



MECP Certificate of Approval No. A272601

## Annual Monitoring Report – 2025 Huron Waste Disposal Site

Township of Huron- Kinloss

**Submitted to:**

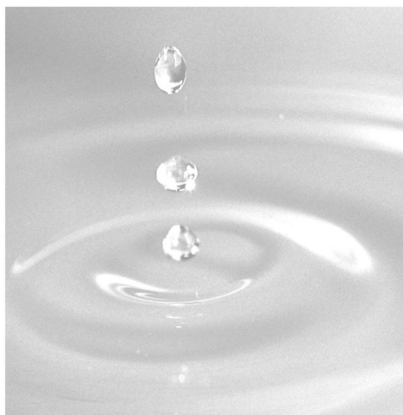
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## 1. Introduction and Background

The Huron Landfill Site is located on Part Lots 19 and 20, Concession 5, Huron-Kinloss Township, Bruce County, ON. The site location is provided on Figure 1.1. The Township of Huron-Kinloss was formed in 1999 as a result of the amalgamation of the former Townships of Huron and Kinloss, as well as the Village of Lucknow. The Huron Landfill Site is approved to accept domestic, commercial, and solid non-hazardous industrial wastes (limited to scrap metal, wood, miscellaneous debris and inert fill). No hazardous waste or liquid industrial waste is accepted at this site.

The Huron Landfill Site comprises a total area of 17.7 ha (43.7 acres), of which 8.0 hectares has been approved for landfilling at this time. The original ECA was issued July 31st, 1989, and amended July 6th, 2010, to incorporate numerous additional conditions. ECA No. 272601 was amended on July 9th, 2010, to expand the service area to include the Village of Lucknow and lastly on April 16, 2020. The Huron Landfill Site additionally has a separate ECA for a Stormwater Management System under ECA No. 4076-BYRM6P consisting of approximately 4.5 ha (11.1 acres). The approval, and its amendments, are enclosed in Appendix A.

Condition 11 of the current ECA requires that a report on the development, operation, and monitoring of the site be submitted annually to the District Manager by March 31st of the year following the period being reported upon. This Annual Operations and Monitoring Report, has been prepared to satisfy the reporting requirements of the ECA for the Huron Landfill Site and includes a summary of the operational and environmental monitoring information.

It is noted that GEI Consultants Canada Ltd. (GEI), formerly operating as GM BluePlan Engineering, have been retained by the Township since 2024 to complete environmental monitoring requirements and the Annual Reports. Reporting requirements for the site were previously completed by WSP. Therefore, pre-2024 operational details and water quality results presented herein are based on the previous reports prepared by others.

As part of the established annual monitoring program, site visits were conducted on May 25 and September 16, 2025, during which site inspections, water level measurements, and the collection of groundwater and surface water samples were completed.

## 2. Site Usage

The Township of Huron-Kinloss is comprised of three former/geographic centers: Township of Huron, the former Township of Kinloss, and the former Village of Lucknow. Refuse received at the landfill site originates from full time and seasonal residents of the former Township of Huron, waste from the former Kinloss Township (as of 2002) and waste from the Villag of Lucknow (as of July 2018).

Waste collection is provided to the Township on a weekly basis, and recyclables are picked up on a bi-weekly basis. Currently, the Township subcontracts Bruce Area Solid Waste Recycling (BASWR) to complete the collection.

Activities that currently occur at the Huron landfill site include landfilling of residual waste and wood waste, waste collection of blue box materials, e-waste and other waste diversion streams, and stockpiling of scrap metal, white goods and tires, as appropriate. The site includes surface water management features, an access route from the northeast, a waste receiving and transfer area, supervisor office and scale, and a site maintenance shed.

### **3. Site Life Expectancy**

#### **3.1. Existing Conditions**

The ECA allows for landfilling within a total landfill footprint of 17.7 ha with 8 ha approved for landfilling. The site historically utilized the trench method of landfilling (until 2010), including the filling of 6 trench areas (T1 to T6). Each trench area is comprised of a number of trenches and reportedly measure 5 m wide and 40 m long with a 1.0 m buffer between adjacent trenches, and a depth of 3 m. In 2010, landfilling commenced above ground utilizing the ‘area ramp method’ of operation and with six cells (Cell T1 to Cell T6) as indicated on Figure 3.

Currently, active landfilling is occurring within Cell 3. The final contours are presented on Figure 7.

#### **3.2. Estimated Refuse Generation**

Topographical surveys are typically completed to monitor site development. A topographical survey was completed in September of 2024, at which point the estimated volume of remaining capacity onsite was calculated to be 70,329m<sup>3</sup>. This volume was calculated based on a comparison of the top of waste elevation surveyed in September of 2024 (i.e., existing conditions), and the revised final contour plan, which allows for a comparison of the remaining airspace between the existing surface and the eventual final surface as presented in the top contour plan. The remaining air space between the current waste elevation onsite and the final top contours was calculated to be 70,329m<sup>3</sup>. A comprehensive survey was completed in 2025, which compared the surface that was surveyed in 2024 to allow for a higher level of certainty regarding the remaining site capacity. Based on the 2025 survey, the estimated remaining capacity onsite was calculated to be 65,500 m<sup>3</sup>.

#### **3.3. Remaining Site Capacity**

Based on the current remaining landfill capacity of an estimated 65,500 m<sup>3</sup> for waste and daily cover, and the five-year average fill rate (from 2021 to 2025) of 7,666 m<sup>3</sup>/year, the remaining site life for the Huron Landfill is approximately 9 years. Based on the maximum fill rate reported during the last five years (10,443 m<sup>3</sup>), the remaining site life would be approximately 5 years. Using the 2025 fill rate of 4,829 m<sup>3</sup>/year, the remaining site life is about 11 years. A summary of the landfill volume capacity calculations for the Huron Landfill is provided in Table 1.

### **4. Burning Operations**

Under Condition 4 of the ECA, issued in October 1991, the burning of clean wood and brush in accordance with the MOE Guideline “Burning at Landfill Sites” is allowed. Conditions 42 and 43 of the ECA outline the conditions in which burning of clean wood and brush can occur.

Burning at the site is to be restricted to clean, dry wood wastes such as brush, trees, and lumber. These wood wastes are to be stockpiled in a designated burn area located on-site and supervised burning of wood waste should occur intermittently on clear, dry windless days. Burning of designated wood wastes is to be carried out in an area at least 30 m away from the active landfilling area. At this time, the burn area is located within the southerly portion of the site. Additionally, an area of 4.5 m around the burn pit should be kept free of vegetation.

Burning should occur under the direct supervision of an attendant at all times. The site attendant is responsible to remove any non-wood wastes from the pile prior to burning, and to regularly remove cold ashes from the burn area for disposal in the active landfill area. The attendant must have the means to extinguish the fire if necessary.

## 5. Recycling/Waste Reduction

### 5.1. Recycling

The Township of Huron-Kinloss currently operates a curbside blue box recycling program for all residents where glass, steel and aluminium cans, paper (i.e., newspaper, magazines, and fine paper), boxboard, and plastic (PET and HDPE) drinking bottles and tubs are diverted from the landfill. Several recycling depots are also maintained within the Township for the collection of cardboard since this material is not included in the blue box recycling program.

The Township also promotes the recycling of metals, tires, white goods, bale wrap, propane tanks, and electronics (e-waste) separately from the blue box program.

Bruce Area Solid Waste Recycling (BASWR) is the recycling contractor for the Township for both curbside pickup and landfill recycling. BASWR has provided an analysis of the total recyclables diverted from the Huron landfill located in the Township of Huron-Kinloss for the 2025 calendar year. Based on the information and data provided, the amounts of recyclables diverted from the Huron landfill is presented below:

Recyclables	Material Diverted from the Municipality of Huron-Kinloss (Tonnes unless otherwise noted)			
	Year	2023	2024	2025
<b>CURB-SIDE PICK –UP: BLUE BOX RECYCLABLE MATERIALS<sup>1</sup></b>				
Newspaper		79.68	61.63	68.27
Steel		25.39	19.64	21.75
Aluminium		17.22	13.32	14.75
Glass		80.95	62.61	69.35
HDPE Plastic		35.67	27.59	30.56
PET Plastic		52.86	40.89	45.29
Boxboard		62.31	48.20	53.39
Cardboard		102.99	98.93	110.95
<b>Total (Blue Box)</b>		<b>457.07</b>	<b>372.80</b>	<b>414.32</b>
Scrap Metal		128.2	74.54	80.68
Tires (Units)		3,808	3,175	815
Tires (est, tonnes)		29.11	37.90	13.24
E-waste		20.93	19.68	14.80
Other		18.69	16.22	15.72
<b>Total Diverted</b>		<b>654.0</b>	<b>521.14</b>	<b>538.76</b>

Currently, the waste collected at the Kinloss Landfill site is transferred to the Huron Landfill site. As such, the recycling totals (for Huron and Kinloss combined), have been provided in the above table. The total amount of recyclable goods diverted from both the Huron and Kinloss Landfills was generally in line with the average. The total diversion for 2025 is reported to be 539 tonnes, which represents a slight increase from the previous year. It is important that the Municipality continue to remove stockpiles of recyclable goods on a regular basis to prevent clutter and to maintain an aesthetically acceptable site.

## **5.2. White Goods & Miscellaneous Scrap Metal**

The Township reports that they do not accept appliances containing chlorofluorocarbons (CFCs) at the Huron landfill site. Refrigeration units received at the site are to be tagged, indicating that they have been drained of CFCs by a qualified technician. White goods and scrap metal are to be segregated and temporarily stored on-site until they are picked up by a scrap dealer and removed offsite for recycling. In 2025, the Township reports that 80.68 tonnes scrap metal and white good units were removed from the Huron and Kinloss landfills for recycling.

## **5.3. Tires**

Tires should be stockpiled on the site and sold for recycling purposes. According to Environmental Protection Act there must be fewer than 5,000 tire units at any given time. The volume of tires within an individual stockpile should not exceed 300 m<sup>3</sup> (or approximately 2,400 tire units based on 8 tires/m<sup>3</sup>). There must be greater than 15 m between the stockpile and the property line, buildings, and the active area of the landfill and greater than 30 m separation between the tire pile and the burn pile. Tires should be stockpiled in an area where there is no vegetation within 4.5 m. Individual stockpiles should be separated from each other and from other waste piles by a minimum of 6 m.

According to the site records, a total of 815 tires, approximately 13.24 tonnes of tires were removed from the Huron and Kinloss sites in 2025.

## **5.4. Bale Wrap**

The collection of bale wrap creates an additional waste diversion stream. This material should be collected in a designated area which prevents the plastic from blowing (i.e., within a short wall of concrete blocks or in a designated storage bin). Previously, recycling of this material was limited to white wrap material. Small sections, weighing between 3 and 5 pounds should be cleaned of rocks and stones, with a minimal amount of dirt. No coloured wrap, twine or other plastic materials should be stored in this pile. Previously, pick-up of this material was arranged with Cleanfarms, however reportedly as of March 31, 2024 the Township could no longer receive silage bags, or bunker wrap. Bale wrap is still accepted at the site. Based on reported totals, approximately 1.97 tonnes of bale wrap and bunker cover was received at the Huron and Kinloss sites in 2025.

## **5.5. Leaf and Yard Waste**

Yard wastes, derived from the small rural areas in the Huron-Kinloss Township, are collected for composting at the site. The leaf and yard waste are turned by the site operator on a regular basis. Surface water run-off was not observed and odours, related to the pile, were not noted by GEI personnel during either of the site visits. Topsoil generated from this service can be used for placement over the final cover. In 2025, approximately 202.71 tonnes of brush and stumps were received at the Huron Landfill.

## **5.6. Electronic Waste**

A bin is available at the Huron landfill site for drop-off of e-waste. This material is recycled under the program run by Electronic Products Recycling Association (EPRA).

Batteries should be stored in a single layer, within an enclosed container in order to prevent precipitation from coming in contact with the batteries.

The storage container should also provide secondary containment in the event of leakage. Previously, batteries were collected by Environmental 360 Solutions. However, as of April 23, 2024 batteries are now included in e-waste and are collected by EPRA.

For 2025, the Township reports that 14.80 tons of e-waste was removed from the Huron and Kinloss landfill sites.

## **5.7. Municipal Hazardous or Special Waste (MHSW)**

The MHSW program for the Township is operated by the County of Bruce through the Household Hazardous Waste Collection Program. Under the program, residents can drop-off the following hazardous materials free of charge.

- Paints and coatings, plus their containers
- Solvents, such as thinners for paint, lacquer and contact cement, paint strippers and degreasers, and their containers
- Oil filters
- Oil containers of 30 litres or less
- Single-use batteries
- Antifreeze and its containers
- Pressurized containers, such as propane tanks and cylinders, oxygen and helium tanks
- Lawn fertilizers that contain pesticides
- Pesticides, and their containers

## **6. General Operations**

### **6.1. Site Controls**

The site is open to the public on Tuesdays, Fridays and Saturdays from 10:00 AM to 4:00 PM.

The site is located in a relatively secluded setting, is surrounded by fencing, and is adequately screened from public view and from the Concession 6 East right-of-way by a constructed earthen berm and tree cover. When the site is closed to the public, a locked gate across the entrance road, located in the northeast corner of the site, controls access to the site.

Signs posted at the gate/main entrance to the Site note the hours of operation, the acceptable wastes that can be landfilled, a list of the emergency numbers and a contact number for the Township. The operator is equipped with a cell phone in the event of an emergency. Within the landfill area, portable signs are posted at the various designated disposal locations including the designated areas for waste, metals, the various recyclable materials, and wood waste. These signs are clearly visible. In 2021, a separate entrance was installed directly south of the current main entrance to allow residents to access the site for drop off of residential compost and burnable materials.

### **6.2. Site Cleanliness**

The most important aspect of site cleanliness is to ensure that all landfill wastes have adequate soil cover so that refuse is not exposed. Application of an appropriate soil cover immediately following waste disposal reduces blowing litter, prevents surface water from percolating through the refuse to create leachate, and discourages rodent and vector activity.

Based on the site visits by GEI staff, the Township generally maintains good daily covering operations at the site. However, on-site blowing litter and exposed refuse was observed during the site visits. A consistent effort should be made to ensure wastes are covered and blown litter is collected on a routine basis, especially along the north and east property boundaries. The Site operator is responsible for compaction and covering of refuse and for collecting blown litter. We recommend that waste is compacted and covered, and that litter is collected regularly to maintain good site appearance. Based on a Provincial Officer's Order (Order Number 1-516357730), several issues regarding final cover have previously been identified onsite. The Order was issued to address non-compliance with conditions listed in the Site's CofA and subsequently a Stormwater Management Workplan (SMWP) was developed. In response to MECP direction, the SWMP indicated that appropriate vegetative cover be established over all bare areas of the landfill site (4.5 ha), and that re-grading onsite be completed. Based on correspondence provided by the Township, and site visits completed by GEI staff in 2024, re-grading activities have been completed onsite, and final cover has been placed within the northeasterly portion of the site. However, based on the work being completed in late fall of 2024, the MECP requested that the site be re-seeded in spring of 2025.

The MECP previously identified two defined channels located near the active area of the site that were directing landfill leachate away from the waste footprint and potentially offsite. A breach in the southwesterly stormwater berm was also identified, resulting in the potential for leachate migration beyond the site boundary.

Based on information provided by the Township, a contractor was retained in July 2025 to complete repairs to the berm. During the fall 2025 monitoring event conducted by GEI, site personnel observed that the corrective actions associated with the berm repairs had been implemented.

Documentation provided by the Township indicates that weekly cover logs were submitted to the MECP throughout 2025. A review of these records confirms that the logs included detailed daily entries describing cover application activities. Correspondence received from the MECP, dated February 27, 2026, indicates that the Ministry is satisfied with the consistency of cover material application at the site and has discontinued the requirement for submission of weekly cover logs. It is proposed that moving forward, a sufficient area for one year of landfilling be stripped of interim cover and vegetation, prior to waste placement. Landfill progression shall continue with this recommended pattern of vegetation and interim cover removal for an area to allow for one year of waste placement. Progressive closure of finished areas of the landfill shall be completed through placement of final cover, consisting of 600 mm of clayey cap and 150 mm of topsoil and seed dispersed over all areas that are completed to the approved top contours on an annual basis.

Another important aspect of site cleanliness is to ensure that accumulations of recyclable materials, including piled tires and waste metals, are efficiently managed, and that wood wastes are burned regularly to maintain a manageable pile, understanding that pick-ups may be limited by the receiver and/or contractors. Designated areas for recyclable goods at the Site appeared to be organized and well managed.

### **6.3. Site Operations**

Waste compaction and covering operations are achieved with the use of a Caterpillar (CAT) 816 steel-wheeled sheepsfoot waste compactor. Historically the Township generally achieved satisfactory waste compaction and covering at the working face. During the current operating year, active landfilling at the site took place in Cell 3. Grade stakes were previously provided to: (i) control closure elevations, and (ii) ensure that the proper slope is achieved on the final landfill mound. The existing landfill conditions for the landfill are presented on Figure 3.

Landfilling in Cell T5 has been completed and the landfill slopes should gradually be graded to final contours. Upon reaching final contours, the filled area should be capped with 600 mm of low permeability, silty clay material and a minimum of 150 mm of topsoil seeded to grass. Landfill development should continue in cell T4 where final contours can be tied into the existing topographical contours at T5. The final contour plan is shown on Figure 7.

## **6.4. Public Complaints**

During the reporting period, the Township reportedly received a complaint related to the Huron Landfill Site concerning windblown litter on an adjacent property located at 2092 Concession 6. In response, the Township conducted cleanup activities, which included the removal of debris from the roadside and the affected adjacent property. Based on correspondence provided by the Township, the MECP was notified of the complaint and the subsequent follow-up actions were undertaken.

In accordance with Condition 11.1 of the ECA, each annual monitoring report must include “a summary of any public complaints received by the Owner/Operator and the responses made.”

Records of complaints should include, at a minimum, the following information:

- a. The name and address of the complainant;
- b. The date and time the complaint was received;
- c. The nature of the complaint; and
- d. Details of the response, including actions taken and the outcome.

## **7. Summary of Hydrogeologic Setting**

### **7.1. Overburden Geology**

The landfill site is located along the western edge of the physiographic region known as the Huron Slope. The site geology consists of poorly sorted glacial outwash sediments (i.e., mixtures of clay, silt, sand, gravel, and cobbles), with some localized deposits of sorted sands. Based on a review of the MECP water well records, the overburden is approximately 25 to 30 m thick in the vicinity of the site and overlies the grey-brown limestone and shale of the Onondaga formation formed during the Middle Devonian period.

Table 2 includes a summary of the well details including brief descriptions of each unit the screened interval at each well intersects. A brief review of the borehole logs confirms the complex nature of the soils at the Site, although the majority of the shallow overburden soils appear to be relatively fine (i.e., silty sand to silty clay). This complex discontinuous layering with fine-grained soils is thought to provide the variable water level data noted, depending on the units intersected by the monitoring wells. In this scenario, it is possible to have low permeability layers that have limited hydraulic connectivity to relatively coarser grained layers. Borehole logs are provided in Appendix D.

## **7.2. Site Topography**

The surrounding lands are primarily agricultural, with the Town of Ripley located directly northeast of the Site. The site is located along a ridge that trends northwest to southeast, with high-lying lands located to the east (refer to Figure 1). The site topography is generally flat within the central and easterly portions. A significant slope is observed along the south and westerly property boundaries where ground elevations range from 230 metres above sea level (masl) to approximately 220 masl along the South Pine River.

## **7.3. Surface Drainage**

The landfill is located directly east of the South Pine River. Local surface drainage within the waste diversion area slopes easterly towards the river, while the very north part of the site drains toward the roadside ditch along Concession 6 East. The South Pine River flows westerly and northwesterly immediately south of the landfill property. The South Pine River is noted to flow into the Pine River and ultimately into Lake Huron, located approximately 10 km west of the site.

## **7.4. Regional Groundwater Flow**

In general, the regional groundwater flow direction in the overburden is inferred to be westerly. The inferred groundwater flow direction is consistent with the regional topography, which consists of the pronounced ridge with lower lying lands to the west and south of the Site.

## **7.5. On-Site Groundwater Flow System**

Water levels on-site form a complex pattern of groundwater flow likely controlled by both the local topography and the deeper regional groundwater system, depending on site geology. Based on an assessment of the groundwater elevation data available and our understanding of the overburden geology, topography, and the regional groundwater flow system it appears that there are likely several minor, or localized, groundwater flow systems at the site, that ultimately tie into the larger regional groundwater flow system that flows in a westerly direction.

Shallow groundwater in the vicinity of the landfill generally flows to the west towards the South Pine River (Figure 6) making the river the primary receptor for potential impacts from landfill leachate via discharge from shallow groundwater migration.

Water level elevations at monitoring locations OW7D, OW8S & D, OW9 and OW10S & D have consistently been lower than those measured in surrounding wells OW3, OW5 and OW11. Based on water level measurements collected, the groundwater chemistry comparisons, a review of the borehole logs (Appendix D) and well construction details (summarized in Table 2), the lower water levels typically associated with these wells are attributed to the relatively low-permeability soils. Within the area of the landfill, the soils at these locations were found to consist of layers of silt to silt with clay.

In conclusion, the lower water levels are thought to be associated with an area with limited hydraulic connectivity to the adjacent areas of groundwater discharge related to the more regional groundwater flow. Based on the more regional groundwater flow directions, and the geochemistry from wells north and west of the landfill, it is reasonable to expect that the potential leachate impacted groundwater migration would ultimately be in a westerly direction.

## 8. Monitoring Requirements

### 8.1. Sampling Requirements

Monitoring of groundwater and surface water is conducted in the spring and fall of each year. The existing sampling program is based on Schedule B of the ECA.

The monitoring wells are located around the perimeter of the landfill and monitor groundwater quality in both the shallow and intermediate overburden. The surface water monitoring locations are located to determine potential impacts to surface water from the landfill. Samples are obtained from one upstream location and one downstream location, and from an area of water ponding onsite.

#### 8.1.1. Groundwater Sampling Locations

Groundwater quality monitoring was initiated at the site in 1989. Between 1989 and the current reporting period, groundwater quality has been intermittently monitored at the site by twice annual sampling from a network of monitoring wells. The current sampling program consisted of groundwater sampling from the thirteen monitoring wells required by the amended ECA, as shown on Figure 2.

Monitoring is completed twice annually (spring and fall). In addition, surface water samples are collected from two (2) locations twice annually in conjunction with the groundwater monitoring program. A summary of the groundwater and surface water quality monitoring programs and required parameters, as per the Approvals, is provided in Table 3 and Table 4, respectively (below).

**TABLE 3: Summary of Groundwater Quality Monitoring Locations and Parameters**

MONITORING LOCATIONS			MONITORING PARAMETERS
Sampling Location	Spring	Fall	
OW1	X	X	Alkalinity, Ammonia, Anions – Cl, NO2, NO3, SO4 Conductivity, Dissolved Metals DOC, Hardness, Phenols, pH, TKN
OW3	X	X	
OW4	X	x	
OW5	X	X	
OW6	X	x	
OW7S	X	X	
OW7D	X	X	
OW8S	X	x	
OW8D	X	X	
OW9	X	x	
OW10S	X	x	
OW10D	X	x	
OW11	X	x	

### 8.1.2. Surface Water

Historically, surface water quality has been monitored at two locations consisting of an upstream location (SW1) and one downstream location (SW2). In 2019, SW3 was added to the sampling program, collected from the ponded water located in the southwest portion of the site.

**TABLE 4: Summary of Surface Water Quality Monitoring Locations and Parameters**

MONITORING LOCATIONS			MONITORING PARAMETERS
Sampling Location	Spring	Fall	
SW1 (Upstream)	X	X	Alkalinity, Ammonia, Anions (CL, NO2, NO3, SO4), Conductivity, Dissolved Metals, Total Phosphorus
SW2 (Downstream)	X	X	DOC, Hardness, Phenols, pH, TKN
SW3 (Onsite Pond)	X	X	Field Measurements: Temperature, pH, Conductivity

### 8.2. Sampling Procedures

For the groundwater sampling, the static groundwater level and well depth are measured in each monitoring well prior to purging three casing volumes of stagnant water from each monitoring well. GEI personnel also check to ensure that all monitoring wells are properly secured and in compliance with O.Reg. 903. After purging, monitoring wells are allowed to recharge with fresh groundwater before sampling occurs. Groundwater purging and sampling is conducted using dedicated Waterra™ tubing and inertial-type pumps. Samples collected for metals are field filtered using a 0.45 µm filter and placed in laboratory supplied containers with preservative. Samples are kept chilled following completion of the sampling program and sent within 24 hours of the sampling event to Bureau Veritas Laboratories of Mississauga for analysis. The laboratory analytical reports for the current monitoring period are included in Appendix H.

Surface water samples are collected by submerging the appropriate sample container into the water body and removing the container when a sufficient volume of sample has been collected. During collection, contact with the bottom sediment is avoided to prevent stirring-up sediment. When collecting surface water samples, direct dipping of the sample bottle is acceptable unless the bottle contains preservative. For those samples requiring preservative, a clean unpreserved bottle is used to obtain the sample then transferred into the appropriate preserved bottle. The surface water temperature is measured and recorded at the time of sampling.

## 9. Determination of Reasonable Use Criteria For the Site

### 9.1. Determination of Action Levels

The MOE Guideline B-7 establishes the basis for determining what constitutes the reasonable use of groundwater on a property adjacent to a landfill site, which is designed to protect existing and potential water uses. To be conservative, it is assumed that the shallow groundwater in the region will typically be used for domestic purposes. MOE Procedure B-7-1 provides technical details for the application of the reasonable use approach. Generally, the reasonable use criteria (RUC) for an adjacent property are determined using the following approach:

1. Quality cannot be degraded by more than 50% of the difference between background concentrations and the Ontario Drinking Water Standards for non-health related parameters, and

2. Quality cannot be degraded by more than 25% of the difference between background concentrations and the Ontario Drinking Water Standards for health-related parameters.

Background concentrations are considered to be the site-specific quality of the groundwater prior to any impact from landfill leachate.

## 9.2. Background Groundwater Quality

Based on groundwater flow direction at the site, OW5 was selected as the background monitoring location for shallow groundwater. OW5 was selected because it is located up-gradient from the landfill area, has the least chance of impact from the landfill, and historically has had the lowest concentrations of indicator parameters. Historical results were used to calculate average values of indicator parameters for subsequent calculation of the RUC values. Available historic data collected from 2007 to 2024 was used to calculate the average groundwater concentrations for leachate indicator parameters. Historical water quality for OW5 is provided in Appendix F.

The background water quality is typical of a carbonate system and is generally highly mineralized with an average background hardness of 407 mg/L. On average, the background chloride concentration is less than 50 mg/L and the background specific conductance (i.e., conductivity at 25° Celsius) is 860 µS/cm.

## 9.3. Calculation of Objective Levels

The objective levels for several groundwater quality indicator parameters were calculated to evaluate the acceptable level of contaminant concentrations at the site boundary. Background concentrations (Cb) are the site-specific values (discussed in the previous section). The Provincial maximum concentrations (Cr) are identified in the ODWS, August 2000. Acceptable concentrations at the site boundary (Cm) are calculated from MOE Procedure B-7-1 using the following formula:

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

Where:

C<sub>m</sub> = Maximum concentration acceptable in groundwater beneath an adjacent property.

C<sub>b</sub> = Background concentration.

C<sub>r</sub> = Maximum concentration that should be present in groundwater for domestic consumption according to the ODWS.

x = 0.5 for non-health related parameters (AO and OG) and 0.25 for health-related parameters (MAC and IMAC).

AO = Aesthetic Objective

OG = Operational Guideline

MAC = Maximum Acceptable Concentration, Parameters Related to Health

IMAC = Interim Maximum Acceptable Concentration, Parameters Related to Health

To determine if leachate is impacting groundwater, indicator parameters including hardness, alkalinity, chloride, and specific conductance are evaluated in conjunction with other indicator parameters and concentration trends. Additionally, leachate impacted groundwater is compared to the groundwater chemistry at locations with naturally elevated concentrations to determine if leachate contributes to the elevated concentrations.

#### **9.4. Surface Water – Provincial Water Quality Objectives**

The purpose of surface water quality management at the Site is to achieve the requirements established in the Provincial Water Quality Objectives (PWQO) set out by the MOE. The criteria set out by the PWQO, summarized in Table 4, were established to ensure that surface waters are of a quality, which is satisfactory for aquatic life and recreation. Areas that have water quality surpassing the PWQO requirements are to be maintained at or above the applicable objectives. Areas that have water quality that does not presently meet the PWQO are not to be degraded any further and are to be upgraded if practical. Background surface water quality at the Huron Landfill site is represented by SW1.

### **10. Water Quality**

Leachate is produced when surface water percolates down through refuse resulting in impacted water that has the potential to migrate along the surface or in the ground. To determine the presence of potential impacts from leachate, several indicator parameters are monitored, and a trend analysis is conducted to determine changes in existing conditions.

The following sections discuss the potential impacts to groundwater and surface water leaving the property boundaries and compliance with the Reasonable Use Criteria (RUC). In 2025, the sampling events were conducted on May 25 and September 16. The surface water and groundwater quality results for 2025 are summarized in Tables 4 and 5, respectively. Historical groundwater and surface water sampling results and graphical trends of select indicator parameters are included in Appendices “F” and “G,” respectively.

#### **10.1. On-Site Conditions – Leachate Generation**

Leachate is produced when surface water percolates down through refuse and into the groundwater. In 2024, interim cover was applied to the portions of the landfill where active landfilling is not occurring. Moving forward, based on the Stormwater Management Plan (WSP, 2019) for the Huron landfill site, interim cover and vegetation is to be completed for the entire site and only stripped within the current active area. To date, the old fill area located directly north of the current active area has been capped and closed out. It is anticipated that these measures will reduce infiltration and leachate production in these areas of the landfill.

To determine the presence of potential impacts from leachate, several indicator parameters have historically been monitored, and a trend analysis is conducted to determine changes in existing conditions. The following Sections of this report discuss the analytical results in consideration of leachate production at the site, the potential impacts to groundwater and surface water leaving the property boundaries, and compliance with Reasonable Use Criteria (RUC). The results of the most recent and historical groundwater and surface water sampling are presented in tabular and graphical form in Appendix F and Appendix G, respectively.

Closest to the active landfill area in a general downgradient direction (i.e., to the south) is monitoring well OW6. Further south of the active landfill area, and installed in the former filled area of trench T1 is OW11. Both monitoring locations are screened within the waste and are considered to be representative of leachate conditions onsite.

Monitoring data reported until 2011/2012 displayed relatively stable concentration trends, with chloride concentrations typically ranging between 20 mg/L and 85 mg/L. Consistent with active landfilling activities occurring upgradient of OW11, since 2013 increased concentrations of leachate-indicator parameters have been reported.

However, it is noted that the concentrations of leachate indicator parameters appear to have peaked at OW11 in 2015 and have stabilized since that period, with a slight decreasing trend in measured parameters observed since 2018.

Since 2011, OW6 has seen an increase in the measured concentration of leachate indicator parameters, and in particular a more pronounced increase in chloride and conductivity. This response is within values expected based on the fact that OW6 is near the toe of the active area and is situated directly downgradient of the landfill. Similar to OW11, as noted above, the measured increase appears to have occurred primarily between 2011 to 2018 and has stabilized or slightly decreased since that time. An ongoing evaluation of the analytical trends at OW6 will continue to determine if a stable to decreasing trend continues in the long-term.

A review of the impacts at OW6 and OW11 supports the use of conductivity, chloride, hardness, TKN and alkalinity as primary leachate indicator parameters at the Huron Landfill Site.

## **10.2. North Boundary Condition**

### Groundwater

Groundwater quality along the north boundary of the site is monitored at OW4, and further northwest at OW10s and OW10D. Locations of all the monitoring wells are presented on Figure 2.

OW4 is located approximately 20 m northwest of Trench T6, while monitoring wells OW10S and OW10D are located approximately 180 m northwest of Trench T6. Historical review of indicator parameters from OW4 indicates relatively stable trends of chloride, conductivity and hardness.

It should also be noted that other leachate indicator parameters found to be elevated within the onsite wells including chloride, TKN and conductivity are all within the typical background range. Potential leachate influenced groundwater noted at this location would be limited in extent as groundwater would ultimately flow to the southeast as determined by the more regional groundwater flow direction.

Monitoring locations OW10S & 10D are located along Concession 6 East northwest of the landfill site, and hydraulically upgradient of the site. Based on the groundwater quality results, no impacts to OW10S or OW10D from landfill activities are evident. Indicator parameters continue to remain consistent with background conditions.

## **10.3. East Boundary Condition**

### Groundwater

The quality of the shallow groundwater located east of the landfill property is monitored at OW5, located east of the landfill along Concession 6 East.

Monitoring location OW5 is located hydraulically upgradient of the active landfilling area and is inferred to reflect background conditions at the site. Groundwater quality trends are noted to be stable with exception of the parameters that appear to be related to typical road salting/de-icing activities (i.e., conductivity, sodium, and chloride). A review of the other leachate indicator parameter concentrations indicates that they remain stable, and that the sodium : chloride ratio is consistent with road salting activities. The lack of other leachate indicator parameters, and in particular alkalinity, is a strong indication that the sodium and chloride concentrations are likely related to road salt.

## Surface Water

An upstream surface water sample (SW1) is collected from the north side of Concession 6 East, prior to influence from road salt activities and the landfill. This sample is considered to represent background conditions. In previous monitoring years, minor phosphorus, and iron exceedances of the PWQO were reported. Historically, iron and/or phosphorus exceedances have been reported, however comparison of these periodic reported exceedances at this upgradient location is inferred to be in relation to potential sediment interference and not attributed to landfill operations.

## **10.4. South Boundary Condition**

### On-Site Groundwater

The groundwater quality along the southerly property boundary is monitored at wells OW11, OW7S and OW7D. Monitoring wells OW7S and OW7D are located approximately 20 m southwest of Trench T1 and approximately 20 m from the southerly property boundary. While OW7D hardness exceeded RUC and background conditions during the spring sampling event, it is noted that the value dropped back below those thresholds in the fall. No evidence of leachate impacts is noted at OW7S or OW7D and the groundwater quality is considered to be similar to background conditions. In particular, chloride concentrations at both locations are generally noted to be less than 30 mg/L (i.e., below the background chloride of 47 mg/L).

OW11 is located along the southerly boundary and is installed in the former filled area of trench T1. OW11 is screened within the waste, and therefore, the measured concentrations at this location are considered to be representative of leachate conditions onsite. Previously, there have been concerns raised regarding possible mounding in close proximity to the location of OW11, and possible leachate migrating south towards the South Pine River. Several potential remedial actions were identified as part of the 2010 Design and Operations Plan (Pryde Schropp McComb Inc., 2010) including the placement of berms, interceptor trenches, limiting or ceasing landfill operations in the southern area of the site, and closure and capping of suspect areas. It was reported that the remedial actions could be taken at such a time when a non-compliance event occurred. As part of the 2010 D&O, a Contingency Plan was produced. Further details regarding the approved Contingency Plan are provided in Section 12 below.

Historically, elevated concentrations of ammonia, iron, arsenic and manganese have been reported at the location of OW11. Ammonia concentrations appear to have peaked during the 2014 sampling periods, and a decreasing trend has been observed since. A similar trend has been noted for both iron and manganese concentrations, with a peak in concentrations noted in 2014 and a decreasing trend following. Based on the current monitoring results, RUC exceedances, including hardness, alkalinity, chloride, and DOC were reported during both the spring and fall sampling periods. Typical with influence from road salt application, the ratio of chloride to sodium observed at OW11 is typically in the range of 2:1 or greater. In contrast, wells showing influence from leachate typically have a ratio of chloride to sodium in the range of closer to 1:1. The chloride concentrations combined with the elevated sodium levels indicate influence that is most likely from road salt rather than leachate influence. As previously reported, the concentrations of leachate indicator parameters appear to have peaked at OW11 in about 2015 and have displayed a more stable trend since that period, with a slight decreasing trend in measured parameters observed since 2018. An ongoing evaluation of the analytical trends at OW11 will continue to determine if a stable to decreasing trend continues in the long-term.

### Offsite Groundwater

OW3 is located south of the property boundary, on additional lands owned by the Municipality, approximately 30 m south of Trench T1. OW3 monitors groundwater directly south of the southerly property boundary and intersects groundwater inferred to be flowing offsite. Based on a review of concentration trends, impacts to the groundwater due to landfill leachate at this location are not occurring. No RUC exceedances were reported during the 2025 sampling period.

Based on the overall comparison and review of groundwater quality concentrations and trends, it is concluded that the RUC is being met along the southern compliance limit (Table 5). Therefore, while groundwater quality at well OW11 may have been influenced, in part, by landfill-leachate due to the radial groundwater flow patterns, it is apparent that the impacts to the south are likely limited in extent, as evidenced by the general absence of leachate indicators at OW3.

To provide additional certainty regarding the groundwater quality south of OW11, an additional monitoring well was installed onsite in August of 2025 with MECP concurrence. OW12 was installed directly south of OW11, and southeast of OW3. The monitoring location was noted to be dry during the fall sampling event in 2025. It is recommended that this location be added to the annual monitoring program, and efforts will be made during future monitoring events to collect groundwater samples from this location to further characterize the groundwater quality along the southerly property boundary.

### Surface Water

SW3 is located within the southwesterly portion of the site and is collected from the ponded water that typically collects in that area. Leachate impact has typically been noted in this location in the past. Based on the current monitoring results, potential leachate impacts are identified with elevated levels of conductivity, chloride, sodium, potassium and ammonia. Similar to previous years, RUC exceedances were reported for un-ionized ammonia, iron, phenols and boron. It is noted that this surface water location is an isolated surface water feature with no observed outflow features. As previously discussed, a breach in the southwesterly stormwater berm (adjacent to the surface water feature) was previously identified. Based on information provided by the Township, a contractor was retained in July 2025 to complete repairs to the berm. During the fall 2025 monitoring event conducted by GEI, site personnel observed that the corrective actions associated with the berm repairs had been implemented.

## **10.5. West Boundary Condition**

### Groundwater

OW1 is located approximately 20 m southwest of Trench T1. While only hardness RUC exceedances were reported for the 2025 sampling periods, several leachate indicator parameters are noted to be above background conditions, which could be indicative of minor influence from leachate impacted groundwater. Chloride concentrations have averaged approximately 53 mg/L, slightly above the background concentration, but remaining well below the RUC.

OW8S and OW8D are located in the central portion of the site, approximately 10 m downgradient of the westerly edge of Trench T2. OW8s is noted to be screened within the upper silty clay and sand soils while OW8D is noted to be installed approximately 5 m deeper within the more tightly confined silt layer. While elevated levels of sulphate have historically been identified at each of these locations, the sulphate does not appear to be attributed to landfill leachate and is inferred to be naturally occurring. Both monitoring locations continue to exhibit groundwater quality similar to that observed at the background monitoring location. In 2025, no exceedances were reported during the spring or fall sampling at either sampling location.

Monitoring well OW9 is located approximately 100 m north of Trench T4. This monitoring well is noted to be screened within the deeper clayey silt layer located onsite. Historically, groundwater conditions at this location have been observed to be similar to background conditions. Similarly, during the most recent sampling events, no RUC exceedances were reported. Elevated sulphate levels are also reported at this location. However, the sulphate concentrations are noted to be well below the RUC (i.e., 210 mg/L -in the spring).

### Surface Water

A downstream surface water sample (SW2) is collected approximately 380 m downstream of the landfill site (i.e., northwest of the site) and it considered to represent conditions downstream of SW1. Conditions observed at the downstream sample location appear to be similar to the concentrations observed at SW1.

## **10.6. Annual Stormwater Sampling Results**

A Stormwater Management Plan was previously prepared by WSP Canada Inc., titled *“Stormwater Management Plan, Huron Landfill Site – The Township of Huron-Kinloss”* and dated April 2019. At the request of the MECP, the original workplan was subsequently updated, and a revised Stormwater Management Plan was issued by WSP, dated May 16, 2024. Implementation of the revised stormwater management works commenced in 2024 and remains ongoing in accordance with the updated plan.

Schedule B of the Stormwater ECA requires that stormwater samples be collected on a weekly basis during March and April, when runoff from the working face reaches the property boundary. In 2025, GEI conducted the required stormwater sampling at the Site. Detailed results are provided in the letter report titled *“Stormwater Management Workplan – Huron Landfill, Stormwater Grab Samples”*, dated June 25, 2025. A summary of the findings is provided below.

Based on a review of available topographic survey data, surface water runoff from the landfill is anticipated to flow radially outward from the waste footprint. However, as the landfill mound continues to be developed and elevated, the predominant direction of flow is expected to shift toward the southwest. A smaller portion of runoff is anticipated to drain eastward into an existing/proposed triangular roadside ditch.

Following implementation of the workplan, initial stormwater quality control is provided through vegetative cover and swales that convey runoff offsite. Key drainage features include:

- A north drainage ditch, approximately 230 m in length, located along the south side of the Concession 6 East right-of-way (ROW), discharging to the South Pine River Valley; and
- An east drainage ditch, approximately 240 m in length, located along the western limit of the on-site gravel access road and east of the active landfilling area, also discharging to the South Pine River Valley.

Consistent with previous results, phenols were periodically detected in Back Ditch samples at concentrations exceeding the Provincial Water Quality Objectives (PWQO). In addition, slightly elevated concentrations of alkalinity, chloride, and conductivity were observed during the 2025 sampling events. Site observations by GEI personnel identified a localized depression immediately south of the leaf and yard waste area, where ponded leachate was present. During the sampling period, this ponded leachate was observed to overflow into the adjacent roadside ditch. It is inferred that this overflow may be contributing to the elevated parameter concentrations observed in the ditch samples.

Should the ponded leachate no longer discharge to the roadside ditch, an improvement in downstream water quality is anticipated. Continued monitoring in 2026 is recommended to evaluate trends in water quality and to assess the effectiveness of ongoing site development and improvements in vegetative cover. For additional details regarding stormwater management at the Site, reference should be made to the aforementioned letter report.

## **10.7. Summary of Water Quality**

Based on inferred groundwater flow direction and the location of the surface water features, the western property boundary is the focus for determining compliance with the RUC. The hydrogeology indicates that shallow groundwater flows towards the west from the site. Therefore, shallow groundwater is inferred to discharge westerly resulting in the South Pine River being the primary potential receptor for potential impacts from landfill leachate.

Consistent with the location of the former active area in the southerly portion of the Site, the concentrations of several indicator parameters have historically shown an increasing trend at OW11 (located adjacent to the southerly property boundary). While the results are likely indicative of leachate-impacted groundwater at this location, they are also attributed to, at least in part, impacts from road salting along the access road. The former period of increasing concentrations is attributed to the progression of waste placement in proximity to the monitoring well, historical lack of progressive closure and resulting leachate mounding beneath the landfill. In more recent years, leachate indicator parameters have fluctuated in concentration and now appear to be stabilizing to decreasing. It is anticipated that with the absence of further landfilling in this area, a decreasing concentration trend will develop over time, ultimately decreasing the magnitude and extent of influence to the south of the landfill.

It is noted that Cell 6 is located along the southerly property boundary, and represents the final area of above ground landfilling onsite. It is recommended that prior to landfilling in this cell, monitoring of leachate indicator trends are reviewed to discern if an elevated trend remains.

With the installation of OW-3 located downgradient of OW11, and in proximity to the southerly property boundary (and beyond OW11), groundwater quality along the compliance limit to the south can be more reliably assessed. Consistent with historical results, the water quality continues to meet the RUC and is generally consistent with background conditions with no evidence of landfill leachate influence. Additionally, OW12 was installed directly south of OW11 closer to the south property boundary and will continue to be sampled to provide more information directly related to compliance in the area downgradient of OW11.

Surface water quality monitoring within the South Pine River continues to suggest that no influence from landfill leachate is migrating offsite to the river. On-going monitoring of the ponded water within the southwesterly portion of the site (SW3) has shown some evidence of landfill leachate influence. It is inferred that with the recent grading and interim/final cover improvements onsite, that conditions will improve.

Historical and recent groundwater quality results continue to indicate that landfill leachate influence is not observed within the monitoring locations downgradient of the landfill (OW9, OW8S & D and to a lesser extend OW1 and OW7S & D).

## 11. Landfill Gas Generation

Methane is a colorless and odourless gas formed by the decomposition of organic matter under oxygen poor (anaerobic) conditions and is commonly associated with landfills. It is produced by anaerobic bacteria, which become active only when the oxygen in the landfill has been completely consumed. The primary concern related to this parameter is that, under certain conditions, the mixture of methane in air can be explosive within a confined area. Methane gas is measured relative to the lower explosive limit (LEL) which corresponds to 5% the concentration of methane in air.

Gas sampling at the four gas monitoring locations GP1, GP2, GP3 and GP4 (located around the perimeter of the site) has historically indicated that there is no off-site migration of methane gas. The Lower Explosive Limit (LEL) have been measured in each gas probe since 2006, and most recently, methane and oxygen levels have also been recorded. Results are summarized in Table 7.

In 2025, the oxygen levels remained greater than 19% (measured as % by volume). It is noted that the more oxygen present in a landfill, the longer aerobic bacteria can decompose waste producing only carbon dioxide and water as by-products. LEL measurements for all gas monitoring locations produced readings of 0%. Historically, LEL measurements from the gas probes have typically produced readings of zero (0) (with the exception of GP3). Based on the relatively high levels of oxygen recorded in each gas probe, it appears that the system is aerobic in the vicinity of the gas probes. In general, methane gas is not detected within the gas monitors, and we expect that landfill gases being produced are readily vented to the surface through the soils.

Historically, high levels of methane have been detected at GP3, which was reported in previous correspondence to be located directly adjacent the scalehouse. Based on a review of the figures attached as part of previous Annual Monitoring Reports, GP3 is located adjacent to the waste diversion area, and GP1 is located adjacent to the scalehouse. In 2024, GP1 readings reported 0 methane and oxygen levels of approximately 19%, while GP3 readings were elevated during the spring sampling (i.e., 100% methane). It is reported that two methane detectors have been installed in the scalehouse. Reportedly, based on MECP correspondence, a gas detector was installed within the attendants shelter in 2011 and was to be used by staff when working in the attendant building. In 2022, reportedly a new gas detector was purchased and monitoring resumed in September of 2022. It is recommended that further methane monitoring be conducted onsite to discern the apparent discrepancies between GP1 And GP3, and to identify if any elevated methane readings occur.

## 12. Contingency Plan

A Contingency Plan was identified as part of the Design and Operations Plan (Revised) completed by Pryde Schropp McCombe Inc., in January of 2010. The contingency planning portion of the report describes the conditions under which contingency measures may be required (i.e., trigger levels) and outlines the corresponding contingency measures. The reviewer is referred to the DPO for a detailed outline of these measures. A brief summary and discussion of the trigger levels and contingency plan, and how it relates to the most recent groundwater and surface water quality results, is provided below.

The Contingency Plan identifies seven groundwater (OW1, OW3, OW7S, OW7D, OW8S, OW8D and OW9) trigger locations. The established trigger levels for the groundwater are based on MECP correspondence which suggested that the triggers for the groundwater monitoring wells be set at values slightly below the RUC to allow sufficient time to respond to potential trigger events. Based on the monitoring location distance from the property boundary, levels have been calculated at 80% of the RUC (OW8S and OW8D) at 85% of the RUC (OW1, OW3, OW7S and OW7D) and at the actual RUC value (OW9).

In general, the trigger locations showed no leachate impacts to groundwater quality flowing to the north and west from the landfill property, with leachate indicator parameter concentrations reported to be similar to background concentrations. Although RUC exceedances at OW1 and OW7S were previously reported during the 2023 sampling period for DOC, monitoring results from the 2025 sampling events do not indicate impacts from landfill leachate. In addition, surface water quality results indicate that there are no impacts to the water quality in the South Pine River. Therefore, the trigger levels outlined are being met and confirm that leachate impacted groundwater is attenuating as it flows off-site to the west.

Continued monitoring is recommended to discern if an elevated trend persists. If an upward trend is established, additional monitoring locations northwest/west of the landfill property may be recommended.

### **13. Closed Areas**

To date, the portion of the Site identified as the “Old Fill Area” (located west of the trenching area) has been filled to capacity, closed, and capped. Information received from the Township indicates that the area was obtained by the Township in 1961. No information regarding waste disposal within this area was available. The landfill inspections completed in 2025 indicate that the closed area was successfully seeded to grass and has well established tree cover.

## 14. Conclusions

1. An updated Design and Operations Plan for the site was submitted in December 2010 to meet the requirements of the CofA and to address some concerns raised by the Ministry onsite.
2. Based on the remaining landfill capacity of approximately 65,500 m<sup>3</sup> for waste and daily cover, and the average and maximum fill rates of 7,666 m<sup>3</sup>/year and 10,443 m<sup>3</sup>/year, respectively, the remaining life expectancy is estimated to be approximately 9 to 5 years.
3. In consideration of the unused space at the Kinloss Landfill , the combined site life for the Huron and Kinloss Wards is estimated to be approximately 27 years.
4. Continued attention to compaction and the application of daily cover at the active face of the landfill will help maintain an aesthetically acceptable site. In addition, continued application of daily cover and progressive closure, as final contours are reached, will reduce leachate production at the site.
5. At the surface water sampling locations, no impacts to surface water quality above the PWQO are attributed to landfill activities, with the exception of SW3 (onsite pond).
6. Based on the groundwater quality and inferred groundwater flow direction at the site, no evidence of impacts above the RUC are noted beyond municipally owned lands to the north, east, and west.
7. Consistent with the location of the former active area in the southerly portion of the Site, the concentrations of several indicator parameters have historically shown an increasing trend at OW11 (located adjacent to the southerly property boundary). The former period of increasing concentrations is attributed to the progression of waste placement in proximity to the monitoring well, historical lack of progressive closure and resulting leachate mounding beneath the landfill. In more recent years, leachate indicator parameters have fluctuated in concentration and now appear to be stabilizing to decreasing. It is anticipated that with the absence of further landfilling in this area, a decreasing concentration trend will develop over time, ultimately decreasing the magnitude and extent of influence to the south of the landfill.
8. The groundwater quality directly downgradient of the southern property boundary at OW3 shows no evidence of impacts due to landfill leachate and is considered similar to background conditions. Furthermore, where the groundwater discharges to surface water downgradient of the westerly property boundary at SW2, no evidence of impacts are noted. Based on the observed attenuation of impacts between monitoring locations, landfill derived impacts off-site and to the south of the landfill property, above the RUC, are not anticipated.

## 15. Recommendations

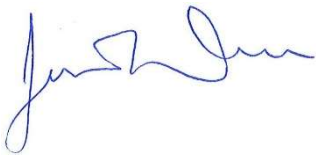
1. Closed and capped areas of the landfill should continue to be inspected on a semi-annual basis to ensure the integrity of the cover material.
2. Landfill development should continue in Cell T4 where final contours can be tied into the existing topographical contours at T5. The final contours for these areas can be tied into the existing topographical contours, subsequently the capping of these areas with final cover and topsoil, seeded to grass, should be finalized as waste placement progresses.
3. The monitoring program conducted in the spring and fall should continue to meet the requirements specified in Schedule B of the amended ECA and as outlined in the updated Design and Operations Report. The recommended sampling program is outlined below:

Groundwater Sample Location		Recommended Groundwater Parameters
OW1	OW4	Alkalinity, Ammonia, Chloride, Nitrate, Nitrite, Sulphate, Conductivity, Dissolved metals by ICPMS, DOC, Hardness, Phenols, pH, TKN
OW5	OW6	
OW7S	OW7D	
OW8S	OW8D	
OW9	OW10S	
OW10D	OW12	
OW11		
Surface Water Sample Location		Recommended Surface Water Parameters
SW1		Alkalinity, Ammonia, Chloride, Nitrate, Nitrite, Sulphate, Conductivity, Dissolved metals by ICPMS, DOC, Hardness, Phenols, pH, TKN, Total Phosphorus
SW2		
SW3		
		<b>Field Parameters:</b> Conductivity, pH, DO, Temperature

All of which is respectfully submitted,

### GEI CONSULTANTS CANADA LTD.

Per:



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## **Tables**

**Table 1: Landfill Volume Capacity (m<sup>3</sup>) – Huron Landfill**

**Table 2: Summary of Monitoring Well Details**

**Table 3: Summary of Groundwater Quality Monitoring Locations and Parameters**

**Table 4: Summary of Surface Water Quality Monitoring Locations and Parameters**

**Table 5: Summary of Surface Water Analytical Results**

**Table 6: Summary of Groundwater Analytical Results**

**Table 7: Reasonable Use Criteria**

**Table 8: Summary of Gas Monitoring Results**

**TABLE 1**  
**LANDFILL VOLUME CAPACITY (m<sup>3</sup>) -**  
**HURON LANDFILL**

	2019	2020	2021	2022	2023	2024	2025
<b>Total Approved Capacity</b>							
Total Capacity for Waste and Daily Cover	288,000	288,000	288,000	288,000	288,000	288,000	288,000
Total Capacity for Topsoil	6,840	6,840	6,840	6,840	6,840	6,840	6,840
Total Capacity for Final Cover	34,200	34,200	34,200	34,200	34,200	34,200	34,200
Total Air space Capacity	329,040	329,040	329,040	329,040	329,040	329,040	329,040
<b>Volume Filled to Beginning of Year</b>							
Volume of Waste and Daily Cover	191,848	205,009	213,097	221,892	232,335	238,511	222,500
Volume of Topsoil Used to Date	0	0	0	0	0	0	0
Volume of Final Cover Used to Date	0	0	0	0	0	0	0
Total Volume Filled	191,848	205,009	213,097	221,892	232,335	238,511	222,500
<b>Available Capacity at Beginning of Year</b>							
Capacity for Waste and Daily Cover	96,152	82,991	74,903	66,108	55,665	--	70,329
Capacity for Topsoil	6,840	6,840	6,840	6,840	6,840	6,840	6,840
Capacity for Final Cover	34,200	34,200	34,200	34,200	34,200	34,200	34,200
Total Available Capacity	137,192	124,031	115,943	107,148	96,705	--	111,369
<b>Capacity Used During Year</b>							
Capacity Used for Waste and Daily Cover	13,161	8,088	8,795	10,443	6,176	--	4,829
Volume of Topsoil Used	0	0	0	0	0	--	0
Capacity Used for Final Cover	0	0	0	0	0	--	0
Total Capacity Used	13,161	8,088	8,795	10,443	6,176	--	4,829
<b>Volume Filled at End of Year</b>							
Volume of Waste and Daily Cover	205,009	213,097	221,892	232,335	238,511	--	227,329
Volume of Topsoil	0	0	0	0	0	--	5,000
Volume of Final Cover	0	0	0	0	0	--	0
Total Volume Filled	205,009	213,097	221,892	232,335	238,511	--	232,329
<b>Remaining Capacity at End of Year</b>							
Capacity for Waste and Daily Cover	82,991	74,903	66,108	55,665	49,489	70,329	65,500
Capacity for Topsoil	6,840	6,840	6,840	6,840	6,840	6,840	6,840
Capacity for Final Cover	34,200	34,200	34,200	34,200	34,200	34,200	34,200
Total Remaining Capacity	124,031	115,943	107,148	96,705	90,529	111,369	106,540
<b>Remaining Site Life (years)</b>							
At 5 Year Average Fill Rate (7,667 m <sup>3</sup> )	11	10	9	7	6	9	9
At 2023 Fill Rate (6,176 m <sup>3</sup> )	13	12	11	9	8	11	11
At 5 year maximum fill rate (10,443 m <sup>3</sup> )	6	6	5	4	4	5	5

**Notes:**

1. Maximum capacity and final cover as provided in ECA No. A272601
2. Estimated fill rates prior to 2024 based on capacities as provided in the 2023 Annual Monitoring Report (WSP, 2024)
3. Remaining Capacity for Waste and Daily Cover in 2024 calculated based on 2024 topographic survey and comparison to final top of final waste contours

TABLE 2  
SUMMARY OF MONITORING WELL DETAILS

Well ID	Year Installed	Well Condition/Status	Stick Up Elevation (mast)	ELEVATION				WELL SCREEN DETAILS				DEPTH TO BEDROCK		Depth Interval of Each Unit			Description of Unit Encountered		
				Ground mast	ToPVC mast	BH Btm		Top		Bottom		Diameter inches	mbs	mast	From mbs	To mast		From mast	To
						mbs	mast	mbs	mast	mbs	mast								
<b>MONITORING LOCATIONS</b>																			
OW1	1989	Monitored	0.70	229.43	230.13	6.1	223.33	4.49	224.94	5.99	223.44	-	-	0.00	0.20	229.43	229.23	Topsoil	
														0.20	0.91	229.23	228.52	Brown, dry silty sand	
														0.91	1.07	228.52	228.36	Brown, dry gravel and sand with traces of silt	
														1.07	1.83	228.36	227.60	Brown, dry sandy silt	
														1.83	2.29	227.60	227.14	Brown, moist sandy silt with some clay	
														2.29	3.35	227.14	226.08	Grey, moist silt with some clay and traces of sand	
														3.35	6.10	226.08	223.33	Grey, dense silt with some sand and clay with some stones	
														0.00	0.91	-	-	Brown, dry silty sand	
														0.9	1.52	-	-	Brown, dry silt with some clay and sand	
OW2	1989	Decommissioned	-	-	-	-	-	-	-	-	-	-	-	0.00	1.37	231.87	230.50	Brown, dry fine sand	
														1.37	1.83	230.50	230.04	Grey silt with some sand and clay	
														1.83	3.66	230.04	228.21	Grey, dense silt with some clay and traces of sand	
														3.66	6.10	228.21	225.77	Grey, dense silt with some sand and clay	
														0.00	0.13	230.08	229.95	Topsoil	
OW3	1989	Monitored	1.76	231.87	233.63	6.1	225.77	4.29	227.58	5.79	226.08	-	-	0.13	1.07	229.95	229.01	Brown, dry gravel and sand with traces of silt	
														1.07	1.52	229.01	228.56	Brown, dry fine sand with some silt and traces of clay	
														1.52	4.27	228.56	225.81	Grey, dry, dense silt with some sand and clay	
														0.00	0.20	231.81	231.61	Topsoil	
														0.20	0.61	231.61	231.20	Brown, dry fine sand with some silt	
OW4	1989	Monitored	0.80	230.08	230.88	4.27	225.81	2.52	0.0	4.02	226.06	-	-	0.61	3.66	231.20	228.15	Grey, dense silt with some sand and clay with traces of stones	
														3.66	6.10	228.15	225.71	Grey, dense silt with some sand and clay	
														0.00	0.61	232.88	232.27	Fill - silt, sand and clay, brown, dense, damp, no apparent odour	
														0.61	8.23	232.27	224.65	Fill - garbage, grey, wet to saturated, strong putrid odour	
														8.23	9.76	224.65	223.12	Silt - some sand and clay, grey, dense, cohesive, slight putrid odour	
OW5	1989	Monitored	1.07	231.81	232.88	6.1	225.71	3.22	228.59	4.72	227.09	-	-	0.00	0.30	230.98	230.68	Topsoil - organics, silt dark brown, dense, dry, no apparent odour	
														0.30	9.14	230.68	221.84	Silt - trace of clay, occasional coarse grained sand, brown, dense, damp, no apparent odour	
														0.00	0.30	230.92	230.62	Sand (topsoil), fine grained sand, little silt, poorly graded, black, dry	
														0.30	11.27	230.62	219.65	Sand, fine grained sand, little to trace silt, poorly graded, brown, moist	
														11.27	12.03	219.65	218.89	Clay, clay and silt lense, brown, moist	
OW6	1997	Monitored	2.36	232.88	235.24	9.76	223.12	7.67	225.21	9.17	223.71	2	Overburden Well	12.03	13.70	218.89	217.22	Sand, coarse to medium grained sand, trace silt, moderately graded, gray, saturated, occasional pebble/stone	
														0.00	0.20	230.08	229.88	Topsoil - organics, silt, dark brown, compact, dry, no apparent odour	
														0.20	6.40	229.88	223.68	Silt to silty clay - scattered sand and gravel, fine to coarse grained, light brown, dense, dry, no apparent odour	
														6.40	7.92	223.68	222.16	Silt - trace of clay, scattered sand and gravel, brown, mottled grey, dense, damp to moist, no apparent odour	
														7.92	8.50	222.16	221.58	Silt and clay - scattered sand and gravel, brown, mottled grey, moist to wet, no apparent odour	
OW7	1997	Monitored	0.93	230.98	231.91	9.14	221.84	7.39	223.59	9.14	221.84	2	Overburden Well	0.00	0.20	230.08	229.88	Topsoil - organics, silt, dark brown, compact, dry, no apparent odour	
														0.20	6.40	229.88	223.68	Silt to silty clay - scattered sand and gravel, fine to coarse grained, light brown, dense, dry, no apparent odour	
														6.40	7.92	223.68	222.16	Silt - trace of clay, scattered sand and gravel, brown, mottled grey, dense, damp to moist, no apparent odour	
														7.92	8.50	222.16	221.58	Silt and clay - scattered sand and gravel, brown, mottled grey, moist to wet, no apparent odour	
														0.00	0.30	230.06	229.76	Fill - topsoil, organics, dark brown, dry, dense, no apparent odour	
OW8	1997	Monitored	0.61	230.08	230.69	8.8	221.28	5.3	224.8	8.8	221.28	2	Overburden Well	0.30	1.52	229.76	228.54	Fill - silt and small amount of debris, porcelain plate, wood, ashes, dry, brown, no apparent odour	
														1.52	17.06	228.54	213.00	Silt - some clay, occasional sand and gravel, fine grained, cohesive, dense, damp to moist, no apparent odour	
														17.06	18.28	213.00	211.78	Clayey silt - occasional sand and gravel sizes, light brown, mottled gray, saturated, compact to dense, no apparent odour	
														0.00	0.05	224.55	224.50	Topsoil - black, organics and moist	
														0.05	3.05	224.05	221.50	Clay - brown, dense, with some gravel and sand & dry	
OW9	2003	Monitored	0.93	224.55	225.48	5.64	218.91	2.6	221.95	5.64	218.9	2	Overburden Well	3.05	4.57	221.50	219.98	Clay - grey, dense, with some gravel and sand, moist	
														4.57	5.64	219.98	218.91	Clay - grey, dense, with some gravel and sand, wet	
														0.00	0.05	224.50	224.45	Topsoil - black, organics, moist	
														0.05	3.05	224.45	221.45	Clay - brown, dense, with some gravel and sand & dry	
														3.05	4.57	221.45	219.93	Clay - grey, dense, with some gravel and sand, moist	
OW10	2003	Monitored	0.72	224.5	225.22	13.41	211.09	11.9	212.6	13.41	211.1	2	Overburden Well	4.57	7.92	219.93	216.58	Clay - grey, dense, with some gravel and sand, wet	
														7.92	10.97	216.58	213.53	Clay - grey, dense, with some gravel and sand, dry	
														10.97	11.78	213.53	212.72	Clay - grey, dense, with some gravel and sand, moist	
														11.78	13.41	212.72	211.09	Gravel & Sand - some some clay and silt, sample is saturated	
														0.00	1.52	234.58	233.06	Clay fill - dense, brown, dry	
OW11	2003	Monitored	3.28	234.58	237.86	5.79	228.79	3.8	230.78	5.79	228.8	2	Overburden Well	1.52	4.72	233.06	229.86	Waste fill - black, strong odour, plastic in cuttings, wet	
														4.72	5.79	229.86	228.79	Clay - native, grey, with some fine gravel and sand, dense, wet	
														0.00	0.40	-	-	Light brown gravelly fine to medium sand; massive, compact, moist	
														0.40	1.10	-	-	Medium grey silt, some clay, trace sand, trace gravel, weathered to 0.7 m, stiff, moist	
														1.10	1.20	-	-	Black sand, partly organic, moist	
GP1	2006	Monitored	-	-	-	-	-	-	-	-	-	-	-	1.20	1.50	-	-	Medium brown fine sand, massive, loose, saturated	
														1.50	1.80	-	-	Medium grey fine sand, some silt, massive, compact, saturated	
														1.80	2.40	-	-	Medium grey silt, some clay, occasional 2 to 5 cm thick seams of silty fine sand, stiff, saturated	
														2.40	2.45	-	-	Medium grey silt, some clay, trace sand, trace gravel, very still, moist	
														0.00	0.20	-	-	Dark brown silt, some sand, partly organic, loost, moist (topsoil)	
GP2	2006	Monitored	-	-	-	-	-	-	-	-	-	-	-	0.20	0.40	-	-	Light red-brown fine sand, trace silt, loose, moist	
														0.40	0.70	-	-	Light grey-brown silt, some clay, trace fine sand, red iron staining, weathered, very stiff, moist	
														0.70	0.95	-	-	Light grey-brown silt, some very fine sand, non-plastic, red iron staining, saturated seams	
														0.95	1.20	-	-	Light grey-brown silt, trace clay, trace sand, trace gravel - very stiff, wet	
														1.20	1.30	-	-	Medium red-brown silty fine sand, loose, moist	
GP3	2006	Monitored	-	-	-	-	-	-	-	-	-	-	-	1.30	2.45	-	-	Medium grey-brown clayey silt, trace sand, trace gravel, very stiff, moist	
														0.00	0.15	-	-	Light brown silty fine sand, some gravel, trace organic matter, loose, dry	
														0.15	0.35	-	-	Medium brown silt, some clay, some sand, some gravel, wood fragments, stiff, moist (fill)	
														0.35	0.45	-	-	Light brown silty fine sand, layered with layers of dark brown partly organic silt, moist (fill)	
														0.45	1.00	-	-	Medium grey-brown silt, some clay, some sand, some gravel, weathered to 0.68m, very stiff, moist	
GP4	2006	Monitored	-	-	-	-	-	-	-	-	-	-	-	1.00	1.35	-	-	Dark brown to black silt, some clay, some sand, some gravel, sandy seams, stiff, moist (fill)	
														1.35	1.55	-	-	Dark brown to medium grey-brown silty sand, some gravel, loose, saturated	
														1.55	2.45	-	-	Medium grey-brown silt, some clay, some sand, some gravel, grading to medium brown then medium red-brown, firm becoming very stiff below 2.0m, moist, wet becoming moist below 2.0m.	
														0.00	0.35	-	-	Medium brown to red-brown silty fine sand, some organic matter, layered, loose, moist	
														0.35	0.65	-	-	Light red-brown sandy silt, layered, firm, wet	

Note - Information presented within this table has been obtained from Borehole logs prepared by others (WSP Annual Reports) and Table 4-1 in WSP 2020 AMR.

- HSA = Hollow Stem Auger

**TABLE 5  
SUMMARY OF SURFACE WATER ANALYTICAL RESULTS**

Sampling Date	PWQO mg/L	SW1		SW2		SW3	
		May-25	16-Sep-25	May-25	16-Sep-25	May-25	16-Sep-25
Conductivity (µS/cm)	NV	530	530	510	470	2200	1900
Calc. Hardness (CaCO3)	NV	280	260	260	230	410	600
pH (unitless)	6.5 to 8.5	8.1	8.1	8.3	8.3	8.0	7.9
Alkalinity	See Note	250	220	230	200	610	350
Ammonia	NV	<0.050	<0.050	<0.050	0.07	18	0.11
Un-ionized ammonia	0.02	0.001	-	0.002	-	<b>0.77</b>	-
Chloride	NV	14	24	15	23	320	250
Total Phosphorous	0.03*	<0.020	<b>0.03</b>	<0.020	<0.020	0.27	0.26
Sulphate	NV	12	14	13	13	76	220
Dissolved Organic Carbon	NV	2.9	5.4	4.0	5.5	79	26
Barium	NV	0.02	0.03	0.02	0.02	0.07	0.09
Boron	0.2*	0.02	0.02	0.02	0.02	1.5	<b>1.3</b>
Calcium	NV	75	62	63	53	85	160
Iron	0.3	<0.1	0.19	<0.1	0.14	<b>0.64</b>	<b>2.1</b>
Magnesium	NV	21	22	23	23	52	41
Manganese	NV	0.01	0.04	0.01	0.02	0.35	0.55
Potassium	NV	1.3	5.8	2.2	5.5	82	70
Sodium	NV	6.6	9.4	6.1	9.3	250	140
Phenols	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<b>0.009</b>	0.001
Field Conductivity (µS/cm)	NV	570	-	630	-	245	-
Field pH (unitless)	6.5 to 8.5	8.4	-	8.6	-	8.37	-
Field Temperature (°C)	NA	11.3	-	11.6	-	10.3	-

Notes:

1. PWQO refers to the Provincial Water Quality Objectives established by the Ministry of the Environment (July 1994)
2. \* denotes IPWQO - Interim Provincial Water Quality Objective (July 1994)
3. Alkalinity should not be decreased by more than 25% of the natural background concentration
4. A Total Phosphorous concentration of 0.03 mg/L applies to streams and rivers
5. Un-ionized ammonia calculated using pH and Temperature per PWQO Guidelines
6. NM = Not Monitored; NV = No value specified; NA = Not Applicable
7. Concentrations in mg/L unless otherwise specified; µS/cm = microsiemens per centimeter
8. Values shaded and in bold represent results greater than the PWQO

**TABLE 6  
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS**

Parameter	Background (mg/L)	ODWS (mg/L)	RUC (mg/L)	Upgradient and Cross-Gradient										Leachate				
				OW10S		OW10D		OW4		OW5		OW3*		OW11		OW6		
				25-May-25	16-Sep-25	25-May-25	16-Sep-25	25-May-25	16-Sep-25	25-May-25	16-Sep-25	25-May-25	16-Sep-25	25-May-25	16-Sep-25	25-May-25	16-Sep-25	
Conductivity (uS/cm)	860	NV	NV	780	800	590	570	880	ISW	1000	1000	850	870	2300	2400	4000	4000	
Hardness (OG)	407	80-100	407	<b>330</b>	<b>350</b>	<b>200</b>	<b>200</b>	<b>410</b>		<b>450</b>	<b>450</b>	<b>370</b>	<b>380</b>	<b>920</b>	<b>930</b>	<b>1200</b>	<b>1200</b>	
pH (Unitless)	7.94	-	-	8.1	7.8	8.1	8.0	8.1		8.1	8.0	8.2	7.8	7.5	7.3	7.6	7.4	
Total Kjeldahl Nitrogen	0.46	NV	NV	<0.10	<0.10	<0.10	0.11	<0.10		0.22	0.28	0.30	0.60	25	54	44	42	
Alkalinity (OG)	350	500	425	260	270	210	190	270		340	350	330	320	<b>870</b>	<b>910</b>	<b>1500</b>	<b>1500</b>	
Ammonia	0.08	NV	NV	<0.050	<0.050	<0.050	<0.050	<0.050		0.06	<0.050	<0.050	0.34	22	56	31	32	
Chloride (AO)*	47	250	149	<1.0	<1.0	4.5	2.1	39		96	90	68	69	<b>250</b>	<b>240</b>	<b>490</b>	<b>480</b>	
Sulphate (AO)	54	500	277	150	150	94	97	140		35	36	14	13	1.1	<1.0	<1.0	1.3	
DOC (AO)*	2.8	5.0	3.90	0.52	0.55	0.50	0.59	<b>3.9</b>		2.1	2.1	2.4	2.6	<b>17</b>	<b>21</b>	<b>130</b>	<b>130</b>	
Barium (MAC)*	0.1	1.0	0.27	0.03	0.03	0.09	0.12	0.07		0.11	0.11	<b>0.82</b>	0.08	0.27	0.34	0.85	0.92	
Calcium	86	NV	NV	70	74	45	46	100		96	94	76	79	170	170	150	150	
Iron (AO)*	0.03	0.3	0.17	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<b>0.33</b>	0.05	<b>14</b>	<b>5.5</b>	<b>8.1</b>	
Magnesium	47	NV	NV	39	40	22	22	40		51	51	44	43	120	120	190	200	
Nitrite (MAC)	0.05	1.0	0.26	<0.010	<0.010	<0.010	<0.010	<0.010		<0.010	<0.010	<0.010	<0.010	0.005	<0.010	<0.010	<0.010	
Nitrate (MAC)*	0.11	10	2.82	0.19	<0.10	0.54	<0.1	0.2		0.2	0.1	<0.10	<0.10	0.05	<0.10	<0.1	<0.1	
Potassium	1.7	NV	NV	1.5	1.9	1.2	1.2	1.4		1.6	1.8	1.5	1.7	18	22	25	27	
Sodium (AO)*	32	200	116	38	40	28	27	24		38	40	35	35	100	110	<b>430</b>	<b>440</b>	
<b>Field Measurements</b>																		
Temperature	--	--	--	10.7	-	10.3	-	9.7		ISW	9.0	-	9.2	-	12.6	-	11.9	-
Conductivity (Field-uS/cm)	860	NV	NV	0.8	-	0.7	-	0.96			1.12	-	0.85	-	2.19	-	3.77	-
pH (Field-Unitless)	7.54	6.5 to 8.5	<b>8.53</b>	-	-	8.40	-	8.33	8.23		-	8.34	-	7.36	-	7.13	-	

**Notes:**

1. ODWS = Ontario Drinking Water Standards (June 2003, Revised June 2006)
2. AO: Aesthetic Objective; OG = Operational Guideline; MAC = Maximum Acceptable Concentration; ISW: Insufficient Water  
IMAC = Interim Maximum Acceptable Concentration
3. NV = No value specified
4. NM = Not Measured
5. Values in bold represent results greater than the ODWS
6. Shaded values represent results greater than the Reasonable Use Criteria (RUC)
7. Samples analyzed by Bureau Veritas Laboratories
8. Results presented in mg/L unless otherwise specified; µS/cm = microsiemens per centimeter
9. \*Identified trigger parameters and locations

**TABLE 6  
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS**

Parameter	Background (mg/L)	ODWS (mg/L)	RUC (mg/L)	Downgradient											
				OW1*		OW7S*		OW7D*		OW9*		OW8S*		OW8D*	
				25-May-25	16-Sep-25	25-May-25	16-Sep-25	25-May-25	16-Sep-25	25-May-25	16-Sep-25	25-May-25	16-Sep-25	25-May-25	16-Sep-25
Conductivity (uS/cm)	860	NV	NV	970	1100	500	500	460	460	680	680	770	770	670	680
Hardness (OG)	407	80-100	407	<b>440</b>	<b>500</b>	<b>130</b>	<b>130</b>	<b>760</b>	<b>79</b>	<b>150</b>		<b>250</b>	<b>250</b>	<b>160</b>	<b>160</b>
pH (Unitless)	7.94	6.5 to 8.5		8.2	7.7	8.4	8.2	8.3	8.2	8.1		8.2	8.1	8.2	8.1
Total Kjeldahl Nitrogen	0.46	NV	NV	0.28	0.39	<0.1	0.11	<0.1	<0.1	<0.1		<0.1	<0.1	0.05	0.21
Alkalinity (OG)	350	500	425	340	370	170	180	180	160	100		220	220	150	160
Ammonia	0.08	NV	NV	0.06	0.08	<0.050	<0.050	<0.050	<0.050	<0.050		<0.050	<0.050	0.025	<0.050
Chloride (AO)*	47	250	149	50	56	26	25	10	10	1.3		51	51	8.6	7.8
Sulphate (AO)	54	500	277	110	100	38	38	47	48	210		85	77	170	160
DOC (AO)*	2.8	5.0	3.90	3.4	3.8	0.56	0.70	1.0	0.84	1.0		<0.40	0.52	0.67	0.85
Barium (MAC)*	0.1	1.0	0.27	0.10	0.11	0.03	0.03	0.03	0.03	0.02		0.05	0.05	0.03	0.03
Iron (AO)*	0.03	0.3	0.17	<0.1	<b>0.35</b>	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	<0.1	0.05	<0.1
Magnesium	47	NV	NV	49	53	15	15	7.7	7.9	16		34	33	17	18
Nitrite (MAC)	0.05	1.0	0.26	<0.01	0.02	<0.010	<0.010	<0.010	<0.010	<0.010		<0.010	<0.010	0.005	<0.010
Nitrate (MAC)*	0.11	10	2.82	0.36	0.33	0.13	<0.1	<0.1	<0.1	<0.1		<0.1	<0.1	0.14	0.27
Potassium	1.7	NV	NV	2.4	2.6	0.9	1.0	0.8	0.9	1.0		1.3	1.5	1.1	1.3
Sodium (AO)*	32	200	116	43	42	55	55	70	70	73		66	66	79	81
<b>Field Measurements</b>															
Temperature	--	--	--	8.6	-	9.8	-	10.2	-	10.3		11.9	-	11.2	-
Conductivity (uS/cm)	495	NV	NV	1.02	-	0.57	-	0.56	-	0.69		0.94	-	0.82	-
pH (Unitless)	7.54	6.5 to 8.5		8.28	-	<b>8.67</b>	-	<b>8.77</b>	-	8.40		<b>8.73</b>	-	8.10	-

**Notes:**

1. ODWS = Ontario Drinking Water Standards (June 2003, Revised June 2006)
2. AO: Aesthetic Objective; OG = Operational Guideline; MAC = Maximum Acceptable Concentration;  
IMAC = Interim Maximum Acceptable Concentration
3. NV = No value specified
4. NM = Not Measured
5. Values in bold represent results greater than the ODWS
6. Shaded values represent results greater than the Reasonable Use Criteria (RUC)
7. Samples analyzed by Bureau Veritas Laboratories
8. Results presented in mg/L unless otherwise specified; µS/cm = microsiemens per centimeter

**TABLE 7  
REASONABLE USE CRITERIA**

<b>GROUNDWATER INDICATOR PARAMETERS HURON LANDFILL SITE</b>					
<b>Parameter</b>	<b>Units</b>	<b>Background Concentration (Cb)</b>	<b>Maximum Concentration (Cr)</b>	<b>ODWS Classification</b>	<b>Objective Level (Cm)</b>
Conductivity	µS/cm	860	NV	NV	NV
Hardness	mg/L	407	80 to 100	OG	407
pH	unitless	7.94	6.5 to 8.5	OG	6.5-8.5
Alkalinity	mg/L	350	500	OG	425
Chloride	mg/L	47	250	AO	149
Nitrate	mg/L	0.11	10	MAC	2.58
Nitrite	mg/L	0.05	1	MAC	0.53
DOC	mg/L	2.81	5	AO	3.91
Ammonia	mg/L	0.08	NV	NA	NV
TKN	mg/L	0.46	NV	NA	NV
Sulphate	mg/L	53.5	500	AO	277
Iron	mg/L	0.03	0.3	AO	0.17
Sodium	mg/L	32	200	AO	116

**Notes:**

Background concentrations are derived from the averages of OW-5 from 2007 to 2024

NV = No Value

AO = Aesthetic Objective

OG = Operational Guideline

MAC = Maximum Acceptable Concentration (Health Related Parameter)

Concentrations in mg/L unless otherwise specified

**MOE Procedure B-7-1**

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

**Where:**

**C<sub>m</sub>** = Maximum Concentration Acceptable in Groundwater at Property Line

**C<sub>b</sub>** = Background Concentrations taken from OW1-92

**C<sub>r</sub>** = Maximum Concentration Acceptable as per the Ontario Drinking Water Standards (ODWS)

**x** = A Constant, 0.5 for Non-Health related Parameters, and 0.25 for Health Related Parameters

**TABLE 8  
SUMMARY OF GAS MONITORING RESULTS**

DATE	Oxygen (% by volume)					Methane (% by volume)					LEL (% by volume)				
	GP1	GP2	GP3	GP4	Scalehouse	GP1	GP2	GP3	GP4	Scalehouse	GP1	GP2	GP3	GP4	Scalehouse
July-07	NM	NM	NM	NM	NM	NM	NM	0.2%	NM	NM	0.0	0.0	4	0.0	NM
December-07	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	0.0	0.0	0	0.0	NM
January-08	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	0.0	0.0	0	0.0	NM
July-08	NM	NM	NM	NM	NM	NM	NM	2.5%	NM	NM	0.0	0.0	49	0.0	NM
December-08	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	0.0	0.0	0	0.0	NM
January-09	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	0.0	0.0	0	0.0	NM
March-10	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	0.0	0.0	0	0.0	NM
February-11	NM	NM	NM	NM	NM	NM	NM	9.0%	NM	NM	0.0	0.0	>100	0.0	NM
March-12	NM	NM	NM	NM	NM	NM	NM	16%	NM	NM	0.0	0.0	>100	0.0	NM
February-13	NM	NM	NM	NM	NM	NM	NM	77%	NM	NM	0.0	0.0	>100	0.0	NM
January-14	NM	NM	NM	NM	NM	NM	NM	35%	NM	NM	0.0	0.0	>100	0.0	NM
January-15	NM	NM	NM	NM	NM	NM	NM	24%	NM	NM	0.0	0.0	>100	0.0	NM
February-16	NM	NM	NM	NM	NM	NM	NM	10%	NM	NM	0.0	0.0	>100	0.0	NM
February-17	NM	NM	NM	NM	NM	NM	NM	4.5%	NM	NM	0.0	0.0	90	0.0	NM
February-18	NM	NM	NM	NM	NM	NM	NM	52%	NM	NM	0.0	0.0	>100	0.0	NM
March-19	NM	NM	NM	NM	NM	NM	NM	41%	NM	NM	0.0	0.0	>100	0.0	NM
February-20	NM	NM	NM	NM	NM	NM	NM	15%	NM	NM	0.0	0.0	>100	0.0	NM
February-21	NM	NM	NM	NM	NM	NM	NM	26%	NM	NM	0.0	0.0	>100	0.0	NM
February-22	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	0.0	0.0	34	0.0	NM
February-23	NM	NM	NM	NM	NM	NM	NM	9.3%	NM	NM	0.0	0.0	>100	0.0	NM
April-24	19.3	19.2	14.8	--	19.9	0.0	0.0	100.0%	--	0.0	0.0	0.0	0	--	0.0
October-24	19.7	20.1	20.2	20.2	20.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0
April-25	19.1	19.2	19.5	19.7	--	0.0	0.0	0.0	0.0	--	0.0	0.0	0.0	0.0	--
November-25	22.0	21.9	21.7	21.0	--	0.0	0.0	0.0	0.0	--	0.0	0.0	0.0	0.0	--

Notes:

1. NM = Not Monitored.
2. LEL = Lower Explosive Limit

## **Figures**

**Figure 1: Site Location Plan**

**Figure 2: Site Layout**

**Figure 3: Existing Conditions**

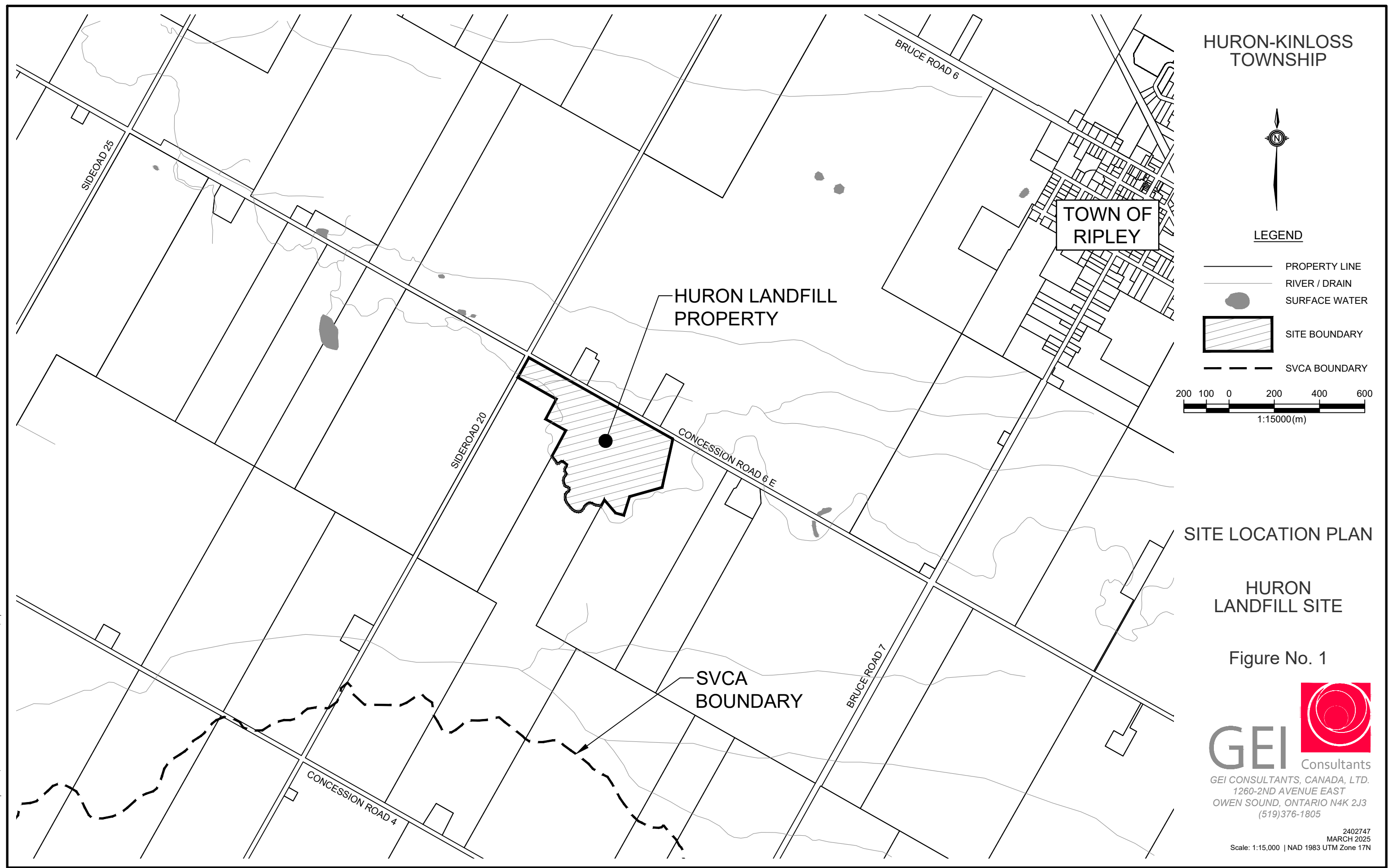
**Figure 4: Section A-A**

**Figure 5: Section B-B**

**Figure 6: Groundwater Flow Map**

**Figure 7: Final Contour Plan**

FILE:Working\HURON KINLOSS ON, TWP OF\2402747 - 224058 Annual Monitoring & Reporting - Huron Landfill Site\Drawings\2402747 - Figure 1 - Site Location.dwg LAYOUT:Site Location  
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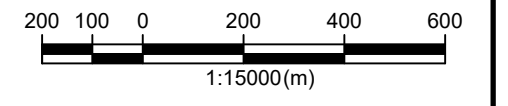


# HURON-KINLOSS TOWNSHIP



## LEGEND

- PROPERTY LINE
- RIVER / DRAIN
- SURFACE WATER
- SITE BOUNDARY
- SVCA BOUNDARY



## SITE LOCATION PLAN

### HURON LANDFILL SITE

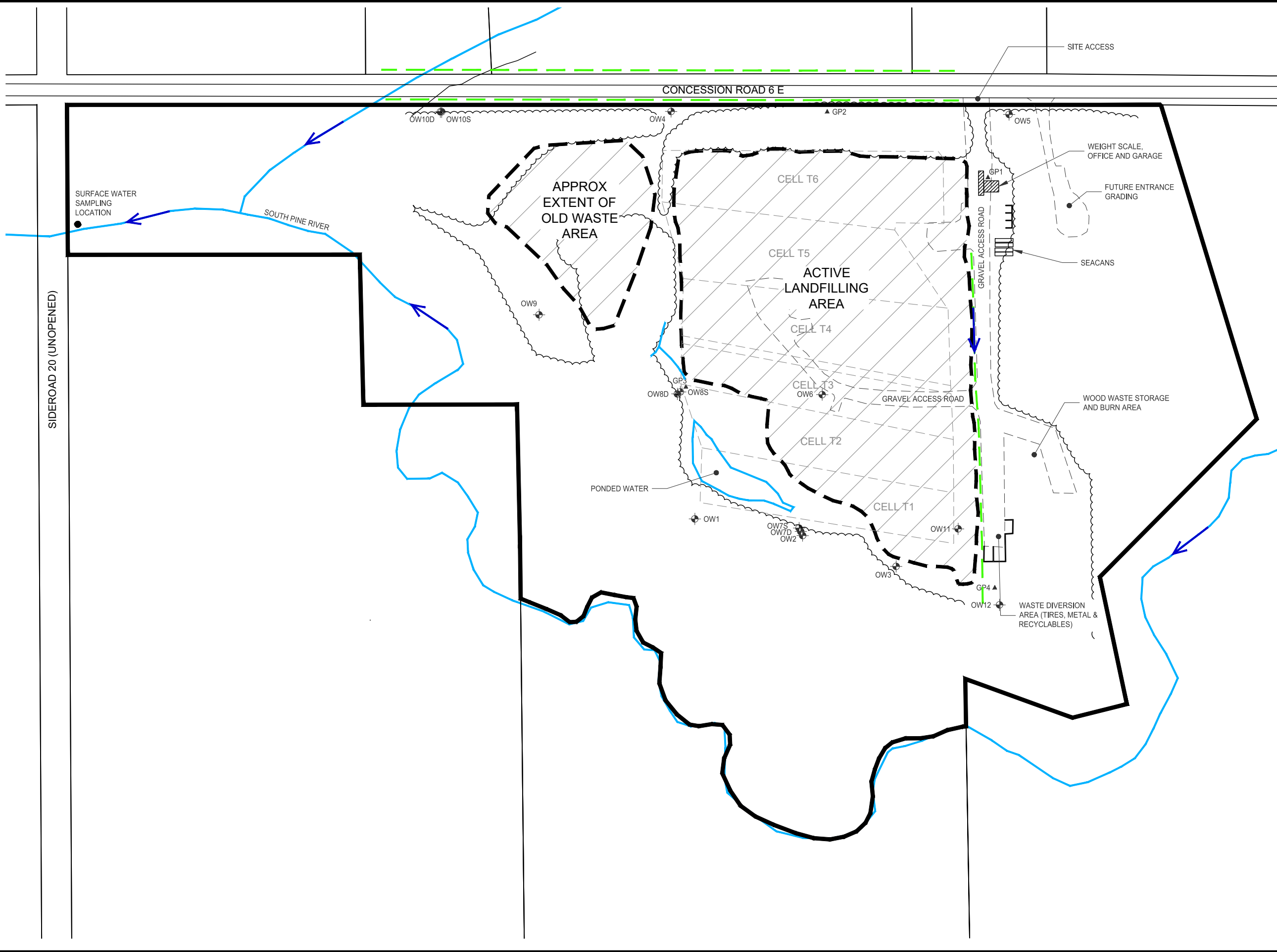
Figure No. 1

**GEI** Consultants  
GEI CONSULTANTS, CANADA, LTD.  
1260-2ND AVENUE EAST  
OWEN SOUND, ONTARIO N4K 2J3  
(519)376-1805












2402747  
MARCH 2025  
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FILE:Working\HURON KINLOSS ON, TWP OF\2402747 - 224058 Annual Monitoring & Reporting - Huron Landfill Site\Drawings\2402747 - Figure 2 - Site Layout.dwg LAYOUT:Site Layout  
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HURON-KINLOSS  
 TOWNSHIP



LEGEND

-  EXISTING DITCH
  -  DIRECTION OF FLOW
  -  PROPERTY LINE
  -  WATERCOURSE
  -  SITE BOUNDARY
  -  WASTE BOUNDARY
  -  STRUCTURES
  -  EDGE OF GRAVEL
  -  CELL BOUNDARY
  -  GP#
  -  OW##
- 30 15 0 25 50 100  
 1:2500 (m)

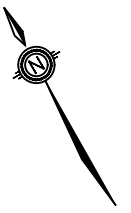
SITE LAYOUT

HURON  
 LANDFILL SITE

Figure No. 2

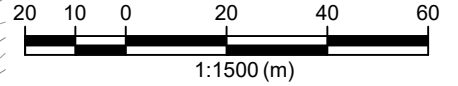
**GEI** Consultants  
 GEI CONSULTANTS, CANADA, LTD.  
 1260-2ND AVENUE EAST  
 OWEN SOUND, ONTARIO N4K 2J3  
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HURON-KINLOSS TOWNSHIP



LEGEND

- PROPERTY LINE
- WATERCOURSE
- SITE BOUNDARY
- WASTE BOUNDARY
- STRUCTURES
- EDGE OF GRAVEL
- CELL BOUNDARY
- GP# GAS PROBE
- OW## OBSERVATION WELL



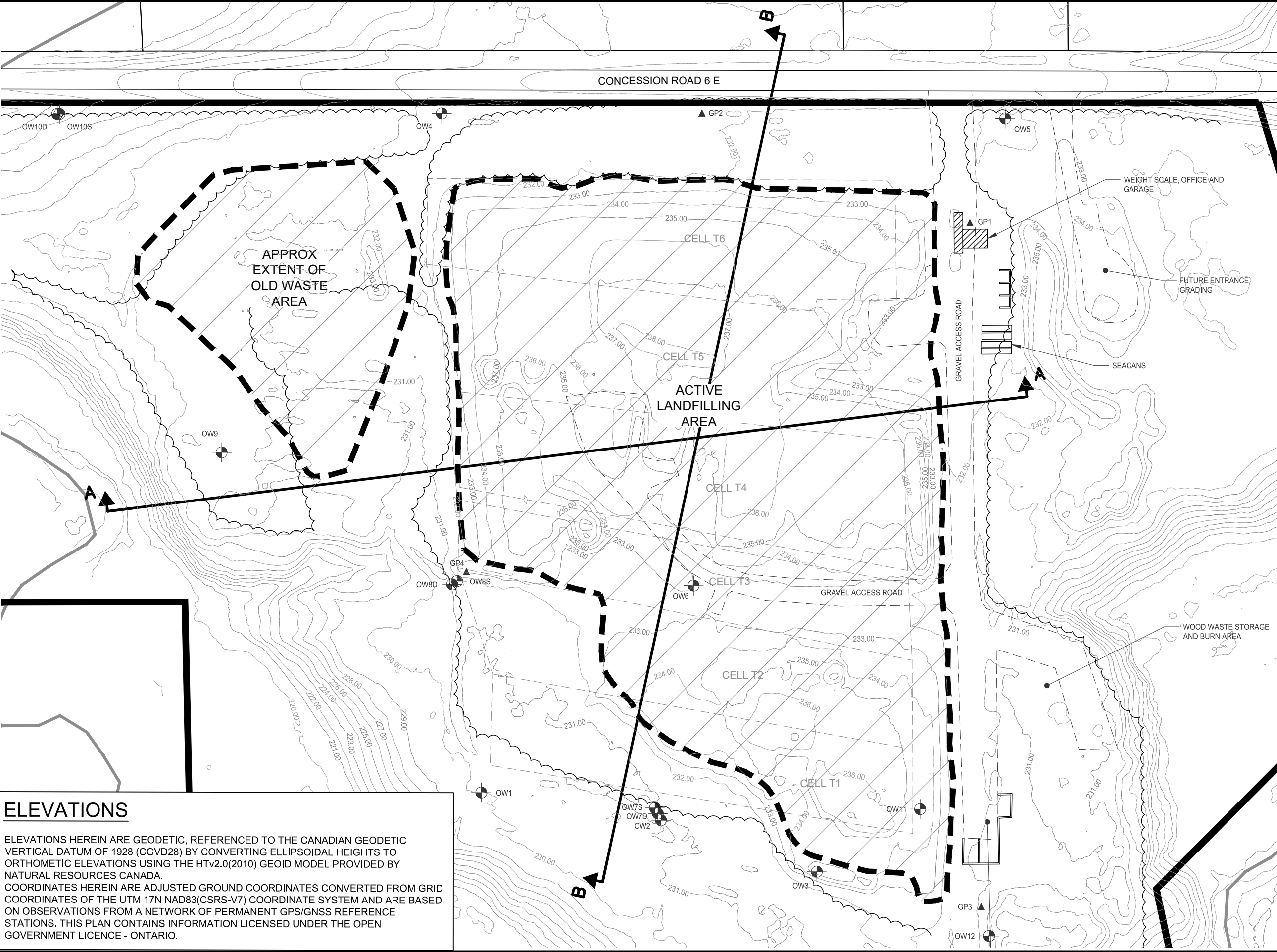
EXISTING CONDITIONS

HURON LANDFILL SITE

Figure No. 3

**GEI** Consultants  
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 OWEN SOUND, ONTARIO N4K 2J3  
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2402747  
 MARCH 2025  
 Scale: 1:1500 | NAD 1983 UTM Zone 17N



**ELEVATIONS**

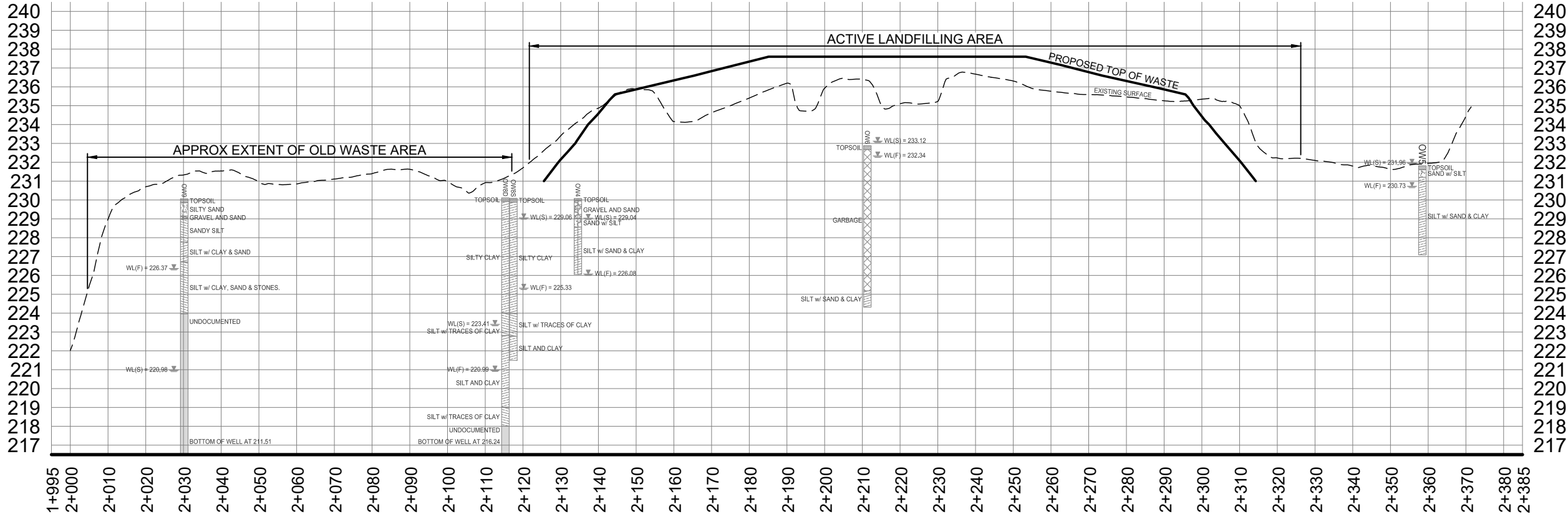
ELEVATIONS HEREIN ARE GEODETIC, REFERENCED TO THE CANADIAN GEODETIC VERTICAL DATUM OF 1928 (CGVD28) BY CONVERTING ELLIPSOIDAL HEIGHTS TO ORTHOMETRIC ELEVATIONS USING THE HTv2.0(2010) GEOID MODEL PROVIDED BY NATURAL RESOURCES CANADA.  
 COORDINATES HEREIN ARE ADJUSTED GROUND COORDINATES CONVERTED FROM GRID COORDINATES OF THE UTM 17N NAD83(CSR5-V7) COORDINATE SYSTEM AND ARE BASED ON OBSERVATIONS FROM A NETWORK OF PERMANENT GPS/GNSS REFERENCE STATIONS. THIS PLAN CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO.

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**LEGEND**

--- EXISTING SURFACE



**SECTION A-A**

H = 1:1250  
V = 1:250

**SECTION A-A**

**HURON  
LANDFILL SITE**

Figure No. 4

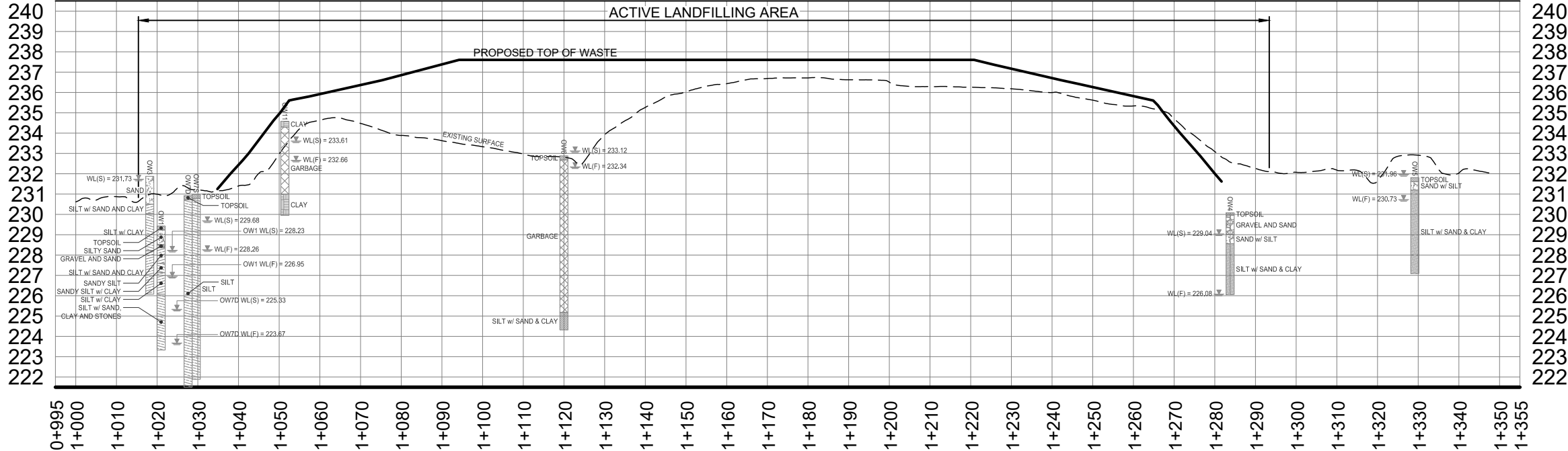
**GEI** Consultants  
 GEI CONSULTANTS, CANADA, LTD.  
 1260-2ND AVENUE EAST  
 OWEN SOUND, ONTARIO N4K 2J3  
 (519)376-1805

HURON-KINLOSS  
TOWNSHIP



LEGEND

----- EXISTING SURFACE



SECTION B-B

H = 1:1250  
V = 1:250

SECTION B-B

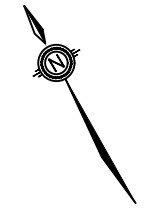
HURON  
LANDFILL SITE

Figure No. 5

**GEI** Consultants  
 GEI CONSULTANTS, CANADA, LTD.  
 1260-2ND AVENUE EAST  
 OWEN SOUND, ONTARIO N4K 2J3  
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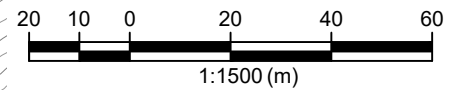
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HURON-KINLOSS TOWNSHIP



LEGEND

- PROPERTY LINE
- WATERCOURSE
- SITE BOUNDARY
- - - WASTE BOUNDARY
- ▨ STRUCTURES
- - - EDGE OF GRAVEL
- ▲ GP# GAS PROBE
- ⊕ OW## OBSERVATION WELL
- 230 — GROUNDWATER CONTOUR



GROUND WATER FLOW MAP

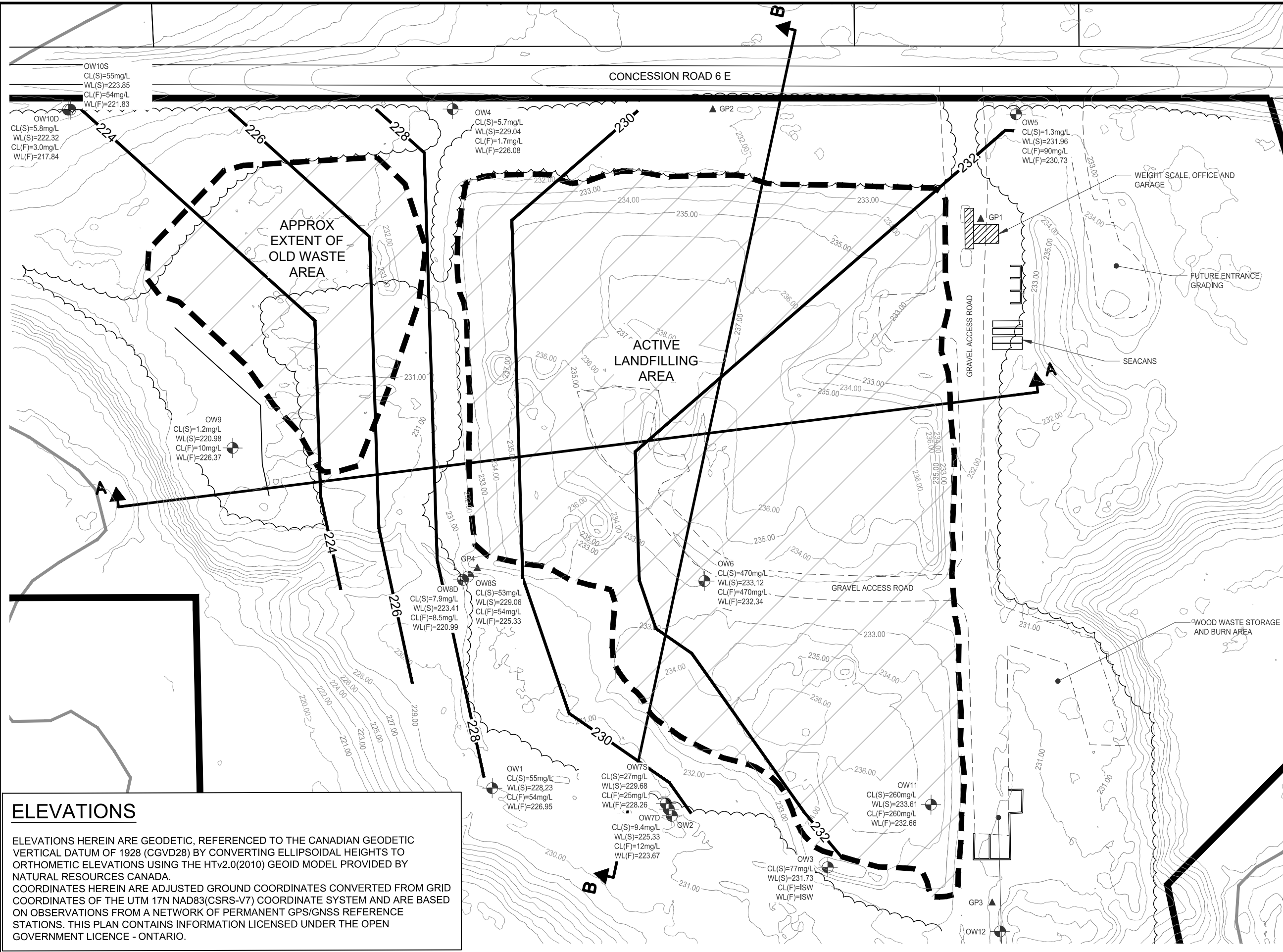
HURON LANDFILL SITE

Figure No. 6



**GEI** Consultants  
 GEI CONSULTANTS, CANADA, LTD.  
 1260-2ND AVENUE EAST  
 OWEN SOUND, ONTARIO N4K 2J3  
 (519)376-1805

2402747  
 MARCH 2025  
 Scale: 1:1500 | NAD 1983 UTM Zone 17N

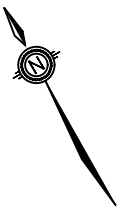


**ELEVATIONS**

ELEVATIONS HEREIN ARE GEODETIC, REFERENCED TO THE CANADIAN GEODETIC VERTICAL DATUM OF 1928 (CGVD28) BY CONVERTING ELLIPSOIDAL HEIGHTS TO ORTHOMETRIC ELEVATIONS USING THE HTV2.0(2010) GEOID MODEL PROVIDED BY NATURAL RESOURCES CANADA.  
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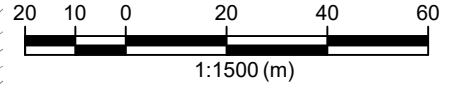
FILE:Working\HURON KINLOSS ON, TWP OF2402747 - 224058 Annual Monitoring & Reporting - Huron Landfill Site\Drawings\2402747 - Figure 6 - GW Flow Map.dwg LAYOUT:GW Flow Map  
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HURON-KINLOSS TOWNSHIP



LEGEND

- PROPERTY LINE
- WATERCOURSE
- SITE BOUNDARY
- WASTE BOUNDARY
- STRUCTURES
- EDGE OF GRAVEL
- GAS PROBE
- OBSERVATION WELL
- 230 FINAL CONTOURS



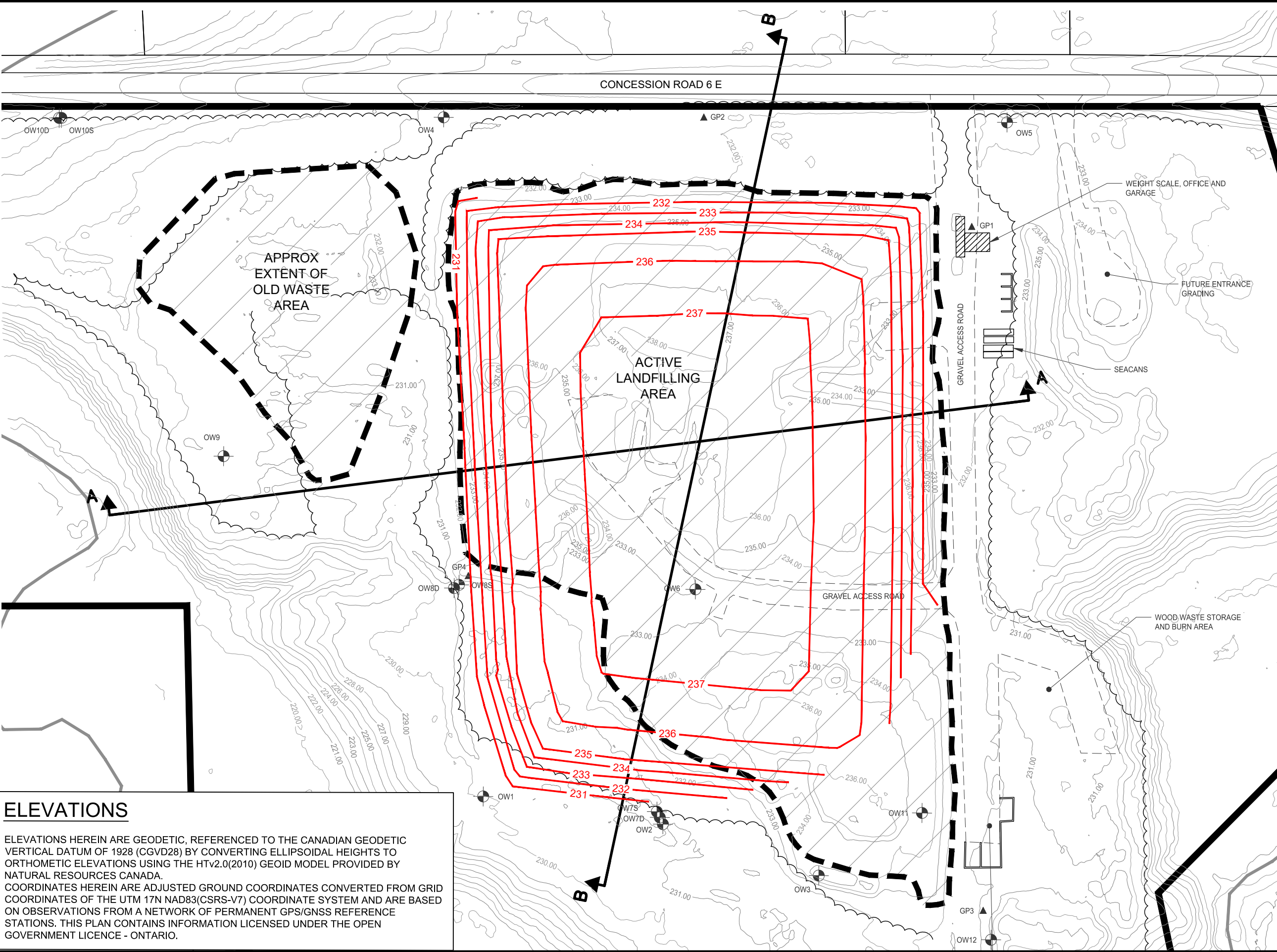
FINAL CONTOUR PLAN

HURON LANDFILL SITE

Figure No. 7

**GEI** Consultants  
 GEI CONSULTANTS, CANADA, LTD.  
 1260-2ND AVENUE EAST  
 OWEN SOUND, ONTARIO N4K 2J3  
 (519)376-1805

2402747  
 MARCH 2025  
 Scale: 1:1500 | NAD 1983 UTM Zone 17N



ELEVATIONS

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FILE:Working\HURON KINLOSS ON, TWP OF\2402747 - 224058 Annual Monitoring & Reporting - Huron Landfill Site\Drawings\2402747 - Figure 7 - Final Contour Plan.dwg LAYOUT:Final Contour Plan  
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## **Appendix A      Environmental Compliance Approval No. A271902**



Ministry  
of the Environment  
de l'Environnement

Provisional Certificate of Approval for a  
Waste Disposal Site

Certificat provisoire d'autorisation du  
lieu d'élimination des déchets

Provisional Certificate of Approval No. A-272601  
Certificat provisoire d'autorisation no

Page 1 of 2  
page de

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

Aux termes de la Loi sur la protection de l'environnement et des règlements y afférents et sous réserve des restrictions qui s'y appliquent, ce Certificat provisoire d'autorisation est délivré à:

Township of Huron,  
P. O. Box 149,  
Ripley, Ontario  
N0G 2R0

For the use and operation of an 8 hectare landfilling site within a total area of 17.7 hectares.

All in accordance with the following plans and specifications:

1. An application for a Certificate of Approval for a Waste Disposal Site (Landfill) completed by the Township of Huron, dated August 27, 1991.
2. Letter Re: Township of Huron Waste Disposal Site # A272601 dated August 20, 1991 from Maitland Engineering Services Ltd.

Located at: Part of Lots 19 and 20, Concession 5,  
Township of Huron, County of Bruce

Which includes the use of the site only for the disposal of the following categories of waste: (Note: Use of the site for additional categories of wastes requires a new application and amendments to the Provisional Certificate of Approval.) domestic, commercial, and non-hazardous solid industrial wastes (limited to scrap metal, wood, miscellaneous debris and inert fill).

Serving: The residents of the Township of Huron and the Village of Ripley.

and Subject to the following conditions:

1. This Certificate of Approval shall be registered on the title to the lands comprising the waste disposal site. No operation shall be carried out at the site after sixty days from this condition becoming enforceable unless this Certificate including the reasons for this condition has been registered by the applicant as an instrument in the appropriate Land Registry Office against title to the site and a duplicate registered copy thereof returned by the applicant to the Director, Approvals Branch, Ministry of the Environment.

Dated this  
day of

15

day of  
month

October

19 91

*[Handwritten signature]*



of the  
Environment

de  
l'Environnement

Provisional Certificate of Approval for a  
Waste Disposal Site  
*Certificat provisoire d'autorisation du  
lieu d'élimination des déchets*

Provisional Certificate of Approval No. A-272601  
*Certificat provisoire d'autorisation no*

Page 2 of 2  
page de

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

*Aux termes de la Loi sur la protection de l'environnement et des règlements y afférents et sous réserve des restrictions qui s'y appliquent, ce Certificat provisoire d'autorisation est délivré à:*

2. Site monitoring under the direction of a professional consultant shall be in accordance with the attached Schedule "B".
3. The Municipality shall submit an annual report, prepared by their Consultant, to the Owen Sound District Office, Ministry of the Environment, addressing the requirements of Section 5.1.5 of report Schedule "A" Item 3, for each year by the subsequent March 31, of the following year, commencing March 31, 1980. Provided that on-site till material is used for final cover, Section 5.1.5 (c) need not be addressed.
4. No waste other than segregated brush, lumber and clean wood shall be burned at this site, in an area separate from the stump waste and only under conditions that will not cause any adverse off-site impact.
5. Access to the burning area by the public and other unauthorized personnel is prohibited when burning is being carried out.
6. No burning shall be carried out unless supervision is provided by the operating authority at all times.
7. The terms and conditions set out in this Provisional Certificate of Approval replace all terms and conditions set out in any Certificate No. A-272601 issued previous to the date of this Certificate of Approval.

Dated this  
date ce

day of  
jour de

19

SCHEDULE "A"

This Schedule "A" forms part of Provisional Certificate of Approval No. A-272601 dated

1. Application for a Certificate of Approval for a waste disposal site dated July 13, 1972 submitted by the Township of Huron.
2. Application for a Certificate of Approval for a Waste Disposal Site (Landfill) dated December 20, 1985 submitted by the Township of Huron.
3. "Plan of Development and Operation, Township of Huron Waste Disposal Site, Township of Huron, County of Bruce" dated April 15, 1985, Revised October 11, 1985 prepared by Maitland Engineering Services Ltd.
4. Letter from the Township of Huron to the Ministry of the Environment dated November 26, 1987 requesting an emergency Certificate of Approval to include waste from the Village of Ripley.
5. Application for a Certificate of Approval for a Waste Disposal Site (Landfill) dated August 27, 1991, submitted by the Township of Huron.

SCHEDULE "B"

Water quality monitoring of the groundwater (three wells) and the surface water (Pine River upstream and downstream of the waste disposal site) plus the interceptor ditch shall be undertaken twice yearly in the periods of September-October and April-May commencing September-October, 1989.

Background water quality consisting of the following parameters shall be obtained on the first two monitoring occasions: pH, phenols, potassium, magnesium, calcium, sodium, sulphate, chloride, carbonate, bicarbonate, electrical conductivity, total kjeldahl nitrogen, nitrate, dissolved organic carbon and total metals (As, Cd, Co, Cr, Cu, Sg, Mn, Ni, Pb, Se, So, Cn, Zn).

Subsequent water quality monitoring shall be only for the following "indicator parameters": pH, conductance, chloride, hardness, DOC and phenols.

All surface water samples shall be tested for turbidity, total phosphorous and ammonia in addition to those parameters listed above.

All groundwater samples shall be field filtered utilizing a 0.45 micron filter.

Static water levels are to be obtained in the groundwater monitoring wells prior to commencing the sampling procedure. Each well is to be bailed the equivalent of three casing lengths of water prior to obtaining the sample.

TO:

Township of Huron  
P. O. Box 149  
Ripley, Ontario  
N0G 2R0

You are hereby notified that Provisional Certificate of Approval No. A 272601 has been issued to you subject to the conditions outlined therein.

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

1. The reason for Condition 1 requiring registration of the Certificate is that Section 45 of the Environmental Protection Act, prohibits any use being made of the lands after they cease to be used for waste disposal purposes within a period of twenty-five years from the year in which such land ceased to be used unless the approval of the Minister for the proposed use has been given. The purpose of this prohibition is to protect future occupants of the site and the environment from any hazards which might occur as a result of waste being disposed of on the site. This prohibition and potential hazard should be drawn to the attention of future owners and occupants by the Certificate being registered on title.
2. The reasons for Conditions 2 and 3, are to ensure that the approved water quality monitoring program is established with interpretation on a routine basis in conjunction with the site operation and development to document and remedy, if warranted, potential environmental problems associated with the operation of the site.
3. The reason for Condition 4, is that the burning of wastes other than segregated brush, lumber and clean wood results in unacceptable emissions of air contaminants.
4. The reason for Conditions 5 and 6 is that restricted access to the burning area and adequate supervision are required to ensure that burning is carried out in an acceptable manner under the proper conditions and only suitable types of waste are burned.
5. The reason for Condition 7 is to clarify that this Certificate sets out all of the requirements imposed with respect to this site other than requirements imposed by legislation and the common law.

The use and operation of this site without the above conditions may create a nuisance or result in a hazard to the health and safety of any person.

- 2 -

You may by written notice served upon me and the Environmental Appeal Board within 15 days after receipt of this Notice, require a hearing by the Board. Section 122a of the Environmental Protection Act, R.S.O. 1980, c. 141, as amended, provides that the Notice requiring the hearing shall state the portions of each term or condition in the approval in respect of which the hearing is required and the grounds on which you intend to rely at the hearing.

This Notice should be served upon:

The Secretary  
Environmental Appeal Board  
112 St. Clair Avenue West      AND  
Suite 502  
Toronto, Ontario.  
M4V 1N3

The Director  
Section 38, E.P.A.  
Ministry of the Environment  
250 Davisville Ave.  
Toronto, Ontario.  
M4S 1H2

Dated at <sup>London</sup> Toronto this 15<sup>th</sup> day of October, 1991



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Director,  
Section 38, E.P.A.  
Ministry of the Environment

AMENDMENT TO PROVISIONAL CERTIFICATE OF  
APPROVAL  
WASTE DISPOSAL SITE  
NUMBER A272601  
Notice No. 2  
Issue Date: July 6, 2010

The Corporation of the Township of Huron-Kinloss  
21 Queen St  
Ripley, Ontario  
N0G 2R0

Site Location: Huron Landfill Site  
Lot 19 and 20, Concession 5  
Huron-Kinloss Township, County of Bruce

*You are hereby notified that I have amended Provisional Certificate of Approval No. A272601 issued on October 15, 1991, as amended for a waste disposal Site, consisting of 8.0 hectares Waste Fill Area within a total Site Area of 17.7 hectares , as follows:*

1. LANDFILLING BY AREA METHOD

Pursuant to Section 27 of the *Environmental Protection Act*, approval is hereby granted to change the landfilling operation at the Huron Landfill from Trench method to Area method, for the disposal of domestic, commercial, and solid non-hazardous industrial wastes (limited to scrap metal, wood, miscellaneous debris and inert fill); and

2. OPERATION OF WASTE SEGREGATION/RECYCLING AND WEEE FACILITIES

Pursuant to Section 27 of the *Environmental Protection Act*, approval is hereby granted for the establishment and operation of waste segregation/recycling centre and WEEE program at the Huron Landfill Site, for the acceptance, temporary storage, and transfer of non-putricible recyclable waste;

all in accordance with the following documentation which is added to Schedule "A", and forms part of the Provisional Certificate of Approval No. A272601, and subject to the terms and conditions listed herein:

Note: Use of the Site for any other type of waste and/or any other waste management activity is not approved under this Certificate, and requires obtaining a separate approval amending this Certificate.

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

**DEFINITIONS:**

- a. "*Certificate* " means this entire Provisional Certificate of Approval No. A272601, issued in accordance with section 39 of the *EPA* , and includes any schedules to it, the application and the supporting documentation listed in schedule "A";
- b. "*Director* " means any *Ministry* employee appointed in writing by the Minister pursuant to section 5 of the *EPA* as a Director for the purposes of Part V of the *EPA*;
- c. "*District Manager* " means the District Manager of the Owen Sound district office of the Ministry of the Environment;
- d. "*EPA* " means *Environmental Protection Act* , R.S.O. 1990, c. E. 19, as amended;
- e. "*Operator* " means any person, other than the Owner's employees, authorized by the Owner as having the charge, management or control of any aspect of the site and includes its successors or assigns;
- f. "*Owner* " means any person that is responsible for the establishment or operation of the site being approved by this *Certificate* , and includes the Township of Huron-Kinloss, its successors and assigns;
- g. "*Provincial Officer* " means any person designated in writing by the Minister as a provincial officer pursuant to section 5 of the *OWRA* or section 5 of the *EPA* .
- h. "*Regional Director* " means the Regional Director of the Southwestern Regional Office of the Ministry of the Environment;
- i. "*Regulation 232* " or "*Reg. 232* " means Ontario Regulation 232/98 (New Landfill Standards) made under the *EPA* , as amended from time to time;
- j. "*Regulation 347* " or "*Reg. 347* " means Regulation 347, R.R.O. 1990, made under the *EPA* , as amended from time to time;
- k. "*Site* " means the entire waste disposal site, including the buffer lands/contaminant attenuation zone, located at Lot 19, 20, Concession 5, Huron-Kinloss Township, County of Bruce, approved by this *Certificate* .
- l. "*Trained personnel*" means knowledgeable in the following through instruction and/or practice:
  - relevant waste management legislation, regulations and guidelines;

- major environmental concerns pertaining to the waste to be handled;
- occupational health and safety concerns pertaining to the processes and wastes to be handled;
- management procedures including the use and operation of equipment for the processes and wastes to be handled;
- emergency response procedures;
- specific written procedures for the control of nuisance conditions;
- Specific written procedures for refusal of unacceptable waste loads;
- the requirements of this *Certificate* .

m. "OWRA" means Ontario Water Resources Act, R. S. O. 1990

n. "WEEE" means Waste Electrical and Electronic Equipment (WEEE) Program

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

## **TERMS AND CONDITIONS**

### **1.0 GENERAL**

- 1.1 Except as otherwise provided by these conditions, the Site shall be designed, developed, used, maintained and operated, and all facilities, equipment and fixtures shall be built and installed, in accordance with the Applications for Provisional Certificate of Approval for a Waste Disposal Site, dated August 29, 2008 and April 23, 2009, and supporting documentation, and plans and specifications listed in Schedule "A".
- 1.2 The requirements specified in this Certificate are the requirements under the Environmental Protection Act, R.S.O. 1990. The issuance of this Certificate in no way abrogates the Owner/Operator's legal obligations to take all reasonable steps to avoid violating other applicable provisions of this legislation and other legislation and regulations.
- 1.3 The requirements of this Certificate are severable. If any requirement of this Certificate, or the application of any requirement of this Certificate to any circumstance, is held invalid, the application of such requirement to other circumstances and the remainder of this Certificate shall not be affected in any way.
- 1.4 The Owner/Operator shall ensure compliance with all the terms and conditions of this Certificate. Any non-compliance constitutes a violation of the Environmental Protection Act, R.S.O. 1990 and is grounds for enforcement.
- 1.5 (a) The Owner/Operator shall, forthwith upon request of the Director, District Manager, or Provincial Officer (as defined in the Act), furnish any information requested by such persons with respect to compliance with this Certificate, including but not limited to, any records required to be kept under this Certificate; and

- (b) In the event the Owner/Operator provides the Ministry with information, records, documentation or notification in accordance with this Certificate (for the purposes of this condition referred to as "Information"),
- (i) the receipt of Information by the Ministry;
  - (ii) the acceptance by the Ministry of the Information's completeness or accuracy; or
  - (iii) the failure of the Ministry to prosecute the Owner/Operator, or to require the Owner/Operator to take any action, under this Certificate or any statute or regulation in relation to the Information;

shall not be construed as an approval, excuse or justification by the Ministry of any act or omission of the Owner/Operator relating to the Information, amounting to non-compliance with this Certificate or any statute or regulation.

- 1.6 The Owner/Operator shall allow Ministry personnel, or a Ministry authorized representative(s), upon presentation of credentials, to carry out any and all inspections authorized by Section 156, 157 or 158 of the Environmental Protection Act, R.S.O. 1990, Section 15, 16 or 17 of the Ontario Water Resources Act, R.S.O. 1990, or Section 19 or 20 of the Pesticides Act, R.S.O. 1990, as amended from time to time, of any place to which this Certificate relates; and, without restricting the generality of the foregoing, to:
- a. enter upon the premises where the records required by the conditions of this Certificate are kept;
  - b. have access to and copy, at reasonable times, any records required by the conditions of this Certificate;
  - c. inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations required by the conditions of this Certificate; and
  - d. sample and monitor at reasonable times for the purposes of assuring compliance with the conditions of this Certificate.
- 1.7 (a) Where there is a conflict between a provision of any document referred to in Schedule "A", and the conditions of this Certificate, the conditions in this Certificate shall take precedence; and
- (b) Where there is a conflict between documents listed in Schedule "A", the document bearing the most recent date shall prevail.
- 1.8 The Owner/Operator shall ensure that all communications/correspondence made pursuant to this Certificate includes reference to the Provisional Certificate of Approval Number, A272601.
- 1.9 The Owner/Operator shall notify the Director in writing of any of the following changes within

thirty (30) days of the change occurring:

- a. change of Owner or Operator of the Site or both;
  - b. change of address or address of the new Owner;
  - c. any change of name of the company, and a copy of the most current "Initial Notice or Notice of Change" (form 1 or 2 of O. Reg. 182, Chapter C-39, R.R.O. 1990 as amended from time to time), filed under the Corporations Information Act shall be included in the notification to the Director; and
  - d. change in directors or officers of the company, and a copy of the most current "Initial Notice or Notice of Change" as referred to in 12(c), supra.
- 1.10 In the event of any change in ownership of the Site, the Owner/Operator shall notify, in writing, the succeeding owner of the existence of this Certificate, and a copy of such notice shall be forwarded to the Director.
- 1.11 Any information relating to this Certificate and contained in Ministry files may be made available to the public in accordance with the provisions of the Freedom of Information and Protection of Privacy Act, R.S.O. 1990, C. F-31.
- 1.12 All records and monitoring data required by the conditions of this Certificate must be kept on the Site for a minimum period of two (2) years from the date of their creation.

#### **Transferral or Encumbrance of Site**

- 1.13 No portion of this Site shall be transferred or encumbered prior to or after closing of the Site, unless the Director is notified in advance in writing and is satisfied with the arrangements made to ensure that all terms and conditions of this Certificate will be carried out and sufficient financial assurance (EPA, Part XII) is deposited with the Ministry, to ensure that these terms and conditions will be carried out.

## **2.0 SITE DESIGN AND DEVELOPMENT**

### **Service Area**

- 2.1 Only waste generated from within the geographic boundaries of the **Township of Huron-Kinloss** shall be received for disposal at this Site. No waste generated and/or transferred from outside the **Township of Huron-Kinloss** shall be received for disposal at this Site.

### **Waste Types**

- 2.2 Only domestic, commercial, and solid non-hazardous industrial wastes (limited to scrap metal, wood, miscellaneous debris and inert fill), shall be received for disposal at this Site. **No hazardous**

**waste or liquid industrial waste**, as defined in Reg. 347, and as amended, shall be disposed at the Site.

### **Waste Fill Rate**

- 2.3 The maximum rate at which the Site shall receive waste for disposal, is limited to **100 tonnes per day**, and **3,000 tonnes per calendar year**. The receipt of waste in excess of the daily maximum fill rate may only be allowed on a limited short-term basis, on no more than two consecutive operating days, and only with prior notification and concurrence from the District Manager.

### **Site Capacity**

- 2.4 The total waste disposal capacity of the Site (waste filled by trench method and by area method), including waste, daily cover and interim cover is **288,000 cubic metres**.

### **Waste Placement**

- 2.5 Landfilling operations shall be conducted by **Area method** in which waste shall be filled and compacted over the prepared base or on previously filled areas, as applicable, in layers and covered with approved cover material, in accordance with the "Design and Operations Plan (Revised)" (Section 3.4), Item 8 in Schedule "A", attached to this Certificate.
- 2.6 The Site shall be developed in a progressive manner from the northwest corner (Cell 1) towards eastward and landfilling shall be carried out sequentially from the top surface of the existing waste, in cells 1 to 6, each cell measuring approximately 40 metres in width, as shown on Map 3, "Initial Stage of Landfilling Operation", dated August 13, 2008, included in the "Design and Operations Plan (Revised)", Item 8, in Schedule "A", attached to this Certificate. No waste shall be landfilled outside the **limit of the 8.0 hectares footprint fill area**, surrounded on all sides by a minimum **30 metres** wide buffer.
- 2.7 Prior to landfilling by **Area method**, detailed Drawing showing the base preparation grades/contours consistent with the conceptual design minimum base elevations (i.e. top of existing waste by trench method), shall be submitted by the Owner/Operator, copied to the District Manager, for approval by the Director. No waste shall be landfilled below the top surface of the existing waste, as shown on Map 2, (Site Plan), dated January 6, 2010, included in Item 8, in Schedule "A", attached to this Certificate.
- 2.8 No waste shall be landfilled at any time above the **final contours** shown on Map 6, "Final Contours", dated January 6, 2010, included in the "Design and Operations Plan (Revised)", Item 8, in Schedule "A", attached to this Certificate. The maximum elevation of the fill area, including final cover, shall not exceed **238.75 metres above sea level**. Final slopes above grade at the time of site closure within the waste fill area shall be within the range of 4H:1V (25%) on the sides, and 20H:1V (5%) on the top surface.
- 2.9 Prior to waste placement in each cell, the existing vegetation, topsoil and cover material shall be

stripped to the top of the existing waste to provide hydraulic continuity through the existing and the new waste masses.

### **3.0 SITE OPERATIONS**

#### **Hours of Operation**

- 3.1 The Site shall be opened to receive waste for disposal from **Monday to Saturday, from 08:00 am to 5:00 pm**, as described in Item 13 in Schedule "A", attached to this Certificate. The Site shall be closed on statutory holidays.
- 3.2 The hours of operation may be amended from time to time to accommodate seasonal or unusual demand, based on prior concurrence from the District Manager.

#### **Daily, Interim and Final Covers**

- 3.3 Daily, interim and final cover material shall be applied in accordance with the Design & Operations Plan (Revised), (Section 3.5), Item 8 in Schedule "A", attached to this Certificate, and as follows:

- a. **Daily Cover** - At the end of each working day, after deposition of waste into the waste fill area, the entire working face shall be compacted and covered with a minimum thickness of 150 mm of soil cover or an approved thickness of alternative cover material such as **compost, wood-chips or foundry sand**. Prior to placing waste at the start of the next operating day, the existing daily cover material shall be scarified or removed to the extent practical, to ensure vertical hydraulic connection is maintained between layers of waste and to promote percolation of leachate downwards.
- b. **Interim Cover** - In areas where landfilling ceases temporarily for a period of 6 months or more, a minimum thickness of 300 mm of soil shall be placed as interim cover. The quality of soil for use as interim cover shall, as a minimum, meet the criteria for Industrial/Commercial land use specified in Table A in the Ministry's "Guideline for Use at Contaminated Sites in Ontario", revised February 1997.
- c. **Final Cover** - Final cover shall be applied progressively as areas of the landfill reach final waste elevations. The final soil cap shall consist of a minimum 600 mm thickness of impermeable compacted soil overlain by a minimum 150 mm topsoil and vegetative cover, as described in Section 2.3 in Item 8 in Schedule "A", attached to this Certificate. Prior to placement of final cover, the Owner/Operator shall submit for the approval of the Director, a report detailing the specifications, including particle size distribution of the final cover soil which shall confirm the designed permeability of  $10^{-3} \text{cm/sec}$  or less, as well as the protocols for testing and acceptance for on-site and off-site final cover soils. All areas of final cover shall be graded and vegetated as soon as practically possible.

#### **Alternative Daily and Interim Cover Materials**

3.4 Alternative materials to that approved under Condition 3.3 above, may be used as daily and interim cover material, based on an application with supporting information and applicable fee for a trial use or permanent use, submitted by the Owner/Operator to the Director, copied to the District Manager, and as approved by the Director via an amendment to this Certificate. The alternative material shall be non-hazardous according to Reg. 347 and will be expected to perform at least, as well as soil in relation to the following functions:

- a. Control of blowing litter, odours, dust, landfill gas, gulls, vectors, vermin and fires;
- b. Provision for an aesthetic condition of the landfill during the active life of the Site;
- c. Provision for vehicle access to the active tipping face; and
- d. Compatibility with the design of the Site for groundwater protection, leachate management and landfill gas management.

#### **Site Supervision and Security**

3.5 No waste shall be received, landfilled or transferred from the Site/Facilities unless a site supervisor

or attendant is present and supervises the operations during operating hours. The Site shall be closed when a site attendant is not present to supervise landfilling and/or waste transfer operations.

- 3.6 The Site shall be operated and maintained in a secure manner with lockable entrance and exit gates, such that unauthorized persons cannot enter the Site, during non-operating hours.

#### **Nuisance Controls and Adverse Effects**

- 3.7 The Owner/Operator shall implement control measures for odour, litter, birds, vector and vermin, as described in Sections 3.12 and 3.13 in Item 8 in Schedule "A", attached to this Certificate. Effectiveness of the control measures shall be reviewed and monitored regularly and updated/revised, as required, based on operational experience and complaints.
- 3.8 (a). The *Owner/Operator* shall ensure that wind-blown litter originating from the waste management activities at the Site is picked up regularly along the Site perimeter roads and access roads.
- (b). The *Owner/Operator* shall, at its own expense, remove wind-blown litter originating from the waste management activities at the Site, from adjacent neighbouring properties of the Site, a minimum once per month or more frequently when wind-blown litter from the Site becomes severe.
- 3.9 The Site shall be operated and maintained such that any other operational impacts, including dust, noise and traffic, do not create a nuisance. Any adverse effect on the natural environment or impairment of water quality resulting from the operations of the site, shall be ameliorated promptly, including such accelerated or additional monitoring as may be necessary to determine the nature and extent of the impairment.

#### **Signage**

- 3.10 The existing sign shall be maintained at the main entrance/exit to the *Site* on which is legibly displayed the following information:
- (a) the name of the *Site* and *Owner /Operator*;
  - (b) the number of the Certificate;
  - (c) the normal hours of operation;
  - (d) the allowable and prohibited waste types;
  - (e) the telephone number to which complaints may be directed;
  - (f) a twenty-four (24) hour emergency telephone number (if different from above); and
  - (g) a warning against dumping outside the *Site* .
- 3.11 Signs shall also be posted along internal access roads controlling vehicle speed, turning movements and to direct vehicles and/or users to the working face and other designated areas and facilities on the Site, as appropriate. All landfill signs shall be kept legible, in good repair, and cleaned when required.

#### 4.0 WASTE SEGREGATION/RECYCLING AND WEEE FACILITIES

##### Design and Operations Manual

- 4.1 By December 31, 2010, the Owner/Operator shall submit for the approval of the Director, copy to the District Manager, an application with applicable fees, supported by detailed Design and Operations Manual for the Waste Segregation/Recycling and WEEE program Facilities. The detailed design and operations manual for the Facilities shall reflect the conceptual design and operations, as presented in Item 8 (Section 3.11), in Schedule "A", attached to this Certificate. The manual shall as a minimum, include, but not be limited to the following:
- (a) a full-scale site plan and specifications, showing the footprint of the 8.0 hectares waste fill area, the boundaries of the buffer/contaminant attenuation zone and the entire Site boundaries; and indicating all waste management activities, as well as the location and type of finished surface for each storage area, and identifying any storage bins;
  - (b) specify the area and storage capacity for each designated storage location;
  - (c) operating hours for receipt of materials at the facilities which shall be within the general hours of operation of the landfill site, and frequency for removal/transfer of stockpiled materials;
  - (d) an outline of the responsibilities of site personnel;
  - (e) personnel training protocols;
  - (f) procedure for monitoring incoming waste, and record-keeping procedures;
  - (g) proper storage, containment, handling, sorting and shipping procedures which shall avoid the creation of environmental nuisance or adverse effect;
  - (h) details on the inspection/monitoring, maintenance, repair and replacement of the facilities, as necessary;
  - (i) contingency measures and procedures to be followed by personnel in the event of fire, or spills or litter, or complaints, or any environmental nuisance or hazard, or other emergencies;
  - (j) proper management of other diverted materials such as rough fill (i.e. concrete slabs and stumps). provide detailed description of the final disposal/removal of this material;
  - (k) procedure detailing how unauthorised materials will be dealt with.
- 4.2 Any design optimization or modification that is inconsistent with the conceptual design and operation shall be clearly identified, along with an explanation of the reasons for the change.
- 4.3 The Waste Segregation/Recycling and the WEEE Facilities shall only accept **scrap metals, tires, white goods, solid non-hazardous recyclable materials, including cardboards, rough fill (i.e. concrete slabs and stumps), bale-wrap, propane canisters and E-waste**, which shall be segregated, stored temporary for a period not exceeding 120 days from the date of first receipt, or as needed, and transferred for off-site disposal, to ensure that the design storage capacities are not exceeded at any time. The storage of specific material beyond 120 days may be allowed, only with prior notification and written concurrence from the District Manager.
- 4.4 If the storage of material causes nuisance, or adverse effect, or fire hazard, the material shall be removed or transferred immediately regardless of the permitted storage period. If for any reason

waste cannot be transferred from the Waste Segregation/Recycling Facility, the Waste Segregation/Recycling Facility shall cease accepting waste.

- 4.5 The Waste Segregation/Recycling and the WEEE program Facilities shall be operated in a secure manner within containment structures or in storage containers, such that temporary storage of waste materials will not create nuisance, or fire hazard, or adverse effect. Containment structures or storage containers shall be clearly labeled to indicate the type and nature of the waste stored.
- 4.6 Any material/waste containing soluble or decomposable substances which may adversely impact the quality of surface water and groundwater, shall be placed on a floor/pad, to minimize the potential for adverse impacts.
- 4.7 Any white goods received which contain refrigerants shall have the refrigerants removed by a licenced technician in accordance with Ontario Regulation 189, prior to being shipped off-site.
- 4.8 The maximum number of **tire units** stored at the facility at any one time shall not exceed **5,000 units**.

## **5.0 INSPECTION AND MAINTENANCE**

- 5.1 The Owner/Operator shall conduct regular inspections of the Site, including the active waste tipping area, Waste Segregation/Recycling and WEEE Facilities and associated equipment, buildings/shacks, final cover, security fencing and barriers, to ensure that all are maintained in good working order and secure at all times and to ensure that no off-site impacts such as vermin, vectors, odour, dust, and litter, result from the operations of the Site/Facilities to cause any nuisance or adverse effect on the environment.
- 5.2 If any inspection indicates that there is an area of ponding or zero slope in the final soil capped area, and/or any deficiencies detected during these regular inspections, the Owner/Operator shall take all steps necessary to provide positive drainage and rehabilitate the final soil cap, and/or any deficiencies detected as soon as practically possible.
- 5.3 A written record of the inspections shall be maintained at the Site, and shall include the following:
  - (a) name and signature of trained personnel conducting the inspection;
  - (b) date and time of the inspection;
  - (c) list of equipments and Facilities inspected and all deficiencies and/or any nuisance impacts observed;
  - (d) a detailed description of any maintenance/repairs carried out and/or remedial action taken in order to control the nuisance;
  - (e) date and time of maintenance/repair activity; and
  - (f) recommendations for remedial action and any preventative measures taken to prevent future reoccurrences.

## **6.0 ENVIRONMENTAL CONTROL AND MONITORING**

- 6.1 Subject to the addition of Arsenic and Nitrate-N in the suite of parameters listed in Table 4, for groundwater quality monitoring, the Owner/Operator shall carry out monitoring programs for surface water, groundwater/leachate and landfill gas, as described in Section 6.4 and summarized in Table 4, in Item 8 in Schedule "A", as amended in Item 12, in Schedule "A", attached to this Certificate, and as per written recommendations of the District Manager, through the review of annual monitoring Reports, and any related OWRA requirements.
- 6.2 The groundwater quality at the site boundary shall meet the Ontario Drinking Water Quality Standards (DWQS) and the Provincial Water Quality Objectives (PWQO). The applicable parameters to meet the DWQS and PWQO, shall be selected and monitored through a recommendation in the Annual Monitoring Report, subject to the prior approval of the District Manager.
- 6.3 Upon commencement of landfilling by area method, the Owner/Operator shall commence developing a leachate quality profile, updated leachate quantity estimate generated, and the appropriate long-term leachate management plan for the Site. The results of the leachate management plan shall be included in the first annual report for the Site, as required by this Certificate.
- 6.4 If monitoring results show exceedance of the Provincial Water Quality Objectives along the Site boundary due to the landfill operations, the Owner/Operator shall install new wells downgradient of the existing wells, to confirm the suitability of groundwater quality discharging off-site. The appropriate sampling stations shall be determined and reviewed with the Ministry, prior to installation.
- 6.5 The Owner/Operator shall replace any on-site and/or off-site monitoring wells installed under the monitoring program, which are destroyed or in any way made inoperable for sampling, in a timely manner, so that regular sampling event is not severely compromised.

#### **Surface Water Management**

- 6.6 Within one (1) year of the date of this Notice, the Owner/Operator shall submit an application with applicable fees, for approval under OWRA, copied to the District Manager, to install a stormwater management facility for the site, as described in Section 7.0 in Item 8 in Schedule "A", as amended in Item 12, in Schedule "A", attached to this Certificate, to assess the interaction between groundwater and surface water, and on-site and the South Pine River.

#### **Landfill Gas Monitoring**

- 6.7 The Owner/Operator shall ensure that all buildings and structures existing at the Site or to be built on-Site which at times are occupied by people, or contains electrical equipment, or a potential source of ignition, are situated, constructed and monitored in a manner which minimizes the potential for explosive hazards due to landfill gas.

6.8 The Owner/Operator shall ensure that any proposed changes to the monitoring programs under this Certificate shall be implemented subject to prior written concurrence of the District Manager.

#### **7.0 TRIGGER MECHANISM AND CONTINGENCY PLANS**

7.1 The Owner/Operator shall carry out trigger mechanism for surface water, groundwater/leachate and landfill gas, as described in Section 9.0 and summarized in Table 5, in Item 8 in Schedule "A", as amended in Item 12, in Schedule "A", attached to this Certificate, and as per written recommendations of the District Manager, through the review of annual monitoring Reports.

7.2 In the event of a confirmed exceedance of the site-specific trigger level relating to groundwater/leachate, or surface water impacts due to leachate, or landfill gas, the Owner/Operator shall immediately notify the District Manager, and an investigation into the cause and the need for implementation of remedial or contingency actions shall be carried out by the Owner/Operator in accordance with the trigger mechanisms and associated contingency plans, as described in Section 9.2 in Item 8 in Schedule "A", attached to this Certificate.

7.3 The Owner/Operator shall ensure that any proposed changes to the site-specific trigger levels for leachate impacts to the groundwater and surface water, shall be approved in writing and in advance, by the District Manager.

#### **8.0 STAFF TRAINING PLAN**

8.1 The Owner/Operator shall develop and maintain a training plan for Site operations employees and shall ensure that all site operations employees have been adequately trained and received on-going training with respect to the following, as amended:

- (a) terms, conditions and operating requirements of this Certificate, A272601 and Notices for the Site;
- (b) the operation, inspection, and maintenance of the Site with respect to the approved design and operations documents;
- (c) Relevant waste management legislation and regulations;
- (d) Environmental concerns related to waste management at the Site;
- (e) Occupational Health and Safety concerns related to waste management at the Site; and
- (f) Emergency procedures and contingency plans in case of fire, spills, off-site impacts and any other emergency situations.

#### **9.0 SPILLS AND EMERGENCY RESPONSE AND REPORTING**

9.1 All spills, upsets and fires shall be immediately reported to the **Ministry's Spills Action Centre at 1-800-268-6060** and shall be recorded in the log book as to the nature of the spill or upset, and the action taken for clean-up, correction and prevention of future occurrences.

9.2 The Owner/Operator shall immediately take all measures necessary to contain and clean up any spill or leak which may result from the operations at this Site.

## 10.0 DAILY LOG BOOK

10.1 The Owner/Operator shall ensure that a log book of records of observations made during site inspections and daily records of Site operations, are maintained for each operating day during the operation of the Site, and that the records are retained at the Site for at least two years after they are created. The daily records shall include the following information:

- (a) the date, time of arrival, name of hauler, vehicle license plate number, type, origin and quantity (tonnes) of all waste and cover material received at the site, and of all wastes rejected by the site;
- (b) quantity and type of waste (by waste class and name) received, temporarily stored and transferred from the Site;
- (c) any complaints from the public received by the Owner/Operator concerning landfilling operations as well as all other waste management activities, and a description of the action taken by the Owner/Operator in response;
- (d) a record of litter collection activities and the application of dust suppressants;
- (e) results of any tests done to determine the acceptability of waste at the site.
- (f) the area of the Site in which waste disposal operations are taking place;
- (g) quantity and type of any rejected wastes;
- (h) the receiving Site for the waste shipped from the Site;
- (i) the amount of any leachate removed, or treated and discharged from the Site if any;
- (j) a record of the daily inspections, including equipment and Site Inspection report as required under Condition 5.2 above; and
- (k) a description of any out-of-service period of any control, treatment, disposal or monitoring facilities, the reasons for the loss of service, and action taken to restore and maintain service.
- (l) a record of nuisance impact control;
- (m) all spills, fires, upsets or other problems encountered during the operation of the Site and action(s) taken to remediate the problem; and
- (n) records of staff training, as required under Condition 8.0.

## 11.0 ANNUAL REPORT

Condition 3 in Notice dated October 15, 1991 is hereby revoked and replaced with Condition 10.1 as follows:

11.1 The Owner/Operator shall continue the preparation of an Annual Report on the development, operations and monitoring of the Site, based on Section 6.3 in the Design and Operations Plan (Revised), (Items 8) in Schedule "A" as amended by Item 12, in Schedule "A" attached to this Certificate, or as from time to time amended. The report shall be prepared by a qualified consultant, and submitted to the District Manager, with copies to the Regional Director, by **March 31** each year, and shall cover the preceding calendar year. The report shall as a minimum, include the following:

- a. The results and an interpretive analysis of the results of all leachate, groundwater, surface water, and landfill gas monitoring, including an assessment of leachate elevation data with

respect to trigger elevations; shallow aquifer watertable elevation mapping and groundwater flow direction; regional aquifer piezometric elevation mapping and groundwater flow direction; and an assessment of the need to amend the monitoring programs and trigger mechanisms or to implement contingency measures;

- b. Review and assessment of the effectiveness of the nuisance control programs, including the following information:
  - i. Impact and status of the Site operation on the wetlands and/or South Pine River;
  - ii. Implementation and effectiveness of active control measures;
  - iii. Changes undertaken, or required, to improve the effectiveness of nuisance control programs.
- c. An assessment of the operation and performance of all engineered facilities, the need to amend the design or operation of the Site, and the adequacy of and need to implement the contingency plans;
- d. Site plans showing the existing contours of the Site; areas of landfilling operation during the reporting period; areas of intended operation during the next reporting period; areas of excavation during the reporting period; the progress of final cover, vegetative cover, and any intermediate cover application; the progress of liner placement and leachate collection system placement; previously existing site facilities; facilities installed during the reporting period; and site preparations and facilities planned for installation during the next reporting period;
- e. Calculations of the volume of waste, daily and intermediate cover, final cover material deposited or placed at the Site during the reporting period and a calculation of the total volume of Site capacity used during the reporting period;
- f. A calculation of the remaining capacity of the Site and an estimate of the remaining Site life;
- g. Summaries of the monthly, maximum daily (as available), and total annual quantity (tonnes) of waste received at the Site;
- h. a summary of any public complaints received by the Owner/Operator and the responses made;
- i. a discussion of any operational problems encountered at the Site and corrective action taken;
- j. the status of compliance with all conditions of this Certificate, including the inspection, monitoring and reporting requirements in the conditions of this Certificate;
- k. the extent to which the monitoring results indicate compliance with the conditions of this certificate, PWQO, ODWS, the Reasonable Use Guideline and any other relevant statutes and guidelines; and
- l. any other information with respect to the Site which the Regional Director or District Manager may require from time to time.

## 12.0 SITE CLOSURE PLAN

- 12.1 At least two (2) years prior to the anticipated date of closure of this Site or the date 90 per cent of the total waste disposal volume is reached, whichever occurs first, the Owner/Operator, shall submit to the Director for approval, with copies to the District Manager, a detailed Site Closure Plan pertaining to the termination of landfilling operations at this Site, post-closure inspection, maintenance and monitoring, and end-use plan for the Site. The Site closure plan shall as a minimum, include the following:
- a. A plan showing Site appearance after closure;
  - b. A description of the proposed end-use of the Site;
  - c. Descriptions of the procedures for closure of the Site, including:
    - i. advance notification of the public of the landfill closure;
    - ii. posting of a sign at the Site entrance indicating the landfill is closed and identifying any alternative waste disposal arrangements;
    - iii. completion, inspection and maintenance of the final cover and landscaping;
    - iv. site security;
    - v. removal of unnecessary landfill-related structures, buildings and facilities; and
    - vi. final construction of any control, treatment, disposal and monitoring facilities for leachate, groundwater, surface water and landfill gas;
  - d. Description of the procedures for post-closure care of the Site, including:
    - i. operation, inspection and maintenance of the control, treatment, disposal and monitoring facilities for leachate, groundwater, surface water and landfill gas;
    - ii. record keeping and reporting; and
    - iii. complaint contact and response procedures;
  - e. An assessment of the adequacy of and need to implement the contingency plans for leachate and landfill gas; and
  - f. An updated estimate of the contaminating life span of the Site, based on the results of the monitoring programs to date;

## SCHEDULE "A"

*The following documentation is hereby added to Schedule "A", and forms part of the Provisional Certificate of Approval No. A272601. If there is a conflict between documents listed in Schedule "A", the document bearing the most recent date shall apply:*

### **Documentation**

6. Letter dated June 28, 2007, from Tesfaye Gebrezghi, Waste Supervisor, Ministry of the Environment to John Tidball, Miller Thomson LLP and Mary Rose Walden, CAO-Administrator, the Corporation of the Township of Huron-Kinloss, Re: the approved theoretical capacity for the Huron Landfill Site.
7. Letter dated August 14, 2008, from Brad R. Pryde, President - Pryde Schropp McComb Inc., to Tesfaye Gebrezghi, Waste Supervisor, Ministry of the Environment, Re: Application for Approval of Waste Disposal Site Amendment to Certificate of Approval, No. A272601, to change the landfilling operation at the Huron Landfill from Trench method to Area method. (MOE Ref # 7021-7HJKZF).
8. Report entitled "Design and Operation Plan (Revised), Huron Landfill, Township of Huron-Kinloss", dated January, 2010, prepared by Pryde Schropp McComb Inc.
9. Letter dated August 26, 2008, from Brad R. Pryde, President - Pryde Schropp McComb Inc., to Gabriela Sadowska, Application Assessment, Ministry of the Environment, Re: Application for Approval of Waste Disposal Site Amendment to Certificate of Approval, No. A272601, to change the landfilling operation at the Huron Landfill from Trench method to Area method, with attached completed Application for a Provisional Certificate of Approval for a Waste Disposal Site, dated August 29, 2008, signed by Joanna Molott, Deputy Clerk, the Corporation of the Township of Huron-Kinloss. (MOE Ref # 7021-7HJKZF).
10. Letter dated May 1, 2009, from Stephen J. Cobean, Pryde Schropp McComb Inc., to the Director of Approvals, Ministry of the Environment, Re: Application for Approval of Waste Disposal Site Amendment to Certificate of Approval, No. A272601, to change the service area of the Huron Landfill to include the Village of Lucknow, with attached completed Application for a Provisional Certificate of Approval for a Waste Disposal Site, dated April 23, 2009, signed by Hugh Nichol, Superintendent of Public Works, the Corporation of the Township of Huron-Kinloss. (MOE Ref # 1307-RQMZH).
11. Report entitled "Service Area Study, Huron Landfill, Township of Huron-Kinloss", dated April, 2009, prepared by Pryde Schropp McComb Inc.
12. Letter dated January 14, 2010, from Stephen J. Cobean, Pryde Schropp McComb Inc., to Dickson Odame-Osafo, Ministry of the Environment, Re: Response to the Ministry of the Environment review comment on the Design and Operation Plan, Huron Landfill (MOE Ref # 7021-7HJKZF).
13. Letter dated June 9, 2010, from Stephen J. Cobean, Pryde Schropp McComb Inc., to Dickson Odame-Osafo, Ministry of the Environment, Re: Draft Certificate of Approval Review, Huron Landfill

Site (MOE Ref # 7021-7HJKZF).

## REASONS

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

1. The reason for **Conditions 1.1, 2.5, 2.6, 2.9, 4.1, 4.2, 4.3, 6.8 and 7.3** is to ensure that the landfill Site is designed, developed, operated, monitored and maintained in accordance with the application and supporting documentation submitted by the Owner, and not in a manner which the Director has not been asked to consider.
2. The reason for **Conditions 1.2 to 1.5, 1.7 and 1.11** is to clarify the legal rights and responsibilities of the Owner.
3. The reason for **Condition 1.6** is to ensure that appropriate Ministry staff have ready access to the Site for inspection of facilities, equipment, practices and operations required by the conditions in this Certificate of Approval. This condition is supplementary to the powers of entry afforded a Provincial Officer pursuant to the EPA and OWRA.
4. The reason for **Condition 1.8** is to ensure that all correspondence relevant to this Certificate of Approval is properly identified by the Certificate of Approval number for ease of reference.
5. The reasons for **Conditions 1.9 and 1.13** are to restrict potential transfer or encumbrance of the Site without the approval of the Director and to ensure that any transfer or encumbrance can be made only on the basis that it will not endanger compliance with this Certificate of Approval.
6. **Condition 1.10** is included, pursuant to subsection 197(1) of the EPA, to provide that any persons having an interest in the Site are aware that the land has been approved and used for the purposes of waste disposal.
7. The reason for **Condition 1.12** is to ensure the availability of records, including drawings for inspection and information purposes.
8. The reasons for **Conditions 2.1, 2.2 and 2.3** are to specify the approved area from which waste may be accepted at the Site, the types of waste that may be accepted for disposal at the Site, and the maximum rates at which this Site may receive waste, based on the Owner's application and supporting documentation.
9. The reason for **Conditions 2.4, 2.7 and 2.8** is to specify restrictions on the extent of landfilling at this Site based on the Owner's application and supporting documentation. These limits define the approved volumetric capacity of the site.
10. The reasons for **Conditions 3.1 and 3.2** are to specify the hours of operation for the landfill Site and a mechanism for amendment of the hours of operation, as may be necessary.
11. The reason for **Condition 3.3** is to ensure that daily and intermediate cover is used to control potential nuisance effects, to facilitate vehicle access on the site, and to ensure an acceptable site

appearance is maintained. The proper closure of a landfill site requires the application of a final cover which is aesthetically pleasing, controls infiltration, and is suitable for the end use planned for the site.

12. The reason for **Condition 3.4** is to specify the approval requirements for use of alternative cover material at the Site.
13. The reasons for **Conditions 3.5 and 3.6** are to ensure that the Site is supervised by properly trained staff in a manner which does not result in a hazard or nuisance to the natural environment or any person, and to ensure a controlled access and integrity of the Site by preventing unauthorized access when the Site is closed and no site attendant is on duty.
14. The reason for **Conditions 3.7 to 3.9 and 4.4 to 4.8** is to ensure that the Site is operated in an environmentally acceptable manner for the protection of the natural environment and public health and safety.
15. The reason for **Conditions 3.10 and 3.11** is to ensure that users of the Site are fully aware of important information and restrictions related to Site operations and access under this Certificate of Approval.
16. The reason for **Conditions 5.1 and 5.2** is to ensure that the Site is operated, inspected and maintained in an environmentally acceptable manner and does not result in a hazard or nuisance to the natural environment or any person.
17. The reasons for **Conditions 6.1 to 6.6** are to demonstrate that the site performs in conformance with the requirements of this Certificate, the EPA and its regulations, and OWRA and its Regulations. Regular monitoring allows for the analysis of trends over time and ensures that there is an early warning of potential problems so that any necessary remedial/contingency action can be taken.
18. The reasons for **Conditions 7.1 and 7.2** are to ensure that the Owner follows a plan with an organized set of procedures for identifying and responding to unexpected but possible problems at the Site. A remedial action / contingency plan is necessary to ensure protection of the natural environment and public health and safety.
19. The reason for **Condition 8.1** is to ensure that the Site is operated by properly trained staff in a manner which does not result in a hazard or nuisance to the natural environment or any person.
20. The reason for **Conditions 9.1 and 9.2** is to ensure that the Ministry is notified forthwith of any spills as required in Part X of the EPA, so that appropriate spills response can be determined.
21. The reasons for **Conditions 5.3 and 10.1** are to ensure the availability of records for inspection and information purposes, to provide for the proper assessment of effectiveness and efficiency of site design and operation, their effect or relationship to any nuisance or environmental impacts, and the occurrence of any public complaints or concerns. Record keeping is necessary to determine compliance with this Certificate of Approval, the EPA and its regulations.

22. The reasons for **Condition 11.1** are to ensure that regular review of site development, operations and monitoring data is documented and any possible improvements to site design, operations or monitoring programs are identified, and to ensure that potential impacts on the local wetland are reviewed/updated regularly. An annual report is an important tool used in reviewing site activities and for determining the effectiveness of site design.
23. The reasons for **Condition 12.1** are to ensure that final closure of the Site is completed in an aesthetically pleasing manner and to ensure the long-term protection of the natural environment.

**This Notice shall constitute part of the approval issued under Provisional Certificate of Approval No. A272601 dated July 31, 1989**

*In accordance with Section 139 of the Environmental Protection Act, R.S.O. 1990, Chapter E-19, as amended, you may by written notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act, provides that the Notice requiring the hearing shall state:*

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

*The Notice should also include:*

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

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

*This Notice must be served upon:*

The Secretary\*  
Environmental Review Tribunal  
655 Bay Street, 15th Floor  
Toronto, Ontario  
M5G 1E5

AND

The Director  
Section 39, *Environmental Protection Act*  
Ministry of the Environment  
2 St. Clair Avenue West, Floor 12A  
Toronto, Ontario  
M4V 1L5

\* Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or [www.ert.gov.on.ca](http://www.ert.gov.on.ca)

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

DATED AT TORONTO this 6th day of July, 2010

THIS CERTIFICATE WAS MAILED  
ON July 9, 2010  
Jc  
(Signed)



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

DO/  
c: District Manager, MOE Owen Sound  
Brad Schropp, Pryde Schropp McComb Inc. ✓

AMENDMENT TO PROVISIONAL CERTIFICATE OF  
APPROVAL  
WASTE DISPOSAL SITE  
NUMBER A272601  
Notice No. 3  
Issue Date: July 9, 2010

The Corporation of the Township of Huron-Kinloss  
21 Queen St  
Post Office Box, No. 130  
Ripley, Ontario  
N0G 2R0

Site Location: Huron Landfill Site  
Concession Road 6  
Lot 19, 20, Concession 5  
Huron-Kinloss Township, County of Bruce  
N0G 2R0

*You are hereby notified that I have amended Provisional Certificate of Approval No. A272601 issued on October 15, 1991, as amended for a waste disposal Site, consisting of 8.0 hectares Waste Fill Area within a total Site Area of 17.7 hectares, as follows:*

1. EXPANSION OF SERVICE AREA

Pursuant to Section 27 of the *Environmental Protection Act*, approval is hereby granted to expand the service area of the Huron Landfill site to include the Village of Lucknow;

all in accordance with the following documentation which is added to Schedule "A", and forms part of the Provisional Certificate of Approval No. A272601, and subject to the terms and conditions listed herein:

Note: Use of the Site for any other type of waste and/or any other waste management activity is not approved under this Certificate, and requires obtaining a separate approval amending this Certificate.

**Documentation**

*The following documentation is hereby added to Schedule "A", and forms part of the Provisional*

*Certificate of Approval No. A272601.*

10. Letter dated May 1, 2009, from Stephen J. Cobean, Pryde Schropp McComb Inc., to the Director of Approvals, Ministry of the Environment, Re: Application for Approval of Waste Disposal Site Amendment to Certificate of Approval, No. A272601, to change the service area of the Huron Landfill to include the Village of Lucknow, with attached completed Application for a Provisional Certificate of Approval for a Waste Disposal Site, dated April 23, 2009, signed by Hugh Nichol, Superintendent of Public Works, the Corporation of the Township of Huron-Kinloss. (MOE Ref # 1307-RQMZH).
11. Report entitled "Service Area Study, Huron Landfill, Township of Huron-Kinloss", dated April, 2009, prepared by Pryde Schropp McComb Inc.

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

**Service Area**

- 2.1 Only waste generated from within the geographic boundaries of the **Township of Huron-Kinloss** which include the Township of Huron, the Township of Kinloss and the Village of Lucknow, shall be received for disposal at this Site. No waste generated and/or transferred from outside the **Township of Huron-Kinloss** shall be received for disposal at this Site.

The reason for this amendment to the Certificate of Approval is as follows:

The reason for **Condition 2.1**, is to specify the approved area from which waste may be accepted at the Site, due to amalgamation, based on the Owner's application and supporting documentation.

**This Notice shall constitute part of the approval issued under Provisional Certificate of Approval No. A272601 dated July 31, 1989**

*In accordance with Section 139 of the Environmental Protection Act, R.S.O. 1990, Chapter E-19, as amended, you may by written notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act, provides that the Notice requiring the hearing shall state:*

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

*The Notice should also include:*

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

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

*This Notice must be served upon:*

The Secretary\*  
Environmental Review Tribunal  
655 Bay Street, 15th Floor  
Toronto, Ontario  
M5G 1E5

AND

The Director  
Section 39, *Environmental Protection Act*  
Ministry of the Environment  
2 St. Clair Avenue West, Floor 12A  
Toronto, Ontario  
M4V 1L5

\* Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or [www.ert.gov.on.ca](http://www.ert.gov.on.ca)

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

DATED AT TORONTO this 9th day of July, 2010



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

DO/  
:: District Manager, MOE Owen Sound  
Steve J. Cobean, Pryde Schropp McComb Inc.

**AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL**

NUMBER A272601  
Issue Date: April 16, 2020

The Corporation of the Township of Huron-Kinloss  
21 Queen St  
Huron-Kinloss, Ontario  
N0G 2R0

Site Location: Huron Landfill Site  
Concession Road 6  
Lot 19, 20, Concession 5  
Huron-Kinloss Township, County of Bruce  
N0G 2R0

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

*a waste disposal Site, consisting of 8.0 hectares Waste Fill Area within a total Site Area of 17.7 hectare.*

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

- a. "Approval" and "ECA" means this entire Environmental Compliance Approval No. A272601, issued in accordance with section 39 of the EPA, and includes any schedules to it, the application and the supporting documentation listed in schedule "A";
- b. "Director" means any Ministry employee appointed in writing by the Minister pursuant to section 5 of the EPA as a Director for the purposes of Part V of the EPA;
- c. "District Manager" means the District Manager of the Owen Sound district office of the Ministry of the Environment;
- d. "EPA" means Environmental Protection Act, R.S.O. 1990, c. E. 19, as amended;
- e. "Minister" means the Minister of the Ontario Ministry of the Environment, Conservation and Parks;
- f. "Ministry" and "MECP" means the Ontario Ministry of the Environment, Conservation and Parks;

- g. "Operator " means any person, other than the Owner's employees, authorized by the Owner as having the charge, management or control of any aspect of the site and includes its successors or assigns;
- h. "Owner" means any person that is responsible for the establishment or operation of the site being approved by this ECA, and includes the Township of Huron-Kinloss, its successors and assigns;
- i. "FBAL" means Fill Beyond Approved Limits;
- j. "Provincial Officer" means any person designated in writing by the Minister as a provincial officer pursuant to section 5 of the OWRA or section 5 of the EPA;
- k. "Regional Director" means the Regional Director of the Southwestern Regional Office of the Ministry or the Environment;
- l. "Regulation 232" or "Reg. 232" means Regulation 232/98 (New Landfill Standards) made under the EPA, as amended from time to time;
- m. "Regulation 347" or "Reg. 347" means Regulation 347, R.R.O. 1990, made under the EPA, as amended from time to time;
- n. "Site" means the entire waste disposal site, including the buffer lands/contaminant attenuation zone, located at Lot 19, 20, Concession 5, Huron-Kinloss Township, County of Bruce, approved by this ECA;
- o. "Trained personnel" means knowledgeable in the following through instruction and/or practice:
- relevant waste management legislation, regulations and guidelines;
  - major environmental concerns pertaining to the waste to be handled;
  - occupational health and safety concerns pertaining to the processes and wastes to be handled;
  - management procedures including the use and operation of equipment for the processes and wastes to be handled;
  - emergency response procedures;
  - specific written procedures for the control of nuisance conditions;
  - Specific written procedures for refusal of unacceptable waste loads;
  - the requirements of this ECA.
- p. "OWRA" means Ontario Water Resources Act, R. S. O. 1990; and
- q. "WEEE" means Waste Electrical and Electronic Equipment (WEEE) Program.

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

## TERMS AND CONDITIONS

### 1.0 GENERAL

- 1.1 Except as otherwise provided by these conditions, the Site shall be designed, developed, used, maintained and operated, and all facilities, equipment and fixtures shall be built and installed, in accordance with the Applications for Provisional Certificate of Approval for a Waste Disposal Site, dated August 29, 2008 and April 23, 2009, and supporting documentation, and plans and specifications listed in Schedule "A".
- 1.2 The requirements specified in this ECA are the requirements under the Environmental Protection Act, R.S.O. 1990. The issuance of this ECA in no way abrogates the Owner/Operator's legal obligations to take all reasonable steps to avoid violating other applicable provisions of this legislation and other legislation and regulations.
- 1.3 The requirements of this ECA are severable. If any requirement of this ECA, or the application of any requirement of this ECA to any circumstance, is held invalid, the application of such requirement to other circumstances and the remainder of this ECA shall not be affected in any way.
- 1.4 The Owner/Operator shall ensure compliance with all the terms and conditions of this ECA. Any non-compliance constitutes a violation of the Environmental Protection Act, R.S.O. 1990 and is grounds for enforcement.
- 1.5 (a) The Owner/Operator shall, forthwith upon request of the Director, District Manager, or Provincial Officer (as defined in the EPA), furnish any information requested by such persons with respect to compliance with this ECA, including but not limited to, any records required to be kept under this ECA; and
- (b) In the event the Owner/Operator provides the Ministry with information, records, documentation or notification in accordance with this ECA (for the purposes of this condition referred to as "Information"),
- (i) the receipt of Information by the Ministry;
  - (ii) the acceptance by the Ministry of the Information's completeness or accuracy; or
  - (iii) the failure of the Ministry to prosecute the Owner/Operator, or to require the Owner/Operator to take any action, under this ECA or any statute or regulation in relation to the Information;
- shall not be construed as an approval, excuse or justification by the Ministry of any act or omission of the Owner/Operator relating to the Information, amounting to non-compliance with this ECA or any statute or regulation.
- 1.6 The Owner/Operator shall allow Ministry personnel, or a Ministry authorized representative(s), upon presentation of credentials, to carry out any and all inspections authorized by Section 156, 157 or 158 of the Environmental Protection Act, R.S.O. 1990, Section 15, 16 or 17 of the Ontario Water Resources Act, R.S.O. 1990, or Section 19 or 20 of the Pesticides Act, R.S.O. 1990, as amended from time to time, of any place to which this ECA relates; and, without restricting the generality of the foregoing, to:
- a. enter upon the premises where the records required by the conditions of this ECA are kept;
  - b. have access to and copy, at reasonable times, any records required by the conditions of this ECA;
  - c. inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations required by the conditions of this ECA; and

- d. sample and monitor at reasonable times for the purposes of assuring compliance with the conditions of this ECA.
- 1.7
- (a) Where there is a conflict between a provision of any document referred to in Schedule “A”, and the conditions of this ECA, the conditions in this ECA shall take precedence; and
  - (b) Where there is a conflict between documents listed in Schedule “A”, the document bearing the most recent date shall prevail.
- 1.8 The Owner/Operator shall ensure that all communications/correspondence made pursuant to this ECA includes reference to the Environmental Compliance Approval Number A272601.
- 1.9 The Owner/Operator shall notify the Director in writing of any of the following changes within thirty (30) days of the change occurring:
- a. change of Owner or Operator of the Site or both;
  - b. change of address or address of the new Owner;
  - c. any change of name of the company, and a copy of the most current "Initial Notice or Notice of Change" (form 1 or 2 of O. Reg. 182, Chapter C-39, R.R.O. 1990 as amended from time to time), filed under the Corporations Information Act shall be included in the notification to the Director; and
  - d. change in directors or officers of the company, and a copy of the most current "Initial Notice or Notice of Change" as referred to in 12(c), supra.
- 1.10 In the event of any change in ownership of the Site, the Owner/Operator shall notify, in writing, the succeeding owner of the existence of this ECA, and a copy of such notice shall be forwarded to the Director.
- 1.11 Any information relating to this ECA and contained in Ministry files may be made available to the public in accordance with the provisions of the Freedom of Information and Protection of Privacy Act, R.S.O. 1990, C. F-31.
- 1.12 All records and monitoring data required by the conditions of this ECA must be kept on the Site for a minimum period of two (2) years from the date of their creation.

### **Transferral or Encumbrance of Site**

- 1.13 No portion of this Site shall be transferred or encumbered prior to or after closing of the Site, unless the Director is notified in advance in writing and is satisfied with the arrangements made to ensure that all terms and conditions of this ECA will be carried out and sufficient financial assurance (EPA, Part XII) is deposited with the Ministry, to ensure that these terms and conditions will be carried out.

## **2.0 SITE DESIGN AND DEVELOPMENT**

### **Service Area**

- 2.1 Only waste generated from within the geographic boundaries of the Township of Huron-Kinloss which include the Township of Huron, the Township of Kinloss and the Village of Lucknow, shall be received for disposal at this Site. No waste generated and/or transferred from outside the Township of Huron-Kinloss shall be received for disposal at this Site.

### **Waste Types**

- 2.2 Only domestic, commercial, and solid non-hazardous industrial wastes (limited to scrap metal, wood, miscellaneous debris and inert fill), shall be received for disposal at this Site. No hazardous waste or liquid industrial waste, as defined in Reg. 347, and as amended, shall be disposed at the Site.

### **Waste Fill Rate**

- 2.3 The maximum rate at which the Site shall receive waste for disposal, is limited to 100 tonnes per day, and 3,000 tonnes per calendar year. The receipt of waste in excess of the daily maximum fill rate may only be allowed on a limited short-term basis, on no more than two consecutive operating days, and only with prior notification and concurrence from the District Manager.

### **Site Capacity**

- 2.4 The total waste disposal capacity of the Site (waste filled by trench method and by area method), including waste, daily cover and interim cover is 288,000 cubic metres.

### **Waste Placement**

- 2.5 Landfilling operations shall be conducted by area method in which waste shall be filled and compacted over the prepared base or on previously filled areas, as applicable, in layers and covered with approved cover material, in accordance with the "Design and Operations Plan (Revised)" (Section 3.4), Item 8 in Schedule "A", attached to this ECA.
- 2.6 The Site shall be developed in a progressive manner from the northwest corner (Cell 1) towards eastward and landfilling shall be carried out sequentially from the top surface of the existing waste, in cells 1 to 6, each cell measuring approximately 40 metres in width, as shown on Map 3, "Initial Stage of Landfilling Operation", dated August 13, 2008, included in the "Design and Operations Plan (Revised)", Item 8, in Schedule "A", attached to this ECA.
- 2.7 The Ministry acknowledges that waste was placed outside of the approved limit, known as FBAL, as documented in Item 16, in Schedule "A", attached to this ECA. To accommodate the FBAL and maintain the total waste disposal capacity of the Site, the final waste contours and the approved waste footprint fill area have been changed as shown on Figure No. 3 "Huron Landfill, Proposed Final Contours - Revised (Top of Waste)", dated February 21, 2019, in Item 16, in Schedule "A", attached to this ECA. Final slopes above grade at the time of site closure within the waste fill area shall be within the range of 4H:1V (25%) on the sides, and 20H:1V (5%) on the top surface.
- 2.8 Prior to waste placement in each cell, the existing vegetation, topsoil and cover material shall be

stripped to the top of the existing waste to provide hydraulic continuity through the existing and the new waste masses.

### **3.0 SITE OPERATIONS**

#### **Hours of Operation**

- 3.1 The Site shall be opened to receive waste for disposal from Monday to Saturday, from 08:00 am to 5:00 pm, as described in Item 13 in Schedule "A", attached to this ECA. The Site shall be closed on statutory holidays.
- 3.2 The hours of operation may be amended from time to time to accommodate seasonal or unusual demand, based on prior concurrence from the District Manager.

#### **Daily, Interim and Final Covers**

- 3.3 Daily, interim and final cover material shall be applied in accordance with the Design & Operations Plan (Revised), (Section 3.5), Item 8 in Schedule "A", attached to this ECA, and as follows:
- a. Daily Cover - At the end of each working day, after deposition of waste into the waste fill area, the entire working face shall be compacted and covered with a minimum thickness of 150 mm of soil cover or an approved thickness of alternative cover material such as compost, wood-chips or foundry sand. Prior to placing waste at the start of the next operating day, the existing daily cover material shall be scarified or removed to the extent practical, to ensure vertical hydraulic connection is maintained between layers of waste and to promote percolation of leachate downwards.
  - b. Interim Cover - In areas where landfilling ceases temporarily for a period of 6 months or more, a minimum thickness of 300 mm of soil shall be placed as interim cover. The quality of soil for use as interim cover shall, as a minimum, meet the criteria for Industrial/Commercial land use specified in Table A in the Ministry's "Guideline for Use at Contaminated Sites in Ontario", revised February 1997.
  - c. Final Cover - Final cover shall be applied progressively as areas of the landfill reach final waste elevations. The final soil cap shall consist of a minimum 600 mm thickness of impermeable compacted soil overlain by a minimum 150 mm topsoil and vegetative cover, as described in Section 2.3 in Item 8 in Schedule "A", attached to this ECA. Prior to placement of final cover, the Owner/Operator shall submit for the approval of the Director, a report detailing the specifications, including particle size distribution of the final cover soil which shall confirm the designed permeability of  $10^{-5} \text{cm}/\text{sec}$  or less, as well as the protocols for testing and acceptance for on-site and off-site final cover soils. All areas of final cover shall be graded and vegetated as soon as practically possible.

#### **Alternative Daily and Interim Cover Materials**

- 3.4 Alternative materials to that approved under Condition 3.3 above, may be used as daily and interim cover material, based on an application with supporting information and applicable fee for a trial

use or permanent use, submitted by the Owner/Operator to the Director, copied to the District Manager, and as approved by the Director via an amendment to this ECA. The alternative material shall be non-hazardous according to Reg. 347 and will be expected to perform at least, as well as soil in relation to the following functions:

- a. Control of blowing litter, odours, dust, landfill gas, gulls, vectors, vermin and fires;
- b. Provision for an aesthetic condition of the landfill during the active life of the Site;
- c. Provision for vehicle access to the active tipping face; and
- d. Compatibility with the design of the Site for groundwater protection, leachate management and landfill gas management.

### **Site Supervision and Security**

- 3.5 No waste shall be received, landfilled or transferred from the Site/Facilities unless a site supervisor or attendant is present and supervises the operations during operating hours. The Site shall be closed when a site attendant is not present to supervise landfilling and/or waste transfer operations.
- 3.6 The Site shall be operated and maintained in a secure manner with lockable entrance and exit gates, such that unauthorized persons cannot enter the Site, during non-operating hours.

### **Nuisance Controls and Adverse Effects**

- 3.7 The Owner/Operator shall implement control measures for odour, litter, birds, vector and vermin, as described in Sections 3.12 and 3.13 in Item 8 in Schedule "A", attached to this ECA. Effectiveness of the control measures shall be reviewed and monitored regularly and updated/revised, as required, based on operational experience and complaints.
- 3.8
  - (a). The Owner/Operator shall ensure that wind-blown litter originating from the waste management activities at the Site is picked up regularly along the Site perimeter roads and access roads.
  - (b). The Owner/Operator shall, at its own expense, remove wind-blown litter originating from the waste management activities at the Site, from adjacent neighbouring properties of the Site, a minimum once per month or more frequently when wind-blown litter from the Site becomes severe.
- 3.9 The Site shall be operated and maintained such that any other operational impacts, including dust, noise and traffic, do not create a nuisance. Any adverse effect on the natural environment or impairment of water quality resulting from the operations of the site, shall be ameliorated promptly, including such accelerated or additional monitoring as may be necessary to determine the nature and extent of the impairment.

### **Signage**

- 3.10 The existing sign shall be maintained at the main entrance/exit to the Site on which is legibly displayed the following information:
  - (a) the name of the Site and Owner/Operator;
  - (b) the number of the ECA;

- (c) the normal hours of operation;
- (d) the allowable and prohibited waste types;
- (e) the telephone number to which complaints may be directed;
- (f) a twenty-four (24) hour emergency telephone number (if different from above); and
- (g) a warning against dumping outside the Site.

3.11 Signs shall also be posted along internal access roads controlling vehicle speed, turning movements and to direct vehicles and/or users to the working face and other designated areas and facilities on the Site, as appropriate. All landfill signs shall be kept legible, in good repair, and cleaned when required.

#### **4.0 WASTE SEGREGATION/RECYCLING AND WEEE FACILITIES**

##### **Design and Operations Manual**

- 4.1 The Waste Segregation/Recycling Centre and WEEE program at the Huron Landfill Site, for the acceptance, temporary storage, and transfer of non-putrescible recyclable waste, shall be operated in accordance with the Design and Operation Manual, Item 15 in Schedule "A", attached to this Approval.
- 4.2 Any design optimization or modification that is inconsistent with the conceptual design and operation shall be clearly identified, along with an explanation of the reasons for the change.
- 4.3 The Waste Segregation/Recycling and the WEEE Facilities shall only accept scrap metals, tires, white goods, solid non-hazardous recyclable materials, including cardboards, rough fill (i.e. concrete slabs and stumps), bale-wrap, propane canisters and E-waste, which shall be segregated, stored temporary for a period not exceeding 120 days from the date of first receipt, or as needed, and transferred for off-site disposal, to ensure that the design storage capacities are not exceeded at any time. The storage of specific material beyond 120 days may be allowed, only with prior notification and written concurrence from the District Manager.
- 4.4 If the storage of material causes nuisance, or adverse effect, or fire hazard, the material shall be removed or transferred immediately regardless of the permitted storage period. If for any reason waste cannot be transferred from the Waste Segregation/Recycling Facility, the Waste Segregation/Recycling Facility shall cease accepting waste.
- 4.5 The Waste Segregation/Recycling and the WEEE program Facilities shall be operated in a secure manner within containment structures or in storage containers, such that temporary storage of waste materials will not create nuisance, or fire hazard, or adverse effect. Containment structures or storage containers shall be clearly labelled to indicate the type and nature of the waste stored.
- 4.6 Any material/waste containing soluble or decomposable substances which may adversely impact the quality of surface water and groundwater, shall be placed on a floor/pad, to minimize the potential for adverse impacts.

- 4.7 Any white goods received which contain refrigerants shall have the refrigerants removed by a licensed technician in accordance with Ontario Regulation 189, prior to being shipped off-site.
- 4.8 The maximum number of tire units stored at the facility at any one time shall not exceed 5,000 units.

## **5.0 INSPECTION AND MAINTENANCE**

- 5.1 The Owner/Operator shall conduct regular inspections of the Site, including the active waste tipping area, Waste Segregation/Recycling and WEEE Facilities and associated equipment, buildings/shacks, final cover, security fencing and barriers, to ensure that all are maintained in good working order and secure at all times and to ensure that no off-site impacts such as vermin, vectors, odour, dust, and litter, result from the operations of the Site/Facilities to cause any nuisance or adverse effect on the environment.
- 5.2 If any inspection indicates that there is an area of ponding or zero slope in the final soil capped area, and/or any deficiencies detected during these regular inspections, the Owner/Operator shall take all steps necessary to provide positive drainage and rehabilitate the final soil cap, and/or any deficiencies detected as soon as practically possible.
- 5.3 A written record of the inspections shall be maintained at the Site, and shall include the following:
- (a) name and signature of trained personnel conducting the inspection;
  - (b) date and time of the inspection;
  - (c) list of equipment and Facilities inspected and all deficiencies and/or any nuisance impacts observed;
  - (d) a detailed description of any maintenance/repairs carried out and/or remedial action taken in order to control the nuisance;
  - (e) date and time of maintenance/repair activity; and
  - (f) recommendations for remedial action and any preventative measures taken to prevent future reoccurrences.

## **6.0 ENVIRONMENTAL CONTROL AND MONITORING**

- 6.1 Subject to the addition of Arsenic and Nitrate-N in the suite of parameters listed in Table 4, for groundwater quality monitoring, the Owner/Operator shall carry out monitoring programs for surface water, groundwater/leachate and landfill gas, as described in Section 6.4 and summarized in Table 4, in Item 8 in Schedule "A", as amended in Item 12, in Schedule "A", attached to this ECA, and as per written recommendations of the District Manager, through the review of annual monitoring Reports, and any related OWRA requirements.
- 6.2 The groundwater quality at the site boundary shall meet the Ontario Drinking Water Quality Standards (DWQS) and the Provincial Water Quality Objectives (PWQO). The applicable parameters to meet the DWQS and PWQO, shall be selected and monitored through a recommendation in the Annual Monitoring Report, subject to the prior approval of the District

Manager.

- 6.3 Upon commencement of landfilling by area method, the Owner/Operator shall commence developing a leachate quality profile, updated leachate quantity estimate generated, and the appropriate long-term leachate management plan for the Site. The results of the leachate management plan shall be included in the first annual report for the Site, as required by this ECA.
- 6.4 If monitoring results show exceedance of the Provincial Water Quality Objectives along the Site boundary due to the landfill operations, the Owner/Operator shall install new wells downgradient of the existing wells, to confirm the suitability of groundwater quality discharging off-site. The appropriate sampling stations shall be determined and reviewed with the Ministry, prior to installation.
- 6.5 The Owner/Operator shall replace any on-site and/or off-site monitoring wells installed under the monitoring program, which are destroyed or in any way made inoperable for sampling, in a timely manner, so that regular sampling event is not severely compromised.

### **Landfill Gas Monitoring**

- 6.6 The Owner/Operator shall ensure that all buildings and structures existing at the Site or to be built on-Site which at times are occupied by people, or contains electrical equipment, or a potential source of ignition, are situated, constructed and monitored in a manner which minimizes the potential for explosive hazards due to landfill gas.
- 6.7 The Owner/Operator shall ensure that any proposed changes to the monitoring programs under this ECA shall be implemented subject to prior written concurrence of the District Manager.

### **7.0 TRIGGER MECHANISM AND CONTINGENCY PLANS**

- 7.1 The Owner/Operator shall carry out trigger mechanism for surface water, groundwater/leachate and landfill gas, as described in Section 9.0 and summarized in Table 5, in Item 8 in Schedule "A", as amended in Item 12, in Schedule "A", attached to this ECA, and as per written recommendations of the District Manager, through the review of annual monitoring Reports.
- 7.2 In the event of a confirmed exceedance of the site-specific trigger level relating to groundwater/leachate, or surface water impacts due to leachate, or landfill gas, the Owner/Operator shall immediately notify the District Manager, and an investigation into the cause and the need for implementation of remedial or contingency actions shall be carried out by the Owner/Operator in accordance with the trigger mechanisms and associated contingency plans, as described in Section 9.2 in Item 8 in Schedule "A", attached to this ECA.
- 7.3 The Owner/Operator shall ensure that any proposed changes to the site-specific trigger levels for leachate impacts to the groundwater and surface water, shall be approved in writing and in advance, by the District Manager.

## **8.0 STAFF TRAINING PLAN**

- 8.1 The Owner/Operator shall develop and maintain a training plan for Site operations employees and shall ensure that all site operations employees have been adequately trained and received on-going training with respect to the following, as amended:
- (a) terms, conditions and operating requirements of this ECA, A272601 and Notices for the Site;
  - (b) the operation, inspection, and maintenance of the Site with respect to the approved design and operations documents;
  - (c) Relevant waste management legislation and regulations;
  - (d) Environmental concerns related to waste management at the Site;
  - (e) Occupational Health and Safety concerns related to waste management at the Site; and
  - (f) Emergency procedures and contingency plans in case of fire, spills, off-site impacts and any other emergency situations.

## **9.0 SPILLS AND EMERGENCY RESPONSE AND REPORTING**

- 9.1 All spills, upsets and fires shall be immediately reported to the Ministry's Spills Action Centre at 1-800-268-6060 and shall be recorded in the log book as to the nature of the spill or upset, and the action taken for clean-up, correction and prevention of future occurrences.
- 9.2 The Owner/Operator shall immediately take all measures necessary to contain and clean up any spill or leak which may result from the operations at this Site.

## **10.0 DAILY LOG BOOK**

- 10.1 The Owner/Operator shall ensure that a log book of records of observations made during site inspections and daily records of Site operations, are maintained for each operating day during the operation of the Site, and that the records are retained at the Site for at least two years after they are created. The daily records shall include the following information:
- (a) the date, time of arrival, name of hauler, vehicle license plate number, type, origin and quantity (tonnes) of all waste and cover material received at the site, and of all wastes rejected by the site;
  - (b) quantity and type of waste (by waste class and name) received, temporarily stored and transferred from the Site;
  - (c) any complaints from the public received by the Owner/Operator concerning landfilling operations as well as all other waste management activities, and a description of the action taken by the Owner/Operator in response;
  - (d) a record of litter collection activities and the application of dust suppressants;
  - (e) results of any tests done to determine the acceptability of waste at the site;
  - (f) the area of the Site in which waste disposal operations are taking place;
  - (g) quantity and type of any rejected wastes;
  - (h) the receiving Site for the waste shipped from the Site;
  - (i) the amount of any leachate removed, or treated and discharged from the Site if any;

- (j) a record of the daily inspections, including equipment and Site Inspection report as required under Condition 5.3 above;
- (k) a description of any out-of-service period of any control, treatment, disposal or monitoring facilities, the reasons for the loss of service, and action taken to restore and maintain service;
- (l) a record of nuisance impact control;
- (m) all spills, fires, upsets or other problems encountered during the operation of the Site and action(s) taken to remediate the problem; and
- (n) records of staff training, as required under Condition 8.0.

## 11.0 ANNUAL REPORT

- 11.1 The Owner/Operator shall continue the preparation of an Annual Report on the development, operations and monitoring of the Site, based on Section 6.3 in the Design and Operations Plan (Revised), (Items 8) in Schedule "A" as amended by Item 12, in Schedule "A" attached to this ECA, or as from time to time amended. The report shall be prepared by a qualified consultant, and submitted to the District Manager, with copies to the Regional Director, by March 31 each year, and shall cover the preceding calendar year. The report shall as a minimum, include the following:
- a. The results and an interpretive analysis of the results of all leachate, groundwater, surface water, and landfill gas monitoring, including an assessment of leachate elevation data with respect to trigger elevations; shallow aquifer watertable elevation mapping and groundwater flow direction; regional aquifer piezometric elevation mapping and groundwater flow direction; and an assessment of the need to amend the monitoring programs and trigger mechanisms or to implement contingency measures;
  - b. Review and assessment of the effectiveness of the nuisance control programs, including the following information:
    - i. Impact and status of the Site operation on the wetlands and/or South Pine River;
    - ii. Implementation and effectiveness of active control measures;
    - iii. Changes undertaken, or required, to improve the effectiveness of nuisance control programs.
  - c. An assessment of the operation and performance of all engineered facilities, the need to amend the design or operation of the Site, and the adequacy of and need to implement the contingency plans;
  - d. Site plans showing the existing contours of the Site; areas of landfilling operation during the reporting period; areas of intended operation during the next reporting period; areas of excavation during the reporting period; the progress of final cover, vegetative cover, and any intermediate cover application; the progress of liner placement and leachate collection system placement; previously existing site facilities; facilities installed during the reporting period; and site preparations and facilities planned for installation during the next reporting period;
  - e. Calculations of the volume of waste, daily and intermediate cover, final cover material deposited or placed at the Site during the reporting period and a calculation of the total volume of Site capacity used during the reporting period;
  - f. A calculation of the remaining capacity of the Site and an estimate of the remaining Site life;
  - g. Summaries of the monthly, maximum daily (as available), and total annual quantity (tonnes)

- of waste received at the Site;
- h. A summary of any public complaints received by the Owner/Operator and the responses made;
- i. A discussion of any operational problems encountered at the Site and corrective action taken;
- j. The status of compliance with all conditions of this ECA, including the inspection, monitoring and reporting requirements in the conditions of this ECA;
- k. The extent to which the monitoring results indicate compliance with the conditions of this ECA, PWQO, ODWS, the Reasonable Use Guideline and any other relevant statutes and guidelines; and
- l. Any other information with respect to the Site which the Regional Director or District Manager may require from time to time.

## **12.0 SITE CLOSURE PLAN**

- 12.1 At least two (2) years prior to the anticipated date of closure of this Site or the date 90 per cent of the total waste disposal volume is reached, whichever occurs first, the Owner/Operator, shall submit to the Director for approval, with copies to the District Manager, a detailed Site Closure Plan pertaining to the termination of landfilling operations at this Site, post-closure inspection, maintenance and monitoring, and end-use plan for the Site. The Site closure plan shall as a minimum, include the following:
- a. A plan showing Site appearance after closure;
  - b. A description of the proposed end-use of the Site;
  - c. Descriptions of the procedures for closure of the Site, including:
    - i. advance notification of the public of the landfill closure;
    - ii. posting of a sign at the Site entrance indicating the landfill is closed and identifying any alternative waste disposal arrangements;
    - iii. completion, inspection and maintenance of the final cover and landscaping;
    - iv. site security;
    - v. removal of unnecessary landfill-related structures, buildings and facilities; and
    - vi. final construction of any control, treatment, disposal and monitoring facilities for leachate, groundwater, surface water and landfill gas;
  - d. Description of the procedures for post-closure care of the Site, including:
    - i. operation, inspection and maintenance of the control, treatment, disposal and monitoring facilities for leachate, groundwater, surface water and landfill gas;
    - ii. record keeping and reporting; and
    - iii. complaint contact and response procedures;
  - e. An assessment of the adequacy of and need to implement the contingency plans for leachate and landfill gas; and
  - f. An updated estimate of the contaminating life span of the Site, based on the results of the monitoring programs to date.

## SCHEDULE "A"

*The following documentation is hereby added to Schedule "A", and forms part of the Environmental Compliance Approval No. A272601. If there is a conflict between documents listed in Schedule "A", the document bearing the most recent date shall apply:*

### **Documentation**

1. Application for a Certificate of Approval for a waste disposal site dated July 13, 1972 submitted by the Township of Huron.
2. Application for a Certificate of Approval for a Waste Disposal Site (Landfill) dated December 20, 1985 submitted by the Township of Huron.
3. "Plan of Development and Operation, Township of Huron Waste Disposal Site, Township of Huron, County of Bruce" dated April 15, 1985, Revised October 11, 1985 prepared by Maitland Engineering Services Ltd.
4. Letter from the Township of Huron to the Ministry of the Environment dated November 26, 1987 requesting an emergency Certificate of Approval to include waste from the Village of Ripley.
5. Application for a Certificate of Approval for a Waste Disposal Site (Landfill) dated August 27, 1991, submitted by the Township of Huron.
6. Letter dated June 28, 2007, from Tesfaye Gebrezghi, Waste Supervisor, Ministry of the Environment to John Tidball, Miller Thomson LLP and Mary Rose Walden, CAO-Administrator, the Corporation of the Township of Huron-Kinloss, Re: the approved theoretical capacity for the Huron Landfill Site.
7. Letter dated August 14, 2008, from Brad R. Pryde, President - Pryde Schropp McComb Inc., to Tesfaye Gebrezghi, Waste Supervisor, Ministry of the Environment, Re: Application for Approval of Waste Disposal Site Amendment to Certificate of Approval, No. A272601, to change the landfilling operation at the Huron Landfill from Trench method to Area method. (MOE Ref # 7021-7HJKZF).
8. Report entitled "Design and Operation Plan (Revised), Huron Landfill, Township of Huron-Kinloss", dated January, 2010, prepared by Pryde Schropp McComb Inc.
9. Letter dated August 26, 2008, from Brad R. Pryde, President - Pryde Schropp McComb Inc., to Gabriela Sadowska, Application Assessment, Ministry of the Environment, Re: Application for Approval of Waste Disposal Site Amendment to Certificate of Approval, No. A272601, to change the landfilling operation at the Huron Landfill from Trench method to Area method, with attached completed Application for a Provisional Certificate of Approval for a Waste Disposal Site, dated August 29, 2008, signed by Joanna Molott, Deputy Clerk, the Corporation of the Township of Huron-Kinloss. (MOE Ref # 7021-7HJKZF).

10. Letter dated May 1, 2009, from Stephen J. Cobean, Pryde Schropp McComb Inc., to the Director of Approvals, Ministry of the Environment, Re: Application for Approval of Waste Disposal Site Amendment to Certificate of Approval, No. A272601, to change the service area of the Huron Landfill to include the Village of Lucknow, with attached completed Application for a Provisional Certificate of Approval for a Waste Disposal Site, dated April 23, 2009, signed by Hugh Nichol, Superintendent of Public Works, the Corporation of the Township of Huron-Kinloss. (MOE Ref # 1307-RQMZH).
11. Report entitled "Service Area Study, Huron Landfill, Township of Huron-Kinloss", dated April, 2009, prepared by Pryde Schropp McComb Inc.
12. Letter dated January 14, 2010, from Stephen J. Cobean, Pryde Schropp McComb Inc., to Dickson Odame-Osafo, Ministry of the Environment, Re: Response to the Ministry of the Environment review comment on the Design and Operation Plan, Huron Landfill (MOE Ref # 7021-7HJKZF).
13. Letter dated June 9, 2010, from Stephen J. Cobean, Pryde Schropp McComb Inc., to Dickson Odame-Osafo, Ministry of the Environment, Re: Draft Certificate of Approval Review, Huron Landfill Site (MOE Ref # 7021-7HJKZF).
14. Letter dated December 23, 2010, from Stephen J. Cobean, Pryde Schropp McComb Inc., to the Director of Approvals, Ministry of the Environment, Re: Township of Huron-Kinloss Huron Landfill Approval, No. A272601, with attached completed Application for a Certificate of Approval for a Waste Disposal Site, dated December 22, 2010, signed by Hugh Nichol, Director of Public Works, Township of Huron-Kinloss. (MOE Ref # 9904-8CMUJL).
15. Report entitled "Design and Operation Manual, Huron Waste Disposal Site, Township of Huron-Kinloss", dated December, 2010, prepared by Pryde Schropp McComb Inc.
16. Environmental Compliance Approval application and supporting documents dated May 27, 2019 and signed by John Yungblut, Director of Public Works. Supporting documents include:
  - Attachment A: Memorandum Re: Fill Beyond Approved Limit, dated February 21, 2019.
  - Attachment B: Georeferencing Plan
  - Attachment C: Zoning Map
  - Attachment D: Solid Non-Hazardous Waste Disposal Site Inspection Report

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

1. *The reason for Conditions 1.1, 2.5, 2.6, 2.9, 4.1, 4.2, 4.3, 6.8 and 7.3 is to ensure that the landfill Site is designed, developed, operated, monitored and maintained in accordance with the application and supporting documentation submitted by the Owner, and not in a manner which the Director has not been asked to consider.*
2. *The reason for Conditions 1.2 to 1.5, 1.7 and 1.11 is to clarify the legal rights and responsibilities of the Owner.*
3. *The reason for Condition 1.6 is to ensure that appropriate Ministry staff have ready access to the Site for inspection of facilities, equipment, practices and operations required by the conditions in*

*this ECA. This condition is supplementary to the powers of entry afforded a Provincial Officer pursuant to the EPA and OWRA.*

4. *The reason for Condition 1.8 is to ensure that all correspondence relevant to this ECA is properly identified by the ECA number for ease of reference.*
5. *The reasons for Conditions 1.9 and 1.13 are to restrict potential transfer or encumbrance of the Site without the approval of the Director and to ensure that any transfer or encumbrance can be made only on the basis that it will not endanger compliance with this ECA.*
6. *Condition 1.10 is included, pursuant to subsection 197(1) of the EPA, to provide that any persons having an interest in the Site are aware that the land has been approved and used for the purposes of waste disposal.*
7. *The reason for Condition 1.12 is to ensure the availability of records, including drawings for inspection and information purposes.*
8. *The reasons for Conditions 2.1, 2.2 and 2.3 are to specify the approved area from which waste may be accepted at the Site, the types of waste that may be accepted for disposal at the Site, and the maximum rates at which this Site may receive waste, based on the Owner's application and supporting documentation.*
9. *The reason for Conditions 2.4, 2.7 and 2.8 is to specify restrictions on the extent of landfilling at this Site based on the Owner's application and supporting documentation. These limits define the approved volumetric capacity of the site.*
10. *The reasons for Conditions 3.1 and 3.2 are to specify the hours of operation for the landfill Site and a mechanism for amendment of the hours of operation, as may be necessary.*
11. *The reason for Condition 3.3 is to ensure that daily and intermediate cover is used to control potential nuisance effects, to facilitate vehicle access on the site, and to ensure an acceptable site appearance is maintained. The proper closure of a landfill site requires the application of a final cover which is aesthetically pleasing, controls infiltration, and is suitable for the end use planned for the site.*
12. *The reason for Condition 3.4 is to specify the approval requirements for use of alternative cover material at the Site.*
13. *The reasons for Conditions 3.5 and 3.6 are to ensure that the Site is supervised by properly trained staff in a manner which does not result in a hazard or nuisance to the natural environment or any person, and to ensure a controlled access and integrity of the Site by preventing unauthorized access when the Site is closed and no site attendant is on duty.*
14. *The reason for Conditions 3.7 to 3.9 and 4.4 to 4.8 is to ensure that the Site is operated in an environmentally acceptable manner for the protection of the natural environment and public health and safety.*

15. *The reason for Conditions 3.10 and 3.11 is to ensure that users of the Site are fully aware of important information and restrictions related to Site operations and access under this ECA.*
16. *The reason for Conditions 5.1 and 5.2 is to ensure that the Site is operated, inspected and maintained in an environmentally acceptable manner and does not result in a hazard or nuisance to the natural environment or any person.*
17. *The reasons for Conditions 6.1 to 6.6 are to demonstrate that the site performs in conformance with the requirements of this ECA, the EPA and its regulations, and OWRA and its Regulations. Regular monitoring allows for the analysis of trends over time and ensures that there is an early warning of potential problems so that any necessary remedial/contingency action can be taken.*
18. *The reasons for Conditions 7.1 and 7.2 are to ensure that the Owner follows a plan with an organized set of procedures for identifying and responding to unexpected but possible problems at the Site. A remedial action / contingency plan is necessary to ensure protection of the natural environment and public health and safety.*
19. *The reason for Condition 8.1 is to ensure that the Site is operated by properly trained staff in a manner which does not result in a hazard or nuisance to the natural environment or any person.*
20. *The reason for Conditions 9.1 and 9.2 is to ensure that the Ministry is notified forthwith of any spills as required in Part X of the EPA, so that appropriate spills response can be determined.*
21. *The reasons for Conditions 5.3 and 10.1 are to ensure the availability of records for inspection and information purposes, to provide for the proper assessment of effectiveness and efficiency of site design and operation, their effect or relationship to any nuisance or environmental impacts, and the occurrence of any public complaints or concerns. Record keeping is necessary to determine compliance with this ECA, the EPA and its regulations.*
22. *The reasons for Condition 11.1 are to ensure that regular review of site development, operations and monitoring data is documented and any possible improvements to site design, operations or monitoring programs are identified, and to ensure that potential impacts on the local wetland are reviewed/updated regularly. An annual report is an important tool used in reviewing site activities and for determining the effectiveness of site design.*
23. *The reasons for Condition 12.1 are to ensure that final closure of the Site is completed in an aesthetically pleasing manner and to ensure the long-term protection of the natural environment.*

**Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). A272601 issued on July 31, 1989**

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

shall state:

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

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

*The Notice should also include:*

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

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

*This Notice must be served upon:*

The Secretary\*  
Environmental Review Tribunal  
655 Bay Street, Suite 1500  
Toronto, Ontario  
M5G 1E5

AND

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

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

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

DATED AT TORONTO this 16th day of April, 2020



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Mohsen Keyvani, P.Eng.

Director

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

CM/

c: District Manager, MECP Owen Sound  
Peter Brodzikowski, P. Eng., WSP

**ENVIRONMENTAL COMPLIANCE APPROVAL**

NUMBER 4076-BYRM6P  
Issue Date: June 24, 2021

The Corporation of the Township of Huron-Kinloss  
21 Queen Street  
Huron-Kinloss, Ontario  
N0G 2R0

Site Location: Huron Landfill Site  
Concession Road 6  
Lot 19, 20, Concession 5  
Township of Huron-Kinloss, County of Bruce

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

stormwater management system consisting of approximately 4.5 hectares of the open area (with exception of active landfill area) of Huron Landfill Site covered with grass vegetation for surface water management, discharging surface water via overland sheet flow northerly to a roadside ditch, southerly and westerly to South Pine River, and easterly via an existing onsite ditch to South Pine River;

all in accordance with the submitted supporting documents listed in Schedule A.

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

1. "Approval" means this entire document and any schedules attached to it, and the application;
2. "Director" means a person appointed by the Minister pursuant to section 5 of the EPA for the purposes of Part II.1 of the EPA;
3. "District Manager" means the District Manager of the appropriate local District Office of the Ministry, where the Works are geographically located;
4. "EPA" means the *Environmental Protection Act*, R.S.O. 1990, c.E.19, as amended;
5. "Ministry" means the ministry of the government of Ontario responsible for the EPA and OWRA and includes all officials, employees or other persons acting on its behalf;

6. "MNRF" means the Ministry of Natural Resources and Forestry of the government of Ontario and includes all officials, employees or other persons acting on its behalf;
7. "Owner" means The Corporation of the Township of Huron-Kinloss, and includes its successors and assignees;
8. "OWRA" means the *Ontario Water Resources Act*, R.S.O. 1990, c. O.40, as amended;
9. "Works" means the sewage Works described in the Owner's application, and this Approval.

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

## TERMS AND CONDITIONS

### 1. GENERAL CONDITIONS

1. The Owner shall ensure that any person authorized to carry out work on or operate any aspect of the Works is notified of this Approval and the conditions herein and shall take all reasonable measures to ensure any such person complies with the same.
2. Except as otherwise provided by these Conditions, the Owner shall design, build, install, operate and maintain the Works in accordance with the description given in this Approval, and the application for approval of the Works.
3. Where there is a conflict between a provision of any document in the schedule referred to in this Approval and the conditions of this Approval, the conditions in this Approval shall take precedence, and where there is a conflict between the documents in the schedule, the document bearing the most recent date shall prevail.
4. Where there is a conflict between the documents listed in Schedule A and the application, the application shall take precedence unless it is clear that the purpose of the document was to amend the application.
5. The conditions of this Approval are severable. If any condition of this Approval, or the application of any requirement of this Approval to any circumstance, is held invalid or unenforceable, the application of such condition to other circumstances and the remainder of this Approval shall not be affected thereby.
6. The issuance of, and compliance with the conditions of, this Approval does not:
  - a. relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement, including, but not limited to, the obligation to obtain approval from the local conservation authority/MNRF necessary to construct or operate the sewage works; or

- b. limit in any way the authority of the Ministry to require certain steps be taken to require the Owner to furnish any further information related to compliance with this Approval.

## **2. EXPIRY OF APPROVAL**

1. This Approval will cease to apply to those parts of the Works which have not been constructed within ten (10) years of the date of this Approval.
2. In the event that completion and commissioning of any portion of the Works is anticipated to be delayed beyond the specified expiry period, the Owner shall submit an application of extension to the expiry period, at least twelve (12) months prior to the end of the period. The application for extension shall include the reason(s) for the delay, whether there is any design change(s) and a review of whether the standards applicable at the time of Approval of the Works are still applicable at the time of request for extension, to ensure the ongoing protection of the environment.

## **3. CHANGE OF OWNER**

1. The Owner shall notify the District Manager and the Director, in writing, of any of the following changes within thirty (30) days of the change occurring:
  - a. change of Owner;
  - b. change of address of the Owner;
  - c. change of partners where the Owner is or at any time becomes a partnership, and a copy of the most recent declaration filed under the *Business Names Act*, R.S.O. 1990, c.B17 shall be included in the notification to the District Manager; or
  - d. change of name of the corporation where the Owner is or at any time becomes a corporation, and a copy of the most current information filed under the *Corporations Information Act*, R.S.O. 1990, c. C39 shall be included in the notification to the District Manager.
2. In the event of any change in ownership of the Works, other than a change to a successor municipality, the Owner shall notify in writing the succeeding owner of the existence of this Approval, and a copy of such notice shall be forwarded to the District Manager and the Director.
3. The Owner shall ensure that all communications made pursuant to this condition refer to the number at the top of this Approval.

## **4. OPERATION AND MAINTENANCE**

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

2. The Owner shall undertake an inspection of the condition of the Works, at least once a year, and undertake any necessary cleaning and maintenance to ensure that sediment, debris and excessive decaying vegetation are removed from the Works to prevent the excessive build-up of sediment, oil/grit, debris and/or decaying vegetation, to avoid reduction of the capacity of the Works. The Owner shall also regularly inspect and clean out the inlet to and outlet from the Works to ensure that these are not obstructed.
3. The Owner shall ensure that the effluent from the Works is essentially free of floating and settleable solids and does not contain oil or any other substance in amounts sufficient to create a visible film, sheen or foam on the receiving waters.
4. The Owner shall ensure that the operation and maintenance program is carried out as per the Stormwater Management Plan referred to in the submitted supporting documents forming part of this Approval.
5. The Owner shall prepare an operations manual prior to the commencement of operation of the Works, to the satisfaction of the District Manager, that includes, but not necessarily limited to, the following information:
  - a. operating and maintenance procedures for routine operation of the Works;
  - b. inspection programs, including frequency of inspection, for the Works and the methods or tests employed to detect when maintenance is necessary;
  - c. repair and maintenance programs, including the frequency of repair and maintenance for the Works;
  - d. contingency plans and procedures for dealing with potential spill, bypasses and any other abnormal situations and for notifying the District Manager; and
  - e. procedures for receiving, responding and recording public complaints, including recording any follow-up actions taken.
6. The Owner shall maintain the operations manual up to date through revisions undertaken from time to time and retain a copy at the Owner's administrative office. Upon request, the Owner shall make the manual available for inspection and copying by Ministry personnel.

## **5. MONITORING AND RECORDING**

1. The Owner shall, upon commencement of operation of the Works, carry out a monitoring program and all samples and measurements taken for the purposes of this Approval are to be taken at a time and in a location characteristic of the quality of the surface water over the time period being monitored.
2. The Owner shall complete once every week inspections of the open working face of the site in March and April of each year and observe for leachate/runoff migration from the open working

face that is leaving the site as runoff. Such runoff observed exiting the property shall be sampled on the day of the inspection and shall be sampled at the point(s) where the runoff exits the landfill property.

3. Samples shall be collected at the sampling point(s), at the sampling frequencies specified, by means of the specified sample type and analyzed for each parameter listed in the monitoring table included in Schedule B.
4. All samples collected under this Condition shall be submitted to a laboratory accredited by the Canadian Association for Laboratory Accreditation (CALA) and results of these efforts, and discussion with respect to leachate/runoff influence from the working face to the property boundary, shall be provided in the annual report.
5. The methods and protocols for sampling, analysis, toxicity testing, and recording shall conform, in order of precedence, to the methods and protocols specified in the following:
  - a. the Ministry's publication "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater" (January 1999), ISBN 0-7778-1880-9, as amended from time to time by more recently published editions;
  - b. the publication "Standard Methods for the Examination of Water and Wastewater" (21st edition) as amended from time to time by more recently published editions;
  - c. in respect of any parameters not mentioned in (a) - (b), the written approval of the District Manager, which approval shall be obtained prior to sampling.
6. The Owner shall record the dates and times of these inspections, and whether samples were collected. These records shall form part of Condition 7.3.
7. The Owner may, after three (3) years of monitoring in accordance with this Condition, apply to the District Manager in writing to amend or remove this Condition.

## **6. TEMPORARY EROSION AND SEDIMENT CONTROL**

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

## **7. REPORTING**

1. One (1) week prior to the start-up of the operation of the Works, the Owner shall notify the District Manager (in writing) of the pending start-up date.
2. The Owner shall, upon request, make all reports, manuals, plans, records, data, procedures and supporting documentation available to Ministry staff.
3. The Owner shall prepare a performance report within ninety (90) days following the end of the period being reported upon, and submit the report(s) to the District Manager when requested. The first such report shall cover the first annual period following the commencement of operation of the Works and subsequent reports shall be prepared to cover successive annual periods following thereafter. The reports shall contain, but shall not be limited to, the following information:
  - a. a summary and interpretation of all monitoring data, including an overview of the success and adequacy of the Works;
  - b. a description of any operating problems encountered and corrective actions taken;
  - c. a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism or thing forming part of the Works, including an estimate of the quantity of any materials removed from the Works;
  - d. a summary of any effluent quality assurance or control measures undertaken in the reporting period;
  - e. a summary of the calibration and maintenance carried out on monitoring equipment;
  - f. a summary of any complaints received during the reporting period and any steps taken to address the complaints;
  - g. a summary of all spill or abnormal discharge events; and
  - h. any other information the District Manager requires from time to time.

## **8. SPILL CONTINGENCY PLAN**

1. Prior to construction of the Works, the Owner shall implement a spill contingency plan - that is a set of procedures describing how to mitigate the impacts of a spill within the area serviced by the Works. The Owner shall, upon request, make this plan available to Ministry staff. This plan shall include as a minimum:
  - a. the name, job title and location (address) of the Owner, person in charge, management or person(s) in control of the facility;

- b. the name, job title and 24-hour telephone number of the person(s) responsible for activating the spill contingency plan;
  - c. a site plan drawn to scale showing the facility, nearby buildings, streets, catch-basins and manholes, drainage patterns (including direction(s) of flow in storm sewers), any receiving body(ies) of water that could potentially be significantly impacted by a spill and any features which need to be taken into account in terms of potential impacts on access and response (including physical obstructions and location of response and clean-up equipment);
  - d. steps to be taken to report, contain, clean up and dispose of contaminants following a spill;
  - e. a listing of telephone numbers for: local clean-up company(ies) who may be called upon to assist in responding to spills; local emergency responders including health institution(s); and Ministry Spills Action Centre 1-800-268-6060;
  - f. Safety Data Sheets (SDS) for each hazardous material which may be transported or stored within the area serviced by the Works;
  - g. the means (internal corporate procedures) by which the spill contingency plan is activated;
  - h. a description of the spill response training provided to employees assigned to work in the area serviced by the Works, the date(s) on which the training was provided and by whom;
  - i. an inventory of response and clean-up equipment available to implement the spill contingency plan, location and, date of maintenance/replacement if warranted; and
  - j. the date on which the contingency plan was prepared and subsequently, amended.
2. The spill contingency plan shall be kept in a conspicuous, readily accessible location on-site.
  3. The spill contingency plan shall be amended from time to time as required by changes in the operation of the facility.

## **9. RECORD KEEPING**

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

## **Schedule A**

1. Application for Environmental Compliance Approval, September 17, 2019, submitted by The Corporation of the Township of Huron-Kinloss;
2. Stormwater Management Plan, dated April 2019, including plans and all additional supporting information and documentation, prepared by WSP Canada Inc.

## Schedule B

### Surface Water Monitoring

#### Sampling Point(s) - Property Boundary

<b>Frequency</b>	Weekly in March and April of each year when runoff from the working face reaching the property boundary
<b>Sample Type</b>	Grab
<b>Parameters</b>	Ammonia, Dissolved organic carbon, Chloride, Alkalinity, Conductivity, Total Phenols, Total Kjeldahl Nitrogen (TKN)

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

1. Condition 1 is imposed to ensure that the Works are constructed and operated in the manner in which they were described and upon which approval was granted. This condition is also included to emphasize the precedence of conditions in the Approval and the practice that the Approval is based on the most current document, if several conflicting documents are submitted for review. Condition 1.6 is included to emphasize that the issuance of this Approval does not diminish any other statutory and regulatory obligations to which the Owner is subject in the construction, maintenance and operation of the Works. The Condition specifically highlights the need to obtain any necessary conservation authority approvals. The Condition also emphasizes the fact that this Approval doesn't limit the authority of the Ministry to require further information.
2. Condition 2 is included to ensure that, when the Works are constructed, the Works will meet the standards that apply at the time of construction to ensure the ongoing protection of the environment.
3. Condition 3 is included to ensure that the Ministry records are kept accurate and current with respect to the approved Works and to ensure that subsequent owners of the Works are made aware of the Approval and continue to operate the Works in compliance with it.
4. Condition 4 is included as regular inspection and necessary removal of sediment and excessive decaying vegetation from the Works are required to mitigate the impact of sediment, debris and/or decaying vegetation on the treatment capacity of the Works. The Condition also ensures that the Works are operated and maintained to function as designed.
5. Condition 5 is included to require the Owner to evaluate and demonstrate the performance of the Works, and that the Works does not cause any impairment to the natural environment.
6. Condition 6 is included as installation, regular inspection and maintenance of the temporary sediment and erosion control measures is required to mitigate the impact on the downstream receiving watercourse during construction until they are no longer required.
7. Condition 7 is included to provide a performance record for future references, to ensure that the Ministry is made aware of problems as they arise, and to provide a compliance record for all the terms and conditions outlined in this Approval, so that the Ministry can work with the Owner in resolving any problems in a timely manner.
8. Condition 8 is included to ensure that the Owner will implement the Spill Contingency Plan, such that the environment is protected and deterioration, loss, injury or damage to any person(s) or property is prevented.
9. Condition 9 is included to require that all records are retained for a sufficient time period to adequately evaluate the long-term operation and maintenance of the Works.

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

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

*The Notice should also include:*

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

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

*This Notice must be served upon:*

The Secretary\*  
Environmental Review Tribunal  
655 Bay Street, Suite 1500  
Toronto, Ontario  
M5G 1E5

AND

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

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

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

DATED AT TORONTO this 24th day of June, 2021



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Aziz Ahmed, P.Eng.  
Director  
appointed for the purposes of Part II.1 of the  
*Environmental Protection Act*

LW/

c: District Manager, DWEC, MECP Owen Sound  
Peter Brozikowski, P.Eng, WSP Canada Inc.

## **Appendix B      Supporting Documents & Correspondence**



## Solid Non-Hazardous Waste Disposal Site Inspection Report

<b>Client:</b>	The Corporation of the Township of Huron-Kinloss Mailing Address: 21 Queen St, Post Office Box, 130, Ripley, Ontario, Canada, N0G 2R0 Physical Address: 21 Queen St Ripley, Huron-Kinloss, Township, County of Bruce, Ontario, Canada, N0G 2R0 Telephone: (519)395-3735, Extension: 130, FAX: (519)395-4107, email: hnichol@huronkinloss.com Client #: 4545-4MERDZ, Client Type: Municipal Government, NAICS: 22131 Additional Address Info: Ripley		
<b>Inspection Site Address:</b>	Huron Landfill Site Address: Lot: 19, 20, Concession: 5, Concession Road 6, Geographic Township: BRUCE, Huron-Kinloss, Township, County of Bruce, N0G 2R0 District Office: Owen Sound GeoReference: Map Datum: NAD27, Zone: 17, Accuracy Estimate: 1-10 metres eg. Good Quality GPS, Method: GPS, UTM Easting: 451457, UTM Northing: 4878824, UTM Location Description: Entrance gate., LIO GeoReference: Zone: , UTM Easting: , UTM Northing: , Latitude: 44.2708, Longitude: -81.433 Site #: 3678-5Q8L7L		
<b>Contact Name:</b>	Hugh Nichol	<b>Title:</b>	Public Works Superintendant
<b>Contact Telephone:</b>	(519)395-3735 ext	<b>Contact Fax:</b>	
<b>Last Inspection Date:</b>	2014/02/20		
<b>Inspection Start Date:</b>	2018/01/16	<b>Inspection Finish Date:</b>	2018/01/16
<b>Region:</b>	Southwestern		

### 1.0 INTRODUCTION

The Huron Landfill Site waste disposal facility was inspected as part of the Ministry of the Environment and Climate Change (MOECC) 2017/2018 inspection program.

The purpose of this pro-active inspection was to assess compliance of the operation of the site in relation to the terms and conditions of Environmental Compliance Approval (ECA) Number A272601, any relevant control documents, MOECC legislation and to confirm conformance with the MOECC waste-related policies and guidelines.

This inspection included an unannounced site visit conducted on January 16, 2018 to inspect the operational activities of the landfill site. At the time of inspection the landfill site was open and landfill attendants were present at the site. Mr. Terry Edmiston, operator in charge, assisted with the site inspection.

A copy of the 2016 Annual Report (AR) was previously forwarded to the Ministry's Technical Support; therefore, a detailed review of the monitoring data for the site was not conducted as part of this inspection. The 2016 Annual Report, as per Condition 11 of the ECA is required by March 31st of each year, prepared by WSP Canada Inc., dated March 2017, was reviewed as part of the inspection.

A previous MOECC inspection was conducted at this site on February 20, 2014. The landfill is owned and operated by the Township of Huron-Kinloss and services the residential and industrial, commercial and

institutional sectors located within the service area.

The landfill is located on Part Lots 19 and 20, Concession 5, in the former Township of Huron in the amalgamated Township of Huron-Kinloss, at 2087 Concession 6 East Road; southwest of the community of Ripley.

According to the AR, the Township is home to a total of approximately 7,000 residents that are serviced by the Huron Landfill. Additionally, waste from the former Township of Huron, the former Township of Kinloss and the Village of Lucknow is landfilled at the Huron Landfill.

## 2.0 INSPECTION OBSERVATIONS

### **Certificate of Approval Number(s):**

Environmental Compliance Approval A272601 was issued October 15, 1991 and amended in 2007, 2010 and 2012.

-ECA A272601, issued on October 15, 1991 - requires registration of the ECA on the title; submission of an annual report to the MOE, monitoring of groundwater and surface water quality and imposes terms/conditions of onsite burning.

- A272601 Notice No. 1, issued on August 14, 2007 - ECA was amended to include changes to operational plans to clarify theoretical capacity and to require a new Design and Operations Plan within one year of issuance.

- A272601 Notice No. 2, issued on July 6, 2010 - ECA was amended to change the landfilling operation at the Landfill from trench method to area method, for disposal of domestic, commercial and solid non-hazardous industrial wastes and to approve the establishment and operation of waste segregation/recycling centre and WEEE program at the landfill, for acceptance, temporary storage and transfer of non-putricible recyclable waste

- A272601 Notice No. 3, issued on July 9, 2010 - ECA was amended to approve expansion of the service area of the landfill site to include the Village of Lucknow.

- A272601 Notice No. 4, issued on March 2, 2012 - ECA was amended to approve operation of a Waste Segregation/Recycling Centre and WEEE program at the Landfill, for the acceptance, temporary storage, and transfer of non-putricible recyclable waste.

## 2.1 FINANCIAL ASSURANCE:

### **Specifics:**

There is no financial assurance required for this landfill site as it is a municipally owned landfill.

## 2.2 APPROVED AREA OF THE SITE:

### **Specifics:**

The total approved area of the site specified in the ECA consists of 8.0 hectares waste fill area within a total site area of 17.7 hectares.

At the time of inspection the Landfill footprint appeared defined by site topography and access roads. Wastes intended for landfilling were observed to be deposited into the approved area.

## 2.3 APPROVED CAPACITY:

### **Specifics:**

Condition 2.4 of the ECA states that the total waste disposal capacity of the site (waste filled by trench method and by area method), including waste, daily cover and interim cover is 288,000 cubic metres.

Condition 2.3 of the Certificate states that the maximum rate at which the site shall receive waste for disposal, is limited to 100 tonnes per day, and 3,000 tonnes per calendar year. The receipt of waste in excess of the daily maximum fill rate may only be allowed on a limited short-term basis, on no more than two consecutive operating days, and only with prior notification and concurrence from the District Manager.

According to the AR, the average landfilled volume over the past five years is 6,605 cubic metres including waste and cover material. WSP used this average fill rate and remaining capacity determined in the Design and Operational Plan to result in a site closure date of 2035. Currently the former Village of Lucknow's waste is received by the Mid-Huron Landfill. However, this landfill was estimated to be closed in 2017. When this closure occurs the waste from the former Village of Lucknow will be landfilled at the Huron Landfill. The above estimate of reaching maximum capacity in 2035 does not account for future waste received from the former Village of Lucknow.

At the time of the inspection it was indicated that waste limits are known to staff and are monitored through the scale house computerized weigh scale tracking system. This tracking system allows site personnel to monitor daily waste quantities and total waste tonnage accepted onsite. Daily waste quantity records were observed by Environmental Officers during the inspection. Staff indicated that waste typically does not exceed 30 tonnes per day even in the peak season of summer.

**2.4 ACCESS CONTROL:**

**Specifics:**

Access to the site is controlled by a locked gate at the main entrance and a vegetative screen and fencing along Concession 6 Road. The site is open year round for the public on Tuesday, Friday and Saturday between 10:00 a.m. to 4:00 p.m.

During operating hours municipal staff are present to supervise site activities; one at the weight station and one or two at the recycling/dumping areas. At the time of inspection, the landfill site was open. A locked access gate was observed in place to restrict access to the site as required by section 11.(2) of O. Reg 347.

**2.5 COVER MATERIAL:**

**Specifics:**

Environmental Compliance Approval A272601 Condition 3.3 of the Notice No. 2 states:

a. Daily Cover - At the end of each working day, after deposition of waste into the waste fill area, the entire working face shall be compacted and covered with a minimum thickness of 150 mm of soil cover or an approved thickness of alternative cover material such as compost, wood-chips or foundry sand. Prior to placing waste at the start of the next operating day, the existing daily cover material shall be scarified or removed to the extent practical, to ensure vertical hydraulic connection is maintained between layers of waste and to promote percolation of leachate downwards.

b. Interim Cover - In areas where landfilling ceases temporarily for a period of 6 months or more, a minimum thickness of 300 mm of soil shall be placed as interim cover. The quality of soil for use as interim cover shall, as a minimum, meet the criteria for Industrial/Commercial land use specified in Table A in the Ministry's "Guideline for Use at Contaminated Sites in Ontario", revised February 1997.

c. Final Cover - Final cover shall be applied progressively as areas of the landfill reach final waste elevations. The final soil cap shall consist of a minimum 600 mm thickness of impermeable compacted soil overlain by a minimum 150 mm topsoil and vegetative cover, as described in Section 2.3 in Item 8 in Schedule "A", attached to this Certificate. Prior to placement of final cover, the Owner/Operator shall submit for the approval of the Director, a report detailing the specifications, including particle size distribution of the final cover soil which shall confirm the designed permeability of 10-5cm/sec or less, as well as the protocols for testing and acceptance for on-site and off-site final cover soils. All areas of final cover shall be graded and vegetated as soon as practically possible.

Daily cover was not observed on the open face of the waste fill area during the inspection in contravention to Condition 3.3 of the ECA (**See Section 5.0 Action(s) Required**). Mr. Edmiston indicated that cover material stock is clay based and forms clumps making it difficult for the site equipment to apply the required material.

**2.6 WASTE BURNING:**

**Specifics:**

ECA Condition 4 permits the burning of clean wood and brush. At the time of inspection, there was no burning taking place. Materials other than clean wood and brush were not observed in the burn pile at the time of inspection.

**2.7 GROUNDWATER/SURFACEWATER IMPACT:**

**Specifics:**

There was no obvious evidence of groundwater or surface water impact at this site.

The 2016 AR identifies that groundwater and surface water sampling occur twice annually, in the spring and fall. At the time of inspection, snow conditions caused only a few monitoring wells to be observed. All monitoring wells observed appeared to be in good condition with locks to control access. However, the Annual Report detailed that Well OW2 is damaged and has been filled with bentonite and fitted with a temporary cap. As required by Section 21(3) of O. Reg. 903, the well shall be properly abandoned (**See Section 5.0 Action(s) Required**).

According to the 2016 AR, surface water monitoring samples are obtained from an upstream and downstream station on South Pine River. Surface water monitoring results have not indicated any landfill related impacts.

The District Office has forwarded a copy of the 2016 Annual Report to the Ministry's Technical Support Section for review. Any comments regarding groundwater or surface water impacts will be dealt with under a letter separate from this report.

**2.8 LEACHATE CONTROL SYSTEM:**

**Specifics:**

A Leachate Management Plan (the Plan) has been implemented to manage the leachate generated at this site. The Plan is designed to minimize the volume of leachate impacted surface water accumulation in the trench and contains procedures for managing the impacted water.

According to Mr. Edmiston, leachate has collected in a pond-like formation to the south western corner of the landfill area near to the interceptor berm. He thinks there the pond is approximately 4 feet with 2 feet of that potentially being black leachate. Mr. Edmiston explained that the area needs to be pumped out and filled and that he hopes this will occur in the spring (**See Section 5.0 Action(s) Required**).

No leachate breakout was noted during the inspection, however, snow cover and frozen ground made it difficult to observe the site. The area to the south western corner of the landfill area did appear to be a depression in the landscape and have the presence of cattails, an aquatic vegetation.

**2.9 METHANE GAS CONTROL SYSTEM:**

**Specifics:**

There is no methane gas collection system at this site.

Condition 6.7 of the ECA requires the Owner/Operator to ensure that all buildings and structures existing at the Site or to be built on-Site which at times are occupied by people, or contains electrical equipment, or a potential source of ignition, are situated, constructed and monitored in a manner which minimizes the potential for explosive hazards due to landfill gas.

Testing for methane gas at this site was initiated in 2002. There are four methane monitoring locations on the site and the gas probes are monitored in the winter, when the waste disposal site is under frozen conditions.

According to the Annual Report, methane monitoring indicated no detections of methane in 2016-2017 at monitoring points GP1, GP2, GP4 and at the scale house. However, at GP3 methane was detected at 0.9 percent of its lower explosive limit. Mr. Edmiston indicated that the shed near the recycling bins has been removed from the site as per previous MOECC suggestion. In response to the detection of methane at the Landfill, the Township purchased a Sensit Model HXG-2D gas detector and trained the site attendants on the operation of the instrument. When working in the vicinity of GP3 the gas detector was reported to be utilized by staff. In 2016, there were no reports of the lower explosive limit being greater than zero.

Mr. Edmiston was not aware of any methane issues at the Landfill since the last inspection.

At the time of the inspection, no gas odours were noted on or off-site.

**2.10 OTHER WASTES:**

**Specifics:**

At the time of inspection, there was no evidence of wastes other than solid non-hazardous wastes being deposited in the fill area of the site.

According to the 2016 Annual Report, Huron Landfill accepted the following items:

- clean burnable wood,
- scrap metal,
- refrigeration units,
- e-waste,
- mattresses and,
- tires.

Recyclable Materials

A series of signed bins are located near the entrance for recyclable materials including paper, cardboard and plastic/metal containers. Solid non-hazardous waste was found in small increments in the recycling area and attendants were sorting through it at the time of inspection.

Bale Wrap

Bale wrap is no longer collected onsite Huron Landfill. The contractor, Switch Energy, now picks up the bale wrap individually and it does not enter the landfill.

Propane Cylinders

Propane cylinders were observed stored onsite. They were segregated, and the storage area was signed/labelled. Propane cylinders are stored next to a building structure, sheltered from incidental traffic accidents, in a manner which prevents cylinders from being knocked over or cylinder valves from breaking.

Tires

There were less than 5000 tire units stored at the site at the time of inspection. Less than 300 tire units were observed. The tires were segregated and the signage was legible.

Refrigeration Equipment

Refrigeration equipment was segregated for the storage of refrigerant appliances. At the time of inspection, Mr. Edmiston explained that Don Thompson TV & Appliances, Ripley was a licensed technician who removes the CFCs. Several units were observed and were not in an upright position. Refrigerators containing Chlorofluorocarbons (CFC) should be stored separately from the drained/tagged ones, to avoid damage of the un-drained units. Untagged refrigerators must be handled carefully, placed separately in upright position until CFCs are removed and tagged by a licensed technician as required by Section 41(1) of O. Reg. 463/10. Rough handling will result in breaking of lines and loss of CFC's to the atmosphere (**See Section 5.0 Action(s) Required**).

Scrap Metal

Scrap metal is collected on-site in a separate area for recycling. Scrap metal is removed by Sullivan Salvage.

Mattresses

Mattresses are collected onsite in a separate container as of 2015 and are shipped from the landfill on a regular basis.

**3.0 REVIEW OF PREVIOUS NON-COMPLIANCE ISSUES**

1. Failure to apply cover material in accordance with the Condition 3.3 of the Notice No. 2; **Action Item incomplete**
2. Failure to contain and clean up wind blown litter; **Action Item complete**
3. Failure of the Operator of the Landfill to extinguish the burn pile upon leaving the site; **Action Item complete**
4. Failure to ensure compliance with the 120 temporary storage/transfer days limit required by Condition 4.3 of the Notice No. 2; **Action Item complete**
5. Failure to post and maintain signs at the landfill in accordance with the requirements of Condition 3.11 of the Notice No. 2; **Action Item complete**
6. Failure to handle and store appliances containing CFCs in an environmentally responsible manner; **Action Item incomplete**
7. Failure to store segregated wastes in environmentally responsible manner; **Action item complete**
8. Failure to prevent scavenging at the landfill in accordance with Section 23 O.Reg.232/98 and Section 11(19) of the O.Reg.347; **Action Item complete**
9. Failure to provide training to the employees involved with the site operation as required by Condition 8.1 of the Notice No. 2. **Action Item complete**

**4.0 SUMMARY OF INSPECTION FINDINGS (HEALTH/ENVIRONMENTAL IMPACT)**

**Was there any indication of a known or anticipated human health impact during the inspection and/or review of relevant material, related to this Ministry's mandate?**

No

**Specifics:**

**Was there any indication of a known or anticipated environmental impact during the inspection and/or review of relevant material ?**

No

**Specifics:**

**Was there any indication of a known or suspected violation of a legal requirement during the inspection and/or review of relevant material which could cause a human health impact or environmental impairment ?**

Yes

**Specifics:**

Daily cover was not observed on the open face of the waste fill area during the inspection in contravention to Condition 3.3 of the ECA

Well OW2 is damaged and has been filled with bentonite and fitted with a temporary cap. As required by Section 21(3) of O. Reg. 903, the well shall be properly abandoned

Leachate pond-like formation to the south western corner of the landfill area near to the interceptor berm

Several refrigeration units were observed untagged and not in an upright position. Untagged refrigerators must be handled carefully, placed separately in upright position until CFCs are removed and tagged by a licensed technician as required by Section 41(1) of O. Reg. 463/10.

**Was there any indication of a potential for environmental impairment during the inspection and/or the review of relevant material ?**

No

**Specifics:**

**Was there any indication of minor administrative non-compliance?**

No

**Specifics:**

## 5.0 ACTION(S) REQUIRED

1. The Owner/Operator shall ensure daily cover is maintained on the open face of the waste fill area as required by Condition 3.3 of the ECA.
2. The Owner/Operator shall properly abandon Well OW2 as per Section 21(3) of O. Reg. 903.
3. On or before March 15, 2018 the company shall provide a written response to the undersigned Provincial Officer detailing the actions to be taken to address the above listed Action Items.
4. On or before April 30, 2018 the Owner/Operator shall implement the Leachate Contingency Plan as per Section 9.2 of the Design and Operation Plan to address the pond-like formation of leachate to the south western corner of the landfill area near to the interceptor berm and provide notification of completion to the undersigned Provincial Officer.

## 6.0 OTHER INSPECTION FINDINGS

There were no other inspection findings associated with this inspection.

## 7.0 INCIDENT REPORT

Applicable  
3187-AVHRNS

## 8.0 ATTACHMENTS

IMG\_20180116\_135607.jpg; IMG\_20180116\_135645.jpg; IMG\_20180116\_140110.jpg; IMG\_20180116\_140123.jpg;  
IMG\_20180116\_140125.jpg; IMG\_20180116\_140200.jpg; IMG\_20180116\_140416.jpg; IMG\_20180116\_140440.jpg;  
IMG\_20180116\_140444.jpg; IMG\_20180116\_140511.jpg; IMG\_20180116\_140622.jpg; IMG\_20180116\_140709.jpg;  
IMG\_20180116\_140735.jpg; IMG\_20180116\_140908.jpg; IMG\_20180116\_141306.jpg; IMG\_20180116\_141310.jpg;  
IMG\_20180116\_141322.jpg; IMG\_20180116\_141942.jpg

**PREPARED BY:**

**Environmental Officer:**

**Name:**

Natasha Munn

**District Office:**

Southwestern Region

**Date:**

2018/01/25

**Signature**



**REVIEWED BY:**

**District Supervisor:**

**Name:**

Andrew Barton

**District Office:**

Owen Sound District Office

**Date:**

2018/01/31

**Signature:**



**File Storage Number:**

BR HK C5 610

**Note:**

"This inspection report does not in any way suggest that there is or has been compliance with applicable legislation and regulations as they may apply to this facility. It is, and remains, the responsibility of the owner and/or the operating authority to ensure compliance with all applicable legislative and regulatory requirements"



March 8, 2018

Ms Natasha Munn, Inspector (Acting)  
Ministry of Environment and Climate Change,  
Drinking Water and Environmental Compliance Division,  
Environmental Enforcement and Compliance Office,  
Sector Compliance Branch,  
Sector Inspections Unit  
305 Milner Ave,  
TORONTO, ON  
M1B 3V4

Dear Ms. Munn:

**Subject: Inspection - Huron Landfill, Lot 19 and 20, Concession 5, Concession Road 6, Former Huron Township, Amalgamated Township of Huron-Kinloss, Bruce County, ON**

On behalf of the Corporation of the Township of Huron-Kinloss ('Township'), WSP responds to the Landfill Inspection completed at the Huron Landfill ('Site') by the Ministry of Environment and Climate Change (MOECC) on January 16, 2018 as detailed in the Solid Non-Hazardous Waste Disposal Site Inspection Report ('Report') dated January 31, 2018.

WSP's responses are in the order of those Section 3.0 and Section 5.0 Action(s) Required items in the January 16, 2018 report.

References are made by MOECC to the Design and Operations Plan by Pryde, Schropp McComb dated January 2010 (2010 D&O).

Regarding the 'Inspection Site Address', and such that there is not confusion and misidentification with the Township of Kinloss landfill, the Township clarifies that the landfill is in the former Township of Huron which is within the amalgamated Township of Huron-Kinloss.

## SECTION 2.5 – COVER MATERIAL

MOECC states 'Daily cover was not observed on the open face of the waste fill area during the inspection.'

## SECTION 2.8 – LEACHATE CONTROL SYSTEM

MOECC relies on the Site Operator's, Mr. Terry Edmiston, observations that leachate has collected in a pond-like formation to the southwestern landfill area near the interceptor berm.

The MOECC noted no leachate breakout. They state the area appeared to be a depression and had cattails, an aquatic vegetation.

## SECTION 2.10 – OTHER WASTES

Under 'Refrigeration', the MOECC noted 'several units were observed and not in an upright position'.

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## SECTION 3.0 - PREVIOUS NON-COMPLIANCE ISSUES

Items noted as ‘Incomplete’ in the report are addressed below.

- 1 MOECC notes failure to apply cover material adequately.  
A response regarding cover material is provided below.
- 6 MOECC notes failure to handle and store appliances containing CFC’s in an environmentally responsible manner.  
Site staff are aware of the requirements for CFC containing appliances and have been advised to handle the items correctly and to maintain the appliances in an upright position.

## SECTION 4.0 – SUMMARY OF INSPECTION FINDINGS (HEALTH/ENVIRONMENTAL IMPACT)

The MOECC notes:

- That daily cover was not observed on the open face of the waste fill area during the inspection.
- That OW2 was ‘damaged and has been filled with bentonite and fitted with a temporary cap’.  
The MOECC references the 2016 Annual Monitoring Report (AMR) in assessing OW2.  
Per Appendix F of the 2016 AMR, OW2 was drilled in 1989 to a depth of 1.52 m.
- A leachate pond-like formation in the south west corner of the landfill area near the interceptor berm.

The clay interceptor berm was constructed 17 years ago in 2001. It is described in Section 7.2 of the 2010 D&O as being ‘approximately 1 m in height’.

Section 7.3 of the 2010 D&O describes the Surface Water Management Plan (SWMP) noting that the use of the retaining berm is to reduce the impact that of surface water runoff would have on the Site. The plan is ‘expected to minimize and control leachate production and to protect the existing drainage routes from erosion while not creating other erosional areas’.

Based on previous survey information, the area of possible pond-like formation behind the retaining berm before flowing around on either end (above the 231 mASL contour) is estimated at 424 m<sup>2</sup>. The low area defined by the 231 mASL contour is 1,026 m<sup>2</sup>. Based on a 1 m depth, a volume of 424 to 1,026 m<sup>3</sup> is calculated.

- Several refrigeration units to be untagged and not in an upright position.

For all of the above findings, the MOECC did not note any potential for environmental impairment.

## SECTION 5.0 - ACTION(S) REQUIRED

The Actions required are in quotations as followed by the proposed action(s) by the Township.

1. ‘The Owner/Operator shall ensure that daily cover is maintained on the open face of the waste fill area...’ per Condition 3.3 of the ECA.

Per Section 3.3 b) of the ECA, ‘at the end of each working day, after deposition of waste into the working area, the entire working face shall be compacted and covered with a minimum thickness of at least 150mm of soil...’

The operator understands the requirements of ECA Section 3.3 b) and ensures that all waste fill areas are covered adequately at the end of the working day.



2. 'The Owner/Operator shall properly abandon Well OW2...' in accordance with of Ontario Regulation (O. Reg.) 903.

Per the borehole log in Appendix F of the 2016 AMR, the construction of OW2 is to a depth of 1.52 m. It was temporarily filled with bentonite. As it is less than 3 m depth, it would not be classified as a 'well' within O Reg 903 and would not require a licenced driller to remove.

The Township has tentatively scheduled a backhoe to excavate the standpipe and refill and compact the excavated area. WSP will supervise the decommissioning work.

3. 'On or before **March 15, 2018**, the company shall provide a written response...' to the MOECC '...detailing the actions to be taken to address the above listed Action items'.

This correspondence is provided in satisfaction of this requirement.

4. 'On or before **April 30, 2018**, the Owner/Operator shall implement the Leachate Contingency Plan as per Section 9.2 of the Design and Operations Plan (2010 D&O) to address the formation of leachate in the south west corner of the landfill area near the interceptor berm and provide notification of the completion...' to MOECC.

Section 7.3 of the D&O describes the interceptor berm, the modifications for which are detailed in Section 3.3.3 of the SWMP.

Section 9.2 of the 2010 D&O details the Leachate Contingency Plan (LCP). The LCP is implemented if trigger levels are exceeded OR if 'leachate outbreaks are observed'.

The LCP is a process with different approaches being detailed in the 2010 D&O.

The Township has requested that WSP review the 2010 D&O and the LCP to assess whether the interceptor berm is constructed per Section 3.3.3 of the SWMP and is functioning adequately.

WSP will review the 2010 D&O Sections 7.3 and 9.2 i), and investigate and make recommendations regarding the required approach and determining which LCP options are required.

WSP will conduct a topographic survey of the south west interceptor berm area to determine the volume of impacted water.

Given the past issue with the high water table at the Site, the effect of shallow groundwater will be considered.

WSP will collect a water quality sample(s) to characterize the quality of the surface water behind the interceptor berm.

WSP and the Township will update the MOECC on the progress of this action item.

We trust the above to be satisfactory. Please contact the undersigned with any questions or comments.

Yours truly,

Norm Bell, P.Geo.  
Senior Hydrogeologist / Project Geoscientist

/nab  
Encl.

cc: Mr Andrew Barton, MOECC Owen Sound District Office  
Mr Hugh Nichol, Township of Huron-Kinloss  
Mr Terry Edmiston, Township of Huron-Kinloss

WSP ref.: 101-16942-00



April 30, 2018

Ms. Natasha Munn, Environmental Officer  
Ministry of the Environment and Climate Change  
Owen Sound District Office  
101 17th Street East  
OWEN SOUND, ON  
N4K 0A5

**Subject: Inspection - Huron Landfill, Lot 19 and 20, Concession 5, Concession Road 6, Former Huron Township, Amalgamated Township of Huron-Kinloss, Bruce County, Ontario - Action Item 4**

Dear Ms. Munn

On behalf of the Corporation of the Township of Huron-Kinloss (Township), WSP responds to the Landfill Inspection completed at the Huron Landfill (Site) by the Ministry of the Environment and Climate Change (MOECC) on January 16, 2018 as detailed in the Solid Non-Hazardous Waste Disposal Site Inspection Report (Report) dated January 31, 2018.

#### **EXISTING SITE CONDITIONS**

WSP visited the Site on April 9, 2018 and inspected the southwest corner of the open area where surface water ponding occurs. During our visit there was minimal snow cover on the ground. Refer to attached **Figure 1** which outlines the existing site conditions at that time.

It appears that at least a portion (north side) of the impoundment is affected by leachate seeping from the uncovered, relatively small portion of the active landfilling area. The remaining part of the landfill footprint is adequately covered (interim cover). Leachate escaping the active disposal area is diluted with stormwater draining from the remaining part of the Site. Water drains westerly towards the Impoundment #1 which is created by an interceptor berm aligned along the edge of the open area. There is a gap in the berm through which water drains further west forming a separate second ponding area. This second impoundment, designated as Impoundment #2, is at a lower elevation than Impoundment #1. It was observed that there is a notch (erosion washout) in the berm holding water in Impoundment #2 through which water is trickling down towards South Pine River.

Standing water in the south part of Impoundment #1 does not visually appear to be affected by leachate, while the remaining north portion of this water body and Impoundment #2 are discoloured by leachate.

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## SURFACE WATER QUALITY ASSESSMENT

Testing and sampling of water was carried out.

On April 23, 2018, three (3) unfiltered samples of surface water were obtained from the southwest portion of the Site. The samples were from the Impoundment #1 (South portion) (SW3/18) ponded surface water behind the interceptor berm. The Impoundment #1 (north portion) (SW4/18) sample was closest to landfilling and Impoundment Area #2 (SW5/18) further from active landfilling with possible dilution by overland flow from the northwest.

The field parameters measured for conductivity and pH were:

<b>1</b>	Impoundment #1 (SW3/18) – South portion	370 uS/cm	8.69
<b>2</b>	Impoundment #1 (SW4/18) – North portion	2,787 uS/cm	7.14
<b>3</b>	Impoundment #2 (SW5/18)	2,100 uS/cm	7.54

The Impoundment #1 (South portion) (SW3/18) sample was slightly grey and cloudy. Impoundment #1 – North (SW4/18) and Impoundment #2 (SW5/18) samples were coloured yellow to brown and yellow to orangey respectively. No sheen was observed.

SW4/18 and SW5/18 appear impacted by leachate based on visual and odour indications.

The samples were submitted to Caduceon Environmental Laboratories for analyses of the identical parameters used for the surface water samples in the annual monitoring program for the site. Analyses were compared to the Provincial Water Quality Objectives (PWQO) and the existing SW1 (upstream) and SW2 (downstream) results from Table 6 of the 2017 Annual Monitoring Report (AMR).

The SW1 (upstream) sample had a conductivity of 463 and 686 uS/cm for June and October 2017 respectively. Alkalinity was 229 to 322 mg/L. Hardness was 218 to 357 mg/L. The total phosphorus concentrations were above the PWQO for the October 2017 at 0.07 mg/L.

The laboratory results for Impoundment #1 (South portion) (SW3/18) agree well with field results and has a conductivity of 378 uS/cm and pH of 8.41 indicating slightly alkaline conditions. The conductivity, alkalinity (110 mg/L) and hardness (181 mg/L) are less than that of the South Pine River at SW1 (upstream) in 2017. Chlorides are low at 25.6 mg/L.

Impoundment #1 (South portion) (SW3/18) is above the PWQO for:

- total phosphorus (0.09 mg/L),
- aluminum (0.9 mg/L),
- chromium (0.002 mg/L),
- iron (1.34 mg/L) and
- zinc (0.04 mg/L).

Impoundment #1 (North portion) (SW4/18) indicates impacts by leachate with conductivity of 3,060 uS/cm. Impoundment #2 (SW5/18) sample appears similarly impacted but is more dilute than the SW4/18 sample with correspondingly less conductivity at 2,290 uS/cm. Chlorides are up to 6.4x higher than Impoundment #1 – South at 163 and 126 mg/L respectively. Alkalinity and hardness are also elevated.

As noted above, the concentrations measured in Impoundment #1 (North portion) are higher than in Impoundment #2 and are typically an order of magnitude (10x) higher than concentrations in Impoundment #1 (South portion).

Impoundment #1 (North portion) (SW4/18) is above the PWQO for:

- Un-ionized ammonia (0.19 mg/L),
- total phosphorus (0.98 mg/L),
- phenolics (0.105 mg/L),
- aluminum (0.34 mg/L),
- boron (4.59 mg/L),
- chromium (0.019 mg/L),
- cobalt (0.006 mg/L),
- copper (0.0054 mg/L),
- iron (7.82 mg/L),
- vanadium (0.007 mg/L) and
- zinc (0.656 mg/L).

Impoundment #2 (SW5/18) is above the PWQO for:

- Un-ionized ammonia (0.35 mg/L),
- total phosphorus (0.53 mg/L),
- phenolics (0.070 mg/L),
- aluminum (0.23 mg/L),
- boron (3.33 mg/L),
- chromium (0.014 mg/L),
- cobalt (0.0052 mg/L),
- iron (5.11 mg/L) and
- zinc (0.402 mg/L).

Impacts by leachate on SW4/18 and SW5/18, obtained in Impoundment #1 (North portion) and Impoundment #2 respectively, are indicated. The SW4/18 and SW5/18 sample concentrations are significantly elevated above the Provincial Water Quality Objectives (PWQO) for un-ionized ammonia, total phosphorus, phenolics and metals (including aluminum, boron, chromium, cobalt, copper in SW4/18, iron, vanadium in SW4/18 and zinc).

## **INTERPRETATION AND DISCUSSION**

The above described leachate impact is a directly related to inadequate and irregular waste covering within the active landfilling area. While most of the landfill is adequately covered, contact surface water originating from this relatively small part of the landfill has impacted surface water accumulated in the southwest corner of the Site.

It appears that an unknown amount of surface water has already drained into the South Pine River.

The surface water sample analyses indicate the Impoundment #1 (South portion) (SW3/18) water has similar conductivity to the receiving water body, the South Pine River.

With on-site treatment for sediment removal (through use of a stilling basin constructed with staked straw bales), the Impoundment #1 (South portion) water would be suitable for a controlled release based on the analyses received. For assessment of ponded surface water in Impoundment #1 (South portion), we recommend the use of a 4 criteria assessment process whereby water is visually assessed for colour, odour and sheen and measured in the field for conductivity. For water having excessive discolouration, odour or sheen and a conductivity greater than 700 uS/cm (the approximate conductivity of the upstream receiving body), the water should be considered as unacceptable for release.

The sediment removal in the stilling basin may result in lowering of the concentration of several of the metal parameters which may be adsorbed onto particulates (iron, but also aluminum which, like the SW1 upstream sample, is above the PWQO). Further, a temporary soil berm is recommended to be placed between the south portion of Impoundment #1 and the north portion to prevent backflow during pump out of Impoundment #1 (South portion).

Release of the Impoundment #1 (North portion) and Impoundment #2 water would have potential environmental impacts on the receiving body, the South Pine River. Therefore, this water should not be released but should be taken off site for treatment.

## REMEDIAL MEASURES

The current situation is not desirable and should be rectified.

It was determined that the existing Impoundment #1 has not been constructed in accordance with the Surface Water Management Report included as Appendix I to the Design and Operation Plan (Revised) for the Huron Landfill dated January 2010. This report has called for installation of a 150 mm diameter outlet pipe through the interceptor berm to allow for controlled release of ponded water. The outlet pipe has not been installed to date.

It is proposed to make some modifications to the existing stormwater system to rectify the above noted problems. The reader is referred to the enclosed **Figure 2** which outlines the concept of the proposed works as follows:

- 1** Pump out contaminated surface water in Impoundment #1 (north portion) and Impoundment #2 and truck away for treatment to a properly licenced sewage treatment plant. This should be done using a properly licensed hauler.
- 2** Ponded water in Impoundment #1 (South portion) which is determined as clean and not influenced by leachate (see above 4 criteria assessment) could be pumped over the interceptor berm into a stilling basin to remove sediment to drain to the receiving water body (South Pine River). Testing of water prior to release is covered above.
- 3** After dewatering, Impoundment #1 area should be regraded with the berm being strengthened/raised where required.
- 4** In addition, Impoundment #1 (South portion) area should be equipped with the pipe outlet connected with an isolation valve (normally open). This would allow for controlled release of surface water from this area through the natural channel downstream. The valve could be closed if water in the pond is affected by leachate. In such a case, water should be handled as per Item 1. In addition to flow control, the pond would treat surface water by settling of suspended solids.
- 5** It is also proposed to provide an emergency spillway (rip rap lined) to protect the facility against catastrophic berm failure which could occur under a rare, heavy storm event. The existing channel downstream from Impoundment #1 (South portion) shall also be reinforced with rip rap stone on geotextile.
- 6** Following the controlled release of the Impoundment #1 (South portion) water, the gap in the berm on the west side should be filled and the area of the existing Impoundment #2 should be returned to its natural state (regrade, topsoil and vegetate).

The proposed work plan, if approved by the MOECC, could be completed during the upcoming 2018 construction season. The conceptual design outlined herein would have to be firmed up with detail design.



Additional work, including a detailed topographical survey of the work area would be necessary to properly design various critical details including elevations (top of berm, pipe inverts, pond bottom, etc.).

Before proceeding with this task, we will await your response and approval of the proposed work plan.

Yours truly,

---

Norman A. Bell, P.Geol.  
Senior Hydrogeologist/Geoscientist

---

Peter Brodzikowski, P.Eng.  
Senior Environmental Engineer

PSB/NAB/dlw

cc: Mr. Hugh Nichol, Municipality of Huron-Kinloss  
Encl. Caduceon analyses results (April 23/2018), Sheet 1 and 2  
WSP ref.: 121-60020-13 (101-16942-00)

**Table 6a**  
**Surface Water Quality Monitoring Results**  
**Huron Landfill - 2018**

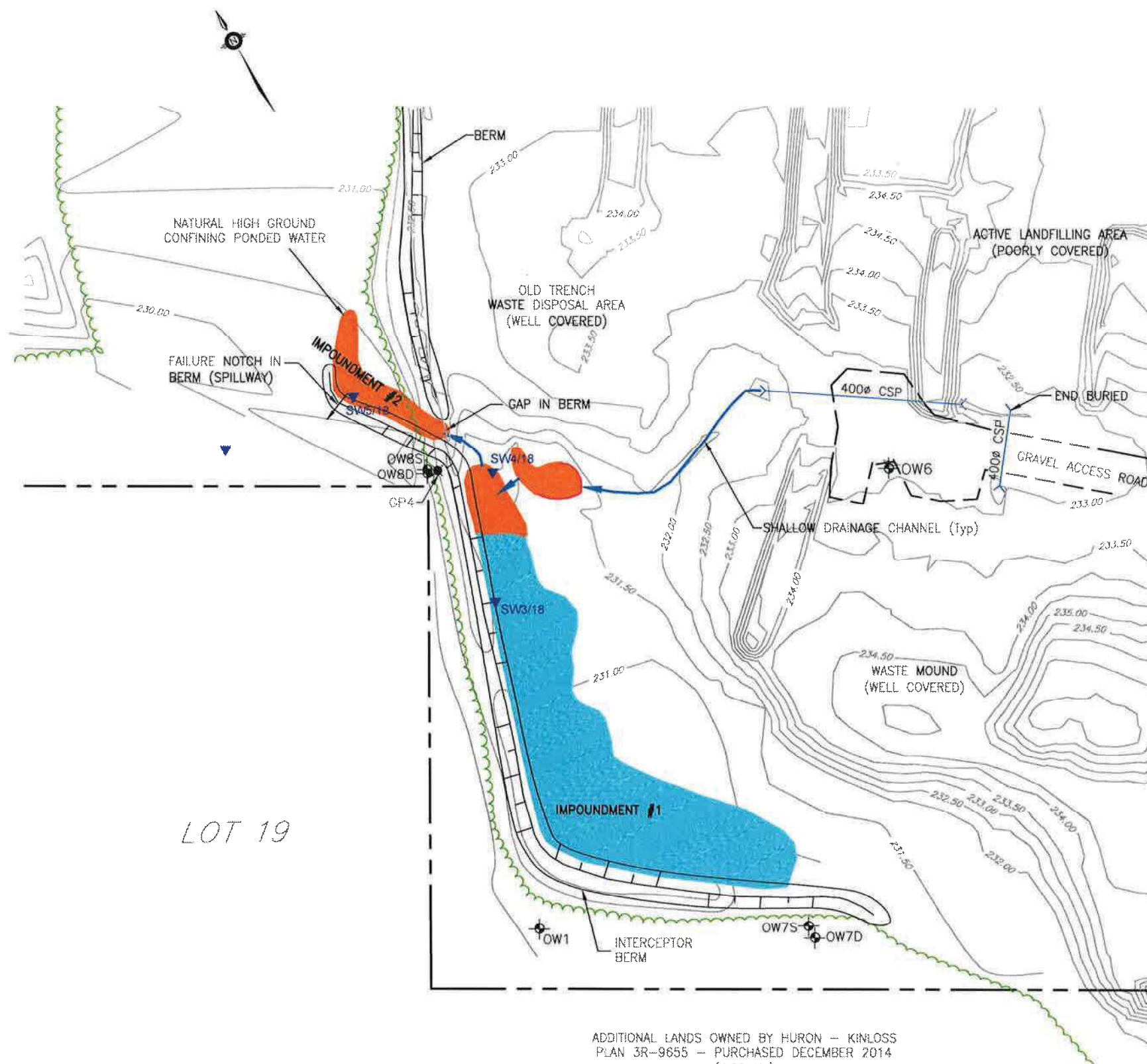
Surface Water Station Date	Units	PWQO mg/L	SW 1 (Upstream)	SW 1 (Upstream)	SW 2 (Downstream)	SW 2 (Downstream)	SW3/18	SW4/18	SW5/18
			12-Jun-17	30-Oct-17	12-Jun-17	30-Oct-17	23-Apr-18	23-Apr-18	23-Apr-18
<b>Calculated Parameters</b>									
Hardness (CaCO3)	mg/L		218	357	262	339	181	1200	859
<b>Inorganics</b>									
Total Ammonia-N	mg/L		0.03	<0.01	0.04	0.02	0.16	45.5	29.6
Calculated Un-ionized Ammonia	mg/L	0.02 <sup>(10)</sup>	<0.02	<0.02	<0.02	<0.02	0.02	0.19	0.35
Conductivity	umho/cm		463	686	486	688	378	3060	2290
Total Kjeldahl Nitrogen (TKN)	mg/L		0.6	0.67	0.9	0.66	1.0	74.9	48.8
Dissolved Organic Carbon	mg/L		5.1	6.0	4.7	5.4	7.5	239.0	184.0
pH	pH	6.5 - 8.5	8.11	8.28	8.05	8.29	8.41	7.80	7.98
Phenols-4AAP	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.105	0.070
Total Phosphorus	mg/L	0.03 <sup>(9)</sup>	0.02	0.07	0.07	0.06	0.09	0.98	0.53
Dissolved Sulphate (SO4)	mg/L		13	12	13	12	23	179	151
Alkalinity (Total as CaCO3)	mg/L	<sup>(7)</sup>	229	322	220	297	110	1240	847
Dissolved Chloride (Cl)	mg/L		10.2	14.9	10.4	15.0	25.6	163.0	126.0
Nitrite (N)	mg/L		0.26	<0.05	0.20	<0.05	<0.05	<0.05	<0.05
Nitrate (N)	mg/L		3.27	9.67	3.23	9.69	0.32	0.19	0.18

Surface Water Station Date	Units	PWQO mg/L	SW 1 (Upstream)	SW 1 (Upstream)	SW 2 (Downstream)	SW 2 (Downstream)	SW3/18	SW4/18	SW5/18
			12-Jun-17	30-Oct-17	12-Jun-17	30-Oct-17	23-Apr-18	23-Apr-18	23-Apr-18
<b>Metals</b>									
Total Aluminum (Al)	mg/L	0.075 <sup>(8)</sup>	0.09	0.15	0.12	0.13	0.90	0.34	0.23
Total Arsenic (As)	mg/L	0.100 <sup>(11)</sup>	0.0006	<0.0005	0.0006	<0.0005	0.0014	0.0113	0.0083
Total Beryllium (Be)	mg/L	1.100 <sup>(12)</sup>	<0.0001	<0.002	<0.0001	<0.002	<0.0001	<0.0001	<0.0001
Total Boron (B)	mg/L	0.200 <sup>(1)</sup>	0.008	0.012	0.023	0.014	0.190	4.57	3.33
Total Cadmium (Cd)	mg/L	0.0002 <sup>(3)</sup>	<0.000014	<0.000070	0.000033	<0.000070	0.00003	0.00011	0.00008
Total Calcium (Ca)	mg/L		51.8	96.5	64.1	91.3	56.8	319	223
Total Chromium (Cr)	mg/L	0.001 <sup>(13)</sup>	<0.001	<0.001	<0.001	<0.001	0.002	0.019	0.014
Total Cobalt (Co)	mg/L	0.0009	0.0001	<0.0005	0.0002	<0.0005	0.0008	0.0060	0.0052
Total Copper (Cu)	mg/L	0.005 <sup>(4)</sup>	0.0016	0.0009	0.0022	0.0009	0.0026	0.0054	0.0043
Total Iron (Fe)	mg/L	0.300	0.096	0.169	0.164	0.119	1.340	7.820	5.110
Total Lead (Pb)	mg/L	0.025 <sup>(5)</sup>	0.00006	<0.0001	0.00022	<0.0001	0.00190	0.00218	0.00143
Total Magnesium (Mg)	mg/L		21.5	28.2	24.9	26.9	9.52	96.90	73.40
Total Manganese (Mn)	mg/L		0.005	0.007	0.020	0.005	0.142	1.23	0.923
Total Molybdenum (Mo)	mg/L	0.040 <sup>(1)</sup>	0.0004	<0.0005	0.0004	<0.0005	0.0009	0.0041	0.0037
Total Nickel (Ni)	mg/L	0.025	0.0017	0.003	0.0019	0.003	0.0030	0.0244	0.0204
Total Potassium (K)	mg/L		1.9	2.7	2.2	2.6	5.6	84.6	62.9
Total Silver (Ag)	mg/L	0.0001	<0.00002	<0.0001	<0.00002	<0.0001	<0.00002	0.00005	0.00004
Total Sodium (Na)	mg/L		5.0	5.8	6.7	5.7	37.4	223	169
Total Vanadium (V)	mg/L	0.006 <sup>(1)</sup>	<0.005	<0.005	<0.005	<0.005	<0.005	0.007	0.005
Total Zinc (Zn)	mg/L	0.030 <sup>(6)</sup>	<0.005	<0.005	0.054	<0.005	0.04	0.656	0.402

ND = Not Detected  
RDL = Reportable Detection Limit  
- = not done

Surface Water Station Date	Units	SW 1 (Upstream)	SW 1 (Upstream)	SW 2 (Downstream)	SW 2 (Downstream)	SW3/18	SW4/18	SW5/18
		12-Jun-17	30-Oct-17	12-Jun-17	30-Oct-17	23-Apr-18	23-Apr-18	23-Apr-18
<b>FIELD MEASUREMENTS</b>								
Temperature	Degrees C	21.2	8.8	20.0	8.8	16.4	16.7	18.0
Conductivity	umhos	463	705	478	702	370	2787	2100
pH		7.85	8.08	7.60	8.02	8.69	7.14	7.54

- NOTES:
- PWQO indicates Provincial Water Quality Objectives.
  - (I) indicates interim PWQO
  - Cadmium: PWQO = 0.2 µg/L; Interim PWQO = 0.5 µg/L (for Hardness >100 mg/L); = 0.1 µg/L (for hardness < 100 mg/L).
  - Copper Interim PWQO = 5 µg/L (for Hardness >20 mg/L)
  - Revised Interim PWQO = 5 µg/L (for Alkalinity > 80 mg/L (as CaCO3))
  - Zinc Revised Interim PWQO = 20 µg/L
  - Alkalinity should not be decreased by more than 25 % of the natural concentration.
  - Interim PWQO = 75 ug/L for pH >6.5 to 9.0.
  - PWQO = 0.020 mg/L to avoid nuisance algae growth, PWQO = 0.010 mg/L for high level of protection  
PWQO = 0.030 mg/L for prevention of excessive plant growth
  - PWQO for un-ionized ammonia
  - Interim PWQO for arsenic is 5 ug/L
  - For hardness < 7 mg/L: PWQO = 11 µg/L; for hardness > 75 mg/L: PWQO = 1100 µg/L
  - Chromium: PWQO - 1 µg/L for hexavalent chromium, 8.9 µg/L for trivalent chromium.
  - Un-ionized Ammonia Fraction (f) where  $f = 1 / (10^{pH - pKa} + 1)$ ;  $pKa = 0.09018 + 2729.92/T$ ;  $T = °C + 273.15$
  - value exceeds PWQO.



**LEGEND :**

- RELATIVELY CLEAN WATER NOT SHOWING DISCOLORATION
- PONDED WATER DISCOLORED
- LANDFILL PROPERTY LINE
- EXISTING GROUND CONTOURS
- EXISTING TREELINE
- GP4 EXISTING GAS PROBE
- OW8S EXISTING OBSERVATION WELL
- SW3/18 SURFACE WATER SAMPLE APRIL 23, 2018

**NOTES :**

1. TOPOGRAPHIC FEATURES SHOWN ON THIS PLAN ARE BASED ON DECEMBER 19, 2017 FIELD SURVEY BY SMC GEOMATICS (MOUNDED WASTE DISPOSAL AREA) AND VISUAL OBSERVATIONS RECORDED DURING AN APRIL 9, 2018 SITE VISIT.
2. EXISTING GROUND CONTOURS SHOWN DO NOT NECESSARILY OUTLINE EXISTING GROUND TOPOGRAPHY ACCURATELY EXCEPT MOUNDED WASTE DISPOSAL AREA.

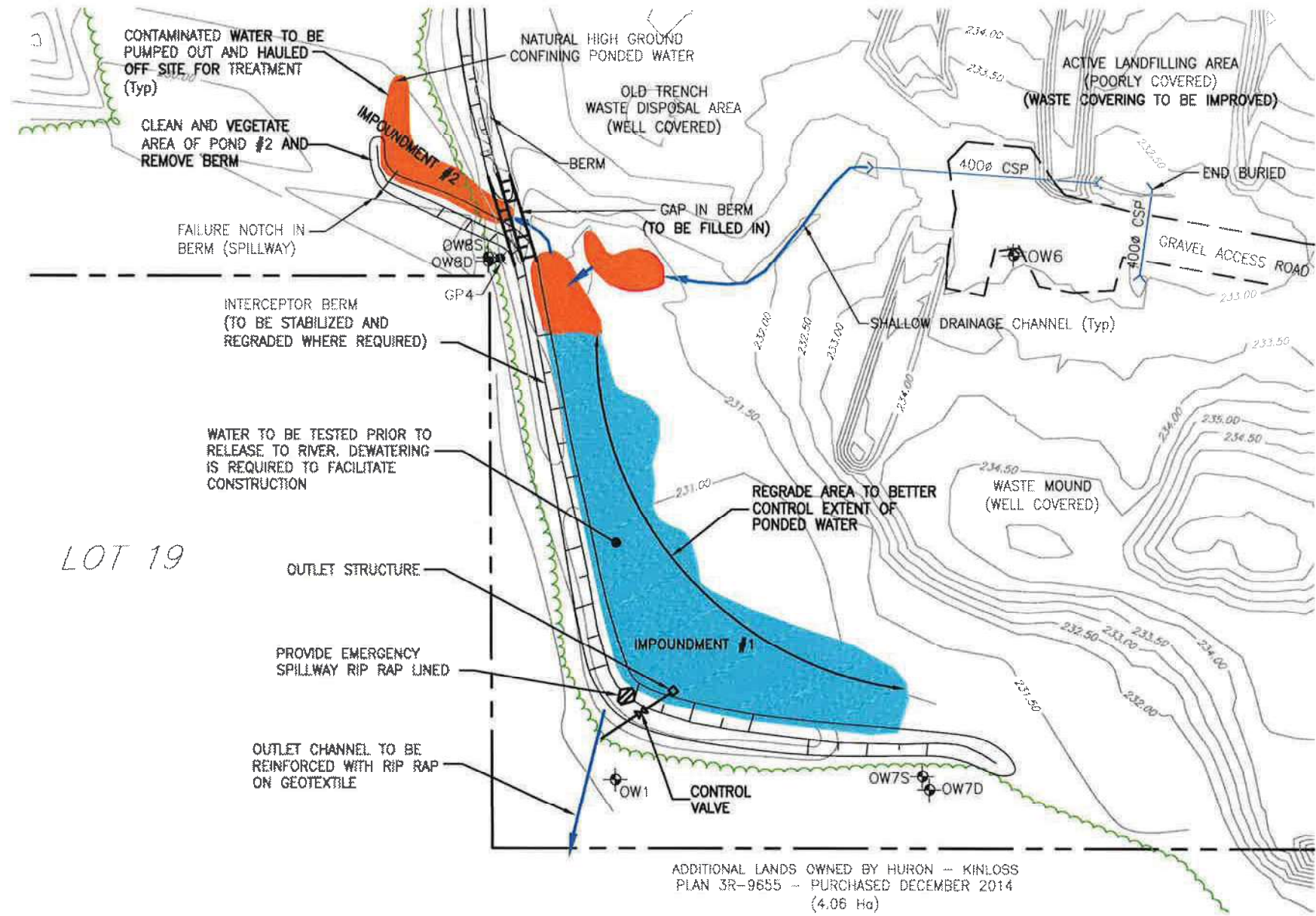
LOT 19



ADDITIONAL LANDS OWNED BY HURON - KINLOSS  
 PLAN 3R-9655 - PURCHASED DECEMBER 2014  
 (4.06 Ha)



COPYRIGHT © WSP

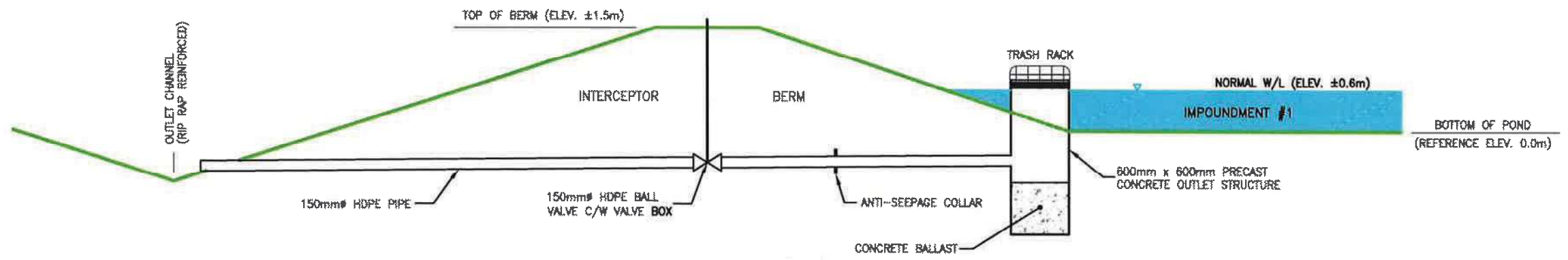


- LEGEND :**
- RELATIVELY CLEAN WATER NOT SHOWING DISCOLORATION
  - PONDED WATER DISCOLORED
  - LANDFILL PROPERTY LINE
  - EXISTING GROUND CONTOURS
  - EXISTING TREELINE
  - GP4 EXISTING GAS PROBE
  - OW8S EXISTING OBSERVATION WELL

- NOTES :**
1. TOPOGRAPHIC FEATURES SHOWN ON THIS PLAN ARE BASED ON DECEMBER 19, 2017 FIELD SURVEY BY SMC GEOMATICS (MOUNDED WASTE DISPOSAL AREA) AND VISUAL OBSERVATIONS RECORDED DURING AN APRIL 9, 2018 SITE VISIT.
  2. EXISTING GROUND CONTOURS SHOWN DO NOT NECESSARILY OUTLINE EXISTING GROUND TOPOGRAPHY ACCURATELY EXCEPT MOUNDED WASTE DISPOSAL AREA.



ADDITIONAL LANDS OWNED BY HURON - KINLOSS  
 PLAN 3R-9655 - PURCHASED DECEMBER 2014  
 (4.06 Ha)



**OUTLET SCHEMATIC**  
 N T S

15/03/2018 10:45:00 - Huron Environmental Remediation 2018/10/11/1661-00-2.dwg Apr 21, 2018 - 14:00  
 COPYRIGHT © WSP



C.O.C.: G67765

REPORT No. B18-10504

**Report To:**

**WSP Canada Inc.**

1450 1st Ave. West, Suite 101  
 Owen Sound ON N4K 6W2 Canada

**Attention:** Norm Bell

**Caduceon Environmental Laboratories**

2378 Holly Lane  
 Ottawa Ontario K1V 7P1  
 Tel: 613-526-0123  
 Fax: 613-526-1244

DATE RECEIVED: 24-Apr-18

JOB/PROJECT NO.: Huron Landfill

DATE REPORTED: 25-Apr-18

P.O. NUMBER: 121.60020.05

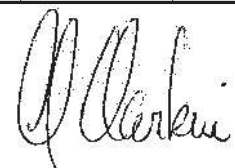
SAMPLE MATRIX: Surface Water

WATERWORKS NO. 101.16942.00

**Relabeled SW3/18 SW4/18 SW5/18**

Client I.D.	SW1-18	SW2-18	SW3-18
Sample I.D.	B18-10504-1	B18-10504-2	B18-10504-3
Date Collected	23-Apr-18	23-Apr-18	23-Apr-18

Parameter	Units	R.L.	Reference Method	Date/Site Analyzed				
Hardness (as CaCO <sub>3</sub> )	mg/L	1	SM 3120	24-Apr-18/O	181	1200	859	
Alkalinity(CaCO <sub>3</sub> ) to pH4.5	mg/L	5	SM 2320B	25-Apr-18/O	110	1240	847	
Conductivity @25°C	µmho/cm	1	SM 2510B	25-Apr-18/O	378	3060	2290	
pH @25°C	pH Units		SM 4500H	25-Apr-18/O	8.41	7.80	7.98	
Chloride	mg/L	0.5	SM4110C	24-Apr-18/O	25.6	163	126	
Nitrate (N)	mg/L	0.05	SM4110C	24-Apr-18/O	0.32	0.19	0.18	
Nitrite (N)	mg/L	0.05	SM4110C	24-Apr-18/O	< 0.05	< 0.05	< 0.05	
Sulphate	mg/L	1	SM4110C	24-Apr-18/O	23	179	151	
Calcium	mg/L	0.02	SM 3120	24-Apr-18/O	56.8	319	223	
Magnesium	mg/L	0.02	SM 3120	24-Apr-18/O	9.52	96.9	73.4	
Sodium	mg/L	0.2	SM 3120	24-Apr-18/O	37.4	223	169	
Potassium	mg/L	0.1	SM 3120	24-Apr-18/O	5.6	84.6	62.9	
Aluminum	mg/L	0.01	SM 3120	24-Apr-18/O	0.90	0.34	0.23	
Arsenic	mg/L	0.0001	EPA 200.8	24-Apr-18/O	0.0014	0.0113	0.0083	
Beryllium	mg/L	0.0001	EPA 200.8	24-Apr-18/O	< 0.0001	< 0.0001	< 0.0001	
Boron	mg/L	0.005	SM 3120	24-Apr-18/O	0.190	4.57	3.33	
Cadmium	mg/L	0.000014	EPA 200.8	24-Apr-18/O	0.000030	0.000106	0.000077	
Chromium	mg/L	0.001	EPA 200.8	24-Apr-18/O	0.002	0.019	0.014	
Cobalt	mg/L	0.0001	EPA 200.8	24-Apr-18/O	0.0008	0.0060	0.0052	
Copper	mg/L	0.0001	EPA 200.8	24-Apr-18/O	0.0026	0.0054	0.0043	
Iron	mg/L	0.005	SM 3120	24-Apr-18/O	1.34	7.82	5.11	
Lead	mg/L	0.00002	EPA 200.8	24-Apr-18/O	0.00190	0.00218	0.00143	
Manganese	mg/L	0.001	SM 3120	24-Apr-18/O	0.142	1.23	0.923	
Molybdenum	mg/L	0.0001	EPA 200.8	24-Apr-18/O	0.0009	0.0041	0.0037	
Nickel	mg/L	0.0002	EPA 200.8	24-Apr-18/O	0.0030	0.0244	0.0204	
Silver	mg/L	0.00002	EPA 200.8	24-Apr-18/O	< 0.00002	0.00005	0.00004	
Vanadium	mg/L	0.005	SM 3120	24-Apr-18/O	< 0.005	0.007	0.005	
Zinc	mg/L	0.005	SM 3120	24-Apr-18/O	0.040	0.656	0.402	



Greg Clarkin, BSc., C. Chem  
 Lab Manager - Ottawa District

R.L. = Reporting Limit

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

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

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

C.O.C.: G67765

REPORT No. B18-10504

**Report To:**

**WSP Canada Inc.**

1450 1st Ave. West, Suite 101  
Owen Sound ON N4K 6W2 Canada

**Attention:** Norm Bell

**Caduceon Environmental Laboratories**

2378 Holly Lane  
Ottawa Ontario K1V 7P1  
Tel: 613-526-0123  
Fax: 613-526-1244

DATE RECEIVED: 24-Apr-18

JOB/PROJECT NO.: Huron Landfill

DATE REPORTED: 25-Apr-18

P.O. NUMBER: 121.60020.05

SAMPLE MATRIX: Surface Water

WATERWORKS NO. 101.16942.00

<b>Client I.D.</b>	SW1-18	SW2-18	SW3-18
<b>Sample I.D.</b>	B18-10504-1	B18-10504-2	B18-10504-3
<b>Date Collected</b>	23-Apr-18	23-Apr-18	23-Apr-18

Parameter	Units	R.L.	Reference Method	Date/Site Analyzed				
Ammonia (N)-Total	mg/L	0.01	MOEE 3364	24-Apr-18/O	0.16	45.5	29.6	
Total Kjeldahl Nitrogen	mg/L	0.1	E3199A.1	25-Apr-18/K	1.0	74.9	48.8	
Phosphorus-Total	mg/L	0.01	E3199A.1	25-Apr-18/K	0.09	0.98	0.53	
Phenolics	mg/L	0.001	MOEE 3179	24-Apr-18/O	< 0.001	0.105	0.070	
Dissolved Organic Carbon	mg/L	0.2	EPA 415.1	24-Apr-18/O	7.5	239	184	
Anion Sum	meq/L		Calc.	25-Apr-18/O	3.42	33.0	23.6	
Cation Sum	meq/L		Calc.	25-Apr-18/O	5.48	39.4	28.5	
% Difference	%		Calc.	25-Apr-18/O	23.2 <sup>1</sup>	8.80	9.34	
Ion Ratio	AS/CS		Calc.	25-Apr-18/O	0.624	0.838	0.829	
Sodium Adsorption Ratio	-		Calc.	25-Apr-18/O	1.21	2.81	2.51	
TDS(ion sum calc.)	mg/L	1	Calc.	25-Apr-18/O	225	1875	1358	
Conductivity (calc.)	µmho/cm		Calc.	25-Apr-18/O	440	2820	2160	
TDS(calc.)/EC(actual)	-		Calc.	25-Apr-18/O	0.596	0.613	0.593	
EC(calc.)/EC(actual)	-		Calc.	25-Apr-18/O	1.16	0.921	0.944	
Langelier Index(25°C)	S.I.		Calc.	25-Apr-18/O	0.773	1.88	1.74	

<sup>1</sup> Outside of 10% Acceptance Criteria, solids present



Greg Clarkin, BSc., C. Chem  
Lab Manager - Ottawa District

R.L. = Reporting Limit

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

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

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



## MEMO

**TO:** File #101-16942-00  
**FROM:** Kaurel Tamasauskas., Environmental Technologist  
**SUBJECT:** Spring Monitoring – May 23, 2018 – Huron Landfill  
**DATE:** June 1, 2018

---

The following notes were completed after the spring monitoring event at the Huron landfill:

- Kaurel Tamasauskas and Nicole Collins measured water levels and collected water samples on May 23, 2018.
- The weather was sunny, hot and a high of 28°C.
- All groundwater monitors were purged to remove three (3) well volumes of water or were purged dry and allowed to recover prior to sampling.
- Sampling locations included the following groundwater monitors: OW1, OW3, OW4, OW5, OW6, OW7S, OW7D, OW8S, OW8D, OW9, OW10S, OW10D and OW11.
- Sampling locations for surface waters included: SW1 and SW2.
- SW1 is located in an upstream location on the South Pine River at the bridge on Concession Road 6.
- SW2 is located in a downstream location approximately 380 m west of active landfilling.
- Duplicate samples were collected at OW7S and SW2.
- GWC, metals, nutrients, phenols and DOC samples were collected at all groundwater and surface water locations (with the addition of total phosphorus for surface water samples only).
- Groundwater samples for nutrients, metals and DOC were field filtered at the time of collection. Surface water samples for metals (specifically aluminum) should also be field filtered.
- Field measurements of pH, conductivity and temperature were taken at all sampling locations.
- The cells being actively landfilled are the southeast side of cells T3 and T2.



Memo to File #101-16942-00  
Spring Sampling – May 23, 2018 – Huron Landfill

- The channel/gully beside OW1 is being eroded and the edge of it is very close to monitor OW1, as the protective casing/culvert is exposed on the bank of the gully (see photos in directory).
- Rain water has also collected south of monitors OW8S and OW8D (west end of Cell T2). The water in this area appears to be dark grey to black in colour and a sheen is present on the surface (see photos in directory).
- OW3 and OW9 require a 2" PVC slip-on cap.
- No methane measurements were required during this round of sampling.
- Field notes are in HG 120 pages 28 - 33.
- Digital photos were taken of the site, and can be found in the project directory.

Prepared by:

A handwritten signature in blue ink, appearing to read 'Kaurel Tamasauskas', is written over a horizontal line.

Kaurel Tamasauskas  
Environmental Technologist  
KMT/  
Encl.  
cc Norm Bell. P.Geo., WSP



management collection and containment options that would allow for improved collection and management before off site discharge.

Please note that Condition 6.6 of Notice No. 2 of Environmental Compliance Approval # A272601 issued July 6, 2010 states:

*Within one (1) year of the date of this Notice, the Owner/Operator shall submit an application with applicable fees, for approval under OWRA, copied to the District Manager, to install a stormwater management facility for the site, as described in Section 7.0 in Item 8 in Schedule "A", as amended in Item 12, in Schedule "A", attached to this Certificate, to assess the interaction between groundwater and surface water, and on-site and the South Pine River.*

We have reviewed our files and cannot locate an ECA stormwater application for this site, as required by Condition 6.6. This is non-compliance with the ECA.

The municipality must take the following actions:

- immediately take steps to prevent leachate from draining off the active landfill site area;
- immediately separate landfill leachate from landfill stormwater; and
- prepare and submit an ECA application as required by Condition 6.6 of ECA # A272601.

Please submit to this office by June 15, 2018 confirmation in writing that actions listed above are being undertaken, with details of the measures being taken

If you have any questions concerning this letter, please contact Natasha Munn at (519) 371-6582 or the undersigned at (519) 371-6191.

Yours truly,



---

Ian Mitchell , P.Eng.  
District Engineer  
Owen Sound District Office

File Storage Number: BR HK C5 610

cc. Norm Bell/Peter Brodzikowski, WSP, Owen Sound via email  
Natasha Munn, MOECC, Owen Sound  
Hugh Geurts, MOECC, London



## MEMO

**TO:** File #101-16942-00  
**FROM:** Kaurel Tamasauskas, Environmental Technologist  
**SUBJECT:** Fall Monitoring – October 25, 2018 – Huron Landfill  
**DATE:** November 6, 2018

---

The following notes were completed after the fall monitoring event at the Huron landfill:

- Kaurel Tamasauskas and Nicole Collins measured water levels and collected water samples on October 25, 2018.
- The weather was overcast, cool and a high of 9°C.
- All groundwater monitors were purged to remove three (3) well volumes of water or were purged dry and allowed to recover prior to sampling.
- Sampling locations included the following groundwater monitors: OW1, OW3, OW4, OW5, OW6, OW7S, OW7D, OW8S, OW8D, OW9, OW10S, OW10D and OW11.
- Sampling locations for surface waters included: SW1 and SW2.
- SW1 is located in an upstream location on the South Pine River at the bridge on Concession Road 6.
- SW2 is located in a downstream location approximately 380 m west of active landfilling.
- Duplicate samples were collected at OW10D and SW1.
- GWC, metals, nutrients, phenols and DOC samples were collected at all groundwater and surface water locations (with the addition of total phosphorus for surface water samples only).
- Groundwater samples for nutrients, metals and DOC were field filtered at the time of collection. Surface water samples for metals (specifically aluminum) should also be field filtered.
- Field measurements of pH, conductivity and temperature were taken at all sampling locations.
- The cell that is being actively landfilled is the north east side of cell T4.



- The channel/gully beside OW1 is being eroded and the edge of it is very close to monitor OW1, as the protective casing/culvert is exposed on the bank of the gully (see photos in directory).
- Rain water has collected west of monitor OW11. Many mattresses were also observed in this wet area.
- Rain water has also collected south of monitors OW8S and OW8D (west end of Cell T2). The water in this area appears to be dark grey to black in colour and a sheen is present on the surface (see photos in directory).
- Monitors OW4, OW7S and OW8S need new tubing next monitoring round.
- OW3 and OW9 require a 2" PVC slip-on cap.
- No methane measurements were required during this round of sampling.
- Field notes are in HG 120 pages 34 - 39.
- Digital photos were taken of the site, and can be found in the project directory.

Prepared by:

A handwritten signature in blue ink, appearing to be 'Kaurel Tamasauskas', is written over a horizontal line.

Kaurel Tamasauskas  
Environmental Technologist  
KMT/  
Encl.

cc Norm Bell, P.Geo., WSP



## Solid Non-Hazardous Waste Disposal Site Inspection Report

<b>Client:</b>	The Corporation of the Township of Huron-Kinloss Mailing Address: 21 Queen St, Huron-Kinloss, Ontario, Canada, N0G 2R0 Physical Address: 21 Queen St, Huron-Kinloss, Township, County of Bruce, Ontario, Canada, N0G 2R0 Telephone: (519)395-3735, Extension: 130, FAX: (519)395-4107, email: hnichol@huronkinloss.com Client #: 4545-4MERDZ, Client Type: Municipal Government, NAICS: 22131		
<b>Inspection Site Address:</b>	Huron Landfill Site Address: Lot: 19, 20, Concession: 5, Concession Road 6, Geographic Township: BRUCE, Huron-Kinloss, Township, County of Bruce, N0G 2R0 District Office: Owen Sound GeoReference: Map Datum: NAD27, Zone: 17, Accuracy Estimate: 1-10 metres eg. Good Quality GPS, Method: GPS, UTM Easting: 451457, UTM Northing: 4878824, UTM Location Description: Entrance gate., LIO GeoReference: Zone: , UTM Easting: , UTM Northing: , Latitude: 44.2708, Longitude: -81.433 Site #: 3678-5Q8L7L		
<b>Contact Name:</b>	John Yungblut	<b>Title:</b>	Public Works Superintendent
<b>Contact Telephone:</b>	(519)395-3735 ext	<b>Contact Fax:</b>	519-395-4107
<b>Last Inspection Date:</b>	2018/01/16		
<b>Inspection Start Date:</b>	2019/01/16	<b>Inspection Finish Date:</b>	2019/01/16
<b>Region:</b>	Southwestern		

### 1.0 INTRODUCTION

The Huron Landfill Site waste disposal facility was inspected as part of the Ministry of the Environment, Conservation and Parks (MECP) 2018/2019 inspection program.

The purpose of this pro-active inspection was to assess compliance of the operation of the site in relation to the terms and conditions of Environmental Compliance Approval (ECA) Number A272601, any relevant control documents, MECP legislation and to confirm conformance with the MECP waste-related policies and guidelines.

This inspection included an unannounced site visit conducted on January 16, 2019 to inspect the operational activities of the landfill site. At the time of inspection the landfill site was closed and landfill attendants were unavailable at the site.

A copy of the 2017 Annual Report (AR) was previously forwarded to the Ministry's Technical Support; therefore, a detailed review of the monitoring data for the site was not conducted as part of this inspection. The 2017 Annual Report, as per Condition 11 of the ECA is required by March 31st of each year, prepared by WSP Canada Inc., dated March 2018, was reviewed as part of the inspection.

A previous MECP inspection was conducted at this site on January 16, 2018. The landfill is owned and operated by the Township of Huron-Kinloss and services the residential and industrial, commercial and institutional sectors located within the service area.

The landfill is located on Part Lots 19 and 20, Concession 5, in the former Township of Huron in the amalgamated Township of Huron-Kinloss, at 2087 Concession 6 East Road; southwest of the community of Ripley.

According to the AR, the Township is home to a total of approximately 7,000 residents that are serviced by the Huron Landfill. Additionally, waste from the former Township of Huron, the former Township of Kinloss and the Village of Lucknow is landfilled at the Huron Landfill. The Mid-Huron Landfill was closed June 30, 2018, and therefore, as granted in the amended ECA from 2010, waste from the Village of Lucknow is now landfilled at the Huron Landfill.

## 2.0 INSPECTION OBSERVATIONS

### **Certificate of Approval Number(s):**

Environmental Compliance Approval A272601 was issued October 15, 1991 and amended in 2007, 2010 and 2012.

-ECA A272601, issued on October 15, 1991 - requires registration of the ECA on the title; submission of an annual report to the MOE, monitoring of groundwater and surface water quality and imposes terms/conditions of onsite burning.

- A272601 Notice No. 1, issued on August 14, 2007 - ECA was amended to include changes to operational plans to clarify theoretical capacity and to require a new Design and Operations Plan within one year of issuance

- A272601 Notice No. 2, issued on July 6, 2010 - ECA was amended to change the landfilling operation at the Landfill from trench method to area method, for disposal of domestic, commercial and solid non-hazardous industrial wastes and to approve the establishment and operation of waste segregation/recycling centre and WEEE program at the landfill, for acceptance, temporary storage and transfer of recyclable waste

- A272601 Notice No. 3, issued on July 9, 2010 - ECA was amended to approve expansion of the service area of the landfill site to include the Village of Lucknow.

- A272601 Notice No. 4, issued on March 2, 2012 - ECA was amended to approve operation of a Waste Segregation/Recycling Centre and WEEE program at the Landfill, for the acceptance, temporary storage, and transfer of recyclable waste.

## 2.1 FINANCIAL ASSURANCE:

### **Specifics:**

There is no financial assurance required for this landfill site as it is a municipally owned landfill.

## 2.2 APPROVED AREA OF THE SITE:

### **Specifics:**

The total approved area of the site specified in the ECA consists of 8.0 hectares waste fill area within a total site area of 17.7 hectares.

At the time of inspection the Landfill footprint appeared defined by site topography and access roads. Wastes intended for landfilling were observed to be deposited into the approved area with the exception of historic waste that was filled beyond the approved limits. It is the ministry's position that the waste can likely be left where it is provided it is not causing issues and is deducted from the overall approved capacity of the site (**See Section 5.0 Action(s) Required**).

## 2.3 APPROVED CAPACITY:

### **Specifics:**

Condition 2.4 of the ECA states that the total waste disposal capacity of the site (waste filled by trench method and by area method), including waste, daily cover and interim cover is 288,000 cubic metres.

Condition 2.3 of the Certificate states that the maximum rate at which the site shall receive waste for disposal, is limited to 100 tonnes per day, and 3,000 tonnes per calendar year. The receipt of waste in excess of the daily maximum fill rate may only be allowed on a limited short-term basis, on no more than two consecutive operating days, and only with prior notification and concurrence from the District Manager.

According to the AR, the average landfilled volume over the past five years is 7,440 cubic metres including waste and cover material. The estimated landfill volume for 2017 is 10,927 cubic metres which is a historic annual maximum fill rate compared to previous years. WSP used the above average fill rate and remaining capacity determined in the Design and Operational Plan to result in a site closure date of 2031. Formerly, the former Village of Lucknow's waste

was received by the Mid-Huron Landfill. However, this landfill closed on June 30, 2018. Since this closure, waste from the former Village of Lucknow is landfilled at the Huron Landfill. The above estimate of reaching maximum capacity in 2031 does not account for waste received from the former Village of Lucknow.

#### 2.4 ACCESS CONTROL:

##### Specifics:

Access to the site is controlled by a locked gate at the main entrance and a vegetative screen and fencing along Concession 6 Road. The site is open year round for the public on Tuesday, Friday and Saturday between 10:00 a.m. to 4:00 p.m.

During operating hours municipal staff are present to supervise site activities; one at the weight station and one or two at the recycling/dumping areas. At the time of inspection, the landfill site was closed. A locked access gate was observed in place to restrict access to the site as required by section 11.(2) of O. Reg 347.

#### 2.5 COVER MATERIAL:

##### Specifics:

ECA A272601 Condition 3.3 of the Notice No. 2 states:

a. Daily Cover - At the end of each working day, after deposition of waste into the waste fill area, the entire working face shall be compacted and covered with a minimum thickness of 150 mm of soil cover or an approved thickness of alternative cover material such as compost, wood-chips or foundry sand. Prior to placing waste at the start of the next operating day, the existing daily cover material shall be scarified or removed to the extent practical, to ensure vertical hydraulic connection is maintained between layers of waste and to promote percolation of leachate downwards

b. Interim Cover - In areas where landfilling ceases temporarily for a period of 6 months or more, a minimum thickness of 300 mm of soil shall be placed as interim cover. The quality of soil for use as interim cover shall, as a minimum, meet the criteria for Industrial/Commercial land use specified in Table A in the Ministry's "Guideline for Use at Contaminated Sites in Ontario", revised February 1997.

c. Final Cover - Final cover shall be applied progressively as areas of the landfill reach final waste elevations. The final soil cap shall consist of a minimum 600 mm thickness of impermeable compacted soil overlain by a minimum 150 mm topsoil and vegetative cover, as described in Section 2.3 in Item 8 in Schedule "A", attached to this Certificate. Prior to placement of final cover, the Owner/Operator shall submit for the approval of the Director, a report detailing the specifications, including particle size distribution of the final cover soil which shall confirm the designed permeability of 10-5cm/sec or less, as well as the protocols for testing and acceptance for on-site and off-site final cover soils. All areas of final cover shall be graded and vegetated as soon as practically possible.

Cover on the landfill has been improved since the 2018 MECP inspection. Most sections of the landfill have adequate interim cover and solely one section is open for landfilling. However, daily cover was not observed on the open face of the waste fill area during the inspection in contravention to Condition 3.3 of the ECA (**See Section 5.0 Action(s) Required**). Landfill staff have previously indicated that cover material stock is clay based and forms clumps making it difficult for the site equipment to apply the required material. It is recommended that the municipality uses cover material that is more easily used in winter (**See Section 6.0 Other Inspection Findings**).

#### 2.6 WASTE BURNING:

##### Specifics:

ECA Condition 4 permits the burning of clean wood and brush. At the time of inspection, there was no burning taking place. Materials other than clean wood and brush were not observed in the burn pile at the time of inspection.

#### 2.7 GROUNDWATER/SURFACEWATER IMPACT:

##### Specifics:

There was no obvious evidence of groundwater or surface water impact at this site.

The 2017 AR identifies that groundwater and surface water sampling occur twice annually, in the spring and fall. At the time of inspection, snow conditions caused only a few monitoring wells to be observed. All monitoring wells observed appeared to be in good condition with locks to control access. However, the Annual Report detailed that Well OW2 was damaged and has been filled with bentonite and fitted with a temporary cap. A report received by the Owen Sound District Office indicated that the well was removed on March 12, 2018 as required by Section 21(3) of O. Reg. 903, the well shall be properly abandoned.

According to the 2017 AR, surface water monitoring samples are obtained from an upstream and downstream station on South Pine River. Surface water monitoring results have not indicated any landfill related impacts.

The District Office has forwarded a copy of the 2017 Annual Report to the Ministry's Technical Support Section for

review. Any comments regarding groundwater or surface water impacts will be dealt with under a letter separate from this report.

## 2.8 LEACHATE CONTROL SYSTEM:

### Specifics:

A Leachate Management Plan (the Plan) was implemented to manage the leachate generated at this site. The Plan was designed to minimize the volume of leachate impacted surface water accumulation in the trench and contains procedures for managing the impacted water.

However, during the previous 2018 MECP landfill inspection, it came to the attention of the Environmental Officer that leachate was ponding at the interceptor berm toward Pine River. A Leachate Contingency Plan is currently underway from consultants WSP as per Section 9.2 of the Design and Operation Plan (**See Section 5.0 Action(s) Required**).

An additional site visit was conducted in conjunction with the MECP's district staff, MECP's Surface Water Specialist, municipal staff and WSP consultants on June 7, 2018. It was observed that a catch basin was located at the base of the berm and corrugated steel piping was located on the downhill, near the open face of the landfill. This pipe appeared to direct overland flow toward the stormwater collection berm. Leachate coloured runoff was observed to be flowing off the approved landfill footprint with no collection or containment structures. Since these observations took place, the corrugated steel pipe was reported by the municipality to have been covered over with both ends blocked. It no longer functions as a corrugated steel pipe and is unable to transmit runoff or leachate on the site.

WSP consultants reported that material was delivered to the landfill site on June 22, 2018, to fill in the gap in the interceptor berm. It was reported that the area where leachate was ponding and trickling off site has been levelled off and there was no sign of leachate.

Additionally, the operator has created two berm-like structures extending from the outside limits of the existing fill area that will direct any runoff from the waste across the access road to a small collection area where it can infiltrate into the ground. The berms are small enough to allow traffic to still cross over when accessing the pit. During the time of the inspection, the berms were observed and it was noted that they appear to be intercepting runoff.

In 2018, it came to the ministry's attention that an ECA (stormwater) failed to be submitted by the municipality as required by Condition 6.6 of ECA # A272601 (**See Section 5.0 Action(s) Required**). WSP Consultants have proposed to develop a plan to accommodate a stormwater pond within the footprint of the landfill and submit an ECA application. Specific dates on workplan and timelines have not yet been submitted to the MECP.

## 2.9 METHANE GAS CONTROL SYSTEM:

### Specifics:

There is no methane gas collection system at this site.

Condition 6.7 of the ECA requires the Owner/Operator to ensure that all buildings and structures existing at the Site or to be built on-Site which at times are occupied by people, or contains electrical equipment, or a potential source of ignition, are situated, constructed and monitored in a manner which minimizes the potential for explosive hazards due to landfill gas.

Testing for methane gas at this site was initiated in 2002. There are four methane monitoring locations on the site and the gas probes are monitored in the winter, when the waste disposal site is under frozen conditions.

According to the AR, methane monitoring indicated no detections of methane in 2017-2018 at monitoring points GP1, GP2, GP4 and at the scale house. However, at GP3 methane was detected at 100 percent of its lower explosive limit. The shed in close proximity to GP3 has been removed from the site as per previous MECP suggestion. In response to the detection of methane at the Landfill, the Township purchased a Sensit Model HXG-2D gas detector and trained the site attendants on the operation of the instrument. When working in the vicinity of GP3 the gas detector was reported to be utilized by staff. In 2017, there were no reports of the lower explosive limit being greater than zero.

At the time of the inspection, no gas odours were noted on or off-site.

## 2.10 OTHER WASTES:

### Specifics:

At the time of inspection, there was no evidence of wastes other than solid non-hazardous wastes being deposited in the fill area of the site.

According to the 2017 Annual Report, Huron Landfill accepted the following items:

- recyclable materials
- clean burnable wood,
- scrap metal,

- refrigeration units,
- e-waste,
- mattresses and,
- tires.

#### Recyclable Materials

A series of signed bins are located near the entrance for recyclable materials including paper, cardboard and plastic/metal containers. Recycling tonnages removed from the site have increased in recent years with 2017 diverting 429.82 tonnes from the landfill, as stated in the AR.

#### Bale Wrap

Bale wrap is no longer collected onsite Huron Landfill. The contractor, Switch Energy, now picks up the bale wrap individually and it does not enter the landfill.

#### Propane Cylinders

Propane cylinders were observed stored onsite. They were segregated, and the storage area was signed/labelled. Propane cylinders are stored next to a building structure, sheltered from incidental traffic accidents, in a manner which prevents cylinders from being knocked over or cylinder valves from breaking.

#### Tires

There were less than 5000 tire units stored at the site at the time of inspection. The tires were segregated and the signage was legible.

#### Refrigeration Equipment

Refrigeration equipment was segregated for the storage of refrigerant appliances. Several units were observed and were not in an upright position. Refrigerators containing Chlorofluorocarbons (CFC) should be stored separately from the drained/tagged units, to avoid damage of the un-drained units. Untagged refrigerators must be handled carefully, placed separately in upright position until CFCs are removed and tagged by a licensed technician as required by Section 41(1) of O. Reg. 463/10. Rough handling will result in breaking of lines and loss of CFC's to the atmosphere **(See Section 5.0 Action(s) Required)**.

#### Scrap Metal

Scrap metal is collected on-site in a separate area for recycling. Scrap metal is removed by AOR and Triple M Metal LP on a regular basis as needed.

#### Mattresses

Mattresses were collected onsite in a separate area as of 2015 and were shipped from the landfill on a regular basis. As previously noted in this inspection report, several mattresses were observed outside of the current working landfill area and were not covered by daily cover **(See Section 6.0 Other Inspection Findings)**.

### **3.0 REVIEW OF PREVIOUS NON-COMPLIANCE ISSUES**

The following previous non-compliance issues were noted in the January 2018 inspection;

The Owner/Operator shall ensure daily cover is maintained on the open face of the waste fill area as required by Condition 3.3 of the ECA.

- daily cover remained a non-compliance issue during this site inspection

The Owner/Operator shall properly abandon Well OW2 as per Section 21(3) of O. Reg. 903.

- complete

On or before April 30, 2018 the Owner/Operator shall implement the Leachate Contingency Plan as per Section 9.2 of the Design and Operation Plan to address the pond-like formation of leachate to the south western corner of the landfill area near to the interceptor berm and provide notification of completion to the undersigned Provincial Officer.

- a Leachate Contingency Plan is currently being worked on by consultants WSP. It has not been submitted to the MECF to this date.

In 2018, it came to the ministry's attention that a stormwater ECA was not submitted in contravention to Condition 6.6 of ECA # A272601.

- consultants WSP have been hired and they are currently going over different options for stormwater pond placement

### **4.0 SUMMARY OF INSPECTION FINDINGS (HEALTH/ENVIRONMENTAL IMPACT)**

**Was there any indication of a known or anticipated human health impact during the inspection and/or review of relevant material, related to this Ministry's mandate?**

No

**Specifics:**

**Was there any indication of a known or anticipated environmental impact during the inspection and/or review of relevant material ?**

No

**Specifics:**

**Was there any indication of a known or suspected violation of a legal requirement during the inspection and/or review of relevant material which could cause a human health impact or environmental impairment ?**

Yes

**Specifics:**

Historic waste deposited beyond the approved landfill limits.

Daily cover was not observed on the open face of the waste fill area during the inspection in contravention to Condition 3.3 of the ECA.

An ECA (stormwater) was not submitted by the municipality as required by Condition 6.6 of ECA # A272601.

A Leachate Contingency Plan must be completed as per Section 9.2 of the Design and Operation Plan.

Several refrigeration units were observed untagged and not in an upright position. Untagged refrigerators must be handled carefully, placed separately in upright position until CFCs are removed and tagged by a licensed technician as required by Section 41(1) of O. Reg. 463/10.

**Was there any indication of a potential for environmental impairment during the inspection and/or the review of relevant material ?**

No

**Specifics:**

**Was there any indication of minor administrative non-compliance?**

No

**Specifics:**

## 5.0 ACTION(S) REQUIRED

1. The Owner/Operator shall ensure daily cover is maintained on the open face of the waste fill area as required by Condition 3.3 of the ECA.
2. The Owner/Operator shall ensure refrigeration units are stored in segregated, in an upright position until CFCs are removed and tagged by a licensed technician as required by Section 41(1) of O. Reg. 463/10.
3. The Owner/Operator shall contact the MECP's Client Services and Permissions Branch to ensure that historic waste that was filled beyond the approved limits of the landfill can remain where it is provided it is not causing issues and is deducted from the overall approved capacity of the site, at Client Services and Permissions Branch 2 St. Clair Avenue West, Floor 12A, Toronto, Ontario, M4V 1L7, with a copy to the MECP Owen Sound District Office at 101-17th Street East, Owen Sound, Ontario, N4K 0A5.
4. On or before March 1, 2019 the owner shall provide a written response to the undersigned Provincial Officer detailing the actions to be taken to address the above listed Action Items.
5. On or before April 30, 2019, the Owner/Operator shall complete a Leachate Contingency Plan as per Section 9.2 of the Design and Operation Plan.

6. On or before April 30, 2019, the Owner/Operator shall submit an Application for ECA (stormwater) to the MECP as required by Condition 6.6 of ECA # A272601, made under the EPA, accompanied by all necessary supporting documentation and fees, to the Director of Client Services and Permissions Branch, 2 St. Clair Avenue West, Floor 12A, Toronto, Ontario, M4V 1L7, with a copy to the MECP Owen Sound District Office at 101-17th Street East, Owen Sound, Ontario, N4K 0A5.

## 6.0 OTHER INSPECTION FINDINGS

During the site inspection ponding water was observed in the open face of the landfill. It appeared that garbage was iced into the ponded areas on the site. Waste should not be placed in water and water should be diverted from the open face of the landfill.

Additionally, 2 large piles of mattresses were observed towards the south of the landfill. The mattresses were piled on top of the berm with some spilling over the berm. The ministry was concerned that these mattresses were placed outside of the landfill area and were without daily cover as required by Condition 3.3 of the ECA.

## 7.0 INCIDENT REPORT

Applicable  
6011-B8MTVQ 

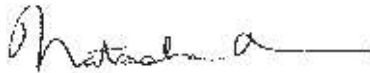
## 8.0 ATTACHMENTS

Huron LF Jan 16 19 10.JPG; Huron LF Jan 16 19 11.JPG; Huron LF Jan 16 19 12.JPG; Huron LF Jan 16 19 13.JPG; Huron LF Jan 16 19 14.JPG; Huron LF Jan 16 19 15.JPG; Huron LF Jan 16 19 16.JPG; Huron LF Jan 16 19 1.JPG; Huron LF Jan 16 19 2.JPG; Huron LF Jan 16 19 3.JPG; Huron LF Jan 16 19 4.JPG; Huron LF Jan 16 19 5.JPG; Huron LF Jan 16 19 6.JPG; Huron LF Jan 16 19 7.JPG; Huron LF Jan 16 19 8.JPG; Huron LF Jan 16 19 9.JPG

### PREPARED BY:

#### Environmental Officer:

Name: **Natasha Munn**  
District Office: **Southwestern Region**  
Date: **2019/01/28**  
Signature



### REVIEWED BY:

#### District Supervisor:

Name: **Scott Gass**  
District Office: **Owen Sound District Office**  
Date: **2019/01/29**

Signature:



File Storage Number: BR HK QU 610

### Note:

"This inspection report does not in any way suggest that there is or has been compliance with applicable legislation and regulations as they may apply to this facility. It is, and remains, the responsibility of the owner and/or the operating authority to ensure compliance with all applicable legislative and regulatory requirements"





## MEMO

**TO:** File #101-16942-00  
**FROM:** Kaurel Tamasauskas, Environmental Technologist  
**SUBJECT:** Methane Monitoring – March 11, 2019 – Huron Landfill  
**DATE:** March 14, 2019

---

The following notes were completed after the methane monitoring event at the Huron Landfill:

→ On March 11, 2019, methane gas monitoring was completed by Kaurel Tamasauskas at the Huron Landfill. In conjunction with methane monitoring, static water level readings were obtained from all of the gas probes. Methane gas readings were taken using the Gasurveyor 3-5000 methane meter at the following locations:

Location	Methane
GP1	0.0% LEL
GP2	0.0% LEL
GP3	41.0% VOL. GAS
GP4	0.0% LEL

→ The weather was overcast with a high of -5°C.  
→ Field notes are in HG 120, page 40.

Prepared by:

Kaurel Tamasauskas  
Environmental Technologist  
KMT/  
Encl.



## MEMO

**TO:** File #101-16942-00 (121-60020-05)  
**FROM:** Peter Brodzikowski, P.Eng.  
**SUBJECT:** Huron Landfill – Fill Beyond Approved Limit (FBAL)  
**DATE:** February 21, 2019

---

It was recently discovered that some waste has been landfilled outside the approved landfill limit defined by the Design and Operations Plan (D&O) prepared by Pryde Schropp McComb in January 2010. The area in question is located in the southeast corner of the waste fill area. The Ministry of the Environment, Conservation and Parks (MECP) Site Inspection Report dated January 29, 2019, requires the Township of Huron-Kinloss to assess and resolve this issue with the MECP's Client Services and Permissions Branch. This requirement constitutes Item 3 of Action(s) Required from the above noted report.

WSP has calculated that there is approximately 11,846 m<sup>3</sup> of waste deposited outside the approved fill limit in the above noted part of the site. This volume was determined by comparison of the existing site topography with the approved top of waste contours and assumed waste bottom outside the approved fill area. This overfill is presented graphically on attached **Figure 1**. This figure outlines the following:

- the existing site topography as of December 2018;
- approved top of waste contours as per D&O; and
- depth of waste deposit outside the approved fill limit is delineated by 0.5 m interval contours (red). These contours represent FBAL.

It is proposed to leave all material deposited outside the approved fill limit in place “as is” since there is no significant adverse effect resulting from this situation. Localized small berms/piles located within and near the FBAL area shall be flattened and spread out evenly nearby to eliminate the existing grading irregularities. Ultimately, the FBAL area shall be final covered in the same way as the remaining part of the site in accordance with the D&O requirements.

The approved top of waste contours for the entire site are shown on **Figure 2**.

In order to compensate for the FBAL we have adjusted (lowered) the approved final top of waste contours within the central part of the site. The revised final top of waste contours are presented on **Figure 3**. Top of waste contours in the central, top part of the site, sloping at approximately 5%, were lowered by 0.40 m. Volume reduction resulting from such a change is calculated as follows:

$$201 \text{ m} \times 144 \text{ m} \times 0.4 \text{ m} = 11,578 \text{ m}^3$$



Accounting for calculations accuracy, this volume is almost the same as the overfill volume (11,846 m<sup>3</sup>) within the FBAL area. The proposed change in the final top of waste contours is adequate to compensate for the overfill identified within the FBAL area.

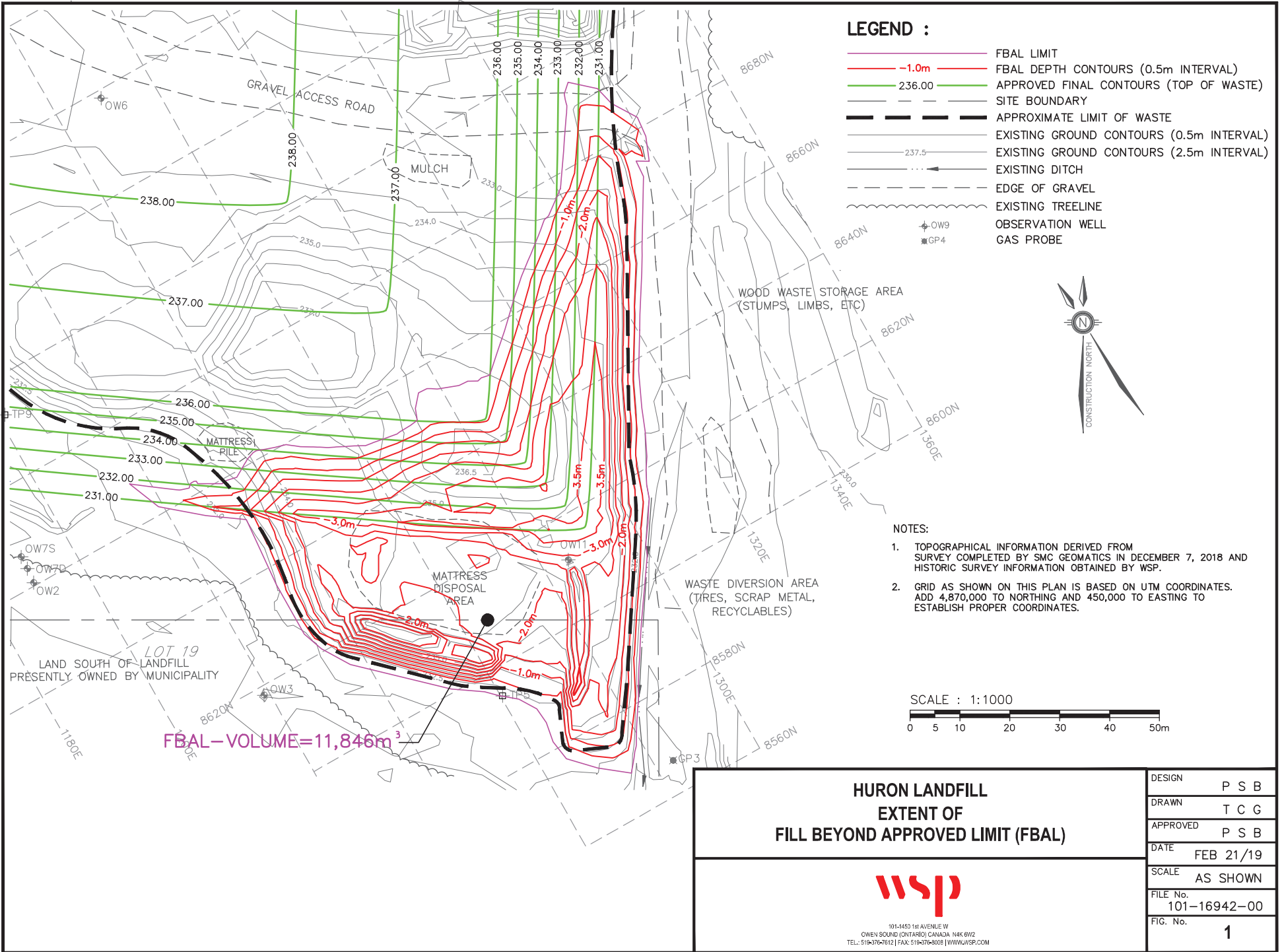
In order to avoid similar problems (waste overfill), the Township will improve their grade control for landfilling operations. This is critical when landfilling takes place near exterior side slopes and close to final top grades. Grade stakes shall be planted regularly to guide the operator when placing waste in such critical areas.

Prepared by:

A handwritten signature in black ink that reads "P. Brodzikowski". The signature is written in a cursive, slightly slanted style.

Peter Brodzikowski, P.Eng.  
Senior Environmental Engineer  
PSB/dlw  
Encl.

G:\2010\05\401 - Environment\101-16942-00 - Huron WDS\DRAW\2018\101-16942-FIG 1.dwg Feb 21, 2019 - 2:15pm



<b>HURON LANDFILL EXTENT OF FILL BEYOND APPROVED LIMIT (FBAL)</b>	DESIGN	P S B
	DRAWN	T C G
 <small>101-1450 141 AVENUE W OWEN SOUND (ONTARIO) CANADA N4K 6W2 TEL: 519-376-7612   FAX: 519-376-8008   WWW.WSP.COM</small>	APPROVED	P S B
	DATE	FEB 21/19
	SCALE	AS SHOWN
	FILE No.	101-16942-00
	FIG. No.	1

G:\2010\05\401 - Environment\101-16942-00 - Huron WDS\DRM\2018\101-16942-FIG 2.dwg Feb 21, 2019 - 2:16pm



**LEGEND :**

- 235.00 APPROVED FINAL CONTOURS (TOP OF WASTE)
- SITE BOUNDARY
- CONCESSION/LOT LINE
- APPROXIMATE LIMIT OF WASTE
- EXISTING GROUND CONTOURS (0.5m INTERVAL)
- 237.5 EXISTING GROUND CONTOURS (2.5m INTERVAL)
- EDGE OF GRAVEL
- EXISTING FENCE LINE
- EXISTING DITCH
- EXISTING TREELINE
- ⊕ OW9 OBSERVATION WELL
- ⊕ GP4 GAS PROBE
- ⊕ TP TEST PIT

**NOTES:**

1. TOPOGRAPHICAL INFORMATION DERIVED FROM SURVEY COMPLETED BY SMC GEOMATICS IN DECEMBER 7, 2018 AND HISTORIC SURVEY INFORMATION OBTAINED BY WSP.
2. GRID AS SHOWN ON THIS PLAN IS BASED ON UTM COORDINATES. ADD 4,870,000 TO NORTHING AND 450,000 TO EASTING TO ESTABLISH PROPER COORDINATES.



**HURON LANDFILL  
APPROVED FINAL CONTOURS  
(TOP OF WASTE)**



101-1450 1st AVENUE W  
OWEN SOUND (ONTARIO) CANADA N4K 6W2  
TEL: 519-376-7612 | FAX: 519-376-8038 | WWW.WSP.COM

DESIGN	P S B
DRAWN	T C G
APPROVED	P S B
DATE	FEB 21/19
SCALE	AS SHOWN
FILE No.	101-16942-00
FIG. No.	2

LAND SOUTH OF LANDFILL  
PRESENTLY OWNED BY MUNICIPALITY

G:\2010\05\401 - Environment\101-16942-00 - Huron WDS\DRM\2018\101-16942-FIG 3.dwg Feb 21, 2019 - 2:17pm



**LEGEND :**

- 235.00 PROPOSED FINAL CONTOURS (TOP OF WASTE)
- SITE BOUNDARY
- CONCESSION/LOT LINE
- APPROXIMATE LIMIT OF WASTE
- EXISTING GROUND CONTOURS (0.5m INTERVAL)
- 237.5 EXISTING GROUND CONTOURS (2.5m INTERVAL)
- EDGE OF GRAVEL
- EXISTING FENCE LINE
- EXISTING DITCH
- EXISTING TREELINE
- ⊕ OW9 OBSERVATION WELL
- ⊕ GP4 GAS PROBE
- ⊕ TP TEST PIT

**NOTES:**

1. TOPOGRAPHICAL INFORMATION DERIVED FROM SURVEY COMPLETED BY SMC GEOMATICS IN DECEMBER 7, 2018 AND HISTORIC SURVEY INFORMATION OBTAINED BY WSP.
2. GRID AS SHOWN ON THIS PLAN IS BASED ON UTM COORDINATES. ADD 4,870,000 TO NORTHING AND 450,000 TO EASTING TO ESTABLISH PROPER COORDINATES.



**FLATTEN AND SPREAD OUT WASTE BERMS/PILES OVER SURROUNDING LANDFILL AREA TO ELIMINATE GRADING IRREGULARITIES**

**HURON LANDFILL  
PROPOSED FINAL CONTOURS - REVISED  
(TOP OF WASTE)**



101-1492 14th AVENUE W  
OWEN SOUND (ONTARIO) CANADA N4K 6W2  
TEL: 519-476-7612 | FAX: 519-476-6038 | WWW.WSP.COM

DESIGN	P S B
DRAWN	T C G
APPROVED	P S B
DATE	FEB 21/19
SCALE	AS SHOWN
FILE No.	101-16942-00
FIG. No.	<b>3</b>

Owen Sound District Office  
101 17<sup>th</sup> Street East, 3<sup>rd</sup> Floor  
Owen Sound ON N4K 0A5  
Tel.: 519-371-2901  
Fax.: 519-371-2905

Bureau de district d'Owen Sound  
101 17<sup>ème</sup> rue Est, 3<sup>e</sup> étage  
Owen Sound ON N4K 0A5  
Tél. : 519-371-2901  
Télé. : 519-371-2905

August 23, 2023

The Corporation of the Township of Huron-Kinloss  
21 Queen St.  
Ripley, ON N0G 2R0

**RE:** Inspection of Huron Landfill at 2087 Concession Rd 6 E, Ripley, ON, on July 25, 2023 |  
Event No. 1-216548108

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The ministry undertakes inspections of the regulated community including industry, businesses and individuals. The primary focus of this inspection is to confirm compliance with ministry legislation as well as evaluating compliance and conformance with related permissions, policies and guidelines.

Attached to this letter is the report for the inspection completed at Huron Landfill at 2087 Concession 6 Rd E, ON, on July 25, 2023. This report provides an assessment of compliance and conformance based on observations and information available during the inspection review period only. As always, please refer to the applicable legislative requirements, permissions, policies, guidelines and best management practices to clarify your specific obligations.

Instances of non-compliance and/or non-conformance were identified during the inspection. Please refer to the "NON-COMPLIANCE/NON-CONFORMANCE ITEMS" section within the report to determine the actions required and take any necessary steps by the date(s) prescribed to bring the system/facility into compliance/conformance.

Additional findings and applicable comments, where provided, will be found within the report. If you have questions or concerns, please contact me by email at [lisa.hines@ontario.ca](mailto:lisa.hines@ontario.ca) or by telephone at 519-270-6627.



Lisa Hines  
Senior Environmental Officer  
Badge No. 1876  
Drinking Water and Environmental Compliance Division



HURON LANDFILL  
2087 CONCESSION 6 E, HURON-KINLOSS, ON,  
**INSPECTION REPORT**

Entity: THE CORPORATION OF THE  
TOWNSHIP OF HURON-KINLOSS  
Inspection Start Date: June 28, 2023  
Inspection End Date: August 04, 2023  
Inspected By: Lisa Hines  
Badge #: 1876



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(signature)

### NON-COMPLIANCE

The following item(s) have been identified as non-compliance, based on a "No" response captured for a legislative question(s). For additional information on each question see the Inspection Details section of the report.

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

Item	Question	Compliance Response/Corrective Action(s)
NC-1	<p><b>Question ID:</b> NOL 14</p> <p>Is site access limited to times when an attendant is on duty?</p>	<p>Actions required are documented under the question "Are all disposal operations at the site adequately and continually supervised?".</p>
NC-2	<p><b>Question ID:</b> NOL 36</p> <p>Is proper equipment available for the compaction of waste and applying cover material?</p>	<p>No actions required at this time.</p>
NC-3	<p><b>Question ID:</b> NOL 38</p> <p>Are all disposal operations at the site adequately and continually supervised?</p>	<p>Action Item No. 1 The Owner shall immediately start complying with condition 3.5 of the ECA.</p>
NC-4	<p><b>Question ID:</b> NOL 41</p> <p>Is the waste being compacted adequately?</p>	<p>Action Item No. 2 On or before September 1, 2023, the Owner shall comply with their Design and Operations Plan (Revised) and compact the working face at least two periods per open day. The Owner shall also comply with condition 3.3 of the ECA and compact the entire working face at the end of each working day.</p>
NC-5	<p><b>Question ID:</b> NOL 42</p> <p>Is Daily cover applied to the waste at the end of each working day or as otherwise specified in the ECA?</p>	<p>See Provincial Officer's Order No. 1-224312016 for actions required.</p>

<p>NC-6</p>	<p><b>Question ID:</b> 949100</p> <p>Were the inspection questions sufficient to address other identified non-compliance items?</p>	<p>Action Item No. 3 The Owner shall immediately cease the burning of restricted items, burning at the leaf and yard waste site and unsupervised burning.</p> <p>Action Item No. 4 On or before September 6, 2023, the Owner shall remove the installed PVC pipe located behind the scrap metal area.</p> <p>See Provincial Officer's Order No. 1-224312016 for action items regarding the Stormwater Management Plan and the leachate collection tank.</p>
<p>NC-7</p>	<p><b>Question ID:</b> NOL 46</p> <p>Are daily records of site operations available at the site for at least the past 2 years or as otherwise required by the ECA?</p>	<p>Action Item No. 5 The Owner shall immediately comply with Condition 10.1 of the ECA and ensure daily records of site operations are maintained for each operating day.</p> <p>The Owner shall provide written verification to Provincial Officer Lisa Hines when each of the above action items have been completed.</p>

## **RECOMMENDATIONS**

This should not be construed as a confirmation of full conformance with all potential applicable BMPs. These inspection findings are limited to the components and/or activities that were assessed, and the legislative framework(s) that were applied. It remains the responsibility of the owner to ensure compliance with all applicable legislative and regulatory requirements.

If you have any questions related to this inspection, please contact the signed Provincial Officer.

### INSPECTION DETAILS

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

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

<b>Question ID</b>	NOL 1	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Does the Open landfill site have an Environmental Compliance Approval (ECA)?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes  ECA #A272601 was issued on April 16, 2020.			

<b>Question ID</b>	NOL 2	<b>Question Type</b>	Information
<b>Legislative Requirement(s):</b> Not Applicable			
<b>Question:</b> Is this landfill on Crown land?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> No			

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

<b>Question ID</b>	NOL 4	<b>Question Type</b>	Information
<b>Legislative Requirement(s):</b> Not Applicable			
<b>Question:</b> Does the landfill have a Contaminant Attenuation Zone (CAZ)?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b>			

No

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

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

<b>Question ID</b>	NOL 14	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Is site access limited to times when an attendant is on duty?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Actions required are documented under the question "Are all disposal operations at the site adequately and continually supervised?".			

<b>Question ID</b>	NOL 15	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Does the site only receive waste from within its approved service area?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

<b>Question ID</b>	NOL 16	<b>Question Type</b>	Information
<b>Legislative Requirement(s):</b> Not Applicable			
<b>Question:</b> Is the site required to have a ground water monitoring program by the ECA?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

<b>Question ID</b>	NOL 17	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Is the site implementing the groundwater monitoring program as required by the ECA?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

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

<b>Question ID</b>	NOL 21	<b>Question Type</b>	Information
<b>Legislative Requirement(s):</b> Not Applicable			
<b>Question:</b> Is the site required to manage leachate by the ECA?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

<b>Question ID</b>	NOL 23	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b>			

EPA | 27 | (1); EPA | O. Reg. 232/98 | 26;

**Question:**

Are samples taken to monitor leachate quality?

**Compliance Response(s)/Corrective Action(s)/Observation(s):**

Yes

Question ID	NOL 24	Question Type	Information
<b>Legislative Requirement(s):</b> Not Applicable			
<b>Question:</b> Is the ministry concerned with the leachate quality?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> No			

Question ID	NOL 26	Question Type	Information
<b>Legislative Requirement(s):</b> Not Applicable			
<b>Question:</b> Is the site required to manage landfill gas by the ECA?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

Question ID	NOL 27	Question Type	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Is the site implementing the landfill gas management requirements in the ECA?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

Question ID	NOL 29	Question Type	Information
<b>Legislative Requirement(s):</b> Not Applicable			
<b>Question:</b> Is the ministry concerned with landfill gas at this site?			

<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> No
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<b>Question ID</b>	NOL 31	<b>Question Type</b>	Information
<b>Legislative Requirement(s):</b> Not Applicable			
<b>Question:</b> Is the site required to have a surface water monitoring program by the ECA?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

<b>Question ID</b>	NOL 32	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Is the site implementing the surface water monitoring program as required by the ECA?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

<b>Question ID</b>	NOL 34	<b>Question Type</b>	Information
<b>Legislative Requirement(s):</b> Not Applicable			
<b>Question:</b> Are there water quality concerns with the results of the samples that have been tested?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			
<p>The below comments were provided by the ministry's tech support unit after reviewing the 2022 surface water monitoring results.</p> <ol style="list-style-type: none"> <li>1. Surface water quality measured for both river monitoring locations (SW1, SW2) is similar and do not suggest significant impact from landfill activities. Slight exceedances of aluminum and iron at the downstream location do not require any action.</li> <li>2. Water quality measured for the ponded water (SW3) showed exceedances of several parameters, indicative of leachate impacts. It is recommended to continue monitoring SW3 location and track changes in contamination level in future monitoring efforts.</li> </ol>			

<b>Question ID</b>	NOL 35	<b>Question Type</b>	Information
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<b>Legislative Requirement(s):</b> Not Applicable
<b>Question:</b> Is there ongoing abatement to address any concerns the ministry has with the surface water monitoring?
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> No

Question ID	NOL 36	Question Type	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Is proper equipment available for the compaction of waste and applying cover material?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> No actions required at this time.  During the announced inspection on July 25, 2023, John Yungblut and Lisa Kreller stated the compactor can't be used during the day in the summer as it will overheat. They have purchased another compactor; however no approximate date was given as to when they would be receiving the new compactor. During several conversations in 2022, John stated the loader isn't the ideal piece of equipment for applying and removing daily cover.			

Question ID	NOL 37	Question Type	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Is the landfill able to accurately determine the amount of waste received?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

Question ID	NOL 38	Question Type	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Are all disposal operations at the site adequately and continually supervised?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Action Item No. 1 The Owner shall immediately start complying with condition 3.5 of the ECA.			

On June 28, 2023, an unannounced site visit was completed while the landfill was closed. During the site visit a Bruce Area Solid Waste Recycling truck entered the site and deposited waste into the active landfill area and the recycling bins. During the announced inspection on July 25, 2023, John Yungblut and Lisa Kreller stated the truck drivers have keys and let themselves in when needed. They weigh the trucks themselves and provide those records to the municipality.

Condition 3.5 of the ECA states "No waste shall be received, landfilled or transferred from the Site/Facilities unless a site supervisor or attendant is present and supervises the operations during operating hours. The Site shall be closed when a site attendant is not present to supervise landfilling and/or waste transfer operations."

Question ID	NOL 39	Question Type	Information
<b>Legislative Requirement(s):</b> Not Applicable			
<b>Question:</b> Does the landfill operator have a site inspection program as required by the ECA?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> No			

Question ID	NOL 40	Question Type	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Does the landfill operator have a procedure in place to address issues identified by staff during the site inspection?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

Question ID	NOL 41	Question Type	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Is the waste being compacted adequately?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Action Item No. 2 On or before September 1, 2023, the Owner shall comply with their Design and Operations Plan (Revised) and compact the working face at least two periods per open day. The Owner shall			

also comply with condition 3.3 of the ECA and compact the entire working face at the end of each working day.

During the announced inspection on July 25, 2023, Lisa Kreller stated they compact the active working face every Thursday, Saturday and Monday mornings. Lisa stated they only operate the compactor in the mornings during the summer months because the compactor will overheat if operated throughout the day.

As per the Design and Operations Plan (Revised) compaction is to occur at a frequency of at least two periods per open day. The second compaction event should be as close to the end of the working day as possible. As per condition 3.3.a. of the ECA, "At the end of each working day, after deposition of waste into the waste fill area, the entire working face shall be compacted and covered."

Question ID	NOL 42	Question Type	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1); EPA   O. Reg. 232/98   7;			
<b>Question:</b> Is Daily cover applied to the waste at the end of each working day or as otherwise specified in the ECA?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> See Provincial Officer's Order No. 1-224312016 for actions required.  Unannounced site visits were conducted on June 8 and 28, 2023, and daily cover had not been applied on the active working face. During the announced inspection on July 25, 2023, John Yungblut and Lisa Kreller stated they apply daily cover as often as they can. They are currently using clay soil for cover but are researching and considering using a product called "Top Coat" to use as an alternative daily cover.  As per condition 3.3 of the ECA, daily cover is to be applied "At the end of each working day, after deposition of waste into the waste fill area, the entire working face shall be compacted and covered with a minimum thickness of 150 mm of soil cover or an approved thickness of alternative cover material."			

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

<b>Question ID</b>	NOL 45	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Is the waste disposal area adequately screened from public view?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

<b>Question ID</b>	NOL 46	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1); EPA   O. Reg. 232/98   21;			
<b>Question:</b> Are daily records of site operations available at the site for at least the past 2 years or as otherwise required by the ECA?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Action Item No. 5 The Owner shall immediately comply with Condition 10.1 of the ECA and ensure daily records of site operations are maintained for each operating day.  The Owner shall provide written verification to Provincial Officer Lisa Hines when each of the above action items have been completed.  During the announced inspection on July 25, 2023, John Yungblut and Lisa Kreller stated there has been multiple break-ins and theft of items such as the computer, gas monitor and paper files from the weigh scale office in recent years. Because of this, they are no longer keeping paper records at the office. Records are entered in the computer system and are stored on the computers at the municipal office. I requested John email the daily log book records for January - June 2023 and the site inspections for June 2023. The municipality was unable to provide such records.			

<b>Question ID</b>	NOL 47	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Has the annual operations report been submitted to MECP or available on site as required by the ECA?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

<b>Question ID</b>	NOL 48	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1); EPA   O. Reg. 232/98   23;			
<b>Question:</b> Is scavenging being prevented?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

<b>Question ID</b>	NOL 49	<b>Question Type</b>	Information
<b>Legislative Requirement(s):</b> Not Applicable			
<b>Question:</b> Has a closure plan been submitted to the MECP?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> No			

<b>Question ID</b>	NOL 51	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Is the landfill only accepting the types of waste that they are approved to receive?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

<b>Question ID</b>	NOL 52	<b>Question Type</b>	Information
<b>Legislative Requirement(s):</b> Not Applicable			
<b>Question:</b> Does the landfill have a waste refusal procedure in place to manage waste that arrives at the site that the site is not approved the accept?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> No			

<b>Question ID</b>	NOL 54	<b>Question Type</b>	Legislative
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<b>Legislative Requirement(s):</b> EPA   27   (1);
<b>Question:</b> Does the landfill have a procedure in place to address and document spills and fires?
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes

<b>Question ID</b>	NOL 55	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Does the landfill have emergency contingency plan as required by the ECA?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

<b>Question ID</b>	NOL 56	<b>Question Type</b>	Information
<b>Legislative Requirement(s):</b> Not Applicable			
<b>Question:</b> Is there an ECA condition requiring financial assurance?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> No			

<b>Question ID</b>	NOL 59	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Does the landfill have a procedure in place to address complaints?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

<b>Question ID</b>	NOL 60	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b>			

Has the landfill operator addressed the complaints to the satisfaction of the ministry?
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes

Question ID	NOL 61	Question Type	Information
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Has the landfill operator developed a Design and Operations Manual?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

Question ID	NOL 62	Question Type	Information
<b>Legislative Requirement(s):</b> Not Applicable			
<b>Question:</b> Is the Design and Operations Manual up to date?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> No			

Question ID	NOL 63	Question Type	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Does the landfill operator have training procedures for site personnel?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

Question ID	NOL 65	Question Type	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Has the Certificate of Requirement been registered on Title?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

<b>Question ID</b>	949100	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> Not Applicable			
<b>Question:</b> Were the inspection questions sufficient to address other identified non-compliance items?			
<p><b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b></p> <p>Action Item No. 3 The Owner shall immediately cease the burning of restricted items, burning at the leaf and yard waste site and unsupervised burning.</p> <p>Action Item No. 4 On or before September 6, 2023, the Owner shall remove the installed PVC pipe located behind the scrap metal area.</p> <p>See Provincial Officer's Order No. 1-224312016 for action items regarding the Stormwater Management Plan and the leachate collection tank.</p> <p>On June 28, 2023, an unannounced site visit was completed while the landfill was closed, and no staff were present. During the site visit two burn piles were identified to be actively burning. One of the burn areas was located at the back (South end) of the leaf and yard waste site, which is located to the East of the landfill and currently open to the public 24 hours a day, 7 days a week. The other burn area was inside the landfill site and was closed to the public. Both burn piles appeared to have been burning brush and mattresses, as mattress springs could be identified.</p> <p>As per the Design and Operations Plan (Revised) the Township of Huron-Kinloss adopted an "Operations Program for Burning" which states the following:</p> <p>"Only segregated brush, scrap lumber and associated wood by-products will be included in the burning program. All other wastes and unsegregated wastes received at the site will be disposed of on the active working face".</p> <p>"Access to the landfill site by the public and other unauthorized personnel will be prohibited when burning is carried out. Supervision of the burning operation will be provided by the operating authority."</p> <p>The Design and Operations Plan (Revised) also provides a designated burning area which is illustrated in Map 2 of the plan. The designated burning area is located within the landfill area, not the leaf and yard waste site.</p> <p>During the unannounced site visit on June 28, 2023, the ministry's Surface Water Specialist (Hugh Geurts) identified several leachate and surface water management concerns. Some of their comments included the lack of vegetation, large open face that lacked daily cover, defined channels near the open face that is directing leachate offsite and berm failure in the swale</p>			

located in the southwest corner is offering a route for leachate to travel offsite. These comments were relayed to John Yungblut and Lisa Kreller during the announced inspection on July 25, 2023. Also a PVC pipe installed in the ground to encourage the flow of potential leachate off site was discovered behind the scrap metal area.

A Stormwater Management Plan dated April 2019 was developed for the site to address several of the above concerns and was to be implemented in 2019, with site maintenance performed as required. To date the Stormwater Management Plan has not been implemented.

During the announced inspection on July 25, 2023, John Yungblut stated the leachate collection tank was installed in 2019 and is approximately 28 m<sup>3</sup>. The exact size is unknown. When asked if there was any communication with MECP or an approval issued for the installation of the tank, John stated no. The municipality discussed it with their engineers and decided to install it as a type of "pilot project" without MECP approval.

## Director's Order

Director's Order Number

1-228594023

### Director's Order Issued To

THE CORPORATION OF THE TOWNSHIP OF HURON-KINLOSS  
21 QUEEN ST , HURON-KINLOSS, ON, N0G 2R0

### Site

Huron Landfill  
2087 CONCESSION 6 E, HURON-KINLOSS, ON,

Refer to the Definitions section in Part B of this Director's Order for the meaning of all capitalized terms that are used in this Director's Order.

### PART A - WORK ORDERED

Pursuant to my authority under **EPA | 157**;

I order you to do the following;

**Item No. 1**      **Compliance Due Date:** August 29, 2023

Commencing on August 29, 2023, and on each Tuesday thereafter, submit a weekly report to the Provincial Officer by email at [lisa.hines@ontario.ca](mailto:lisa.hines@ontario.ca) and to [environment.owensound@ontario.ca](mailto:environment.owensound@ontario.ca) detailing actions taken from Monday through Sunday of the previous week to apply daily cover as per condition 3.3 of the ECA. A weekly report shall be provided until the ministry provides notice that the reports are no longer required.

The report shall include at a minimum, the following:

1. A statement confirming cover was applied as per condition 3.3 of the ECA including:

- a) The date and time-of-day cover was applied,
- b) Thickness of cover that was applied and total quantity of cover applied,
- c) The type of cover that was applied and,
- d) Name of individual who applied the cover.

2. If cover was not applied, a statement why cover was not applied including:

- a) Date and,
- b) Reasons why

**Item No. 2**      **Compliance Due Date:** September 29, 2023

By September 29, 2023, retain the services of a Qualified Person to carry out the work as described in Work Ordered Item Nos. 4 and 6.

**Item No. 3**      **Compliance Due Date:** September 29, 2023

By September 29, 2023, submit to the Provincial Officer written confirmation from the Qualified Person(s) by email to [lisa.hines@ontario.ca](mailto:lisa.hines@ontario.ca) and [environment.owensound@ontario.ca](mailto:environment.owensound@ontario.ca) that they have, (1) received a copy of the Order; (2) been retained to carry out the work as described in Work Ordered Item Nos. 4 and 6; and (3) the experience and qualifications to carry out such work.

**Item No. 4**      **Compliance Due Date:** October 29, 2023

By October 29, 2023, have the Qualified Person prepare a work plan to implement the actions described in the Stormwater Management Plan, that shall include, at a minimum, the following:

- (a) a description of any outstanding actions or recommendations described in the Stormwater Management Plan for leachate and surface water control that have not yet been implemented or completed; and
- (b) a detailed plan which describes how any actions or recommendations described in (a) will be implemented; and
- (c) a detailed schedule, with timelines, for the implementation of any actions or recommendations described in (a).

**Item No. 5**      **Compliance Due Date:** October 29, 2023

By October 29, 2023, submit to the Provincial Officer by email to [lisa.hines@ontario.ca](mailto:lisa.hines@ontario.ca) and to [environment.owensound@ontario.ca](mailto:environment.owensound@ontario.ca) a copy of the work plan prepared by the Qualified Person as required in Work Ordered Item No. 4.

**Item No. 6**      **Compliance Due Date:** November 29, 2023

By November 29, 2023, have the Qualified Person complete and submit an application for an amendment to the waste ECA to include any leachate collection tank being used at the Site, with all necessary supporting documentation and applicable fees, to the Director, Environmental Approvals Access and Service Integration Branch, of the Ministry by email to [ECA.submissions@ontario.ca](mailto:ECA.submissions@ontario.ca), or online through a My Ontario Account.

**Item No. 7**      **Compliance Due Date:** November 29, 2023

By November 29, 2023, submit a copy of the completed ECA amendment application described in Work Ordered Item No. 6 to the Provincial Officer by email to [lisa.hines@ontario.ca](mailto:lisa.hines@ontario.ca) and to [environment.owensound@ontario.ca](mailto:environment.owensound@ontario.ca).

## PART B - BACKGROUND AND REASONS

### Definitions

For the purposes of this Director's Order, the capitalized terms shall have the meanings set out in the original Order with the addition or alteration of the following capitalized terms set out below:

"Director" means the undersigned director or, in the event that the undersigned is unable to act, any other director appointed under the **EPA**.

"Request for Review" means the request that the Order be reviewed by the Director sent on August 23, 2023.

### Request for Review of the Order

I have reviewed the Order and have considered the Request for Review and accompanied submissions with the Issuing Officer, **Lisa Hines**.

For convenience and ease of reference I have attached a copy of the Order. The Review and Appeal Information and Additional Information sections in the Order are not relevant to this Director's Order.

The Work Ordered Items set out above replace all the Work Ordered Items in the Order and may include, as described below, items in the Order that were not requested to be reviewed.

The Provincial Officer's Report in the Order is hereby incorporated into, and forms part of, this Director's Order except as may be noted below.

In response to your Request for Review, the following summarizes the Work Ordered Items set out in this Director's Order and describes the decision that I have made to confirm or alter the Order:

On August 23, 2023, I received a request for review of Item 1 of Provincial Officer's Order No. 1-224312016 (Order) from John Yungblut. The Order was issued on August 23, 2023, by Lisa Hines, Provincial Officer with the Ministry of the Environment, Conservation and Parks (Ministry). On August 28, 2023, I received a further request for review of Items No. 2-7 of the Order from John Yungblut. On August 30, 2023, further reasoning for the request for review was provided by Mary Rose Walden. After reviewing all information available to myself, either produced by ministry staff and/or yourself (on behalf of The Corporation of the Township of Huron-Kinloss), I have completed my review.

I have amended Ordered Item No. 1.

I have extended the compliance dates for each of the Ordered Items which are illustrated below.

Ordered Item No. 2, with previous compliance date of September 15, 2023, has been amended to have a new compliance date of September 29, 2023.

Ordered Item No. 3, with previous compliance date of September 15, 2023, has been amended to have a new compliance date of September 29, 2023.

Ordered Item No. 4, with previous compliance date of October 15, 2023, has been amended to have a new compliance date of October 29, 2023.

Ordered Item No. 5, with previous compliance date of October 15, 2023, has been amended to have a new compliance date of October 29, 2023.

Ordered Item No. 6, with previous compliance date of November 15, 2023, has been amended to have a new compliance date of November 29, 2023.

Ordered Item No. 7, with previous compliance date of November 15, 2023, has been amended to have a new compliance date of November 29, 2023.

### **Reasons for the Response**

The following sets out a summary of the Request for Review submissions and my responses to them and the reasons for such responses.

I have amended Ordered Item No. 1 to require a weekly report to be submitted on each Tuesday until the ministry provides notice that the reports are no longer required. The amendment also lists what the reports shall include at a minimum.

You requested an extension of dates for compliance by four weeks for Ordered Item Nos. 2-7, due to your anticipated timeline for retaining a Qualified Person. I have amended the compliance dates for ordered Items Number 2, 3, 4, 5, 6, and 7, by two weeks. During the onsite inspection on July 25, 2023, Provincial Officer Lisa Hines discussed the deficiencies of the Stormwater Management Plan with the Director of Public Works John Yungblut and provided notice that a Provincial Officer's Order would be issued. It is my opinion that an extension of 14 days, in addition to the time that has elapsed since you were made aware of the non-compliance during the inspection, provides sufficient time to retain a Qualified Person to carry out the work as described in the Order.

I am of the opinion that requirements of the Order were both reasonable and necessary to achieve regulatory compliance with applicable environmental legislation and to provide for the protection of the natural environment and human health.

### **Attachments**

The attachments listed below form part of this Director's Order:  
(1) 1-224312016 signed August 23, 2023.

## ISSUING DIRECTOR

**Name:** John Ritchie

**Job Title:** District Manager

**Badge Number:** 1157

**Address:** 101 17TH ST E 3RD FLR, OWEN SOUND, ON, N4K 0A5

**Director Email:** john.s.ritchie@ontario.ca

**Office Email:** Environment.OwenSound@ontario.ca

**Date:** Aug 30, 2023

**Signature:**

*John Ritchie*

## APPEAL TO THE ONTARIO LAND TRIBUNAL INFORMATION

### REQUEST FOR HEARING

You may require a hearing before the Ontario Land Tribunal if, within 15 days of service of this Director's Order, you serve written notice of your appeal on the Ontario Land Tribunal and the Director as indicated in the Contact Information below. Your notice of appeal must state the portions of this Director's Order for which a hearing is required and the grounds on which you intend to rely at the hearing. Unless you receive leave (permission) from the Ontario Land Tribunal, you are not entitled to appeal a portion of this Director's Order or to rely on grounds of appeal that are not stated in the notice of appeal.

### CONTACT INFORMATION

The contact information for the Director and the Ontario Land Tribunal is the following:

Registrar  
Ontario Land Tribunal  
655 BAY STREET, SUITE 1500  
TORONTO, ON M5G 1E5  
Email: [OLT.Registrar@ontario.ca](mailto:OLT.Registrar@ontario.ca)

and Director  
Ministry of the Environment,  
Conservation and Parks  
Owen Sound District Office  
101 17TH ST E, 3RD FLR  
OWEN SOUND, ON N4K 0A5  
Office Email: [Environment.  
OwenSound@ontario.ca](mailto:Environment.OwenSound@ontario.ca)  
Fax: (519) 371-2905

The contact information for the Ontario Land Tribunal and further information regarding its appeal requirements can be obtained directly from the Tribunal at:

Tel: (416) 212-6349, Toll Free: 1 (866) 448-2248 or [www.olt.gov.on.ca](http://www.olt.gov.on.ca)

### SERVICE INFORMATION

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- statute, regulation, or by-law;
- federal, provincial, or municipal law; or
- applicable requirements that are not addressed in this Director's Order.

The requirements of this Director's Order are severable. If any requirement of this Director's Order, or the application of any requirement to any circumstance, is held invalid, such finding does not invalidate or render unenforceable the requirement in other circumstances. It also does not invalidate or render unenforceable the other requirements of this Director's Order.

Further orders may be issued in accordance with the legislation as circumstances require.

This Director's Order is binding upon any successors or assignees of the persons to whom this Director's Order is issued.

**The procedures to request a hearing and an appeal of this Director's Order and other information provided above are intended as a guide. The legislation should be consulted for additional details and accurate reference. Further information can be obtained from e-Laws at [www.ontario.ca/laws](http://www.ontario.ca/laws).**

## Director's Order

Director's Order Number

1-228594023

### Director's Order Issued To

THE CORPORATION OF THE TOWNSHIP OF HURON-KINLOSS  
21 QUEEN ST , HURON-KINLOSS, ON, N0G 2R0

### Site

Huron Landfill  
2087 CONCESSION 6 E, HURON-KINLOSS, ON,

Refer to the Definitions section in Part B of this Director's Order for the meaning of all capitalized terms that are used in this Director's Order.

### PART A - WORK ORDERED

Pursuant to my authority under **EPA | 157**;

I order you to do the following;

**Item No. 1**      **Compliance Due Date:** August 29, 2023

Commencing on August 29, 2023, and on each Tuesday thereafter, submit a weekly report to the Provincial Officer by email at [lisa.hines@ontario.ca](mailto:lisa.hines@ontario.ca) and to [environment.owensound@ontario.ca](mailto:environment.owensound@ontario.ca) detailing actions taken from Monday through Sunday of the previous week to apply daily cover as per condition 3.3 of the ECA. A weekly report shall be provided until the ministry provides notice that the reports are no longer required.

The report shall include at a minimum, the following:

1. A statement confirming cover was applied as per condition 3.3 of the ECA including:

- a) The date and time-of-day cover was applied,
- b) Thickness of cover that was applied and total quantity of cover applied,
- c) The type of cover that was applied and,
- d) Name of individual who applied the cover.

2. If cover was not applied, a statement why cover was not applied including:

- a) Date and,
- b) Reasons why

**Item No. 2**      **Compliance Due Date:** September 29, 2023

By September 29, 2023, retain the services of a Qualified Person to carry out the work as described in Work Ordered Item Nos. 4 and 6.

**Item No. 3**      **Compliance Due Date:** September 29, 2023

By September 29, 2023, submit to the Provincial Officer written confirmation from the Qualified Person(s) by email to [lisa.hines@ontario.ca](mailto:lisa.hines@ontario.ca) and [environment.owensound@ontario.ca](mailto:environment.owensound@ontario.ca) that they have, (1) received a copy of the Order; (2) been retained to carry out the work as described in Work Ordered Item Nos. 4 and 6; and (3) the experience and qualifications to carry out such work.

**Item No. 4**      **Compliance Due Date:** October 29, 2023

By October 29, 2023, have the Qualified Person prepare a work plan to implement the actions described in the Stormwater Management Plan, that shall include, at a minimum, the following:

- (a) a description of any outstanding actions or recommendations described in the Stormwater Management Plan for leachate and surface water control that have not yet been implemented or completed; and
- (b) a detailed plan which describes how any actions or recommendations described in (a) will be implemented; and
- (c) a detailed schedule, with timelines, for the implementation of any actions or recommendations described in (a).

**Item No. 5**      **Compliance Due Date:** October 29, 2023

By October 29, 2023, submit to the Provincial Officer by email to [lisa.hines@ontario.ca](mailto:lisa.hines@ontario.ca) and to [environment.owensound@ontario.ca](mailto:environment.owensound@ontario.ca) a copy of the work plan prepared by the Qualified Person as required in Work Ordered Item No. 4.

**Item No. 6**      **Compliance Due Date:** November 29, 2023

By November 29, 2023, have the Qualified Person complete and submit an application for an amendment to the waste ECA to include any leachate collection tank being used at the Site, with all necessary supporting documentation and applicable fees, to the Director, Environmental Approvals Access and Service Integration Branch, of the Ministry by email to [ECA.submissions@ontario.ca](mailto:ECA.submissions@ontario.ca), or online through a My Ontario Account.

**Item No. 7**      **Compliance Due Date:** November 29, 2023

By November 29, 2023, submit a copy of the completed ECA amendment application described in Work Ordered Item No. 6 to the Provincial Officer by email to [lisa.hines@ontario.ca](mailto:lisa.hines@ontario.ca) and to [environment.owensound@ontario.ca](mailto:environment.owensound@ontario.ca).

## PART B - BACKGROUND AND REASONS

### Definitions

For the purposes of this Director's Order, the capitalized terms shall have the meanings set out in the original Order with the addition or alteration of the following capitalized terms set out below:

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"Request for Review" means the request that the Order be reviewed by the Director sent on August 23, 2023.

### Request for Review of the Order

I have reviewed the Order and have considered the Request for Review and accompanied submissions with the Issuing Officer, **Lisa Hines**.

For convenience and ease of reference I have attached a copy of the Order. The Review and Appeal Information and Additional Information sections in the Order are not relevant to this Director's Order.

The Work Ordered Items set out above replace all the Work Ordered Items in the Order and may include, as described below, items in the Order that were not requested to be reviewed.

The Provincial Officer's Report in the Order is hereby incorporated into, and forms part of, this Director's Order except as may be noted below.

In response to your Request for Review, the following summarizes the Work Ordered Items set out in this Director's Order and describes the decision that I have made to confirm or alter the Order:

On August 23, 2023, I received a request for review of Item 1 of Provincial Officer's Order No. 1-224312016 (Order) from John Yungblut. The Order was issued on August 23, 2023, by Lisa Hines, Provincial Officer with the Ministry of the Environment, Conservation and Parks (Ministry). On August 28, 2023, I received a further request for review of Items No. 2-7 of the Order from John Yungblut. On August 30, 2023, further reasoning for the request for review was provided by Mary Rose Walden. After reviewing all information available to myself, either produced by ministry staff and/or yourself (on behalf of The Corporation of the Township of Huron-Kinloss), I have completed my review.

I have amended Ordered Item No. 1.

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### **Reasons for the Response**

The following sets out a summary of the Request for Review submissions and my responses to them and the reasons for such responses.

I have amended Ordered Item No. 1 to require a weekly report to be submitted on each Tuesday until the ministry provides notice that the reports are no longer required. The amendment also lists what the reports shall include at a minimum.

You requested an extension of dates for compliance by four weeks for Ordered Item Nos. 2-7, due to your anticipated timeline for retaining a Qualified Person. I have amended the compliance dates for ordered Items Number 2, 3, 4, 5, 6, and 7, by two weeks. During the onsite inspection on July 25, 2023, Provincial Officer Lisa Hines discussed the deficiencies of the Stormwater Management Plan with the Director of Public Works John Yungblut and provided notice that a Provincial Officer's Order would be issued. It is my opinion that an extension of 14 days, in addition to the time that has elapsed since you were made aware of the non-compliance during the inspection, provides sufficient time to retain a Qualified Person to carry out the work as described in the Order.

I am of the opinion that requirements of the Order were both reasonable and necessary to achieve regulatory compliance with applicable environmental legislation and to provide for the protection of the natural environment and human health.

### **Attachments**

The attachments listed below form part of this Director's Order:  
(1) 1-224312016 signed August 23, 2023.

## ISSUING DIRECTOR

**Name:** John Ritchie

**Job Title:** District Manager

**Badge Number:** 1157

**Address:** 101 17TH ST E 3RD FLR, OWEN SOUND, ON, N4K 0A5

**Director Email:** john.s.ritchie@ontario.ca

**Office Email:** Environment.OwenSound@ontario.ca

**Date:** Aug 30, 2023

**Signature:**

*John Ritchie*

## APPEAL TO THE ONTARIO LAND TRIBUNAL INFORMATION

### REQUEST FOR HEARING

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655 BAY STREET, SUITE 1500  
TORONTO, ON M5G 1E5  
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and Director  
Ministry of the Environment,  
Conservation and Parks  
Owen Sound District Office  
101 17TH ST E, 3RD FLR  
OWEN SOUND, ON N4K 0A5  
Office Email: [Environment.OwenSound@ontario.ca](mailto:Environment.OwenSound@ontario.ca)  
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**From:** [Hines, Lisa \(MECP\)](#)  
**To:** [John Yungblut](#)  
**Subject:** RE: Huron Landfill Inspection Report  
**Date:** February 1, 2024 10:51:02 AM

---

Thanks John!

Lisa Hines  
Environmental Compliance Officer  
*Ministry of the Environment, Conservation and Parks*  
Owen Sound District Office  
101-17<sup>th</sup> Street East, 3<sup>rd</sup> Floor, Owen Sound, ON N4K 0A5  
E: [Lisa.Hines@ontario.ca](mailto:Lisa.Hines@ontario.ca)  
P: 519-270-6627  
F: 519-371-2905

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---

**From:** John Yungblut <[jyungblut@huronkinloss.com](mailto:jyungblut@huronkinloss.com)>  
**Sent:** February 1, 2024 10:48 AM  
**To:** Hines, Lisa (MECP) <[Lisa.Hines@ontario.ca](mailto:Lisa.Hines@ontario.ca)>  
**Cc:** Lisa Kreller <[lkreller@huronkinloss.com](mailto:lkreller@huronkinloss.com)>; Gass, Scott (MECP) <[Scott.gass@ontario.ca](mailto:Scott.gass@ontario.ca)>; Hutchesson, Sarah <[sarah.hutchesson@wsp.com](mailto:sarah.hutchesson@wsp.com)>; Tamasauskas, Kaurel <[Kaurel.Tamasauskas@wsp.com](mailto:Kaurel.Tamasauskas@wsp.com)>  
**Subject:** RE: Huron Landfill Inspection Report

**CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.**

The new agreement is attached, with a revised section 3.21. We don't typically have staff on site on Wednesdays, so they are now holding garbage collected on Wednesdays and disposing of it on Thursdays. The new agreement does not technically come into effect until April 1<sup>st</sup>, but it's the same contractor we have currently, and they have agreed to comply with the new agreement immediately rather than waiting until April 1<sup>st</sup>. Our contractor has not disposed of garbage on a Wednesday since Jan. 10, 2024.

John Yungblut, C.E.T.  
Director of Public Works  
Township of Huron-Kinloss  
(519) 395-3735

---

**From:** Hines, Lisa (MECP) <[Lisa.Hines@ontario.ca](mailto:Lisa.Hines@ontario.ca)>

**Sent:** Thursday, February 1, 2024 10:37 AM

**To:** John Yungblut <[jyungblut@huronkinloss.com](mailto:jyungblut@huronkinloss.com)>

**Cc:** Lisa Kreller <[lkreller@huronkinloss.com](mailto:lkreller@huronkinloss.com)>; Gass, Scott (MECP) <[Scott.gass@ontario.ca](mailto:Scott.gass@ontario.ca)>;  
Hutchesson, Sarah <[sarah.hutchesson@wsp.com](mailto:sarah.hutchesson@wsp.com)>; Tamasauskas, Kaurel  
<[Kaurel.Tamasauskas@wsp.com](mailto:Kaurel.Tamasauskas@wsp.com)>

**Subject:** RE: Huron Landfill Inspection Report

Good morning John,

Thank you for the email. Can you please expand on the changes that have been made to bring the Site into compliance? Also, can you email me a copy of the amended contract?

Regards,

Lisa Hines

Environmental Compliance Officer

*Ministry of the Environment, Conservation and Parks*

Owen Sound District Office

101-17<sup>th</sup> Street East, 3<sup>rd</sup> Floor, Owen Sound, ON N4K 0A5

E: [Lisa.Hines@ontario.ca](mailto:Lisa.Hines@ontario.ca)

P: 519-270-6627

F: 519-371-2905

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---

**From:** John Yungblut <[jyungblut@huronkinloss.com](mailto:jyungblut@huronkinloss.com)>

**Sent:** February 1, 2024 10:32 AM

**To:** Hines, Lisa (MECP) <[Lisa.Hines@ontario.ca](mailto:Lisa.Hines@ontario.ca)>

**Cc:** Lisa Kreller <[lkreller@huronkinloss.com](mailto:lkreller@huronkinloss.com)>; Gass, Scott (MECP) <[Scott.gass@ontario.ca](mailto:Scott.gass@ontario.ca)>;  
Hutchesson, Sarah <[sarah.hutchesson@wsp.com](mailto:sarah.hutchesson@wsp.com)>; Tamasauskas, Kaurel  
<[Kaurel.Tamasauskas@wsp.com](mailto:Kaurel.Tamasauskas@wsp.com)>

**Subject:** RE: Huron Landfill Inspection Report

**CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.**

Good morning Lisa,

We have amended our contract with our waste collection contractor, so we are now in compliance with Item NC-3, Action Item No. 1.

Regards,

John Yungblut, C.E.T.  
Director of Public Works  
Township of Huron-Kinloss  
(519) 395-3735

---

**From:** Hines, Lisa (MECP) <[Lisa.Hines@ontario.ca](mailto:Lisa.Hines@ontario.ca)>  
**Sent:** Wednesday, August 23, 2023 1:33 PM  
**To:** John Yungblut <[jyungblut@huronkinloss.com](mailto:jyungblut@huronkinloss.com)>  
**Cc:** Lisa Kreller <[lkreller@huronkinloss.com](mailto:lkreller@huronkinloss.com)>; Gass, Scott (MECP) <[Scott.gass@ontario.ca](mailto:Scott.gass@ontario.ca)>  
**Subject:** Huron Landfill Inspection Report

Good afternoon John,

See attached inspection report from the site inspection conducted on July 25, 2023, at the Huron Landfill. Please let me know if you have any questions or concerns.

Note: The Provincial Officer's Order referenced in the Inspection report will be issued in a separate email.

Regards,

Lisa Hines  
Senior Environmental Officer  
*Ministry of the Environment, Conservation and Parks*  
Owen Sound District Office  
101-17<sup>th</sup> Street East, 3<sup>rd</sup> Floor, Owen Sound, ON N4K 0A5  
E: [Lisa.Hines@ontario.ca](mailto:Lisa.Hines@ontario.ca)  
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## Tamasauskas, Kaurel

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**From:** Hines, Lisa (MECP) <Lisa.Hines@ontario.ca>  
**Sent:** December 11, 2023 9:32 AM  
**To:** Hutchesson, Sarah  
**Cc:** John Yungblut; Tamasauskas, Kaurel  
**Subject:** RE: Huron Landfill - Stormwater Management Workplan

Hi Sarah,

See below Memorandum from the ministry's surface water specialist, Hugh Geurts.

### MEMORANDUM – December 11, 2023

**TO: Lisa Hines  
Abatement, Owen Sound District Office**

**FROM: Hugh Geurts  
Southwest Regional Water Assessment Unit**

**RE: Surface Water Review - Huron Landfill – Stormwater Management  
Workplan. Township of Huron-Kinloss. Submitted by WSP  
consultants and dated October 30, 2023**

I have reviewed the above noted report and I offer the following comments. (Please also refer to my comments at the bottom of this E-mail from our June 28<sup>th</sup>, site inspection)

Section 2.1 . The workplan notes that the township has not undertaken vegetative cover as it is their opinion that natural vegetation has established on its own. **I find this response unacceptable. Further to our June 28<sup>th</sup> site visit. The cover is sporadic at best with annual weeds predominate and resulting in substantial bare spots of exposed soils. Vegetative cover should have been and should be done as soon as possible with perennial grasses and legumes recognized for establishing good cover of cap soils.**

Section 2.3 The workplan notes the following . The SWMP recommends the systematic open / close of one (1) year's worth of landfilling space. The vegetation and cover is removed from the selected area as landfilling progresses. The Township has implemented this recommendation. **Further to our site visit of June 28<sup>th</sup> , 2023, I saw zero evidence of vegetation management to substantiate this claim.**

Section 2.4. The workplan notes that final cover on the North slope is vegetating naturally and that further work is unnecessary. **Similar to my comments for Section 2.1 , my observations from June 28<sup>th</sup> , 20223 suggest the vegetative cover is substandard as to what would be expected for an area of final cover.**

Section 2.5 . The workplan notes that the Municipality has not undertaken recommended water sampling as per the April 2019 stormwater plan . **The report offers no explanation as to why the sampling was not undertaken.**

**Overall Comment:** Further to my summary below, I find that lack of proper vegetative cover at this site is a significant contributor to the issues of surface water management at this site. If runoff from the open face and footprint continues to show evidence of running of the site in an unacceptable manner, I would support the district taking further abatement actions as warranted.

## **MEMORANDUM – JUNE 28, 2023, site inspection**

**To: Lisa Hines  
Abatement, Owen Sound District Office**

**From: Hugh Geurts  
Water Assessment Unit, West Central Regional Office**

**RE: Regional Surface Water Review. Inspection of Huron Landfill on June 28, 2023. Landfill located at – 2087 Conc. Rd 6 E. Ripley in Huron-Kinloss**

Upon Completion of our on-site inspection of the Landfill on June 28<sup>th</sup>, I offer the following.

From my observations there has been little improvement to the stormwater management of the site since my last involvement of 2018-2019. Based on my observations - little to no action was taken with respect to the attached stormwater Management Plan

My main observations of note are.

1. There has been little to no active planting of vegetation on exposed soils on the site which in my view has limited the ability of the site to encourage precipitation infiltration and as a result has encouraged visible runoff and erosion.
2. The open Face of waste was considerably larger than I would expect based on my experience and lacked daily cover offering a significant opportunity for the generation of open face leachate runoff.
3. There were at least two defined channels at or near the open face that would direct landfill leachate away and off site (red lines in below diagram). Visual observation of runoff channel from the open face to the southeast suggest that runoff was by-passing a possible subsurface leachate collection and management unit (to be confirmed)
4. The depression/swale located in the southwest corner of the site that would otherwise retain stormwater runoff from the majority of the active footprint shows no signs of maintenance and

at least one berm failure was identified in the swale that would suggest the swale has little to no capability to retain water (in red below). This failure accordingly offers a second route for leachate to exit the site.

I find the management of stormwater and leachate at the site to be inconsistent with Ministry expectations for reasonably limiting off site impact to water resources.



5.

**Based on the above comments, the submitted Stormwater Management Workplan is determined to be unacceptable. Submit a revised workplan by January 12, 2024.**

Regards,

Lisa Hines  
Environmental Compliance Officer  
*Ministry of the Environment, Conservation and Parks*  
Owen Sound District Office  
101-17<sup>th</sup> Street East, 3<sup>rd</sup> Floor, Owen Sound, ON N4K 0A5  
E: [Lisa.Hines@ontario.ca](mailto:Lisa.Hines@ontario.ca)  
P: 519-270-6627  
F: 519-371-2905

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**From:** Hutchesson, Sarah <sarah.hutchesson@wsp.com>

**Sent:** October 30, 2023 5:23 PM

**To:** Hines, Lisa (MECP) <Lisa.Hines@ontario.ca>

**Cc:** John Yungblut <jyungblut@huronkinloss.com>; Tamasauskas, Kaurel <Kaurel.Tamasauskas@wsp.com>

**Subject:** Huron Landfill - Stormwater Management Workplan

**CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.**

Hi Lisa,

Attached please find the work plan to implement the Stormwater Management tasks for Huron Landfill.

Sincerely,

Sarah



**Sarah Hutchesson**

Environmental Engineer

M.Sc., P.Eng.

*She/Her*

T+ 1 705-712-0185

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HURON LANDFILL

Physical Address: 2087 CONCESSION 6 E, ,  
HURON-KINLOSS, ON

## INSPECTION REPORT

Entity: THE CORPORATION OF THE  
TOWNSHIP OF HURON-  
KINLOSS

Inspection Start Date: May 27, 2025

Site Inspection Date: May 28, 2025

Inspection End Date: July 22, 2025

Inspected By: Lisa Hines

Badge #: 1876



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(signature)

### NON-COMPLIANCE

The following item(s) have been identified as non-compliance, based on a "No" response captured for a legislative question(s). For additional information on each question see the Inspection Details section of the report.

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

Item	Question	Compliance Response/Corrective Action(s)
NC-1	<p><b>Question ID:</b> NOL 42</p> <p>Is Daily cover applied to the waste at the end of each working day or as otherwise specified in the ECA?</p>	<p>On or before September 5, 2025, the Township shall comply with condition 3.3 of the ECA by applying daily cover material in accordance with the Design and Operations Plan (Section 3.5).</p>
NC-2	<p><b>Question ID:</b> NOL 48</p> <p>Is scavenging being prevented?</p>	<p>It is recommended that the Township review its storage and collection procedures for scrap metal to identify additional measures that could help deter scavenging.</p>
NC-3	<p><b>Question ID:</b> 949100</p> <p>Were the inspection questions sufficient to address other identified non-compliance items?</p>	<p>The following instances of non-compliance were also noted during the inspection:</p> <ol style="list-style-type: none"> <li>1. On or before October 31, 2025, the Township shall decommission and replace OW1.</li> <li>2. On or before October 31, 2025, the Township shall retain the services of a qualified person and have the qualified person conduct a topographical survey of the site.</li> <li>3. On or before October 31, 2025, the Township shall apply final cover to areas of the site that have reached final waste elevations, and the cover shall be graded and vegetated.</li> <li>4. On or before September 5, 2025, the Township shall update their daily inspection log to comply with Condition 5 of the ECA.</li> <li>5. The Township shall notify the undersigned provincial officer in writing once each of the</li> </ol>

above action items have been completed.

**Ministry Program: SEWAGE | Regulated Activity: Industrial Stormwater**

Item	Question	Compliance Response/Corrective Action(s)
NC-4	<p><b>Question ID:</b> 949100</p> <p>Were the inspection questions sufficient to address other identified non-compliance items?</p>	<p>The following instances of non-compliance were also noted during the inspection:</p> <ol style="list-style-type: none"><li>1. On or before October 31, 2025, the Township shall reseed all areas of the landfill where the 2024 seeding failed to establish vegetation, as well as any newly bare areas where final cover has been applied.</li><li>2. On or before September 5, 2025, the Township shall comply with condition 4.5 of the ECA and prepare an operations manual.</li></ol>

## RECOMMENDATIONS

This should not be construed as a confirmation of full conformance with all potential applicable BMPs. These inspection findings are limited to the components and/or activities that were assessed, and the legislative framework(s) that were applied. It remains the responsibility of the owner to ensure compliance with all applicable legislative and regulatory requirements.

If you have any questions related to this inspection, please contact the signed Provincial Officer.

### INSPECTION DETAILS

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

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

<b>Question ID</b>	NOL 1	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Does the Open landfill site have an Environmental Compliance Approval (ECA)?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes  Amended ECA #A272601 was issued on April 16, 2020.			

<b>Question ID</b>	NOL 2	<b>Question Type</b>	Information
<b>Legislative Requirement(s):</b> Not Applicable			
<b>Question:</b> Is this landfill on Crown land?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> No			

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

<b>Question ID</b>	NOL 4	<b>Question Type</b>	Information
<b>Legislative Requirement(s):</b> Not Applicable			

<p><b>Question:</b> Does the landfill have a Contaminant Attenuation Zone (CAZ)?</p>
<p><b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> No</p>

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

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

<b>Question ID</b>	NOL 14	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Is site access limited to times when an attendant is on duty?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

Question ID	NOL 15	Question Type	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Does the site only receive waste from within its approved service area?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

Question ID	NOL 16	Question Type	Information
<b>Legislative Requirement(s):</b> Not Applicable			
<b>Question:</b> Is the site required to have a ground water monitoring program by the ECA?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes  Condition 6.1 of the ECA requires the Township to carry out the groundwater monitoring program as described in Section 6.4 and Table 4 of the "Design and Operations Plan (Revised)" dated January 2010.			

Question ID	NOL 17	Question Type	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Is the site implementing the groundwater monitoring program as required by the ECA?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

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

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Question ID	NOL 19	Question Type	Information
<b>Legislative Requirement(s):</b> Not Applicable			
<b>Question:</b> Is the ministry concerned with the results of the samples that have been tested?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> No			

Question ID	NOL 21	Question Type	Information
<b>Legislative Requirement(s):</b> Not Applicable			
<b>Question:</b> Is the site required to manage leachate by the ECA?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

Question ID	NOL 22	Question Type	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Is the landfill implementing the procedures required by the ECA to manage leachate?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			
Condition 6.3 requires the Township to develop a leachate management plan for the site. In 2019 the Township submitted an ECA application for their stormwater management system. With the application they submitted the "Stormwater Management Plan", dated April 2019. In June 2021, ECA #4076-BYRM6P was issued to the Township for their stormwater management system.			

Question ID	NOL 24	Question Type	Information
<b>Legislative Requirement(s):</b> Not Applicable			

<b>Question:</b> Is the ministry concerned with the leachate quality?
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> No

<b>Question ID</b>	NOL 26	<b>Question Type</b>	Information
<b>Legislative Requirement(s):</b> Not Applicable			
<b>Question:</b> Is the site required to manage landfill gas by the ECA?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> No			

<b>Question ID</b>	NOL 28	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Is landfill gas managed and monitored at this site?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes  Condition 6.1 of the ECA requires the Township to carry out the landfill gas monitoring as described in Section 6.4 and Table 4 of the "Design and Operations Plan (Revised)" dated January 2010.			

<b>Question ID</b>	NOL 29	<b>Question Type</b>	Information
<b>Legislative Requirement(s):</b> Not Applicable			
<b>Question:</b> Is the ministry concerned with landfill gas at this site?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> No			

Question ID	NOL 31	Question Type	Information
<b>Legislative Requirement(s):</b> Not Applicable			
<b>Question:</b> Is the site required to have a surface water monitoring program by the ECA?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes  Condition 6.1 of the ECA requires the Township to carry out the surface water monitoring program as described in Section 6.4 and Table 4 of the "Design and Operations Plan (Revised)" dated January 2010.			

Question ID	NOL 32	Question Type	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Is the site implementing the surface water monitoring program as required by the ECA?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

Question ID	NOL 34	Question Type	Information
<b>Legislative Requirement(s):</b> Not Applicable			
<b>Question:</b> Are there water quality concerns with the results of the samples that have been tested?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> No			

Question ID	NOL 36	Question Type	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Is proper equipment available for the compaction of waste and applying cover material?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

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<b>Question ID</b>	NOL 37	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Is the landfill able to accurately determine the amount of waste received?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

<b>Question ID</b>	NOL 38	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Are all disposal operations at the site adequately and continually supervised?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

<b>Question ID</b>	NOL 39	<b>Question Type</b>	Information
<b>Legislative Requirement(s):</b> Not Applicable			
<b>Question:</b> Does the landfill operator have a site inspection program as required by the ECA?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

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

**Compliance Response(s)/Corrective Action(s)/Observation(s):**  
Yes

<b>Question ID</b>	NOL 41	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Is the waste being compacted adequately?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

<b>Question ID</b>	NOL 42	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1); EPA   O. Reg. 232/98   7;			
<b>Question:</b> Is Daily cover applied to the waste at the end of each working day or as otherwise specified in the ECA?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> On or before September 5, 2025, the Township shall comply with condition 3.3 of the ECA by applying daily cover material in accordance with the Design and Operations Plan (Section 3.5).  Section 3.5 of the Design and Operations Plan states "Ideally at the end of each open day, all waste will be covered with no exposed waste visible."  In 2023, Director's Order #1-228594023 was issued to the Township, which included a condition requiring the submission of weekly reports on the application of daily cover. A review of recent reports indicates that daily cover is not being applied consistently. One significant contributing factor appears to be that Bruce Area Solid Waste Recycling (BASWR) garbage trucks arrive near the end of the day. Another issue is that the Township's contractor is not always available to apply cover or to apply a full layer of cover. Several entries in the daily cover reports indicate that only partial cover was applied.  During the inspection, Cory Dulong (Manager of Environmental Services) mentioned that they may be looking for another contractor as they unhappy with their current contractors work.			

<b>Question ID</b>	NOL 43	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Are procedures implemented to control rodents or other animals and insects at the site?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

<b>Question ID</b>	NOL 44	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Is site access restricted by use of a gate, fence, or physical barrier when the site is not operating?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes  The Site has a large fence that runs parallel with Concession 6, and the rest of the property boundary is treed.			

<b>Question ID</b>	NOL 45	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Is the waste disposal area adequately screened from public view?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

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

<p><b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes</p> <p>Records are stored electronically.</p>
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<b>Question ID</b>	NOL 47	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Has the annual operations report been submitted to MECP or available on site as required by the ECA?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			
The 2024 Annual Monitoring Report was submitted to the ministry on March 28, 2025.			

<b>Question ID</b>	NOL 48	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1); EPA   O. Reg. 232/98   23;			
<b>Question:</b> Is scavenging being prevented?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> It is recommended that the Township review its storage and collection procedures for scrap metal to identify additional measures that could help deter scavenging.			
The site gate is locked at all times while landfill personnel are not on site and there's a large fence that runs parallel with Concession 6. However, at the time of the inspection Cory Dulong and John Yungblut (Director of Public Works) stated they continue to experience scavenging of scrap metal from individuals with ATV's, that access the site through the trees.			

<b>Question ID</b>	NOL 49	<b>Question Type</b>	Information
<b>Legislative Requirement(s):</b> Not Applicable			
<b>Question:</b> Has a closure plan been submitted to the MECP?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> No			

<b>Question ID</b>	NOL 51	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Is the landfill only accepting the types of waste that they are approved to receive?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

<b>Question ID</b>	NOL 52	<b>Question Type</b>	Information
<b>Legislative Requirement(s):</b> Not Applicable			
<b>Question:</b> Does the landfill have a waste refusal procedure in place to manage waste that arrives at the site that the site is not approved the accept?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

<b>Question ID</b>	NOL 53	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> is the waste refusal procedure being followed?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

<b>Question ID</b>	NOL 54	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Does the landfill have a procedure in place to address and document spills and fires?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

<b>Question ID</b>	NOL 55	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Does the landfill have emergency contingency plan as required by the ECA?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

<b>Question ID</b>	NOL 56	<b>Question Type</b>	Information
<b>Legislative Requirement(s):</b> Not Applicable			
<b>Question:</b> Is there an ECA condition requiring financial assurance?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> No			

<b>Question ID</b>	NOL 59	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Does the landfill have a procedure in place to address complaints?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

<b>Question ID</b>	NOL 60	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Has the landfill operator addressed the complaints to the satisfaction of the ministry?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

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Question ID	NOL 61	Question Type	Information
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Has the landfill operator developed a Design and Operations Manual?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

Question ID	NOL 62	Question Type	Information
<b>Legislative Requirement(s):</b> Not Applicable			
<b>Question:</b> Is the Design and Operations Manual up to date?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

Question ID	NOL 63	Question Type	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Does the landfill operator have training procedures for site personnel?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

Question ID	NOL 64	Question Type	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Is the landfill operator following the established training procedures?			

**Compliance Response(s)/Corrective Action(s)/Observation(s):**  
Yes

<b>Question ID</b>	NOL 65	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> EPA   27   (1);			
<b>Question:</b> Has the Certificate of Requirement been registered on Title?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes			

<b>Question ID</b>	949100	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> Not Applicable			
<b>Question:</b> Were the inspection questions sufficient to address other identified non-compliance items?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> The following instances of non-compliance were also noted during the inspection:			
<ol style="list-style-type: none"> <li>1. On or before October 31, 2025, the Township shall decommission and replace OW1.</li> <li>2. On or before October 31, 2025, the Township shall retain the services of a qualified person and have the qualified person conduct a topographical survey of the site.</li> <li>3. On or before October 31, 2025, the Township shall apply final cover to areas of the site that have reached final waste elevations, and the cover shall be graded and vegetated.</li> <li>4. On or before September 5, 2025, the Township shall update their daily inspection log to comply with Condition 5 of the ECA.</li> <li>5. The Township shall notify the undersigned provincial officer in writing once each of the above action items have been completed.</li> </ol>			
<p>In the 2024 Annual Monitoring Report, GEI states "During the 2024 sampling events, OW1 was noted to be in poor conditions and located within a significantly eroded stream bank. It is recommended that this monitoring location be decommissioned and a new monitoring well be installed in close proximity." In an email from Cory to Officer Hines on June 25, 2025, Cory provided a quote they received for the work to be completed and stated they have already asked GEI to proceed with the work. Cory also mentioned they will be adding an additional</p>			

monitoring well "behind where the seepage was noted near the pile of old bed mattresses in the back south east corner."

GEI also stated in the 2024 Annual Monitoring Report, "It is recommended that a comprehensive survey be completed in the fall of 2025 in order to compare the surface with that which was surveyed in 2024, and to allow for a higher level of certainty regarding the remaining site capacity." During the inspection Cory mentioned that they will be conducting another site survey in the fall to assess the progress of applied final cover and continue grading and vegetating areas where final cover has been applied.

On June 25, 2025, Cory sent an email providing answers and documents to inspection follow-up questions from Officer Hines. Among the documents were daily inspection logs that the Township is required to complete as per Condition 5 of the ECA. Upon review, the daily log was found to be insufficient. The following is a list of some of the missing information:

- List of facilities and equipment inspected and any deficiencies found.
- List of any maintenance/ repairs
- Leachate breakout areas should be noted
- Recommendations for remedial actions

On March 18, 2025, Cory sent Officer Hines an email explaining that the Township would like to try an alternative cover material and provided material specification sheets. This was discussed again during the onsite inspection. The Township is reminded if they wish to pursue this alternative cover material, they must comply with condition 3.4 of the ECA which states "Alternative materials to that approved under Condition 3.3 above, may be used as daily and interim cover material, based on an application with supporting information and applicable fee for trail use or permanent use, submitted by the Owner/Operator to the Director, copied to the District Manager, and as approved by the Director via an amendment to this ECA."

**Ministry Program:** SEWAGE | **Regulated Activity:** Industrial Stormwater

Question ID	WW_APPROVAL_100000	Question Type	Information
<b>Legislative Requirement(s):</b> OWRA   53   (1);			
<b>Question:</b> Is an Environmental Compliance Approval (ECA) required for this sewage works?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b>  Yes			

<b>Question ID</b>	WW_APPROVAL_110000	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> OWRA   53   (1);			
<b>Question:</b> Do all sewage works currently being inspected have a valid Environmental Compliance Approval (ECA)?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b>  ECA #4076-BYRM6P was issued for the stormwater management system in July 2021.			

<b>Question ID</b>	WW_APPROVAL_111000	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> OWRA   53   (1);			
<b>Question:</b> Is the sewage works constructed in accordance with the Environmental Compliance Approval (ECA)?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b>  Yes			

<b>Question ID</b>	WWSW_SPILLS_100000	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> EPA   91.1; OWRA   53   (1);			
<b>Question:</b> Does the facility have appropriate spill prevention and spill contingency plans and procedures for the stormwater management facility?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes: The facility has a spill prevention and spill contingency plan and procedures in place.  At the time of the inspection it was determined that a spill contingency plan had not been created. On July 21, 2025, GEI (consultants) emailed a copy of the Spill Contingency Plan dated July 2025 to Officer Hines.			

<b>Question ID</b>	WW_AUDIT_SAMPLE_100000	<b>Question Type</b>	Information
<b>Legislative Requirement(s):</b> Not Applicable			
<b>Question:</b> Were Ministry audit samples collected during this inspection?			

**Compliance Response(s)/Corrective Action(s)/Observation(s):**

No: Audit samples were not collected during this inspection.

<b>Question ID</b>	WW_IMPAIRMENT_100000	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> OWRA   30   (1);			
<b>Question:</b> Were there no indications of a known or anticipated human health impact during the inspection and/or review of relevant material ?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes: There were no indications of a known or anticipated human health impact associated with the operation of the sewage works.			

<b>Question ID</b>	WW_IMPAIRMENT_200000	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> OWRA   30   (1);			
<b>Question:</b> Were there no indications of a known or anticipated environmental impact during the inspection and/or review of relevant material?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Yes: There were no indications of a known or anticipated environmental impact associated with the operation of the sewage work			

<b>Question ID</b>	949100	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> Not Applicable			
<b>Question:</b> Were the inspection questions sufficient to address other identified non-compliance items?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> The following instances of non-compliance were also noted during the inspection:  1. On or before October 31, 2025, the Township shall reseed all areas of the landfill where the 2024 seeding failed to establish vegetation, as well as any newly bare areas where final cover has been applied.  2. On or before September 5, 2025, the Township shall comply with condition 4.5 of the ECA			

and prepare an operations manual.

At the time of the inspection, some seeded areas exhibited poor or failed seed germination, resulting in sparse grass coverage. Evidence of erosion scarring was observed in some locations northeast of the active working face.

At the time of the inspection it was determined that an operations manual had not been created as per Condition 4.5 of the ECA which states "The Owner shall prepare an operations manual prior to the commencement of the operation of the Works."

During the inspection Officer Hines asked if the inlet and outlet of the Works have ever been cleaned, to which John stated no as there's never been an issue with the flow. The Township is reminded of Condition 4.2 of the ECA which states "The Owner shall undertake an inspection of the condition of the Works, at least once a year, and undertake any necessary cleaning and maintenance to ensure that sediment, debris and excessive decaying vegetation are removed from the Works to prevent the excessive build-up of sediment, oil/grit, debris and/or decaying vegetation, to avoid reduction of the capacity of the Works. The Owner shall also regularly inspect and clean out the inlet to and the outlet from the Works to ensure that these are not obstructed."

## **Appendix C      GEI Landfill Inspection Reports**

Site Name:

Auron Landfill

File No:

2402747-

Date:

16-Sept. - 25

Inspector:

AB

### GAMSBY AND MANNEROW LIMITED LANDFILL INSPECTION REPORT

	<u>YES</u>	<u>NO</u>	<u>COMMENTS</u>
1. Site Open:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. Access Control:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3. Supervisor On-Site:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4. Signs Posted:			
Entrance	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Waste Disposal Area	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Tires	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Brush	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Appliances	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Metals	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Other	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5. Litter:			
On-Site	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Off-Site	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>minimal litter noted onsite.</u>
6. Rodent/Vector Evidence:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
7. Scavenging:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
8. Monitoring Wells			

NOTES:

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	<u>ACCEPTABLE</u>	<u>NOT ACCEPTABLE</u>	<u>COMMENTS</u>
9. Access Road Condition:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
10. Screening from Public View:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
11. Working Face:			
Compaction	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Daily Cover	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
12. Segregation of Wastes:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
13. Finished Areas:			
Final Cover	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Seeding	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
14. Burning:			
Burn Pile Size	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Wood Wastes Only	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Ashes Removed	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
15. Leachate Management:	<input type="checkbox"/>	<input type="checkbox"/>	_____
16. Recycleables:			
Tires	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Appliances	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Metals	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Blue Box	<input type="checkbox"/>	<input type="checkbox"/>	_____
Other	<input type="checkbox"/>	<input type="checkbox"/>	_____

NOTES: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
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## **Appendix D      Monitoring Well Installation Details**

MONITORING HOLE LOGS  
from the Wilson Report

Constructed September 26, 1989

<u>Monitoring Hole</u>	<u>Depths (m)</u>	<u>Materials</u>
<u>1</u>	49.42 - 49.22	TOPSOIL
	0 - 0.20	brown, dry silty SAND
	0.20 - 0.91	brown, dry GRAVEL and SAND with traces of silt
	0.91 - 1.07	brown, dry sandy SILT
	1.07 - 1.83	brown, moist sandy SILT with some clay
	1.83 - 2.29	grey, moist SILT with some clay and traces of sand
	2.29 - 3.35	grey, dense SILT with some sand and clay with some stones
	3.35 - 6.10	

- 45.02  
 i Water level at 4.40m below ground level (Oct. 27, 1989)  
 ii Sample 1 - 4.57m  
     clay - 20%  
     silt - 61%  
     sand - 19%  
 iii Estimated coefficient of permeability  $9 \times 10^{-7}$  cm/sec.

<u>2</u>	49.81 - 48.90	brown, dry silty SAND
	0 - 0.91	brown, dry SILT with some clay and sand
	0.91 - 1.52	

- Monitoring hole dry  
 ii Sample 2 - 0.30m  
     silt - 33%  
     sand - 67%

iii Estimated coefficient of permeability  
 $2 \times 10^{-4}$  cm/sec.

iv M.H. 2 could not be advanced further  
because of refusal (probably a rock)

v Sample 3 - 1.22m

clay - 20%

silt - 61%

sand - 19%

v Estimated coefficient of permeability  
 $6 \times 10^{-7}$  cm/sec.

u

50.77 - 49.40

0 - 1.37

1.37 - 1.83

47.11

1.83 - 3.66

49.67

3.66 - 6.10

brown, dry fine SAND

grey SILT with some sand  
and clay

grey, dense SILT with  
some clay and traces of  
sand

grey, dense SILT with  
some sand and clay

i Water level at 5.64m below ground level  
(Oct. 27, 1989) 45.13

ii Sample 4 - 3.05m

clay - 13%

silt - 78%

sand - 9%

iii Estimated coefficient of permeability  
 $5 \times 10^{-6}$  cm/sec.

4

50.56 50.43

0 - 0.13

0.13 - 1.07

49.04

1.07 - 1.52

46.29

1.52 - 4.27

TOPSOIL

brown, dry GRAVEL and SAND with traces of silt  
brown, dry fine SAND with some silt and traces of clay

gray, dry, dense SILT with some sand and clay

i Monitoring hole dry

ii Sample 5 - 0.76m

silt - 7%

sand - 43%

gravel - 50%

Estimated coefficient of permeability  $1 \times 10^{-2}$  cm/sec.

5

51.22 51.02

0 - 0.20

0.20 - 0.61

47.56

0.61 - 3.66

45.12

3.66 - 6.10

TOPSOIL

brown, dry, fine SAND with some silt

grey, dense SILT with some sand and clay with traces of stones

grey, dense SILT with some sand and clay

45.78

i Water level at 5.44m below ground level (Oct. 27, 1989)

ii Sample 6 - 0.30m

silt - 22%

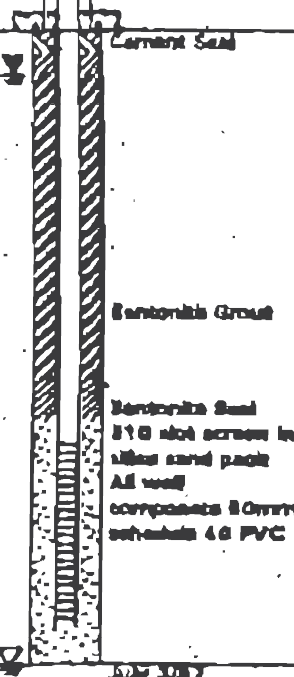
sand - 78%

iii Estimated coefficient of permeability  $5 \times 10^{-4}$  cm/sec.

# Log of Drilling Operations

Client: Maitland Engineering Services Ltd. Project: Huron Township Landfill  
 Contract No.: H-1275 Location: Huron Township Supervised by: S. Wheelton  
 Drilling Co.: Lantech Drilling Drilling Method: CME 750 Hollow Stem Augers with S/S  
 Borehole Location: See Figure 1 Date Started: 7/2/97 Date Completed: 7/2/97

Stratigraphic Description	Strat. Plot	Elev. Depth (m)	SAMPLE				Depth Scale	
			Num.	Type	Incl.	N Val.	(ft)	(m)
Surface Elevation (m) <u>51.00</u>								
Fill - silt, sand and clay, brown, dense, damp, no apparent odour		<u>50.48</u>						
Fill - garbage, grey, wet to saturated, strong putrid odour		<u>49.87</u>						
		<u>49.00</u>						
		<u>48.50</u>						
Silt - some sand and clay, grey, dense, cohesive, slight putrid odour		<u>48.34</u>	1	SS	<input checked="" type="checkbox"/>			
End of Borehole		<u>47.78</u>						



Water found (dd/m/y)  
 Water Level (dd/m/y)

- SAMPLE TYPE
- AC Auger Cutting
  - CS Continuous
  - RC Rock Core
  - SS Split Spoon
  - ST Shelby Tube
  - WC Wash Cuttings





# Log of Drilling Operations

Client: Maldand Engineering Services Ltd. Project: Huron Township Landfill  
 Contract No.: H-1275 Location: Huron Township Supervised by: S. Wheelton  
 Drilling Co.: Lantech Drilling Drilling Method: CME 750 Hollow Stem Augers with S/S  
 Borehole Location: See Figure 1 Date Started: 7/2/97 Date Completed: 7/2/97

Stratigraphic Description	Elev. Depth (m)	SAMPLE				Depth Scale (m)
		Num.	Type	Int.	N Val.	
Surface Elevation (mb) 40.98	19.88					
Topsoil - organics, silt, dark brown, dense, dry, no apparent odour	19.30					
Silt - trace of clay, occasional coarse grained sand, brown, dense, damp, no apparent odour		1	SS	X		
		2	SS	X		
		3	SS	X		
		4	SS	X		
		5	SS	X		
		6	SS	X		
		7	SS	X		
Sand and Gravel - silty, brown, dense, saturated, no apparent odour	11.37					
Silt - trace of clay, occasional coarse grained sand, brown, dense, damp, no apparent odour	12.00					
	28.28					
End of Borehole	13.70					

@ 8.38m becomes saturated

Cement Seal

Well Dry as of July 3/97

Bentonite Grout

Bentonite Seal  
 #10 slot screen in silt/sand pack  
 All well components 80mm schedule 40 PVC

Water found (dd/m/yr)  
 Static Water Level (dd/m/yr)







SAMPLE TYPE AC Auger Cutting SS Split Spoon  
 CS Continuous ST Shaly Tube  
 RC Rock Core WC Wash Cuttings

# Log of Drilling Operations

Client: Maitland Engineering Services Ltd. Project: Huron Township Landfill  
 Job No.: H-1278 Location: Huron Township Supervised by: S. Wheelton  
 Drilling Co.: Lantech Drilling Drilling Method: CME 750 Hollow Stem Augers with S/S  
 Hole Location: See Figure 1 Date Started: 7/3/97 Date Completed: 7/3/97

Stratigraphic Description	Surf. Elev. (m)	Elev. Depth (m)	Diagram	SAMPLE				Depth Scale (m)
				Material	Type	Incl.	N. Val.	
Surface Elevation (m) <u>48.87</u>								
Topsoil - organics, silt, dark brown, compact, dry, no apparent odour		<u>48.87</u>						
Silt to Silty Clay - scattered sand and gravel, fine to coarse grained, light brown, dense, dry, no apparent odour		<u>3.28</u>						
@ 3.81 becomes moist								
@ 5.33m becomes wet and grey in colour								
Silt - traces of clay, scattered sand and gravel, brown, mottled grey, dense, damp to moist, no apparent odour		<u>49.17</u>						
		<u>4.10</u>						
Silt and Clay - scattered sand and gravel, brown, mottled grey, moist to wet, no apparent odour		<u>49.78</u>						
		<u>7.13</u>						
		<u>48.87</u>						
End of Borehole								

Water found (dd/m/yr)  
 Static Water Level (dd/m/yr)

SAMPLE TYPE AC  Auger Cutting SS  Split Spoon  
 CS  Continuous ST  Shelby Tube  
 RC  Rock Core WC  Wash Cuttings

# Log of Drilling Operations

Contract No.: H-1275 Location: Huron Township Project: Huron Township Landfill  
 Drilling Co.: Lantech Drilling Drilling Method: CME 750 Hollow Stem Augers with S/S Supervised by: S. Wheeler  
 Hole Location: See Figure 1 Date Started: 7/3/97 Date Completed: 7/3/97

Stratigraphic Description	Start Elev. (m)	Elev. Depth (m)	Well Diagram	SAMPLE				Depth Scale	
				Num.	Type	Int.	N.Val.	(m)	(ft)
Surface Elevation (m) <u>19.87</u>									
<b>Topsoil - organics, silt, dark brown, compact, dry, no apparent odour</b>		<u>19.87</u>	<p>Current Seal</p> <p>Well Dry as of July 2/97</p> <p>Bentonite Grout</p> <p>Bentonite Seal</p> <p>810 slot screen in silica sand pack            All well components 50mm schedule 40 PVC</p>						
<b>Silt to Silty Clay - scattered sand and gravel, fine to coarse grained, light brown, dense, dry, no apparent odour</b>		<u>2.28</u>		1	SS	X			
				1	SS	X			
Ⓞ 3.81 becomes moist				3	SS	X			
Ⓞ 5.33m becomes wet and grey in colour				4	SS	X			
		<u>19.79</u>							
<b>Silt - trace of clay, scattered sand and gravel, brown, mottled grey, dense, damp to moist, no apparent odour</b>		<u>2.28</u>		5	SS	X			
		<u>61.78</u>							
<b>Silt and Clay - scattered sand and gravel, brown, mottled grey, moist to wet, no apparent odour</b>		<u>7.21</u>	6	SS	X				
			7	SS	X				
		<u>28.77</u>							
<b>Silt - trace of clay, scattered sand and gravel, brown, mottled grey, dense, damp to moist, no apparent odour</b>		<u>11.28</u>	8	SS	X				
		<u>38.18</u>							
End of Borehole		<u>13.11</u>							

Water found (dd/m/yr)  
 Static Water Level (dd/m/yr)

SAMPLE TYPE AC Auger Cutting SS Split Spoon  
 CS Continuous ST Shaly Tube  
 RC Rock Core WC Wash Cuttings



# Log of Drilling Operations

Client: Mattland Engineering Services Ltd. Project: Huron Township Landfill  
 Contract No.: H-1278 Location: Huron Township Supervised by: S. Wheelton  
 Drilling Co.: Lantach Drilling Drilling Method: CME 750 Hollow Stem Augers with S/S  
 Borehole Location: See Figure 1 Date Started: 7/3/97 Date Completed: 7/3/97

Stratigraphic Description	Elev. Depth (m)	Elev. Depth (m)	SAMPLE				Depth Scale (m)
			Num.	Type	Incl.	N. Val.	
Surface Elevation (m) <b>58.88</b>							
Fill - topsoil, organics, dark brown, dry, dense, no apparent odour	58.88	58.88					
Fill - silt and small amount of debris, porcelain plate, wood, ashes, dry, brown, no apparent odour	12.97	58.87	1	SS	X		
Silt - some clay, occasional sand and gravel, fine grained, cohesive, dense, damp to moist, no apparent odour	1.38	57.50	2	SS	X		
			3	SS	X		
			4	SS	X		
			5	SS	X		
			6	SS	X		
			7	SS	X		
			8	SS	X		
			9	SS	X		
			10	SS	X		

@ 12.95m becomes very dense

Wet Silt - occasional sand and gravel  
 ss, light brown, mottled grey, saturated,  
 compact to dense, no apparent odour

End of Borehole

13.82  
 17.04  
 32.81  
 18.38

July 3/97

Water found (dd/m/yr)  
 Static Water Level (dd/m/yr)

- SAMPLE TYPE
- AC Auger Cutting
  - CS Continuous
  - RC Rock Core
  - SS Split Spoon
  - ST Shelby Tube
  - WC Wash Cuttings

# LOG OF DRILLING OPERATIONS

OW105



## BURNSIDE

21. Report & Assessment Manual  
111 Vershob Avenue West, Suite 2000, Mississauga, ON L4V 1P5  
Tel: 905-875-3889 Fax: 905-875-3890

Page 1 of 1

Client: Township of Huron-Kinloss	Project Name: Monitoring Well Installation	Logged by: S Quinlan
Project No.: W99609	Location: Huron Landfill	Ground (m AMSL):
Drilling Co.: Lantech Drilling Services Inc.	Date Started: 22/07/2003	Static Water Level (m AMSL):
Drilling Method: Hollow Stem Auger	Date Completed: 22/07/2003	Sand Pack (m AMSL):

Depth Scale (ft) (m)	Stratigraphic Description	Strat. Plot	Depth (m)	Diagram	SAMPLE				Depth Scale (ft) (m)
					Num.	Type	Incl.	Recovery	
0.0	TOPSOIL - Black, Organics & Moist		0.0						0.0
0.6	CLAY - Brown, Dense, with some Gravel and Sand & Dry		0.6						0.6
1.2			1.2						1.2
1.8			1.8						1.8
2.4	CLAY - Grey, Dense, with some Gravel and Sand & Moist		2.4					2.4	
3.0			3.0					3.0	
3.6			3.6					3.6	
4.2	CLAY - Grey, Dense, with some Gravel and Sand & Wet		4.2					4.2	
4.8			4.8					4.8	

Prepared By: S. Quinlan      Checked By: D. Hopkins      Date Prepared: July 25, 03

Borehole log was prepared for hydrogeological and/or environmental purposes and does not necessarily contain information for a geotechnical assessment of the subsurface conditions. Borehole data requires interpretation by R. J. Burnside & Associates Limited personnel before use by others.

0 1st found @ time of drilling 2nd Water Level	MONITORING WELL DATA Pipe: 51 mm dia. PVC Screen: 51 mm dia. PVC #10 slot	SAMPLE TYPE AC  Auger Cutting CS  Continuous RC  Rock Core	SS  Spill Spoon AR  Air Rotary WC  Wash Cuttings
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# LOG OF DRILLING OPERATIONS

OW10 D

Page 1 of 1



R. J. Burnside & Associates Limited  
 117 Burnside Avenue, North York, Ontario M2H 3K2  
 Phone: (416) 622-4926 Fax: (416) 622-8429

Client: Township of Huron-Kinloss	Project Name: Monitoring Well Installation	Logged by: S Quintan
Project No.: W99609	Location: Huron Landfill	Ground (m amsl):
Drilling Co.: Lantech Drilling Services Inc.	Date Started: 22/07/2003	Static Water Level (m amsl):
Drilling Method: Hollow Stem Auger	Date Completed: 22/07/2003	Sand Pack (m amsl):

Depth Scale (ft) (m)	Stratigraphic Description	Strat. Plot	Depth (m)	SAMPLE				Depth Scale (ft) (m)
				Num.	Type	Int.	%Recov.	
0.0 - 1.5	TOPSOIL- Black, Organics & Moist. CLAY - Brown, Dense, with some Gravel and Sand & Dry		0.0 - 1.5					0.0 - 1.5
1.5 - 3.0	CLAY - Grey, Dense, with some Gravel and Sand & Moist.		1.5 - 3.0	1	AC	X	0	1.5
3.0 - 4.5				2	AC	X	0	3.0
4.5 - 6.0				3	AC	X	0	4.5
6.0 - 7.5				4	AC	X	0	6.0
7.5 - 9.0				5	AC	X	0	7.5
9.0 - 10.5				6	AC	X	0	9.0
10.5 - 12.0	CLAY - Grey, Dense, with some Gravel and Sand & Wet.		10.5 - 12.0	7	AC	X	70	10.5
12.0 - 13.5				8	AC	X	10	12.0
13.5 - 15.0				9	AC	X	0	13.5
15.0 - 16.5				10	AC	X	0	15.0
16.5 - 18.0	CLAY - Grey, Dense, with some Gravel and Sand & Dry.		16.5 - 18.0	11	AC	X	0	16.5
18.0 - 19.5				12	AC	X	0	18.0
19.5 - 21.0				13	AC	X	0	19.5
21.0 - 22.5				14	AC	X	0	21.0
22.5 - 24.0	CLAY - Grey, Dense, with some Gravel and Sand & Moist.		22.5 - 24.0	15	AC	X	10	22.5
24.0 - 25.5				16	AC	X	0	24.0
25.5 - 27.0				17	AC	X	0	25.5
27.0 - 28.5	GRAVEL & SAND - with some Clay and Silt, sample is Saturated.		27.0 - 28.5	18	AC	X	10	27.0
28.5 - 30.0				19	AC	X	30	28.5

Prepared By: S. Quintan      Checked By: D. Hopkins      Date Prepared: July 25, 03

This whole log was prepared for hydrogeological and/or environmental purposes and does not necessarily contain information for a geotechnical assessment of the subsurface conditions. Borehole data requires interpretation by R. J. Burnside & Associates Limited personnel before use by others.

found @ time of drilling Water Level -	MONITORING WELL DATA		SAMPLE TYPE			
	Pipe: 51 mm dia. PVC	Screen: 51 mm dia. PVC #10 slot	AC	Auger Cutting	SS	Split Spoon
			CS	Continuous	AR	Air Rotary
			RC	Rock Core	WC	Wash Cuttings

# LOG OF DRILLING OPERATIONS

OW 11- Leachate

Page 1 of 1



R. J. Burnside & Associates Limited  
14 Burnside Avenue, Unit 10, Aurora, Ontario M1R 1X4  
Phone: (905) 709-2222 Fax: (905) 709-2222

Client: Township of Huron-Kinloss	Project Name: Monitoring Well Installation	Logged by: S. Quinlan
Project No.: W99608	Location: Huron Landfill	Ground (m AMSL):
Drilling Co.: Lantech Drilling Services Inc.	Date Started: 23/07/2003	Static Water Level (m AMSL):
Drilling Method: Hollow Stem Auger	Date Completed: 23/07/2003	Sand Pack (m AMSL):

Depth Scale (ft) (m)	Stratigraphic Description	Strat. Plot	Depth (m)	Diagram	SAMPLE			Depth Scale (ft) (m)
					Num.	Type	InL	
1.0	CLAY FILL - Dense, Brown & Dry	[Pattern]		cement				
1.4	WASTE FILL - Black, Strong Odour, Plastic in Cuttings & Wet	[Pattern]	1.4	bentonite seal	6			
1.8				silica sand pack				
2.2	CLAY - Native, grey, with some fine gravel and sand, dense & wet	[Pattern]	2.2					

Logged By: S. Quinlan Checked By: D. Hopkins Date Prepared: July 25, 03

This borehole log was prepared for hydrogeological and/or environmental purposes and does not necessarily contain information for a geotechnical assessment of the subsurface conditions. Borehole data requires interpretation by R. J. Burnside & Associates Limited personnel before use by others.

Water Level: Screen: Pipe: found @ time of drilling	MONITORING WELL DATA 51 mm dia. PVC 51 mm dia. PVC #10 slot	SAMPLE TYPE AC [Pattern] Auger Cutting CS [Pattern] Continuous RC [Pattern] Rock Core S3 [Pattern] Split Spoon AR [Pattern] Air Rotary WC [Pattern] Wash Cuttings
--	---	--

Project No.: LNE08507  
 Location: Part Lots 19 & 20, Concession 5, Huron Township  
 Drilling Company: Noll Drilling Inc.  
 Drilling Method: Geoprobe  
 Sampling Interval: Continuous  
 Supervised by: J. Rutherford  
 Construction: 25 mm diameter threaded-joint PVC pipe with 10 slot PVC screen  
 capped with slip-on labcock valve  
 lockable steel protective casing

GP1	Depth	Soil Description	Concrete	Sand	Screen
	0.0 - 0.40	Light brown gravelly fine to medium SAND; massive; compact; moist	0 - 0.5	0.5 - 2.4	0.5 - 2
	0.40 - 1.10	Medium grey SILT, some clay, trace sand, trace gravel; weathered to 0.7 m; stiff; moist			
	1.10 - 1.20	Black SAND; partly organic; moist			
	1.20 - 1.50	Medium brown fine SAND; massive; loose; saturated			
	1.50 - 1.80	Medium grey fine SAND, some silt; massive; compact; saturated			
	1.80 - 2.40	Medium grey SILT, some clay; occasional 2 to 5 cm thick seams of silty fine sand; stiff; saturated			
	2.40 - 2.45	Medium grey SILT, some clay, trace sand, trace gravel; very stiff; moist			
Borehole Location: North side of gatehouse and scales					
Date Started: Jun 13, 2006					
Date Completed: Jun 13, 2006					

GP2	Depth	Soil Description	Concrete	Bentonite	Sand	Screen
	0.0 - 0.20	Dark brown SILT, some sand; partly organic; loose; moist (topsoil)	0 - 0.5	0.5 - 0.6	0.6 - 2.4	0.6 - 2.1
	0.20 - 0.40	Light red-brown fine SAND, trace silt; loose; moist				
	0.40 - 0.70	Light grey-brown SILT, some clay, trace fine sand; red iron staining; weathered; very stiff; moist				
	0.70 - 0.95	Light grey-brown SILT, some very fine sand; non-plastic; red iron staining; saturated seams				
	0.95 - 1.20	Light grey-brown SILT, trace clay, trace sand, trace gravel; very stiff; wet				
	1.20 - 1.30	Medium red-brown silty fine SAND; loose; moist				
	1.30 - 2.45	Medium grey-brown clayey SILT, trace sand, trace gravel; very stiff; moist				
Borehole Location: North edge of landfill area						
Date Started: Jun 13, 2006						
Date Completed: Jun 13, 2006						

GP3	Depth	Soil Description	Concrete	Bentonite	Sand	Screen
	0.0 - 0.15	Light brown silty fine SAND, some gravel; trace organic matter; loose; dry	0 - 0.5	0.5 - 0.6	0.6 - 2.4	0.9 - 2.4
	0.15 - 0.35	Medium brown SILT, some clay, some sand, some gravel; wood fragments; stiff; moist (fill)				
	0.35 - 0.45	Light brown silty fine SAND; layered with layers of dark brown partly organic silt; moist (fill)				
	0.45 - 1.00	Medium grey-brown SILT, some clay, some sand, some gravel; weathered to 0.68 m; very stiff; moist				
	1.00 - 1.35	Dark brown to black SILT, some clay, some sand, some gravel; sandy seams; stiff; moist (fill)				
	1.35 - 1.55	Dark brown to medium grey-brown silty SAND, some gravel; loose; saturated				
	1.55 - 2.45	Medium grey-brown SILT, some clay, some sand, some gravel; grading to medium brown then medium red-brown; firm becoming very stiff below 2.0 m; moist, wet becoming moist below 2.0 m				
Borehole Location: Southeast corner of fill area, north side of shed						
Date Started: Jun 14, 2006						
Date Completed: Jun 14, 2006						

GP4	Depth	Soil Description	Concrete	Bentonite	Sand	Screen
	0.0 - 0.35	Medium brown to red-brown silty fine SAND; some organic matter; layered; loose; moist	0 - 0.5	0.5 - 0.8	0.8 - 2.4	0.9 - 2.4
	0.35 - 0.65	Light red-brown sandy SILT; layered; firm; wet				
	0.65 - 1.20	Light red-brown SILT, some clay, trace fine sand; weathered to 0.75 m; grey discoloration along fractures; firm; moist				
	1.20 - 1.80	Medium brown SILT, trace clay, trace sand, trace gravel; layered with saturated fine sand seams; firm; moist				
	1.80 - 2.45	Medium brown clayey SILT, trace sand, trace gravel; very stiff; moist				
Borehole Location: Southwest of OW8						
Date Started: Jun 14, 2006						
Date Completed: Jun 14, 2006						

# RECORD OF BOREHOLE No. OW-12



Project Number: 2402747  
 Project Client: Township of Huron Kinloss, ON  
 Project Name: Huron Landfill Site  
 Project Location: \_\_\_\_\_  
 Drilling Location: See Borehole Location Plan  
 Local Benchmark: \_\_\_\_\_

Drilling Method: Hollow Stem Augers Drilling Machine: \_\_\_\_\_  
 Logged By: ABoyd Northing: \_\_\_\_\_ Date Started: Jul 14/25  
 Reviewed By: \_\_\_\_\_ Easting: \_\_\_\_\_ Date Completed: Jul 14/25

LITHOLOGY PROFILE		SOIL SAMPLING				DEPTH (m)	ELEVATION (m)	FIELD TESTING				LAB TESTING				Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)			
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value			Shear Strength Testing (kPa)				Atterberg Limits					GR	SA	SI	CL
						×	+	▲	△	○	●	○	LL							
0.0	TOPSOIL FILL					0														
2.4	SILTY CLAY: Brown  --- Dark grey ---					2														
12.2	GRAVEL: Dry					12														
13.7	Borehole Terminated at 13.7 m					13.7													No confirmed water strike	

<b>GEI CONSULTANTS</b> Canada Ltd. www.geiconsultants.ca	Groundwater depth encountered on completion of drilling: Dry	Cave depth after auger removal: Open
	Groundwater depth observed on:	Groundwater Elevation:
Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.		Scale: 1 : 100 Page: 1 of 1

## **Appendix E      Historic Summary of Water Level Elevations**

**SUMMARY OF WATER LEVEL ELEVATIONS  
HURON LANDFILL SITE**

Date	Top of Casing Elevation	Top of Casing Elevation (Resurveyed 2015)	Nov-89	Nov-90	May-91	Sep-91	May-92	Oct-92	May-93	Sep-93	May-94	Oct-94
Monitoring Location			Water Level Elevation	Water Level Elevation	Water Level Elevation	Water Level Elevation	Water Level Elevation	Water Level Elevation	Water Level Elevation	Water Level Elevation	Water Level Elevation	Water Level Elevation
Unit	(m)	(m)	(masl)	(masl)	(masl)	(masl)	(masl)	(masl)	(masl)	(masl)	(masl)	(masl)
Well ID												
OW1	50.24	--	45.02	48.46	48.24	47.03	48.20	48.37	48.09	48.37	48.67	48.11
OW3	51.76	--	45.13	50.08	49.69	47.50	49.77	49.72	49.63	49.52	50.13	49.62
OW4	51.60	--	--	50.38	49.74	48.30	49.83	49.69	49.65	49.54	50.27	49.57
OW5	52.12	--	45.82	51.21	50.99	49.61	50.92	50.12	51.00	51.46	51.15	50.97
OW6	51.95	53.47	--	--	--	--	--	--	--	--	--	--
OW7S	50.77	--	--	--	--	--	--	--	--	--	--	--
OW7D	50.81	--	--	--	--	--	--	--	--	--	--	--
OW8S	50.21	--	--	--	--	--	--	--	--	--	--	--
OW8D	50.40	--	--	--	--	--	--	--	--	--	--	--
OW9	51.73	--	--	--	--	--	--	--	--	--	--	--
OW10S	44.76	--	--	--	--	--	--	--	--	--	--	--
OW10D	44.50	--	--	--	--	--	--	--	--	--	--	--
OW11	52.61	55.06	--	--	--	--	--	--	--	--	--	--

Notes:

1. Water levels are in meters (compared to generated site datum); mbTOC = meters below top of casing.
2. \*OW-6 - 1.52 m and OW11 - 2.45 m of pipe added on November 18, 2015 , water level elevations were adjusted accordingly
3. NI = Not Installed; NM = Not monitored.
4. Top of Casing Elevation Status:

**SUMMARY OF WATER LEVEL ELEVATIONS  
HURON LANDFILL SITE**

Date	Top of Casing Elevation	Top of Casing Elevation (Resurveyed 2015)	May-95	Sep-95	May-96	Sep-96	May-97	Sep-97	May-98	Sep-98	May-99	Sep-99
Monitoring Location			Water Level Elevation	Water Level Elevation	Water Level Elevation	Water Level Elevation	Water Level Elevation	Water Level Elevation	Water Level Elevation	Water Level Elevation	Water Level Elevation	Water Level Elevation
Unit	(m)	(m)	(masl)	(masl)	(masl)	(masl)	(masl)	(masl)	(masl)	(masl)	(masl)	(masl)
Well ID												
OW1	50.24	--	48.24	47.35	48.44	47.26	48.28	47.98	48.24	46.88	48.21	46.75
OW3	51.76	--	49.96	48.85	49.91	48.41	49.96	48.84	49.76	47.73	49.69	47.82
OW4	51.60	--	49.77	48.84	50.08	48.67	50.10	48.99	49.51	48.04	49.46	48.21
OW5	52.12	--	50.95	50.21	51.10	51.11	51.13	50.64	50.67	49.75	50.56	49.25
OW6	51.95	53.47	--	--	--	--	--	49.95	48.21	46.00	47.39	45.82
OW7S	50.77	--	--	--	--	--	--	47.28	48.08	47.19	47.81	47.01
OW7D	50.81	--	--	--	--	--	--	--	43.72	41.34	43.12	41.43
OW8S	50.21	--	--	--	--	--	--	46.54	48.42	47.74	48.16	47.54
OW8D	50.40	--	--	--	--	--	--	--	44.36	38.09	40.90	37.62
OW9	51.73	--	--	--	--	--	--	38.63	40.69	37.76	39.22	37.01
OW10S	44.76	--	--	--	--	--	--	--	--	--	--	--
OW10D	44.50	--	--	--	--	--	--	--	--	--	--	--
OW11	52.61	55.06	--	--	--	--	--	--	--	--	--	--

Notes:

1. Water levels are in meters (compared to generated site datum); mt
2. \*OW-6 - 1.52 m and OW11 - 2.45 m of pipe added on November 18, 2015 , water level elevations were adjusted accordingly
3. NI = Not Installed; NM = Not monitored.
4. Top of Casing Elevation Status:

**SUMMARY OF WATER LEVEL ELEVATIONS  
HURON LANDFILL SITE**

Date	Top of Casing Elevation	Top of Casing Elevation (Resurveyed 2015)	May-00	Sep-00	May-01	Sep-01	May-02	Sep-02	May-03	Oct-03	May-04	Sep-04
Monitoring Location			Water Level Elevation	Water Level Elevation	Water Level Elevation	Water Level Elevation	Level Elevation	Level Elevation	Level Elevation	Level Elevation	Level Elevation	Level Elevation
Unit	(m)	(m)	(masl)	(masl)	(masl)	(masl)	(masl)	(masl)	(masl)	(masl)	(masl)	(masl)
Well ID												
OW1	50.24	--	48.32	48.60	48.55	48.08	48.68	46.98	48.75	48.66	48.84	47.94
OW3	51.76	--	49.76	49.83	49.72	47.64	49.89	47.82	50.09	49.95	50.16	49.06
OW4	51.60	--	49.56	50.09	49.86	48.08	49.90	48.13	50.20	49.73	50.20	49.14
OW5	52.12	--	50.84	51.13	51.16	50.12	51.14	48.49	51.18	51.05	50.92	50.19
OW6	51.95	53.47	47.25	46.57	47.93	45.86	48.09	46.25	47.11	47.28	47.85	47.11
OW7S	50.77	--	47.98	47.70	48.02	46.95	48.17	47.09	47.51	47.30	47.97	47.39
OW7D	50.81	--	42.54	41.35	44.23	40.52	44.24	41.17	42.30	41.53	43.51	42.43
OW8S	50.21	--	48.39	48.67	48.30	47.54	48.57	47.31	48.34	48.46	48.51	48.13
OW8D	50.40	--	40.93	39.15	42.44	37.55	42.72	38.64	40.24	39.42	42.00	40.69
OW9	51.73	--	40.11	39.79	39.85	37.80	40.98	37.55	41.21	40.64	41.30	38.55
OW10S	44.76	--	--	--	--	--	--	--	--	39.44	41.96	41.69
OW10D	44.50	--	--	--	--	--	--	--	--	41.17	42.30	38.60
OW11	52.61	55.06	--	--	--	--	--	--	--	50.61	50.81	50.17

Notes:

1. Water levels are in meters (compared to generated site datum); mt
2. \*OW-6 - 1.52 m and OW11 - 2.45 m of pipe added on November 18, 2015 , water level elevations were adjusted accordingly
3. NI = Not Installed; NM = Not monitored.
4. Top of Casing Elevation Status:

**SUMMARY OF WATER LEVEL ELEVATIONS  
HURON LANDFILL SITE**

Date	Top of Casing Elevation	Top of Casing Elevation (Resurveyed 2015)	May-05 Level Elevation	Sep-05 Level Elevation	Apr-06 Level Elevation	Oct-06 Level Elevation	Jul-07 Level Elevation	Dec-07 Level Elevation	Jul-08 Level Elevation	Dec-08 Level Elevation	Jul-09 Level Elevation	Mar-10 Level Elevation
Monitoring Location												
Unit	(m)	(m)	(masl)	(masl)	(masl)	(masl)	(masl)	(masl)	(masl)	(masl)	(masl)	(masl)
Well ID												
OW1	50.24	--	48.28	48.52	48.64	48.63	47.40	48.43	47.78	48.78	48.05	48.61
OW3	51.76	--	49.74	47.48	49.99	48.07	48.64	47.54	49.16	49.95	49.46	50.08
OW4	51.60	--	49.54	47.88	50.12	48.27	47.91	47.46	49.21	50.26	49.33	50.12
OW5	52.12	--	50.73	47.72	51.12	50.41	49.32	49.73	49.98	51.16	50.51	51.18
OW6	51.95	53.47	47.80	46.51	47.90	46.92	47.17	46.67	47.69	48.08	48.20	47.75
OW7S	50.77	--	47.96	47.08	48.19	47.17	47.01	46.13	47.75	48.15	48.01	48.04
OW7D	50.81	--	43.73	41.25	42.97	42.09	43.20	41.31	44.05	43.49	44.89	43.46
OW8S	50.21	--	48.29	46.81	48.59	47.21	47.33	46.27	47.83	48.86	48.15	48.51
OW8D	50.40	--	42.12	39.45	41.52	39.17	41.69	39.85	42.62	41.85	43.24	41.69
OW9	51.73	--	40.70	37.11	42.11	37.12	37.75	36.22	40.81	42.81	40.09	41.42
OW10S	44.76	--	42.67	40.72	42.32	41.85	42.03	41.56	42.58	43.13	42.80	42.66
OW10D	44.50	--	40.49	37.37	42.74	37.60	37.85	36.47	40.42	41.39	40.12	42.17
OW11	52.61	55.06	50.79	49.79	51.18	49.78	49.20	49.54	50.54	51.33	50.47	51.27

Notes:

1. Water levels are in meters (compared to generated site datum); mt
2. \*OW-6 - 1.52 m and OW11 - 2.45 m of pipe added on November 18, 2015 , water level elevations were adjusted accordingly
3. NI = Not Installed; NM = Not monitored.
4. Top of Casing Elevation Status:

**SUMMARY OF WATER LEVEL ELEVATIONS  
HURON LANDFILL SITE**

Date	Top of Casing Elevation	Top of Casing Elevation (Resurveyed 2015)	Dec-10 Level Elevation	Jun-11 Level Elevation	Oct-11 Level Elevation	Jun-12 Level Elevation	Oct-12 Level Elevation	Jun-13 Level Elevation	Nov-13 Level Elevation	Jul-14 Level Elevation	Nov-14 Level Elevation	May-15 Level Elevation
Monitoring Location												
Unit	(m)	(m)	(masl)	(masl)	(masl)	(masl)	(masl)	(masl)	(masl)	(masl)	(masl)	(masl)
Well ID												
OW1	50.24	--	48.67	48.33	48.41	47.90	48.55	48.51	48.59	47.99	48.56	48.27
OW3	51.76	--	50.14	49.90	48.39	49.23	48.07	49.77	50.15	49.27	50.25	49.73
OW4	51.60	--	49.88	49.62	47.92	48.97	47.17	49.61	50.24	49.00	50.00	49.56
OW5	52.12	--	51.15	50.98	50.96	50.09	50.98	50.84	51.21	49.88	51.21	50.76
OW6	51.95	53.47	47.69	48.21	46.72	48.16	47.62	49.05	49.50	49.83	49.65	49.37
OW7S	50.77	--	47.82	48.27	47.23	47.82	46.90	48.32	48.38	48.06	48.31	48.22
OW7D	50.81	--	43.41	43.25	40.05	43.27	39.52	43.65	41.61	43.90	41.17	43.38
OW8S	50.21	--	48.48	48.46	47.41	47.89	47.17	48.27	48.44	47.90	48.49	48.22
OW8D	50.40	--	41.46	42.34	37.32	41.24	37.08	41.62	38.51	41.74	40.41	41.98
OW9	51.73	--	41.90	41.81	38.91	38.23	37.42	40.99	42.46	39.30	42.66	38.83
OW10S	44.76	--	42.88	42.66	40.56	42.17	40.54	42.74	41.98	42.38	42.55	41.46
OW10D	44.50	--	42.61	41.91	41.02	38.55	38.50	41.05	43.04	39.40	43.07	39.66
OW11	52.61	55.06	51.24	51.04	50.36	50.38	50.80	50.92	50.51	51.75	52.04	51.93

Notes:

1. Water levels are in meters (compared to generated site datum); mt
2. \*OW-6 - 1.52 m and OW11 - 2.45 m of pipe added on November 18, 2015 , water level elevations were adjusted accordingly
3. NI = Not Installed; NM = Not monitored.
4. Top of Casing Elevation Status:

**SUMMARY OF WATER LEVEL ELEVATIONS  
HURON LANDFILL SITE**

Date	Top of Casing Elevation	Top of Casing Elevation (Resurveyed 2015)	Oct-15 Level Elevation	Jun-16 Level Elevation	Nov-16 Level Elevation	Jun-17 Level Elevation	Oct-17 Level Elevation	May-18 Level Elevation	Oct-18 Level Elevation	Jun-19 Level Elevation	Nov-19 Level Elevation	Jun-20 Level Elevation
Monitoring Location												
Unit	(m)	(m)	(masl)	(masl)	(masl)	(masl)	(masl)	(masl)	(masl)	(masl)	(masl)	(masl)
Well ID												
OW1	50.24	--	48.10	48.32	48.50	48.39	48.60	48.41	48.53	48.42	48.51	48.26
OW3	51.76	--	48.91	49.66	48.56	49.70	49.08	49.88	49.48	49.86	50.21	49.43
OW4	51.60	--	48.22	49.56	47.20	49.61	48.45	49.80	48.70	49.64	47.46	49.23
OW5	52.12	--	49.48	50.80	49.12	50.83	50.76	51.18	49.99	50.04	51.12	50.10
OW6	51.95	53.47	50.12	50.56	50.38	51.10	50.90	50.60	50.84	51.12	50.71	51.37
OW7S	50.77	--	47.41	48.38	47.94	48.55	48.19	48.29	48.27	48.50	48.28	48.24
OW7D	50.81	--	41.01	43.89	40.58	43.77	40.91	43.64	42.45	44.84	42.43	44.52
OW8S	50.21	--	47.13	48.29	46.56	48.39	47.31	48.31	47.85	48.53	47.04	48.04
OW8D	50.40	--	39.61	42.80	37.82	42.36	39.97	41.71	38.67	42.63	38.89	41.97
OW9	51.73	--	37.20	40.60	37.07	41.40	39.88	41.23	38.08	42.08	40.43	39.99
OW10S	44.76	--	41.68	42.71	40.86	42.95	42.18	42.59	42.24	43.03	41.15	42.71
OW10D	44.50	--	37.46	41.05	37.35	41.16	40.11	41.09	38.36	42.43	42.35	39.97
OW11	52.61	55.06	50.86	51.10	50.57	50.75	50.48	50.31	50.22	50.55	50.15	50.72

Notes:

1. Water levels are in meters (compared to generated site datum); mt
2. \*OW-6 - 1.52 m and OW11 - 2.45 m of pipe added on November 18, 2015 , water level elevations were adjusted accordingly
3. NI = Not Installed; NM = Not monitored.
4. Top of Casing Elevation Status:

**SUMMARY OF WATER LEVEL ELEVATIONS  
HURON LANDFILL SITE**

Date	Top of Casing Elevation	Top of Casing Elevation (Resurveyed 2015)	Nov-20 Level Elevation	Jun-21 Level Elevation	Nov-21 Level Elevation	May-22 Level Elevation	Nov-22 Level Elevation	May-23 Level Elevation	Sep-23 Level Elevation
Monitoring Location	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit
	(m)	(m)	(masl)	(masl)	(masl)	(masl)	(masl)	(masl)	(masl)
Well ID									
OW1	50.24	--	48.41	48.11	48.55	48.27	48.42	48.30	48.09
OW3	51.76	--	49.77	49.52	50.46	49.64	49.75	49.81	48.92
OW4	51.60	--	49.13	49.35	50.57	49.54	49.75	49.72	49.02
OW5	52.12	--	50.92	50.36	51.22	50.78	51.07	51.11	50.15
OW6	51.95	53.47	50.54	50.93	51.00	51.13	50.84	51.20	50.87
OW7S	50.77	--	48.27	48.11	48.49	48.35	48.24	48.49	48.04
OW7D	50.81	--	42.00	44.06	43.23	44.61	42.74	44.24	42.62
OW8S	50.21	--	46.95	48.04	47.74	48.32	46.72	48.45	47.06
OW8D	50.40	--	38.88	41.01	40.65	42.77	40.09	42.30	40.23
OW9	51.73	--	38.44	38.97	42.43	40.72	38.66	41.91	37.94
OW10S	44.76	--	41.36	42.58	43.13	42.82	41.91	42.99	42.51
OW10D	44.50	--	39.19	39.15	43.67	40.62	38.60	41.93	38.24
OW11	52.61	55.06	50.28	50.40	50.35	50.53	50.20	50.84	50.22

Notes:

1. Water levels are in meters (compared to generated site datum); mt
2. \*OW-6 - 1.52 m and OW11 - 2.45 m of pipe added on November 18, 2015 , water level elevations were adjusted accordingly
3. NI = Not Installed; NM = Not monitored.
4. Top of Casing Elevation Status:

**SUMMARY OF WATER LEVEL ELEVATIONS  
HURON LANDFILL SITE**

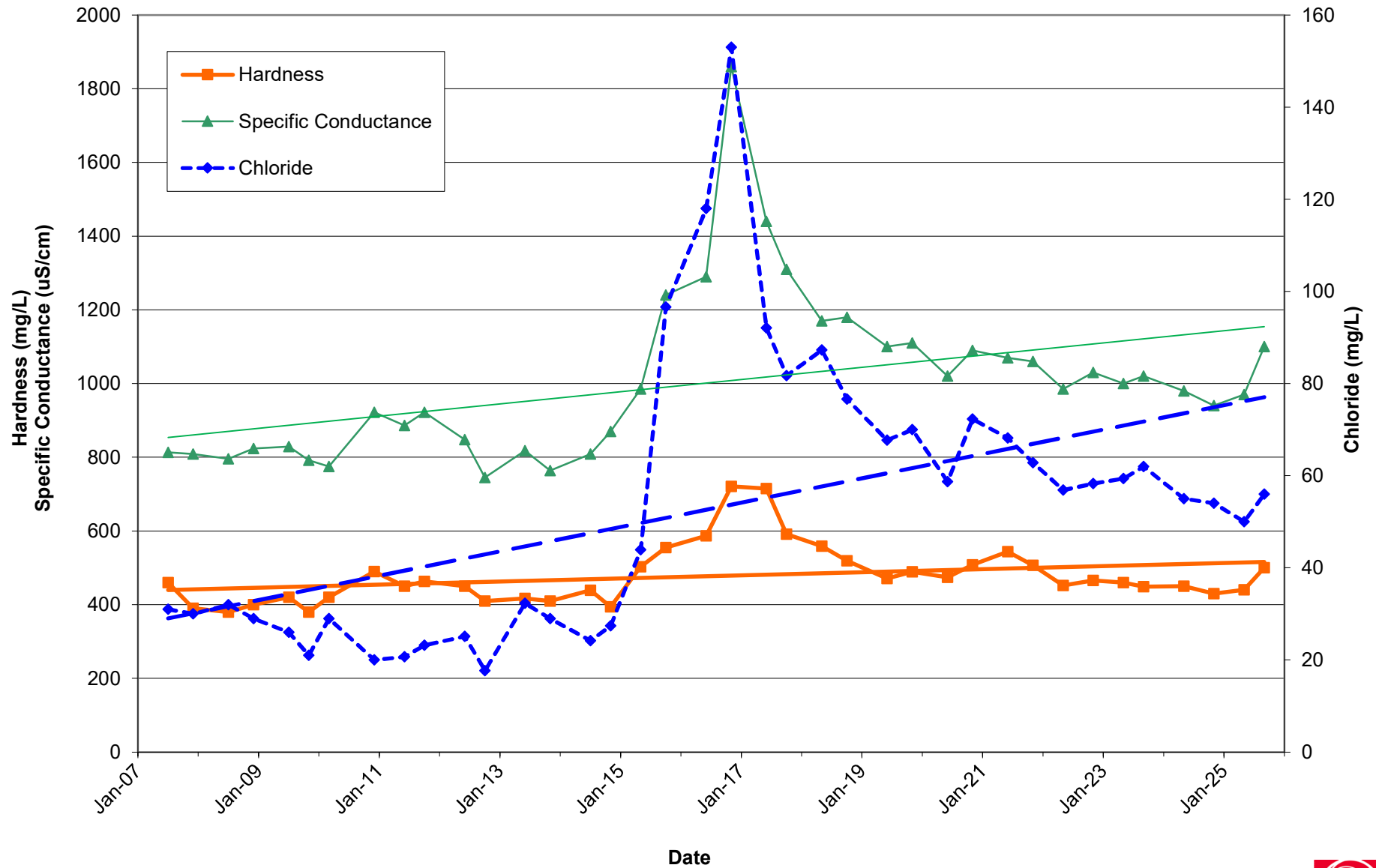
Monitoring Location	Date	Top of Casing Elevation	Top of Casing Elevation (Resurveyed 2015)	May-24		Nov-24		May-25		Sep-25	
				Depth to Water	Level Elevation	Depth to Water	Level Elevation	Depth to Water	Level Elevation	Depth to Water	Level Elevation
Unit	(m)	(m)	(mbTOC)	(masl)	(mbTOC)	(masl)	(mbTOC)	(masl)	(mbTOC)	(masl)	
Well ID											
OW1	50.24	--	1.90	48.34	3.18	47.06	1.91	48.33	2.42	47.82	
OW3	51.76	--	1.90	49.86	-	51.76	1.86	49.90	2.75	49.01	
OW4	51.60	--	1.84	49.76	14.80	36.80	1.85	49.75	3.55	48.05	
OW5	52.12	--	0.92	51.20	2.15	49.97	0.92	51.20	1.74	50.38	
OW6	51.95	53.47	2.12	49.83	2.90	49.05	2.39	49.56	2.17	49.78	
OW7S	50.77	--	2.23	48.54	3.65	47.12	2.29	48.48	3.12	47.65	
OW7D	50.81	--	5.89	44.92	7.55	43.26	6.55	44.26	7.71	43.10	
OW8S	50.21	--	1.63	48.58	5.36	44.85	1.95	48.26	3.46	46.75	
OW8D	50.40	--	7.30	43.10	9.72	40.68	9.05	41.35	9.51	40.89	
OW9	51.73	--	9.92	41.81	4.53	47.20	10.81	40.92	-	51.73	
OW10S	44.76	--	1.63	43.13	3.65	41.11	1.74	43.02	2.27	42.49	
OW10D	44.50	--	2.90	41.60	7.38	37.12	3.86	40.64	6.82	37.68	
OW11	52.61	55.06	4.25	48.36	5.20	47.41	4.25	48.36	4.77	47.84	

Notes:

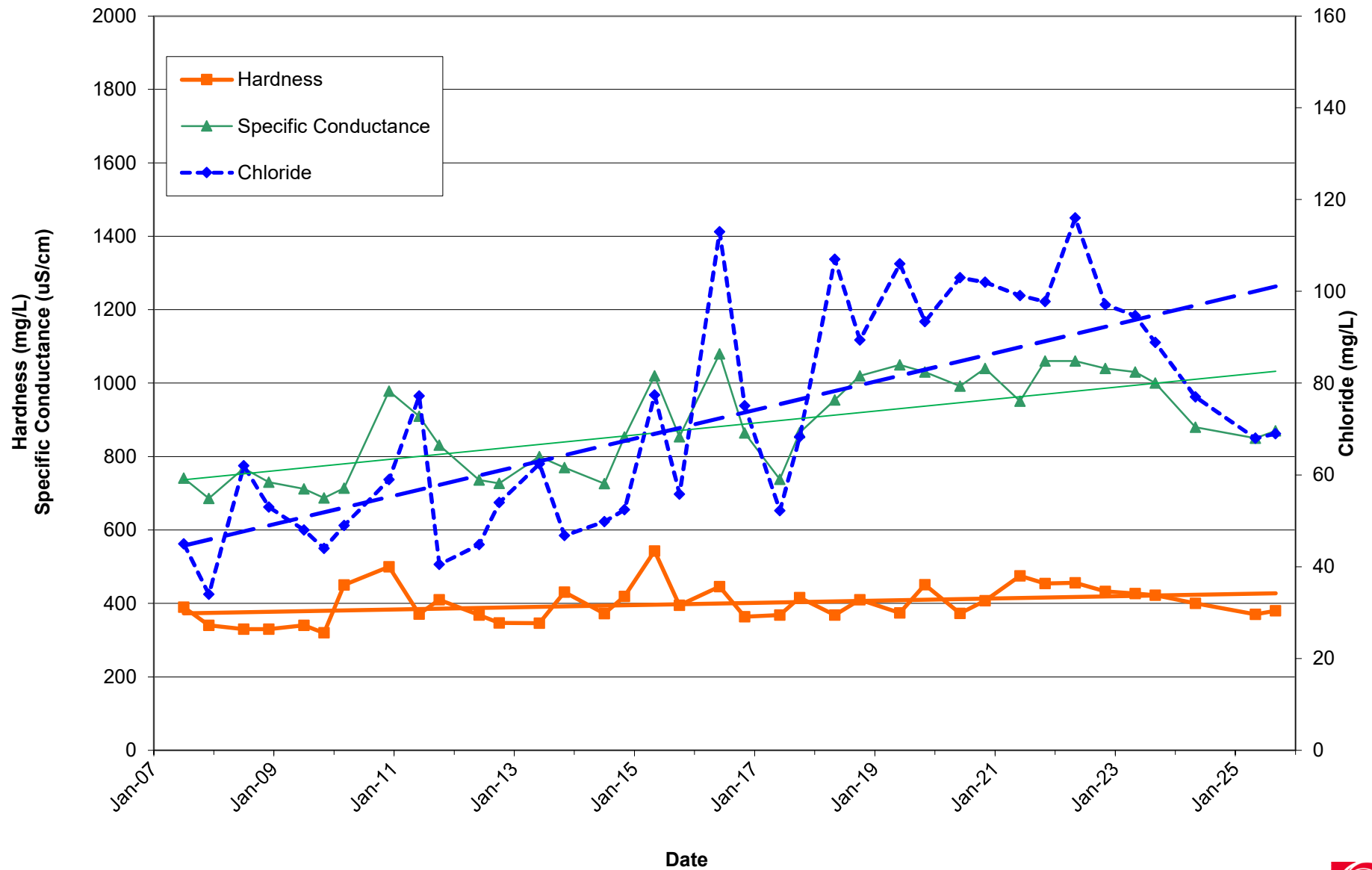
1. Water levels are in meters (compared to generated site datum); mt
2. \*OW-6 - 1.52 m and OW11 - 2.45 m of pipe added on November 18, 2015 , water level elevations were adjusted accordingly
3. NI = Not Installed; NM = Not monitored.
4. Top of Casing Elevation Status:

## **Appendix F      Historic Groundwater Quality Results**

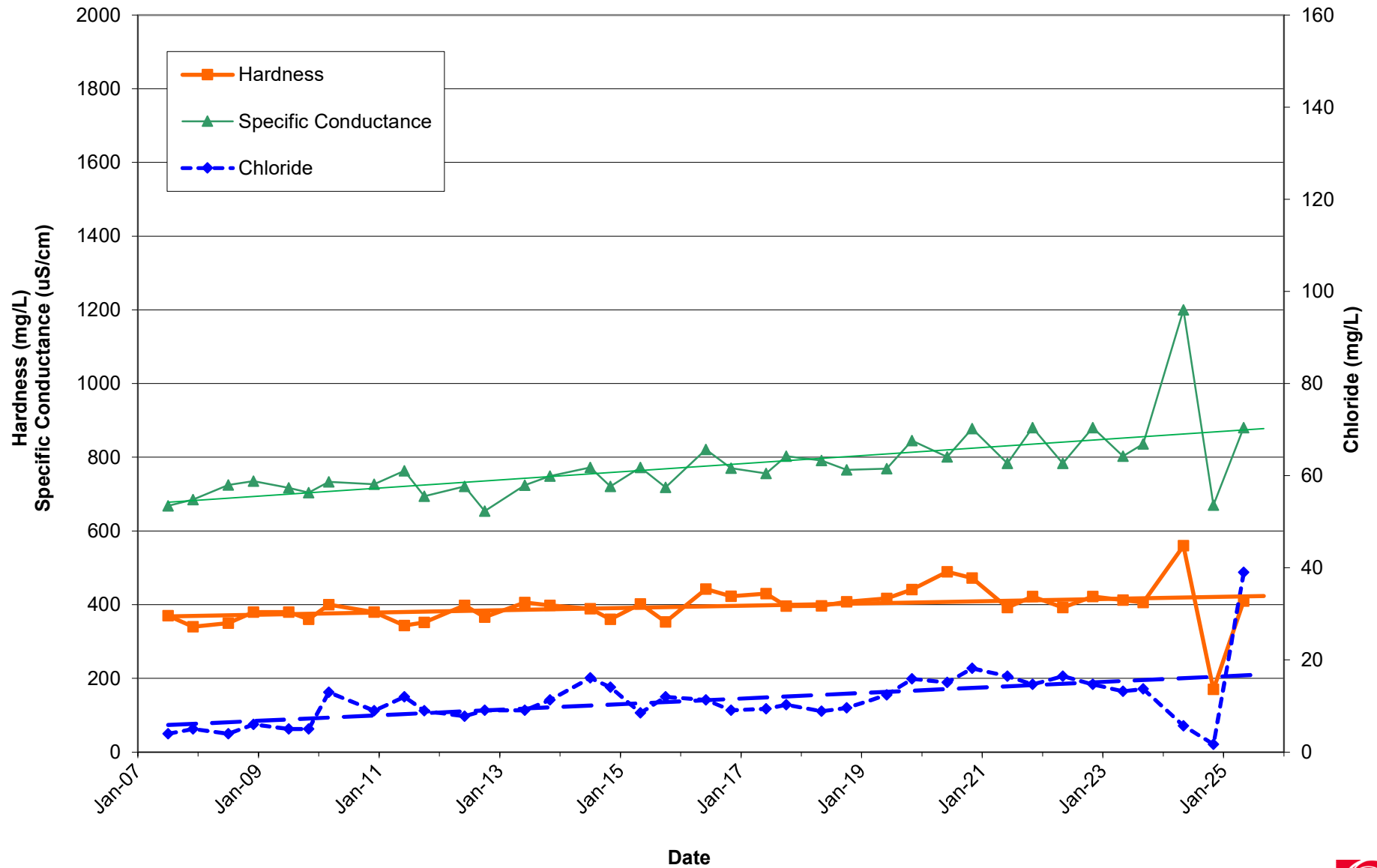
# OW1 Specific Conductance, Chloride, and Hardness



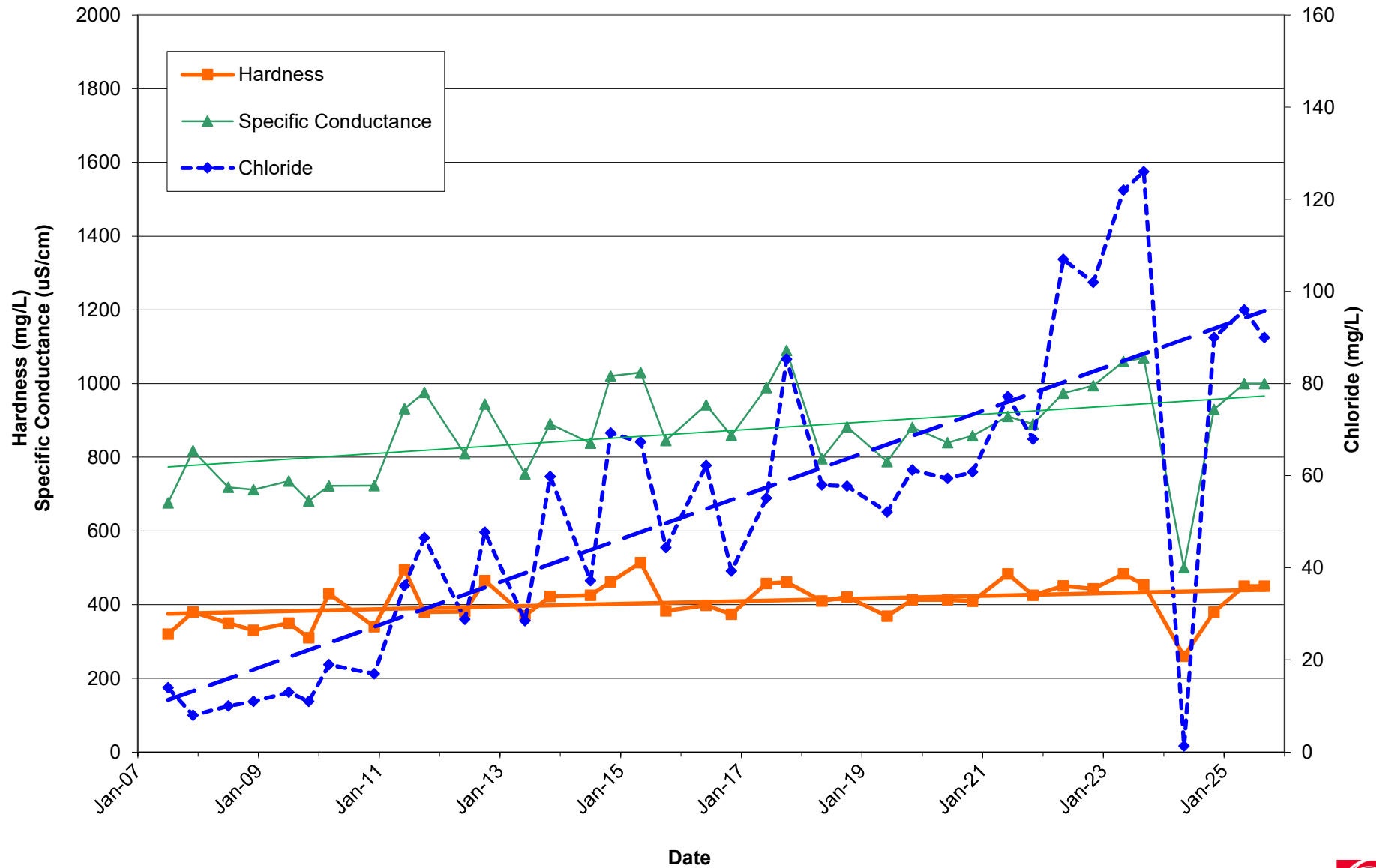
# OW3 Specific Conductance, Chloride, and Hardness



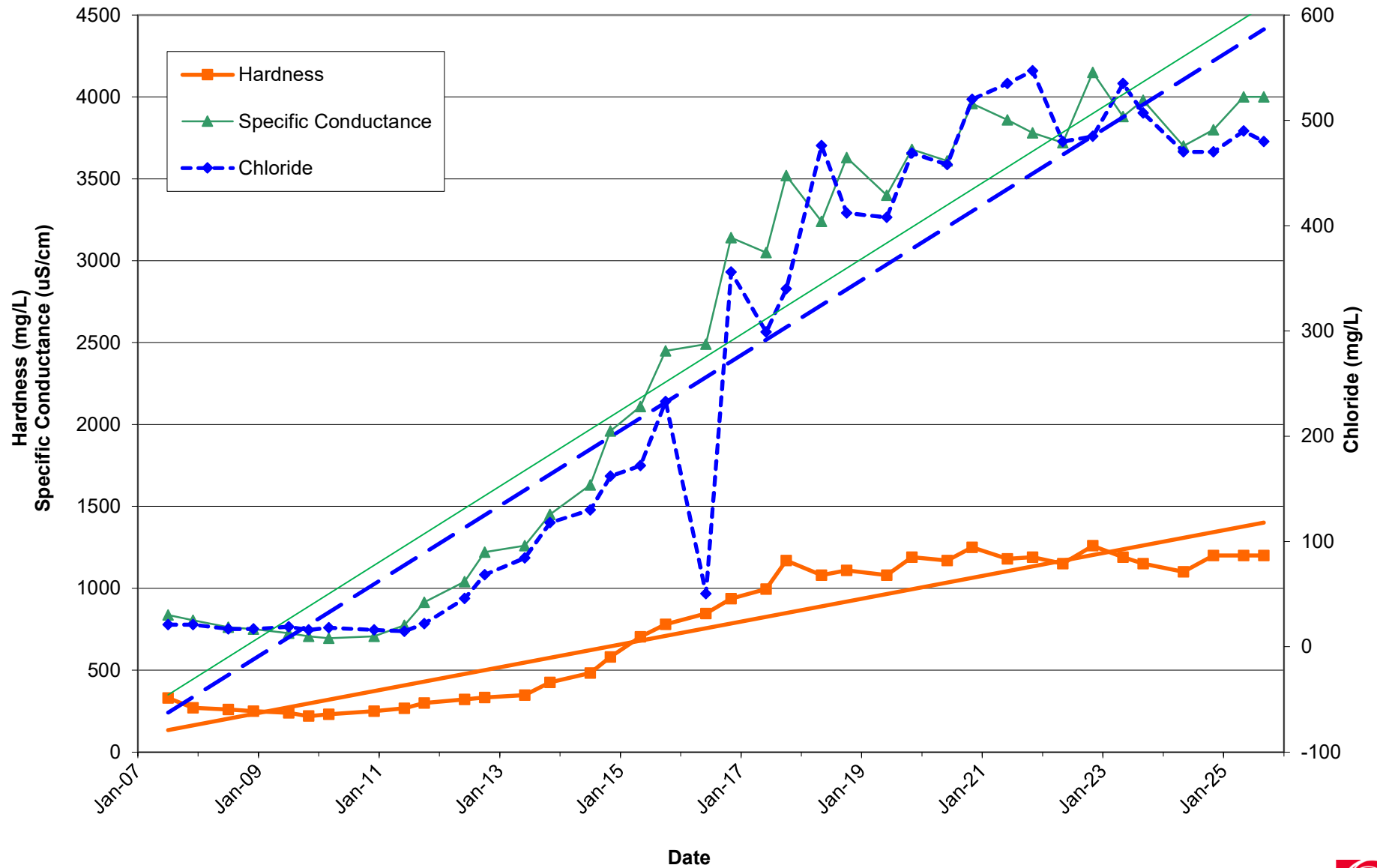
# OW4 Specific Conductance, Chloride, and Hardness



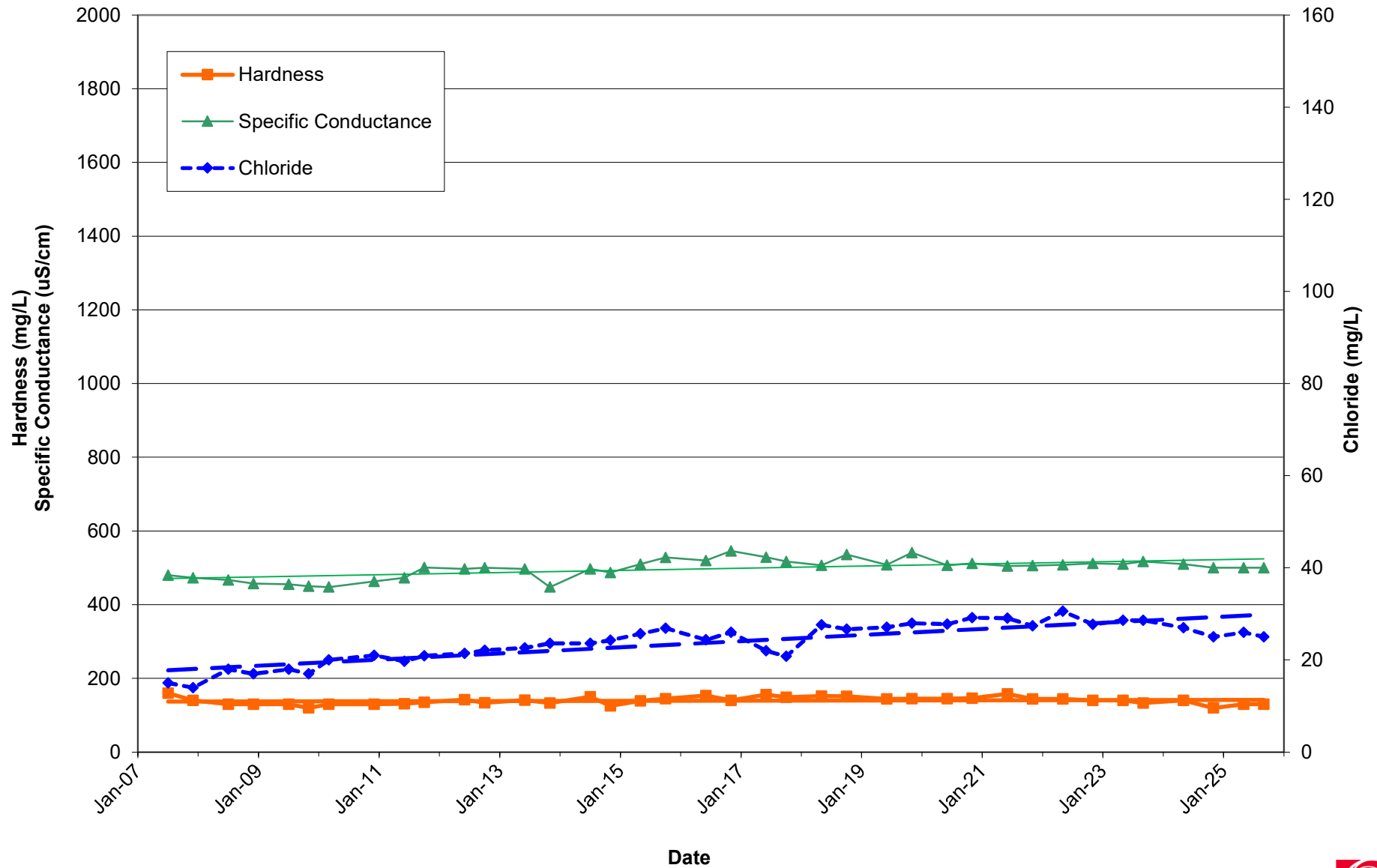
## OW5 Specific Conductance, Chloride, and Hardness



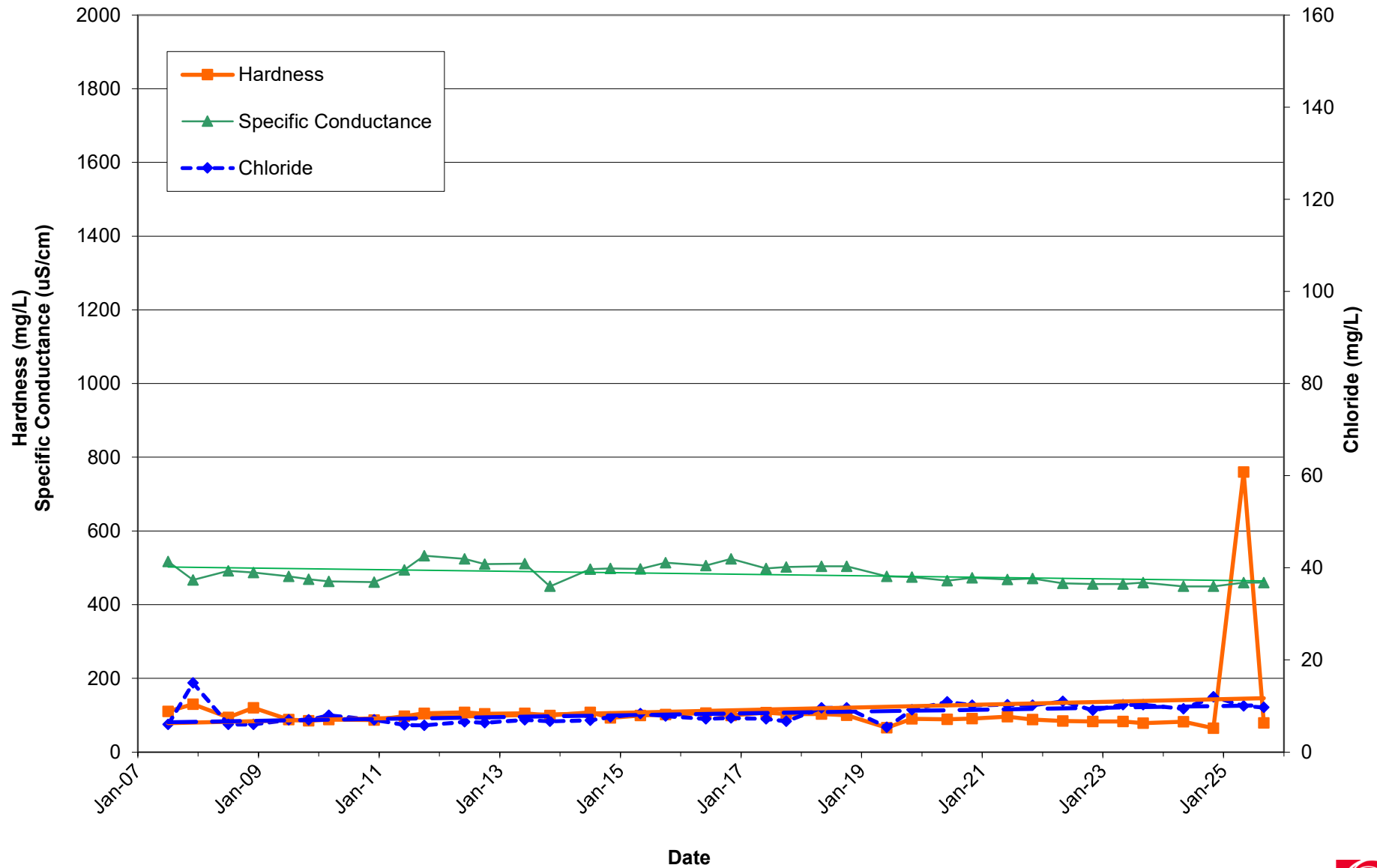
## OW6 Specific Conductance, Chloride, and Hardness



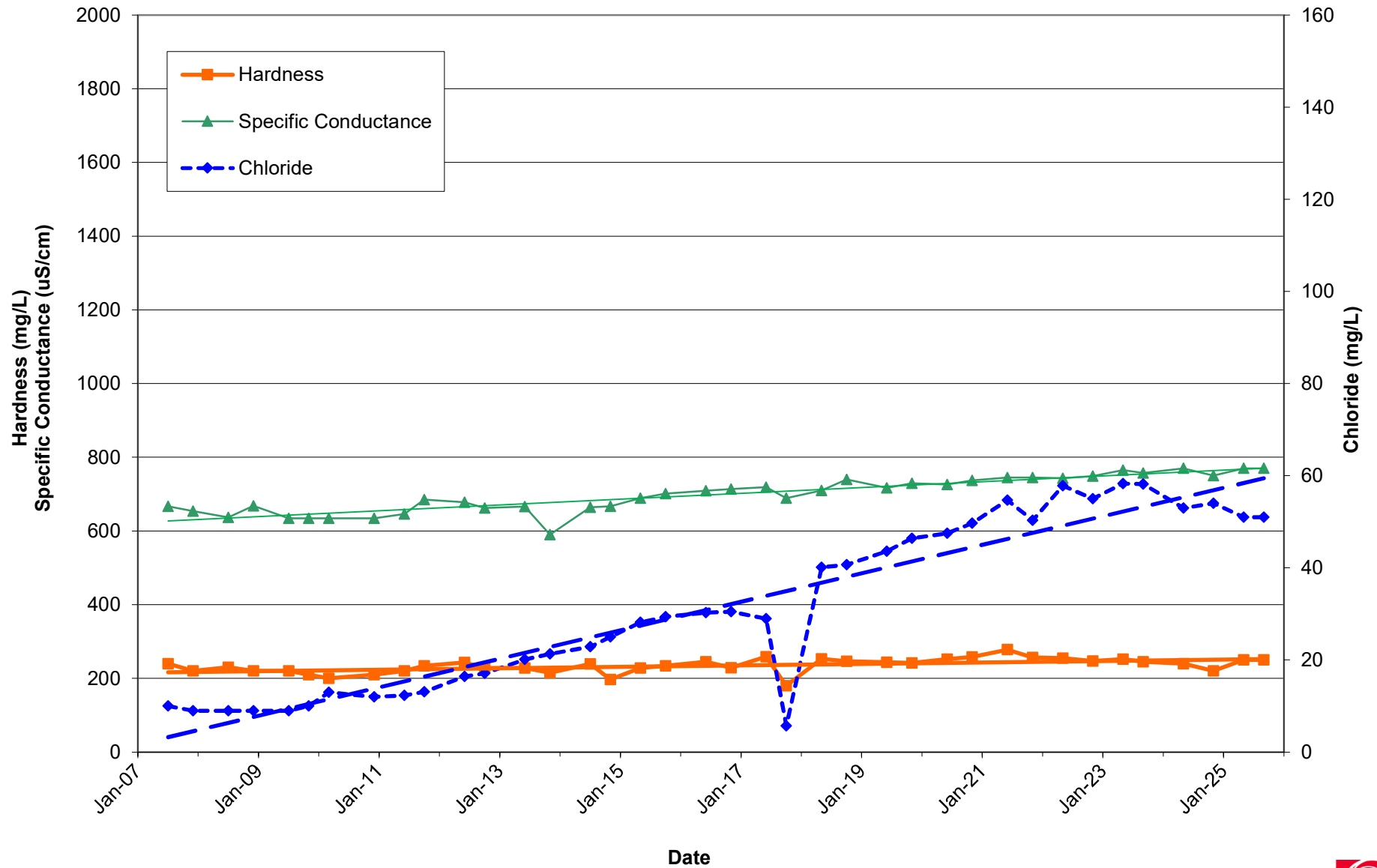
# OW7S Specific Conductance, Chloride, and Hardness



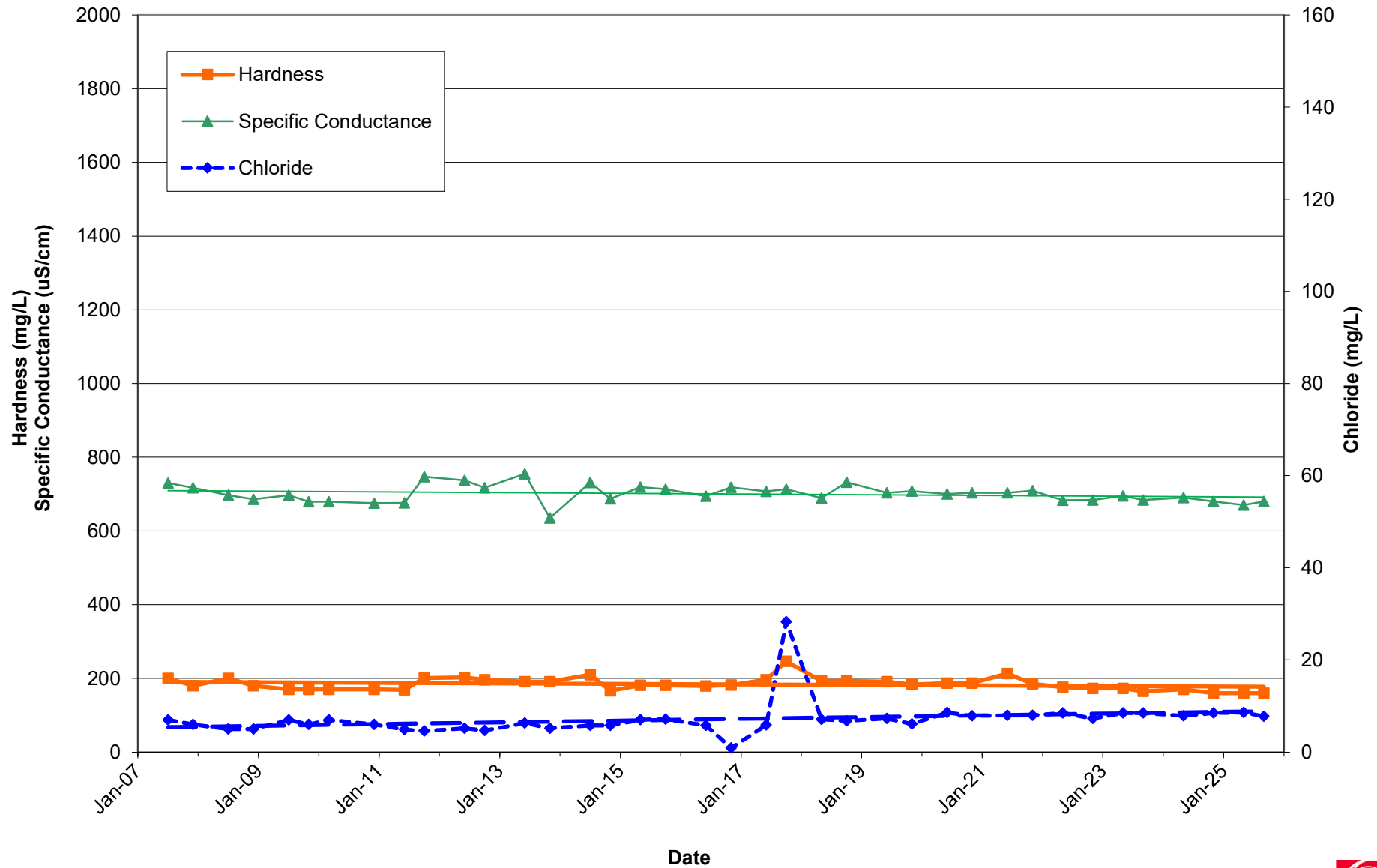
# OW7D Specific Conductance, Chloride, and Hardness



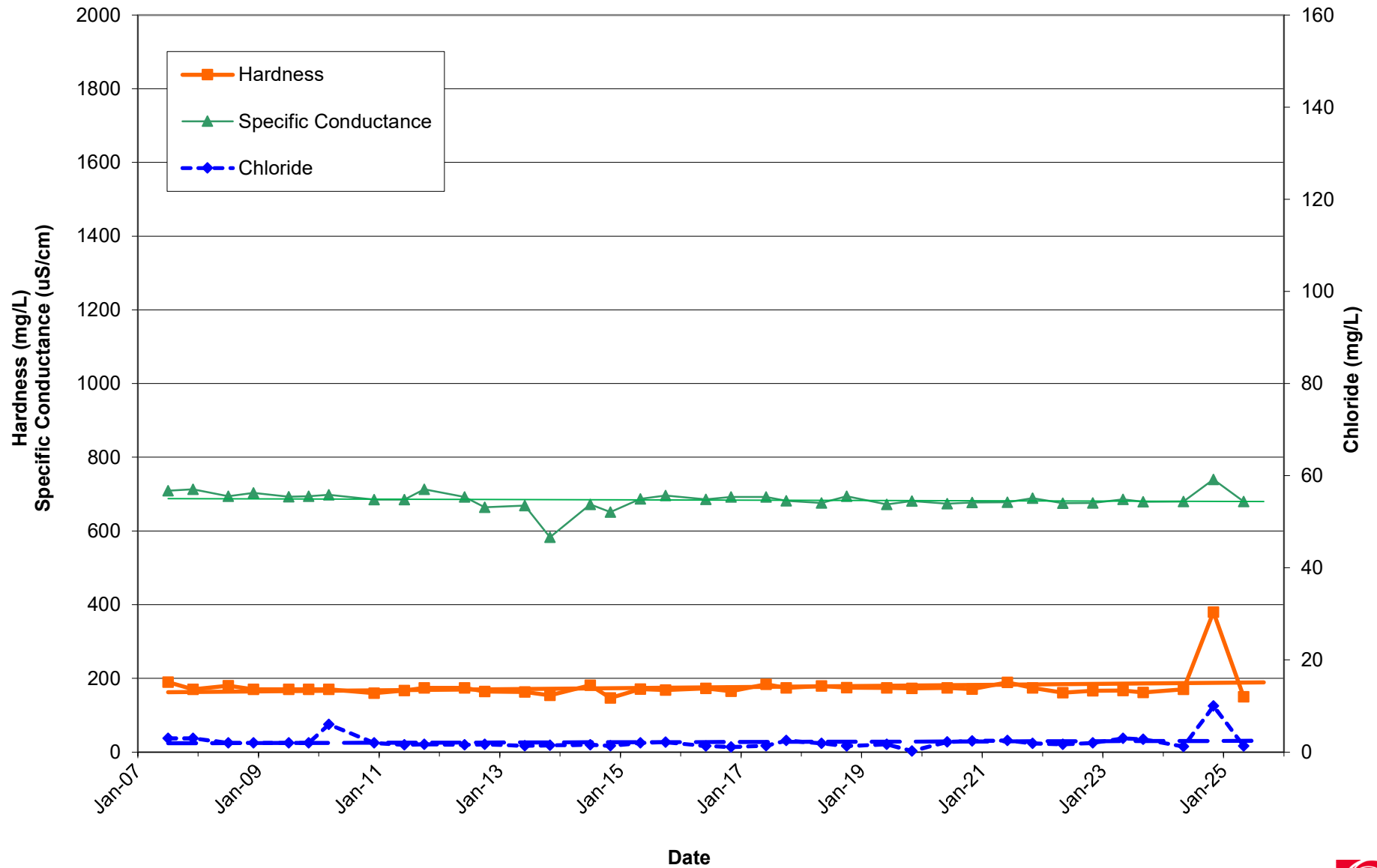
## OW8S Specific Conductance, Chloride, and Hardness



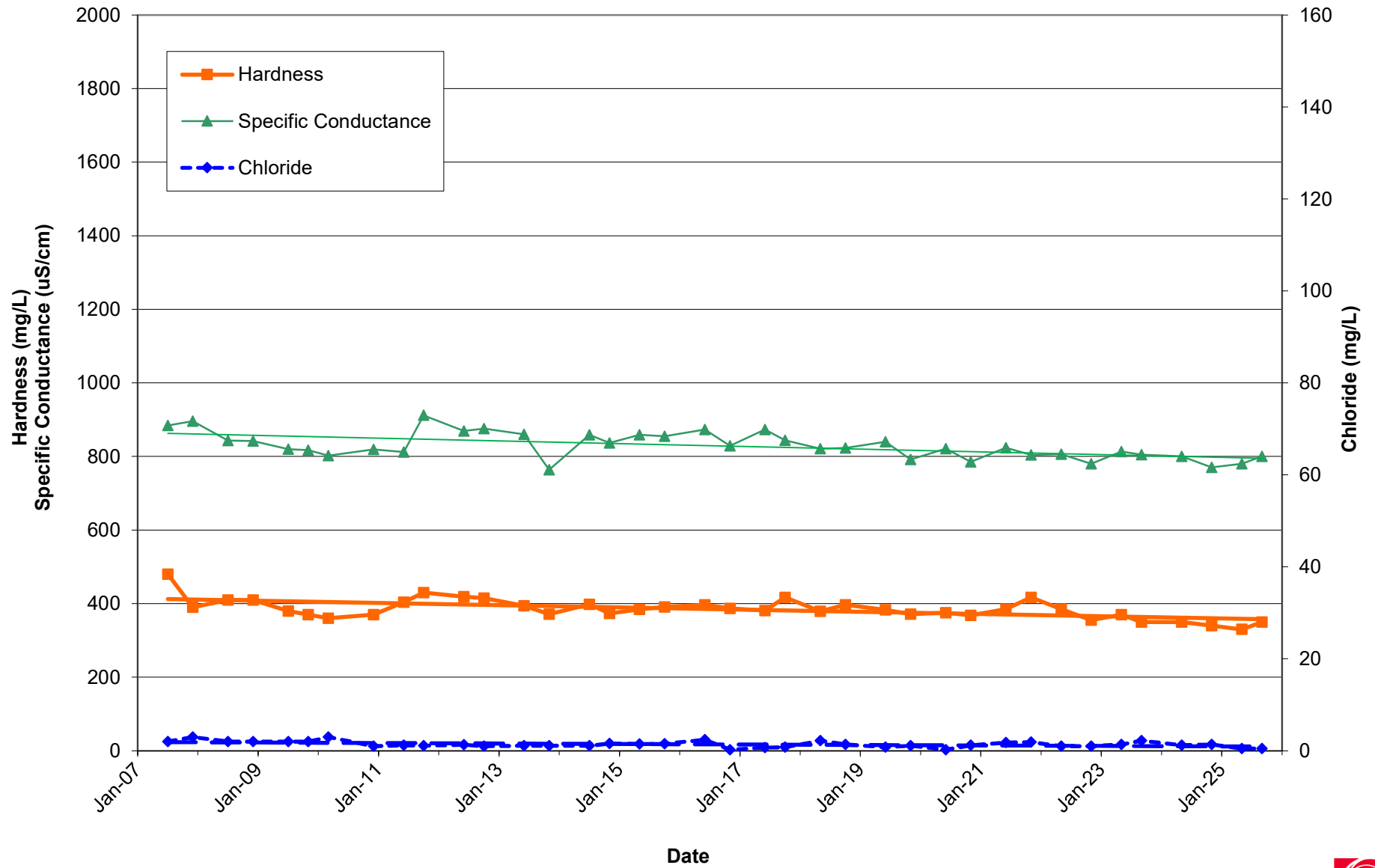
# OW8D Specific Conductance, Chloride, and Hardness



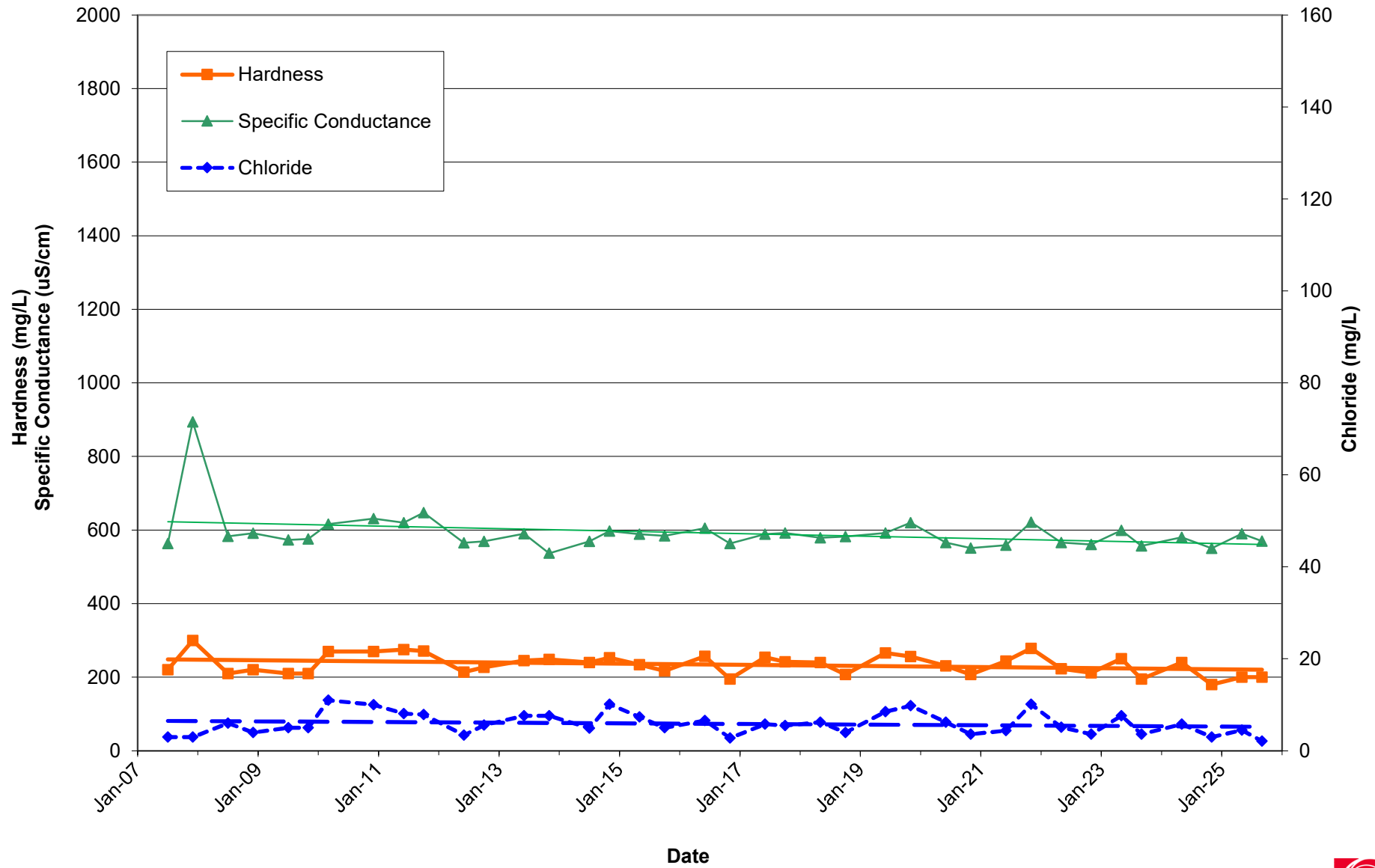
# OW9 Specific Conductance, Chloride, and Hardness



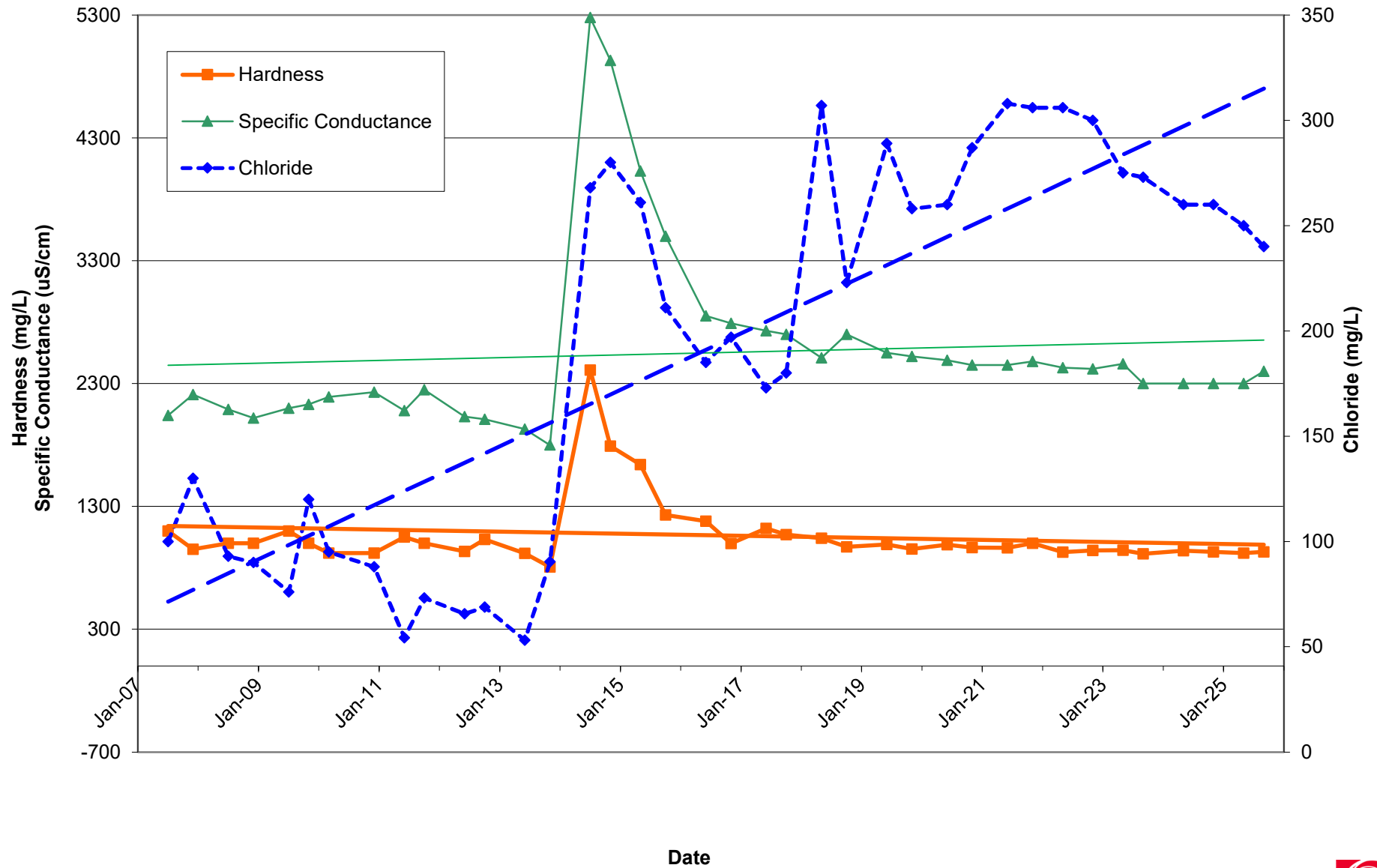
# OW10S Specific Conductance, Chloride, and Hardness



# OW10D Specific Conductance, Chloride, and Hardness



## OW11 Specific Conductance, Chloride, and Hardness



**HISTORICAL GROUNDWATER QUALITY DATA  
OW-1**

Parameter	ODWS	RUC	UNITS	Jul-07	Dec-07	Jul-08	Dec-08	Jul-09	Nov-09	Mar-10	Dec-10	Jun-11	Oct-11	Jun-12	Oct-12	Jun-13	Nov-13	Jul-14	Nov-14	May-15	Oct-15
Alkalinity	500	425	mg/L	366	327	324	365	375	353	339	449	441	402	375	320	355	397	359	429	446	524
Chloride	250	149	mg/L	31.0	30.0	32.0	29.0	26.0	21.0	29.0	20.0	21	23.2	25	18	32.3	29	24.2	27.4	43.9	96.6
Nitrate	10	2.58	mg/L	0.40	1.40	0.10	0.40	0.20	0.50	0.20	0.90	0.10	1.50	0.50	0.70	0.20	<0.1	0.2	1.2	<0.25	<0.25
Nitrite	1	0.28	mg/L	--	--	--	--	--	--	0.01	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.25	<0.25
Ammonia	NV	NV	mg/L	0.14	0.07	0.07	--	0.12	--	<0.05	0.06	<0.01	0.01	0.06	<0.01	0.03	0.08	0.05	0.09	<0.02	0.08
TKN	NV	NV	mg/L	0.30	0.50	0.50	0.30	1.20	1.00	1.00	0.90	0.53	1.31	0.25	1.24	1.32	0.67	0.54	0.70	0.33	3.80
Phenols	NV	NV	mg/L	--	--	--	--	0.004	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.03
DOC	5	3.90	mg/L	2.60	2.80	2.30	2.40	2.50	2.50	2.40	2.60	2.90	2.90	2.90	2.00	10.1	10.0	4.50	7.60	5.30	74.5
Conductivity	NV	NV	uS/cm	813	809	796	824	829	792	775	922	886	922	848	745	818	764	809	870	985	1240
pH	6.5-8.5	NV	Unitless	8.10	8.20	8.10	8.10	7.70	7.90	8.00	7.66	7.40	7.56	7.92	7.81	7.65	7.81	7.94	7.75	8.17	8.05
Sulphate	500	277	mg/L	48	73	59	56	--	49	47	34	33	59	67	88	65	56	61	49	37	23
Hardness	80-100	407	mg/L	460	390	380	400	420	380	420	490	450	463	450	410	417	410	439	394	503	555
Aluminum	0.1	0.07	mg/L	--	--	--	--	--	--	<0.005	<0.005	0.03	0.04	0.03	0.04	0.04	0.03	0.03	0.03	<0.004	0.004
Arsenic	0.025	0.001	mg/L	--	--	--	--	--	--	<0.001	<0.001	0.001	0.001	0.007	0.007	0.002	0.003	0.001	0.003	<0.003	0.004
Barium	1.0	0.32	mg/L	0.08	0.01	0.08	0.08	0.09	0.08	0.07	0.09	0.09	0.10	0.10	0.09	0.07	0.08	0.08	0.09	0.10	0.10
Boron	5.0	1.32	mg/L	0.11	0.10	0.08	0.10	0.11	0.11	0.08	0.11	0.10	0.10	0.13	0.10	0.13	0.01	0.16	0.11	0.14	0.19
Cadmium	0.005	0.002	mg/L	0.0001	0.001	0.001	0.005	0.006	0.0002	0.002	<0.001	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.001	<0.0002
Calcium	NV	NV	mg/L	100	96	94	97	100	91	110	120	109	113	105	98.4	103	94.1	98.9	86	124	129
Chromium	0.05	0.01	mg/L	--	--	--	--	--	--	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.003	0.008	<0.002
Copper	1.0	0.5	mg/L	0.001	0.002	0.003	0.002	0.002	0.002	0.002	<0.005	<0.002	<0.002	<0.002	<0.002	0.001	<0.002	0.004	<0.002	<0.002	<0.002
Iron	0.3	0.17	mg/L	--	--	--	--	--	--	<0.1	<0.1	0.01	0.05	0.006	<0.005	0.009	0.14	0.06	0.16	0.27	2.52
Lead	0.01	0.003	mg/L	--	--	--	--	--	--	<0.005	<0.005	0.0004	<0.00002	<0.00002	0.00002	0.00003	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Magnesium	NV	NV	mg/L	49.0	36.0	35.0	40.0	42.0	36.0	36.0	44.0	43.0	44.0	45.6	39.3	38.8	42.4	46.7	43.7	46.9	56.5
Manganese	0.05	0.04	mg/L	0.01	--	--	--	--	--	0.01	0.02	0.03	0.03	0.01	0.01	0.03	0.06	0.05	0.05	0.16	0.13
Potassium	NV	NV	mg/L	2.4	2.2	3.5	4	2.2	2	2.3	2.5	2.3	2.5	2.7	2.1	2.2	2	2.3	2.0	2.13	2.49
Sodium	200	116	mg/L	27	24	25	27	24	20	25	26	22.3	24	24.7	20.5	24.4	26.1	28.4	24	25.5	59.1
Zinc	5.0	2.5	mg/L	0.047	0.088	0.092	0.052	0.073	0.057	0.076	0.06	0.06	0.011	0.034	0.01	0.036	<0.005	0.006	0.008	0.051	<0.005

Notes: Provided on Page 1 of Appendix F

**HISTORICAL GROUNDWATER QUALITY DATA  
OW-1**

Parameter	ODWS	RUC	UNITS	Jun-16	Nov-16	Jun-17	Oct-17	May-18	Oct-18	Jun-19	Nov-19	Jun-20	Nov-20	Jun-21	Nov-21	May-22	Nov-22	May-23	Sep-23	May-24	Nov-24	May-25	Sep-25	Average	Std. Dev.	
Alkalinity	500	425	mg/L	505	472	449	486	435	437	418	400	383	373	385	385	390	397	381	402	360	360	340	370	396.68	49.69	
Chloride	250	149	mg/L	118.0	153	92.1	81.7	87.3	76.6	67.7	70	58.7	72.3	68.2	62.8	56.9	58.3	59.4	62	55	54	50	56	53.11	30.14	
Nitrate	10	2.58	mg/L	0.1	<0.1	<0.05	0.1	0.14	<0.05	0.06	<0.05	0.19	0.22	0.17	0.12	0.4	<0.05	<0.5	0.05	<0.010	0.21	<0.010	0.36	0.33	0.30	0.37
Nitrite	1	0.28	mg/L	<0.1	<0.1	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.5	<0.05	0.17	<0.010	<0.010	0.015	0.04	0.04	
Ammonia	NV	NV	mg/L	0.13	0.35	0.13	0.20	0.11	0.24	0.220	0.26	0.15	0.04	0.03	0.28	0.02	0.19	0.04	<0.05	<0.050	0.07	0.06	0.08	0.10	0.09	
TKN	NV	NV	mg/L	2.49	1.97	1	0.92	0.9	0.7	0.8	0.7	0.5	1	0.6	1.2	0.5	1.4	0.4	0.4	0.32	0.35	0.28	0.39	0.87	0.69	
Phenols	NV	NV	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.002	<0.002	<0.002	<0.002	0.006	<0.002	<0.002	<0.002	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	0.00	0.01	
DOC	5	3.90	mg/L	22.00	10.7	7.6	9.1	6.3	6.1	10	6.3	5.0	4.9	5.4	4.3	4.1	3.7	3.0	4.3	3.2	3.5	3.4	3.8	7.09	11.84	
Conductivity	NV	NV	uS/cm	1290	1860	1440	1310	1170	1180	1100	1110	1020	1090	1070	1060	985	1030	1000	1020	980	940	970	1100	1004.53	221.17	
pH	6.5-8.5	NV	Unitless	7.95	7.7	7.79	7.66	7.86	7.75	7.92	7.8	7.82	7.77	8.03	8	7.99	7.7	7.9	7.89	8.12	8.17	8.15	7.67	7.88	0.19	
Sulphate	500	277	mg/L	55	402	174	90	104	85	78	87	105	96	100	85	80	82	76	79	75	78	110	100	82.27	60.74	
Hardness	80-100	407	mg/L	587	721	715	591	559	519	471	489	474	508	544	507	452	466	460	449	450	430	440	500	477.97	79.10	
Aluminum	0.1	0.07	mg/L	0.04	0.05	0.07	0.07	0.08	0.07	0.06	0.07	0.04	0.06	0.08	0.03	0.03	0.03	0.06	0.06	-	-	-	-	0.04	0.02	
Arsenic	0.025	0.001	mg/L	0.005	0.0054	0.0011	0.0041	0.0012	0.0034	0.0006	0.004	0.001	0.0008	0.009	0.0021	0.001	0.0013	0.0009	0.002	-	-	-	-	0.00	0.00	
Barium	1.0	0.32	mg/L	0.14	0.179	0.147	0.139	0.114	0.117	0.095	0.112	0.102	0.106	0.119	0.11	0.094	0.009	0.099	0.09	0.097	0.091	0.1	0.11	0.10	0.03	
Boron	5.0	1.32	mg/L	1.05	0.961	0.706	0.67	0.522	0.475	0.473	0.382	0.407	0.442	0.44	0.411	0.393	0.358	0.384	0.315	0.36	0.31	0.29	0.31	0.31	0.25	
Cadmium	0.005	0.002	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.00003	0.00004	0.00001	<0.00002	0.00005	<0.00001	<0.00015	<0.00015	-	-	-	-	0.00	0.00	
Calcium	NV	NV	mg/L	122	159	162	129	123	118	101	105	101	113	121	107	95.4	98	100	97.6	95	89	95	110	108.14	16.89	
Chromium	0.05	0.01	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	<0.001	<0.001	-	-	-	-	0.00	0.00	
Copper	1.0	0.5	mg/L	<0.002	0.0006	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	0.003	<0.002	<0.002	0.0006	0.0026	0.0009	0.0026	0.0009	-	-	-	0.00	0.00	
Iron	0.3	0.17	mg/L	1.80	2	2.33	1.23	0.247	1.29	<0.005	0.475	0.041	0.011	0.015	0.257	0.005	0.035	0.006	0.402	<0.100	<0.100	<0.100	0.35	0.47	0.77	
Lead	0.01	0.003	mg/L	<0.00002	0.0004	0.00013	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.00005	0.00008	0.00007	0.00004	0.00001	0.00002	0.00004	<0.00002	-	-	-	-	0.00	0.00	
Magnesium	NV	NV	mg/L	68.4	78.3	75.2	65.3	61.2	54.6	53.2	55.1	53.8	54.9	58.7	58.3	51.8	53.8	51	49.8	52	52	49	53	50.38	10.30	
Manganese	0.05	0.04	mg/L	0.07	0.115	0.159	0.149	0.024	0.177	0.003	0.117	0.04	0.004	0.005	0.059	<0.001	0.018	0.004	0.212	<0.002	0.32	<0.002	0.086	0.07	0.08	
Potassium	NV	NV	mg/L	2.8	3.6	3.6	3.8	3.5	3	2.8	2.7	3.0	3.0	2.9	3.0	2.7	2.7	2.6	2.3	2.4	2.3	24	2.6	3.24	3.50	
Sodium	200	116	mg/L	74.2	79.3	74.8	71.3	73.1	62.4	57.9	48.1	50.1	51.3	53.2	47.9	42.1	40.8	42.1	40.3	40.0	39.0	43.0	42.0	40.79	17.89	
Zinc	5.0	2.5	mg/L	<0.005	<0.005	0.005	<0.005	0.01	<0.005	0.017	<0.005	0.013	0.011	0.019	0.009	0.02	0.008	0.018	0.009	-	-	-	-	0.03	0.03	

Notes: Provided on Page 1 of Appendix F

**HISTORICAL GROUNDWATER QUALITY DATA  
OW-3**

Parameter	ODWS	RUC	UNITS	Jul-07	Dec-07	Jul-08	Dec-08	Jul-09	Nov-09	Mar-10	Dec-10	Jun-11	Oct-11	Jun-12	Oct-12	Jun-13	Nov-13	Jul-14	Nov-14	May-15	Oct-15
Alkalinity	500	425	mg/L	292	274	268	283	271	266	272	412	381	367	307	313	329	413	295	417	421	366
Chloride	250	149	mg/L	45	34	62	53	48	44	49	59	77	41	45	54	62	47	50	52	77	56
Nitrate	10	2.58	mg/L	0.30	0.10	0.10	0.20	0.20	0.10	0.10	0.30	<0.1	<0.1	0.40	<0.1	0.20	0.10	0.40	<0.25	<0.25	0.1
Nitrite	1	0.28	mg/L	--	--	--	--	--	--	<0.01	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.25	<0.25	<0.1
Ammonia	NV	NV	mg/L	0.06	0.10	--	0.06	--	--	<0.05	<0.05	<0.01	0.01	0.04	<0.01	0.02	0.03	0.01	0.07	<0.02	0.06
TKN	NV	NV	mg/L	0.3	0.4	0.5	1.0	1.4	0.8	0.5	0.4	9.8	1.0	0.3	1.0	2.2	0.5	0.6	0.5	0.3	0.5
Phenols	NV	NV	mg/L	--	--	--	--	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DOC	5	3.90	mg/L	1.7	1.9	1.8	1.8	1.6	2.1	2.2	2.6	2.6	2.3	2.1	2.3	4.7	5.6	4.2	5.8	4.2	3.9
Conductivity	NV	NV	uS/cm	741	686	768	730	712	687	714	978	910	831	736	727	800	770	726	853	1020	854
pH	6.5-8.5	NV	Unitless	8.20	8.10	8.00	8.10	8.00	7.90	8.00	7.74	7.58	7.64	7.95	9.00	7.63	7.73	7.96	7.70	8.11	7.97
Sulphate	500	277	mg/L	51	42	39	40	--	33	31	20	19	16	26	21	26	16	17	16	17	20
Hardness	80-100	407	mg/L	390	340	330	330	340	320	450	500	371	410	368	347	346	431	372	419	543	395
Aluminum	0.1	0.07	mg/L	--	--	--	--	--	--	<0.005	<0.005	0.02	0.04	0.02	0.03	0.03	0.04	0.02	0.03	0.013	<0.004
Arsenic	0.025	0.001	mg/L	0.001	0.001	--	--	0.001	0.001	<0.001	0.001	0.002	0.003	0.001	0.003	0.001	0.003	0.002	0.001	<0.003	0.003
Barium	1.0	0.32	mg/L	0.08	0.07	0.07	0.07	0.06	0.09	0.09	0.09	0.07	0.08	0.09	0.07	0.08	0.08	0.08	0.07	0.11	0.10
Boron	5.0	1.32	mg/L	0.08	0.07	0.07	0.07	0.07	0.07	0.04	0.05	0.08	0.04	0.08	0.06	0.07	0.08	0.08	0.064	0.05	0.07
Cadmium	0.005	0.002	mg/L	0.00008	0.00008	0.0002	0.0001	0.0005	0.068	0.0004	0.0002	0.0004	<0.0002	<0.0002	<0.0002	0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Calcium	NV	NV	mg/L	77	70	67	68	72	68	110	120	72	92	77	74	72	101	80	98	133	88
Chromium	0.05	0.01	mg/L	--	--	--	--	--	--	<0.005	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Copper	1.0	0.5	mg/L	0.001	--	0.001	0.001	0.001	0.001	0.002	<0.0005	<0.002	<0.002	<0.002	<0.002	0.001	<0.002	0.0004	<0.002	<0.003	<0.003
Iron	0.3	0.17	mg/L	--	--	--	--	--	--	<0.100	<0.100	0.01	0.06	<0.005	0.07	<0.005	0.02	0.01	0.05	0.10	<0.010
Lead	0.01	0.003	mg/L	--	--	--	--	--	--	<0.0005	<0.0005	0.0005	0.0002	0.0003	0.0003	0.0003	<0.0002	<0.0002	<0.002	<0.002	<0.0002
Magnesium	NV	NV	mg/L	48	36	38	38	39	36	43	48	46	44	43	39	40	44	42	42	51	43
Manganese	0.05	0.04	mg/L	--	0.015	--	--	--	0.02	0.05	0.10	0.02	0.09	0.00	0.04	0.004	0.02	0.02	0.05	0.10	0.08
Potassium	NV	NV	mg/L	1.9	1.7	3.1	1.8	1.6	1.7	1.7	1.9	1.5	1.8	1.8	1.5	1.8	1.6	1.6	1.6	1.9	1.8
Sodium	200	116	mg/L	26	23	24	23	23	22	22	22	25	25	23	22	24	22	24	21	23	26
Zinc	5.0	2.5	mg/L	--	--	--	0.006	--	--	--	0.006	0.008	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005

Notes: Provided on Page 1 of Appendix F

**HISTORICAL GROUNDWATER QUALITY DATA  
OW-3**

Parameter	ODWS	RUC	UNITS	Jun-16	Nov-16	Jun-17	Oct-17	May-18	Oct-18	Jun-19	Nov-19	Jun-20	Nov-20	Jun-21	Nov-21	May-22	Nov-22	May-23	Sep-23	May-24	May-25	Sep-25	Average	Std. Dev.
Alkalinity	500	425	mg/L	415	355	280	324	347	378	374	400	359	359	341	390	397	387	384	395	320	330	320	346.00	49.77
Chloride	250	149	mg/L	113	75	52	68	107	89	106	93	103	102	99	98	116	97	95	89	77	68	69	72.22	23.91
Nitrate	10	2.58	mg/L	0.40	0.06	0.1	<0.05	0.12	0.12	0.09	<0.05	0.42	0.20	0.25	<0.05	0.20	<0.05	<0.5	0.06	<0.010	<0.10	<0.10	0.15	0.13
Nitrite	1	0.28	mg/L	<0.1	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.5	<0.05	<0.10	<0.010	<0.010	0.03	0.04
Ammonia	NV	NV	mg/L	0.44	0.04	<0.01	0.04	0.11	0.17	0.140	0.11	0.08	0.04	0.03	0.13	<0.01	0.11	0.03	0.14	<0.050	<0.050	0.34	0.08	0.09
TKN	NV	NV	mg/L	0.3	0.4	0.2	0.4	2.0	1.1	0.9	0.5	0.5	0.5	0.5	0.6	0.4	0.4	0.5	0.5	0.2	0.3	0.6	0.88	1.56
Phenols	NV	NV	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	0.004	<0.002	<0.002	<0.002	<0.002	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	0.0027	0.00	0.00
DOC	5	3.90	mg/L	2.7	2.9	2.4	4.2	2.9	3.7	4.2	3.8	2.6	3.1	2.8	2.9	2.3	1.3	0.4	3.2	2.3	2.4	2.6	2.87	1.15
Conductivity	NV	NV	uS/cm	1080	864	738	865	954	1020	1050	1030	992	1040	951	1060	1060	1040	1030	1000	880	850	870	881.54	130.58
pH	6.5-8.5	NV	Unitless	7.78	7.94	8.09	7.90	7.88	7.80	7.95	7.79	7.84	7.64	8.04	7.53	7.88	7.67	7.9	7.81	8.08	8.15	7.82	7.91	0.25
Sulphate	500	277	mg/L	32	24	19	20	23	20	19	16	18	18	17	15	14	13	22	16	13	14	13	22.10	9.17
Hardness	80-100	407	mg/L	446	364	368	416	368	410	374	451	373	407	475	454	456	433	427	422	400	370	380	399.89	50.39
Aluminum	0.1	0.07	mg/L	0.03	0.03	0.02	0.06	0.05	0.05	0.05	0.07	0.05	0.05	0.06	0.03	0.03	0.04	0.06	0.05	-	-	-	0.04	0.02
Arsenic	0.025	0.001	mg/L	0.001	0.002	0.001	0.003	0.001	0.002	0.001	0.002	0.002	0.002	0.001	0.002	0.001	0.002	0.001	0.003	-	-	-	0.00	0.00
Barium	1.0	0.32	mg/L	0.10	0.09	0.09	0.10	0.09	0.10	0.09	0.10	0.10	0.09	0.12	0.10	0.11	0.10	0.10	0.10	0.09	0.82	0.08	0.11	0.12
Boron	5.0	1.32	mg/L	0.06	0.07	0.08	0.09	0.09	0.10	0.10	0.07	0.12	0.11	0.13	0.11	0.12	0.11	0.11	0.06	0.11	0.10	0.093	0.08	0.02
Cadmium	0.005	0.002	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00015	<0.00028	<0.00015	0.000078	0.000016	<0.000015	<0.00001	<0.00001	-	-	-	0.00	0.01
Calcium	NV	NV	mg/L	97	77	72	81	70	90	72	96	74	87	102	96	97	91	92	81	76	79	79	85.45	15.25
Chromium	0.05	0.01	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	-	-	-	0.00	0.00
Copper	1.0	0.5	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.0008	<0.002	<0.002	0.0092	0.006	<0.002	<0.002	0.0003	0.004	0.0006	-	-	-	0.00	0.00
Iron	0.3	0.17	mg/L	0.04	0.04	0.01	0.18	0.01	0.03	<0.005	0.03	0.02	0.01	<0.005	0.11	<0.005	0.10	<0.005	0.22	<0.100	<0.1	0.33	0.05	0.05
Lead	0.01	0.003	mg/L	<0.0002	<0.0002	0.00008	0.00004	0.00003	0.00006	<0.0002	0.0003	0.00007	0.00012	0.00008	0.00006	0.00008	0.00004	0.00002	<0.00002	-	-	-	0.00	0.00
Magnesium	NV	NV	mg/L	49	42	46	46	47	45	47	51	46	46	54	52	52	50	48	47	48	44	43	44.94	4.58
Manganese	0.05	0.04	mg/L	0.04	0.06	0.01	0.06	0.003	0.05	0.003	0.06	0.002	0.02	0.01	0.10	0.01	0.12	0.02	0.09	<0.002	<0.002	0.045	0.04	0.04
Potassium	NV	NV	mg/L	1.7	1.7	1.6	1.8	1.7	1.8	1.6	1.7	1.9	2.0	2.0	1.9	1.8	1.9	1.9	1.6	1.6	1.5	1.7	1.77	0.27
Sodium	200	116	mg/L	32	27	31	34	36	40	40	38	40	36	45	38	44	38	42	40	38	35	35	30.46	7.83
Zinc	5.0	2.5	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	-	-	0.00	0.00

Notes: Provided on Page 1 of Appendix F

**HISTORICAL GROUNDWATER QUALITY DATA  
OW-4**

Parameter	ODWS	RUC	UNITS	Jul-07	Dec-07	Jul-08	Dec-08	Jul-09	Nov-09	Mar-10	Dec-10	Jun-11	Oct-11	Jun-12	Oct-12	Jun-13	Nov-13	Jul-14	Nov-14	May-15	Oct-15
Alkalinity	500	425	mg/L	262	271	287	306	289	277	298	333	330	292	291	363	288	316	315	296	318	309
Chloride	250	149	mg/L	4.0	5.0	4.0	6.0	5.0	5.0	13.0	9.0	12	9.0	7.8	9.1	9.1	11.3	16.1	14.1	8.5	12
Nitrate	10	2.58	mg/L	nd	nd	nd	nd	0.10	0.10	0.20	<0.10	<0.10	0.20	<0.10	<0.10	0.10	0.10	<0.25	<0.25	0.10	0.20
Nitrite	1	0.28	mg/L	nd	nd	nd	nd	nd	nd	<0.01	<0.01	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.25	<0.25	<0.10	<0.10
Ammonia	NV	NV	mg/L	0.05	0.07	0.08	0.05	0.06	nd	<0.05	<0.05	<0.01	<0.01	0.03	<0.01	<0.01	0.06	<0.02	<0.02	<0.01	<0.01
TKN	NV	NV	mg/L	0.20	0.40	0.50	nd	1.80	2.00	1.20	0.40	0.27	0.51	0.16	0.56	0.58	0.20	0.17	0.14	0.18	0.23
Phenols	NV	NV	mg/L	nd	IS	nd	nd	nd	nd	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DOC	5	3.90	mg/L	1.6	1.6	1.3	1.5	1.8	1.9	2.0	2.4	2.0	8.7	2.6	6.2	3.7	3.2	2.4	2.5	1.8	4.2
Conductivity	NV	NV	uS/cm	668	685	725	735	717	704	733	727	763	694	721	654	724	749	772	721	772	718
pH	6.5-8.5	NV	Unitless	7.90	8.20	8.10	8.10	7.90	7.90	8.00	7.73	7.64	7.85	7.83	7.69	7.90	7.98	8.16	7.95	7.90	8.02
Sulphate	500	277	mg/L	106	100	110	101	-	100	96	49	86	70	100	60	101	104	82	86.7	120	82
Hardness	80-100	407	mg/L	370	340	350	380	380	360	400	380	343	352	398	366	406	398	389	360	402	353
Aluminum	0.1	0.07	mg/L	nd	nd	nd	0.005	nd	nd	<0.005	<0.005	0.020	0.040	0.020	0.040	0.030	0.030	<0.004	<0.004	0.040	0.030
Arsenic	0.025	0.001	mg/L	nd	0.001	nd	nd	nd	nd	<0.001	0.001	0.0019	0.0027	0.0009	0.0009	0.0007	0.0007	<0.003	<0.003	0.0011	0.0011
Barium	1.0	0.32	mg/L	0.07	0.07	0.07	0.07	0.07	0.07	0.06	0.07	0.07	0.06	0.08	0.07	0.07	0.08	0.06	0.06	0.08	0.07
Boron	5.0	1.32	mg/L	0.05	0.07	0.04	0.05	0.05	0.05	0.03	0.04	0.05	0.02	0.04	0.04	0.04	0.04	0.02	0.06	0.05	0.05
Cadmium	0.005	0.002	mg/L	0.0014	0.0005	0.0009	0.0003	0.0006	nd	0.0003	<0.0001	0.00016	0.00027	0.00003	<0.00002	0.00005	<0.00002	<0.001	<0.001	<0.00002	<0.00002
Calcium	NV	NV	mg/L	80	76	82	88	85	83	97	90	77.4	81.5	92	87.2	96	93.9	95.4	84.5	90.4	81.9
Chromium	0.05	0.01	mg/L	nd	nd	nd	nd	nd	nd	<0.005	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.003	<0.003	<0.002	<0.002
Copper	1.0	0.5	mg/L	nd	nd	0.002	0.001	0.001	0.002	0.002	<0.0005	<0.002	<0.002	<0.002	<0.002	0.0009	0.0008	<0.003	<0.003	<0.002	0.0003
Iron	0.3	0.17	mg/L	nd	nd	nd	nd	nd	nd	<0.1	<0.1	<0.005	<0.005	<0.005	0.014	0.009	<0.005	<0.010	<0.010	0.017	0.012
Lead	0.01	0.003	mg/L	nd	nd	nd	nd	nd	nd	<0.0005	<0.0005	0.00003	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.002	<0.002	<0.00002	<0.00002
Magnesium	NV	NV	mg/L	40	38	36	39	41	37	38	39	36.3	36.1	40.9	36.1	40.4	39.8	36.5	36.1	42.9	36
Manganese	0.05	0.04	mg/L	nd	0.002	nd	nd	nd	nd	<0.002	0.026	0.005	0.019	0.009	0.033	0.003	0.01	0.003	0.016	0.011	0.039
Potassium	NV	NV	mg/L	1.5	1.5	2.8	1.6	1.6	1.5	1.4	1.3	1.3	1.5	1.5	1.3	1.4	1.4	1.26	1.46	1.4	1.3
Sodium	200	116	mg/L	13	15	15	13	14	13	13	12	14.1	16.2	13.9	15.2	14.3	15.1	14.1	17.6	19.6	18.9
Zinc	5.0	2.5	mg/L	nd	nd	0.007	nd	0.009	nd	0.006	<0.005	0.006	0.009	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005

Notes: Provided on Page 1 of Appendix F

**HISTORICAL GROUNDWATER QUALITY DATA  
OW-4**

Parameter	ODWS	RUC	UNITS	Jun-16	Nov-16	Jun-17	Oct-17	May-18	Oct-18	Jun-19	Nov-19	Jun-20	Nov-20	Jun-21	Nov-21	May-22	Nov-22	May-23	Sep-23	May-24	Nov-24	May-25	Average	Std. Dev.	
Alkalinity	500	425	mg/L	363	341	318	318	293	282	294	296	299	325	320	338	320	338	318	336	640	100	270	312.16	69.52	
Chloride	250	149	mg/L	11.3	9.1	9.4	10.3	8.9	9.6	12.4	15.9	15.1	18.2	16.5	14.7	16.5	14.7	13.2	13.7	5.7	1.7	39	11.24	6.26	
Nitrate	10	2.58	mg/L	<0.05	0.10	<0.05	<0.05	0.05	0.06	0.16	0.08	0.08	0.12	0.20	<0.05	0.2	<0.05	0.06	0.07	<0.010	<0.10	0.16	0.09	0.06	
Nitrite	1	0.28	mg/L	<0.05	<0.10	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.10	<0.05	<0.1	<0.05	<0.05	<0.05	<0.10	<0.010	<0.010	0.03	0.02	
Ammonia	NV	NV	mg/L	<0.01	0.02	0.06	0.06	0.10	0.20	0.060	0.03	0.07	0.03	0.02	<0.01	0.02	<0.01	0.02	<0.05	15	<0.050	<0.050	0.45	2.49	
TKN	NV	NV	mg/L	0.20	0.43	0.40	0.30	0.40	0.80	0.20	0.20	0.70	0.50	0.80	0.70	0.8	0.7	0.7	0.8	16	<0.10	0	0.95	2.62	
Phenols	NV	NV	mg/L	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	0.13	0.00	0.02	
DOC	5	3.90	mg/L	3.2	5.5	2.0	3.7	5.0	4.6	4.2	3.0	4.2	2.8	3.3	2.9	3.3	2.9	2.5	3.6	5.4	1.1	3.9	3.20	1.56	
Conductivity	NV	NV	uS/cm	821	770	756	803	791	766	769	845	801	878	783	880	783	880	803	836	1200	670	880	775.59	94.14	
pH	6.5-8.5	NV	Unitless	7.82	7.96	7.95	7.78	8.07	7.88	7.88	7.71	8.06	7.64	7.97	7.65	7.97	7.65	8.01	7.77	7.68	8.15	8.1	7.90	0.16	
Sulphate	500	277	mg/L	62	64	112	105	126	106	124	130	121	125	99	132	99	132	109	118	12	220	140	102.49	33.31	
Hardness	80-100	407	mg/L	442	423	430	396	397	408	417	441	489	472	392	422	392	422	412	406	560	170	410	395.35	57.23	
Aluminum	0.1	0.07	mg/L	0.030	0.06	0.06	0.05	0.05	0.06	0.04	0.06	0.08	0.06	0.03	0.05	0.03	0.05	0.06	0.05	-	-	-	0.04	0.02	
Arsenic	0.025	0.001	mg/L	<0.0007	0.0019	<0.0001	0.0005	0.0003	0.0011	0.0005	0.0006	0.0004	0.0004	0.0003	0.0004	0.0003	0.0004	0.0004	0.0005	-	-	-	0.00	0.00	
Barium	1.0	0.32	mg/L	0.10	0.09	0.08	0.07	0.07	0.08	0.09	0.09	0.09	0.09	0.07	0.08	0.06	0.08	0.07	0.07	0.096	0.022	0.074	0.07	0.01	
Boron	5.0	1.32	mg/L	0.04	0.06	0.05	0.04	0.04	0.02	0.05	0.06	0.05	0.05	0.04	0.05	0.03	0.05	0.04	0.006	0.37	0.45	0.036	0.06	0.09	
Cadmium	0.005	0.002	mg/L	<0.0001	<0.000014	0.000035	0.000025	<0.000015	<0.000015	0.000074	0.000041	0.000019	0.00002	<0.000015	<0.000015	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	-	-	0.00	0.00
Calcium	NV	NV	mg/L	103	98.6	97.9	90.2	88.1	89.9	92.6	101	114	108	89.7	94.8	89.7	94.8	92.8	92.5	180	37	100	92.32	19.09	
Chromium	0.05	0.01	mg/L	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	-	-	-	0.00	0.00	
Copper	1.0	0.5	mg/L	<0.002	<0.002	<0.002	<0.002	0.0019	<0.002	<0.002	0.0033	0.003	0.003	<0.002	0.0028	<0.002	0.002	0.001	0.001	-	-	-	0.00	0.00	
Iron	0.3	0.17	mg/L	<0.005	0.246	0.005	0.043	<0.005	0.038	<0.005	0.005	0.02	0.029	<0.005	0.029	<0.005	0.02	<0.005	<0.005	0.67	<0.100	<0.100	0.05	0.13	
Lead	0.01	0.003	mg/L	<0.00005	<0.00002	<0.00002	0.00011	0.00008	0.00003	0.00006	0.00006	0.00007	0.00009	0.00005	0.00009	0.00005	0.00009	0.00002	<0.00002	-	-	-	0.00	0.00	
Magnesium	NV	NV	mg/L	45.2	43	45.1	41.5	43.1	44.5	45.2	45.9	49.6	49.3	40.8	45	40.8	45	43.8	42.5	29	18	40	40.17	5.64	
Manganese	0.05	0.04	mg/L	0.023	0.128	0.001	0.032	<0.001	0.096	<0.001	0.006	0.002	0.006	<0.001	0.004	<0.001	0.004	<0.001	0.002	0.68	<0.002	<0.002	0.04	0.12	
Potassium	NV	NV	mg/L	1.6	1.7	1.6	1.5	1.4	1.6	1.7	1.7	1.6	1.8	1.4	1.7	1.4	1.7	1.5	1.3	1.3	1.1	1.4	1.51	0.27	
Sodium	200	116	mg/L	20.9	19.2	18.2	17.9	17.1	19.1	18	19	20.2	18.8	16.9	17.4	16.9	17.4	18.0	17.2	14.0	75.0	24.0	18.17	9.97	
Zinc	5.0	2.5	mg/L	<0.005	<0.005	0.005	<0.005	<0.005	<0.005	0.006	0.006	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	-	-	0.00	0.00	

Notes: Provided on Page 1 of Appendix F

**HISTORICAL GROUNDWATER QUALITY DATA  
OW-5**

Parameter	ODWS	RUC	UNITS	Jul-07	Dec-07	Jul-08	Dec-08	Jul-09	Nov-09	Mar-10	Dec-10	Jun-11	Oct-11	Jun-12	Oct-12	Jun-13	Nov-13	Jul-14	Nov-14	May-15	Oct-15
Alkalinity	500	425	mg/L	320	340	310	324	333	313	323	336	441	386	357	393	329	416	347	430	425	368
Chloride	250	149	mg/L	14	8	10	11	13	11	19	17	36.1	46.5	28.8	47.7	28.5	59.8	37.2	69.3	67.3	44.4
Nitrate	10	2.58	mg/L	0.20	nd	0.10	0.20	0.10	0.30	0.30	0.10	0.10	<0.1	0.10	<0.1	0.20	<0.1	<0.1	0.10	<0.25	<0.25
Nitrite	1	0.28	mg/L	nd	nd	nd	nd	nd	nd	<0.01	0.02	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.25	<0.25
Ammonia	NV	NV	mg/L	0.15	0.15	nd	0.08	0.17	nd	<0.05	0.10	0.04	0.06	0.18	0.04	0.06	0.09	0.10	0.12	0.04	0.08
TKN	NV	NV	mg/L	0.30	0.30	0.30	0.60	1.40	1.10	0.40	0.60	0.67	0.51	0.19	0.18	0.45	0.26	0.28	0.20	0.18	0.22
Phenols	NV	NV	mg/L	nd	nd	nd	nd	nd	nd	0.00	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DOC	5	3.90	mg/L	2.40	2.20	1.90	2.10	nd	2.20	2.00	2.20	2.20	6.50	3.30	2.30	7.30	5.9	3.70	4.30	2.30	3.6
Conductivity	NV	NV	uS/cm	676	817	718	712	735	681	722	723	932	976	809	944	755	891	838	1020	1030	845
pH	6.5-8.5	NV	Unitless	8.20	8.10	8.10	8.10	8.00	8.00	8.00	7.94	7.55	7.52	7.84	7.66	7.79	7.67	7.85	7.72	8.07	8.02
Sulphate	500	277	mg/L	41	106	79	62	-	45	42	38	37	63	49	85	60	67	50	46	37	41
Hardness	80-100	407	mg/L	320	380	350	330	350	310	430	340	495	380	381	465	370	422	425	462	514	383
Aluminum	0.1	0.07	mg/L	nd	nd	nd	nd	0.01	nd	<0.005	<0.005	0.03	0.04	0.02	0.04	0.03	0.04	0.03	0.03	0.10	<0.004
Arsenic	0.025	0.001	mg/L	0.0050	0.0050	0.0030	0.0040	0.0030	0.0030	0.0020	0.0040	0.0032	0.0035	0.0032	0.0043	0.0045	0.0038	0.0034	0.0028	<0.003	0.0040
Barium	1.0	0.32	mg/L	0.08	0.09	0.09	0.08	0.08	0.07	0.10	0.08	0.11	0.08	0.09	0.11	0.09	0.10	0.10	0.08	0.12	0.09
Boron	5.0	1.32	mg/L	0.12	0.14	0.12	0.12	0.14	0.13	0.07	0.13	0.06	0.06	0.11	0.07	0.10	0.08	0.10	0.06	0.06	0.09
Cadmium	0.005	0.002	mg/L	0.0012	0.0005	0.0029	0.0024	0.0020	0.0014	0.0019	<0.0001	0.00038	0.00013	0.00016	0.00008	0.00014	0.00010	0.00007	0.00025	<0.001	<0.001
Calcium	NV	NV	mg/L	63	76	70	65	70	63	95	66	113	80	79	107	76	94	92	108	118	81
Chromium	0.05	0.01	mg/L	nd	nd	nd	nd	nd	nd	<0.005	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.003	0.00
Copper	1.0	0.5	mg/L	0.0010	nd	0.0020	0.0020	0.0020	0.0020	0.0020	<0.0005	<0.002	<0.002	<0.002	<0.002	0.0009	<0.002	0.0004	0.0005	<0.003	<0.003
Iron	0.3	0.17	mg/L	nd	nd	nd	nd	nd	nd	<0.1	<0.1	0.08	<0.005	<0.005	0.15	<0.005	0.07	0.01	<0.005	0.19	0.10
Lead	0.01	0.003	mg/L	nd	nd	nd	nd	nd	nd	<0.0005	<0.0005	<0.00002	<0.00002	0.00003	0.00003	<0.00002	<0.00002	<0.00002	<0.00002	<0.0002	<0.002
Magnesium	NV	NV	mg/L	40	47	42	40	42	38	47	42	52	44	45	48	44	46	48	47	53	44
Manganese	0.05	0.04	mg/L	0.002	0.05	nd	0.01	nd	nd	0.07	0.01	0.07	0.01	<0.001	0.03	0.003	0.03	0.03	0.06	0.07	0.04
Potassium	NV	NV	mg/L	1.6	1.7	3.0	1.8	2.0	1.7	1.5	1.6	1.6	1.6	1.7	1.7	1.5	1.5	1.5	1.5	1.6	1.6
Sodium	200	116	mg/L	30	30	31	29	32	29	23	31	23	30	32	27	32	30	30	32	31	33
Zinc	5.0	2.5	mg/L	nd	nd	0.01	0.01	0.03	0.01	0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005

Notes: Provided on Page 1 of Appendix F

**HISTORICAL GROUNDWATER QUALITY DATA  
OW-5**

Parameter	ODWS	RUC	UNITS	Jun-16	Nov-16	Jun-17	Oct-17	May-18	Oct-18	Jun-19	Nov-19	Jun-20	Nov-20	Jun-21	Nov-21	May-22	Nov-22	May-23	Sep-23	May-24	Nov-24	May-25	Sep-25	Average	Std. Dev.	
Alkalinity	500	425	mg/L	392	367	370	380	311	351	301	317	320	298	320	314	333	325	346	357	250	330	340	350	346	40	
Chloride	250	149	mg/L	62.2	39.3	55	85	58	58	52	61	59	61	77	68	107	102	122	126	1.3	90	96	90	54	33	
Nitrate	10	2.58	mg/L	0.10	<0.1	<0.05	<0.1	0.06	<0.05	0.12	<0.05	0.16	0.09	0.10	0.10	0.20	<0.05	0.15	<0.05	<0.010	<0.10	0.16	0.11	0.10	0.07	
Nitrite	1	0.28	mg/L	<0.1	<0.1	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.10	0.012	<0.010	<0.010	0.04	0.03
Ammonia	NV	NV	mg/L	0.08	0.12	<0.01	0.07	0.07	0.09	0.10	0.13	0.05	0.05	0.05	0.03	<0.01	0.03	<0.01	<0.05	<0.050	0.12	0.06	<0.050	0.07	0.05	
TKN	NV	NV	mg/L	0.25	0.23	0.20	0.25	0.3	0.40	0.40	0.3	0.20	0.20	2.00	0.40	0.70	0.40	0.20	0.20	0.17	0.24	0.22	0.28	0.42	0.38	
Phenols	NV	NV	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	0.00	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	0.003	0.002	
DOC	5	3.90	mg/L	5.0	2.70	2.2	3.8	2.0	3.3	6.9	3.3	3.8	2.5	2.7	2.2	2.7	0.70	<0.2	2.3	0.49	2.2	2.1	2.1	2.5	1.5	
Conductivity	NV	NV	uS/cm	942	859	989	1090	796	882	788	881	839	858	911	890	974	994	1060	1070	500	930	1000	1000	870	131	
pH	6.5-8.5	NV	Unitless	7.88	7.96	7.91	7.76	8.14	7.94	8.21	8.01	8.08	7.95	8.08	7.84	8.14	7.93	7.98	7.94	8.16	8.13	8.14	7.98	8	0.2	
Sulphate	500	277	mg/L	47	52	62	55	53	49	43	49	57	55	59	50	46	41	37	36	18	29	35	36	50	16	
Hardness	80-100	407	mg/L	398	374	457	461	410	421	369	413	413	409	483	425	451	443	483	454	260	380	450	450	408	56	
Aluminum	0.1	0.07	mg/L	0.03	0.03	0.04	0.07	0.06	0.05	0.05	0.06	0.04	0.05	0.07	0.02	0.04	0.02	0.07	0.06	-	-	-	-	0.04	0.02	
Arsenic	0.025	0.001	mg/L	0.0013	0.0019	0.0015	0.0016	0.0012	0.0019	0.0020	0.0024	0.002	0.0020	0.002	0.002	0.002	0.002	0.00	0.00	-	-	-	-	0.003	0.001	
Barium	1.0	0.32	mg/L	0.09	0.09	0.11	0.11	0.10	0.10	0.09	0.09	0.10	0.10	0.12	0.10	0.11	0.12	0.11	0.11	0.12	0.11	0.09	0.10	0.11	0.10	0.01
Boron	5.0	1.32	mg/L	0.11	0.10	0.10	0.10	0.10	0.09	0.10	0.06	0.10	0.11	0.11	0.12	0.11	0.11	0.11	0.07	0.02	0.13	0.11	0.12	0.10	0.03	
Cadmium	0.005	0.002	mg/L	0.00005	<0.00002	<0.0001	0.00002	0.00003	0.00006	0.00003	0.00003	0.00002	0.00003	0.00002	0.00002	0.00002	0.00002	<0.00001	0.00	-	-	-	-	0.0004	0.001	
Calcium	NV	NV	mg/L	80.4	76	97	101	88	90	77	86	86	88	105	87	96	93	105	96	60	77	96	94	87	15	
Chromium	0.05	0.01	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	-	-	-	-	0.001	0.001	
Copper	1.0	0.5	mg/L	<0.002	0.00	<0.002	<0.002	<0.002	<0.002	0.002	<0.002	<0.002	0.01	0.01	<0.002	<0.002	0.001	0.001	0.001	-	-	-	-	0.002	0.002	
Iron	0.3	0.17	mg/L	<0.005	0.01	0.02	0.01	0.01	0.01	<0.005	0.03	<0.005	0.01	0.01	0.01	0.01	<0.005	<0.005	<0.005	<0.100	<0.100	<0.100	<0.1	0.03	0.04	
Lead	0.01	0.003	mg/L	<0.00002	<0.00002	0.00009	<0.00002	0.00004	0.00003	0.00010	<0.00002	0.00003	0.00005	0.00009	0.00003	0.00007	0.00005	0.00	<0.00002	-	-	-	-	0.0001	0.0003	
Magnesium	NV	NV	mg/L	48	45	52	51	46	48	43	48	48	46	54	50	52	52	54	52	26	45	51	51	47	5	
Manganese	0.05	0.04	mg/L	0.14	0.06	0.03	0.10	0.002	0.01	0.001	0.03	<0.001	0.01	0.001	0.002	<0.001	0.00	<0.001	<0.001	0.01	0.19	<0.002	0.02	0.03	0.04	
Potassium	NV	NV	mg/L	1.6	1.5	1.6	1.7	1.5	1.5	1.4	1.4	1.7	1.5	1.8	1.8	1.7	1.8	1.5	0.73	1.5	1.6	1.8	2	0	0	
Sodium	200	116	mg/L	37	34	35	35	36	35	33	33	34	34	38	36	37	37	40	38	6.8	37	38	40	32	6	
Zinc	5.0	2.5	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.01	<0.005	<0.005	<0.005	0.01	<0.005	-	-	-	-	0.004	0.005	

Notes: Provided on Page 1 of Appendix F

**HISTORICAL GROUNDWATER QUALITY DATA  
OW-6**

Parameter	ODWS	RUC	UNITS	Jul-07	Dec-07	Jul-08	Dec-08	Jul-09	Nov-09	Mar-10	Dec-10	Jun-11	Oct-11	Jun-12	Oct-12	Jun-13	Nov-13	Jul-14	Nov-14	May-15	Oct-15
Alkalinity	500	425	mg/L	369	353	338	346	327	321	322	317	343	370	416	491	510	697	653	893	890	1050
Chloride	250	149	mg/L	21	21	17	17	19	16	18	16	15	21.9	46	68	84.3	118	130	162	172	233
Nitrate	10	2.58	mg/L	0.2	nd	0.2	0.2	0.2	0.3	<0.1	0.4	0.2	0.3	<0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.5	<1.0
Nitrite	1	0.28	mg/L	nd	nd	0.01	0.08	nd	0.03	0.03	0.03	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<1.0
Ammonia	NV	NV	mg/L	0.10	0.40	0.09	0.29	0.06	0.19	0.36	0.43	<0.01	<0.01	0.24	<0.01	0.40	0.56	0.81	1.28	1.19	1.37
TKN	NV	NV	mg/L	0.3	0.7	0.7	0.7	1.2	1.2	2.0	1.1	1.7	3.5	0.86	2.3	2.6	4.0	4.9	6.9	7	10
Phenols	NV	NV	mg/L	nd	nd	nd	nd	nd	nd	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002
DOC	5	3.90	mg/L	1.4	1.6	1.4	1.3	1.3	1.3	1.5	1.6	1.5	2.5	4.4	7.5	16	22	19	26	38	60
Conductivity	NV	NV	uS/cm	837	805	762	751	726	706	695	707	774	915	1040	1220	1260	1450	1630	1960	2110	2450
pH	6.5-8.5	NV	Unitless	8.2	8.2	8.1	8.1	8.0	7.9	8.1	8.1	7.8	7.8	8.1	7.9	7.7	7.8	7.8	7.7	8.1	7.9
Sulphate	500	277	mg/L	79	61	49	48	-	38	36	42	67	90	92	106	94	91	75	68	52	36
Hardness	80-100	407	mg/L	330	270	260	250	240	220	230	250	267	299	322	333	347	426	483	580	703	780
Aluminum	0.1	0.07	mg/L	0.33	0.014	nd	nd	nd	nd	<0.005	<0.005	0.02	0.03	0.02	0.03	0.02	0.04	0.03	0.03	0.005	<0.004
Arsenic	0.025	0.001	mg/L	nd	nd	nd	nd	nd	nd	<0.001	<0.001	0.0008	0.0004	0.0012	0.0009	0.001	0.0032	0.0111	0.0091	<0.003	0.005
Barium	1.0	0.32	mg/L	0.09	0.09	0.10	0.09	0.09	0.08	0.09	0.09	0.10	0.10	0.13	0.14	0.14	0.17	0.18	0.22	0.25	0.23
Boron	5.0	1.32	mg/L	0.37	0.33	0.34	0.31	0.36	0.33	0.33	0.35	0.36	0.31	0.37	0.32	0.35	0.35	0.39	0.36	0.41	0.41
Cadmium	0.005	0.002	mg/L	0.0001	0.0001	0.0002	0.0002	0.0003	nd	0.0002	<0.0001	0.00003	<0.00002	<0.00002	0.00004	0.00008	0.00004	<0.00002	0.00041	<0.001	<0.001
Calcium	NV	NV	mg/L	60	49	47	46	43	40	41	45	48.3	54.9	57.6	59.9	61.4	77.2	87.1	103	129	136
Chromium	0.05	0.01	mg/L	nd	nd	nd	nd	nd	nd	<0.005	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.006	0.01
Copper	1.0	0.5	mg/L	0.002	nd	0.002	0.002	0.002	0.007	0.002	<0.0005	<0.002	<0.002	<0.002	0.004	0.0037	0.002	0.0029	<0.002	<0.003	<0.003
Iron	0.3	0.17	mg/L	0.22	0.12	nd	nd	nd	0.1	<0.10	<0.10	0.033	<0.005	0.08	<0.005	<0.005	0.251	3.9	6.4	2.1	4.6
Lead	0.01	0.003	mg/L	nd	nd	nd	nd	nd	nd	<0.0005	<0.0005	0.00002	<0.00002	<0.00002	0.00006	0.00007	0.00004	0.0001	0.00005	<0.002	<0.002
Magnesium	NV	NV	mg/L	44	36	34	32	31	28	30	33	36	40	43	45	47	57	65	79	93	107
Manganese	0.05	0.04	mg/L	0.02	0.09	nd	0.05	nd	0.03	0.02	0.04	0.02	0.03	0.04	0.04	0.08	0.10	0.09	0.13	0.13	0.12
Potassium	NV	NV	mg/L	4.3	3.8	4.8	3.5	3.4	3.1	3.1	3.3	3.4	3.6	4	3.9	3.9	4.4	4.9	4.9	6.0	7.5
Sodium	200	116	mg/L	93	83	76	76	74	74	71	71	73.3	95.4	127	176	166	205	219	209	238	284
Zinc	5.0	2.5	mg/L	nd	nd	0.007	nd	nd	0.005	0.005	0.006	<0.005	0.015	<0.005	<0.005	<0.005	<0.005	0.006	0.015	<0.005	<0.005

Notes: Provided on Page 1 of Appendix F

**HISTORICAL GROUNDWATER QUALITY DATA  
OW-6**

Parameter	ODWS	RUC	UNITS	Jun-16	Nov-16	Jun-17	Oct-17	May-18	Oct-18	Jun-19	Nov-19	Jun-20	Nov-20	Jun-21	Nov-21	May-22	Nov-22	May-23	Sep-23	May-24	Nov-24	May-25	Sep-25
Alkalinity	500	425	mg/L	1350	1460	1110	1440	1330	1360	1280	1380	1410	1430	1430	1430	1470	1570	1420	1210	1400	1400	1500	1500
Chloride	250	149	mg/L	50.5	356	299	340	476	412	408	469	458	520	535	547	480	485	535	507	470	470	490	480
Nitrate	10	2.58	mg/L	<0.1	<0.5	<0.5	<1.0	<0.5	<0.5	<0.05	<0.5	0.7	<0.5	<0.5	<0.05	<1.0	<0.5	<0.5	<0.05	<0.010	<0.10	<0.10	<0.10
Nitrite	1	0.28	mg/L	<0.1	<0.5	<0.5	<1.0	<0.5	<0.5	<0.05	<0.5	<0.5	<0.5	<0.5	<0.05	<1.0	<0.5	<0.5	<0.05	<0.10	<0.010	<0.010	<0.010
Ammonia	NV	NV	mg/L	3.57	7.02	9.26	14.3	15	17	17.9	21	25	28	30	24	41	43	32	36	29	30	31	32
TKN	NV	NV	mg/L	15	19.1	23	29.2	33	32	29	35	47	53	42	33	<0.1	57	41	53	41	41	44	42
Phenols	NV	NV	mg/L	<0.001	0.002	0.001	0.004	0.003	0.02	0.004	0.004	<0.002	0.004	0.017	0.002	0.002	<0.001	<0.001	<0.001	0.007	0.006	0.008	0.006
DOC	5	3.90	mg/L	65	23	106.0	26.2	115	22	110	29	107	82	22	83	17	81	49	18	130	130	130	130
Conductivity	NV	NV	uS/cm	2490	3140	3050	3520	3240	3630	3400	3680	3610	3960	3860	3780	3720	4150	3880	3980	3700	3800	4000	4000
pH	6.5-8.5	NV	Unitless	7.7	7.6	7.78	7.52	7.56	7.5	7.6	7.6	7.4	7.3	7.2	7.2	7.6	7.2	7.5	7.4	7.7	7.8	7.8	7.4
Sulphate	500	277	mg/L	3.0	<5.0	<10	13	<10	<10	<1.0	<10	<10	<10	<10	1.0	<10	<10	11	4	<1.0	<1.0	<1.0	1.3
Hardness	80-100	407	mg/L	845	937	995	1170	1080	1110	1080	1190	1170	1250	1180	1190	1150	1260	1190	1150	1100	1200	1200	1200
Aluminum	0.1	0.07	mg/L	0.04	0.05	0.05	0.05	0.08	0.08	0.07	0.09	0.07	0.08	0.1	0.06	0.06	0.13	0.09	0.08	-	-	-	-
Arsenic	0.025	0.001	mg/L	0.008	0.006	0.015	0.005	0.017	0.010	0.009	0.004	0.007	0.005	0.004	0.012	0.011	0.011	0.01	0.01	-	-	-	-
Barium	1.0	0.32	mg/L	0.29	0.34	0.51	0.53	0.51	0.64	0.59	0.60	0.75	0.77	0.82	0.79	0.75	0.92	0.93	0.94	0.75	0.7	0.85	0.92
Boron	5.0	1.32	mg/L	0.43	0.45	0.51	0.60	0.55	0.56	0.57	0.61	0.64	0.64	0.64	0.64	0.64	0.66	0.66	0.61	0.63	0.57	0.60	0.58
Cadmium	0.005	0.002	mg/L	<0.00002	<0.00002	<0.0001	0.000036	<0.000015	<0.000015	0.000016	<0.000070	<0.000070	<0.000070	<0.000070	<0.000070	<0.000070	<0.000070	<0.000070	<0.000070	<0.00003	-	-	-
Calcium	NV	NV	mg/L	136	141	141	163	151	155	143	154	152	165	151	149	144	157	152	147	150	140	150	150
Chromium	0.05	0.01	mg/L	<0.002	0.003	0.003	0.004	0.003	0.003	0.003	0.004	0.003	0.004	0.004	0.002	<0.002	0.004	0.003	0.003	-	-	-	-
Copper	1.0	0.5	mg/L	<0.002	0.0017	0.007	<0.002	<0.002	<0.002	0.0029	<0.002	<0.002	0.0019	<0.002	<0.002	<0.002	0.001	0.0015	0.003	-	-	-	-
Iron	0.3	0.17	mg/L	6.3	4.6	2.9	2.2	6.7	6.7	5.4	3.3	3.0	3.1	7.7	8.5	5.0	8.0	7.9	7.0	0.25	0.27	5.5	8.1
Lead	0.01	0.003	mg/L	<0.00002	0.00005	0.00008	0.00002	<0.00002	0.00007	0.0001	<0.0001	0.0002	0.00017	0.0001	0.00011	0.00021	0.00018	<0.0001	<0.00009	-	-	-	-
Magnesium	NV	NV	mg/L	123	142	156	185	172	175	175	196	191	203	196	200	192	212	197	190	180	190	190	200
Manganese	0.05	0.04	mg/L	0.06	0.04	0.03	0.03	0.03	0.03	0.02	0.02	0.03	0.02	0.03	0.02	0.02	0.026	0.02	0.02	0.018	0.019	0.017	0.018
Potassium	NV	NV	mg/L	8.6	11	16	19	17	19	19	20	22	26	24	24	22	27	27	26	25	26	25	27
Sodium	200	116	mg/L	297	337	369	430	414	430	408	420	414	445	439	416	407	442	443	412	420	440	430	440
Zinc	5.0	2.5	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.006	<0.005	<0.005	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	-	-	-

Notes: Provided on Page 1 of Appendix F

**HISTORICAL GROUNDWATER QUALITY DATA  
OW-7S**

Parameter	ODWS	RUC	UNITS	Jul-07	Dec-07	Jul-08	Dec-08	Jul-09	Nov-09	Mar-10	Dec-10	Jun-11	Oct-11	Jun-12	Oct-12	Jun-13	Nov-13	Jul-14	Nov-14	May-15	Oct-15
Alkalinity	500	425	mg/L	187	176	172	174	169	167	167	168	174	172	175	177	177	178	169	184	176	177
Chloride	250	149	mg/L	15	14	18	17	18	17	20	21	20	20.9	21	22	22.6	23.6	23.6	24.3	25.7	26.9
Nitrate	10	2.58	mg/L	nd	nd	nd	nd	nd	nd	<0.1	<0.1	0.1	<0.10	<0.10	0.10	0.10	0.10	<0.10	0.10	<0.25	<0.10
Nitrite	1	0.28	mg/L	nd	nd	nd	nd	nd	nd	<0.01	<0.01	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.25	<0.10
Ammonia	NV	NV	mg/L	nd	0.07	nd	nd	0.26	nd	<0.05	<0.05	<0.01	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	0.05	<0.02	<0.02
TKN	NV	NV	mg/L	0.2	0.3	0.2	0.20	0.3	1.0	0.50	<0.5	0.13	0.43	0.08	0.19	0.21	0.13	0.07	0.10	<0.10	<0.10
Phenols	NV	NV	mg/L	nd	nd	nd	nd	nd	nd	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DOC	5	3.90	mg/L	0.6	0.8	0.6	0.8	0.7	0.6	0.8	0.9	0.7	3.9	1.4	8.3	8.5	3.8	1.8	4.1	1.5	1.3
Conductivity	NV	NV	uS/cm	480	473	467	457	455	450	448	463	473	501	497	500	497	448	497	487	510	528
pH	6.5-8.5	NV	Unitless	8.20	8.20	8.20	8.20	8.00	8.00	8.10	8.21	7.97	8.00	8.10	7.99	7.96	8.12	8.07	8.01	8.32	7.51
Sulphate	500	277	mg/L	47	48	45	41	-	37	36	37	40	43	46	52	52	54	51	52	51	58
Hardness	80-100	407	mg/L	160	140	130	130	130	120	130	130	131	135	142	134	141	133	150	125	139	145
Aluminum	0.1	0.07	mg/L	nd	0.015	nd	nd	nd	nd	<0.005	<0.005	0.07	0.02	<0.01	0.02	0.02	0.01	<0.01	<0.004	<0.004	<0.004
Arsenic	0.025	0.001	mg/L	nd	nd	nd	0.0010	nd	nd	<0.001	0.0010	0.0014	0.0016	0.0018	0.0016	0.0014	0.0021	0.0016	0.0013	<0.003	<0.003
Barium	1.0	0.32	mg/L	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.03
Boron	5.0	1.32	mg/L	0.31	0.30	0.28	0.28	0.29	0.29	0.29	0.30	0.30	0.26	0.31	0.27	0.29	0.27	0.31	0.24	0.25	0.28
Cadmium	0.005	0.002	mg/L	0.001	0.0017	0.0004	0.0017	0.0005	0.0003	0.0004	0.0002	0.00017	0.00009	0.0001	0.00014	0.00011	0.0003	0.00008	0.00009	<0.001	<0.001
Calcium	NV	NV	mg/L	31	28	26	27	26	25	26	27	27	28	29	28	29	27	31	26	30	30
Chromium	0.05	0.01	mg/L	nd	nd	nd	nd	nd	nd	<0.005	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.003	<0.003	<0.003
Copper	1.0	0.5	mg/L	nd	nd	nd	0.001	nd	0.001	0.002	<0.0005	0.003	<0.002	<0.002	<0.002	0.0006	<0.002	0.0005	<0.002	<0.003	<0.003
Iron	0.3	0.17	mg/L	nd	nd	nd	nd	nd	nd	<0.1	<0.1	0.025	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.010
Lead	0.01	0.003	mg/L	nd	nd	nd	nd	nd	nd	<0.0005	<0.0005	0.00008	<0.00002	0.00003	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.002	<0.002
Magnesium	NV	NV	mg/L	19	16	16	16	15	14	15	15	16	16	17	16	17	16	17	15	16	17
Manganese	0.05	0.04	mg/L	nd	0.004	nd	nd	nd	0.007	<0.002	0.012	0.002	0.001	<0.001	0.002	<0.001	0.004	0.006	0.002	<0.002	<0.002
Potassium	NV	NV	mg/L	1.2	1.1	0.97	1.1	1.0	1.0	1.1	0.97	1.0	0.9	1.0	1.0	0.9	1.0	0.8	0.97	1.06	1.06
Sodium	200	116	mg/L	59	53	51	51	52	49	53	52	53	58	55	53	56	53	57	48	53	58
Zinc	5.0	2.5	mg/L	nd	nd	nd	nd	nd	nd	<0.005	0.007	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.006	<0.005

Notes: Provided on Page 1 of Appendix F

**HISTORICAL GROUNDWATER QUALITY DATA  
OW-7S**

Parameter	ODWS	RUC	UNITS	Jun-16	Nov-16	Jun-17	Oct-17	May-18	Oct-18	Jun-19	Nov-19	Jun-20	Nov-20	Jun-21	Nov-21	May-22	Nov-22	May-23	Sep-23	May-24	Nov-24	May-25	Sep-25
Alkalinity	500	425	mg/L	181	181	179	173	168	174	166	161	168	155	164	166	176	167	178	180	180	170	170	180
Chloride	250	149	mg/L	24.4	26	22	20.8	27.6	26.7	27.1	28	28	29	29	27	31	28	29	29	27	25	26	25
Nitrate	10	2.58	mg/L	0.10	0.10	<0.05	0.10	0.09	<0.05	0.07	<0.05	0.13	<0.05	0.15	<0.05	0.3	<0.05	0.17	0.09	<0.010	<0.10	0.13	<0.10
Nitrite	1	0.28	mg/L	<0.10	<0.10	<0.05	<0.10	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	0.15	<0.010	<0.010	<0.010
Ammonia	NV	NV	mg/L	<0.01	<0.01	<0.01	<0.01	0.09	0.12	0.12	0.01	0.02	0.01	0.07	0.02	0.17	0.15	0.15	0.1	<0.050	<0.050	<0.050	<0.050
TKN	NV	NV	mg/L	0.13	0.05	0.20	0.07	0.30	0.20	0.20	0.40	<0.1	<0.1	0.20	0.10	<0.1	0.10	0.25	<0.1	0.14	<0.10	<0.10	0.11
Phenols	NV	NV	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	0.003	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010
DOC	5	3.90	mg/L	0.4	1.5	2.0	3.5	2.1	3.2	5.6	2.4	3.6	2.5	3.4	1.7	17	1.7	1.0	4.2	0.48	0.62	0.56	0.7
Conductivity	NV	NV	uS/cm	520	546	529	517	507	536	508	541	507	512	505	506	508	512	510	517	510	500	500	500
pH	6.5-8.5	NV	Unitless	8.10	8.04	8.13	8.06	8.22	7.84	7.92	7.73	8.01	8.03	8.15	7.93	7.95	8.00	7.92	7.72	8.24	8.29	8.38	8.18
Sulphate	500	277	mg/L	54	60	45	42	54	54	50	49	50	51	48	46	47	46	46	46	42	38	38	38
Hardness	80-100	407	mg/L	153	140	156	149	152	151	144	145	145	146	158	144	144	140	141	133	140	120	130	130
Aluminum	0.1	0.07	mg/L	<0.01	0.01	<0.01	0.03	0.02	0.03	0.02	0.03	0.02	0.01	0.03	<0.01	<0.01	<0.01	0.02	0.02	-	-	-	-
Arsenic	0.025	0.001	mg/L	0.0008	0.0008	0.0008	0.0009	<0.0001	0.0011	0.0005	0.0007	0.0006	0.0008	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	-	-	-	-
Barium	1.0	0.32	mg/L	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.04	0.04	0.03	0.033	0.032
Boron	5.0	1.32	mg/L	0.28	0.26	0.31	0.31	0.27	0.29	0.29	0.25	0.29	0.30	0.32	0.31	0.30	0.30	0.3	0.25	0.29	0.28	0.27	0.27
Cadmium	0.005	0.002	mg/L	0.00009	0.00008	<0.0001	0.00007	0.00007	0.00005	0.00003	0.00005	0.00004	0.00005	0.00003	0.00004	0.00003	0.00004	0.00002	0.00002	-	-	-	-
Calcium	NV	NV	mg/L	31	29	32	31	31	32	29	29	29	30	32	28	29	28	29	27	28	25	27	28
Chromium	0.05	0.01	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	-	-	-	-
Copper	1.0	0.5	mg/L	<0.002	0.0006	<0.002	<0.002	<0.002	<0.002	0.0022	0.002	<0.002	0.0031	<0.002	<0.002	<0.002	0.0003	0.001	0.0007	-	-	-	-
Iron	0.3	0.17	mg/L	0.012	0.006	<0.005	0.008	0.012	0.011	0.016	<0.005	<0.005	0.011	<0.005	0.005	<0.005	<0.005	0.009	<0.100	<0.100	<0.100	<0.1	
Lead	0.01	0.003	mg/L	<0.00002	<0.00002	<0.00005	<0.00002	<0.00002	0.00004	0.0001	<0.00002	0.00006	0.00006	0.00002	0.00003	0.00004	0.0005	0.00003	<0.00002	-	-	-	-
Magnesium	NV	NV	mg/L	18	17	19	18	18	17	17	18	18	17	19	18	17	17	16	16	16	15	15	15
Manganese	0.05	0.04	mg/L	<0.001	<0.001	0.002	0.001	<0.001	0.002	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002
Potassium	NV	NV	mg/L	1.0	0.9	1.0	1.0	0.9	0.9	0.9	0.9	1.1	1.0	1.1	1.1	1.1	1.1	1.0	0.8	0.9	0.88	0.9	0.96
Sodium	200	116	mg/L	59	54	62	61	62	61	59	57	58	56	64	57	59	56	59	55	56	52	55	55
Zinc	5.0	2.5	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	-	-	-

Notes: Provided on Page 1 of Appendix F

**HISTORICAL GROUNDWATER QUALITY DATA  
OW-7D**

Parameter	ODWS	RUC	UNITS	Jul-07	Dec-07	Jul-08	Dec-08	Jul-09	Nov-09	Mar-10	Dec-10	Jun-11	Oct-11	Jun-12	Oct-12	Jun-13	Nov-13	Jul-14	Nov-14	May-15	Oct-15
Alkalinity	500	425	mg/L	176	177	169	173	169	164	167	166	173	182	176	178	178	179	166	179	172	174
Chloride	250	149	mg/L	6.0	15	6.0	6.0	7.0	7.0	8.0	7.0	5.9	5.8	6.6	6.4	7.0	6.7	6.9	7.6	8.3	7.8
Nitrate	10	2.58	mg/L	0.10	nd	0.20	0.10	nd	nd	<0.10	0.10	0.20	0.20	0.20	0.20	0.20	0.30	0.30	0.30	<0.25	0.18
Nitrite	1	0.28	mg/L	nd	nd	nd	nd	nd	nd	0.01	<0.01	<0.10	<0.10	<0.10	<0.10	<0.10	0.20	<0.10	<0.10	<0.25	<0.10
Ammonia	NV	NV	mg/L	0.05	0.07	nd	nd	nd	nd	<0.05	<0.05	<0.01	<0.01	0.01	0.09	<0.01	<0.01	<0.01	0.02	<0.02	<0.02
TKN	NV	NV	mg/L	0.20	0.30	0.30	0.20	0.40	0.20	0.70	<0.02	0.27	0.46	0.07	0.11	0.19	0.06	0.19	0.10	<0.10	<0.10
Phenols	NV	NV	mg/L	nd	nd	nd	nd	nd	nd	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DOC	5	3.90	mg/L	1.3	0.7	0.9	0.8	0.8	0.9	1.0	1.1	0.9	1.2	1.6	4.1	5.3	2.7	2.3	5.8	1.7	1.0
Conductivity	NV	NV	uS/cm	517	467	492	487	477	469	463	461	494	533	524	510	511	450	496	498	497	514
pH	6.5-8.5	NV	Unitless	8.20	8.30	8.20	8.1	8.00	8.00	8.10	8.14	7.94	8.00	8.16	8.07	8.02	8.10	8.07	8.09	8.31	7.90
Sulphate	500	277	mg/L	87	41	73	66	-	59	56	55	75	84	83	87	82	81	78	82	69	78
Hardness	80-100	407	mg/L	110	130	94	120	88	85	88	87	97	105	108	104	105	99	108	93	99	102
Aluminum	0.1	0.07	mg/L	nd	nd	nd	nd	nd	nd	<0.005	<0.005	0.01	0.06	<0.01	0.02	0.02	0.02	<0.01	<0.004	<0.004	<0.004
Arsenic	0.025	0.001	mg/L	nd	nd	nd	nd	nd	nd	<0.001	<0.001	0.0006	0.0003	0.0005	0.0006	0.001	0.0005	0.0004	0.0004	<0.003	<0.003
Barium	1.0	0.32	mg/L	0.04	0.04	0.05	0.04	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.04	0.04	0.04	0.04	0.04	0.04
Boron	5.0	1.32	mg/L	0.48	0.29	0.42	0.35	0.45	0.42	0.44	0.42	0.46	0.45	0.48	0.42	0.44	0.43	0.48	0.38	0.38	0.44
Cadmium	0.005	0.002	mg/L	0.0007	0.0005	0.0007	0.001	0.001	0.0005	0.0003	<0.0001	0.0003	0.0006	0.0001	0.0002	0.0002	0.0002	0.00023	0.0003	<0.001	<0.001
Calcium	NV	NV	mg/L	26	27	22	24	20	20	21	21	23	25	25	24	24	23	25	22	23	24
Chromium	0.05	0.01	mg/L	nd	nd	nd	nd	nd	nd	<0.005	<0.005	<0.002	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.003	<0.003	<0.003
Copper	1.0	0.5	mg/L	nd	nd	0.002	0.003	0.001	0.002	0.002	<0.0005	<0.0020	<0.0020	<0.0020	<0.0020	0.002	<0.0020	0.001	<0.0020	<0.0030	<0.0030
Iron	0.3	0.17	mg/L	nd	nd	nd	nd	nd	nd	<0.1	<0.1	<0.005	0.02	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.010	<0.010
Lead	0.01	0.003	mg/L	nd	nd	nd	nd	nd	nd	<0.0005	<0.0005	<0.00002	0.00009	<0.00002	0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Magnesium	NV	NV	mg/L	12	16	9.7	13	9.0	8.6	8.9	8.6	10	11	11	11	11	10	11	10	10	11
Manganese	0.05	0.04	mg/L	0.005	0.002	nd	nd	nd	nd	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	<0.001	<0.002	<0.002
Potassium	NV	NV	mg/L	1.3	1.1	2.5	1.0	1.0	1.0	1.0	0.9	1.0	1.1	1.1	1.0	1.0	0.9	1.0	0.9	1.0	1.1
Sodium	200	116	mg/L	87	52	74	60	73	70	73	69	71	73	76	72	76	70	77	65	70	74
Zinc	5.0	2.5	mg/L	nd	nd	0.006	nd	nd	nd	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.011	<0.005	<0.005	<0.005

Notes: Provided on Page 1 of Appendix F

**HISTORICAL GROUNDWATER QUALITY DATA  
OW-7D**

Parameter	ODWS	RUC	UNITS	Jun-16	Nov-16	Jun-17	Oct-17	May-18	Oct-18	Jun-19	Nov-19	Jun-20	Nov-20	Jun-21	Nov-21	May-22	Nov-22	May-23	Sep-23	May-24	Nov-24	May-25	Sep-25
Alkalinity	500	425	mg/L	180	197	171	170	164	169	158	153	165	151	157	155	166	158	162	176	160	160	180	160
Chloride	250	149	mg/L	7.2	7.4	7.2	6.7	9.6	9.6	5.4	9.2	11	10	10	10.2	11	9.1	10	10	9.4	12	10	9.7
Nitrate	10	2.58	mg/L	0.30	0.3	0.21	0.30	0.29	0.27	0.15	0.13	0.34	0.31	0.29	0.21	0.40	0.25	0.26	0.25	<0.010	<0.10	<0.10	<0.10
Nitrite	1	0.28	mg/L	<0.10	0.3	<0.05	<0.10	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.10	<0.05	<0.05	<0.05	0.16	<0.010	<0.010	<0.010
Ammonia	NV	NV	mg/L	<0.01	<0.01	<0.01	<0.01	0.06	0.03	0.12	<0.01	0.01	0.03	0.02	0.02	<0.01	<0.01	<0.01	<0.05	<0.050	<0.050	<0.050	<0.050
TKN	NV	NV	mg/L	0.07	<0.05	<0.10	0.12	0.30	0.20	0.20	<0.10	0.10	0.10	0.20	0.10	0.20	<0.10	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10
Phenols	NV	NV	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010
DOC	5	3.90	mg/L	0.6	1.6	1.6	2.1	1.5	2.4	5.3	2.9	2.3	3.4	1.6	1.7	2.0	0.7	1.7	2.8	0.68	0.85	0.98	0.84
Conductivity	NV	NV	uS/cm	506	524	498	502	504	504	477	475	465	473	468	471	458	456	456	460	450	450	460	460
pH	6.5-8.5	NV	Unitless	8.12	8.07	8.21	8.13	8.21	7.96	8.08	7.94	8.08	8.09	8.23	7.49	8.12	8.02	7.94	7.43	8.18	8.28	8.27	8.17
Sulphate	500	277	mg/L	77	82	60	59	74	68	34	58	60	61	60	57	54	54	55	55	54	45	47	48
Hardness	80-100	407	mg/L	106	99	107	103	103	100	66	90	89	91	96	88	84	83	83	78.6	82	65	760	79
Aluminum	0.1	0.07	mg/L	<0.01	<0.01	0.01	0.03	0.02	0.02	0.02	0.03	<0.01	0.02	0.03	<0.01	<0.01	<0.01	0.02	0.01	-	-	-	-
Arsenic	0.025	0.001	mg/L	0.000	0.0003	<0.0007	0.0004	<0.0001	0.0004	0.0003	0.0004	0.0004	0.0004	0.0004	0.0004	0.0005	0.0004	0.0004	0.0005	-	-	-	-
Barium	1.0	0.32	mg/L	0.04	0.04	0.04	0.04	0.04	0.04	0.02	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.04	0.03	0.03	0.03
Boron	5.0	1.32	mg/L	0.44	0.40	0.47	0.47	0.43	0.44	0.48	0.41	0.45	0.47	0.49	0.46	0.47	0.47	0.46	0.43	0.46	0.43	0.42	0.42
Cadmium	0.005	0.002	mg/L	0.00016	0.00011	0.0002	0.00017	0.000376	0.000251	0.000261	0.000177	0.000108	0.000117	0.00008	0.000082	0.000153	0.000087	0.0001	0.00008	-	-	-	-
Calcium	NV	NV	mg/L	24	22	24	24	24	23	14	20	20	21	22	20	19	18	19	18	19	15	18	18
Chromium	0.05	0.01	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	-	-	-	-
Copper	1.0	0.5	mg/L	<0.0020	0.013	<0.0020	<0.0020	<0.0020	<0.0020	0.003	0.004	<0.002	0.001	0.002	<0.0020	<0.0020	0.001	0.0006	0.001	-	-	-	-
Iron	0.3	0.17	mg/L	<0.005	<0.005	<0.005	0.007	0.005	<0.005	<0.005	<0.005	<0.005	0.006	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.100	<0.100	<0.100	<0.1
Lead	0.01	0.003	mg/L	0.00325	0.00002	<0.00005	<0.00002	<0.00002	0.00012	0.00088	<0.00002	0.00007	0.00002	0.00003	<0.00002	0.00003	0.00006	0.00002	<0.00002	-	-	-	-
Magnesium	NV	NV	mg/L	11	10	11	11	11	10	7.8	10	10	9.4	10	10	9.0	8.9	8.5	8.2	8.3	6.7	7.7	7.9
Manganese	0.05	0.04	mg/L	<0.001	<0.001	<0.001	<0.001	0.004	0.008	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.002	<0.002	<0.002	0.0072
Potassium	NV	NV	mg/L	1.0	0.9	0.9	1.0	1.0	0.90	0.90	0.90	1.0	0.90	1.0	1.1	1.0	1.0	0.90	0.70	0.89	0.87	0.81	0.92
Sodium	200	116	mg/L	77	70	80	78	81	80	81	73	74	71	79	72	71	70	69	67	71	61	70	70
Zinc	5.0	2.5	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	-	-	-

Notes: Provided on Page 1 of Appendix F

**HISTORICAL GROUNDWATER QUALITY DATA  
OW-8S**

Parameter	ODWS	RUC	UNITS	Jul-07	Dec-07	Jul-08	Dec-08	Jul-09	Nov-09	Mar-10	Dec-10	Jun-11	Oct-11	Jun-12	Oct-12	Jun-13	Nov-13	Jul-14	Nov-14	May-15	Oct-15
Alkalinity	500	425	mg/L	244	238	233	246	233	230	231	226	231	233	233	237	234	235	220	236	223	228
Chloride	250	149	mg/L	10	9	9	9	9	10	13	12	12	13	16	17	20	21	23	25	28	29
Nitrate	10	2.58	mg/L	nd	nd	nd	nd	nd	nd	<0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	<0.1	0.10	<0.25	<0.10
Nitrite	1	0.28	mg/L	nd	nd	nd	nd	nd	nd	0.01	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.25	<0.10
Ammonia	NV	NV	mg/L	0.07	0.10	nd	nd	0.06	0.06	<0.05	0.09	<0.01	<0.01	0.02	<0.01	0.01	0.01	0.02	0.04	0.02	<0.02
TKN	NV	NV	mg/L	0.2	0.3	0.2	nd	0.7	0.20	0.30	<0.5	0.59	0.31	0.08	0.13	0.1	0.06	0.11	<0.10	<0.10	<0.10
Phenols	NV	NV	mg/L	nd	nd	nd	nd	nd	nd	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DOC	5	3.90	mg/L	0.8	0.6	0.5	0.7	0.5	0.6	0.6	0.8	0.6	1.1	1.3	1.7	3.5	4.8	1.9	2.3	1.5	0.9
Conductivity	NV	NV	uS/cm	667	654	637	668	634	634	634	634	646	685	678	662	666	590	664	667	689	701
pH	6.5-8.5	NV	Unitless	8.20	8.20	8.20	8.10	8.00	8.10	8.10	8.07	7.86	7.95	8.20	8.04	7.99	8.06	8.08	8.03	8.34	8.07
Sulphate	500	277	mg/L	102	97	100	101	-	88	89	83	100	106	106	109	104	103	101	104	97	103
Hardness	80-100	407	mg/L	240	220	230	220	220	210	200	210	220	234	243	228	228	215	239	197	228	234
Aluminum	0.1	0.07	mg/L	nd	nd	nd	nd	nd	nd	<0.005	<0.005	0.04	0.03	0.02	0.02	0.02	0.02	0.01	0.01	<0.004	<0.004
Arsenic	0.025	0.001	mg/L	0.001	0.002	0.002	0.001	nd	0.002	<0.001	0.003	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.001	<0.003	<0.003
Barium	1.0	0.32	mg/L	0.05	0.05	0.05	0.04	0.04	0.04	0.05	0.05	0.05	0.04	0.05	0.05	0.05	0.05	0.05	0.04	0.05	0.05
Boron	5.0	1.32	mg/L	0.40	0.41	0.41	0.40	0.39	0.40	0.39	0.42	0.42	0.39	0.44	0.38	0.40	0.39	0.42	0.33	0.40	0.38
Cadmium	0.005	0.002	mg/L	0.0006	0.0001	0.0004	0.0003	0.0004	0.0002	0.0002	<0.0001	0.00011	0.00013	0.00013	0.00009	0.00008	0.00003	0.00006	0.00003	<0.001	<0.001
Calcium	NV	NV	mg/L	42	38	38	37	37	36	35	37	38	40	42	40	39	37	42	34	41	42
Chromium	0.05	0.01	mg/L	nd	nd	nd	nd	nd	nd	<0.005	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.003	<0.003	<0.003
Copper	1.0	0.5	mg/L	nd	nd	0.001	0.001	nd	0.001	0.002	<0.0005	0.008	<0.002	<0.002	<0.002	0.001	<0.002	0.0006	<0.002	<0.003	<0.003
Iron	0.3	0.17	mg/L	nd	nd	nd	nd	nd	nd	<0.1	<0.1	0.014	<0.005	0.007	<0.005	<0.005	<0.005	<0.005	<0.010	<0.010	<0.010
Lead	0.01	0.003	mg/L	nd	nd	nd	nd	nd	nd	<0.0005	<0.0005	0.00007	<0.00002	0.00003	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.002	<0.002
Magnesium	NV	NV	mg/L	34	30	32	30	31	29	28	29	30.7	33	34	31	32	30	32	27	31	32
Manganese	0.05	0.04	mg/L	0.004	0.04	nd	nd	0.00	0.03	<0.002	0.02	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.00	<0.002	0.01
Potassium	NV	NV	mg/L	1.6	1.5	3.2	1.5	1.6	1.5	1.4	1.4	1.4	1.5	1.6	1.5	1.3	1.3	1.4	1.2	1.4	1.5
Sodium	200	116	mg/L	64	57	65	60	61	57	58	59	61	63	63	59	63	57	63	52	60	64
Zinc	5.0	2.5	mg/L	nd	nd	3.2	nd	0.007	nd	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.008	<0.005	<0.005

Notes: Provided on Page 1 of Appendix F

**HISTORICAL GROUNDWATER QUALITY DATA  
OW-8S**

Parameter	ODWS	RUC	UNITS	Jun-16	Nov-16	Jun-17	Oct-17	May-18	Oct-18	Jun-19	Nov-19	Jun-20	Nov-20	Jun-21	Nov-21	May-22	Nov-22	May-23	Sep-23	May-24	Nov-24	May-25	Sep-25
Alkalinity	500	425	mg/L	256	232	225	149	215	222	235	206	216	199	214	212	222	210	218	230	220	220	220	220
Chloride	250	149	mg/L	30	31	29	6	40	41	44	46	48	50	55	50	58	55	58	58	53	54	51	51
Nitrate	10	2.58	mg/L	0.10	<0.10	<0.05	0.20	<0.05	<0.05	<0.05	<0.05	0.10	<0.05	0.12	<0.05	0.20	<0.05	0.1	0.05	<0.010	<0.10	<0.10	<0.10
Nitrite	1	0.28	mg/L	<0.10	<0.10	<0.05	0.10	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	0.11	<0.010	<0.010	<0.010
Ammonia	NV	NV	mg/L	<0.01	<0.01	<0.01	<0.01	0.04	0.03	0.050	0.02	0.03	0.02	0.02	0.03	<0.01	<0.01	<0.01	<0.05	<0.050	<0.050	<0.050	<0.050
TKN	NV	NV	mg/L	<0.05	0.11	<0.10	0.25	0.20	0.20	0.20	0.10	0.10	0.10	0.20	0.20	0.10	0.10	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10
Phenols	NV	NV	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010
DOC	5	3.90	mg/L	<0.2	1.4	0.9	2.2	1	1.3	4.3	2.2	1.2	0.7	1.8	1	0.7	<0.2	<0.2	1.9	0.76	0.47	<0.40	0.52
Conductivity	NV	NV	uS/cm	709	714	719	689	710	740	717	729	726	737	745	745	743	749	765	757	770	750	770	770
pH	6.5-8.5	NV	Unitless	8.16	8.10	8.15	8.20	8.17	8.00	8.14	8.04	8.07	8.06	8.17	7.90	8.11	8.01	8.06	7.67	8.18	8.27	8.18	8.07
Sulphate	500	277	mg/L	103	108	86	164	100	99	94	98	99	99	99	93	93	96	95	94	87	83	85	77
Hardness	80-100	407	mg/L	245	229	259	180	253	246	244	242	252	258	278	257	255	247	252	245	240	220	250	250
Aluminum	0.1	0.07	mg/L	0.01	0.01	0.01	0.04	0.03	0.03	0.03	0.04	0.02	0.03	0.04	<0.01	0.02	0.03	0.04	0.03	-	-	-	-
Arsenic	0.025	0.001	mg/L	0.001	0.001	0.001	0.000	<0.0001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.0007	0.0009	-	-	-	-
Barium	1.0	0.32	mg/L	0.05	0.05	0.05	0.03	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.05	0.05	0.05	0.053	0.05	0.048	0.043	0.049	0.049
Boron	5.0	1.32	mg/L	0.39	0.38	0.43	0.52	0.39	0.40	0.39	0.36	0.40	0.43	0.46	0.43	0.42	0.42	0.426	0.39	0.41	0.39	0.39	0.38
Cadmium	0.005	0.002	mg/L	0.00008	0.00004	<0.0001	0.000113	0.000052	0.000025	0.000025	0.000034	0.00003	0.000023	0.000026	0.000028	0.000025	0.000029	0.00002	0.00002	-	-	-	-
Calcium	NV	NV	mg/L	42	39	45	39	44	43	42	40	42	45	48	42	42	41	44	42	41	37	43	44
Chromium	0.05	0.01	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	-	-	-	-
Copper	1.0	0.5	mg/L	<0.002	0.0005	<0.002	<0.002	<0.002	0.002	0.002	<0.002	<0.002	0.0021	<0.002	<0.002	0.01	0.001	0.0004	0.0009	-	-	-	-
Iron	0.3	0.17	mg/L	<0.005	<0.005	<0.005	0.007	<0.005	<0.005	<0.005	<0.005	0.005	0.006	<0.005	<0.005	0.008	0.013	<0.005	<0.005	<0.100	<0.100	<0.100	<0.1
Lead	0.01	0.003	mg/L	<0.00002	<0.00002	0.00006	<0.00002	<0.00002	<0.00002	0.00018	0.00003	0.00004	0.00008	0.00002	0.00003	0.00081	0.00005	<0.00002	<0.00002	-	-	-	-
Magnesium	NV	NV	mg/L	34	32	36	20	35	34	34	35	36	36	39	37	36	35	35	34	34	30	34	33
Manganese	0.05	0.04	mg/L	<0.001	0.01	<0.001	0.00	<0.001	0.00	<0.001	0.00	<0.001	0.00	<0.001	0.01	<0.001	0.00	<0.001	<0.01	<0.002	<0.002	<0.002	<0.002
Potassium	NV	NV	mg/L	1.4	1.3	1.4	1.3	1.4	1.4	1.3	1.3	1.6	1.5	1.6	1.7	1.5	1.6	1.5	1.3	1.3	1.3	1.3	1.5
Sodium	200	116	mg/L	65	61	69	88	70	69	66	64	67	65	74	67	67	65	67	64	64	60	66	66
Zinc	5.0	2.5	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	-	-	-

Notes: Provided on Page 1 of Appendix F

**HISTORICAL GROUNDWATER QUALITY DATA  
OW-8D**

Parameter	ODWS	RUC	UNITS	Jul-07	Dec-07	Jul-08	Dec-08	Jul-09	Nov-09	Mar-10	Dec-10	Jun-11	Oct-11	Jun-12	Oct-12	Jun-13	Nov-13	Jul-14	Nov-14	May-15	Oct-15	
Alkalinity	500	425	mg/L	160	153	149	165	151	145	145	143	147	157	159	164	161	167	156	162	153	154	
Chloride	250	149	mg/L	7.0	6.0	5.0	5.0	7.0	6.0	7.0	6.0	4.9	4.6	5.2	4.7	6.3	5.2	5.8	5.8	7	7.2	
Nitrate	10	2.58	mg/L	nd	nd	0.20	0.10	nd	nd	<0.1	0.20	0.20	0.20	0.10	0.20	0.20	0.30	0.20	0.20	<0.25	0.17	
Nitrite	1	0.28	mg/L	nd	nd	nd	nd	nd	nd	<0.01	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	0.20	<0.1	<0.1	<0.25	<0.10	
Ammonia	NV	NV	mg/L	nd	0.07	nd	nd	nd	nd	<0.05	<0.05	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	0.02	0.02	<0.02	
TKN	NV	NV	mg/L	0.20	0.30	0.20	0.20	0.30	0.20	0.40	0.40	0.22	0.31	<0.05	0.25	0.07	0.28	0.12	0.10	<0.10	<0.10	
Phenols	NV	NV	mg/L	nd	nd	nd	nd	nd	nd	<0.001	0.004	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
DOC	5	3.90	mg/L	0.8	1.0	0.8	0.8	1.0	0.9	2.1	1.2	0.8	1.4	1.2	1.4	4.7	3.4	2.0	5.6	1.4	1.9	
Conductivity	NV	NV	uS/cm	730	717	697	686	697	679	679	675	676	747	737	717	755	635	731	687	719	713	
pH	6.5-8.5	NV	Unitless	8.20	8.20	8.20	8.20	8.00	8.00	8.10	8.07	7.90	7.95	8.07	8.02	8.09	8.08	8.09	8.04	8.04	8.28	8.06
Sulphate	500	277	mg/L	195	180	178	183	-	190	190	170	187	204	203	207	206	209	207	203	196	198	
Hardness	80-100	407	mg/L	200	180	200	180	170	170	170	170	169	201	203	196	191	191	210	166	181	181	
Aluminum	0.1	0.07	mg/L	nd	nd	nd	nd	nd	nd	<0.005	<0.005	0.24	0.03	0.01	0.03	0.07	0.03	0.02	0.01	<0.004	<0.004	
Arsenic	0.025	0.001	mg/L	nd	nd	nd	nd	nd	nd	<0.001	<0.001	0.0005	0.0004	0.0003	0.0005	0.000	0.0004	0.0002	0.0003	<0.003	<0.003	
Barium	1.0	0.32	mg/L	0.028	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	
Boron	5.0	1.32	mg/L	0.49	0.49	0.49	0.48	0.51	0.49	0.5	0.51	0.51	0.49	0.54	0.47	0.48	0.48	0.54	0.42	0.49	0.48	
Cadmium	0.005	0.002	mg/L	0.0004	0.0009	0.0005	0.0008	nd	0.0003	0.0003	<0.0001	0.0002	<0.00002	0.0001	0.0002	0.0002	0.00008	0.0003	0.0002	<0.001	<0.001	
Calcium	NV	NV	mg/L	43	39	43	36	38	37	38	38	37	45	45	43	42	42	47	36	41	40	
Chromium	0.05	0.01	mg/L	nd	nd	nd	nd	nd	nd	<0.005	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.003	<0.003	<0.003	
Copper	1.0	0.5	mg/L	nd	nd	0.001	0.002	nd	0.002	0.003	<0.0005	<0.002	<0.002	<0.002	<0.002	0.0014	<0.002	0.0013	<0.002	<0.003	<0.003	
Iron	0.3	0.17	mg/L	nd	nd	nd	nd	nd	nd	<0.1	<0.1	0.089	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.010	<0.010	
Lead	0.01	0.003	mg/L	nd	nd	nd	nd	nd	nd	<0.0005	<0.0005	0.00008	<0.00002	<0.00002	<0.00002	0.00002	<0.00002	0.00002	<0.00002	<0.002	<0.002	
Magnesium	NV	NV	mg/L	22	21	22	22	19	18	18	19	18.6	21.8	22.3	21.3	20.9	20.8	22.5	18.4	19.3	19.9	
Manganese	0.05	0.04	mg/L	nd	0.002	nd	nd	0.006	nd	<0.002	0.009	0.014	0.007	0.002	0.003	<0.001	0.006	<0.001	<0.001	<0.002	<0.002	
Potassium	NV	NV	mg/L	1.5	1.4	3.4	1.5	1.5	1.4	1.6	1.3	1.3	1.4	1.5	1.3	1.3	1.3	1.5	1.2	1.39	1.44	
Sodium	200	116	mg/L	89	84	92	77	84	79	82	80	77.8	86	86.9	80.5	80.9	78.4	88.2	70	79.6	83.4	
Zinc	5.0	2.5	mg/L	nd	nd	0.006	0.007	nd	nd	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	

Notes: Provided on Page 1 of Appendix F

**HISTORICAL GROUNDWATER QUALITY DATA  
OW-8D**

Parameter	ODWS	RUC	UNITS	Jun-16	Nov-16	Jun-17	Oct-17	May-18	Oct-18	Jun-19	Nov-19	Jun-20	Nov-20	Jun-21	Nov-21	May-22	Nov-22	May-23	Sep-23	May-24	Nov-24	May-25	Sep-25
Alkalinity	500	425	mg/L	155	159	154	220	148	156	150	145	152	140	149	148	154	145	150	150	150	150	150	160
Chloride	250	149	mg/L	5.8	0.9	5.9	28.3	7.1	6.8	7.3	6.1	8.6	7.9	8.0	8.0	8.5	7.3	8.5	8.5	7.9	8.5	8.6	7.8
Nitrate	10	2.58	mg/L	0.20	0.40	0.21	<0.1	0.17	0.23	0.13	0.11	0.28	0.24	0.36	0.14	0.30	0.16	0.18	0.18	<0.010	0.21	0.14	0.27
Nitrite	1	0.28	mg/L	<0.1	0.30	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	0.14	<0.010	<0.010	<0.010
Ammonia	NV	NV	mg/L	<0.01	<0.01	<0.01	<0.01	0.04	0.02	0.06	<0.01	0.01	0.01	<0.01	0.11	<0.01	<0.01	<0.01	<0.01	<0.050	<0.050	<0.050	<0.050
TKN	NV	NV	mg/L	0.09	<0.05	0.10	0.20	0.20	0.20	0.20	0.10	0.10	0.10	<0.1	0.20	<0.1	<0.1	<0.1	<0.1	0.13	0.15	<0.10	0.21
Phenols	NV	NV	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010
DOC	5	3.90	mg/L	0.4	1.1	1.1	2.3	1.3	2.5	4.2	3.3	4.0	0.90	1.6	1.0	1.9	0.80	0.80	2.6	0.64	0.82	0.64	0.85
Conductivity	NV	NV	uS/cm	694	718	707	713	689	732	703	708	700	703	703	709	683	684	695	684	690	680	670	680
pH	6.5-8.5	NV	Unitless	8.09	8.03	8.14	8.15	8.19	7.91	8.02	7.94	8.09	8.07	8.16	7.88	8.03	8.02	8	7.4	8.17	8.21	8.19	8.08
Sulphate	500	277	mg/L	191	202	165	83	197	198	199	189	194	192	200	191	182	188	189	187	180	170	170	160
Hardness	80-100	407	mg/L	179	182	196	246	193	193	191	183	187	187	213	185	176	173	173	165	170	160	160	160
Aluminum	0.1	0.07	mg/L	0.01	0.02	0.02	0.04	0.03	0.03	0.03	0.04	0.02	0.02	0.04	<0.01	<0.01	<0.01	0.03	0.02	--	--	-	-
Arsenic	0.025	0.001	mg/L	0.000	0.0002	<0.0007	0.0012	<0.0001	0.0002	0.0002	0.0003	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	--	--	-	-
Barium	1.0	0.32	mg/L	0.03	0.03	0.03	0.05	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.03	0.03	0.02	0.03	0.03
Boron	5.0	1.32	mg/L	0.47	0.47	0.53	0.43	0.48	0.49	0.51	0.45	0.52	0.52	0.56	0.53	0.53	0.52	0.53	0.487	0.51	0.47	0.46	0.46
Cadmium	0.005	0.002	mg/L	0.0001	0.0001	0.0003	0.0001	0.000152	0.0001	0.0001	0.000238	0.0001	0.0001	0.000214	0.000164	0.000318	0.000179	0.0001	0.0001	--	--	-	-
Calcium	NV	NV	mg/L	39	40	43	42	43	43	41	39	40	41	47	39	37	37	38	36	39	36	35	36
Chromium	0.05	0.01	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	--	--	-	-
Copper	1.0	0.5	mg/L	<0.002	0.0007	<0.002	<0.002	<0.002	<0.002	0.0007	<0.002	<0.002	0.0025	0.006	<0.002	<0.002	0.0012	0.0005	0.002	--	--	-	-
Iron	0.3	0.17	mg/L	<0.005	<0.005	0.007	0.023	<0.005	<0.005	<0.005	<0.005	<0.005	0.008	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.100	<0.100	<0.100	<0.1
Lead	0.01	0.003	mg/L	<0.00002	<0.00002	<0.00005	0.00005	<0.00002	<0.00002	<0.00002	0.00002	<0.00002	0.00005	0.00005	<0.00002	0.00003	0.00003	<0.00002	0.0001	--	--	-	-
Magnesium	NV	NV	mg/L	19.9	20.2	21.7	34.5	21	21	21.3	21.2	21.3	20.6	23.1	21.5	20.2	19.8	19.1	18.3	19	18	17	18
Manganese	0.05	0.04	mg/L	0.002	0.002	0.003	0.006	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002
Potassium	NV	NV	mg/L	1.2	1.2	1.3	1.5	1.3	1.3	1.3	1.2	1.5	1.3	1.4	1.5	1.4	1.4	1.3	1.1	1.3	1.2	1.1	13
Sodium	200	116	mg/L	83	78.6	90.2	68.1	88.8	89.9	87.3	81.7	85.2	82.3	91.1	84.4	81	79.5	83.0	78.3	83.0	82.0	79.0	81.0
Zinc	5.0	2.5	mg/L	<0.005	<0.005	<0.005	0.052	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	--	--	-	-

Notes: Provided on Page 1 of Appendix F

**HISTORICAL GROUNDWATER QUALITY DATA  
OW-9**

Parameter	ODWS	RUC	UNITS	Jul-07	Dec-07	Jul-08	Dec-08	Jul-09	Nov-09	Mar-10	Dec-10	Jun-11	Oct-11	Jun-12	Oct-12	Jun-13	Nov-13	Jul-14	Nov-14	May-15	Oct-15
Alkalinity	500	425	mg/L	111	107	106	111	108	113	106	103	105	103	103	105	102	104	100	103	98	103
Chloride	250	149	mg/L	3.0	3.0	2.0	2.0	2.0	2.0	6.0	2.0	1.6	1.7	1.6	1.7	1.4	1.5	1.6	1.4	2.0	2.1
Nitrate	10	2.58	mg/L	nd	nd	nd	0.1	nd	0.2	<0.1	<0.1	0.10	0.20	0.10	0.10	0.10	<0.1	0.10	0.10	<0.25	<0.10
Nitrite	1	0.28	mg/L	nd	nd	nd	nd	nd	0.09	0.01	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1	<0.1	<0.25	<0.10
Ammonia	NV	NV	mg/L	0.14	0.07	nd	nd	0.06	0.44	<0.05	<0.05	0.06	<0.01	0.11	0.02	0.15	0.46	0.07	0.19	0.06	0.10
TKN	NV	NV	mg/L	0.5	0.3	0.5	0.2	0.5	0.7	0.5	0.2	0.2	0.26	0.22	0.47	0.24	0.87	0.25	0.30	0.14	0.14
Phenols	NV	NV	mg/L	nd	nd	nd	nd	nd	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DOC	5	3.90	mg/L	1.1	1.2	1.1	1.1	2	1.3	1.2	1.3	1.0	1.3	1.4	1.0	6.7	3.3	1.8	4.1	1.6	1.6
Conductivity	NV	NV	uS/cm	709	713	694	703	693	694	698	685	685	713	692	664	669	583	672	651	687	696
pH	6.5-8.5	NV	Unitless	8.10	8.20	8.10	8.10	7.90	7.80	8.00	8.01	7.86	7.92	8.06	8.02	8.00	8.03	8.06	8.06	8.15	7.81
Sulphate	500	277	mg/L	230	212	235	246	-	230	240	220	222	228	222	220	219	221	224	224	236	253
Hardness	80-100	407	mg/L	190	170	180	170	170	170	170	160	167	174	174	164	163	154	181	147	171	168
Aluminum	0.1	0.07	mg/L	0.008	nd	nd	nd	nd	<0.005	<0.005	0.02	0.03	0.03	0.01	0.03	0.02	0.02	0.02	0.01	<0.004	<0.004
Arsenic	0.025	0.001	mg/L	0.005	0.003	0.003	0.003	0.003	0.005	0.004	0.004	0.006	0.005	0.005	0.004	0.009	0.009	0.005	0.005	0.004	0.005
Barium	1.0	0.32	mg/L	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.03	0.02	0.03	0.02	0.02	0.02	0.03	0.02	0.02	0.02
Boron	5.0	1.32	mg/L	0.48	0.48	0.47	0.47	0.05	0.47	0.45	0.44	0.49	0.45	0.50	0.44	0.46	0.43	0.50	0.39	0.45	0.46
Cadmium	0.005	0.002	mg/L	0.0002	nd	0.0002	0.0002	0.0001	nd	0.0003	<0.0001	0.00009	<0.00002	0.00005	0.00008	0.00009	0.00004	0.00009	0.00006	<0.001	<0.001
Calcium	NV	NV	mg/L	41	37	39	37	37	37	37	36	36	38	38	36	35	33	40	32	38	37
Chromium	0.05	0.01	mg/L	nd	nd	nd	nd	nd	<0.005	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.003	<0.003	<0.003
Copper	1.0	0.5	mg/L	nd	nd	0.001	nd	nd	nd	<0.0005	<0.0005	<0.002	<0.002	<0.002	<0.002	0.0007	<0.002	0.0006	<0.002	<0.003	<0.003
Iron	0.3	0.17	mg/L	nd	nd	nd	nd	nd	nd	<0.1	<0.1	0.024	<0.005	<0.005	<0.005	0.028	0.025	0.007	<0.005	<0.010	<0.010
Lead	0.01	0.003	mg/L	nd	nd	nd	nd	nd	nd	0.0006	<0.0005	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.002
Magnesium	NV	NV	mg/L	21	19	20	19	19	18	19	18	19	19	19	18	18	17	20	16	19	19
Manganese	0.05	0.04	mg/L	0.018	0.013	nd	nd	nd	0.02	0.05	0.01	0.02	0.01	0.01	0.01	0.02	0.02	0.02	0.01	0.01	0.02
Potassium	NV	NV	mg/L	1.3	1.2	3.0	28	1.3	1.3	1.3	1.1	1.1	1.1	1.2	1.1	1.0	1.0	1.2	0.9	1.2	1.22
Sodium	200	116	mg/L	82	74	85	82	78	75	77	75	74	80	78	75	76	69	80	65	77	79
Zinc	5.0	2.5	mg/L	nd	nd	nd	0.008	nd	nd	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005

Notes: Provided on Page 1 of Appendix F

**HISTORICAL GROUNDWATER QUALITY DATA  
OW-9**

Parameter	ODWS	RUC	UNITS	Jun-16	Nov-16	Jun-17	Oct-17	May-18	Oct-18	Jun-19	Nov-19	Jun-20	Nov-20	Jun-21	Nov-21	May-22	Nov-22	May-23	Sep-23	May-24	Nov-24	May-25	Average	
Alkalinity	500	425	mg/L	106	105	106	102	97	122	97	94	101	90	98	100	102	99	107	107	100	290	100	108	
Chloride	250	149	mg/L	1.3	1.1	1.4	2.5	1.9	1.3	1.7	<0.5	2.2	2.4	2.5	1.9	1.7	2	3	2.8	1.2	10	1.3	2.2	
Nitrate	10	2.58	mg/L	<0.1	0.1	<0.05	0.10	0.08	0.17	<0.05	<0.05	0.27	0.09	0.17	0.12	0.30	0.09	0.12	0.10	<0.010	0.18	<0.10	0.11	
Nitrite	1	0.28	mg/L	<0.1	0.1	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	0.07	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	0.1	<0.010	<0.010	0.05	
Ammonia	NV	NV	mg/L	0.11	0.08	<0.01	0.08	0.19	0.15	0.210	0.09	0.1	0.05	0.01	0.06	0.05	0.05	<0.01	<0.05	<0.050	0.067	<0.050	0.10	
TKN	NV	NV	mg/L	0.15	0.27	0.2	0.22	0.4	0.3	0.4	0.3	0.3	0.2	0.1	0.4	0.2	0.1	<0.1	<0.1	<0.10	0.24	<0.10	0.28	
Phenols	NV	NV	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	0.0018	<0.0010	0.001	
DOC	5	3.90	mg/L	0.50	1.5	1.3	2.0	2.7	1.6	11.9	2.5	1.7	1.1	1.5	1.3	2.3	1	1.5	2.3	0.9	1.8	1	2.0	
Conductivity	NV	NV	uS/cm	686	692	692	682	676	694	672	681	674	677	678	689	675	676	686	679	680	740	680	684	
pH	6.5-8.5	NV	Unitless	8.02	7.95	8.10	8.06	8.18	7.86	7.94	7.83	8.05	8.05	8.13	7.59	7.98	7.91	7.59	7.08	8.11	8.12	8.06	8.0	
Sulphate	500	277	mg/L	227	231	200	201	236	231	239	230	234	228	246	240	229	233	243	255	220	110	210	226	
Hardness	80-100	407	mg/L	173	165	184	174	179	175	174	173	174	171	189	174	161	166	167	162	170	380	150	176	
Aluminum	0.1	0.07	mg/L	0.02	0.03	0.01	0.03	0.04	0.04	0.03	0.03	0.01	0.02	0.03	<0.01	<0.01	<0.01	0.03	0.02	--	--	-	0.02	
Arsenic	0.025	0.001	mg/L	0.005	0.003	0.004	0.004	0.004	0.004	0.005	0.003	0.004	0.005	0.003	0.004	0.007	0.004	0.003	0.004	0.004	--	--	-	0.005
Barium	1.0	0.32	mg/L	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.08	0.02	0.03
Boron	5.0	1.32	mg/L	0.44	0.43	0.49	0.49	0.45	0.46	0.47	0.44	0.49	0.49	0.52	0.49	0.49	0.49	0.50	0.47	0.5	0.07	0.44	0.45	
Cadmium	0.005	0.002	mg/L	0.0001	0.00009	0.0001	0.000101	0.000104	0.000023	0.000052	0.000099	0.000063	0.00008	0.000069	0.00009	0.000081	0.000067	0.00005	0.00004	--	--	-	0.0001	
Calcium	NV	NV	mg/L	37	36	40	37	39	39	37	36	37	37	41	37	34	35	37	35	38	81	33	38.2	
Chromium	0.05	0.01	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	--	--	-	0.001	
Copper	1.0	0.5	mg/L	<0.002	0.0004	<0.002	<0.002	<0.002	<0.002	0.0012	<0.002	<0.002	0.0008	0.008	<0.002	<0.002	0.0008	0.003	0.0005	--	--	-	0.001	
Iron	0.3	0.17	mg/L	<0.005	<0.005	<0.005	0.006	0.023	0.024	<0.005	<0.005	<0.005	0.01	0.006	0.016	<0.005	<0.005	<0.005	<0.005	<0.100	<0.100	<0.100	0.01	
Lead	0.01	0.003	mg/L	<0.00002	<0.00002	<0.00005	<0.00002	0.00004	0.00005	0.00003	0.00004	<0.00002	0.00003	0.00007	<0.00002	0.00007	0.00002	0.00002	<0.00002	--	--	-	0.0001	
Magnesium	NV	NV	mg/L	19	18	21	20	20	19	20	20	19	19	21	20	19	19	19	18	18	42	16	19.5	
Manganese	0.05	0.04	mg/L	0.01	0.01	0.02	0.01	0.02	0.02	0.02	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.00	<0.002	0.12	0.0051	0.02	
Potassium	NV	NV	mg/L	1.1	1.0	1.1	1.1	1.0	1.0	1.0	1.1	1.3	1.1	1.2	1.3	1.1	1.2	0.9	1.1	1.5	1	1	1.9	
Sodium	200	116	mg/L	76	73	83	80	81	81	80	78	78	75	83	78	73	75	77	73	78	19	73	76	
Zinc	5.0	2.5	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	--	--	-	0.003	

Notes: Provided on Page 1 of Appendix F

**HISTORICAL GROUNDWATER QUALITY DATA  
OW-10S**

Parameter	ODWS	RUC	UNITS	Jul-07	Dec-07	Jul-08	Dec-08	Jul-09	Nov-09	Mar-10	Dec-10	Jun-11	Oct-11	Jun-12	Oct-12	Jun-13	Nov-13	Jul-14	Nov-14	May-15	Oct-15
Alkalinity	500	425	mg/L	275	281	267	275	266	270	267	269	258	262	259	264	256	261	247	254	242	246
Chloride	250	149	mg/L	2.0	3.0	2.0	2.0	2.0	2.0	3.0	1.0	1.2	1.1	1.3	1.0	1.1	1.1	1.1	1.6	1.5	1.5
Nitrate	10	2.58	mg/L	nd	nd	nd	nd	nd	nd	<0.1	<0.1	0.10	0.10	0.10	0.10	0.30	0.10	0.30	0.10	<0.25	0.25
Nitrite	1	0.28	mg/L	nd	nd	nd	nd	nd	nd	<0.01	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.25	<0.25
Ammonia	NV	NV	mg/L	0.08	0.09	0.05	0.05	0.06	nd	<0.05	<0.05	<0.01	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	0.06	<0.02	<0.02
TKN	NV	NV	mg/L	0.2	0.4	0.4	0.50	0.4	1.00	0.70	<0.5	0.22	0.38	0.07	0.20	0.22	0.37	0.12	<0.10	0.11	0.13
Phenols	NV	NV	mg/L	nd	nd	nd	nd	nd	nd	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DOC	5	3.90	mg/L	1.1	1.1	1.0	1.0	0.9	1.4	1.0	1.0	0.9	1.2	0.8	2.2	8.6	3.4	2.2	3.3	1.8	1.2
Conductivity	NV	NV	uS/cm	884	896	843	842	820	817	802	819	812	912	869	876	860	764	859	837	859	855
pH	6.5-8.5	NV	Unitless	8.20	8.20	8.00	8.00	8.00	7.90	8.00	8.00	7.72	7.74	8.08	7.95	7.83	8.07	7.99	8.06	8.34	8.46
Sulphate	500	277	mg/L	218	199	175	202	-	180	180	170	195	218	214	245	219	220	221	206	228	228
Hardness	80-100	407	mg/L	480	390	410	410	380	370	360	370	404	430	419	415	394	371	398	373	384	391
Aluminum	0.1	0.07	mg/L	0.009	nd	nd	nd	nd	nd	<0.005	<0.005	0.03	0.05	0.02	0.04	0.03	0.04	0.02	0.02	<0.004	<0.004
Arsenic	0.025	0.001	mg/L	nd	nd	nd	nd	nd	nd	<0.001	<0.001	0.0007	0.0006	0.0005	0.0007	0.001	0.0006	0.0003	0.0004	<0.003	<0.003
Barium	1.0	0.32	mg/L	0.028	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.03	0.03
Boron	5.0	1.32	mg/L	0.35	0.36	0.32	0.36	0.31	0.35	0.31	0.35	0.33	0.37	0.35	0.36	0.32	0.37	0.33	0.36	0.32	0.30
Cadmium	0.005	0.002	mg/L	0.001	0.001	0.002	0.0005	0.0003	nd	<0.0001	<0.0001	0.00006	<0.00002	<0.00002	0.00008	0.00008	0.00003	<0.00002	<0.00002	<0.001	<0.001
Calcium	NV	NV	mg/L	96	82	83	83	78	78	74	75	82	89	86	86	81	76	81	77	79	81
Chromium	0.05	0.01	mg/L	nd	nd	nd	nd	nd	nd	<0.005	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.003	<0.003
Copper	1.0	0.5	mg/L	nd	nd	nd	0.001	nd	0.001	0.002	<0.0005	<0.002	<0.002	<0.002	<0.002	0.0008	<0.002	0.0005	0.0002	<0.003	<0.003
Iron	0.3	0.17	mg/L	nd	nd	nd	nd	nd	nd	<0.1	<0.1	<0.005	0.006	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.010
Lead	0.01	0.003	mg/L	nd	nd	nd	nd	nd	nd	<0.0005	<0.0005	<0.00002	<0.00002	<0.00002	0.00003	0.00002	<0.00002	<0.00002	<0.00002	<0.002	<0.002
Magnesium	NV	NV	mg/L	58	46	49	48	46	44	42	43	48	51	50	49	47	44	48	44	45	46
Manganese	0.05	0.04	mg/L	0.10	0.06	nd	nd	0.10	0.02	0.00	0.01	0.00	0.01	0.00	0.00	<0.001	0.01	<0.001	0.00	<0.002	<0.002
Potassium	NV	NV	mg/L	2.3	2.1	2.0	3.6	1.9	1.9	1.7	1.8	1.8	2.1	1.9	2.1	1.6	1.7	1.8	1.7	1.7	1.8
Sodium	200	116	mg/L	47	37	41	44	40	38	40	38	42	45	42	43	42	41	42	42	39	40
Zinc	5.0	2.5	mg/L	nd	nd	nd	0.01	nd	nd	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.006

Notes: Provided on Page 1 of Appendix F

**HISTORICAL GROUNDWATER QUALITY DATA  
OW-10S**

Parameter	ODWS	RUC	UNITS	Jun-16	Nov-16	Jun-17	Oct-17	May-18	Oct-18	Jun-19	Nov-19	Jun-20	Nov-20	Jun-21	Nov-21	May-22	Nov-22	May-23	Sep-23	May-24	Nov-24	May-25	Sep-25
Alkalinity	500	425	mg/L	260	255	260	255	251	241	249	234	238	245	237	244	250	253	257	276	260	270	260	270
Chloride	250	149	mg/L	2.4	<0.5	0.7	0.8	2.2	1.4	0.8	1.1	<0.5	1.2	1.8	1.9	1.0	1.0	1.4	2.2	1.2	1.4	<1.0	<1.0
Nitrate	10	2.58	mg/L	<0.25	0.30	0.30	0.25	0.20	0.27	0.15	0.25	0.11	0.30	0.26	0.32	0.12	0.50	0.22	0.18	<0.010	<0.10	0.19	<0.10
Nitrite	1	0.28	mg/L	<0.25	<0.1	0.3	<0.05	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	0.21	<0.010	<0.010	<0.010
Ammonia	NV	NV	mg/L	<0.02	<0.01	<0.01	<0.01	<0.01	0.05	0.030	0.04	0.01	0.07	0.02	0.03	0.04	<0.01	<0.01	<0.05	<0.050	<0.050	<0.050	<0.050
TKN	NV	NV	mg/L	<0.10	0.17	0.09	<0.1	0.16	0.30	0.20	0.10	0.10	<0.1	<0.1	0.40	1.50	0.20	0.20	0.2	<0.10	<0.10	<0.10	<0.10
Phenols	NV	NV	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010
DOC	5	3.90	mg/L	1.2	<0.2	1.2	0.8	2.3	2.2	1.5	2.4	3.2	1.3	1.6	1.8	1.2	3.0	0.7	2.1	0.41	0.54	0.52	0.55
Conductivity	NV	NV	uS/cm	873	829	873	844	821	823	840	792	821	785	824	804	806	780	813	805	800	770	780	800
pH	6.5-8.5	NV	Unitless	8.09	8.14	8.04	8.09	8.14	8.13	8.05	8.12	8.01	8.01	7.93	8.12	7.74	8.08	7.92	7.71	8.11	8.19	8.07	7.84
Sulphate	500	277	mg/L	237	206	219	177	175	205	197	198	195	192	197	198	184	178	189	183	160	160	150	150
Hardness	80-100	407	mg/L	397	387	381	417	379	397	383	371	375	368	385	417	385	355	370	350	350	340	330	350
Aluminum	0.1	0.07	mg/L	<0.004	0.02	0.02	0.03	0.06	0.06	0.06	0.05	0.06	0.04	0.05	0.06	0.03	0.05	0.03	0.03	--	--	-	-
Arsenic	0.025	0.001	mg/L	<0.003	0.0003	0.0003	<0.0007	0.0004	<0.0001	0.0004	0.0003	0.0002	0.0003	0.0002	0.0002	0.0002	0.0004	0.0003	0.0002	--	--	-	-
Barium	1.0	0.32	mg/L	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.03	0.03	0.03	0.03	0.03	0.02	0.03	0.03	0.03	0.03	0.03	0.03
Boron	5.0	1.32	mg/L	0.47	0.31	0.36	0.33	0.40	0.30	0.38	0.32	0.32	0.33	0.38	0.34	0.39	0.34	0.38	0.36	0.33	0.36	0.31	0.33
Cadmium	0.005	0.002	mg/L	<0.001	0.00005	0.00004	<0.0001	0.000027	0.000019	0.000029	0.000019	<0.000015	0.000017	0.00002	<0.000015	0.0000	0.0000	0.00002	<0.000015	--	--	-	-
Calcium	NV	NV	mg/L	82	78	77	85	75	81	78	74	74	72	79	85	76	69	73	71	74	70	70	74
Chromium	0.05	0.01	mg/L	<0.003	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	--	--	-	-
Copper	1.0	0.5	mg/L	<0.003	<0.002	0.0008	<0.002	<0.002	<0.002	<0.002	0.0015	0.002	<0.002	0.0009	0.011	<0.002	<0.002	0.0006	0.0005	--	--	-	-
Iron	0.3	0.17	mg/L	<0.010	<0.005	<0.005	<0.005	<0.005	0.043	0.036	<0.005	<0.005	0.014	0.01	0.008	0.007	0.045	0.019	<0.005	<0.100	<0.100	<0.100	<0.100
Lead	0.01	0.003	mg/L	<0.002	<0.00002	<0.00002	<0.00005	<0.00002	<0.00002	0.00003	0.00004	<0.00002	0.00003	0.00004	0.00009	0.00005	0.00011	0.00003	<0.00002	--	--	-	-
Magnesium	NV	NV	mg/L	47	47	46	50	47	47	46	45	47	46	46	50	47	44	46	42	41	41	39	40
Manganese	0.05	0.04	mg/L	<0.002	<0.001	<0.001	<0.001	<0.001	0.001	0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	0.002	0.001	<0.001	<0.002	0.01	<0.002	0.004
Potassium	NV	NV	mg/L	2.1	1.6	1.8	1.8	1.9	1.7	1.9	1.6	1.8	1.9	1.9	2.2	1.7	2	1.6	1.5	1.7	1.5	1.5	1900
Sodium	200	116	mg/L	43	43	42	45	45	44	45	43	40	42	40	44	42	40	40	39	39	39	38	40
Zinc	5.0	2.5	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	--	--	-	-

Notes: Provided on Page 1 of Appendix F

**HISTORICAL GROUNDWATER QUALITY DATA  
OW-10D**

Parameter	ODWS	RUC	UNITS	Jul-07	Dec-07	Jul-08	Dec-08	Jul-09	Nov-09	Mar-10	Dec-10	Jun-11	Oct-11	Jun-12	Oct-12	Jun-13	Nov-13	Jul-14	Nov-14	May-15	Oct-15
Alkalinity	500	425	mg/L	193	280	202	204	205	204	235	245	255	238	193	215	229	237	229	237	211	202
Chloride	250	149	mg/L	3.0	3.0	6.0	4.0	5.0	5.0	11	10	8.1	7.9	3.4	5.6	7.6	7.6	4.9	10.1	7.3	5.0
Nitrate	10	2.58	mg/L	nd	nd	0.3	0.3	0.1	0.5	2.4	3	2	2.4	0.3	1.3	1.6	2.2	0.8	2.5	1.4	0.7
Nitrite	1	0.28	mg/L	nd	nd	nd	nd	nd	nd	0.02	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.25	<0.10
Ammonia	NV	NV	mg/L	nd	0.07	0.09	nd	0.09	nd	<0.05	<0.05	<0.01	<0.01	0.08	<0.01	<0.01	<0.01	<0.01	0.03	<0.02	<0.02
TKN	NV	NV	mg/L	0.20	0.60	0.20	0.30	1.2	1.00	0.40	<0.5	0.26	0.17	0.09	0.07	0.10	0.08	0.22	<0.1	<0.10	<0.10
Phenols	NV	NV	mg/L	nd	nd	nd	nd	nd	nd	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DOC	5	3.90	mg/L	0.5	1.0	0.5	0.5	7.9	0.5	0.7	0.8	0.5	1.2	0.7	1.2	4.7	2.7	2.2	1.8	1.5	1.0
Conductivity	NV	NV	uS/cm	563	894	583	591	573	576	616	631	620	647	565	569	590	537	569	597	589	584
pH	6.5-8.5	NV	Unitless	8.20	8.20	8.10	8.20	8.00	8.00	8.00	8.00	7.73	6.90	8.06	7.99	7.80	7.99	8.04	8.01	8.41	7.99
Sulphate	500	277	mg/L	98	203	94	105	-	90	74	63	79	78	106	91	81	77	95	84	84	101
Hardness	80-100	407	mg/L	220	300	210	220	210	210	270	270	275	271	214	227	245	248	240	253	234	217
Aluminum	0.1	0.07	mg/L	0.04	nd	nd	nd	nd	nd	<0.005	<0.005	0.03	0.04	0.02	0.03	0.03	0.04	0.02	0.03	0.008	<0.004
Arsenic	0.025	0.001	mg/L	nd	nd	nd	nd	nd	nd	<0.001	<0.001	0.0005	0.0002	0.0003	0.0004	0.001	0.0003	0.0003	<0.0001	<0.003	<0.003
Barium	1.0	0.32	mg/L	0.11	0.07	0.11	0.09	0.10	0.10	0.12	0.12	0.13	0.12	0.11	0.11	0.12	0.12	0.11	0.12	0.10	0.09
Boron	5.0	1.32	mg/L	0.16	0.25	0.14	0.17	0.14	0.13	0.09	0.05	0.10	0.05	0.16	0.11	0.09	0.07	0.14	0.07	0.11	0.15
Cadmium	0.005	0.002	mg/L	0.0005	0.0002	0.0001	0.0005	0.0006	nd	<0.0001	<0.0001	0.00004	<0.00002	<0.00002	0.00002	0.00006	<0.00002	<0.00002	<0.00002	<0.001	<0.001
Calcium	NV	NV	mg/L	48	61	49	47	47	46	63	67	65	63	47	51	57	59	56	60	55	49
Chromium	0.05	0.01	mg/L	nd	nd	nd	nd	nd	nd	<0.005	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.004	<0.003
Copper	1.0	0.5	mg/L	nd	nd	0.001	0.001	nd	0.001	<0.0005	<0.0005	<0.002	<0.002	<0.002	<0.002	0.0005	<0.002	0.0003	0.0001	<0.003	<0.003
Iron	0.3	0.17	mg/L	nd	nd	nd	nd	nd	nd	<0.1	<0.1	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.010
Lead	0.01	0.003	mg/L	nd	nd	nd	nd	nd	nd	<0.0005	<0.0005	0.00008	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.002	<0.002
Magnesium	NV	NV	mg/L	24	35	22	24	23	23	26	26	28	27	24	24	25	25	25	25	24	23
Manganese	0.05	0.04	mg/L	0.01	0.05	0.004	nd	0.01	0.043	0.02	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.06
Potassium	NV	NV	mg/L	1.4	1.7	1.4	1.4	1.4	1.3	1.4	1.3	1.4	1.3	1.2	1.2	1.2	1.1	1.2	1.1	1.28	1.32
Sodium	200	116	mg/L	31	38	25	30	27	24	17	13	19	17	25	21	17	14	23	14	19	25
Zinc	5.0	2.5	mg/L	nd	nd	nd	nd	0.001	nd	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.009	<0.005

Notes: Provided on Page 1 of Appendix F

**HISTORICAL GROUNDWATER QUALITY DATA  
OW-10D**

Parameter	ODWS	RUC	UNITS	Jun-16	Nov-16	Jun-17	Oct-17	May-18	Oct-18	Jun-19	Nov-19	Jun-20	Nov-20	Jun-21	Nov-21	May-22	Nov-22	May-23	Sep-23	May-24	Nov-24	May-25	Sep-25	
Alkalinity	500	425	mg/L	231	187	216	215	199	191	214	226	200	165	183	231	201	185	218	193	210	180	210	190	
Chloride	250	149	mg/L	6.6	2.8	5.8	5.5	6.2	4.0	8.5	9.8	6.2	3.6	4.4	10	5.1	3.6	7.6	3.6	5.8	3.0	4.5	2.1	
Nitrate	10	2.58	mg/L	1.4	0.2	1.1	1.4	0.8	0.5	1.7	2.8	0.8	<0.05	0.2	2.6	0.4	0.2	1.2	<0.05	0.016	<0.10	0.54	<0.10	
Nitrite	1	0.28	mg/L	<0.1	0.2	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	0.69	<0.010	<0.010	<0.010	
Ammonia	NV	NV	mg/L	<0.01	<0.01	<0.01	<0.01	0.05	0.03	0.040	<0.01	0.03	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.050	<0.050	<0.050	
TKN	NV	NV	mg/L	0.07	<0.05	0.20	0.27	0.20	<0.1	0.10	<0.1	<0.1	<0.1	0.20	0.20	0.10	<0.1	<0.1	<0.1	0.1	<0.10	<0.10	0.11	
Phenols	NV	NV	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	
DOC	5	3.90	mg/L	<0.2	1.0	0.8	1.8	0.9	1.3	1.3	2.3	1.5	1.4	3.1	1.3	1.3	0.4	0.6	2.8	0.48	0.61	0.5	0.59	
Conductivity	NV	NV	uS/cm	605	563	589	592	579	582	592	620	566	551	559	621	566	561	599	557	580	550	590	570	
pH	6.5-8.5	NV	Unitless	8.07	8.06	8.11	8.08	8.15	7.94	8.11	7.92	8.06	8.08	8.10	8.06	8.06	7.98	8.06	7.55	8.22	8.25	8.14	8	
Sulphate	500	277	mg/L	85	112	70	69	88	98	76	65	91	108	103	70	94	104	89	108	80	100	94	97	
Hardness	80-100	407	mg/L	257	195	254	242	240	207	266	256	231	207	244	278	223	212	250	195	240	180	200	200	
Aluminum	0.1	0.07	mg/L	0.02	0.02	0.02	0.04	0.04	0.04	0.04	0.05	0.01	0.03	0.03	0.01	0.01	0.03	0.03	0.03	--	--	-	-	
Arsenic	0.025	0.001	mg/L	0.000	0.0003	<0.0007	0.0003	<0.0001	0.0004	0.0003	0.0003	0.0003	0.0005	0.0004	0.0003	0.0004	0.0004	0.0004	0.0004	0.0004	--	--	-	-
Barium	1.0	0.32	mg/L	0.12	0.10	0.12	0.12	0.11	0.10	0.12	0.11	0.12	0.10	0.11	0.13	0.10	0.10	0.11	0.10	0.11	0.08	0.09	0.12	
Boron	5.0	1.32	mg/L	0.09	0.16	0.11	0.12	0.12	0.16	0.08	0.05	0.14	0.18	0.18	0.08	0.15	0.18	0.11	0.16	0.12	0.18	0.16	0.16	
Cadmium	0.005	0.002	mg/L	0.00004	0.00002	<0.0001	0.000018	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	0.000018	0.000066	0.000015	<0.000015	<0.000015	<0.000001	0.00001	--	--	-	-	
Calcium	NV	NV	mg/L	60	41	58	54	55	45	63	58	51	44	54	64	48	44	57	41	55	37	45	46	
Chromium	0.05	0.01	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.01	--	--	-	-	
Copper	1.0	0.5	mg/L	<0.002	0.0003	<0.002	<0.002	0.002	<0.002	0.0005	<0.002	<0.002	0.0006	<0.002	<0.002	<0.002	0.0006	0.001	0.00006	--	--	-	-	
Iron	0.3	0.17	mg/L	<0.005	<0.005	<0.005	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	<0.005	<0.005	<0.005	<0.005	<0.100	<0.100	<0.1	
Lead	0.01	0.003	mg/L	<0.00002	<0.00002	<0.00005	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.00003	<0.00002	0.00003	0.00003	<0.00002	<0.00002	--	--	-	
Magnesium	NV	NV	mg/L	26	23	26	26	25	23	27	27	25	24	27	29	25	25	26	22	25	21	22	22	
Manganese	0.05	0.04	mg/L	0.01	0.02	0.03	0.03	0.01	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.01	0.009	0.003	0.041	
Potassium	NV	NV	mg/L	1.2	1.1	1.3	1.2	1.3	1.1	1.2	1.1	1.4	1.1	1.3	1.5	1.4	1.3	1.4	1.0	1.2	1.1	1.2	1.2	
Sodium	200	116	mg/L	20.7	27	22	21	24	28	16	16	22	28	29	14	24	26	19	27	19	27	28	27	
Zinc	5.0	2.5	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	--	--	-	-	

Notes: Provided on Page 1 of Appendix F

**HISTORICAL GROUNDWATER QUALITY DATA  
OW-11**

Parameter	ODWS	RUC	UNITS	Jul-07	Dec-07	Jul-08	Dec-08	Jul-09	Nov-09	Mar-10	Dec-10	Jun-11	Oct-11	Jun-12	Oct-12	Jun-13	Nov-13	Jul-14	Nov-14	May-15	Oct-15
Alkalinity	500	425	mg/L	1010	1090	967	1010	844	986	1070	1080	961	1170	1050	1120	1070	1080	2170	2370	1960	1740
Chloride	250	149	mg/L	100	130	93	90	76	120	95	88	54	73	66	69	53	90.4	268	280	261	211
Nitrate	10	2.58	mg/L	nd	nd	nd	nd	nd	nd	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<2.5	<1.0
Nitrite	1	0.28	mg/L	nd	nd	nd	nd	nd	nd	<0.01	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1	<0.1	<2.5	<1.0
Ammonia	NV	NV	mg/L	28	53	26	22	16	21	31	44	27	46	33	38	27	39	89	106	92	67
TKN	NV	NV	mg/L	24	46	22	20	18	23	35	43	34	46	40	51	30	44	107	111	110	71
Phenols	NV	NV	mg/L	0.006	0.007	0.005	0.001	0.008	0.007	0.003	0.01	0.008	0.011	0.007	0.01	0.005	0.005	0.721	0.583	0.168	0.012
DOC	5	3.90	mg/L	12	21	11	11	114	12	13	17	13	15	14	18	24	28	650	230	90	49
Conductivity	NV	NV	uS/cm	2040	2210	2090	2020	2100	2130	2190	2230	2080	2250	2030	2010	1930	1800	5280	4930	4030	3500
pH	6.5-8.5	NV	Unitless	7.70	7.50	7.30	7.5	7.40	7.30	7.30	7.15	7.00	7.84	7.15	7.17	7.00	7.14	7.18	7.27	7.65	7.80
Sulphate	500	277	mg/L	109	2.0	123	82	-	58	59	39	102	8.0	31	9.0	69	21	171	<1	<5.0	9.2
Hardness	80-100	407	mg/L	1100	950	1000	1000	1100	1000	920	920	1050	1000	933	1030	918	807	2410	1790	1640	1230
Aluminum	0.1	0.07	mg/L	0.007	0.009	0.006	nd	0.006	nd	0.006	0.008	0.05	0.06	0.05	0.06	0.05	0.06	0.12	0.11	0.041	0.011
Arsenic	0.025	0.001	mg/L	0.02	0.10	0.02	0.01	0.01	0.01	0.36	0.39	0.67	0.77	0.42	0.30	0.25	0.22	0.12	<0.1	0.03	0.04
Barium	1.0	0.32	mg/L	0.23	0.22	0.25	0.2	0.25	0.28	0.21	0.17	0.16	0.17	0.15	0.17	0.14	0.14	0.41	0.20	0.28	0.18
Boron	5.0	1.32	mg/L	0.26	0.45	0.21	0.22	0.17	0.29	0.32	0.4	0.32	0.40	0.32	0.37	0.29	0.37	2.6	2.2	1.9	1.4
Cadmium	0.005	0.002	mg/L	0.0025	nd	nd	nd	nd	nd	0.0003	<0.0001	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.00026	<0.00002	<0.001	<0.001
Calcium	NV	NV	mg/L	220	170	210	210	240	190	180	170	183	182	163	202	175	149	691	505	435	289
Chromium	0.05	0.01	mg/L	nd	nd	nd	nd	nd	nd	<0.005	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.017	0.009	0.016	0.01
Copper	1.0	0.5	mg/L	nd	nd	nd	nd	nd	nd	0.001	<0.0005	<0.002	<0.002	<0.002	<0.002	0.0006	<0.002	0.0032	<0.002	<0.003	<0.003
Iron	0.3	0.17	mg/L	17	31	12	4.4	14	8.1	3.3	31	33	32	30	35	29	33	10	8.5	24	30
Lead	0.01	0.003	mg/L	nd	nd	nd	nd	nd	nd	<0.0005	<0.0005	0.00008	0.00006	0.00007	0.00006	0.00004	0.00004	0.00121	0.00042	<0.002	<0.002
Magnesium	NV	NV	mg/L	140	130	120	120	130	120	120	120	145	134	128	127	117	106	166	129	135	123
Manganese	0.05	0.04	mg/L	0.24	0.16	0.27	0.25	0.31	0.18	0.19	0.14	0.19	0.15	0.17	0.14	0.17	0.14	1.09	0.61	0.61	0.37
Potassium	NV	NV	mg/L	20	30	17	16	13	18	19	23	21	25	19	21	15	17	144	125	116	90
Sodium	200	116	mg/L	68	92	62	66	49	69	78	87	76.8	85.4	61.9	70	60.3	74.3	308	257	259	196
Zinc	5.0	2.5	mg/L	nd	nd	0.006	0.007	0.008	0.001	0.006	0.007	<0.005	0.008	0.009	0.007	<0.005	<0.005	0.013	0.008	0.024	0.01

Notes: Provided on Page 1 of Appendix F

**HISTORICAL GROUNDWATER QUALITY DATA  
OW-11**

Parameter	ODWS	RUC	UNITS	Jun-16	Nov-16	Jun-17	Oct-17	May-18	Oct-18	Jun-19	Nov-19	Jun-20	Nov-20	Jun-21	Nov-21	May-22	Nov-22	May-23	Sep-23	May-24	Nov-24	May-25	Sep-25
Alkalinity	500	425	mg/L	1630	1410	1120	1220	1130	1080	987	982	991	858	859	917	916	894	876	869	860	880	870	910
Chloride	250	149	mg/L	185	197	173	180	307	223	289	258	260	287	308	306	306	300	300	273	260	260	250	240
Nitrate	10	2.58	mg/L	0.10	0.10	0.08	<0.1	<0.5	<0.05	<0.05	<0.05	0.07	<0.05	0.21	<0.05	<1	<0.5	<0.05	<0.05	<0.010	<0.10	<0.10	<0.10
Nitrite	1	0.28	mg/L	<0.1	<0.1	<0.05	<0.1	<0.5	0.10	<0.05	<0.05	0.16	<0.05	<0.05	<0.05	<1	<0.5	<0.05	<0.05	<0.10	<0.010	<0.010	<0.010
Ammonia	NV	NV	mg/L	46	50	52	45	59	58	55	52	56	31	45	33	49	40	35.3	28.5	23	23	22	56
TKN	NV	NV	mg/L	59	52	57	53	59	63	50	52	66	40	43	48	54	46	36.5	36	24	25	25	54
Phenols	NV	NV	mg/L	0.008	0.006	0.009	0.009	0.009	0.03	0.007	0.009	0.003	<0.002	0.002	0.002	<0.001	<0.001	<0.001	<0.001	0.002	0.002	0.002	0.005
DOC	5	3.90	mg/L	17	15	17	21	20	17	16	11	15	15	11	7.6	8.2	5.1	1.8	8.4	16	16	17	21
Conductivity	NV	NV	uS/cm	2850	2790	2730	2700	2510	2700	2550	2520	2490	2450	2450	2480	2430	2420	2460	2300	2300	2300	2300	2.4
pH	6.5-8.5	NV	Unitless	7.43	7.48	7.40	8.26	7.39	7.47	7.46	7.41	7.25	7.27	7.55	7.52	7.45	7.31	7.54	7.37	7.62	7.69	7.5	7.28
Sulphate	500	277	mg/L	8.0	4.0	2.0	2.0	<10	<1	2.0	3.0	2.0	2.0	3.0	2.0	<10	<10	5	11	1.3	<1.0	1.1	<1.0
Hardness	80-100	407	mg/L	1180	998	1120	1070	1040	970	989	953	988	965	962	999	928	942	943	914	940	930	920	930
Aluminum	0.1	0.07	mg/L	0.06	0.06	0.07	0.11	0.11	0.09	0.09	0.09	0.22	0.09	0.11	0.06	0.06	0.05	0.09	0.09	--	--	-	-
Arsenic	0.025	0.001	mg/L	0.04	0.03	0.03	0.03	0.04	0.02	0.01	0.02	0.01	0.01	0.001	0.003	0.003	0.002	0.002	0.002	--	--	-	-
Barium	1.0	0.32	mg/L	0.16	0.17	0.17	0.22	0.21	0.20	0.20	0.23	0.23	0.29	0.25	0.34	0.24	0.26	0.266	0.257	0.26	0.25	0.27	0.34
Boron	5.0	1.32	mg/L	0.98	0.88	0.97	0.98	0.84	0.83	0.73	0.78	0.73	0.57	0.56	0.55	0.55	0.51	0.52	0.42	0.41	0.43	0.38	0.43
Cadmium	0.005	0.002	mg/L	<0.00002	<0.00002	<0.0001	<0.00014	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	--	--	-
Calcium	NV	NV	mg/L	251	203	222	208	195	184	182	169	177	179	176	177	165	174	175	175	180	170	170	170
Chromium	0.05	0.01	mg/L	0.003	0.003	0.003	0.003	0.003	0.002	0.002	0.003	<0.002	<0.002	<0.002	<0.002	<0.002	0.001	<0.001	<0.001	--	--	-	-
Copper	1.0	0.5	mg/L	<0.002	0.0008	<0.002	<0.002	<0.002	<0.002	0.0012	0.011	<0.002	0.0019	<0.002	<0.002	<0.002	0.0007	0.0006	0.001	--	--	-	-
Iron	0.3	0.17	mg/L	46	34	45	36	36	36	30	30	35	0.04	13	12	15	12	11	8.1	<0.100	<0.100	<0.100	14
Lead	0.01	0.003	mg/L	0.00003	<0.00002	0.00009	<0.00002	0.00003	0.00003	0.00004	<0.0001	0.00081	0.0038	<0.0001	<0.0001	0.00023	<0.0001	<0.0001	<0.0001	<0.00004	--	--	-
Magnesium	NV	NV	mg/L	135	119	137	133	134	124	130	129	133	126	127	135	125	123	123	116	120	120	120	120
Manganese	0.05	0.04	mg/L	0.32	0.25	0.31	0.37	0.29	0.22	0.24	0.21	0.24	0.18	0.26	0.20	0.23	0.24	0.23	0.23	0.17	0.13	0.14	0.13
Potassium	NV	NV	mg/L	56	50	53	55	51	49	43	46	43	28	29	27	30	27	27	22	20	20	18	22
Sodium	200	116	mg/L	128	111	131	131	137	129	122	116	111	111	117	113	111	106	121	96	110	110	100	110
Zinc	5.0	2.5	mg/L	<0.005	<0.005	0.011	0.014	0.008	<0.005	0.005	<0.005	0.007	0.016	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	--	--	-	-

Notes: Provided on Page 1 of Appendix F

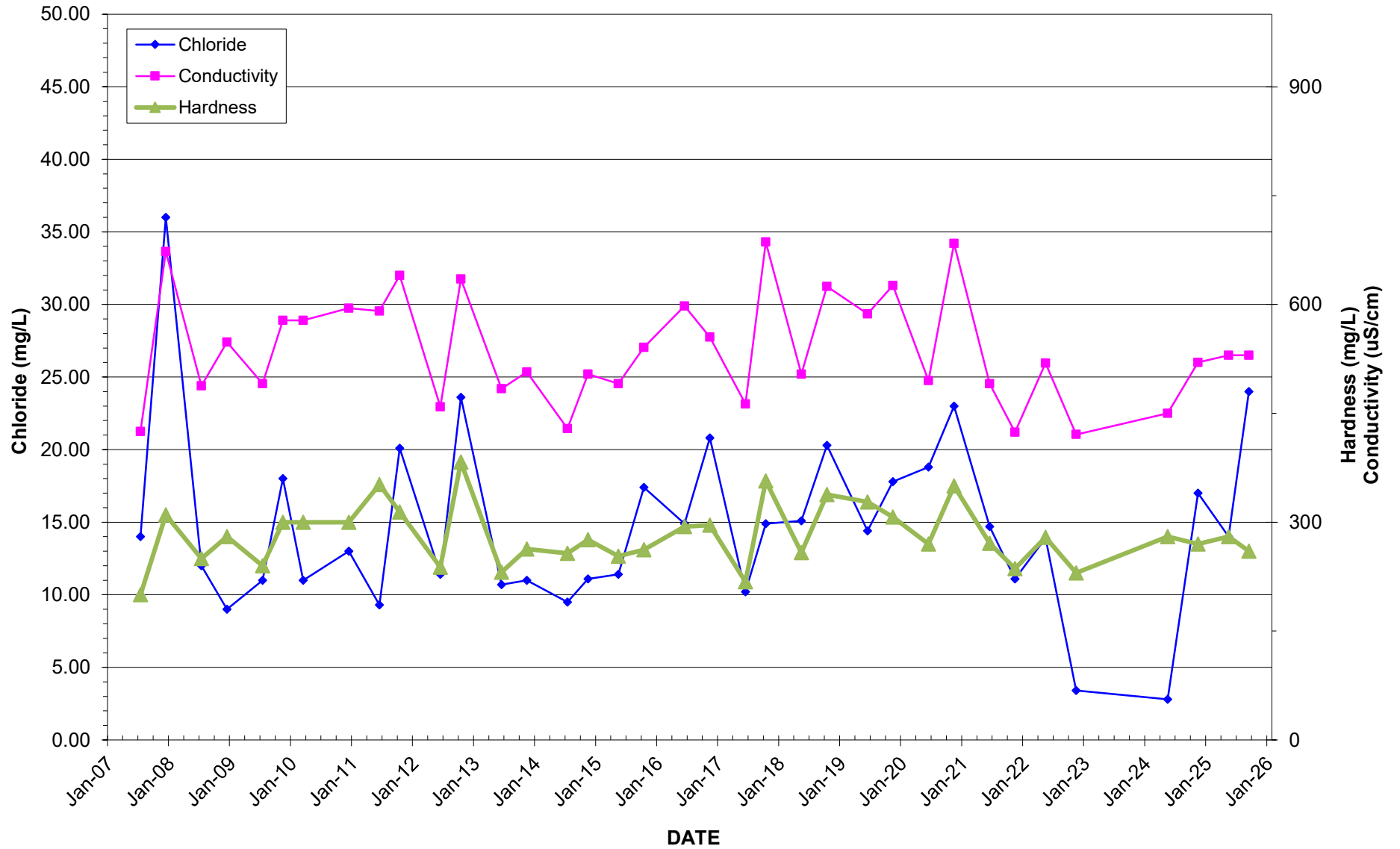
Notes:

1. ODWS= Ontario Drinking Water Standards (June 2003, Revised June 2006)
2. NM = Not Measured; NV = No Value; NR = Not Required
3. ND = Not Detected; NA = Not Applicable
4. \* indicates outlier interpreted as sample or lab error.
5. Data prior to 2024 from Annual Monitoring Report (2023), WSP Canada Inc.
6. Values reported as less than detection limits used as 1/2 detection limit for calculation of averages and plotting.
7. Values in bold represent results greater than the ODWS
8. Shaded values represent results greater than the Reasonable Use Criteria (RUC).
9. Results presented in mg/L unless otherwise specified; conductivity in  $\mu\text{S}/\text{cm}$  = microsiemens per centimeter; pH = Unitless.

## **Appendix G      Historic Surface Water Quality Results**

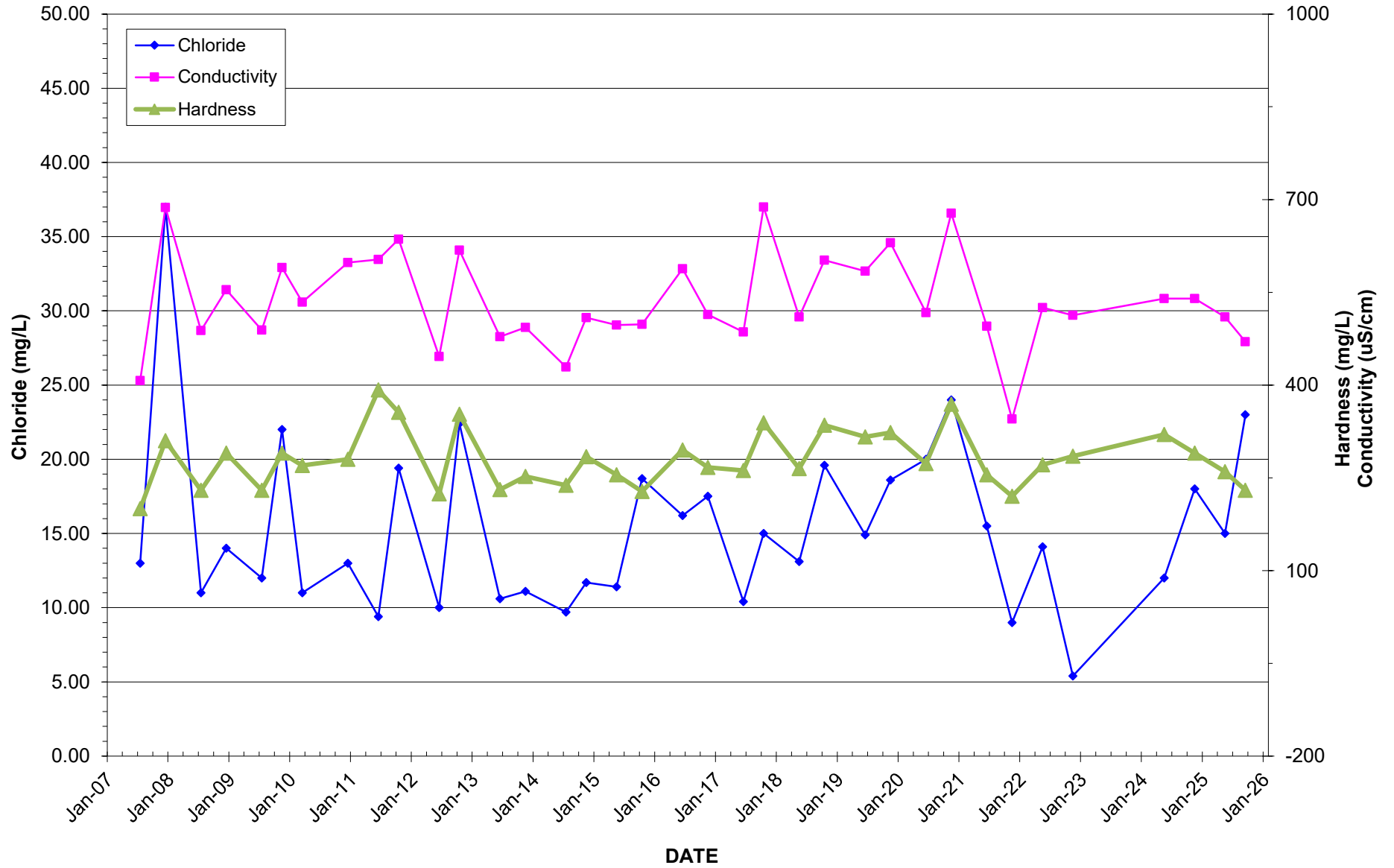
# HISTORICAL SURFACE WATER QUALITY TRENDS

## SURFACE WATER SAMPLING LOCATION - SW1



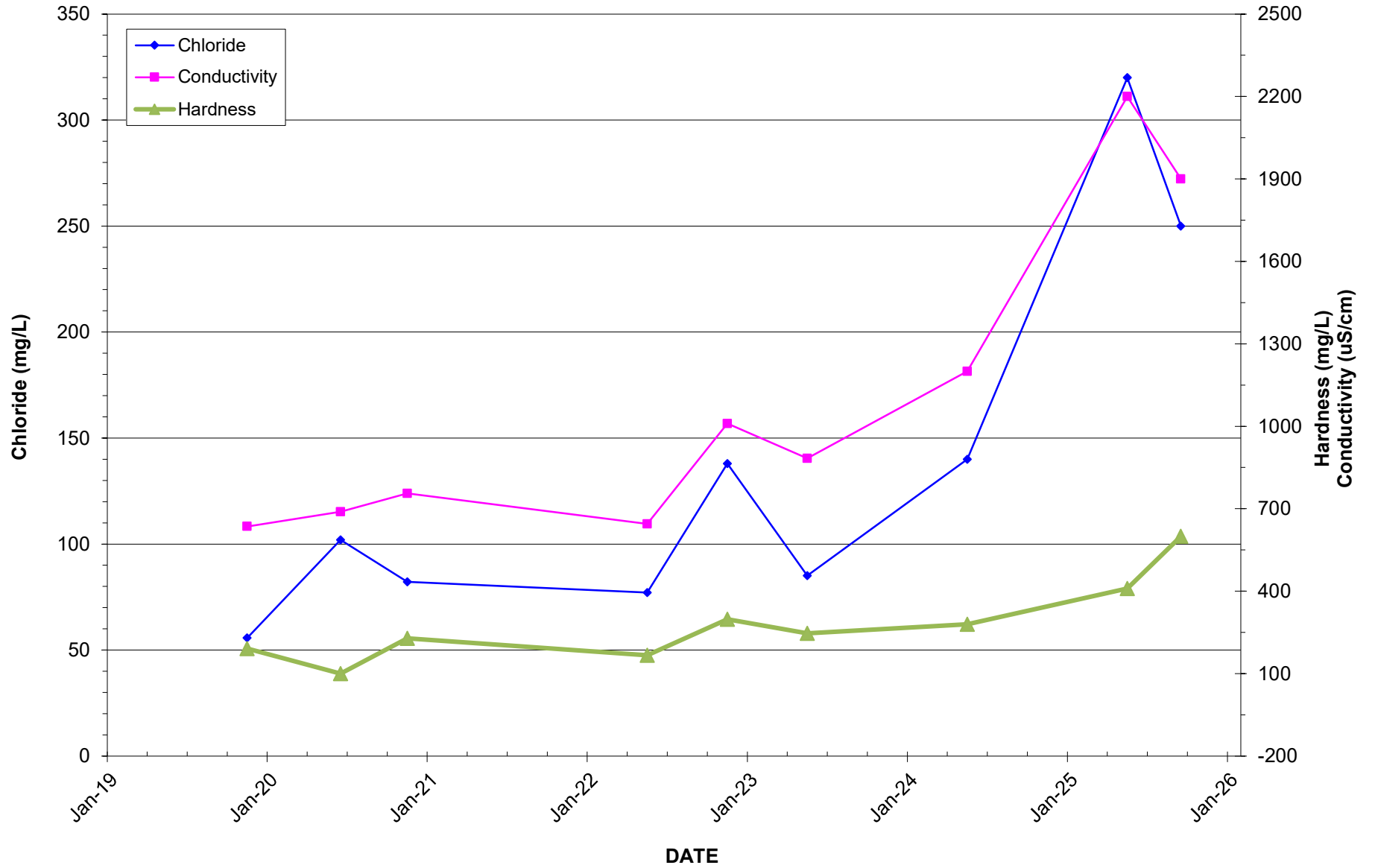
# HISTORICAL SURFACE WATER QUALITY TRENDS

## SURFACE WATER SAMPLING LOCATION - SW2



# HISTORICAL SURFACE WATER QUALITY TRENDS

## SURFACE WATER SAMPLING LOCATION - SW3





## **Appendix H      Laboratory Certificate of Analysis**



Your Project #: Huron (224058)  
 Your C.O.C. #: 1040162-02-01, 1040162-01-01

**Attention: Reporting Contacts**

GEI Consultants  
 1260 - 2nd Ave E  
 Unit 1  
 Owen Sound, ON  
 CANADA N4K 2J3

**Report Date: 2025/05/20**  
 Report #: R8541338  
 Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**BUREAU VERITAS JOB #: C553305**

**Received: 2025/05/10, 12:15**

Sample Matrix: Water  
 # Samples Received: 16

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Alkalinity	9	N/A	2025/05/15	CAM SOP-00448	SM 24 2320 B m
Alkalinity	7	N/A	2025/05/16	CAM SOP-00448	SM 24 2320 B m
Chloride by Automated Colourimetry	14	N/A	2025/05/14	CAM SOP-00463	SM 24 4500-Cl E m
Chloride by Automated Colourimetry	2	N/A	2025/05/15	CAM SOP-00463	SM 24 4500-Cl E m
Conductivity	9	N/A	2025/05/15	CAM SOP-00414	SM 24 2510 m
Conductivity	7	N/A	2025/05/16	CAM SOP-00414	SM 24 2510 m
Dissolved Organic Carbon (DOC) (1)	16	N/A	2025/05/12	CAM SOP-00446	SM 24 5310 B m
Hardness (calculated as CaCO3)	16	N/A	2025/05/14	CAM SOP 00102/00408/00447	SM 2340 B
Dissolved Metals by ICPMS	13	N/A	2025/05/13	CAM SOP-00447	EPA 6020B m
Total Metals Analysis by ICPMS	3	2025/05/16	2025/05/16	CAM SOP-00447	EPA 6020B m
Total Ammonia-N	16	N/A	2025/05/16	CAM SOP-00441	USGS I-2522-90 m
Nitrate & Nitrite as Nitrogen in Water (2)	16	N/A	2025/05/13	CAM SOP-00440	SM 24 4500-NO3I/NO2B
pH (3)	9	2025/05/13	2025/05/15	CAM SOP-00413	SM 24th - 4500H+ B
pH (3)	7	2025/05/13	2025/05/16	CAM SOP-00413	SM 24th - 4500H+ B
Phenols (4AAP)	14	N/A	2025/05/15	CAM SOP-00444	OMOE E3179 m
Phenols (4AAP)	2	N/A	2025/05/16	CAM SOP-00444	OMOE E3179 m
Sulphate by Automated Turbidimetry	14	N/A	2025/05/14	CAM SOP-00464	SM 24 4500-SO42- E m
Sulphate by Automated Turbidimetry	2	N/A	2025/05/15	CAM SOP-00464	SM 24 4500-SO42- E m
Total Kjeldahl Nitrogen in Water	10	2025/05/14	2025/05/15	CAM SOP-00938	SM 4500-N B m
Total Kjeldahl Nitrogen in Water	6	2025/05/14	2025/05/16	CAM SOP-00938	SM 4500-N B m
Total Phosphorus (Colourimetric)	3	2025/05/14	2025/05/15	CAM SOP-00407	SM 24 4500-P I

**Remarks:**

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, EPA, APHA or the Quebec Ministry of Environment.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement



Your Project #: Huron (224058)  
Your C.O.C. #: 1040162-02-01, 1040162-01-01

**Attention: Reporting Contacts**

GEI Consultants  
1260 - 2nd Ave E  
Unit 1  
Owen Sound, ON  
CANADA N4K 2J3

**Report Date: 2025/05/20**  
Report #: R8541338  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**BUREAU VERITAS JOB #: C553305**

**Received: 2025/05/10, 12:15**

Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.

(2) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

(3) "The CCME method and Analytical Protocol (O. Reg 153/04, O. Reg. 406/19) requires pH to be analyzed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the CCME and Analytical Protocol (O. Reg 153/04, O. Reg. 406/19) holding time. Bureau Veritas endeavors to analyze samples as soon as possible after receipt."

**Encryption Key**

Please direct all questions regarding this Certificate of Analysis to:

Babandeep Kaur, Project Manager 2

Email: Babandeep.kaur@bureauveritas.com

Phone# (905) 817-5700

=====

This report has been generated and distributed using a secure automated process.

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.



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VERITAS

Bureau Veritas Job #: C553305  
Report Date: 2025/05/20

GEI Consultants  
Client Project #: Huron (224058)  
Sampler Initials: BC

### RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		AQTH33			AQTH33			AQTH34		
Sampling Date		2025/05/08 09:50			2025/05/08 09:50			2025/05/08 09:20		
COC Number		1040162-01-01			1040162-01-01			1040162-01-01		
	UNITS	OW1	RDL	QC Batch	OW1 Lab-Dup	RDL	QC Batch	OW3	RDL	QC Batch
<b>Calculated Parameters</b>										
Hardness (CaCO3)	mg/L	440	1.0	9926824				370	1.0	9926824
<b>Inorganics</b>										
Total Ammonia-N	mg/L	0.061	0.050	9929366				<0.050	0.050	9929366
Conductivity	umho/cm	970	2.0	9927808				850	2.0	9927908
Total Kjeldahl Nitrogen (TKN)	mg/L	0.28	0.10	9928880				0.28	0.10	9928880
Dissolved Organic Carbon	mg/L	3.4	0.40	9927172				2.4	0.40	9927172
pH	pH	8.15		9927809				8.15		9927909
Phenols-4AAP	mg/L	<0.0010	0.0010	9929668	<0.0010	0.0010	9929668	<0.0010	0.0010	9929443
Dissolved Sulphate (SO4)	mg/L	110	1.0	9928164				14	1.0	9928164
Alkalinity (Total as CaCO3)	mg/L	340	1.0	9927789				330	1.0	9927912
Dissolved Chloride (Cl-)	mg/L	50	1.0	9928163				68	1.0	9928163
Nitrite (N)	mg/L	<0.010	0.010	9927772				<0.010	0.010	9927772
Nitrate (N)	mg/L	0.36	0.10	9927772				<0.10	0.10	9927772
Nitrate + Nitrite (N)	mg/L	0.36	0.10	9927772				<0.10	0.10	9927772
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate										



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Bureau Veritas Job #: C553305  
Report Date: 2025/05/20

GEI Consultants  
Client Project #: Huron (224058)  
Sampler Initials: BC

### RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		AQTH35		AQTH36			AQTH36		
Sampling Date		2025/05/08 09:35		2025/05/08 10:30			2025/05/08 10:30		
COC Number		1040162-01-01		1040162-01-01			1040162-01-01		
	UNITS	OW4	QC Batch	OW5	RDL	QC Batch	OW5 Lab-Dup	RDL	QC Batch
<b>Calculated Parameters</b>									
Hardness (CaCO3)	mg/L	410	9926824	450	1.0	9926824			
<b>Inorganics</b>									
Total Ammonia-N	mg/L	<0.050	9929366	0.060	0.050	9929366			
Conductivity	umho/cm	880	9927908	1000	2.0	9927808			
Total Kjeldahl Nitrogen (TKN)	mg/L	0.13	9928880	0.22	0.10	9928880			
Dissolved Organic Carbon	mg/L	3.9	9927172	2.1	0.40	9927172			
pH	pH	8.10	9927909	8.14		9927809			
Phenols-4AAP	mg/L	<0.0010	9929443	<0.0010	0.0010	9929668			
Dissolved Sulphate (SO4)	mg/L	140	9929090	35	1.0	9928164			
Alkalinity (Total as CaCO3)	mg/L	270	9927912	340	1.0	9927789			
Dissolved Chloride (Cl-)	mg/L	39	9929089	96	1.0	9928163			
Nitrite (N)	mg/L	<0.010	9927772	<0.010	0.010	9927772	<0.010	0.010	9927772
Nitrate (N)	mg/L	0.16	9927772	0.16	0.10	9927772	0.16	0.10	9927772
Nitrate + Nitrite (N)	mg/L	0.16	9927772	0.16	0.10	9927772	0.16	0.10	9927772
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate									



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Bureau Veritas Job #: C553305  
Report Date: 2025/05/20

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Client Project #: Huron (224058)  
Sampler Initials: BC

### RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		AQTH37		AQTH38	AQTH39	AQTH40		
Sampling Date		2025/05/08 09:38		2025/05/08 09:55	2025/05/08 10:00	2025/05/08 09:50		
COC Number		1040162-01-01		1040162-01-01	1040162-01-01	1040162-01-01		
	UNITS	OW6	RDL	OW7S	OW7D	OW8S	RDL	QC Batch
<b>Calculated Parameters</b>								
Hardness (CaCO3)	mg/L	1200	1.0	130	76	250	1.0	9926824
<b>Inorganics</b>								
Total Ammonia-N	mg/L	31	0.10	<0.050	<0.050	<0.050	0.050	9929366
Conductivity	umho/cm	4000	2.0	500	460	770	2.0	9927908
Total Kjeldahl Nitrogen (TKN)	mg/L	44	2.0	<0.10	<0.10	<0.10	0.10	9928880
Dissolved Organic Carbon	mg/L	130	0.40	0.56	0.98	<0.40	0.40	9927172
pH	pH	7.58		8.38	8.27	8.18		9927909
Phenols-4AAP	mg/L	0.0083	0.0020	<0.0010	<0.0010	<0.0010	0.0010	9929443
Dissolved Sulphate (SO4)	mg/L	<1.0	1.0	38	47	85	1.0	9928164
Alkalinity (Total as CaCO3)	mg/L	1500	1.0	170	180	220	1.0	9927912
Dissolved Chloride (Cl-)	mg/L	490	5.0	26	10	51	1.0	9928163
Nitrite (N)	mg/L	<0.010	0.010	<0.010	<0.010	<0.010	0.010	9927772
Nitrate (N)	mg/L	<0.10	0.10	0.13	<0.10	<0.10	0.10	9927772
Nitrate + Nitrite (N)	mg/L	<0.10	0.10	0.13	<0.10	<0.10	0.10	9927772
RDL = Reportable Detection Limit								
QC Batch = Quality Control Batch								



**RESULTS OF ANALYSES OF WATER**

Bureau Veritas ID		AQTH41		AQTH42	AQTH43		
Sampling Date		2025/05/08 09:45		2025/05/08 10:00	2025/05/08 09:50		
COC Number		1040162-01-01		1040162-01-01	1040162-02-01		
	<b>UNITS</b>	<b>OW8D</b>	<b>QC Batch</b>	<b>OW9</b>	<b>OW10S</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Calculated Parameters</b>							
Hardness (CaCO3)	mg/L	160	9926824	150	330	1.0	9926824
<b>Inorganics</b>							
Total Ammonia-N	mg/L	<0.050	9929366	<0.050	<0.050	0.050	9929366
Conductivity	umho/cm	670	9927908	680	780	2.0	9927908
Total Kjeldahl Nitrogen (TKN)	mg/L	<0.10	9928880	<0.10	<0.10	0.10	9928880
Dissolved Organic Carbon	mg/L	0.64	9927172	1.0	0.52	0.40	9927172
pH	pH	8.19	9927909	8.06	8.07		9927909
Phenols-4AAP	mg/L	<0.0010	9929668	<0.0010	<0.0010	0.0010	9929443
Dissolved Sulphate (SO4)	mg/L	170	9928164	210	150	1.0	9928164
Alkalinity (Total as CaCO3)	mg/L	150	9927912	100	260	1.0	9927912
Dissolved Chloride (Cl-)	mg/L	8.6	9928163	1.3	<1.0	1.0	9928163
Nitrite (N)	mg/L	<0.010	9927772	<0.010	<0.010	0.010	9927772
Nitrate (N)	mg/L	0.14	9927772	<0.10	0.19	0.10	9927772
Nitrate + Nitrite (N)	mg/L	0.14	9927772	<0.10	0.19	0.10	9927772
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							



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Bureau Veritas Job #: C553305  
Report Date: 2025/05/20

GEI Consultants  
Client Project #: Huron (224058)  
Sampler Initials: BC

**RESULTS OF ANALYSES OF WATER**

Bureau Veritas ID		AQTH43			AQTH44			AQTH44		
Sampling Date		2025/05/08 09:50			2025/05/08 09:45			2025/05/08 09:45		
COC Number		1040162-02-01			1040162-02-01			1040162-02-01		
	UNITS	OW10S Lab-Dup	RDL	QC Batch	OW10D	RDL	QC Batch	OW10D Lab-Dup	RDL	QC Batch
<b>Calculated Parameters</b>										
Hardness (CaCO3)	mg/L				200	1.0	9926824			
<b>Inorganics</b>										
Total Ammonia-N	mg/L	<0.050	0.050	9929366	<0.050	0.050	9929366			
Conductivity	umho/cm				590	2.0	9927908			
Total Kjeldahl Nitrogen (TKN)	mg/L				<0.10	0.10	9928880	<0.10	0.10	9928880
Dissolved Organic Carbon	mg/L				0.50	0.40	9927172			
pH	pH				8.14		9927909			
Phenols-4AAP	mg/L				<0.0010	0.0010	9929443			
Dissolved Sulphate (SO4)	mg/L				94	1.0	9928164			
Alkalinity (Total as CaCO3)	mg/L				210	1.0	9927912			
Dissolved Chloride (Cl-)	mg/L				4.5	1.0	9928163			
Nitrite (N)	mg/L				<0.010	0.010	9927772			
Nitrate (N)	mg/L				0.54	0.10	9927772			
Nitrate + Nitrite (N)	mg/L				0.54	0.10	9927772			
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate										



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Bureau Veritas Job #: C553305  
Report Date: 2025/05/20

GEI Consultants  
Client Project #: Huron (224058)  
Sampler Initials: BC

### RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		AQTH45				AQTH46				AQTH46		
Sampling Date		2025/05/08 09:30				2025/05/08 10:40				2025/05/08 10:40		
COC Number		1040162-02-01				1040162-02-01				1040162-02-01		
	UNITS	OW11	RDL	QC Batch	SW1	RDL	QC Batch	SW1 Lab-Dup	RDL	QC Batch		
<b>Calculated Parameters</b>												
Hardness (CaCO3)	mg/L	920	1.0	9926824	280	1.0	9926824					
<b>Inorganics</b>												
Total Ammonia-N	mg/L	22	0.10	9929366	<0.050	0.050	9929366					
Conductivity	umho/cm	2300	2.0	9927908	530	2.0	9927908	520	2.0	9927908		
Total Kjeldahl Nitrogen (TKN)	mg/L	25	2.0	9928880	0.18	0.10	9928880					
Dissolved Organic Carbon	mg/L	17	0.40	9927172	2.9	0.40	9927172					
pH	pH	7.50		9927909	8.14		9927909	8.19		9927909		
Phenols-4AAP	mg/L	0.0016	0.0010	9929443	<0.0010	0.0010	9929443					
Total Phosphorus	mg/L				<0.020	0.020	9928883	<0.020	0.020	9928883		
Dissolved Sulphate (SO4)	mg/L	1.1	1.0	9928164	12	1.0	9928164					
Alkalinity (Total as CaCO3)	mg/L	870	1.0	9927912	250	1.0	9927912	250	1.0	9927912		
Dissolved Chloride (Cl-)	mg/L	250	2.0	9928163	14	1.0	9928163					
Nitrite (N)	mg/L	<0.010	0.010	9927772	<0.010	0.010	9927772					
Nitrate (N)	mg/L	<0.10	0.10	9927772	<0.10	0.10	9927772					
Nitrate + Nitrite (N)	mg/L	<0.10	0.10	9927772	<0.10	0.10	9927772					
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate												



BUREAU  
VERITAS

Bureau Veritas Job #: C553305  
Report Date: 2025/05/20

GEI Consultants  
Client Project #: Huron (224058)  
Sampler Initials: BC

**RESULTS OF ANALYSES OF WATER**

Bureau Veritas ID		AQTH47			AQTH48		
Sampling Date		2025/05/08 10:30			2025/05/08 09:40		
COC Number		1040162-02-01			1040162-02-01		
	UNITS	SW2	RDL	QC Batch	SW3	RDL	QC Batch
<b>Calculated Parameters</b>							
Hardness (CaCO3)	mg/L	260	1.0	9926824	410	1.0	9926824
<b>Inorganics</b>							
Total Ammonia-N	mg/L	<0.050	0.050	9929366	18	0.050	9929366
Conductivity	umho/cm	510	2.0	9927908	2200	2.0	9927808
Total Kjeldahl Nitrogen (TKN)	mg/L	<0.10	0.10	9928880	27	1.0	9928880
Dissolved Organic Carbon	mg/L	4.0	0.40	9927172	79	0.40	9927172
pH	pH	8.26		9927909	8.04		9927809
Phenols-4AAP	mg/L	<0.0010	0.0010	9929443	0.0094	0.0020	9929443
Total Phosphorus	mg/L	<0.020	0.020	9928883	0.27	0.10	9928883
Dissolved Sulphate (SO4)	mg/L	13	1.0	9929090	76	20	9928164
Alkalinity (Total as CaCO3)	mg/L	230	1.0	9927912	610	1.0	9927789
Dissolved Chloride (Cl-)	mg/L	15	1.0	9929089	320	20	9928163
Nitrite (N)	mg/L	0.024	0.010	9927772	<0.010	0.010	9927772
Nitrate (N)	mg/L	2.65	0.10	9927772	<0.10	0.10	9927772
Nitrate + Nitrite (N)	mg/L	2.67	0.10	9927772	<0.10	0.10	9927772
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							



**ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)**

Bureau Veritas ID		AQTH33	AQTH34	AQTH35	AQTH35	AQTH36		
Sampling Date		2025/05/08 09:50	2025/05/08 09:20	2025/05/08 09:35	2025/05/08 09:35	2025/05/08 10:30		
COC Number		1040162-01-01	1040162-01-01	1040162-01-01	1040162-01-01	1040162-01-01		
	UNITS	OW1	OW3	OW4	OW4 Lab-Dup	OW5	RDL	QC Batch
<b>Metals</b>								
Dissolved Barium (Ba)	ug/L	100	82	74	77	110	2.0	9927325
Dissolved Bismuth (Bi)	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	9927325
Dissolved Boron (B)	ug/L	290	100	36	37	110	10	9927325
Dissolved Calcium (Ca)	ug/L	95000	76000	100000	100000	96000	200	9927325
Dissolved Iron (Fe)	ug/L	<100	<100	<100	<100	<100	100	9927325
Dissolved Magnesium (Mg)	ug/L	49000	44000	40000	41000	51000	50	9927325
Dissolved Manganese (Mn)	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	9927325
Dissolved Phosphorus (P)	ug/L	<100	<100	<100	<100	<100	100	9927325
Dissolved Potassium (K)	ug/L	2400	1500	1400	1400	1600	200	9927325
Dissolved Sodium (Na)	ug/L	43000	35000	24000	25000	38000	100	9927325
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate								

Bureau Veritas ID		AQTH37		AQTH38	AQTH39	AQTH40		AQTH41		
Sampling Date		2025/05/08 09:38		2025/05/08 09:55	2025/05/08 10:00	2025/05/08 09:50		2025/05/08 09:45		
COC Number		1040162-01-01		1040162-01-01	1040162-01-01	1040162-01-01		1040162-01-01		
	UNITS	OW6	RDL	OW7S	OW7D	OW8S	RDL	OW8D	RDL	QC Batch
<b>Metals</b>										
Dissolved Barium (Ba)	ug/L	850	2.0	33	34	49	2.0	25	2.0	9927325
Dissolved Bismuth (Bi)	ug/L	<1.0	1.0	<1.0	<1.0	<1.0	1.0	<1.0	1.0	9927325
Dissolved Boron (B)	ug/L	600	10	270	420	390	10	460	10	9927325
Dissolved Calcium (Ca)	ug/L	150000	1000	27000	18000	43000	200	35000	400	9927325
Dissolved Iron (Fe)	ug/L	5500	100	<100	<100	<100	100	<100	100	9927325
Dissolved Magnesium (Mg)	ug/L	190000	50	15000	7700	34000	50	17000	50	9927325
Dissolved Manganese (Mn)	ug/L	17	2.0	<2.0	<2.0	<2.0	2.0	<2.0	2.0	9927325
Dissolved Phosphorus (P)	ug/L	200	100	<100	<100	<100	100	<100	100	9927325
Dissolved Potassium (K)	ug/L	25000	200	900	810	1300	200	1100	200	9927325
Dissolved Sodium (Na)	ug/L	430000	100	55000	70000	66000	100	79000	100	9927325
RDL = Reportable Detection Limit QC Batch = Quality Control Batch										



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Bureau Veritas Job #: C553305  
Report Date: 2025/05/20

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Client Project #: Huron (224058)  
Sampler Initials: BC

**ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)**

Bureau Veritas ID		AQTH42		AQTH43		AQTH44		AQTH45		
Sampling Date		2025/05/08 10:00		2025/05/08 09:50		2025/05/08 09:45		2025/05/08 09:30		
COC Number		1040162-01-01		1040162-02-01		1040162-02-01		1040162-02-01		
	UNITS	OW9	RDL	OW10S	RDL	OW10D	RDL	OW11	RDL	QC Batch
<b>Metals</b>										
Dissolved Barium (Ba)	ug/L	20	2.0	25	2.0	89	2.0	270	2.0	9927325
Dissolved Bismuth (Bi)	ug/L	<1.0	1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0	9927325
Dissolved Boron (B)	ug/L	440	10	310	10	160	10	380	10	9927325
Dissolved Calcium (Ca)	ug/L	33000	1000	70000	400	45000	1000	170000	200	9927325
Dissolved Iron (Fe)	ug/L	<100	100	<100	100	<100	100	2700	100	9927325
Dissolved Magnesium (Mg)	ug/L	16000	50	39000	50	22000	50	120000	50	9927325
Dissolved Manganese (Mn)	ug/L	5.1	2.0	<2.0	2.0	3.4	2.0	140	2.0	9927325
Dissolved Phosphorus (P)	ug/L	<100	100	<100	100	<100	100	<100	100	9927325
Dissolved Potassium (K)	ug/L	1000	200	1500	200	1200	200	18000	200	9927325
Dissolved Sodium (Na)	ug/L	73000	100	38000	100	28000	100	100000	100	9927325
RDL = Reportable Detection Limit QC Batch = Quality Control Batch										

Bureau Veritas ID		AQTH46	AQTH47	AQTH47	AQTH48		
Sampling Date		2025/05/08 10:40	2025/05/08 10:30	2025/05/08 10:30	2025/05/08 09:40		
COC Number		1040162-02-01	1040162-02-01	1040162-02-01	1040162-02-01		
	UNITS	SW1	SW2	SW2 Lab-Dup	SW3	RDL	QC Batch
<b>Metals</b>							
Total Barium (Ba)	ug/L	16	22	23	68	2.0	9930486
Total Bismuth (Bi)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	9930486
Total Boron (B)	ug/L	17	15	23	1500	10	9930486
Total Calcium (Ca)	ug/L	75000	63000	64000	85000	200	9930486
Total Iron (Fe)	ug/L	<100	<100	<100	640	100	9930486
Total Magnesium (Mg)	ug/L	21000	23000	23000	52000	50	9930486
Total Manganese (Mn)	ug/L	13	8.7	9.1	350	2.0	9930486
Total Phosphorus (P)	ug/L	<100	<100	<100	540	100	9930486
Total Potassium (K)	ug/L	1300	2200	2100	82000	200	9930486
Total Sodium (Na)	ug/L	6600	6100	6400	250000	100	9930486
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate							



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Sampler Initials: BC

### TEST SUMMARY

**Bureau Veritas ID:** AQTH33  
**Sample ID:** OW1  
**Matrix:** Water

**Collected:** 2025/05/08  
**Shipped:**  
**Received:** 2025/05/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9927789	N/A	2025/05/15	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9928163	N/A	2025/05/14	Massarat Jan
Conductivity	AT	9927808	N/A	2025/05/15	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9927172	N/A	2025/05/12	Gyulshen Idriz
Hardness (calculated as CaCO3)		9926824	N/A	2025/05/14	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	9927325	N/A	2025/05/13	Nan Raykha
Total Ammonia-N	SKAL/NH4	9929366	N/A	2025/05/16	Massarat Jan
Nitrate & Nitrite as Nitrogen in Water	LACH	9927772	N/A	2025/05/13	Helen He
pH	AT	9927809	2025/05/13	2025/05/15	Nachiketa Gohil
Phenols (4AAP)	TECH/PHEN	9929668	N/A	2025/05/15	Madhav Somani
Sulphate by Automated Turbidimetry	SKAL	9928164	N/A	2025/05/14	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	9928880	2025/05/14	2025/05/15	Rajni Tyagi

**Bureau Veritas ID:** AQTH33 Dup  
**Sample ID:** OW1  
**Matrix:** Water

**Collected:** 2025/05/08  
**Shipped:**  
**Received:** 2025/05/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Phenols (4AAP)	TECH/PHEN	9929668	N/A	2025/05/15	Madhav Somani

**Bureau Veritas ID:** AQTH34  
**Sample ID:** OW3  
**Matrix:** Water

**Collected:** 2025/05/08  
**Shipped:**  
**Received:** 2025/05/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9927912	N/A	2025/05/15	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9928163	N/A	2025/05/14	Massarat Jan
Conductivity	AT	9927908	N/A	2025/05/15	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9927172	N/A	2025/05/12	Gyulshen Idriz
Hardness (calculated as CaCO3)		9926824	N/A	2025/05/14	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	9927325	N/A	2025/05/13	Nan Raykha
Total Ammonia-N	SKAL/NH4	9929366	N/A	2025/05/16	Massarat Jan
Nitrate & Nitrite as Nitrogen in Water	LACH	9927772	N/A	2025/05/13	Helen He
pH	AT	9927909	2025/05/13	2025/05/15	Nachiketa Gohil
Phenols (4AAP)	TECH/PHEN	9929443	N/A	2025/05/15	Madhav Somani
Sulphate by Automated Turbidimetry	SKAL	9928164	N/A	2025/05/14	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	9928880	2025/05/14	2025/05/16	Rajni Tyagi

**Bureau Veritas ID:** AQTH35  
**Sample ID:** OW4  
**Matrix:** Water

**Collected:** 2025/05/08  
**Shipped:**  
**Received:** 2025/05/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9927912	N/A	2025/05/15	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9929089	N/A	2025/05/15	Massarat Jan



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### TEST SUMMARY

**Bureau Veritas ID:** AQTH35  
**Sample ID:** OW4  
**Matrix:** Water

**Collected:** 2025/05/08  
**Shipped:**  
**Received:** 2025/05/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Conductivity	AT	9927908	N/A	2025/05/15	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9927172	N/A	2025/05/12	Gyulshen Idriz
Hardness (calculated as CaCO3)		9926824	N/A	2025/05/14	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	9927325	N/A	2025/05/13	Nan Raykha
Total Ammonia-N	SKAL/NH4	9929366	N/A	2025/05/16	Massarat Jan
Nitrate & Nitrite as Nitrogen in Water	LACH	9927772	N/A	2025/05/13	Helen He
pH	AT	9927909	2025/05/13	2025/05/15	Nachiketa Gohil
Phenols (4AAP)	TECH/PHEN	9929443	N/A	2025/05/15	Madhav Somani
Sulphate by Automated Turbidimetry	SKAL	9929090	N/A	2025/05/15	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	9928880	2025/05/14	2025/05/15	Rajni Tyagi

**Bureau Veritas ID:** AQTH35 Dup  
**Sample ID:** OW4  
**Matrix:** Water

**Collected:** 2025/05/08  
**Shipped:**  
**Received:** 2025/05/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Metals by ICPMS	ICP/MS	9927325	N/A	2025/05/13	Nan Raykha

**Bureau Veritas ID:** AQTH36  
**Sample ID:** OW5  
**Matrix:** Water

**Collected:** 2025/05/08  
**Shipped:**  
**Received:** 2025/05/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9927789	N/A	2025/05/15	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9928163	N/A	2025/05/14	Massarat Jan
Conductivity	AT	9927808	N/A	2025/05/15	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9927172	N/A	2025/05/12	Gyulshen Idriz
Hardness (calculated as CaCO3)		9926824	N/A	2025/05/14	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	9927325	N/A	2025/05/13	Nan Raykha
Total Ammonia-N	SKAL/NH4	9929366	N/A	2025/05/16	Massarat Jan
Nitrate & Nitrite as Nitrogen in Water	LACH	9927772	N/A	2025/05/13	Helen He
pH	AT	9927809	2025/05/13	2025/05/15	Nachiketa Gohil
Phenols (4AAP)	TECH/PHEN	9929668	N/A	2025/05/15	Madhav Somani
Sulphate by Automated Turbidimetry	SKAL	9928164	N/A	2025/05/14	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	9928880	2025/05/14	2025/05/16	Rajni Tyagi

**Bureau Veritas ID:** AQTH36 Dup  
**Sample ID:** OW5  
**Matrix:** Water

**Collected:** 2025/05/08  
**Shipped:**  
**Received:** 2025/05/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Nitrate & Nitrite as Nitrogen in Water	LACH	9927772	N/A	2025/05/13	Helen He



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Sampler Initials: BC

### TEST SUMMARY

**Bureau Veritas ID:** AQTH37  
**Sample ID:** OW6  
**Matrix:** Water

**Collected:** 2025/05/08  
**Shipped:**  
**Received:** 2025/05/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9927912	N/A	2025/05/16	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9928163	N/A	2025/05/14	Massarat Jan
Conductivity	AT	9927908	N/A	2025/05/16	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9927172	N/A	2025/05/12	Gyulshen Idriz
Hardness (calculated as CaCO3)		9926824	N/A	2025/05/14	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	9927325	N/A	2025/05/13	Nan Raykha
Total Ammonia-N	SKAL/NH4	9929366	N/A	2025/05/16	Massarat Jan
Nitrate & Nitrite as Nitrogen in Water	LACH	9927772	N/A	2025/05/13	Helen He
pH	AT	9927909	2025/05/13	2025/05/16	Nachiketa Gohil
Phenols (4AAP)	TECH/PHEN	9929443	N/A	2025/05/16	Madhav Somani
Sulphate by Automated Turbidimetry	SKAL	9928164	N/A	2025/05/14	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	9928880	2025/05/14	2025/05/16	Rajni Tyagi

**Bureau Veritas ID:** AQTH38  
**Sample ID:** OW7S  
**Matrix:** Water

**Collected:** 2025/05/08  
**Shipped:**  
**Received:** 2025/05/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9927912	N/A	2025/05/16	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9928163	N/A	2025/05/14	Massarat Jan
Conductivity	AT	9927908	N/A	2025/05/16	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9927172	N/A	2025/05/12	Gyulshen Idriz
Hardness (calculated as CaCO3)		9926824	N/A	2025/05/14	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	9927325	N/A	2025/05/13	Nan Raykha
Total Ammonia-N	SKAL/NH4	9929366	N/A	2025/05/16	Massarat Jan
Nitrate & Nitrite as Nitrogen in Water	LACH	9927772	N/A	2025/05/13	Helen He
pH	AT	9927909	2025/05/13	2025/05/16	Nachiketa Gohil
Phenols (4AAP)	TECH/PHEN	9929443	N/A	2025/05/15	Madhav Somani
Sulphate by Automated Turbidimetry	SKAL	9928164	N/A	2025/05/14	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	9928880	2025/05/14	2025/05/15	Rajni Tyagi

**Bureau Veritas ID:** AQTH39  
**Sample ID:** OW7D  
**Matrix:** Water

**Collected:** 2025/05/08  
**Shipped:**  
**Received:** 2025/05/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9927912	N/A	2025/05/16	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9928163	N/A	2025/05/14	Massarat Jan
Conductivity	AT	9927908	N/A	2025/05/16	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9927172	N/A	2025/05/12	Gyulshen Idriz
Hardness (calculated as CaCO3)		9926824	N/A	2025/05/14	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	9927325	N/A	2025/05/13	Nan Raykha
Total Ammonia-N	SKAL/NH4	9929366	N/A	2025/05/16	Massarat Jan
Nitrate & Nitrite as Nitrogen in Water	LACH	9927772	N/A	2025/05/13	Helen He
pH	AT	9927909	2025/05/13	2025/05/16	Nachiketa Gohil



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### TEST SUMMARY

**Bureau Veritas ID:** AQTH39  
**Sample ID:** OW7D  
**Matrix:** Water

**Collected:** 2025/05/08  
**Shipped:**  
**Received:** 2025/05/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Phenols (4AAP)	TECH/PHEN	9929443	N/A	2025/05/15	Madhav Somani
Sulphate by Automated Turbidimetry	SKAL	9928164	N/A	2025/05/14	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	9928880	2025/05/14	2025/05/15	Rajni Tyagi

**Bureau Veritas ID:** AQTH40  
**Sample ID:** OW8S  
**Matrix:** Water

**Collected:** 2025/05/08  
**Shipped:**  
**Received:** 2025/05/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9927912	N/A	2025/05/16	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9928163	N/A	2025/05/14	Massarat Jan
Conductivity	AT	9927908	N/A	2025/05/16	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9927172	N/A	2025/05/12	Gyulshen Idriz
Hardness (calculated as CaCO3)		9926824	N/A	2025/05/14	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	9927325	N/A	2025/05/13	Nan Raykha
Total Ammonia-N	SKAL/NH4	9929366	N/A	2025/05/16	Massarat Jan
Nitrate & Nitrite as Nitrogen in Water	LACH	9927772	N/A	2025/05/13	Helen He
pH	AT	9927909	2025/05/13	2025/05/16	Nachiketa Gohil
Phenols (4AAP)	TECH/PHEN	9929443	N/A	2025/05/15	Madhav Somani
Sulphate by Automated Turbidimetry	SKAL	9928164	N/A	2025/05/14	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	9928880	2025/05/14	2025/05/15	Rajni Tyagi

**Bureau Veritas ID:** AQTH41  
**Sample ID:** OW8D  
**Matrix:** Water

**Collected:** 2025/05/08  
**Shipped:**  
**Received:** 2025/05/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9927912	N/A	2025/05/16	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9928163	N/A	2025/05/14	Massarat Jan
Conductivity	AT	9927908	N/A	2025/05/16	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9927172	N/A	2025/05/12	Gyulshen Idriz
Hardness (calculated as CaCO3)		9926824	N/A	2025/05/14	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	9927325	N/A	2025/05/13	Nan Raykha
Total Ammonia-N	SKAL/NH4	9929366	N/A	2025/05/16	Massarat Jan
Nitrate & Nitrite as Nitrogen in Water	LACH	9927772	N/A	2025/05/13	Helen He
pH	AT	9927909	2025/05/13	2025/05/16	Nachiketa Gohil
Phenols (4AAP)	TECH/PHEN	9929668	N/A	2025/05/15	Madhav Somani
Sulphate by Automated Turbidimetry	SKAL	9928164	N/A	2025/05/14	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	9928880	2025/05/14	2025/05/15	Rajni Tyagi



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VERITAS

Bureau Veritas Job #: C553305  
Report Date: 2025/05/20

GEI Consultants  
Client Project #: Huron (224058)  
Sampler Initials: BC

### TEST SUMMARY

**Bureau Veritas ID:** AQTH42  
**Sample ID:** OW9  
**Matrix:** Water

**Collected:** 2025/05/08  
**Shipped:**  
**Received:** 2025/05/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9927912	N/A	2025/05/16	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9928163	N/A	2025/05/14	Massarat Jan
Conductivity	AT	9927908	N/A	2025/05/16	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9927172	N/A	2025/05/12	Gyulshen Idriz
Hardness (calculated as CaCO3)		9926824	N/A	2025/05/14	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	9927325	N/A	2025/05/13	Nan Raykha
Total Ammonia-N	SKAL/NH4	9929366	N/A	2025/05/16	Massarat Jan
Nitrate & Nitrite as Nitrogen in Water	LACH	9927772	N/A	2025/05/13	Helen He
pH	AT	9927909	2025/05/13	2025/05/16	Nachiketa Gohil
Phenols (4AAP)	TECH/PHEN	9929443	N/A	2025/05/15	Madhav Somani
Sulphate by Automated Turbidimetry	SKAL	9928164	N/A	2025/05/14	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	9928880	2025/05/14	2025/05/15	Rajni Tyagi

**Bureau Veritas ID:** AQTH43  
**Sample ID:** OW10S  
**Matrix:** Water

**Collected:** 2025/05/08  
**Shipped:**  
**Received:** 2025/05/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9927912	N/A	2025/05/16	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9928163	N/A	2025/05/14	Massarat Jan
Conductivity	AT	9927908	N/A	2025/05/16	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9927172	N/A	2025/05/12	Gyulshen Idriz
Hardness (calculated as CaCO3)		9926824	N/A	2025/05/14	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	9927325	N/A	2025/05/13	Nan Raykha
Total Ammonia-N	SKAL/NH4	9929366	N/A	2025/05/16	Massarat Jan
Nitrate & Nitrite as Nitrogen in Water	LACH	9927772	N/A	2025/05/13	Helen He
pH	AT	9927909	2025/05/13	2025/05/16	Nachiketa Gohil
Phenols (4AAP)	TECH/PHEN	9929443	N/A	2025/05/15	Madhav Somani
Sulphate by Automated Turbidimetry	SKAL	9928164	N/A	2025/05/14	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	9928880	2025/05/14	2025/05/15	Rajni Tyagi

**Bureau Veritas ID:** AQTH43 Dup  
**Sample ID:** OW10S  
**Matrix:** Water

**Collected:** 2025/05/08  
**Shipped:**  
**Received:** 2025/05/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Ammonia-N	SKAL/NH4	9929366	N/A	2025/05/16	Massarat Jan

**Bureau Veritas ID:** AQTH44  
**Sample ID:** OW10D  
**Matrix:** Water

**Collected:** 2025/05/08  
**Shipped:**  
**Received:** 2025/05/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9927912	N/A	2025/05/15	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9928163	N/A	2025/05/14	Massarat Jan



BUREAU  
VERITAS

Bureau Veritas Job #: C553305  
Report Date: 2025/05/20

GEI Consultants  
Client Project #: Huron (224058)  
Sampler Initials: BC

### TEST SUMMARY

**Bureau Veritas ID:** AQTH44  
**Sample ID:** OW10D  
**Matrix:** Water

**Collected:** 2025/05/08  
**Shipped:**  
**Received:** 2025/05/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Conductivity	AT	9927908	N/A	2025/05/15	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9927172	N/A	2025/05/12	Gyulshen Idriz
Hardness (calculated as CaCO3)		9926824	N/A	2025/05/14	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	9927325	N/A	2025/05/13	Nan Raykha
Total Ammonia-N	SKAL/NH4	9929366	N/A	2025/05/16	Massarat Jan
Nitrate & Nitrite as Nitrogen in Water	LACH	9927772	N/A	2025/05/13	Helen He
pH	AT	9927909	2025/05/13	2025/05/15	Nachiketa Gohil
Phenols (4AAP)	TECH/PHEN	9929443	N/A	2025/05/15	Madhav Somani
Sulphate by Automated Turbidimetry	SKAL	9928164	N/A	2025/05/14	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	9928880	2025/05/14	2025/05/15	Rajni Tyagi

**Bureau Veritas ID:** AQTH44 Dup  
**Sample ID:** OW10D  
**Matrix:** Water

**Collected:** 2025/05/08  
**Shipped:**  
**Received:** 2025/05/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Kjeldahl Nitrogen in Water	SKAL	9928880	2025/05/14	2025/05/15	Rajni Tyagi

**Bureau Veritas ID:** AQTH45  
**Sample ID:** OW11  
**Matrix:** Water

**Collected:** 2025/05/08  
**Shipped:**  
**Received:** 2025/05/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9927912	N/A	2025/05/15	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9928163	N/A	2025/05/14	Massarat Jan
Conductivity	AT	9927908	N/A	2025/05/15	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9927172	N/A	2025/05/12	Gyulshen Idriz
Hardness (calculated as CaCO3)		9926824	N/A	2025/05/14	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	9927325	N/A	2025/05/13	Nan Raykha
Total Ammonia-N	SKAL/NH4	9929366	N/A	2025/05/16	Massarat Jan
Nitrate & Nitrite as Nitrogen in Water	LACH	9927772	N/A	2025/05/13	Helen He
pH	AT	9927909	2025/05/13	2025/05/15	Nachiketa Gohil
Phenols (4AAP)	TECH/PHEN	9929443	N/A	2025/05/15	Madhav Somani
Sulphate by Automated Turbidimetry	SKAL	9928164	N/A	2025/05/14	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	9928880	2025/05/14	2025/05/16	Rajni Tyagi

**Bureau Veritas ID:** AQTH46  
**Sample ID:** SW1  
**Matrix:** Water

**Collected:** 2025/05/08  
**Shipped:**  
**Received:** 2025/05/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9927912	N/A	2025/05/15	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9928163	N/A	2025/05/14	Massarat Jan
Conductivity	AT	9927908	N/A	2025/05/15	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9927172	N/A	2025/05/12	Gyulshen Idriz



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Bureau Veritas Job #: C553305  
Report Date: 2025/05/20

GEI Consultants  
Client Project #: Huron (224058)  
Sampler Initials: BC

### TEST SUMMARY

**Bureau Veritas ID:** AQTH46  
**Sample ID:** SW1  
**Matrix:** Water

**Collected:** 2025/05/08  
**Shipped:**  
**Received:** 2025/05/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hardness (calculated as CaCO3)		9926824	N/A	2025/05/14	Automated Statchk
Total Metals Analysis by ICPMS	ICP/MS	9930486	2025/05/16	2025/05/16	Thuy Linh Nguyen
Total Ammonia-N	SKAL/NH4	9929366	N/A	2025/05/16	Massarat Jan
Nitrate & Nitrite as Nitrogen in Water	LACH	9927772	N/A	2025/05/13	Helen He
pH	AT	9927909	2025/05/13	2025/05/15	Nachiketa Gohil
Phenols (4AAP)	TECH/PHEN	9929443	N/A	2025/05/15	Madhav Somani
Sulphate by Automated Turbidimetry	SKAL	9928164	N/A	2025/05/14	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	9928880	2025/05/14	2025/05/15	Rajni Tyagi
Total Phosphorus (Colourimetric)	SKAL/P	9928883	2025/05/14	2025/05/15	Shivani Shivani

**Bureau Veritas ID:** AQTH46 Dup  
**Sample ID:** SW1  
**Matrix:** Water

**Collected:** 2025/05/08  
**Shipped:**  
**Received:** 2025/05/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9927912	N/A	2025/05/15	Nachiketa Gohil
Conductivity	AT	9927908	N/A	2025/05/15	Nachiketa Gohil
pH	AT	9927909	2025/05/13	2025/05/15	Nachiketa Gohil
Total Phosphorus (Colourimetric)	SKAL/P	9928883	2025/05/14	2025/05/15	Shivani Shivani

**Bureau Veritas ID:** AQTH47  
**Sample ID:** SW2  
**Matrix:** Water

**Collected:** 2025/05/08  
**Shipped:**  
**Received:** 2025/05/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9927912	N/A	2025/05/15	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9929089	N/A	2025/05/15	Massarat Jan
Conductivity	AT	9927908	N/A	2025/05/15	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9927172	N/A	2025/05/12	Gyulshen Idriz
Hardness (calculated as CaCO3)		9926824	N/A	2025/05/14	Automated Statchk
Total Metals Analysis by ICPMS	ICP/MS	9930486	2025/05/16	2025/05/16	Thuy Linh Nguyen
Total Ammonia-N	SKAL/NH4	9929366	N/A	2025/05/16	Massarat Jan
Nitrate & Nitrite as Nitrogen in Water	LACH	9927772	N/A	2025/05/13	Helen He
pH	AT	9927909	2025/05/13	2025/05/15	Nachiketa Gohil
Phenols (4AAP)	TECH/PHEN	9929443	N/A	2025/05/15	Madhav Somani
Sulphate by Automated Turbidimetry	SKAL	9929090	N/A	2025/05/15	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	9928880	2025/05/14	2025/05/16	Rajni Tyagi
Total Phosphorus (Colourimetric)	SKAL/P	9928883	2025/05/14	2025/05/15	Shivani Shivani

**Bureau Veritas ID:** AQTH47 Dup  
**Sample ID:** SW2  
**Matrix:** Water

**Collected:** 2025/05/08  
**Shipped:**  
**Received:** 2025/05/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Metals Analysis by ICPMS	ICP/MS	9930486	2025/05/16	2025/05/16	Thuy Linh Nguyen



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VERITAS

Bureau Veritas Job #: C553305  
Report Date: 2025/05/20

GEI Consultants  
Client Project #: Huron (224058)  
Sampler Initials: BC

### TEST SUMMARY

**Bureau Veritas ID:** AQTH48  
**Sample ID:** SW3  
**Matrix:** Water

**Collected:** 2025/05/08  
**Shipped:**  
**Received:** 2025/05/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9927789	N/A	2025/05/15	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9928163	N/A	2025/05/14	Massarat Jan
Conductivity	AT	9927808	N/A	2025/05/15	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9927172	N/A	2025/05/12	Gyulshen Idriz
Hardness (calculated as CaCO3)		9926824	N/A	2025/05/14	Automated Statchk
Total Metals Analysis by ICPMS	ICP/MS	9930486	2025/05/16	2025/05/16	Thuy Linh Nguyen
Total Ammonia-N	SKAL/NH4	9929366	N/A	2025/05/16	Massarat Jan
Nitrate & Nitrite as Nitrogen in Water	LACH	9927772	N/A	2025/05/13	Helen He
pH	AT	9927809	2025/05/13	2025/05/15	Nachiketa Gohil
Phenols (4AAP)	TECH/PHEN	9929443	N/A	2025/05/16	Madhav Somani
Sulphate by Automated Turbidimetry	SKAL	9928164	N/A	2025/05/14	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	9928880	2025/05/14	2025/05/16	Rajni Tyagi
Total Phosphorus (Colourimetric)	SKAL/P	9928883	2025/05/14	2025/05/15	Shivani Shivani



### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	7.0°C
Package 2	9.0°C

**Results relate only to the items tested.**



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Bureau Veritas Job #: C553305

Report Date: 2025/05/20

### QUALITY ASSURANCE REPORT

GEI Consultants

Client Project #: Huron (224058)

Sampler Initials: BC

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
9927172	Dissolved Organic Carbon	2025/05/12	94	80 - 120	96	80 - 120	<0.40	mg/L	0.16	20		
9927325	Dissolved Barium (Ba)	2025/05/13	95	80 - 120	99	80 - 120	<2.0	ug/L	3.9	20		
9927325	Dissolved Bismuth (Bi)	2025/05/13	98	80 - 120	99	80 - 120	<1.0	ug/L	NC	20		
9927325	Dissolved Boron (B)	2025/05/13	99	80 - 120	94	80 - 120	<10	ug/L	2.1	20		
9927325	Dissolved Calcium (Ca)	2025/05/13	NC	80 - 120	99	80 - 120	<200	ug/L	2.0	20		
9927325	Dissolved Iron (Fe)	2025/05/13	98	80 - 120	99	80 - 120	<100	ug/L	NC	20		
9927325	Dissolved Magnesium (Mg)	2025/05/13	NC	80 - 120	98	80 - 120	<50	ug/L	2.0	20		
9927325	Dissolved Manganese (Mn)	2025/05/13	96	80 - 120	98	80 - 120	<2.0	ug/L	NC	20		
9927325	Dissolved Phosphorus (P)	2025/05/13	94	80 - 120	98	80 - 120	<100	ug/L	NC	20		
9927325	Dissolved Potassium (K)	2025/05/13	91	80 - 120	92	80 - 120	<200	ug/L	1.5	20		
9927325	Dissolved Sodium (Na)	2025/05/13	88	80 - 120	99	80 - 120	<100	ug/L	1.7	20		
9927772	Nitrate (N)	2025/05/13	96	80 - 120	95	80 - 120	<0.10	mg/L	2.5	20		
9927772	Nitrite (N)	2025/05/13	105	80 - 120	106	80 - 120	<0.010	mg/L	NC	20		
9927789	Alkalinity (Total as CaCO3)	2025/05/15			95	85 - 115	<1.0	mg/L	5.7	20		
9927808	Conductivity	2025/05/15			102	85 - 115	<2.0	umho/cm	1.4	10		
9927809	pH	2025/05/15			102	98 - 103			0.23	N/A		
9927908	Conductivity	2025/05/15			101	85 - 115	<2.0	umho/cm	0.96	10		
9927909	pH	2025/05/15			102	98 - 103			0.60	N/A		
9927912	Alkalinity (Total as CaCO3)	2025/05/15			96	85 - 115	<1.0	mg/L	0.091	20		
9928163	Dissolved Chloride (Cl-)	2025/05/14	NC	80 - 120	101	80 - 120	<1.0	mg/L	0.30	20		
9928164	Dissolved Sulphate (SO4)	2025/05/14	NC	75 - 125	101	80 - 120	<1.0	mg/L	1.6	20		
9928880	Total Kjeldahl Nitrogen (TKN)	2025/05/15	91	80 - 120	94	80 - 120	<0.10	mg/L	NC	20	94	80 - 120
9928883	Total Phosphorus	2025/05/15	95	80 - 120	102	80 - 120	<0.020	mg/L	NC	20	99	80 - 120
9929089	Dissolved Chloride (Cl-)	2025/05/15	NC	80 - 120	99	80 - 120	<1.0	mg/L	0.19	20		
9929090	Dissolved Sulphate (SO4)	2025/05/15	NC	75 - 125	93	80 - 120	<1.0	mg/L	2.5	20		
9929366	Total Ammonia-N	2025/05/16	94	75 - 125	94	80 - 120	<0.050	mg/L	NC	20		
9929443	Phenols-4AAP	2025/05/15	95	80 - 120	100	80 - 120	<0.0010	mg/L	NC	20		
9929668	Phenols-4AAP	2025/05/15	98	80 - 120	100	80 - 120	<0.0010	mg/L	NC	20		
9930486	Total Barium (Ba)	2025/05/16	97	80 - 120	98	80 - 120	<2.0	ug/L	3.7	20		



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Bureau Veritas Job #: C553305

Report Date: 2025/05/20

### QUALITY ASSURANCE REPORT(CONT'D)

GEI Consultants

Client Project #: Huron (224058)

Sampler Initials: BC

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
9930486	Total Bismuth (Bi)	2025/05/16	98	80 - 120	102	80 - 120	<1.0	ug/L	NC	20		
9930486	Total Boron (B)	2025/05/16	100	80 - 120	98	80 - 120	<10	ug/L	NC	20		
9930486	Total Calcium (Ca)	2025/05/16	NC	80 - 120	105	80 - 120	<200	ug/L	1.2	20		
9930486	Total Iron (Fe)	2025/05/16	101	80 - 120	104	80 - 120	<100	ug/L	NC	20		
9930486	Total Magnesium (Mg)	2025/05/16	104	80 - 120	104	80 - 120	<50	ug/L	0.39	20		
9930486	Total Manganese (Mn)	2025/05/16	99	80 - 120	99	80 - 120	<2.0	ug/L	4.5	20		
9930486	Total Phosphorus (P)	2025/05/16	101	80 - 120	96	80 - 120	<100	ug/L	NC	20		
9930486	Total Potassium (K)	2025/05/16	107	80 - 120	104	80 - 120	<200	ug/L	0.71	20		
9930486	Total Sodium (Na)	2025/05/16	108	80 - 120	107	80 - 120	<100	ug/L	4.2	20		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).



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Bureau Veritas Job #: C553305  
Report Date: 2025/05/20

GEI Consultants  
Client Project #: Huron (224058)  
Sampler Initials: BC

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

*Cristina Carriere*

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Cristina Carriere, Senior Scientific Specialist

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Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.



Your Project #: Huron (224058)  
 Your C.O.C. #: C#1060730-01-01

**Attention: Reporting Contacts**

GEI Consultants  
 1260 - 2nd Ave E  
 Unit 1  
 Owen Sound, ON  
 CANADA N4K 2J3

**Report Date: 2025/09/24**  
 Report #: R8619291  
 Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**BUREAU VERITAS JOB #: C5B5905**

**Received: 2025/09/17, 10:08**

Sample Matrix: Water  
 # Samples Received: 14

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity	4	N/A	2025/09/22	CAM SOP-00448	SM 24 2320 B m
Alkalinity	10	N/A	2025/09/23	CAM SOP-00448	SM 24 2320 B m
Chloride by Automated Colourimetry	12	N/A	2025/09/23	CAM SOP-00463	SM 24 4500-Cl E m
Chloride by Automated Colourimetry	2	N/A	2025/09/24	CAM SOP-00463	SM 24 4500-Cl E m
Conductivity	4	N/A	2025/09/22	CAM SOP-00414	SM 24 2510 m
Conductivity	10	N/A	2025/09/23	CAM SOP-00414	SM 24 2510 m
Dissolved Organic Carbon (DOC) (1)	1	N/A	2025/09/19	CAM SOP-00446	SM 24 5310 B m
Dissolved Organic Carbon (DOC) (1)	13	N/A	2025/09/22	CAM SOP-00446	SM 24 5310 B m
Hardness (calculated as CaCO3)	11	N/A	2025/09/22	CAM SOP 00102/00408/00447	SM 2340 B
Hardness (calculated as CaCO3)	3	N/A	2025/09/23	CAM SOP 00102/00408/00447	SM 2340 B
Dissolved Metals by ICPMS	11	N/A	2025/09/19	CAM SOP-00447	EPA 6020B m
Total Metals Analysis by ICPMS	3	2025/09/23	2025/09/23	CAM SOP-00447	EPA 6020B m
Total Ammonia-N	14	N/A	2025/09/23	CAM SOP-00441	USGS I-2522-90 m
Nitrate & Nitrite as Nitrogen in Water (2)	11	N/A	2025/09/20	CAM SOP-00440	SM 24 4500-NO3I/NO2B
Nitrate & Nitrite as Nitrogen in Water (2)	3	N/A	2025/09/22	CAM SOP-00440	SM 24 4500-NO3I/NO2B
pH (3)	4	2025/09/20	2025/09/22	CAM SOP-00413	SM 24th - 4500H+ B
pH (3)	10	2025/09/22	2025/09/23	CAM SOP-00413	SM 24th - 4500H+ B
Phenols (4AAP)	12	N/A	2025/09/22	CAM SOP-00444	OMOE E3179 m
Phenols (4AAP)	2	N/A	2025/09/23	CAM SOP-00444	OMOE E3179 m
Sulphate by Automated Turbidimetry	12	N/A	2025/09/23	CAM SOP-00464	SM 24 4500-SO42- E m
Sulphate by Automated Turbidimetry	2	N/A	2025/09/24	CAM SOP-00464	SM 24 4500-SO42- E m
Total Kjeldahl Nitrogen in Water	11	2025/09/19	2025/09/23	CAM SOP-00938	SM 4500-N B m
Total Kjeldahl Nitrogen in Water	3	2025/09/19	2025/09/24	CAM SOP-00938	SM 4500-N B m
Total Phosphorus (Colourimetric)	1	2025/09/22	2025/09/24	CAM SOP-00407	SM 24 4500-P I
Total Phosphorus (Colourimetric)	2	2025/09/23	2025/09/24	CAM SOP-00407	SM 24 4500-P I

**Remarks:**

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau



Your Project #: Huron (224058)  
Your C.O.C. #: C#1060730-01-01

**Attention: Reporting Contacts**

GEI Consultants  
1260 - 2nd Ave E  
Unit 1  
Owen Sound, ON  
CANADA N4K 2J3

**Report Date: 2025/09/24**  
Report #: R8619291  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**BUREAU VERITAS JOB #: C5B5905**

**Received: 2025/09/17, 10:08**

Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, EPA, APHA or the Quebec Ministry of Environment.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.

(2) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

(3) "The CCME method and Analytical Protocol (O. Reg 153/04, O. Reg. 406/19) requires pH to be analyzed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the CCME and Analytical Protocol (O. Reg 153/04, O. Reg. 406/19) holding time. Bureau Veritas endeavors to analyze samples as soon as possible after receipt."



Your Project #: Huron (224058)  
Your C.O.C. #: C#1060730-01-01

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**Report Date: 2025/09/24**  
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Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**BUREAU VERITAS JOB #: C5B5905**

**Received: 2025/09/17, 10:08**

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:  
Babandeep Kaur, Project Manager 2  
Email: Babandeep.kaur@bureauveritas.com  
Phone# (905) 817-5700

=====

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Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.  
For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.



BUREAU  
VERITAS

Bureau Veritas Job #: C5B5905  
Report Date: 2025/09/24

GEI Consultants  
Client Project #: Huron (224058)  
Sampler Initials: AB

### RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		AVGG20		AVGG21		AVGG22		
Sampling Date		2025/09/16 10:25		2025/09/16 09:30		2025/09/16 13:05		
COC Number		C#1060730-01-01		C#1060730-01-01		C#1060730-01-01		
	UNITS	OW1	QC Batch	OW3	QC Batch	OW5	RDL	QC Batch
<b>Calculated Parameters</b>								
Hardness (CaCO3)	mg/L	500	A013099	380	A013099	450	1.0	A013737
<b>Inorganics</b>								
Total Ammonia-N	mg/L	0.080	A016073	0.34	A016073	<0.050	0.050	A016073
Conductivity	umho/cm	1100	A015168	870	A016044	1000	2.0	A016044
Total Kjeldahl Nitrogen (TKN)	mg/L	0.39	A014832	0.64	A014832	0.28	0.10	A014832
Dissolved Organic Carbon	mg/L	3.8	A014620	2.6	A015838	2.1	0.40	A015838
pH	pH	7.67	A015169	7.82	A016043	7.98		A016043
Phenols-4AAP	mg/L	<0.0010	A015794	0.0027	A015794	<0.0010	0.0010	A015794
Dissolved Sulphate (SO4)	mg/L	100	A015180	13	A015180	36	1.0	A015180
Alkalinity (Total as CaCO3)	mg/L	370	A015164	320	A016041	350	1.0	A016041
Dissolved Chloride (Cl-)	mg/L	56	A015179	69	A015179	90	1.0	A015179
Nitrite (N)	mg/L	0.015	A015163	<0.010	A015163	<0.010	0.010	A015163
Nitrate (N)	mg/L	0.33	A015163	<0.10	A015163	0.11	0.10	A015163
Nitrate + Nitrite (N)	mg/L	0.34	A015163	<0.10	A015163	0.11	0.10	A015163
RDL = Reportable Detection Limit QC Batch = Quality Control Batch								



RESULTS OF ANALYSES OF WATER

<b>Bureau Veritas ID</b>		AVGG22			AVGG23		
<b>Sampling Date</b>		2025/09/16 13:05			2025/09/16 11:10		
<b>COC Number</b>		C#1060730-01-01			C#1060730-01-01		
	<b>UNITS</b>	<b>OW5 Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>	<b>OW6</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Calculated Parameters</b>							
Hardness (CaCO3)	mg/L				1200	1.0	A013738
<b>Inorganics</b>							
Total Ammonia-N	mg/L				32	0.10	A016073
Conductivity	umho/cm				4000	2.0	A016044
Total Kjeldahl Nitrogen (TKN)	mg/L				42	5.0	A014832
Dissolved Organic Carbon	mg/L	2.0	0.40	A015838	130	0.40	A015838
pH	pH				7.40		A016043
Phenols-4AAP	mg/L				0.0060	0.0010	A015794
Dissolved Sulphate (SO4)	mg/L				1.3	1.0	A015180
Alkalinity (Total as CaCO3)	mg/L				1500	1.0	A016041
Dissolved Chloride (Cl-)	mg/L				480	7.0	A015179
Nitrite (N)	mg/L				<0.010	0.010	A015163
Nitrate (N)	mg/L				<0.10	0.10	A015163
Nitrate + Nitrite (N)	mg/L				<0.10	0.10	A015163
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate							



**BUREAU  
VERITAS**

Bureau Veritas Job #: C5B5905  
Report Date: 2025/09/24

GEI Consultants  
Client Project #: Huron (224058)  
Sampler Initials: AB

**RESULTS OF ANALYSES OF WATER**

Bureau Veritas ID		AVGG24		AVGG25		AVGG25			
Sampling Date		2025/09/16 10:10		2025/09/16 10:15		2025/09/16 10:15			
COC Number		C#1060730-01-01		C#1060730-01-01		C#1060730-01-01			
	UNITS	OW7S	QC Batch	OW7D	RDL	QC Batch	OW7D Lab-Dup	RDL	QC Batch
<b>Calculated Parameters</b>									
Hardness (CaCO3)	mg/L	130	A013738	79	1.0	A013738			
<b>Inorganics</b>									
Total Ammonia-N	mg/L	<0.050	A016073	<0.050	0.050	A016073			
Conductivity	umho/cm	500	A016044	460	2.0	A015168			
Total Kjeldahl Nitrogen (TKN)	mg/L	0.11	A014832	<0.10	0.10	A014832	<0.10	0.10	A014832
Dissolved Organic Carbon	mg/L	0.70	A015844	0.84	0.40	A015844			
pH	pH	8.18	A016043	8.17		A015169			
Phenols-4AAP	mg/L	<0.0010	A015794	<0.0010	0.0010	A015794			
Dissolved Sulphate (SO4)	mg/L	38	A015180	48	1.0	A015180			
Alkalinity (Total as CaCO3)	mg/L	180	A016041	160	1.0	A015164			
Dissolved Chloride (Cl-)	mg/L	25	A015179	9.7	1.0	A015179			
Nitrite (N)	mg/L	<0.010	A015163	<0.010	0.010	A015163			
Nitrate (N)	mg/L	<0.10	A015163	<0.10	0.10	A015163			
Nitrate + Nitrite (N)	mg/L	<0.10	A015163	<0.10	0.10	A015163			
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate									



BUREAU  
VERITAS

Bureau Veritas Job #: C5B5905  
Report Date: 2025/09/24

GEI Consultants  
Client Project #: Huron (224058)  
Sampler Initials: AB

### RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		AVGG26	AVGG27			AVGG27		
Sampling Date		2025/09/16 12:30	2025/09/16 12:35			2025/09/16 12:35		
COC Number		C#1060730-01-01	C#1060730-01-01			C#1060730-01-01		
	UNITS	OW8S	OW8D	RDL	QC Batch	OW8D Lab-Dup	RDL	QC Batch
<b>Calculated Parameters</b>								
Hardness (CaCO3)	mg/L	250	160	1.0	A013738			
<b>Inorganics</b>								
Total Ammonia-N	mg/L	<0.050	<0.050	0.050	A016073			
Conductivity	umho/cm	770	680	2.0	A016044			
Total Kjeldahl Nitrogen (TKN)	mg/L	<0.10	0.21	0.10	A014832			
Dissolved Organic Carbon	mg/L	0.52	0.85	0.40	A015844			
pH	pH	8.07	8.08		A016043			
Phenols-4AAP	mg/L	<0.0010	<0.0010	0.0010	A015794			
Dissolved Sulphate (SO4)	mg/L	77	160	1.0	A015180			
Alkalinity (Total as CaCO3)	mg/L	220	160	1.0	A016041			
Dissolved Chloride (Cl-)	mg/L	51	7.8	1.0	A015179			
Nitrite (N)	mg/L	<0.010	<0.010	0.010	A015163	<0.010	0.010	A015163
Nitrate (N)	mg/L	<0.10	0.27	0.10	A015163	0.27	0.10	A015163
Nitrate + Nitrite (N)	mg/L	<0.10	0.27	0.10	A015163	0.27	0.10	A015163
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate								



RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		AVGG28	AVGG29			AVGG30		
Sampling Date		2025/09/16 12:00	2025/09/16 12:10			2025/09/16 09:40		
COC Number		C#1060730-01-01	C#1060730-01-01			C#1060730-01-01		
	UNITS	OW10S	OW10D	RDL	QC Batch	OW11	RDL	QC Batch
<b>Calculated Parameters</b>								
Hardness (CaCO3)	mg/L	350	200	1.0	A013738	930	1.0	A013738
<b>Inorganics</b>								
Total Ammonia-N	mg/L	<0.050	<0.050	0.050	A016073	56 (1)	0.25	A016073
Conductivity	umho/cm	800	570	2.0	A015168	2400	2.0	A016044
Total Kjeldahl Nitrogen (TKN)	mg/L	<0.10	0.11	0.10	A014832	54 (1)	5.0	A014832
Dissolved Organic Carbon	mg/L	0.55	0.59	0.40	A015844	21	0.40	A015844
pH	pH	7.84	8.00		A015169	7.28		A016043
Phenols-4AAP	mg/L	<0.0010	<0.0010	0.0010	A015794	0.0049	0.0010	A015794
Dissolved Sulphate (SO4)	mg/L	150	97	1.0	A015180	<1.0	1.0	A016139
Alkalinity (Total as CaCO3)	mg/L	270	190	1.0	A015164	910	1.0	A016041
Dissolved Chloride (Cl-)	mg/L	<1.0	2.1	1.0	A015179	240	2.0	A016138
Nitrite (N)	mg/L	<0.010	<0.010	0.010	A015163	<0.010	0.010	A015178
Nitrate (N)	mg/L	<0.10	<0.10	0.10	A015163	<0.10	0.10	A015178
Nitrate + Nitrite (N)	mg/L	<0.10	<0.10	0.10	A015163	<0.10	0.10	A015178
RDL = Reportable Detection Limit QC Batch = Quality Control Batch (1) TKN < NH4: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.								



BUREAU  
VERITAS

Bureau Veritas Job #: C5B5905  
Report Date: 2025/09/24

GEI Consultants  
Client Project #: Huron (224058)  
Sampler Initials: AB

### RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		AVGG31		AVGG32			AVGG32		
Sampling Date		2025/09/16 08:30		2025/09/16 13:20			2025/09/16 13:20		
COC Number		C#1060730-01-01		C#1060730-01-01			C#1060730-01-01		
	UNITS	SW1	QC Batch	SW2	RDL	QC Batch	SW2 Lab-Dup	RDL	QC Batch
<b>Calculated Parameters</b>									
Hardness (CaCO3)	mg/L	260	A013099	230	1.0	A013099			
<b>Inorganics</b>									
Total Ammonia-N	mg/L	<0.050	A016073	0.065	0.050	A016073			
Conductivity	umho/cm	530	A016044	470	2.0	A016044			
Total Kjeldahl Nitrogen (TKN)	mg/L	0.55	A014832	0.50	0.10	A014832			
Dissolved Organic Carbon	mg/L	5.4	A015838	5.5	0.40	A015844			
pH	pH	8.06	A016043	8.31		A016043			
Phenols-4AAP	mg/L	<0.0010	A015794	<0.0010	0.0010	A015794			
Total Phosphorus	mg/L	0.026	A016579	<0.020	0.020	A016579			
Dissolved Sulphate (SO4)	mg/L	14	A015180	13	1.0	A015180			
Alkalinity (Total as CaCO3)	mg/L	220	A016041	200	1.0	A016041			
Dissolved Chloride (Cl-)	mg/L	24	A015179	23	1.0	A015179			
Nitrite (N)	mg/L	<0.010	A015163	0.018	0.010	A015178	0.018	0.010	A015178
Nitrate (N)	mg/L	0.65	A015163	0.19	0.10	A015178	0.20	0.10	A015178
Nitrate + Nitrite (N)	mg/L	0.65	A015163	0.21	0.10	A015178	0.21	0.10	A015178
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate									



**RESULTS OF ANALYSES OF WATER**

<b>Bureau Veritas ID</b>		AVGG33		
<b>Sampling Date</b>		2025/09/16 10:30		
<b>COC Number</b>		C#1060730-01-01		
	<b>UNITS</b>	<b>SW3</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Calculated Parameters</b>				
Hardness (CaCO3)	mg/L	600	1.0	A013099
<b>Inorganics</b>				
Total Ammonia-N	mg/L	0.11	0.050	A016073
Conductivity	umho/cm	1900	2.0	A016044
Total Kjeldahl Nitrogen (TKN)	mg/L	1.8	0.10	A014832
Dissolved Organic Carbon	mg/L	26	0.40	A015844
pH	pH	7.90		A016043
Phenols-4AAP	mg/L	0.0010	0.0010	A015794
Total Phosphorus	mg/L	0.26	0.10	A016579
Dissolved Sulphate (SO4)	mg/L	220	1.0	A016139
Alkalinity (Total as CaCO3)	mg/L	350	1.0	A016041
Dissolved Chloride (Cl-)	mg/L	250	2.0	A016138
Nitrite (N)	mg/L	<0.010	0.010	A015178
Nitrate (N)	mg/L	<0.10	0.10	A015178
Nitrate + Nitrite (N)	mg/L	<0.10	0.10	A015178
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				



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VERITAS

Bureau Veritas Job #: C5B5905  
Report Date: 2025/09/24

GEI Consultants  
Client Project #: Huron (224058)  
Sampler Initials: AB

### ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		AVGG20	AVGG21	AVGG22		AVGG23		
Sampling Date		2025/09/16 10:25	2025/09/16 09:30	2025/09/16 13:05		2025/09/16 11:10		
COC Number		C#1060730-01-01	C#1060730-01-01	C#1060730-01-01		C#1060730-01-01		
	UNITS	OW1	OW3	OW5	RDL	OW6	RDL	QC Batch

Metals								
Dissolved Barium (Ba)	ug/L	110	81	110	2.0	920	2.0	A014203
Dissolved Bismuth (Bi)	ug/L	<1.0	<1.0	<1.0	1.0	<1.0	1.0	A014203
Dissolved Boron (B)	ug/L	310	93	120	10	580	10	A014203
Dissolved Calcium (Ca)	ug/L	110000	79000	94000	200	150000	1000	A014203
Dissolved Iron (Fe)	ug/L	350	330	<100	100	8100	100	A014203
Dissolved Magnesium (Mg)	ug/L	53000	43000	51000	50	200000	50	A014203
Dissolved Manganese (Mn)	ug/L	86	45	22	2.0	18	2.0	A014203
Dissolved Phosphorus (P)	ug/L	<100	<100	<100	100	180	100	A014203
Dissolved Potassium (K)	ug/L	2600	1700	1800	200	27000	200	A014203
Dissolved Sodium (Na)	ug/L	42000	35000	40000	100	440000	100	A014203
RDL = Reportable Detection Limit								
QC Batch = Quality Control Batch								

Bureau Veritas ID		AVGG24	AVGG25	AVGG26		AVGG27		
Sampling Date		2025/09/16 10:10	2025/09/16 10:15	2025/09/16 12:30		2025/09/16 12:35		
COC Number		C#1060730-01-01	C#1060730-01-01	C#1060730-01-01		C#1060730-01-01		
	UNITS	OW7S	OW7D	OW8S	RDL	OW8D	RDL	QC Batch

Metals								
Dissolved Barium (Ba)	ug/L	32	34	49	2.0	25	2.0	A014203
Dissolved Bismuth (Bi)	ug/L	<1.0	<1.0	<1.0	1.0	<1.0	1.0	A014203
Dissolved Boron (B)	ug/L	270	420	380	10	460	10	A014203
Dissolved Calcium (Ca)	ug/L	28000	18000	44000	200	36000	400	A014203
Dissolved Iron (Fe)	ug/L	<100	<100	<100	100	<100	100	A014203
Dissolved Magnesium (Mg)	ug/L	15000	7900	33000	50	18000	50	A014203
Dissolved Manganese (Mn)	ug/L	<2.0	7.2	<2.0	2.0	<2.0	2.0	A014203
Dissolved Phosphorus (P)	ug/L	<100	<100	<100	100	<100	100	A014203
Dissolved Potassium (K)	ug/L	960	920	1500	200	1300	200	A014203
Dissolved Sodium (Na)	ug/L	55000	70000	66000	100	81000	100	A014203
RDL = Reportable Detection Limit								
QC Batch = Quality Control Batch								



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VERITAS

Bureau Veritas Job #: C5B5905  
Report Date: 2025/09/24

GEI Consultants  
Client Project #: Huron (224058)  
Sampler Initials: AB

**ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)**

Bureau Veritas ID		AVGG28	AVGG28		AVGG29		AVGG30		
Sampling Date		2025/09/16 12:00	2025/09/16 12:00		2025/09/16 12:10		2025/09/16 09:40		
COC Number		C#1060730-01-01	C#1060730-01-01		C#1060730-01-01		C#1060730-01-01		
	UNITS	OW10S	OW10S Lab-Dup	RDL	OW10D	RDL	OW11	RDL	QC Batch
<b>Metals</b>									
Dissolved Barium (Ba)	ug/L	28	27	2.0	120	2.0	340	2.0	A014203
Dissolved Bismuth (Bi)	ug/L	<1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0	A014203
Dissolved Boron (B)	ug/L	330	330	10	160	10	430	10	A014203
Dissolved Calcium (Ca)	ug/L	74000	74000	400	46000	1000	170000	200	A014203
Dissolved Iron (Fe)	ug/L	<100	<100	100	<100	100	14000	100	A014203
Dissolved Magnesium (Mg)	ug/L	40000	41000	50	22000	50	120000	50	A014203
Dissolved Manganese (Mn)	ug/L	3.9	3.7	2.0	41	2.0	130	2.0	A014203
Dissolved Phosphorus (P)	ug/L	<100	<100	100	<100	100	200	100	A014203
Dissolved Potassium (K)	ug/L	1900	1900	200	1200	200	22000	200	A014203
Dissolved Sodium (Na)	ug/L	40000	40000	100	27000	100	110000	100	A014203
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate									

Bureau Veritas ID		AVGG31	AVGG32	AVGG33		
Sampling Date		2025/09/16 08:30	2025/09/16 13:20	2025/09/16 10:30		
COC Number		C#1060730-01-01	C#1060730-01-01	C#1060730-01-01		
	UNITS	SW1	SW2	SW3	RDL	QC Batch
<b>Metals</b>						
Total Barium (Ba)	ug/L	26	24	91	2.0	A016454
Total Bismuth (Bi)	ug/L	<1.0	<1.0	<1.0	1.0	A016454
Total Boron (B)	ug/L	19	21	1300	10	A016454
Total Calcium (Ca)	ug/L	62000	53000	160000	200	A016454
Total Iron (Fe)	ug/L	190	140	2100	100	A016454
Total Magnesium (Mg)	ug/L	22000	23000	41000	50	A016454
Total Manganese (Mn)	ug/L	38	16	550	2.0	A016454
Total Phosphorus (P)	ug/L	<100	<100	330	100	A016454
Total Potassium (K)	ug/L	5800	5500	70000	200	A016454
Total Sodium (Na)	ug/L	9400	9300	140000	100	A016454
RDL = Reportable Detection Limit QC Batch = Quality Control Batch						



BUREAU  
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Bureau Veritas Job #: C5B5905  
Report Date: 2025/09/24

GEI Consultants  
Client Project #: Huron (224058)  
Sampler Initials: AB

### TEST SUMMARY

**Bureau Veritas ID:** AVGG20  
**Sample ID:** OW1  
**Matrix:** Water

**Collected:** 2025/09/16  
**Shipped:**  
**Received:** 2025/09/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	A015164	N/A	2025/09/22	Surinder Rai
Chloride by Automated Colourimetry	SKAL	A015179	N/A	2025/09/23	Alina Dobreanu
Conductivity	AT	A015168	N/A	2025/09/22	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	A014620	N/A	2025/09/19	Gyulshen Idriz
Hardness (calculated as CaCO3)		A013099	N/A	2025/09/22	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	A014203	N/A	2025/09/19	Prempal Bhatti
Total Ammonia-N	SKAL/NH4	A016073	N/A	2025/09/23	Kruti Jitesh Patel
Nitrate & Nitrite as Nitrogen in Water	LACH	A015163	N/A	2025/09/20	Helen He
pH	AT	A015169	2025/09/20	2025/09/22	Surinder Rai
Phenols (4AAP)	TECH/PHEN	A015794	N/A	2025/09/22	Jency Sara Johnson
Sulphate by Automated Turbidimetry	SKAL	A015180	N/A	2025/09/23	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	A014832	2025/09/19	2025/09/23	Rajni Tyagi

**Bureau Veritas ID:** AVGG21  
**Sample ID:** OW3  
**Matrix:** Water

**Collected:** 2025/09/16  
**Shipped:**  
**Received:** 2025/09/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	A016041	N/A	2025/09/23	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	A015179	N/A	2025/09/23	Alina Dobreanu
Conductivity	AT	A016044	N/A	2025/09/23	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	A015838	N/A	2025/09/22	Gyulshen Idriz
Hardness (calculated as CaCO3)		A013099	N/A	2025/09/22	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	A014203	N/A	2025/09/19	Prempal Bhatti
Total Ammonia-N	SKAL/NH4	A016073	N/A	2025/09/23	Kruti Jitesh Patel
Nitrate & Nitrite as Nitrogen in Water	LACH	A015163	N/A	2025/09/20	Helen He
pH	AT	A016043	2025/09/22	2025/09/23	Nachiketa Gohil
Phenols (4AAP)	TECH/PHEN	A015794	N/A	2025/09/22	Jency Sara Johnson
Sulphate by Automated Turbidimetry	SKAL	A015180	N/A	2025/09/23	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	A014832	2025/09/19	2025/09/23	Rajni Tyagi

**Bureau Veritas ID:** AVGG22  
**Sample ID:** OW5  
**Matrix:** Water

**Collected:** 2025/09/16  
**Shipped:**  
**Received:** 2025/09/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	A016041	N/A	2025/09/23	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	A015179	N/A	2025/09/23	Alina Dobreanu
Conductivity	AT	A016044	N/A	2025/09/23	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	A015838	N/A	2025/09/22	Gyulshen Idriz
Hardness (calculated as CaCO3)		A013737	N/A	2025/09/22	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	A014203	N/A	2025/09/19	Prempal Bhatti
Total Ammonia-N	SKAL/NH4	A016073	N/A	2025/09/23	Kruti Jitesh Patel
Nitrate & Nitrite as Nitrogen in Water	LACH	A015163	N/A	2025/09/20	Helen He
pH	AT	A016043	2025/09/22	2025/09/23	Nachiketa Gohil



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VERITAS

Bureau Veritas Job #: C5B5905  
Report Date: 2025/09/24

GEI Consultants  
Client Project #: Huron (224058)  
Sampler Initials: AB

### TEST SUMMARY

**Bureau Veritas ID:** AVGG22  
**Sample ID:** OW5  
**Matrix:** Water

**Collected:** 2025/09/16  
**Shipped:**  
**Received:** 2025/09/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Phenols (4AAP)	TECH/PHEN	A015794	N/A	2025/09/22	Jency Sara Johnson
Sulphate by Automated Turbidimetry	SKAL	A015180	N/A	2025/09/23	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	A014832	2025/09/19	2025/09/23	Rajni Tyagi

**Bureau Veritas ID:** AVGG22 Dup  
**Sample ID:** OW5  
**Matrix:** Water

**Collected:** 2025/09/16  
**Shipped:**  
**Received:** 2025/09/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Organic Carbon (DOC)	TOCV/NDIR	A015838	N/A	2025/09/22	Gyulshen Idriz

**Bureau Veritas ID:** AVGG23  
**Sample ID:** OW6  
**Matrix:** Water

**Collected:** 2025/09/16  
**Shipped:**  
**Received:** 2025/09/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	A016041	N/A	2025/09/23	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	A015179	N/A	2025/09/23	Alina Dobreanu
Conductivity	AT	A016044	N/A	2025/09/23	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	A015838	N/A	2025/09/22	Gyulshen Idriz
Hardness (calculated as CaCO3)		A013738	N/A	2025/09/22	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	A014203	N/A	2025/09/19	Prempal Bhatti
Total Ammonia-N	SKAL/NH4	A016073	N/A	2025/09/23	Kruti Jitesh Patel
Nitrate & Nitrite as Nitrogen in Water	LACH	A015163	N/A	2025/09/20	Helen He
pH	AT	A016043	2025/09/22	2025/09/23	Nachiketa Gohil
Phenols (4AAP)	TECH/PHEN	A015794	N/A	2025/09/22	Jency Sara Johnson
Sulphate by Automated Turbidimetry	SKAL	A015180	N/A	2025/09/23	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	A014832	2025/09/19	2025/09/24	Rajni Tyagi

**Bureau Veritas ID:** AVGG24  
**Sample ID:** OW7S  
**Matrix:** Water

**Collected:** 2025/09/16  
**Shipped:**  
**Received:** 2025/09/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	A016041	N/A	2025/09/23	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	A015179	N/A	2025/09/23	Alina Dobreanu
Conductivity	AT	A016044	N/A	2025/09/23	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	A015844	N/A	2025/09/22	Gyulshen Idriz
Hardness (calculated as CaCO3)		A013738	N/A	2025/09/22	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	A014203	N/A	2025/09/19	Prempal Bhatti
Total Ammonia-N	SKAL/NH4	A016073	N/A	2025/09/23	Kruti Jitesh Patel
Nitrate & Nitrite as Nitrogen in Water	LACH	A015163	N/A	2025/09/20	Helen He
pH	AT	A016043	2025/09/22	2025/09/23	Nachiketa Gohil
Phenols (4AAP)	TECH/PHEN	A015794	N/A	2025/09/22	Jency Sara Johnson
Sulphate by Automated Turbidimetry	SKAL	A015180	N/A	2025/09/23	Massarat Jan



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Bureau Veritas Job #: C5B5905  
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GEI Consultants  
Client Project #: Huron (224058)  
Sampler Initials: AB

### TEST SUMMARY

**Bureau Veritas ID:** AVGG24  
**Sample ID:** OW7S  
**Matrix:** Water

**Collected:** 2025/09/16  
**Shipped:**  
**Received:** 2025/09/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Kjeldahl Nitrogen in Water	SKAL	A014832	2025/09/19	2025/09/23	Rajni Tyagi

**Bureau Veritas ID:** AVGG25  
**Sample ID:** OW7D  
**Matrix:** Water

**Collected:** 2025/09/16  
**Shipped:**  
**Received:** 2025/09/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	A015164	N/A	2025/09/22	Surinder Rai
Chloride by Automated Colourimetry	SKAL	A015179	N/A	2025/09/23	Alina Dobreanu
Conductivity	AT	A015168	N/A	2025/09/22	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	A015844	N/A	2025/09/22	Gyulshen Idriz
Hardness (calculated as CaCO3)		A013738	N/A	2025/09/22	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	A014203	N/A	2025/09/19	Prempal Bhatti
Total Ammonia-N	SKAL/NH4	A016073	N/A	2025/09/23	Kruti Jitesh Patel
Nitrate & Nitrite as Nitrogen in Water	LACH	A015163	N/A	2025/09/20	Helen He
pH	AT	A015169	2025/09/20	2025/09/22	Surinder Rai
Phenols (4AAP)	TECH/PHEN	A015794	N/A	2025/09/22	Jency Sara Johnson
Sulphate by Automated Turbidimetry	SKAL	A015180	N/A	2025/09/23	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	A014832	2025/09/19	2025/09/23	Rajni Tyagi

**Bureau Veritas ID:** AVGG25 Dup  
**Sample ID:** OW7D  
**Matrix:** Water

**Collected:** 2025/09/16  
**Shipped:**  
**Received:** 2025/09/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Kjeldahl Nitrogen in Water	SKAL	A014832	2025/09/19	2025/09/23	Rajni Tyagi

**Bureau Veritas ID:** AVGG26  
**Sample ID:** OW8S  
**Matrix:** Water

**Collected:** 2025/09/16  
**Shipped:**  
**Received:** 2025/09/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	A016041	N/A	2025/09/23	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	A015179	N/A	2025/09/23	Alina Dobreanu
Conductivity	AT	A016044	N/A	2025/09/23	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	A015844	N/A	2025/09/22	Gyulshen Idriz
Hardness (calculated as CaCO3)		A013738	N/A	2025/09/22	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	A014203	N/A	2025/09/19	Prempal Bhatti
Total Ammonia-N	SKAL/NH4	A016073	N/A	2025/09/23	Kruti Jitesh Patel
Nitrate & Nitrite as Nitrogen in Water	LACH	A015163	N/A	2025/09/20	Helen He
pH	AT	A016043	2025/09/22	2025/09/23	Nachiketa Gohil
Phenols (4AAP)	TECH/PHEN	A015794	N/A	2025/09/22	Jency Sara Johnson
Sulphate by Automated Turbidimetry	SKAL	A015180	N/A	2025/09/24	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	A014832	2025/09/19	2025/09/23	Rajni Tyagi



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Bureau Veritas Job #: C5B5905  
Report Date: 2025/09/24

GEI Consultants  
Client Project #: Huron (224058)  
Sampler Initials: AB

### TEST SUMMARY

**Bureau Veritas ID:** AVGG27  
**Sample ID:** OW8D  
**Matrix:** Water

**Collected:** 2025/09/16  
**Shipped:**  
**Received:** 2025/09/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	A016041	N/A	2025/09/23	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	A015179	N/A	2025/09/23	Alina Dobreanu
Conductivity	AT	A016044	N/A	2025/09/23	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	A015844	N/A	2025/09/22	Gyulshen Idriz
Hardness (calculated as CaCO3)		A013738	N/A	2025/09/22	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	A014203	N/A	2025/09/19	Prempal Bhatti
Total Ammonia-N	SKAL/NH4	A016073	N/A	2025/09/23	Kruti Jitesh Patel
Nitrate & Nitrite as Nitrogen in Water	LACH	A015163	N/A	2025/09/20	Helen He
pH	AT	A016043	2025/09/22	2025/09/23	Nachiketa Gohil
Phenols (4AAP)	TECH/PHEN	A015794	N/A	2025/09/22	Jency Sara Johnson
Sulphate by Automated Turbidimetry	SKAL	A015180	N/A	2025/09/24	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	A014832	2025/09/19	2025/09/23	Rajni Tyagi

**Bureau Veritas ID:** AVGG27 Dup  
**Sample ID:** OW8D  
**Matrix:** Water

**Collected:** 2025/09/16  
**Shipped:**  
**Received:** 2025/09/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Nitrate & Nitrite as Nitrogen in Water	LACH	A015163	N/A	2025/09/20	Helen He

**Bureau Veritas ID:** AVGG28  
**Sample ID:** OW10S  
**Matrix:** Water

**Collected:** 2025/09/16  
**Shipped:**  
**Received:** 2025/09/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	A015164	N/A	2025/09/22	Surinder Rai
Chloride by Automated Colourimetry	SKAL	A015179	N/A	2025/09/23	Alina Dobreanu
Conductivity	AT	A015168	N/A	2025/09/22	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	A015844	N/A	2025/09/22	Gyulshen Idriz
Hardness (calculated as CaCO3)		A013738	N/A	2025/09/22	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	A014203	N/A	2025/09/19	Prempal Bhatti
Total Ammonia-N	SKAL/NH4	A016073	N/A	2025/09/23	Kruti Jitesh Patel
Nitrate & Nitrite as Nitrogen in Water	LACH	A015163	N/A	2025/09/20	Helen He
pH	AT	A015169	2025/09/20	2025/09/22	Surinder Rai
Phenols (4AAP)	TECH/PHEN	A015794	N/A	2025/09/22	Jency Sara Johnson
Sulphate by Automated Turbidimetry	SKAL	A015180	N/A	2025/09/23	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	A014832	2025/09/19	2025/09/24	Rajni Tyagi

**Bureau Veritas ID:** AVGG28 Dup  
**Sample ID:** OW10S  
**Matrix:** Water

**Collected:** 2025/09/16  
**Shipped:**  
**Received:** 2025/09/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Metals by ICPMS	ICP/MS	A014203	N/A	2025/09/19	Prempal Bhatti



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Client Project #: Huron (224058)  
Sampler Initials: AB

### TEST SUMMARY

**Bureau Veritas ID:** AVGG29  
**Sample ID:** OW10D  
**Matrix:** Water

**Collected:** 2025/09/16  
**Shipped:**  
**Received:** 2025/09/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	A015164	N/A	2025/09/22	Surinder Rai
Chloride by Automated Colourimetry	SKAL	A015179	N/A	2025/09/23	Alina Dobreanu
Conductivity	AT	A015168	N/A	2025/09/22	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	A015844	N/A	2025/09/22	Gyulshen Idriz
Hardness (calculated as CaCO3)		A013738	N/A	2025/09/22	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	A014203	N/A	2025/09/19	Prempal Bhatti
Total Ammonia-N	SKAL/NH4	A016073	N/A	2025/09/23	Kruti Jitesh Patel
Nitrate & Nitrite as Nitrogen in Water	LACH	A015163	N/A	2025/09/20	Helen He
pH	AT	A015169	2025/09/20	2025/09/22	Surinder Rai
Phenols (4AAP)	TECH/PHEN	A015794	N/A	2025/09/22	Jency Sara Johnson
Sulphate by Automated Turbidimetry	SKAL	A015180	N/A	2025/09/23	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	A014832	2025/09/19	2025/09/23	Rajni Tyagi

**Bureau Veritas ID:** AVGG30  
**Sample ID:** OW11  
**Matrix:** Water

**Collected:** 2025/09/16  
**Shipped:**  
**Received:** 2025/09/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	A016041	N/A	2025/09/23	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	A016138	N/A	2025/09/24	Alina Dobreanu
Conductivity	AT	A016044	N/A	2025/09/23	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	A015844	N/A	2025/09/22	Gyulshen Idriz
Hardness (calculated as CaCO3)		A013738	N/A	2025/09/22	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	A014203	N/A	2025/09/19	Prempal Bhatti
Total Ammonia-N	SKAL/NH4	A016073	N/A	2025/09/23	Kruti Jitesh Patel
Nitrate & Nitrite as Nitrogen in Water	LACH	A015178	N/A	2025/09/22	Chandra Nandlal
pH	AT	A016043	2025/09/22	2025/09/23	Nachiketa Gohil
Phenols (4AAP)	TECH/PHEN	A015794	N/A	2025/09/23	Jency Sara Johnson
Sulphate by Automated Turbidimetry	SKAL	A016139	N/A	2025/09/23	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	A014832	2025/09/19	2025/09/24	Rajni Tyagi

**Bureau Veritas ID:** AVGG31  
**Sample ID:** SW1  
**Matrix:** Water

**Collected:** 2025/09/16  
**Shipped:**  
**Received:** 2025/09/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	A016041	N/A	2025/09/23	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	A015179	N/A	2025/09/23	Alina Dobreanu
Conductivity	AT	A016044	N/A	2025/09/23	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	A015838	N/A	2025/09/22	Gyulshen Idriz
Hardness (calculated as CaCO3)		A013099	N/A	2025/09/23	Automated Statchk
Total Metals Analysis by ICPMS	ICP/MS	A016454	2025/09/23	2025/09/23	Azita Fazaeli
Total Ammonia-N	SKAL/NH4	A016073	N/A	2025/09/23	Kruti Jitesh Patel
Nitrate & Nitrite as Nitrogen in Water	LACH	A015163	N/A	2025/09/20	Helen He
pH	AT	A016043	2025/09/22	2025/09/23	Nachiketa Gohil



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Bureau Veritas Job #: C5B5905  
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GEI Consultants  
Client Project #: Huron (224058)  
Sampler Initials: AB

### TEST SUMMARY

**Bureau Veritas ID:** AVGG31  
**Sample ID:** SW1  
**Matrix:** Water

**Collected:** 2025/09/16  
**Shipped:**  
**Received:** 2025/09/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Phenols (4AAP)	TECH/PHEN	A015794	N/A	2025/09/23	Jency Sara Johnson
Sulphate by Automated Turbidimetry	SKAL	A015180	N/A	2025/09/23	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	A014832	2025/09/19	2025/09/23	Rajni Tyagi
Total Phosphorus (Colourimetric)	SKAL/P	A016579	2025/09/22	2025/09/24	Vidhi Khatri

**Bureau Veritas ID:** AVGG32  
**Sample ID:** SW2  
**Matrix:** Water

**Collected:** 2025/09/16  
**Shipped:**  
**Received:** 2025/09/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	A016041	N/A	2025/09/23	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	A015179	N/A	2025/09/23	Alina Dobreanu
Conductivity	AT	A016044	N/A	2025/09/23	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	A015844	N/A	2025/09/22	Gyulshen Idriz
Hardness (calculated as CaCO3)		A013099	N/A	2025/09/23	Automated Statchk
Total Metals Analysis by ICPMS	ICP/MS	A016454	2025/09/23	2025/09/23	Azita Fazaeli
Total Ammonia-N	SKAL/NH4	A016073	N/A	2025/09/23	Kruti Jitesh Patel
Nitrate & Nitrite as Nitrogen in Water	LACH	A015178	N/A	2025/09/22	Chandra Nandlal
pH	AT	A016043	2025/09/22	2025/09/23	Nachiketa Gohil
Phenols (4AAP)	TECH/PHEN	A015794	N/A	2025/09/22	Jency Sara Johnson
Sulphate by Automated Turbidimetry	SKAL	A015180	N/A	2025/09/23	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	A014832	2025/09/19	2025/09/23	Rajni Tyagi
Total Phosphorus (Colourimetric)	SKAL/P	A016579	2025/09/23	2025/09/24	Vidhi Khatri

**Bureau Veritas ID:** AVGG32 Dup  
**Sample ID:** SW2  
**Matrix:** Water

**Collected:** 2025/09/16  
**Shipped:**  
**Received:** 2025/09/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Nitrate & Nitrite as Nitrogen in Water	LACH	A015178	N/A	2025/09/22	Chandra Nandlal

**Bureau Veritas ID:** AVGG33  
**Sample ID:** SW3  
**Matrix:** Water

**Collected:** 2025/09/16  
**Shipped:**  
**Received:** 2025/09/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	A016041	N/A	2025/09/23	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	A016138	N/A	2025/09/24	Alina Dobreanu
Conductivity	AT	A016044	N/A	2025/09/23	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	A015844	N/A	2025/09/22	Gyulshen Idriz
Hardness (calculated as CaCO3)		A013099	N/A	2025/09/23	Automated Statchk
Total Metals Analysis by ICPMS	ICP/MS	A016454	2025/09/23	2025/09/23	Azita Fazaeli
Total Ammonia-N	SKAL/NH4	A016073	N/A	2025/09/23	Kruti Jitesh Patel
Nitrate & Nitrite as Nitrogen in Water	LACH	A015178	N/A	2025/09/22	Chandra Nandlal
pH	AT	A016043	2025/09/22	2025/09/23	Nachiketa Gohil



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Bureau Veritas Job #: C5B5905  
Report Date: 2025/09/24

GEI Consultants  
Client Project #: Huron (224058)  
Sampler Initials: AB

### TEST SUMMARY

**Bureau Veritas ID:** AVGG33  
**Sample ID:** SW3  
**Matrix:** Water

**Collected:** 2025/09/16  
**Shipped:**  
**Received:** 2025/09/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Phenols (4AAP)	TECH/PHEN	A015794	N/A	2025/09/22	Jency Sara Johnson
Sulphate by Automated Turbidimetry	SKAL	A016139	N/A	2025/09/23	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	A014832	2025/09/19	2025/09/23	Rajni Tyagi
Total Phosphorus (Colourimetric)	SKAL/P	A016579	2025/09/23	2025/09/24	Vidhi Khatri



### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	2.7°C
Package 2	4.3°C

Sample AVGG30 [OW11] : TKN < Ammonia: Both values fall within the method uncertainty for duplicates and are likely equivalent.

**Results relate only to the items tested.**



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Bureau Veritas Job #: C5B5905

Report Date: 2025/09/24

### QUALITY ASSURANCE REPORT

GEI Consultants

Client Project #: Huron (224058)

Sampler Initials: AB

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
A014203	Dissolved Barium (Ba)	2025/09/19	98	80 - 120	97	80 - 120	<2.0	ug/L	2.9	20		
A014203	Dissolved Bismuth (Bi)	2025/09/19	96	80 - 120	95	80 - 120	<1.0	ug/L	NC	20		
A014203	Dissolved Boron (B)	2025/09/19	95	80 - 120	92	80 - 120	<10	ug/L	0.40	20		
A014203	Dissolved Calcium (Ca)	2025/09/19	NC	80 - 120	104	80 - 120	<200	ug/L	0.34	20		
A014203	Dissolved Iron (Fe)	2025/09/19	102	80 - 120	98	80 - 120	<100	ug/L	NC	20		
A014203	Dissolved Magnesium (Mg)	2025/09/19	NC	80 - 120	97	80 - 120	<50	ug/L	0.39	20		
A014203	Dissolved Manganese (Mn)	2025/09/19	101	80 - 120	99	80 - 120	<2.0	ug/L	5.5	20		
A014203	Dissolved Phosphorus (P)	2025/09/19	102	80 - 120	94	80 - 120	<100	ug/L	NC	20		
A014203	Dissolved Potassium (K)	2025/09/19	103	80 - 120	99	80 - 120	<200	ug/L	0.54	20		
A014203	Dissolved Sodium (Na)	2025/09/19	NC	80 - 120	98	80 - 120	<100	ug/L	0.22	20		
A014620	Dissolved Organic Carbon	2025/09/19	91	80 - 120	95	80 - 120	<0.40	mg/L	NC	20		
A014832	Total Kjeldahl Nitrogen (TKN)	2025/09/23	100	80 - 120	101	80 - 120	<0.10	mg/L	NC	20	105	80 - 120
A015163	Nitrate (N)	2025/09/20	101	80 - 120	99	80 - 120	<0.10	mg/L	0.19	20		
A015163	Nitrite (N)	2025/09/20	112	80 - 120	106	80 - 120	<0.010	mg/L	NC	20		
A015164	Alkalinity (Total as CaCO3)	2025/09/22			95	85 - 115	<1.0	mg/L	1.3	20		
A015168	Conductivity	2025/09/22			101	85 - 115	<2.0	umho/cm	NC	10		
A015169	pH	2025/09/22			102	98 - 103			1.3	N/A		
A015178	Nitrate (N)	2025/09/22	91	80 - 120	92	80 - 120	<0.10	mg/L	1.8	20		
A015178	Nitrite (N)	2025/09/22	103	80 - 120	105	80 - 120	<0.010	mg/L	2.3	20		
A015179	Dissolved Chloride (Cl-)	2025/09/23	NC	80 - 120	91	80 - 120	<1.0	mg/L	0.0016	20		
A015180	Dissolved Sulphate (SO4)	2025/09/23	NC	75 - 125	100	80 - 120	<1.0	mg/L	0.26	20		
A015794	Phenols-4AAP	2025/09/22	81	80 - 120	103	80 - 120	<0.0010	mg/L	0	20		
A015838	Dissolved Organic Carbon	2025/09/22	91	80 - 120	95	80 - 120	<0.40	mg/L	0.97	20		
A015844	Dissolved Organic Carbon	2025/09/22	91	80 - 120	96	80 - 120	<0.40	mg/L	1.2	20		
A016041	Alkalinity (Total as CaCO3)	2025/09/23			97	85 - 115	<1.0	mg/L	1.9	20		
A016043	pH	2025/09/23			102	98 - 103			0.79	N/A		
A016044	Conductivity	2025/09/23			102	85 - 115	<2.0	umho/cm	0	10		
A016073	Total Ammonia-N	2025/09/23	103	75 - 125	103	80 - 120	<0.050	mg/L	NC	20		
A016138	Dissolved Chloride (Cl-)	2025/09/24	97	80 - 120	96	80 - 120	<1.0	mg/L	0.29	20		



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Bureau Veritas Job #: C5B5905

Report Date: 2025/09/24

### QUALITY ASSURANCE REPORT(CONT'D)

GEI Consultants

Client Project #: Huron (224058)

Sampler Initials: AB

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
A016139	Dissolved Sulphate (SO4)	2025/09/23	100	75 - 125	100	80 - 120	<1.0	mg/L	0.34	20		
A016454	Total Barium (Ba)	2025/09/23	98	80 - 120	97	80 - 120	<2.0	ug/L	0.17	20		
A016454	Total Bismuth (Bi)	2025/09/23	100	80 - 120	99	80 - 120	<1.0	ug/L	NC	20		
A016454	Total Boron (B)	2025/09/23	97	80 - 120	96	80 - 120	<10	ug/L	2.3	20		
A016454	Total Calcium (Ca)	2025/09/23	NC	80 - 120	100	80 - 120	<200	ug/L	1.1	20		
A016454	Total Iron (Fe)	2025/09/23	104	80 - 120	100	80 - 120	<100	ug/L	NC	20		
A016454	Total Magnesium (Mg)	2025/09/23	99	80 - 120	97	80 - 120	<50	ug/L	1.7	20		
A016454	Total Manganese (Mn)	2025/09/23	101	80 - 120	99	80 - 120	<2.0	ug/L	1.3	20		
A016454	Total Phosphorus (P)	2025/09/23	109	80 - 120	96	80 - 120	<100	ug/L	NC	20		
A016454	Total Potassium (K)	2025/09/23	102	80 - 120	98	80 - 120	<200	ug/L	0.93	20		
A016454	Total Sodium (Na)	2025/09/23	NC	80 - 120	102	80 - 120	<100	ug/L	0.88	20		
A016579	Total Phosphorus	2025/09/24	94	80 - 120	104	80 - 120	<0.020	mg/L	2.9	20	91	80 - 120

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).



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Bureau Veritas Job #: C5B5905  
Report Date: 2025/09/24

GEI Consultants  
Client Project #: Huron (224058)  
Sampler Initials: AB

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

*Cristina Carriere*

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Cristina Carriere, Senior Scientific Specialist

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Your Project #: 2402747  
 Site#: Huron Landfill - Back Ditch  
 Site Location: Huron Landfill - Back Ditch  
 Your C.O.C. #: C#1036154-01-01

**Attention: Reporting Contacts**

GEI Consultants  
 1260 - 2nd Ave E  
 Unit 1  
 Owen Sound, ON  
 CANADA N4K 2J3

**Report Date: 2025/03/11**  
 Report #: R8500847  
 Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**BUREAU VERITAS JOB #: C523836**

**Received: 2025/03/06, 09:35**

Sample Matrix: Water  
 # Samples Received: 2

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Alkalinity	2	N/A	2025/03/08	CAM SOP-00448	SM 24 2320 B m
Chloride by Automated Colourimetry	2	N/A	2025/03/10	CAM SOP-00463	SM 24 4500-CI E m
Conductivity	2	N/A	2025/03/08	CAM SOP-00414	SM 24 2510 m
Dissolved Organic Carbon (DOC) (1)	2	N/A	2025/03/07	CAM SOP-00446	SM 24 5310 B m
Total Ammonia-N	1	N/A	2025/03/10	CAM SOP-00441	USGS I-2522-90 m
Total Ammonia-N	1	N/A	2025/03/11	CAM SOP-00441	USGS I-2522-90 m
Phenols (4AAP)	2	N/A	2025/03/07	CAM SOP-00444	OMOE E3179 m
Total Kjeldahl Nitrogen in Water	2	2025/03/07	2025/03/07	CAM SOP-00938	SM 4500-N B m

**Remarks:**  
 Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, EPA, APHA or the Quebec Ministry of Environment.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested. This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.



Your Project #: 2402747  
Site#: Huron Landfill - Back Ditch  
Site Location: Huron Landfill - Back Ditch  
Your C.O.C. #: C#1036154-01-01

**Attention: Reporting Contacts**

GEI Consultants  
1260 - 2nd Ave E  
Unit 1  
Owen Sound, ON  
CANADA N4K 2J3

**Report Date: 2025/03/11**  
Report #: R8500847  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**BUREAU VERITAS JOB #: C523836**  
**Received: 2025/03/06, 09:35**

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:

Ashton Gibson, Project Manager  
Email: ashton.gibson@bureauveritas.com  
Phone# (416)998-5786

=====

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Bureau Veritas Job #: C523836  
Report Date: 2025/03/11

GEI Consultants  
Client Project #: 2402747  
Site Location: Huron Landfill - Back Ditch  
Sampler Initials: AB

### RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		AOQA24		AOQA25		
Sampling Date		2025/03/05 11:55		2025/03/05 12:25		
COC Number		C#1036154-01-01		C#1036154-01-01		
	UNITS	FRONT PL	QC Batch	BACK DITCH	RDL	QC Batch
<b>Inorganics</b>						
Total Ammonia-N	mg/L	0.096	9887910	0.43	0.050	9887835
Conductivity	umho/cm	800	9887294	250	2.0	9887294
Total Kjeldahl Nitrogen (TKN)	mg/L	0.39	9887063	0.61	0.10	9887063
Dissolved Organic Carbon	mg/L	8.1	9887091	1.8	0.40	9887091
Phenols-4AAP	mg/L	<0.0010	9886917	<0.0010	0.0010	9886917
Alkalinity (Total as CaCO3)	mg/L	220	9887293	100	1.0	9887293
Dissolved Chloride (Cl-)	mg/L	75	9887586	14	1.0	9887586
RDL = Reportable Detection Limit QC Batch = Quality Control Batch						



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Bureau Veritas Job #: C523836  
Report Date: 2025/03/11

GEI Consultants  
Client Project #: 2402747  
Site Location: Huron Landfill - Back Ditch  
Sampler Initials: AB

### TEST SUMMARY

**Bureau Veritas ID:** AOQA24  
**Sample ID:** FRONT PL  
**Matrix:** Water

**Collected:** 2025/03/05  
**Shipped:**  
**Received:** 2025/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9887293	N/A	2025/03/08	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9887586	N/A	2025/03/10	Alina Dobreanu
Conductivity	AT	9887294	N/A	2025/03/08	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9887091	N/A	2025/03/07	Gyulshen Idriz
Total Ammonia-N	SKAL/NH4	9887910	N/A	2025/03/11	Massarat Jan
Phenols (4AAP)	TECH/PHEN	9886917	N/A	2025/03/07	Sachi Patel
Total Kjeldahl Nitrogen in Water	SKAL	9887063	2025/03/07	2025/03/07	Kruti Jitesh Patel

**Bureau Veritas ID:** AOQA25  
**Sample ID:** BACK DITCH  
**Matrix:** Water

**Collected:** 2025/03/05  
**Shipped:**  
**Received:** 2025/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9887293	N/A	2025/03/08	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9887586	N/A	2025/03/10	Alina Dobreanu
Conductivity	AT	9887294	N/A	2025/03/08	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9887091	N/A	2025/03/07	Gyulshen Idriz
Total Ammonia-N	SKAL/NH4	9887835	N/A	2025/03/10	Massarat Jan
Phenols (4AAP)	TECH/PHEN	9886917	N/A	2025/03/07	Sachi Patel
Total Kjeldahl Nitrogen in Water	SKAL	9887063	2025/03/07	2025/03/07	Kruti Jitesh Patel



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Report Date: 2025/03/11

GEI Consultants  
Client Project #: 2402747  
Site Location: Huron Landfill - Back Ditch  
Sampler Initials: AB

### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	7.0°C
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**Results relate only to the items tested.**



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Bureau Veritas Job #: C523836

Report Date: 2025/03/11

### QUALITY ASSURANCE REPORT

GEI Consultants

Client Project #: 2402747

Site Location: Huron Landfill - Back Ditch

Sampler Initials: AB

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
9886917	Phenols-4AAP	2025/03/07	96	80 - 120	95	80 - 120	<0.0010	mg/L	NC	20		
9887063	Total Kjeldahl Nitrogen (TKN)	2025/03/10	98	80 - 120	100	80 - 120	<0.10	mg/L	NC	20	96	80 - 120
9887091	Dissolved Organic Carbon	2025/03/07	90	80 - 120	95	80 - 120	<0.40	mg/L	0.71	20		
9887293	Alkalinity (Total as CaCO3)	2025/03/08			95	85 - 115	<1.0	mg/L	1.6	20		
9887294	Conductivity	2025/03/08			102	85 - 115	<2.0	umho/cm	0.64	10		
9887586	Dissolved Chloride (Cl-)	2025/03/10	90	80 - 120	94	80 - 120	<1.0	mg/L	1.3	20		
9887835	Total Ammonia-N	2025/03/10	94	75 - 125	97	80 - 120	<0.050	mg/L	0.051	20		
9887910	Total Ammonia-N	2025/03/11	NC	75 - 125	99	80 - 120	<0.050	mg/L	0.16	20		

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).



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Bureau Veritas Job #: C523836

Report Date: 2025/03/11

GEI Consultants

Client Project #: 2402747

Site Location: Huron Landfill - Back Ditch

Sampler Initials: AB

## VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

A handwritten signature in cursive script that reads 'Louise A. Harding'.

Louise Harding, Scientific Specialist

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