pH Units		NA	2019-06-18	2019-06-18	5.23	5.51
Total Dissolved Solids	mg/L		20	2019-06-19	2019-06-19	<20	<20
Alkalinity (as CaCO3)	mg/L		5	2019-06-18	2019-06-18	<5	<5
Fluoride	mg/L	1.5	0.05	2019-06-19	2019-06-19	<0.05	<0.05
Chloride	mg/L		0.10	2019-06-19	2019-06-19	<0.10	<0.10
Nitrate as N	mg/L	10.0	0.05	2019-06-19	2019-06-19	<0.05	<0.05
Nitrite as N	mg/L	1.0	0.05	2019-06-19	2019-06-19	<0.05	<0.05
Bromide	mg/L		0.05	2019-06-19	2019-06-19	<0.05	<0.05
Sulphate	mg/L		0.10	2019-06-19	2019-06-19	<0.10	<0.10
Cyanide, Free	mg/L	0.2	0.002	2019-06-20	2019-06-20	<0.002	<0.002
Calcium	mg/L		0.05	2019-06-19	2019-06-19	<0.05	<0.05
Magnesium	mg/L		0.05	2019-06-19	2019-06-19	<0.05	<0.05
Sodium	mg/L	20	0.05	2019-06-19	2019-06-19	<0.05	<0.05
Potassium	mg/L		0.05	2019-06-19	2019-06-19	<0.05	<0.05
Arsenic	mg/L	0.010	0.003	2019-06-20	2019-06-20	<0.003	<0.003
Barium	mg/L	1	0.002	2019-06-20	2019-06-20	<0.002	<0.002
Boron	mg/L	5	0.010	2019-06-20	2019-06-20	<0.010	<0.010
Cadmium	mg/L	0.005	0.001	2019-06-20	2019-06-20	<0.001	<0.001
Chromium	mg/L	0.05	0.003	2019-06-20	2019-06-20	<0.003	<0.003
Iron	mg/L		0.010	2019-06-20	2019-06-20	<0.010	<0.010
Lead	mg/L	0.01	0.001	2019-06-20	2019-06-20	<0.001	<0.001
Mercury	mg/L	0.001	0.0001	2019-06-18	2019-06-18	<0.0001	<0.0001
Nickel	mg/L		0.003	2019-06-20	2019-06-20	<0.003	<0.003
Zinc	mg/L		0.005	2019-06-20	2019-06-20	<0.005	<0.005

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Ontario Drinking Water Quality Standards. Na value is derived from O. Reg. 248
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.
280769-280954 Elevated RDLs indicate the degree of sample dilution prior to the analyses in order to keep analytes within the calibration range of the instrument and to reduce matrix interference.
Analysis performed at AGAT Toronto (unless marked by *)

Certified By:





Guideline Violation

AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

5835 COOPERS AVENUE
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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
280769	GW-44985-061119-DD-43D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	196
280776	GW-44985-061119-DD-43S	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	21.0
280841	GW-44985-061119-DD-55D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	330
280842	GW-44985-061119-DD-55S	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	50.8
280843	GW-44985-061119-DD-49D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	123
280850	GW-44985-061119-DD-42S	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	62.8
280852	GW-44985-061119-DD-57D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	342
280852	GW-44985-061119-DD-57D	O.Reg.169/03(ug/L)	Volatile Organic Compounds in Water	Benzene	µg/L	1	5.3
280853	GW-44985-061119-DD-57S	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	47.8
280854	GW-44985-061119-DD-58S	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	107
280855	GW-44985-061119-DD-56D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	271
280856	GW-44985-061119-DD-56S	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	64.8
280857	GW-44985-061119-DD-56S-98	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	66.3
280858	GW-44985-061119-DD-59S	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	26.3
280870	GW-44985-061119-DD-59D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	174
280870	GW-44985-061119-DD-59D	O.Reg.169/03(ug/L)	Volatile Organic Compounds in Water	Benzene	µg/L	1	1.3
280871	GW-44985-061119-DD-48S	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	38.8
280872	GW-44985-061119-DD-48D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	295
280873	GW-44985-061119-DD-45D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	1030
280874	GW-44985-061119-DD-45S	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	27.5
280875	GW-44985-061119-DD-62S	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	55.4
280878	GW-44985-061119-DD-63S	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	161
280879	GW-44985-061119-DD-54D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	167
280880	GW-44985-061119-DD-61D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	162
280882	GW-44985-061119-DD-61I	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	32.6
280883	GW-44985-061119-DD-61S	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	71.0
280884	GW-44985-061119-DD-22	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	81.8
280885	GW-44985-061219-DD-22D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	913
280885	GW-44985-061219-DD-22D	O.Reg.169/03(ug/L)	Volatile Organic Compounds in Water	Benzene	µg/L	1	1.7
280887	GW-44985-061219-DD-60D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	707
280888	GW-44985-061219-DD-39D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	234
280889	GW-44985-061219-DD-39I	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	69.1
280890	GW-44985-061219-DD-39S	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	59.3
280911	GW-44985-061219-DD-47D	O.Reg.169/03(mg/L)	Groundwater Parameters	Barium	mg/L	1	1.48
280911	GW-44985-061219-DD-47D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	855
280912	GW-44985-061219-DD-40S	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	47.1
280913	GW-44985-061219-DD-40D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	247
280914	GW-44985-061219-DD-32IV	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	35.8
280915	GW-44985-061219-DD-46D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	227
280916	GW-44985-061219-DD-46I	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	50.2
280917	GW-44985-061219-DD-46S	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	89.2
280918	GW-44985-061219-DD-35S	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	34.1
280925	GW-44985-061219-DD-35D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	234



Guideline Violation

AGAT WORK ORDER: 19T480053

PROJECT: 44985 (PO#73507870-2)

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CLIENT NAME: GHD LIMITED

ATTENTION TO: Laura Ermeta

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
280928	GW-44985-061219-DD-53D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	298
280929	GW-44985-061219-DD-32S	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	22.3
280930	GW-44985-061219-DD-32D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	236
280931	GW-44985-061219-DD-30D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	205
280932	GW-44985-061219-DD-30S	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	38.9
280933	GW-44985-061219-DD-41D	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	209
280934	GW-44985-061219-DD-41S	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	44.2
280935	GW-44985-061219-DD-52B	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	64.0
280936	GW-44985-061219-DD-50B	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	21.4
280937	GW-44985-061219-DD-51B	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	83.7
280938	GW-44985-061219-DD-52A	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	50.5
280941	GW-44985-061119-DD-59D-98	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	148
280941	GW-44985-061119-DD-59D-98	O.Reg.169/03(ug/L)	Volatile Organic Compounds in Water	Benzene	µg/L	1	1.1
280944	GW-44985-061319-DD-PW2	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	250
280945	GW-44985-061319-DD-PW2-98	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	253
280948	GW-44985-061319-DD-EW2A	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	85.3
280949	GW-44985-061319-DD-EW2C	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	86.2
280950	GW-44985-061319-DD-EW2B	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	87.2
280951	GW-44985-061319-DD-EW1C	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	171
280952	GW-44985-061319-DD-EW1B	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	171
280953	GW-44985-061319-DD-EW1A	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	175
280954	GW-44985-061319-DD-PW1	O.Reg.169/03(mg/L)	Groundwater Parameters	Sodium	mg/L	20	323

Quality Assurance

CLIENT NAME: GHD LIMITED
 PROJECT: 44985 (PO#73507870-2)
 SAMPLING SITE:

AGAT WORK ORDER: 19T480053
 ATTENTION TO: Laura Ermeta
 SAMPLED BY:

Trace Organics Analysis															
RPT Date: Jun 28, 2019			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE		MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

Volatile Organic Compounds in Water

Dichlorodifluoromethane	280930	280930	< 0.20	< 0.20	NA	< 0.20	86%	50%	140%	82%	50%	140%	79%	50%	140%
Chloromethane	280930	280930	< 0.40	< 0.40	NA	< 0.40	89%	50%	140%	114%	50%	140%	99%	50%	140%
Vinyl Chloride	280930	280930	< 0.17	< 0.17	NA	< 0.17	92%	50%	140%	94%	50%	140%	90%	50%	140%
Bromomethane	280930	280930	< 0.20	< 0.20	NA	< 0.20	102%	50%	140%	99%	50%	140%	96%	50%	140%
Chloroethane	280930	280930	< 0.20	< 0.20	NA	< 0.20	83%	50%	140%	108%	50%	140%	97%	50%	140%
Trichlorofluoromethane	280930	280930	< 0.40	< 0.40	NA	< 0.40	100%	50%	140%	95%	50%	140%	93%	50%	140%
Acetone	280930	280930	< 1.0	< 1.0	NA	< 1.0	90%	50%	140%	91%	50%	140%	80%	50%	140%
1,1 Dichloroethylene	280930	280930	< 0.30	< 0.30	NA	< 0.30	81%	50%	140%	80%	60%	130%	80%	50%	140%
Methylene Chloride	280930	280930	< 0.30	< 0.30	NA	< 0.30	101%	50%	140%	93%	60%	130%	104%	50%	140%
trans- 1,2-dichloroethylene	280930	280930	< 0.20	< 0.20	NA	< 0.20	89%	50%	140%	81%	60%	130%	103%	50%	140%
Methyl tert-butyl ether	280930	280930	< 0.20	< 0.20	NA	< 0.20	92%	50%	140%	88%	60%	130%	98%	50%	140%
1,1-Dichloroethane	280930	280930	< 0.30	< 0.30	NA	< 0.30	106%	50%	140%	79%	60%	130%	85%	50%	140%
Methyl Ethyl Ketone	280930	280930	< 1.0	< 1.0	NA	< 1.0	97%	50%	140%	81%	50%	140%	108%	50%	140%
cis- 1,2-Dichloroethylene	280930	280930	< 0.20	< 0.20	NA	< 0.20	89%	50%	140%	82%	60%	130%	81%	50%	140%
Chloroform	280930	280930	< 0.20	< 0.20	NA	< 0.20	78%	50%	140%	89%	60%	130%	95%	50%	140%
1,2 - Dichloroethane	280930	280930	< 0.20	< 0.20	NA	< 0.20	89%	50%	140%	88%	60%	130%	88%	50%	140%
1,1,1-Trichloroethane	280930	280930	< 0.30	< 0.30	NA	< 0.30	80%	50%	140%	98%	60%	130%	108%	50%	140%
Carbon Tetrachloride	280930	280930	< 0.20	< 0.20	NA	< 0.20	98%	50%	140%	83%	60%	130%	80%	50%	140%
Benzene	280930	280930	< 0.20	< 0.20	NA	< 0.20	85%	50%	140%	76%	60%	130%	98%	50%	140%
1,2-Dichloropropane	280930	280930	< 0.20	< 0.20	NA	< 0.20	92%	50%	140%	86%	60%	130%	96%	50%	140%
Trichloroethylene	280930	280930	< 0.20	< 0.20	NA	< 0.20	81%	50%	140%	89%	60%	130%	83%	50%	140%
Bromodichloromethane	280930	280930	< 0.20	< 0.20	NA	< 0.20	89%	50%	140%	78%	60%	130%	79%	50%	140%
cis-1,3-Dichloropropene	280930	280930	< 0.20	< 0.20	NA	< 0.20	80%	50%	140%	90%	60%	130%	85%	50%	140%
Methyl Isobutyl Ketone	280930	280930	< 1.0	< 1.0	NA	< 1.0	96%	50%	140%	79%	50%	140%	79%	50%	140%
trans-1,3-Dichloropropene	280930	280930	< 0.30	< 0.30	NA	< 0.30	95%	50%	140%	83%	60%	130%	86%	50%	140%
1,1,2-Trichloroethane	280930	280930	< 0.20	< 0.20	NA	< 0.20	81%	50%	140%	83%	60%	130%	96%	50%	140%
Toluene	280930	280930	< 0.20	< 0.20	NA	< 0.20	113%	50%	140%	106%	60%	130%	98%	50%	140%
2-Hexanone	280930	280930	< 1.0	< 1.0	NA	< 1.0	90%	50%	140%	79%	60%	130%	80%	50%	140%
Dibromochloromethane	280930	280930	< 0.10	< 0.10	NA	< 0.10	86%	50%	140%	88%	60%	130%	102%	50%	140%
Ethylene Dibromide	280930	280930	< 0.10	< 0.10	NA	< 0.10	85%	50%	140%	83%	60%	130%	97%	50%	140%
Tetrachloroethylene	280930	280930	< 0.20	< 0.20	NA	< 0.20	97%	50%	140%	90%	60%	130%	97%	50%	140%
1,1,1,2-Tetrachloroethane	280930	280930	< 0.10	< 0.10	NA	< 0.10	108%	50%	140%	93%	60%	130%	80%	50%	140%
Chlorobenzene	280930	280930	< 0.10	< 0.10	NA	< 0.10	103%	50%	140%	98%	60%	130%	89%	50%	140%
Ethylbenzene	280930	280930	< 0.10	< 0.10	NA	< 0.10	106%	50%	140%	85%	60%	130%	91%	50%	140%
m & p-Xylene	280930	280930	< 0.20	< 0.20	NA	< 0.20	111%	50%	140%	92%	60%	130%	96%	50%	140%
Bromoform	280930	280930	< 0.10	< 0.10	NA	< 0.10	87%	50%	140%	97%	60%	130%	100%	50%	140%
Styrene	280930	280930	< 0.10	< 0.10	NA	< 0.10	92%	50%	140%	80%	60%	130%	81%	50%	140%
1,1,2,2-Tetrachloroethane	280930	280930	< 0.10	< 0.10	NA	< 0.10	95%	50%	140%	99%	60%	130%	85%	50%	140%
o-Xylene	280930	280930	< 0.10	< 0.10	NA	< 0.10	106%	50%	140%	98%	60%	130%	95%	50%	140%

Quality Assurance

 CLIENT NAME: GHD LIMITED
 PROJECT: 44985 (PO#73507870-2)
 SAMPLING SITE:

 AGAT WORK ORDER: 19T480053
 ATTENTION TO: Laura Ermeta
 SAMPLED BY:

Trace Organics Analysis (Continued)

RPT Date: Jun 28, 2019			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
1,3-Dichlorobenzene	280930	280930	< 0.10	< 0.10	NA	< 0.10	96%	50%	140%	88%	60%	130%	95%	50%	140%
1,4-Dichlorobenzene	280930	280930	< 0.10	< 0.10	NA	< 0.10	89%	50%	140%	86%	60%	130%	83%	50%	140%
1,2-Dichlorobenzene	280930	280930	< 0.10	< 0.10	NA	< 0.10	86%	50%	140%	86%	60%	130%	79%	50%	140%
1,2,4-Trichlorobenzene	280930	280930	< 0.30	< 0.30	NA	< 0.30	97%	50%	140%	82%	60%	130%	106%	50%	140%
1,3-Dichloropropene (Cis + Trans)	280930	280930	< 0.30	< 0.30	NA	< 0.30	88%	50%	140%	87%	60%	130%	86%	50%	140%
n-Hexane	280930	280930	< 0.20	< 0.20	NA	< 0.20	85%	50%	140%	101%	60%	130%	91%	50%	140%
Volatile Organic Compounds in Water															
Dichlorodifluoromethane	280884	280884	< 0.20	< 0.20	NA	< 0.20	86%	50%	140%	82%	50%	140%	79%	50%	140%
Chloromethane	280884	280884	< 0.40	< 0.40	NA	< 0.40	89%	50%	140%	114%	50%	140%	99%	50%	140%
Vinyl Chloride	280884	280884	< 0.17	< 0.17	NA	< 0.17	92%	50%	140%	94%	50%	140%	90%	50%	140%
Bromomethane	280884	280884	< 0.20	< 0.20	NA	< 0.20	102%	50%	140%	99%	50%	140%	96%	50%	140%
Chloroethane	280884	280884	< 0.20	< 0.20	NA	< 0.20	83%	50%	140%	108%	50%	140%	97%	50%	140%
Trichlorofluoromethane	280884	280884	< 0.40	< 0.40	NA	< 0.40	100%	50%	140%	95%	50%	140%	93%	50%	140%
Acetone	280884	280884	< 1.0	< 1.0	NA	< 1.0	90%	50%	140%	91%	50%	140%	80%	50%	140%
1,1 Dichloroethylene	280884	280884	< 0.30	< 0.30	NA	< 0.30	81%	50%	140%	80%	60%	130%	80%	50%	140%
Methylene Chloride	280884	280884	< 0.30	< 0.30	NA	< 0.30	101%	50%	140%	93%	60%	130%	104%	50%	140%
trans- 1,2-dichloroethylene	280884	280884	< 0.20	< 0.20	NA	< 0.20	89%	50%	140%	81%	60%	130%	103%	50%	140%
Methyl tert-butyl ether	280884	280884	< 0.20	< 0.20	NA	< 0.20	92%	50%	140%	88%	60%	130%	98%	50%	140%
1,1-Dichloroethane	280884	280884	< 0.30	< 0.30	NA	< 0.30	106%	50%	140%	79%	60%	130%	85%	50%	140%
Methyl Ethyl Ketone	280884	280884	< 1.0	< 1.0	NA	< 1.0	97%	50%	140%	81%	50%	140%	108%	50%	140%
cis- 1,2-Dichloroethylene	280884	280884	< 0.20	< 0.20	NA	< 0.20	89%	50%	140%	82%	60%	130%	81%	50%	140%
Chloroform	280884	280884	< 0.20	< 0.20	NA	< 0.20	78%	50%	140%	89%	60%	130%	95%	50%	140%
1,2 - Dichloroethane	280884	280884	< 0.20	< 0.20	NA	< 0.20	89%	50%	140%	88%	60%	130%	88%	50%	140%
1,1,1-Trichloroethane	280884	280884	< 0.30	< 0.30	NA	< 0.30	80%	50%	140%	98%	60%	130%	108%	50%	140%
Carbon Tetrachloride	280884	280884	< 0.20	< 0.20	NA	< 0.20	98%	50%	140%	83%	60%	130%	80%	50%	140%
Benzene	280884	280884	< 0.20	< 0.20	NA	< 0.20	85%	50%	140%	76%	60%	130%	98%	50%	140%
1,2-Dichloropropane	280884	280884	< 0.20	< 0.20	NA	< 0.20	92%	50%	140%	86%	60%	130%	96%	50%	140%
Trichloroethylene	280884	280884	< 0.20	< 0.20	NA	< 0.20	81%	50%	140%	89%	60%	130%	83%	50%	140%
Bromodichloromethane	280884	280884	< 0.20	< 0.20	NA	< 0.20	89%	50%	140%	78%	60%	130%	79%	50%	140%
cis-1,3-Dichloropropene	280884	280884	< 0.20	< 0.20	NA	< 0.20	80%	50%	140%	90%	60%	130%	85%	50%	140%
Methyl Isobutyl Ketone	280884	280884	< 1.0	< 1.0	NA	< 1.0	96%	50%	140%	79%	50%	140%	79%	50%	140%
trans-1,3-Dichloropropene	280884	280884	< 0.30	< 0.30	NA	< 0.30	95%	50%	140%	83%	60%	130%	86%	50%	140%
1,1,2-Trichloroethane	280884	280884	< 0.20	< 0.20	NA	< 0.20	81%	50%	140%	83%	60%	130%	96%	50%	140%
Toluene	280884	280884	< 0.20	< 0.20	NA	< 0.20	113%	50%	140%	106%	60%	130%	98%	50%	140%
2-Hexanone	280884	280884	< 1.0	< 1.0	NA	< 1.0	90%	50%	140%	79%	60%	130%	80%	50%	140%
Dibromochloromethane	280884	280884	< 0.10	< 0.10	NA	< 0.10	86%	50%	140%	88%	60%	130%	102%	50%	140%
Ethylene Dibromide	280884	280884	< 0.10	< 0.10	NA	< 0.10	85%	50%	140%	83%	60%	130%	97%	50%	140%
Tetrachloroethylene	280884	280884	< 0.20	< 0.20	NA	< 0.20	97%	50%	140%	90%	60%	130%	97%	50%	140%
1,1,1,2-Tetrachloroethane	280884	280884	< 0.10	< 0.10	NA	< 0.10	108%	50%	140%	93%	60%	130%	80%	50%	140%

Quality Assurance

 CLIENT NAME: GHD LIMITED
 PROJECT: 44985 (PO#73507870-2)
 SAMPLING SITE:

 AGAT WORK ORDER: 19T480053
 ATTENTION TO: Laura Ermeta
 SAMPLED BY:

Trace Organics Analysis (Continued)

RPT Date: Jun 28, 2019			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits		
								Lower	Upper		Lower	Upper		Lower	Upper	
Chlorobenzene	280884	280884	< 0.10	< 0.10	NA	< 0.10	103%	50%	140%	98%	60%	130%	89%	50%	140%	
Ethylbenzene	280884	280884	< 0.10	< 0.10	NA	< 0.10	106%	50%	140%	85%	60%	130%	91%	50%	140%	
m & p-Xylene	280884	280884	< 0.20	< 0.20	NA	< 0.20	111%	50%	140%	92%	60%	130%	96%	50%	140%	
Bromoform	280884	280884	< 0.10	< 0.10	NA	< 0.10	87%	50%	140%	97%	60%	130%	100%	50%	140%	
Styrene	280884	280884	< 0.10	< 0.10	NA	< 0.10	92%	50%	140%	80%	60%	130%	81%	50%	140%	
1,1,2,2-Tetrachloroethane	280884	280884	< 0.10	< 0.10	NA	< 0.10	95%	50%	140%	99%	60%	130%	85%	50%	140%	
o-Xylene	280884	280884	< 0.10	< 0.10	NA	< 0.10	106%	50%	140%	98%	60%	130%	95%	50%	140%	
1,3-Dichlorobenzene	280884	280884	< 0.10	< 0.10	NA	< 0.10	96%	50%	140%	88%	60%	130%	95%	50%	140%	
1,4-Dichlorobenzene	280884	280884	< 0.10	< 0.10	NA	< 0.10	89%	50%	140%	86%	60%	130%	83%	50%	140%	
1,2-Dichlorobenzene	280884	280884	< 0.10	< 0.10	NA	< 0.10	86%	50%	140%	86%	60%	130%	79%	50%	140%	
1,2,4-Trichlorobenzene	280884	280884	< 0.30	< 0.30	NA	< 0.30	97%	50%	140%	82%	60%	130%	106%	50%	140%	
1,3-Dichloropropene (Cis + Trans)	280884	280884	< 0.30	< 0.30	NA	< 0.30	88%	50%	140%	87%	60%	130%	86%	50%	140%	
n-Hexane	280884	280884	< 0.20	< 0.20	NA	< 0.20	85%	50%	140%	101%	60%	130%	91%	50%	140%	
Volatile Organic Compounds in Water																
Dichlorodifluoromethane	280885	280885	< 0.20	< 0.20	NA	< 0.20	86%	50%	140%	82%	50%	140%	79%	50%	140%	
Chloromethane	280885	280885	< 0.40	< 0.40	NA	< 0.40	89%	50%	140%	114%	50%	140%	99%	50%	140%	
Vinyl Chloride	280885	280885	< 0.17	< 0.17	NA	< 0.17	92%	50%	140%	94%	50%	140%	90%	50%	140%	
Bromomethane	280885	280885	< 0.20	< 0.20	NA	< 0.20	102%	50%	140%	99%	50%	140%	96%	50%	140%	
Chloroethane	280885	280885	< 0.20	< 0.20	NA	< 0.20	83%	50%	140%	108%	50%	140%	97%	50%	140%	
Trichlorofluoromethane	280885	280885	< 0.40	< 0.40	NA	< 0.40	100%	50%	140%	95%	50%	140%	93%	50%	140%	
Acetone	280885	280885	< 1.0	< 1.0	NA	< 1.0	90%	50%	140%	91%	50%	140%	80%	50%	140%	
1,1 Dichloroethylene	280885	280885	< 0.30	< 0.30	NA	< 0.30	81%	50%	140%	80%	60%	130%	80%	50%	140%	
Methylene Chloride	280885	280885	< 0.30	< 0.30	NA	< 0.30	101%	50%	140%	93%	60%	130%	104%	50%	140%	
trans- 1,2-dichloroethylene	280885	280885	< 0.20	< 0.20	NA	< 0.20	89%	50%	140%	81%	60%	130%	103%	50%	140%	
Methyl tert-butyl ether	280885	280885	< 0.20	< 0.20	NA	< 0.20	92%	50%	140%	88%	60%	130%	98%	50%	140%	
1,1-Dichloroethane	280885	280885	< 0.30	< 0.30	NA	< 0.30	106%	50%	140%	79%	60%	130%	85%	50%	140%	
Methyl Ethyl Ketone	280885	280885	< 1.0	< 1.0	NA	< 1.0	97%	50%	140%	81%	50%	140%	108%	50%	140%	
cis- 1,2-Dichloroethylene	280885	280885	0.91	0.90	NA	< 0.20	89%	50%	140%	82%	60%	130%	81%	50%	140%	
Chloroform	280885	280885	< 0.20	< 0.20	NA	< 0.20	78%	50%	140%	89%	60%	130%	95%	50%	140%	
1,2 - Dichloroethane	280885	280885	< 0.20	< 0.20	NA	< 0.20	89%	50%	140%	88%	60%	130%	88%	50%	140%	
1,1,1-Trichloroethane	280885	280885	< 0.30	< 0.30	NA	< 0.30	80%	50%	140%	98%	60%	130%	108%	50%	140%	
Carbon Tetrachloride	280885	280885	< 0.20	< 0.20	NA	< 0.20	98%	50%	140%	83%	60%	130%	80%	50%	140%	
Benzene	280885	280885	1.7	1.4	19.4%	< 0.20	85%	50%	140%	76%	60%	130%	98%	50%	140%	
1,2-Dichloropropane	280885	280885	< 0.20	< 0.20	NA	< 0.20	92%	50%	140%	86%	60%	130%	96%	50%	140%	
Trichloroethylene	280885	280885	3.4	2.9	15.9%	< 0.20	81%	50%	140%	89%	60%	130%	83%	50%	140%	
Bromodichloromethane	280885	280885	< 0.20	< 0.20	NA	< 0.20	89%	50%	140%	78%	60%	130%	79%	50%	140%	
cis-1,3-Dichloropropene	280885	280885	< 0.20	< 0.20	NA	< 0.20	80%	50%	140%	90%	60%	130%	85%	50%	140%	
Methyl Isobutyl Ketone	280885	280885	< 1.0	< 1.0	NA	< 1.0	96%	50%	140%	79%	50%	140%	79%	50%	140%	
trans-1,3-Dichloropropene	280885	280885	< 0.30	< 0.30	NA	< 0.30	95%	50%	140%	83%	60%	130%	86%	50%	140%	

Quality Assurance

 CLIENT NAME: GHD LIMITED
 PROJECT: 44985 (PO#73507870-2)
 SAMPLING SITE:

 AGAT WORK ORDER: 19T480053
 ATTENTION TO: Laura Ermeta
 SAMPLED BY:

Trace Organics Analysis (Continued)

RPT Date: Jun 28, 2019			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits		
								Lower	Upper		Lower	Upper		Lower	Upper	
1,1,2-Trichloroethane	280885	280885	< 0.20	< 0.20	NA	< 0.20	81%	50%	140%	83%	60%	130%	96%	50%	140%	
Toluene	280885	280885	< 0.20	< 0.20	NA	< 0.20	113%	50%	140%	106%	60%	130%	98%	50%	140%	
2-Hexanone	280885	280885	< 1.0	< 1.0	NA	< 1.0	90%	50%	140%	79%	60%	130%	80%	50%	140%	
Dibromochloromethane	280885	280885	< 0.10	< 0.10	NA	< 0.10	86%	50%	140%	88%	60%	130%	102%	50%	140%	
Ethylene Dibromide	280885	280885	< 0.10	< 0.10	NA	< 0.10	85%	50%	140%	83%	60%	130%	97%	50%	140%	
Tetrachloroethylene	280885	280885	< 0.20	< 0.20	NA	< 0.20	97%	50%	140%	90%	60%	130%	97%	50%	140%	
1,1,1,2-Tetrachloroethane	280885	280885	< 0.10	< 0.10	NA	< 0.10	108%	50%	140%	93%	60%	130%	80%	50%	140%	
Chlorobenzene	280885	280885	< 0.10	< 0.10	NA	< 0.10	103%	50%	140%	98%	60%	130%	89%	50%	140%	
Ethylbenzene	280885	280885	< 0.10	< 0.10	NA	< 0.10	106%	50%	140%	85%	60%	130%	91%	50%	140%	
m & p-Xylene	280885	280885	< 0.20	< 0.20	NA	< 0.20	111%	50%	140%	92%	60%	130%	96%	50%	140%	
Bromoform	280885	280885	< 0.10	< 0.10	NA	< 0.10	87%	50%	140%	97%	60%	130%	100%	50%	140%	
Styrene	280885	280885	< 0.10	< 0.10	NA	< 0.10	92%	50%	140%	80%	60%	130%	81%	50%	140%	
1,1,2,2-Tetrachloroethane	280885	280885	< 0.10	< 0.10	NA	< 0.10	95%	50%	140%	99%	60%	130%	85%	50%	140%	
o-Xylene	280885	280885	< 0.10	< 0.10	NA	< 0.10	106%	50%	140%	98%	60%	130%	95%	50%	140%	
1,3-Dichlorobenzene	280885	280885	< 0.10	< 0.10	NA	< 0.10	96%	50%	140%	88%	60%	130%	95%	50%	140%	
1,4-Dichlorobenzene	280885	280885	< 0.10	< 0.10	NA	< 0.10	89%	50%	140%	86%	60%	130%	83%	50%	140%	
1,2-Dichlorobenzene	280885	280885	< 0.10	< 0.10	NA	< 0.10	86%	50%	140%	86%	60%	130%	79%	50%	140%	
1,2,4-Trichlorobenzene	280885	280885	< 0.30	< 0.30	NA	< 0.30	97%	50%	140%	82%	60%	130%	106%	50%	140%	
1,3-Dichloropropene (Cis + Trans)	280885	280885	< 0.30	< 0.30	NA	< 0.30	88%	50%	140%	87%	60%	130%	86%	50%	140%	
n-Hexane	280885	280885	< 0.20	< 0.20	NA	< 0.20	85%	50%	140%	101%	60%	130%	91%	50%	140%	

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By: _____



Quality Assurance

CLIENT NAME: GHD LIMITED
 PROJECT: 44985 (PO#73507870-2)
 SAMPLING SITE:

AGAT WORK ORDER: 19T480053
 ATTENTION TO: Laura Ermeta
 SAMPLED BY:

Water Analysis																
RPT Date: Jun 28, 2019			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits		
								Lower	Upper		Lower	Upper		Lower	Upper	

Groundwater Parameters

Electrical Conductivity	280769	280769	1140	1140	0.0%	< 2	107%	80%	120%						
pH	280769	280769	7.77	7.85	1.0%	NA	100%	90%	110%						
Total Dissolved Solids	280769	280769	598	616	3.0%	< 20	98%	80%	120%						
Alkalinity (as CaCO3)	280769	280769	237	238	0.4%	< 5	99%	80%	120%						
Fluoride	280932	280932	0.75	0.79	5.2%	< 0.05	97%	90%	110%	96%	90%	110%	102%	80%	120%
Chloride	280932	280932	5.25	4.68	11.5%	< 0.10	90%	90%	110%	101%	90%	110%	108%	80%	120%
Nitrate as N	280932	280932	< 0.25	< 0.25	NA	< 0.05	93%	90%	110%	102%	90%	110%	101%	80%	120%
Nitrite as N	280932	280932	< 0.25	< 0.25	NA	< 0.05	NA	90%	110%	99%	90%	110%	106%	80%	120%
Bromide	280932	280932	< 0.25	< 0.25	NA	< 0.05	108%	90%	110%	96%	90%	110%	94%	80%	120%
Sulphate	280932	280932	115	114	0.9%	< 0.10	92%	90%	110%	100%	90%	110%	106%	80%	120%
Cyanide, Free	280769	280769	< 0.002	< 0.002	NA	< 0.002	90%	90%	110%	105%	90%	110%	88%	70%	130%
Calcium	280776	280776	88.8	90.5	1.9%	< 0.05	96%	90%	110%	95%	90%	110%	98%	70%	130%
Magnesium	280776	280776	25.7	26.8	4.2%	< 0.05	94%	90%	110%	93%	90%	110%	99%	70%	130%
Sodium	280776	280776	21.0	21.2	0.9%	< 0.05	95%	90%	110%	94%	90%	110%	98%	70%	130%
Potassium	280776	280776	1.45	1.68	14.7%	< 0.05	95%	90%	110%	95%	90%	110%	100%	70%	130%
Arsenic	280769	280769	< 0.003	< 0.003	NA	< 0.003	101%	90%	110%	103%	90%	110%	108%	70%	130%
Barium	280769	280769	0.164	0.158	3.7%	< 0.002	101%	90%	110%	102%	90%	110%	97%	70%	130%
Boron	280769	280769	1.33	1.30	2.3%	< 0.010	99%	90%	110%	101%	90%	110%	99%	70%	130%
Cadmium	280769	280769	< 0.001	< 0.001	NA	< 0.001	99%	90%	110%	103%	90%	110%	106%	70%	130%
Chromium	280769	280769	< 0.003	< 0.003	NA	< 0.003	97%	90%	110%	101%	90%	110%	103%	70%	130%
Iron	280769	280769	0.480	0.468	2.5%	< 0.010	102%	90%	110%	105%	90%	110%	110%	70%	130%
Lead	280769	280769	< 0.001	< 0.001	NA	< 0.001	96%	90%	110%	96%	90%	110%	88%	70%	130%
Mercury	280769	280769	< 0.0001	< 0.0001	NA	< 0.0001	104%	90%	110%	99%	90%	110%	98%	80%	120%
Nickel	280769	280769	< 0.003	< 0.003	NA	< 0.003	96%	90%	110%	100%	90%	110%	98%	70%	130%
Zinc	280769	280769	< 0.005	< 0.005	NA	< 0.005	95%	90%	110%	100%	90%	110%	101%	70%	130%

Groundwater Parameters

Electrical Conductivity	280853	280853	1530	1540	0.7%	< 2	101%	80%	120%						
pH	280853	280853	7.83	7.78	0.6%	NA	100%	90%	110%						
Total Dissolved Solids	280878	280878	1250	1320	5.4%	< 20	100%	80%	120%						
Alkalinity (as CaCO3)	280853	280853	485	485	0.0%	< 5	110%	80%	120%						
Fluoride	280875	280875	0.41	0.40	2.5%	< 0.05	96%	90%	110%	101%	90%	110%	111%	80%	120%
Chloride	280875	280875	32.1	31.3	2.5%	< 0.10	93%	90%	110%	108%	90%	110%	112%	80%	120%
Nitrate as N	280875	280875	< 0.25	< 0.25	NA	< 0.05	94%	90%	110%	108%	90%	110%	109%	80%	120%
Nitrite as N	280875	280875	< 0.25	< 0.25	NA	< 0.05	NA	90%	110%	104%	90%	110%	114%	80%	120%
Bromide	280875	280875	< 0.25	< 0.25	NA	< 0.05	104%	90%	110%	106%	90%	110%	120%	80%	120%
Sulphate	280875	280875	180	176	2.2%	< 0.10	92%	90%	110%	105%	90%	110%	108%	80%	120%
Cyanide, Free	280878	280878	< 0.002	< 0.002	NA	< 0.002	101%	90%	110%	109%	90%	110%	93%	70%	130%
Calcium	280870	280870	17.2	15.0	13.7%	< 0.05	97%	90%	110%	99%	90%	110%	100%	70%	130%
Magnesium	280870	280870	5.51	4.75	14.8%	< 0.05	94%	90%	110%	97%	90%	110%	100%	70%	130%

Quality Assurance

CLIENT NAME: GHD LIMITED
 PROJECT: 44985 (PO#73507870-2)
 SAMPLING SITE:

AGAT WORK ORDER: 19T480053
 ATTENTION TO: Laura Ermeta
 SAMPLED BY:

Water Analysis (Continued)

RPT Date: Jun 28, 2019			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits		
								Lower	Upper		Lower	Upper		Lower	Upper	
Sodium	280870	280870	174	153	12.8%	< 0.05	95%	90%	110%	97%	90%	110%	97%	70%	130%	
Potassium	280870	280870	1.93	1.7	12.7%	< 0.05	96%	90%	110%	97%	90%	110%	101%	70%	130%	
Arsenic	280879	280879	< 0.003	<0.003	NA	< 0.003	100%	90%	110%	101%	90%	110%	107%	70%	130%	
Barium	280879	280879	0.106	0.101	4.8%	< 0.002	101%	90%	110%	100%	90%	110%	98%	70%	130%	
Boron	280879	280879	1.63	1.64	0.6%	< 0.010	104%	90%	110%	106%	90%	110%	109%	70%	130%	
Cadmium	280879	280879	< 0.001	<0.001	NA	< 0.001	99%	90%	110%	103%	90%	110%	104%	70%	130%	
Chromium	280879	280879	< 0.003	<0.003	NA	< 0.003	100%	90%	110%	100%	90%	110%	101%	70%	130%	
Iron	280879	280879	0.131	0.123	6.3%	< 0.010	100%	90%	110%	101%	90%	110%	106%	70%	130%	
Lead	280879	280879	< 0.001	<0.001	NA	< 0.001	97%	90%	110%	94%	90%	110%	89%	70%	130%	
Mercury	280879	280879	< 0.0001	<0.0001	NA	< 0.0001	102%	90%	110%	100%	90%	110%	101%	80%	120%	
Nickel	280879	280879	< 0.003	<0.003	NA	< 0.003	94%	90%	110%	97%	90%	110%	96%	70%	130%	
Zinc	280879	280879	0.006	<0.005	NA	< 0.005	96%	90%	110%	99%	90%	110%	98%	70%	130%	
Groundwater Parameters																
Electrical Conductivity	280887	280887	3480	3480	0.0%	< 2	99%	80%	120%							
pH	280887	280887	8.09	7.94	1.9%	NA	100%	90%	110%							
Total Dissolved Solids	280927	280927	872	904	3.6%	< 20	100%	80%	120%							
Alkalinity (as CaCO3)	280887	280887	512	512	0.0%	< 5	100%	80%	120%							
Fluoride	280879	280879	1.28	1.30	1.6%	< 0.05	NA	90%	110%	103%	90%	110%	96%	80%	120%	
Chloride	280879	280879	141	141	0.0%	< 0.10	NA	90%	110%	102%	90%	110%	104%	80%	120%	
Nitrate as N	280879	280879	< 0.25	<0.25	NA	< 0.05	NA	90%	110%	101%	90%	110%	101%	80%	120%	
Nitrite as N	280879	280879	< 0.25	<0.25	NA	< 0.05	NA	90%	110%	106%	90%	110%	108%	80%	120%	
Bromide	280879	280879	< 0.25	<0.25	NA	< 0.05	NA	90%	110%	96%	90%	110%	106%	80%	120%	
Sulphate	280879	280879	< 0.50	<0.50	NA	< 0.10	NA	90%	110%	101%	90%	110%	103%	80%	120%	
Cyanide, Free	280925	280925	< 0.002	< 0.002	NA	< 0.002	105%	90%	110%	108%	90%	110%	108%	70%	130%	
Calcium	280932	280932	81.7	82.5	1.0%	< 0.05	97%	90%	110%	99%	90%	110%	95%	70%	130%	
Magnesium	280932	280932	52.8	53.1	0.6%	< 0.05	94%	90%	110%	97%	90%	110%	94%	70%	130%	
Sodium	280932	280932	38.9	39.0	0.3%	< 0.05	95%	90%	110%	97%	90%	110%	93%	70%	130%	
Potassium	280932	280932	1.68	1.69	0.6%	< 0.05	96%	90%	110%	97%	90%	110%	95%	70%	130%	
Arsenic	280913	280913	< 0.003	<0.003	NA	< 0.003	99%	90%	110%	101%	90%	110%	106%	70%	130%	
Barium	280913	280913	0.217	0.207	4.7%	< 0.002	98%	90%	110%	103%	90%	110%	93%	70%	130%	
Boron	280913	280913	1.59	1.62	1.9%	< 0.010	100%	90%	110%	94%	90%	110%	107%	70%	130%	
Cadmium	280913	280913	< 0.001	<0.001	NA	< 0.001	98%	90%	110%	101%	90%	110%	107%	70%	130%	
Chromium	280913	280913	< 0.003	<0.003	NA	< 0.003	95%	90%	110%	98%	90%	110%	94%	70%	130%	
Iron	280913	280913	1.92	1.90	1.0%	< 0.010	102%	90%	110%	100%	90%	110%	107%	70%	130%	
Lead	280913	280913	< 0.001	<0.001	NA	< 0.001	92%	90%	110%	96%	90%	110%	85%	70%	130%	
Mercury	280927	280927	< 0.0001	<0.0001	NA	< 0.0001	100%	90%	110%	101%	90%	110%	102%	80%	120%	
Nickel	280913	280913	< 0.003	<0.003	NA	< 0.003	95%	90%	110%	94%	90%	110%	88%	70%	130%	
Zinc	280913	280913	< 0.005	<0.005	NA	< 0.005	94%	90%	110%	98%	90%	110%	91%	70%	130%	

Groundwater Parameters

Quality Assurance

CLIENT NAME: GHD LIMITED
 PROJECT: 44985 (PO#73507870-2)
 SAMPLING SITE:

AGAT WORK ORDER: 19T480053
 ATTENTION TO: Laura Ermeta
 SAMPLED BY:

Water Analysis (Continued)

RPT Date: Jun 28, 2019			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits		
								Lower	Upper		Lower	Upper		Lower	Upper	
Electrical Conductivity	280932	280932	898	902	0.4%	< 2	101%	80%	120%							
pH	280932	280932	8.02	7.91	1.4%	NA	100%	90%	110%							
Total Dissolved Solids	280931	280931	620	608	2.0%	< 20	100%	80%	120%							
Alkalinity (as CaCO3)	280932	280932	372	372	0.0%	< 5	109%	80%	120%							
Fluoride	280918	280918	< 0.5	<0.5	NA	< 0.05	102%	90%	110%	99%	90%	110%	105%	80%	120%	
Chloride	280918	280918	8.8	9.0	2.2%	< 0.10	94%	90%	110%	103%	90%	110%	102%	80%	120%	
Nitrate as N	280918	280918	< 0.5	<0.5	NA	< 0.05	96%	90%	110%	104%	90%	110%	102%	80%	120%	
Nitrite as N	280918	280918	< 0.5	<0.5	NA	< 0.05	NA	90%	110%	101%	90%	110%	108%	80%	120%	
Bromide	280918	280918	< 0.5	<0.5	NA	< 0.05	107%	90%	110%	103%	90%	110%	100%	80%	120%	
Sulphate	280918	280918	548	549	0.2%	< 0.10	95%	90%	110%	101%	90%	110%	100%	80%	120%	
Cyanide, Free	280952	280952	< 0.002	< 0.002	NA	< 0.002	108%	90%	110%	109%	90%	110%	89%	70%	130%	
Calcium	280948	280948	32.2	32.4	0.6%	< 0.05	96%	90%	110%	98%	90%	110%	96%	70%	130%	
Magnesium	280948	280948	13.6	13.7	0.7%	< 0.05	93%	90%	110%	94%	90%	110%	95%	70%	130%	
Sodium	280948	280948	85.3	86.2	1.0%	< 0.05	94%	90%	110%	95%	90%	110%	94%	70%	130%	
Potassium	280948	280948	2.34	2.32	0.9%	< 0.05	95%	90%	110%	95%	90%	110%	95%	70%	130%	
Arsenic	280944	280944	< 0.003	<0.003	NA	< 0.003	97%	90%	110%	95%	90%	110%	104%	70%	130%	
Barium	280944	280944	0.128	0.134	4.6%	< 0.002	98%	90%	110%	99%	90%	110%	105%	70%	130%	
Boron	280944	280944	2.01	1.99	1.0%	< 0.010	101%	90%	110%	91%	90%	110%	98%	70%	130%	
Cadmium	280944	280944	< 0.001	<0.001	NA	< 0.001	99%	90%	110%	100%	90%	110%	100%	70%	130%	
Chromium	280944	280944	< 0.003	<0.003	NA	< 0.003	101%	90%	110%	99%	90%	110%	96%	70%	130%	
Iron	280944	280944	0.085	0.082	3.6%	< 0.010	101%	90%	110%	97%	90%	110%	96%	70%	130%	
Lead	280944	280944	< 0.001	<0.001	NA	< 0.001	91%	90%	110%	91%	90%	110%	91%	70%	130%	
Mercury	280953	280953	< 0.0001	<0.0001	NA	< 0.0001	101%	90%	110%	104%	90%	110%	101%	80%	120%	
Nickel	280944	280944	< 0.003	<0.003	NA	< 0.003	97%	90%	110%	100%	90%	110%	93%	70%	130%	
Zinc	280944	280944	0.005	0.005	NA	< 0.005	97%	90%	110%	99%	90%	110%	98%	70%	130%	
Ammonia (Water)																
Ammonia as N	280776	280776	0.03	<0.02	NA	< 0.02	101%	90%	110%	105%	90%	110%	95%	80%	120%	
Ammonia (Water)																
Ammonia as N	280912	280912	<0.02	<0.02	NA	< 0.02	101%	90%	110%	105%	90%	110%	99%	80%	120%	

Comments: Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By: _____



Method Summary

 CLIENT NAME: GHD LIMITED
 PROJECT: 44985 (PO#73507870-2)
 SAMPLING SITE:

 AGAT WORK ORDER: 19T480053
 ATTENTION TO: Laura Ermeta
 SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Dichlorodifluoromethane	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Chloromethane	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Vinyl Chloride	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Bromomethane	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Chloroethane	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Acetone	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
1,1 Dichloroethylene	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Methylene Chloride	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
trans- 1,2-dichloroethylene	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Methyl tert-butyl ether	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
cis- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Chloroform	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
1,2 - Dichloroethane	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Benzene	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Trichloroethylene	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Bromodichloromethane	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
cis-1,3-Dichloropropene	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
trans-1,3-Dichloropropene	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Toluene	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
2-Hexanone	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Dibromochloromethane	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Chlorobenzene	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Ethylbenzene	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
m & p-Xylene	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Bromoform	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Styrene	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
o-Xylene	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
1,2,4-Trichlorobenzene	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
1,3-Dichloropropene (Cis + Trans)	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Xylene Mixture (Total)	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
n-Hexane	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Toluene-d8	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS



Method Summary

CLIENT NAME: GHD LIMITED
 PROJECT: 44985 (PO#73507870-2)
 SAMPLING SITE:

AGAT WORK ORDER: 19T480053
 ATTENTION TO: Laura Ermeta
 SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Ammonia as N	INOR-93-6059	QuikChem 10-107-06-1-J & SM 4500 NH3-F	LACHAT FIA
Electrical Conductivity	INOR-93-6000	SM 2510 B	PC TITRATE
pH	INOR-93-6000	SM 4500-H+ B	PC TITRATE
Total Dissolved Solids	INOR-93-6028	SM 2540 C	BALANCE
Alkalinity (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Fluoride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Chloride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrate as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Bromide	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Cyanide, Free	INOR-93-6052	MOE CN-3015 & SM 4500 CN- I	TECHNICON AUTO ANALYZER
Calcium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Magnesium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Sodium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Potassium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Arsenic	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Barium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Boron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Chromium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Iron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Lead	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Mercury	MET-93-6100	EPA SW 846 7470 & 245.1	CVAAS
Nickel	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS



AGAT Laboratories

5835 Coopers Avenue
Mississauga, Ontario; L4Z 1Y2
Phone: 905-712-5100;
Fax: 905-712-5122

8 Lq

LABORATORY USE ONLY

Arrival Condition: Good Poor (complete "Notes")

Arrival Temperature: see attached

AGAT Job Number: 19T480053

Notes:

CHAIN OF CUSTODY RECORD

Client Information

Company: GHD Ltd.

Contact: Laura Ermeta

Address: 651 Colby Drive, Waterloo Ontario
N2V 1C2

Phone: 519-884-0510 Fax: 519-725-1394

PO#: 73507870-2

Client Project #: 44985

AGAT Quotation #:

Report Information

1. Name: Laura Ermeta

Email: Laura.Ermeta@ghd.com

2. Name: _____

Email: _____

3. Name: _____

Email: _____

4. Name: _____

Email: _____

Report Format
(Please "x" those that apply)

Single sample per page

Multiple samples per page

Results by Fax

Turnaround Time (TAT)*
(Please "x" the applicable box below)

Regular TAT:

5 to 7 working days

Rush TAT (Rush Surcharges Apply):

3 to 5 days

48 to 72 hours

24 to 48 hours

Date Required (Rush surcharges may apply)

Regulatory Guideline Required: (Please "x" those that apply)

Reg 153 Table (indicate one)

Sewer Use

PWQO

Reg 558

CCME

Other (indicate) Reg.169/03(mg/L)

Region (indicate one): Sanitary Storm

Ind/Com: Res/Park Ag Med/Fine Coarse

Is this a drinking water sample (potable water intended for human consumption)? Yes No

If "Yes" please use the Drinking Water Chain of Custody Record

PH, Conductivity, TDS, Alkalinity, Cations, Anions

CN

Dissolved Metals + Hg

Ammonia

VOCs

Sample Identification	Date Sampled	Time Sampled	Sample Matrix	# of Containers	Comments - Site/Sample Info, Sample Containment	PH, Conductivity, TDS, Alkalinity, Cations, Anions	CN	Dissolved Metals + Hg	Ammonia	VOCs											
GW-44985-06_19-DD- <u>430</u>	<u>6/11/14</u>	<u>AM</u>	water	<u>1</u>		x	x	x		x											
GW-44985-06_19-DD- <u>435</u>			water	<u>1</u>		x	x	x	x												
GW-44985-06_19-DD- <u>435</u>			water	<u>1</u>		x	x	x	x												
GW-44985-06_19-DD- <u>435</u>			water	<u>1</u>		x	x	x	x												
GW-44985-06_19-DD- <u>435</u>			water	<u>1</u>		x	x	x	x												
GW-44985-06_19-DD- <u>435</u>			water	<u>1</u>		x	x	x	x												
GW-44985-06_19-DD- <u>435</u>			water	<u>1</u>		x	x	x	x												
GW-44985-06_19-DD- <u>435</u>			water	<u>1</u>		x	x	x	x												
GW-44985-06_19-DD- <u>435</u>			water	<u>1</u>		x	x	x	x												
GW-44985-06_19-DD- <u>435</u>			water	<u>1</u>		x	x	x	x												

TOTAL # OF CONTAINERS 95

* Samples received after 2:00 PM will be logged in for the next business day. TAT is exclusive of weekends and statutory holidays

Sample Relinquished By (print name & sign)	Date/Time	Samples Received By (print name and sign)	Date/Time	Special Instructions <u>FIELD METALS FILTERED</u>
		<u>Simeon</u>	<u>19/6/14 9:00</u>	
Sample Relinquished By (print name & sign)	Date/Time	Samples Received By (print name and sign)	Date/Time	

Page 1 of 2



AGAT Laboratories

5835 Coopers Avenue
Mississauga, Ontario; L4Z 1Y2
Phone: 905-712-5100;
Fax: 905-712-5122

LABORATORY USE ONLY

Arrival Condition: Good Poor (complete "Notes")
Arrival Temperature: _____
AGAT Job Number: _____
Notes: _____

CHAIN OF CUSTODY RECORD

Client Information

Company: GHD Ltd.

Contact: Laura Ermeta

Address: 651 Colby Drive, Waterloo Ontario
N2V 1C2

Phone: 519-884-0510 Fax: 519-725-1394

PO #: 73507870-2

Client Project #: 44985

AGAT Quotation #:

Report Information

1. Name: Laura Ermeta
Email: Laura.Ermeta@ghd.com

2. Name: _____
Email: _____

3. Name: _____
Email: _____

4. Name: _____
Email: _____

Report Format
(Please "x" those that apply)

Single sample per page

Multiple samples per page

Results by Fax

Turnaround Time (TAT)*
(Please "x" the applicable box below)

Regular TAT:
 5 to 7 working days

Rush TAT (Rush Surcharges Apply):
 3 to 5 days
 48 to 72 hours
 24 to 48 hours

Date Required (Rush surcharges may apply)

Regulatory Guideline Required: (Please "x" those that apply)

Reg 153 Table (indicate one)

Sewer Use

PWQO

Reg 558

CCME

Other (indicate) Reg.169/03(mg/L)

Region (indicate one): Ind/Com Res/Park Ag Med/Fine Coarse

Sanitary Storm

Is this a drinking water sample (potable water intended for human consumption)?
 Yes No

If "Yes" please use the Drinking Water Chain of Custody Record

Parameters: pH, Conductivity, TDS, Alkalinity, Cations, Anions, CN, Dissolved Metals + Hg, Ammonia, VOCs

Sample Identification	Date Sampled	Time Sampled	Sample Matrix	# of Containers	Comments - Site/Sample Info, Sample Containment	pH	Conductivity	TDS	Alkalinity	Cations	Anions	CN	Dissolved Metals + Hg	Ammonia	VOCs
GW-44985-06__19-DD-	6/11/19	PM	water	9		X	X	X	X	X	X				
GW-44985-06__19-DD-	6/5		water	9		X	X	X	X	X	X				
GW-44985-06__19-DD-	2/2		water	6		X	X	X	X	X	X				
GW-44985-06__19-DD-	2/20 6/12/19	AM	water	6		X	X	X	X	X	X				
GW-44985-06__19-DD-	6/10		water	5		X	X	X	X	X	X				
GW-44985-06__19-DD-	3/10		water	5		X	X	X	X	X	X				
GW-44985-06__19-DD-	3/10		water	5		X	X	X	X	X	X				
GW-44985-06__19-DD-	3/5		water	4		X	X	X	X	X	X				
GW-44985-06__19-DD-	2/11		water	4		X	X	X	X	X	X				
GW-44985-06__19-DD-	4/7		water	3		X	X	X	X	X	X				
GW-44985-06__19-DD-	4/3		water	3		X	X	X	X	X	X				

* Samples received after 2:00 PM will be logged in for the next business day. TAT is exclusive of weekends and statutory holidays

TOTAL # OF CONTAINERS 45

Sample Relinquished By (print name & sign) [Signature] Date/Time 6/13/19 Samples Received By (print name and sign) _____ Date/Time _____

Sample Relinquished By (print name & sign) _____ Date/Time _____ Samples Received By (print name and sign) _____ Date/Time _____

Special Instructions SEE 1/5

Page 2 of 8



AGAT Laboratories

5835 Coopers Avenue
Mississauga, Ontario; L4Z 1Y2
Phone: 905-712-5100;
Fax: 905-712-5122

LABORATORY USE ONLY

Arrival Condition: Good Poor (complete "Notes")
Arrival Temperature: _____
AGAT Job Number: _____
Notes: _____

CHAIN OF CUSTODY RECORD

Client Information

Company: GHD Ltd.

Contact: Laura Ermeta

Address: 651 Colby Drive, Waterloo Ontario
N2V 1C2

Phone: 519-884-0510 Fax: 519-725-1394

PO#: 73507870-2

Client Project #: 44985

AGAT Quotation #: _____

Report Information

1. Name: Laura Ermeta
Email: Laura.Ermeta@ghd.com

2. Name: _____
Email: _____

3. Name: _____
Email: _____

4. Name: _____
Email: _____

Report Format
(Please "x" those that apply)

Single sample per page

Multiple samples per page

Results by Fax

Turnaround Time (TAT)*
(Please "x" the applicable box below)

Regular TAT:
 5 to 7 working days

Rush TAT (Rush Surcharges Apply):
 3 to 5 days
 48 to 72 hours
 24 to 48 hours

Date Required (Rush surcharges may apply)

Regulatory Guideline Required: (Please "x" those that apply)

Reg 153 Table (indicate one)

Sewer Use

PWQO

Reg 558

CCME

Other (indicate) Reg.169/03(mg/L)

Region (Indicate one): Sanitary Storm

Ind/Com: Res/Park Ag Med/Fine Coarse

Is this a drinking water sample (potable water intended for human consumption)? Yes No

If "Yes" please use the Drinking Water Chain of Custody Record

pH, Conductivity, TDS, Alkalinity, Cations, Anions

CN

Dissolved Metals + Hg

Ammonia

VOCs

Sample Identification	Date Sampled	Time Sampled	Sample Matrix	# of Containers	Comments - Site/Sample Info, Sample Containment	pH, Conductivity, TDS, Alkalinity, Cations, Anions	CN	Dissolved Metals + Hg	Ammonia	VOCs											
GW-44985-06_19-DD-100	6/21/19	Am	water	8		X	X	X		X											
GW-44985-06_19-DD-101			water	8		X	X	X	X	X											
GW-44985-06_19-DD-102			water	8		X	X	X	X	X											
GW-44985-06_19-DD-103			water	9		X	X	X	X	X											
GW-44985-06_19-DD-104		Prv	water	9		X	X	X	X	X											
GW-44985-06_19-DD-105			water	9		X	X	X	X	X											
GW-44985-06_19-DD-106			water	9		X	X	X	X	X											
GW-44985-06_19-DD-107			water	9		X	X	X	X	X											
GW-44985-06_19-DD-108			water	9		X	X	X	X	X											
GW-44985-06_19-DD-109			water	9		X	X	X	X	X											
GW-44985-06_19-DD-110			water	9		X	X	X	X	X											

TOTAL # OF CONTAINERS 94

* Samples received after 2:00 PM will be logged in for the next business day. TAT is exclusive of weekends and statutory holidays

Sample Relinquished By (print name & sign)	Date/Time	Samples Received By (print name and sign)	Date/Time	Special Instructions <u>SEE 1/5</u>
<u>D. Andrus</u>	<u>6/21/19</u>	<u>[Signature]</u>		
Sample Relinquished By (print name & sign)	Date/Time	Samples Received By (print name and sign)	Date/Time	

Page 3 of 5



Sample Temperature Log

Client: GHD

COC# or Work Order #: _____

of Coolers: 8 on ice

of Submissions: 1

Arrival Temperatures - Branch/Driver

Arrival Temperatures - Laboratory

Cooler #1: 76 / 8 / 82

Cooler #1: _____ / _____ / _____

Cooler #2: 69 / 71 / 74

Cooler #2: _____ / _____ / _____

Cooler #3: 8 / 76 / 72

Cooler #3: _____ / _____ / _____

Cooler #4: 73 / 69 / 67

Cooler #4: _____ / _____ / _____

Cooler #5: 74 / 76 / 69

Cooler #5: _____ / _____ / _____

Cooler #6: 81 / 83 / 74

Cooler #6: _____ / _____ / _____

Cooler #7: 61 / 64 / 72

Cooler #7: _____ / _____ / _____

Cooler #8: 73 / 61 / 64

Cooler #8: _____ / _____ / _____

Cooler #9: _____ / _____ / _____

Cooler #9: _____ / _____ / _____

Cooler #10: _____ / _____ / _____

Cooler #10: _____ / _____ / _____

IR Gun ID: _____

IR Gun ID: _____

Taken By: Simai

Taken By: _____

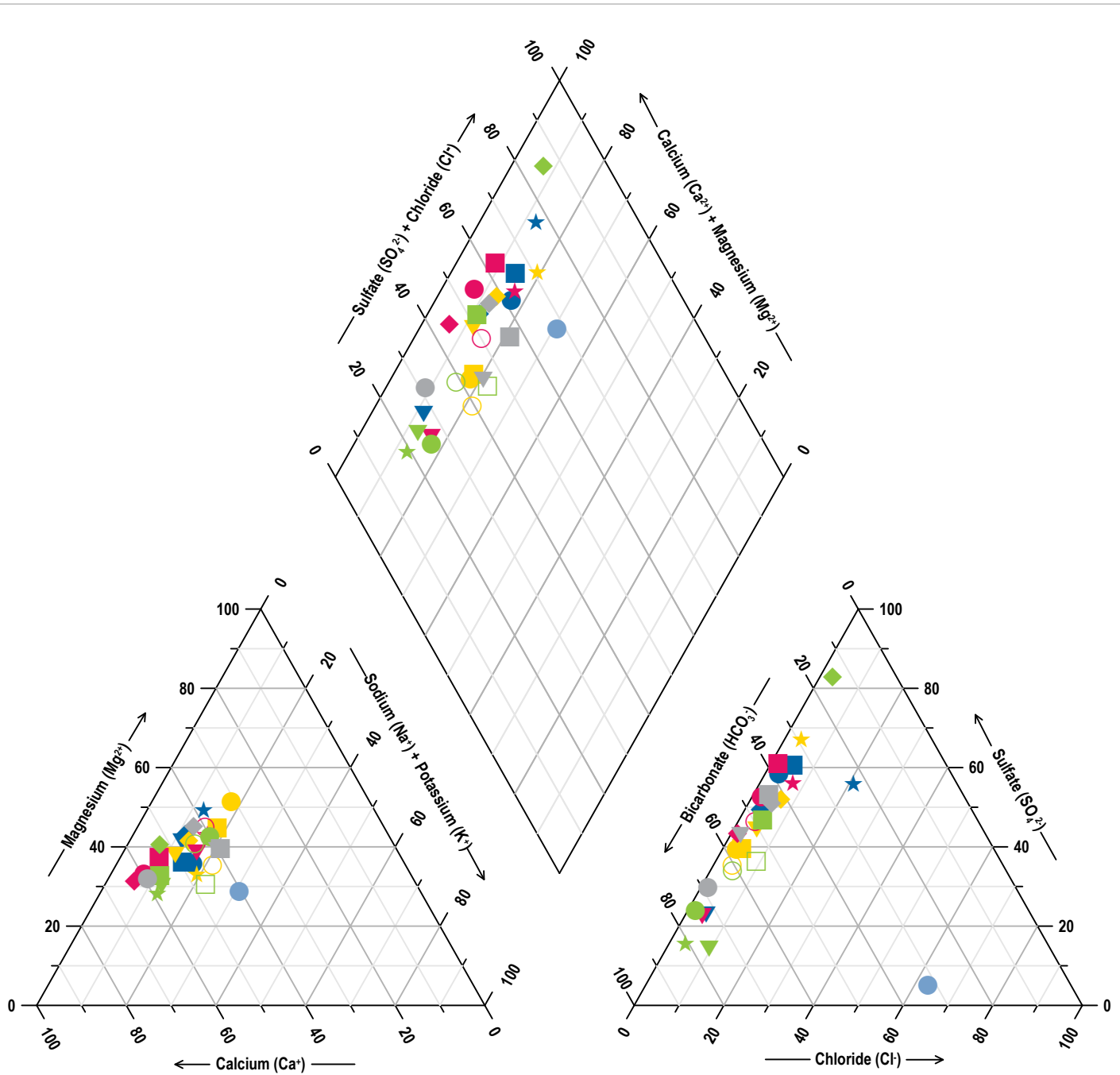
Date (yyyy/mm/dd): 19/6/14 Time: 9:00 AM / PM

Date (yyyy/mm/dd): _____ Time: _____:_____ AM / PM

Instructions for use of this form: 1) complete all fields of info including total # of coolers and # of submissions rec'd, 2) photocopy and place in each submission prior to giving a WO#, 3) Proceed as normal, write the WO# and scan (please make sure to scan along with the COC)

Appendix F

Piper Plots



LEGEND

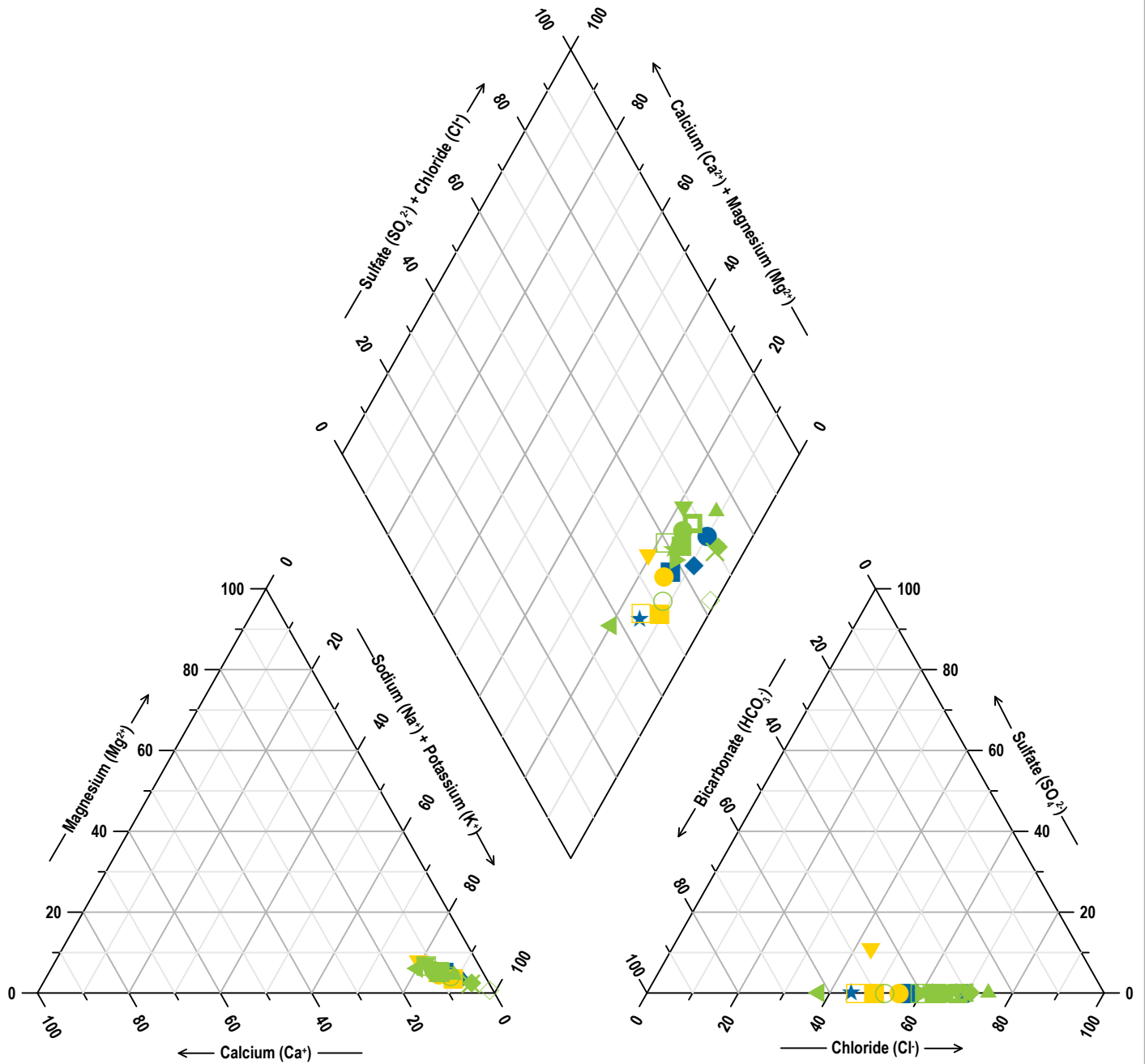
Off-Site	North Berm	Downgradient of North Berm	Removed from North Berm	South Berm and Internal
● TW55-09S	● TW39-99I	● OW32-90S	● TW30-94	● TW50-02B
■ TW56-11S	■ TW39-99S	■ OW35-90S	■ TW41-99S	■ TW51-02B
◆ TW57-11S	◆ TW46-99I	◆ TW21-94-II	◆ TW42-99S	◆ TW52-02A
★ TW58-11S	★ TW46-99S	★ TW22-94	★ TW43-99S	★ TW52-02B
▼ TW59-13S	▼ TW61-13I	▼ TW32-94-IV	▼ TW45-99S	▼ TW63-13S
	○ TW61-13S	○ TW40-99S	○ TW48-16S	
			□ TW62-13S	



CLEAN HARBORS CANADA INC
 LAMBTON FACILITY
 2019 GROUNDWATER MONITORING
 ANNUAL REPORT
 JUNE 2019 ACTIVE AQUITARD
 PIPER PLOT

Project No. 044985-43
 Date March 2020

FIGURE F.1



LEGEND

Off-Site	Internal	Perimeter		
● TW55-09D	● TW39-99D	● OW32-90D	○ TW41-99D	◀ TW49-00D
■ TW56-11D	■ TW46-99D	■ OW35-05D	□ TW43-99D	■ TW53-03D
◆ TW57-11D	□ TW54-09D	◆ TW22-99D	◇ TW45-99D	× TW60-13D
★ TW59-13D	▼ TW61-13D	★ TW30-99D	▲ TW47-00D	
		▼ TW40-99D	▶ TW48-00D	



CLEAN HARBORS CANADA INC
 LAMBTON FACILITY
 2019 GROUNDWATER MONITORING
 ANNUAL REPORT
 JUNE 2019 INTERFACE AQUIFER
 PIPER PLOT

Project No. 044985-43
 Date March 2020

FIGURE F.2



about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

www.ghd.com