# 2021 Annual Report, Stoney Lake Road Landfill



Environmental Compliance Approval No.: A340901

April 25, 2022

Prepared for:

The Corporation of the Township of Douro-Dummer

Cambium Reference: 12987-004

CAMBIUM INC.

866.217.7900

cambium-inc.com

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## **Executive Summary**

The Stoney Lake Landfill is owned by the Township of Douro-Dummer and operates as a waste transfer station, managed by Waste Connections of Canada under Ministry of the Environment, Conservation and Parks Environmental Compliance Approval No. A340901. The site is on the east half of Lot 21, Concession 4, Township of Douro-Dummer, County of Peterborough. The municipal address is 348 County Road 6, about 6 km east of the town of Lakefield. The total site area is 4.25 ha and has an approved landfill area of 1.60 ha. The site ceased landfilling operations in 2003 and final closure activities were completed in 2005.

This report presents the results of the 2021 activities that were completed at the Stoney Lake Road Landfill. The report and activities have been completed and reported on in general conformance with the November 2010 Ministry of the Environment Technical Guidance Document entitled "Monitoring and Reporting for Waste Disposal Sites – Groundwater and Surface Water". The "Monitoring and Screening Checklist" is provided in Appendix A.

Groundwater elevations indicated that groundwater flow in the vicinity of the site is southeast in the overburden/upped bedrock and lower bedrock aquifer. Groundwater is anticipated to discharge to unevaluated wetlands and the Galesburg Provincially Significant Wetland to the southeast.

A leachate plume is evident beneath and down-gradient of the waste mound. Impacts were generally restricted to the overburden/upper bedrock aquifer. Natural attenuation is occurring as concentrations generally decrease with distance.

Although numerous parameters exceeded the Ministry's Reasonable Use Criteria, groundwater is interpreted to discharge to surface. As such, the intent of Ministry Guideline B-7 is satisfied.

The surface water quality down-gradient of the waste mound continued to be un-impacted by waste disposal operations. It is evident that outside sources (i.e., road de-icing activities, and wetland environments) and poor sampling conditions were influencing to the water quality. The surface water trigger was not activated in 2021 and no further action was warranted.

2021 Annual Report, Stoney Lake Road Landfill 348 County Road 6, Lakefield The Corporation of the Township of Douro-Dummer Cambium Reference: 12987-004

April 25, 2022

Gas measurements collected in 2021 were less than 2.5% methane by volume at the perimeter monitoring wells, and less than 1.0% methane by volume in the on-site structures.

A Ministry site inspection completed on December 11, 2020, noted numerous deficiencies. Following the inspection, the Township of Douro-Dummer and Waste Connections completed the necessary requirements to ensure compliance with the ECA in 2021.

Many aspects of the established monitoring program are considered redundant and/or unnecessary to determine Site compliance. As such, Cambium has proposed changes to the established monitoring program that remove components deemed unnecessary.

Boron concentrations are increasing at well TW07-2. No boron impacts have been observed at the closest down-gradient surface water location SW1 at this time. However, in addition to the proposed modifications of the established monitoring program, a contingency plan has been outlined that will further investigate boron concentrations in the areas southeast of the Site.

The reductions to the established monitoring program, and the proposed contingency plan should be completed in parallel, at the same time. The need for continued monitoring of the newly installed drivepoint piezometer, and any other mitigation measures will be determined during and after the completion of the contingency plan.

Respectfully submitted,

Cambium Inc.

Michael Pion, C.E.T.

Senior Environmental Technologist

Cameron MacDougall, P.Geo.

PRACTISING MEMBER

Project Manager

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## **Table of Contents**

1.0	Introduction	1
1.1	Site Location	1
1.2	Site Description	1
1.3	Scope of Work	2
2.0	Methodology	4
2.1	Groundwater Monitoring Program	2
2.2	Surface Water Monitoring Program	<del>6</del>
2.3	Landfill Gas Monitoring Program	
2.4	Site Review and Operations Overview	7
3.0	Geological and Hydrogeological Context	8
3.1	Topography and Drainage	8
3.1.1	Precipitation Data	ç
3.2	Hydrogeology	10
3.2.1	Well Records	11
3.2.2	Groundwater Flow Direction	12
3.2.3	Vertical Gradients	12
3.3	Conceptual Site Model	13
4.0	Results and Discussion	14
4.1	Quality Assurance / Quality Control	14
4.2	Groundwater Quality	14
4.2.1	Background Groundwater Quality	15
4.2.2	Leachate Characteristics	15
4.2.3	Down-gradient Groundwater Quality	17
4.2.4	Volatile Organic Compounds	18
4.2.5	Provincial Water Quality Objectives Assessment	19
4.2.6	Groundwater Compliance Assessment	19
43	Surface Water Quality	22



4.3.1	Background Surface Water Quality	22
4.3.2	Downstream Surface Water Quality	23
4.3.3	Surface Water Compliance Assessment	24
4.3.3.	1 Trigger Location	24
4.3.3.	2 Trigger Parameter Concentrations	24
4.3.3.3	3 Surface Water Trigger Mechanism	24
4.3.3.4	4 2021 Compliance Assessment	25
4.4	Landfill Gas Monitoring	26
4.5	Adequacy of Monitoring Program	27
4.5.1	Summary of Proposed Monitoring Program Changes	30
5.0	Site Operations	32
5.1	Site Access and Security	32
5.2	Site Operations	33
5.3	Training	34
5.4	Site Inspections	34
5.4.1	Litter Control	35
5.4.2	Roads	36
5.4.3	Final Cover Integrity	36
5.5	Complaint and Incidents	36
5.6	Monitoring Well Security	36
5.7	Materials Summary	37
5.7.1	Site Usage	37
5.7.2	Material Diversion	38
5.8	Site Documentation Reviews and Updates	38
5.9	Compliance with Ministry Approval	38
6.0	Conclusions	39
6.1	Recommendations	40
Refere	nces	41



Glossary of Term	s	43
Standard Limitations		
List of Embedde	ed Tables	
Embedded Table 1	Site Details	2
Embedded Table 2	Coordinates of Surface Water Stations	g
Embedded Table 3	Historical and 2021 Precipitation Data	g
Embedded Table 4	Leachate Indicator Parameters	16
Embedded Table 5	Summary of Site Usage	37
Embedded Table 6	Summary of Site Usage	38
Please Note: Fully a	accessible appended figures, tables, and appendices are available upo	n
request.		

# **List of Appended Figures**

Figure 1	Regional Location Plan
Figure 2	Local Topography Plan
Figure 3	Existing Conditions
Figure 4	Groundwater Elevations – Overburden/Upper Bedrock
Figure 5	Groundwater Elevations – Lower Bedrock
Figure 6	Groundwater Configuration – Overburden/Upper Bedrock
Figure 7	Groundwater Configuration – Lower Bedrock

# **List of Appended Tables**

Table 1	Groundwater and Surface Water Monitoring Program
Table 2	Groundwater Elevations
Table 3	Vertical Gradients
Table 4	Groundwater Quality – Overburden/Upper Bedrock



2021 Annual Report, Stoney Lake Road Landfill 348 County Road 6, Lakefield The Corporation of the Township of Douro-Dummer Cambium Reference: 12987-004

April 25, 2022

Table 5 Groundwater Quality – Lower Bedrock
 Table 6 Groundwater Quality – VOCs
 Table 7 Groundwater Quality – PWQO
 Table 8 Surface Water Quality
 Table 9 Landfill Gas Measurements

## **List of Appendices**

Appendix A Monitoring and Screen Checklist

Appendix B Environmental Compliance Approval No.: A340901

Appendix C Correspondence

Appendix D Field Sheets and Climate Data

Appendix E Laboratory Certificates of Analysis

Appendix F Photographs

Appendix G Borehole Logs

Appendix H Well Records

Appendix I Monthly Waste Quantities



### 1.0 Introduction

The Corporation of the Township of Douro-Dummer (Township) retained Cambium Inc. (Cambium) to complete the 2021 annual monitoring program for the Stoney Lake Road Landfill (Site). The Site operates under Ontario Ministry of the Environment, Conservation and Parks (Ministry) Environmental Compliance Approval (ECA) No. A340901, most recently amended on June 9, 2016 (Appendix B).

To aid in the understanding of the history and development of the Site, the following information is included digitally in the report package:

- Closure Plan, Stoney Lake Road (North) Waste Disposal Site (LR, 2000)
- Hydrogeological Study, Stoney Lake Road "North" Landfill Site (LR, 1994)

#### 1.1 Site Location

The Site is on the east half of Lot 21, Concession 4, in the Township of Douro-Dummer, County of Peterborough (Figure 1). The municipal address for the Site is 348 County Road 6 (Stoney Lake Road). The Site is accessed from the north side of County Road 6, about 6 km east of the town of Lakefield. The Universal Transverse Mercator (UTM) coordinates for the site entrance are Zone 17, 720969 m east, 4926536 m north.

#### 1.2 Site Description

The Site was owned operated by the Township for the operation of a solid waste natural attenuation landfill until closure in 2003. Final closure activities were completed in 2005. Currently the Site operates as a waste transfer station, managed by Waste Connections of Canada (Waste Connections), for the collection of solid non-hazardous waste, and construction and demolition (C&D) materials. Waste Connections leases the property from the Township.

The Site is fully fenced and has a locked gate. The Site is in a rural area and is bordered by forest and wetland to the east and south, and passive agricultural land to the north and west.



Site details are included in Embedded Table 1. A local topography plan is attached as Figure 2. Existing site conditions are on Figure 3.

#### **Embedded Table 1** Site Details

Total Site Area	4.25 ha
Approved Area of Refuse Placement	1.60 ha
Approved Site Capacity	54,000 m <sup>3</sup>

## 1.3 Scope of Work

The scope of the 2021 work program was based on the results of the 2020 monitoring program (GHD, 2021), the requirements outlined in the ECA Condition 6 (8), and included:

- Groundwater elevation monitoring
- Surface water and groundwater sampling and analysis
- Landfill Gas (LFG) monitoring
- Evaluation of groundwater quality against the Ontario Drinking Water Quality Standards (ODWQS) and Reasonable Use Concept (RUC) values developed in accordance with Ministry Guideline B-7
- Evaluation of groundwater quality at select monitoring wells against the Provincial Water Quality Objectives (PWQO)
- Evaluation of surface water quality against the PWQO and calculated surface water trigger values
- Site Inspection
- An overview of site development and operations
- Preparation of this annual report

This report presents the results of the 2021 work program and provides an assessment of current landfill impacts on surrounding groundwater and surface water environments. Recommendations for the 2022 monitoring program, based on the 2021 results and assessment, are outlined herein. Furthermore, this report addresses the Ministry Site



2021 Annual Report, Stoney Lake Road Landfill 348 County Road 6, Lakefield The Corporation of the Township of Douro-Dummer Cambium Reference: 12987-004

April 25, 2022

Inspection report completed by Sarah Bellamy, Environmental Officer, Peterborough District Office on December 11, 2020 (Appendix C).



## 2.0 Methodology

The 2021 work program was completed to maintain compliance with the ECA and Ministry requirements. As such, the environmental monitoring work program was completed consistent with Guidance Manual for Landfill Sites Receiving Municipal Waste (MOEE, 1993) and Monitoring and Reporting for Waste Disposal Sites, Groundwater and Surface Water, Technical Guidance Document (MOE, 2010).

Field tasks were completed following Cambium's Standard Operating Procedures developed from recognized standard procedures such as those listed above and **Guidance on Sampling and Analytical Methods for use at Contaminated Sites in Ontario** (MOEE, 1996). A health and safety program was developed for site-specific conditions and all Cambium personnel working on the project were familiarized and required to follow the identified protocol.

Surface water and groundwater samples were stored in coolers with freezer packs and maintained at less than 10°C during transport to Caduceon Environmental Laboratories (Caduceon) in Kingston, Ontario. Caduceon is accredited by the Canadian Association for Laboratory Accreditation Inc. for specific environmental tests listed in the scope of accreditation. Groundwater samples were analyzed for those parameters referenced by the most recent Annual Monitoring Report (GHD, 2021), and are also outlined in Table 1.

## 2.1 Groundwater Monitoring Program

The following tasks were completed as part of the 2021 groundwater monitoring program:

- Prior to sampling, water levels were measured at each monitoring well using an electronic water level tape.
- The purge volume was calculated on-site during each monitoring event using the measured water level, well depth, and the borehole diameter. Each groundwater monitoring well to be sampled was purged of approximately three well bore volumes. For wells with low recovery, at least one saturated borehole volume was purged prior to sampling. Purged water was disposed on-site, down-gradient of each respective well.



- Samples were collected using dedicated polyethylene tubing equipped with inertial-lift foot valves.
- Groundwater samples for metals, and dissolved organic carbon (DOC, at select monitors) analysis was field filtered.
- Field measurements were recorded for pH, conductivity, temperature, dissolved oxygen (DO), and oxygen reduction potential (ORP).

Groundwater samples were collected on June 28 and November 10 from the monitoring wells listed below at the frequencies listed in attached Table 1. The only deviation from the monitoring program was that monitoring well TW08-2 had insufficient volumes for sample collection during the spring sampling event.

Monitoring wells included in the groundwater monitoring program are shown on Figure 3. The UTM coordinates for the monitoring locations are in Table 2. Groundwater results are discussed in Section 4.2. Field data sheets are in Appendix D. Laboratory Certificates of Analysis are in Appendix E. Photographs of each monitoring location are in Appendix F.

- TW02-1 TW02-2 TW03-1 TW04-1 TW05-1 TW05-2
- TW06-1 TW06-2 TW07-1 TW07-2 TW08-1 TW08-2
- TW09-1 TW09-2 TW10-2 TW11-2

The following blind duplicate groundwater samples were collected as part of the Quality Assurance/Quality Control (QA/QC) program. As these field duplicates equate to at least 10% of the total samples collected, this is an adequate QA/QC program for groundwater. In addition to these samples, the laboratory completes internal QA/QC. The results of the QA/QC program are presented in Section 4.1.

- June: TW02-2 (includes VOC duplicate), and TW04-1
- November: TW04-1, and TW06-2 (includes VOC duplicate)



## 2.2 Surface Water Monitoring Program

The following tasks were completed as part of the 2021 surface water monitoring program:

- Weather conditions prior to and during field events were recorded.
- Surface water samples were collected by immersing the sample container into the water body.
- When sample bottles were prefilled with preservatives, a clean bottle was used to collect and decant the water directly into the sample bottle.
- Surface water samples for mercury (0.45 µm) analysis was filtered by the laboratory.
- Field measurements including pH, conductivity, temperature, DO, and ORP were recorded at each sample location.
- Where possible, depth, width, and flow velocity measurements were collected at each surface water location.

The surface water monitoring program included sample collections from on-site surface water sample stations SW3, and SW6 and off-site stations SW1, and SW8 on June 28, August 26, and November 10. The following deviations from the monitoring program were noted:

- Stations SW3 and SW6 were dry during the June sampling event.
- Stations SW3, SW6, and SW8 were dry during August sampling event.

Surface water sampling locations are shown on Figure 2. The UTM coordinates for the monitoring locations are in Embedded Table 2. Surface water results are discussed in Section 4.3. The surface water field data sheets are in Appendix D. Laboratory Certificates of Analysis provided by Caduceon are in Appendix E. Photographs of each surface water sample location are in Appendix F.

Blind duplicate surface water samples were collected from station SW1 during all three monitoring events in 2021 as part of the QA/QC program. As these field duplicates equate to at least 10% of the total samples obtained, this is an adequate QA/QC program for surface water. The results of the QA/QC program are presented in Section 4.1.



## 2.3 Landfill Gas Monitoring Program

Landfill gas monitoring was implemented at the Site to assess compliance with Section 4.10 of Landfill Standards, A Guideline on the Regulatory and Approval Requirements for New and Expanding Landfilling Sites (MOEE, 1998), which states the concentration of methane gas in the subsurface may not exceed 2.5% by volume at the property boundary.

Landfill gas, specifically methane and carbon dioxide, is derived from the decomposition of organic wastes. Production of LFG from landfilled wastes normally reaches a maximum rate approximately two years after placement and may continue at this rate for many years. The biological decomposition process results in the generation of LFG until some period, likely decades, after the landfilling of that waste ceases. Hazardous concentrations for methane are 5 to 17% methane by volume or between 50,000 and 170,000 ppm (Werner Sölken, 2021)...

Landfill gas monitoring was conducted on all groundwater monitoring wells, gas probes (GP1 and GP2), and on-site structures (waste storage building and office) in conjunction with the spring and autumn sampling events. An RKI Eagle 2 Gas Monitor calibrated for methane, and hydrogen sulphide was used to collect measurements. The LFG monitoring results are in Table 9 and discussed in Section 4.4.

## 2.4 Site Review and Operations Overview

Site operations were observed during site visits completed in June, August, and November 2021. During these visits, the items listed below were inspected on accessed areas of the Site and observations noted in the field file. In February 2022, Waste Connections provided additional 2021 site operations information. Site inspection results are presented in Section 5.0.

- Litter control
- Condition and layout of recycling bins
- Status of monitoring well security
- Condition and layout of access roads, access gates
- Final cover integrity



## 3.0 Geological and Hydrogeological Context

## 3.1 Topography and Drainage

The Site is in the Otonabee River tertiary watershed and the Lock19 – Otonabee River quaternary watershed. The Galesburgh Provincially Significant Wetland (PSW) is east-southeast of the Site. Unevaluated wetlands are found to the east and west of the Site. Locally, drainage on-site is generally directed east towards an unnamed watercourse which flows through the Galesburgh PSW (with a minor portion of drainage directed westwards). The unnamed watercourse flows south, under County Road 6, through a culvert. Overall drainage is directed south-southwest through a complex series of unevaluated wetlands a portion of the Galesburgh PSW, and various other ponds and perennial streams which eventually discharge into Buckley Lake, about 3.0 km southwest of the Site. From Buckley Lake, drainage is directed to the southwest eventually discharging into the Otonabee River.

The surface water drainage systems on and near the Site have generally been characterized as stagnant, with intermittent flows occurring during periods of increased precipitation.

There are currently four surface water locations around the Site, as described below (Figure 2).

- SW1 is about 350 m east and down-gradient of the Site at a culvert on the north side of County Road 6. This surface water station is on a perennial stream with a well-defined channel.
- SW3 is at the southwest corner of the Site in wetland type environment. This area has the
  potential to collect surface water run-off.
- SW6 is slightly down-gradient the toe of the waste mound to the east, in a low lying wet area.
- SW8 is on a tributary, about 500 m east of the Site, which drains into the perennial stream where SW1 is situated. This station is used to monitor background water quality.



The geospatial coordinates (NAD 83) for the surface water monitoring stations are in Embedded Table 2. Flow and discharge rates measured during the monitoring events are in Appendix D.

**Embedded Table 2** Coordinates of Surface Water Stations

<b>Surface Water Station</b>	Northing	Easting
SW1	4926664	721376
SW3	4926525	720902
SW6	4926665	720950
SW8	4926853	721559

#### Notes:

1. Zone 17.

## 3.1.1 Precipitation Data

A review of the 2021 precipitation data for the Peterborough Trent U (Government of Canada, 2021a) in comparison to the average precipitation data for 1981 to 2010 (Government of Canada, 2021b) indicated that the overall precipitation was normal; however, varied from month to month.

In 2021, the wettest months of the year were July and September which had 81% and 94% more precipitation than normal. Conversely, the driest months of the year where May and August. The monthly precipitation, as well as the amount of precipitation during and in the three days prior to the sampling events is summarized in Embedded Table 3. Refer to Appendix D for field sheets and climate data.

**Embedded Table 3** Historical and 2021 Precipitation Data

Sampling Date	Average Monthly Precipitation (mm) (1981 – 2010)	2021 Precipitation (mm)	Precipitation During and Prior to Sampling (mm)
June 28	79.9	94.3	32.0
August 26	77.0	20.6	0.2
November 10	86.4	49.4	0.0



## 3.2 Hydrogeology

The Site is in the physiographic region know as the Peterborough Drumlin Field. This area is characterized by a northeast-southwest trending drumlin features. The underlying bedrock consists of limestone with minor shale of the Middle Ordovician Trent-Black River Group (GHD, 2021). Most of the area is densely covered with glacial deposits, formed from the retreat of the Wisconsin ice sheet during the Pleistocene Epoch. The features surrounding the Site include moraines, drumlins, and kames (LR, 1994).

There are 16 wells in the current groundwater monitoring program, six of these wells are nested/clustered wells which monitor the overburden/upper bedrock units, and the lower bedrock unit. All lower bedrock monitoring wells are designated with a -1 in their well name. Available borehole records indicate that the lower bedrock monitors were installed at variable depths from about 5 m below ground surface (bgs) to about 11 mbgs on the eastern slope of the waste mound. Conversely the overburden varies in depth from about 2.5 mbgs (east of the waste mound) to 5 mbgs (south of the waste mound) and is comprised of dense sandy, glacial till (Appendix G). Throughout the 2021 monitoring year water levels ranged from 0.48 m above grade at TW09-1 to 7.81 mbgs at TW04-1 in the lower bedrock aquifer. Water levels ranged from 0.13 m above grade at TW09-2 to 4.46 mbgs at TW02-2 during the 2021 monitoring period.

Groundwater wells included in the current monitoring program are described below. Refer to Table 2 for a summary of monitoring well depths and Figure 3 for locations.

- Clustered wells TW02 are installed on the northern slope, and immediately adjacent waste footprint. Borehole logs indicate that no waste was encountered at these monitors during installation.
- Monitoring well TW03-1 are installed on the eastern slope of the waste mound. Monitoring well TW04-1 are installed in the central east area of the waste mound, at the top of the slope. Both monitors were completed within the waste footprint, in the lower bedrock aquifer.



- Clustered wells TW05, TW07, and TW09 are installed about 20 m, 75 m, and 110 m south-southeast and down-gradient of the waste mound. Monitoring well TW07 is near the property boundary and TW09 is off-site on the south side of County Road 6.
- Clustered wells TW06 are installed about 25 m downgradient of the waste mound on the eastern property boundary.
- Clustered wells TW08 are installed about 50 m up-gradient and northwest of the waste mound. These wells are used to assess background water quality. Replacement wells were installed in late 2014, adjacent the old monitors, as TW08-1 was previously abandoned, and TW08-2 was always dry.
- Monitoring well TW10-2 is installed at the toe of the eastern slope of the waste mound.
   Monitor TW11-2 is installed on the eastern slope of the waste mound. No borehole logs were available at the time of this report but given the location of TW11-2 is it assumed that this monitoring well is installed at or below the waste.

#### 3.2.1 Well Records

A Ministry well record search completed in 2022 for a radius of 1 km from the Site yielded 26 results (MECP, 2022). No residential supply wells described below were identified within a 500 m of the Site. The following observations are provided:

- Eleven records where for monitoring wells at the Site.
- Eight well records were incorrectly plotted.
- Three well records were identified to the west (cross-gradient) of the Site ranging in depth from about 15 to 25 m. Wells were installed in the limestone bedrock and reported a static water level ranging from about 7 to 19 m.
- Two well records were identified north (up-gradient) of the Site at depths of about 18 and 53 m. The shallow well was completed in the brown limestone and had a static water level of about 10 m. Conversely, the deep well was completed in the grey limestone and red granite and had a static water level of about 6 m.



- One well record was identified to the southeast (down-gradient) of the Site at a depth of about 45 m and installed in the grey limestone and red/black granite. The static water level was about 11 m.
- One well record was identified to the southwest (cross-gradient) of the site at a depth of about 18 m and completed in the limestone bedrock. The static water level was about 8 m.

Given the depth to the domestic wells and distance away from the Site, the potential for adverse impact to down-gradient domestic water supplies is minimal. The water well locations are shown on Figure 2 and water well records are in Appendix H.

#### 3.2.2 Groundwater Flow Direction

Groundwater levels measured in the spring and autumn 2021 were used to calculate groundwater elevations and groundwater flow direction summarized in Table 2, and shown on Figure 4 and Figure 5. Groundwater elevation contours and flow direction are shown on Figure 6 (overburden/upper bedrock) and Figure 7 (lower bedrock). The general direction of shallow groundwater flow is to the in the overburden/upper bedrock and lower bedrock units were southeast, consistent with historical observations. The calculated horizontal hydraulic gradients to the southeast in 2021 were as followed:

- Overburden/upper bedrock: 0.01 m/m in the spring, and 0.016 m/m in the autumn
- Lower Bedrock: 0.02 m/m in the spring, and 0.03 m/m in the autumn

#### 3.2.3 Vertical Gradients

Groundwater elevation data was used to calculate the vertical gradients for all multi-level monitors at the Site (Table 3). Vertical gradients at most wells where downward, though upward gradients were observed at clustered monitors TW07 and TW09 southeast of the waste mound. Vertical hydraulic gradients at wells TW06 were considered to be neutral.



3.3 Conceptual Site Model

The following characterization of hydrogeological conditions is based upon the previous annual monitoring reports completed by GHD (GHD, 2021), the Hydrogeological Study completed by Lakefield Research (LR, 1994), and other supporting data.

In general, local drainage on-site is mostly directed east-southeast towards a watercourse that flows through the Galesburgh PSW. The watercourse flows south, under County Road 6, through a culvert. The watercourse continues to flow south into Buckley Lake, which in turn discharges to the Otonabee River.

The surface water drainage systems on and near the Site are generally stagnant due to the relatively flat topography of the area. Surface water flow is only anticipated during times of increased precipitation.

The general direction of groundwater flow in the overburden/upper bedrock, and lower bedrock aquifers were determined to be toward the southeast. Vertical gradients are typically reported as downward across the Site. However, neutral vertical gradients are consistently reported at clustered wells TW06 and upward gradients are regularly sustained in the areas southeast of the Site in closest proximity to the wetland area (i.e., clustered wells TW07, and TW09). Given this evaluation, groundwater is interpreted to discharge to surface in the areas southeast of the Site. The primary receiver of landfill leachate are the unevaluated wetlands and Galesburg PSW to the southeast.



4.0 Results and Discussion

Water quality results from the monitoring program are used to assess the existence, extent, and degree of impacts to the groundwater and surface water environments related to waste disposal site activities at the Site.

To ensure appropriate actions are in place to respond to degradation in surface water or groundwater quality beyond an acceptable level, site-specific trigger levels and contingency measures aid in the assessment of impacts from leachate contamination and help to prevent adverse impacts to the environments surrounding the waste disposal site.

This section presents the results of the 2021 monitoring program.

4.1 Quality Assurance / Quality Control

Results from the analyses completed on the blind duplicate samples obtained as part of the QA/QC program were evaluated. Parameter concentrations were considered significantly different if the relative percent difference (RPD) between the duplicate and the parent samples was greater than 30% when at least one result was greater than five times the reported detection limit (RDL).

The duplicate groundwater and surface water analyses were compared to the originals.

Overall, the duplicate samples correlated well with the parent samples and met the data quality objective of 30%. Exceptions were noted:

- Total Kjeldahl Nitrogen (TKN) at monitoring well TW02-2 in June.
- Sulphate and total phosphorus at station SW1 in November.
- Ammonia at TW06-2 in November.

Considering the low variation between the parent and duplicate groundwater and surface water samples, the results were interpreted with confidence.

4.2 Groundwater Quality

Groundwater analysis data for 2011 to 2021 are in Table 4 through Table 7.



To assess water quality impacts related to landfill site operations, groundwater analytical results were compared to background water quality and historical data. Site compliance was assessed using the ODWQS (MOE, 2006) and the RUC (MOEE, 1994a). In addition, as there is potential for shallow groundwater to discharge to the nearby surface water features select monitors were compared to the PWQO (MOEE, 1994b). This aids in predicting any potential adverse impacts to the surface water down-gradient of the Site as a result of leachate impacted groundwater discharging to surface.

#### 4.2.1 Background Groundwater Quality

When evaluating the impact of any waste disposal site on a groundwater resource, a reference point or value must be established to assist in determining the magnitude of the impact. In this respect, the quality of the groundwater that is not impacted by the waste disposal site operation (background water quality) should be used for comparison purposes. Given the location of up-gradient cluster monitors TW08 (Figure 3), the groundwater results for this well represents background water quality at the Site. Monitoring well TW08-1 was completed in the lower bedrock and TW08-2 was completed in the upper bedrock.

Monitoring well TW08-1 generally has similar water chemistry to TW08-2 though some metals (e.g., iron, chloride, manganese, etc.) were reported from TW08-1 at greater concentrations. Conversely, TW08-2 has elevated concentrations of alkalinity, and phosphorus when compared to TW08-1.

Only one sample could only be collected from TW08-2 in November 2021 as the monitoring well was reported to have insufficient sampling volumes in June. The water quality at clustered wells TW08 was generally consistent with historical ranges, though nitrate concentrations were slightly elevated at TW08-2 in November. Overall, the water quality at these monitors remained representative of background conditions at the Site.

#### 4.2.2 Leachate Characteristics

Monitoring wells TW03-1, TW04-1, and TW11-2 were installed within the waste mound. No well records were available for TW10-2; however, given that this monitor is installed on the northeastern boundary of the existing limit of waste it was included in the leachate



assessment. Lastly, monitors TW02-1 and TW02-2 were installed up-gradient on the north slope of the waste mound. Water quality results at these locations have been indicative of the leachate quality. Several Leachate Indicator Parameters (LIPs) have been identified at the Site. A parameter was considered a LIP if it has been regularly reported at concentrations greater than background water quality. The LIPs identified at the Site are outlined below in Embedded Table 4, as defined by GHD (GHD, 2021).

#### **Embedded Table 4** Leachate Indicator Parameters

alkalinity	barium	boron	chloride	iron
manganese	total dissolved solids (TDS)	nitrate	sodium	sulphate

Monitoring well TW04-1 is centrally located on the waste mound and TW03-1 is installed on the eastern slope. Both monitors were installed in the lower bedrock aquifer below the waste mound. Most LIP concentrations are significantly elevated at both monitoring wells except for alkalinity and barium at TW04-1, and nitrate at TW03-1. Water quality results in 2021 were generally consistent with historical concentrations except for elevated nitrate at TW04-1 in November. The water quality at both monitoring wells were considered stable with no apparent increasing or decreasing trends.

Monitoring well TW10-2 is installed at the toe of the waste mound and TW11-2 is installed on the eastern slope. Historical water quality at both monitoring wells indicated that these wells are impacted by waste disposal operations as all LIPs are significantly elevated over background concentrations. Though both monitoring wells are impacted, the leachate signature is different with concentrations being generally greater at down-gradient well TW10-2. The only exception is sulphate and chloride which were greater at TW11-2. The water quality in 2021 was generally consistent with historical ranges except for elevated concentrations of boron at TW10-2, and nitrate at TW11-2 in November.

Monitoring wells TW02-1 and TW02-2 were installed up-gradient, on the north slope of the waste mound in the lower and upper/overburden bedrock aquifers, respectively. The available mapping and borehole logs indicated that these monitors were not installed within an area of waste placement but given that they are within the approved landfill footprint there is a



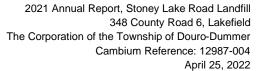
potential for these monitors to be impacted by radial groundwater flow. The water quality between the two aquifers were significantly different. It is evident that the water chemistry in the upper bedrock aquifer (TW02-2) has been impacted by waste disposal operations as all LIPs except for nitrate were significantly elevated over background water quality. Conversely, the water quality at TW02-1 in the lower bedrock aquifer was similar to background water quality with the exception of chloride. The water quality in 2021 was consistent with historical concentrations and is considered stable with no increasing or decreasing trends.

## 4.2.3 Down-gradient Groundwater Quality

Clustered wells TW06, TW05, TW07, and TW09 monitor the overburden/upper bedrock and lower bedrock aquifers down-gradient to the east-southeast.

Clustered wells TW06 are down-gradient the waste mound to the east and adjacent the property boundary. Monitoring well TW06-1 is completed in the lower bedrock aquifer whereas TW06-2 was screened across the overburden/upper bedrock aquifer interface. Most LIPs were elevated at these monitors when compared to their background quality except for chloride (TW06-1), iron, and nitrate. The water quality in the overburden/upper bedrock aquifer at TW06-2 had generally greater concentrations of LIPs when compared to the TW06-1 including boron, chloride, sodium, TDS, and sulphate. The vertical gradients calculated between the two monitors is either neutral, or slightly downwards which supports the conceptual Site model which indicates that vertical groundwater migration is restricted and will discharge to surface to the east-southeast. The water quality in 2021 was generally consistent with historical concentrations with no increasing or decreasing trends.

Nested wells TW05 are down-gradient the waste mound to the southeast. Monitoring well TW05-1 is installed in the lower bedrock aquifer whereas TW05-2 is in the overburden/upper bedrock aquifer. All LIPs at both locations were significantly elevated over background quality except for nitrate at TW05-1 and barium at TW05-2. The water quality in 2021 was generally consistent with historical results except alkalinity at monitoring well TW05-1 in November. Increasing trends are evident at TW05-1 for alkalinity, chloride, and sulphate. However, the water quality at TW05-2 is variable and concentrations of these parameters appear to be stabilizing within recent years. Several LIPs (including boron), are regularly reported from well





TW05-2 at concentrations greater than the leachate characterization wells. Similar parameters were also reported at well TW05-1 at concentrations greater than the leachate indicator wells installed in bedrock (albeit, at concentrations generally less than TW05-2). As such, clustered wells TW05 are also considered to be a leachate characterization wells, even though available information indicates that they are installed outside of the waste footprint. Given the close proximity to the waste mound, the elevated LIP concentrations were not unexpected.

Clustered wells TW07 are on the north side and adjacent to County Road 6. All LIPs except nitrate are elevated at TW07-2. Given the proximity to County Road 6 some impact may be partially attributed to road de-icing activities (i.e., chloride, sodium, and TDS). The water quality in 2021 was generally consistent with historical results at both monitors. An increasing trend for boron is apparent at TW07-2, whereas concentrations of sulphate, TDS, and barium have been decreasing since at least 2018. The concentrations of all LIPs were reported from well TW07-1 at concentrations either similar to or less than those reported from well TW07-2, indicating that leachate influences at well TW07-1 are minor (i.e., only the concentration of iron was reported at concentrations greater than ODWQS criteria in 2021 from well TW07-1).

Clustered wells TW09 are off-site and on the south side of County Road 6. The water quality at both monitors is similar to their respective background wells. The only exception is parameters associated with road de-icing activities and barium. Given the lack of other elevated LIPs, these wells are considered not impacted by waste disposal operations. The water quality results were consistent with historical ranges and is considered stable at both monitors.

## 4.2.4 Volatile Organic Compounds

Volatile Organic Compound (VOC) analysis was completed in the spring and autumn at monitor TW02-2 and TW06-2. Historical results have indicated sporadic ODWQS exceedances for toluene at both monitors with the occurring last at TW06-2 in 2018. All VOC concentrations were less than the reported detection limit in 2021. Refer to Table 6 for VOC results.



#### 4.2.5 Provincial Water Quality Objectives Assessment

Given that there is potential for groundwater discharge to surface, monitors TW06-2, TW07-2 and TW09-2 were compared to the PWQO (Table 7). The following parameters did not meet the PWQO criteria at the identified locations:

- TW06-2: boron (November), phosphorus (November), and DO
- TW07-2: boron, iron, phosphorus (June), and DO
- TW09-2: phosphorus

Phosphorus is not an identified LIP at the Site and can be attributed to natural elevated concentrations within the area. Due to the nature of DO in groundwater, low DO measurements are not unexpected and are not considered significant for groundwater quality comparisons.

As previously mentioned in Section 4.2.3, boron and iron concentrations were elevated over background water quality at TW07-2. Given that boron concentrations are increasing (and were reported at concentrations marginally greater than the Canadian Water Quality Guideline (CWQG) (CCME, 2011) of 1,500 µg/L in 2021) a contingency plan has been proposed to monitor for potential impacts east of TW07-2. Further details are discussed in Section 4.5.

## 4.2.6 Groundwater Compliance Assessment

To ensure appropriate actions are in place to respond to any potential degradation in groundwater quality beyond an acceptable level, site-specific trigger levels have been developed for the Site. Condition 8 (2a) of the ECA indicates that the Site shall be operated in such a way to ensure compliance with Ministry Guideline B-7 (MOEE, 1994a). The Ministry Guideline B-7 states that, in accordance with the appropriate criteria for particular uses, a change in quality of the groundwater on an adjacent property will be accepted only as follows (Ministry Procedure B-7-1):

The quality cannot be degraded by an amount in excess of 50% of the difference between background and the ODWQS for non-health related parameters and in excess of 25% of the difference between background and the ODWQS for health-related



parameters. Background is considered to be the quality of the groundwater prior to any man-made contamination.

The maximum concentration of a particular contaminant that is considered acceptable in the groundwater beneath an adjacent property is calculated in accordance with the following relationship:

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

Where.

C<sub>m</sub> is maximum concentration accepted

C<sub>b</sub> is background concentration

c, is maximum concentration permitted in accordance with the ODWQS

x is a constant that reduces the contamination to a level that is considered by the Ministry to have a negligible effect on water use (i.e., 0.5 for non-health related parameters and 0.25 for health-related parameters)

The RUC values were calculated using the median value of the background concentration (C<sub>b</sub>) from a minimum of the previous five sampling events as required by Ministry Eastern Region Technical Support Section. Where background concentrations were less than the laboratory RDL, the RDL was used as the background concentration. Where the background concentrations exceeded ODWQS, the C<sub>b</sub> value was set as the RUC value. The calculated C<sub>m</sub> values for the Site were set as the RUC values.

The RUC values were calculated for all LIPs with an ODWQS criteria using background water quality at TW08-1 and TW08-2 for the lower bedrock and overburden/upper bedrock, respectively. The RUC values were then compared to the water quality results at wells TW06-1, TW06-2, TW07-1, TW07-2, TW09-1, and TW09-2. Historically TW10-2 and TW11-2 has been included in this assessment; however, given that these monitors were installed within and adjacent the waste mound (i.e., not on the property boundary) assessing compliance with these wells was considered redundant.



The following parameters exceeded the RUC criteria in the overburden/upper bedrock aquifer in 2021 (Table 4):

- TW06-2: alkalinity (June), and TDS
- TW07-2: chloride, iron, TDS, and sulphate
- TW09-2: barium (June), and iron (June)

It is possible that the RUC exceedances reported from well TW06-2 are a result of landfill leachate influences. As previously discussed in Section 4.2.3, monitoring well TW07-2 is adjacent County Road 6 and the RUC exceedances for chloride, iron, and TDS can at least be partially attributed to road de-icing activities. The water quality at TW09-2 is interpreted not to be impacted by the Site. As such, the RUC exceedance for barium was attributed to an outside source. Furthermore, the iron exceedance can be attributed to the rich organic soils within the area the well has been installed.

The following parameters exceeded the RUC criteria in the lower bedrock aquifer in 2021 (Table 5).

- TW06-1: barium, manganese, alkalinity (November), and TDS
- TW07-1: iron
- TW09-1: no exceedances

It is possible that the RUC exceedances reported from well TW06-1 are a result of landfill leachate influences. The RUC exceedances for TW07-1 are potentially sourced from landfill leachate influences (but iron concentrations are relatively low, as such leachate influences are considered minor at this well).

As outlined in Section 3.3, groundwater flow across the Site is to the southeast. Upwards hydraulic gradients are regularly reported at wells TW07 and TW09 between the deeper bedrock aquifer and shallower bedrock/overburden aquifer. Monitor TW06 is at the eastern property boundary of the Site. The hydraulic gradient between the deep and shallow bedrock wells is negligible (and is considered neutral). It is noted that the TW06-2 is installed to a depth of approximately 3.4 mbgs, whereas the deeper bedrock well is installed to a depth of



approximately 5.0 mbgs. The screens of these two wells only have a vertical separation of approximately 1.6 m (as compared to vertical separation distances of approximately 5 and 6 m at wells TW07 and TW09). It is expected that upward hydraulic gradients, sourced from deeper portions of bedrock aquifer, exist in the area of TW06 and further east/southeast of the Site. These conditions have already been proven to exist at wells TW07 and TW09, as such it is reasonable to assume that similar conditions exist in other lower elevation/down-gradient areas of the waste mound (such as TW06).

Due to the upward hydraulic gradients at wells TW07 and TW09 it is expected that groundwater discharges to surface water in the areas immediately south and east of the Site. As such, the intent of Ministry Guideline B-7 is considered to be satisfied. Assessing compliance by referencing Guideline B-7 is not considered appropriate for the Site. Further, there are no known groundwater users in close proximity that are hydraulically down-gradient of the Site. The risk of leachate influencing local groundwater supplies is considered low.

The adequacy of the existing environmental monitoring program is discussed further in Section 4.5.

## 4.3 Surface Water Quality

The 2011 to 2021 surface water quality data are included on Table 8. The surface water data have been compared with background water quality and historical data, and compliance was assessed using the PWQO (MOEE, 1994b).

## 4.3.1 Background Surface Water Quality

Station SW8 is a perennial stream in a wetland environment, about 150 m north of County Road 6, and is representative of background surface water quality. This station is only connected to downstream and down-gradient station SW1. Historical water quality results indicate low but detectable concentrations of most metals, and the occasional PWQO exceedance for iron, total phosphorus, and phenols. Additionally, copper, and pH (high, field and lab) have sporadically exceeded the PWQO criteria.

Only two samples were collected from this station in 2021 as this station was dry during the summer sampling event. Water quality results in 2021 were generally consistent with historical



concentration ranges. The only parameters to exceed the PWQO criteria were zinc, and total phosphorous. Overall, the water chemistry at station SW8 continued to represent background surface water quality for the Site.

## 4.3.2 Downstream Surface Water Quality

Station SW1 is the farthest down-gradient surface water monitoring station and is located off-site. The water quality at this station is similar to background station SW8 including the occasional PWQO exceedances for iron, total phosphorus, and phenols. Where differences in water quality where observed this can be attributed to road de-icing activities along County Road 6. The water quality results in 2021 where consistent with historical results including the PWQO exceedances for iron, and total phosphorus. This surface water station has not been impacted by the Site.

Stations SW3 and SW6 are on the southwest and eastern property boundaries (respectively). Both stations are in low-lying wet areas with potential to receive surface water run-off from the waste mound. Both stations were dry during the spring and summer sampling events in 2021. Samples from these stations were only collected in November.

Historical water quality at station SW3 has indicated low concentrations of most parameters with the occasional spikes in concentration. This can be attributed to the low-lying stagnant nature of the water body which results in poor sampling conditions. As this station is adjacent County Road 6, elevated concentrations of hardness, TDS, chloride, and alkalinity can be attributed to road de-icing activities. As such, an increasing trend is apparent for chloride at this location. Total phosphorus and boron are the only parameters that persistently exceed the PWQO criteria at this station as was the case in 2021. Although boron has persistently exceeded the PWQO (average 277  $\mu$ g/L), the concentrations were much less than the CWQG criteria for boron of 1,500  $\mu$ g/L (CCME, 2011). Given that total phosphorus is not a LIP for the Site, it is likely that the elevated concentrations can be attributed to naturally elevated concentrations within the area. The water quality results in 2021 were generally consistent with historical concentrations.

At the time of this report, only five data sets were available for station SW6. Initial results indicate persistent exceedances of the PWQO criteria for iron, mercury, total phosphorus, and



phenols. Only total phosphorus exceeded the PWQO criteria in 2021. Given the lack of water quality data available it is difficult to discern site-related impacts at this station.

## 4.3.3 Surface Water Compliance Assessment

The following sections discuss the surface water trigger assessment as outlined in the 2020 Monitoring Report (GHD, 2021).

## 4.3.3.1 Trigger Location

Surface water trigger points are generally at any point where surface water impacts due to landfilling operations are likely to occur. As such, station SW1 was identified by the Ministry as the primary downstream trigger sampling location.

#### 4.3.3.2 Trigger Parameter Concentrations

The surface water trigger criteria was calculated using background water quality at station SW8 for all parameters listed in Table 1. An exceedance at the downstream surface water stations is the numerical elevation of an analytical value greater than the 75<sup>th</sup> percentile at the background surface water station SW8.

The 75<sup>th</sup> percentile is defined as the number in a data set in which 75% of the values are less than that number and 25% of the values are greater than that number. A minimum of eight water samples, not including the assessment year, at the selected upstream background compliance monitoring location is recommended.

#### 4.3.3.3 Surface Water Trigger Mechanism

Three consecutive annual exceedances of the trigger criteria at station SW1 and deemed to be caused by the Site would initiate the preparation of a contingency plan. The contingency plan is based on a three-tier system detailed below.

**Tier 1- Alert:** If a parameter exceeds the PWQO criterial for three consecutive sampling events, then the Tier 2 trigger would be implemented.

**Tier 2- Confirmation:** Three additional samples will be collected on a monthly basis starting after the third PWQO exceedance. Samples will be collected from the background monitoring



location SW8 and station SW1, at a minimum. The purpose of additional sampling is to confirm that the exceedances can be attributed to the Site. If the exceedance is determined to be caused by the Site, then a discussion would be initiated between the Township and the Ministry to determine appropriate actions required. The meeting should take place within 6 months from the activation Tier 2.

The first remedial step should be a detailed surface water/biological study to determine the trigger exceedances are impacting the water quality and biology of the receiving watercourse. If impacts were determined to be negligible following the surface water study then Ministry support would be requested to not implement the contingency plans.

If negative impacts are determined by the study, then the contingency plan would commence following the next exceedance of a trigger parameter during any routine sample event. The plan should include the following:

- A recommendation for Site closure or continued operation with designed controls to prevent further impacts (e.g., leachate collection and treatment system, surface water drainage works, low permeable soil or geotextile capping on the waste mound).
- A schedule for the installation of remedial works.
- An initial plan for subsequent monitoring to confirm the remediation controls have reduced surface water impacts.

**Tier 3 – Compliance:** This is the implementation of the remedial works to be completed and the additional monitoring required to determine its effectiveness.

## 4.3.3.4 2021 Compliance Assessment

The only parameters to exceed the surface water trigger criteria for three consecutive events at station SW1 were zinc, sulphate, and conductivity. The only LIP to exceed the trigger criteria was sulphate. Given that no other LIPs exceeded the trigger criteria the exceedances were not attributed to the Site. Elevated concentrations of sulphate were also reported at SW8 during the June and November sampling events in 2021, therefore downstream concentrations of sulphate could have been caused by natural conditions.



Furthermore, as there is no PWQO criteria for sulphate, compliance was further assessed using the British Columbia Water Quality Guideline (BCWG) (BCMOE, 2016). The reported sulphate concentrations in 2021 (average 5 mg/L) were significantly less than the BCWG criteria of 428 mg/L. As such, it was determined that no negative impact was anticipated to occur to the downstream surface water locations. The surface water trigger was not activated in 2021 and no further action was warranted.

## 4.4 Landfill Gas Monitoring

LFG, specifically methane and carbon dioxide, are derived from the decomposition of organic wastes. Production of LFG from landfilled wastes normally reaches a maximum rate about two years after placement and may continue at this rate for many years. The biological decomposition process results in the generation of LFG until some period, likely decades, after the landfilling of that waste ceases.

The 2021 LFG results are included on Table 9 and in Appendix D. Landfill gas measurements for methane, and hydrogen sulphide were collected during the spring and autumn sampling events at all groundwater monitors, gas probes, and on-site structures (office and sorting building) (Figure 3). Gas measurements were not collected in the office during the spring monitoring event as a COVID-19 precaution.

Measurements collected in 2021 indicated detectable methane concentrations at monitoring wells TW03-1, TW10-2 (November), TW11-2 and gas probes GP1, and GP2. Given that these locations were installed within the existing limit of waste elevated methane concentrations were not unexpected. Of note, methane concentrations at TW03-1, TW11-2, GP1, and GP2 had at least one measured concentration within the lower explosive limit. Caution should be used when working around these monitoring locations in the future.

The remaining monitoring location measurements were all below 0.05% methane by volume. As such, the site complied with ECA Condition 8 (1a, b, and c) which specifies:

 The concentration of methane gas below ground surface at the property boundary must be less than 2.5 % methane by volume.



- The concentration of methane gas must be less than 1.0% methane by volume in any onsite buildings or enclosed structures (i.e., office, and waste storage building).
- The concentration of methane gas from the Site must be less than 0.05 % methane by
  volume in any off-site building or enclosed structures, and in the area immediately outside
  the foundation or basement floor of the building or structure, only if the location is
  accessible to any person, contains electrical equipment, or a potential source of ignition.

## 4.5 Adequacy of Monitoring Program

It is Cambium's opinion that the existing monitoring program requires modification to sufficiently address current conditions at the Site. As outlined below, Cambium recommends that the environmental monitoring program be modified to focus on surface water influences in the area southeast of the Site and reduce the assessment on bedrock groundwater quality. The reasons for this are as follows:

- Site related impacts were generally stable in the overburden/upper and lower bedrock aquifers. Furthermore, natural attenuation is occurring since LIP concentrations decrease with distance from the waste mound.
- Groundwater is interpreted to discharge to surface in the areas south/southeast of the Site.
   This has already been established at wells TW07 and TW09. As such, the Site is considered to meet the intent of Guideline B-7. Assessing Site compliance by referencing Guideline B-7 is not considered appropriate.
- Continued monitoring of the bedrock wells is not considered relevant to the Site compliance assessment since groundwater is interpreted to discharge to surface in the areas south and east of the Site. Further, the water quality reported from the bedrock wells is generally always of better quality than an adjacent overburden well.
- There are several overburden wells included in the monitoring program that provide redundant information (such as wells TW02-2 and TW11-2). Continued monitoring of these wells is not considered relevant to Site compliance assessment.



- Negligible leachate influences have been reported at wells TW09-1 and TW09-2.
   Continued monitoring of these wells is not considered relevant to Site compliance assessment.
- The concentration of boron reported at well TW07-2 is steadily increasing. As outlined below, Cambium recommends that a shallow drivepoint piezometer be installed in the area east of well TW07-2 to confirm water quality. Cambium recommends that a temporary, accelerated, monitoring program be enacted on the newly proposed well as a contingency plan to gather water quality information. The accelerated monitoring program will be separate from the approved monitoring program outlined herein (and separate from the proposed reductions to the established monitoring program).
- Influences at the farthest downstream surface water location SW1 (identified by the Ministry as the primary downstream trigger location) were minimal and the site-specific trigger was not activated in 2021. It is noted that elevated concentrations of some LIPs have been reported at station SW1 on occasion, however elevated concentrations of these same parameters have also been reported from the background monitoring station SW8. As such, the elevated concentrations of LIPs reported at station SW1 (when reported) may not be solely due to influences from the Site.
- The surface water sampling stations that regularly report an influence from landfill leachate
  (SW3 and SW6) are generally dry in the summer and fall. Samples from these stations are
  usually only collected once a year in the spring. Many sampling results collected at these
  stations are considered to have been influences by poor sampling conditions and/or outside
  influences (i.e., road de-icing activities).
- Landfill gas readings are stable.

In consideration of the above, Cambium proposes the following amendments to the established environmental monitoring program:

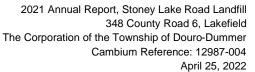
(Note: Items 1 through 8 do not include the proposed contingency plan to address rising boron concentrations at well TW07-2. Those details are outlined in item 9 and should be enacted in parallel with the proposed reductions to the approved monitoring program in the ECA.)



- 1. Groundwater, surface water, and landfill gas monitoring frequencies should be reduced to once annually (to be completed in the spring).
- 2. Groundwater samples should only be collected from the following shallow wells: TW05-2, TW06-2, TW07-2, TW08-2, and TW10-2. All other monitoring wells should be removed from the monitoring program.
- 3. The shallow wells should be analyzed for those parameters outlined in Column 4, Schedule 5 of the Landfill Standards (in addition to barium, boron, manganese, sodium, and hardness).
- 4. Groundwater levels should be measured from clustered wells TW05, TW06, TW07, TW08, and TW10.
- 5. Surface water samples should only be collected from stations SW1 and SW8. Stations SW3 and SW6 should be removed from the monitoring program.
- 6. The surface water samples should be analyzed for those parameters outlined in Column 4, Schedule 5 of the Landfill Standards (in addition to barium, boron, manganese, sodium, and hardness).
- 7. Cambium recommends that the reporting frequency be reduced from once annually to once every two years.
- 8. Ministry Guideline B-7 should not be referenced to determine the compliance status of the Site since there is evidence that groundwater discharges to surface in the areas off-site to the southeast of the waste mound. Site compliance can be monitored by the use of the exiting surface water trigger mechanism.

Cambiums recommends that the following contingency plan be implemented to address the increasing concentrations of boron reported at well TW07-2. The contingency plan includes installing a shallow drivepoint piezometer and completing a temporary, accelerated, monitoring program that will be established outside of recommended monitoring program described above. The proposed contingency plan is as follows:

9. A shallow drivepoint piezometer should be installed in the area east of well TW07-2. The shallow drivepoint piezometer will be installed in such a fashion that is monitors shallow





groundwater conditions southeast of the Site in areas where groundwater is interpreted to discharge to surface. Establishing a new surface water sampling station southeast of the Site is not considered appropriate since local conditions do not allow for sustained surface water sampling stations that can provide representative samples (i.e., conditions are almost always ponded or dry). An accelerated monitoring program should be enacted at the newly installed drivepoint piezometer to confirm water quality conditions (specifically boron concentrations). Cambium recommends that samples from the new shallow drivepoint piezometer be collected three times annually for three years. In addition, samples should be collected from SW1 and SW8 three times a year to confirm up and down-gradient conditions. Samples should be analyzed for the parameter outlined in Column 4, Schedule 5 of the Landfill Standards (in addition to barium, boron, manganese, sodium, and hardness). A brief letter report will be submitted to Ministry on or before December 31 of the first full monitoring year (and by December 31 of every year thereafter) outlining the results of the temporary, accelerated sampling program. The letter reported will be prepared as a separate document from the annual monitoring report. The need to continue the accelerated monitoring program or proceed with other contingency plans and/or mitigation measures should be reviewed during and at the end of the three year monitoring period. The drivepoint piezometer can be installed with the use of hand tools. The groundwater levels in the area east of well TW07-2 are estimated to be approximately 1 mbgs, as such the shallow drivepoint piezometer likely does not need to be installed to a depth greater than 2 mbgs.

# 4.5.1 Summary of Proposed Monitoring Program Changes

In summary, many aspects of the established monitoring program are considered redundant and/or unnecessary to determine Site compliance (i.e., sampling of deep bedrock monitoring wells, sampling of surface water stations SW3 and SW6, etc.). The proposed changes outlined herein include removal of redundant aspects of the established monitoring program.

Cambium has also identified potential compliance issues that could influence surface water receivers downstream of the Site to the southeast (i.e., increasing concentration of boron at well TW07-2). Therefore, in addition to the proposed modifications of the established



April 25, 2022

monitoring program, a contingency plan that includes installing a shallow drivepoint piezometer and an accelerated (temporary) monitoring program is also proposed.

In Cambium's opinion, the reductions to the established monitoring program, and the proposed contingency plan should be completed in parallel, at the same time. The need for continued monitoring of the newly installed drivepoint piezometer, and any other mitigation measures to account for increasing boron concentrations in the areas southeast of the Site will be determined during and after the completion of the accelerated (temporary) monitoring program.

The groundwater, surface water, and landfill gas monitoring and reporting will continue to be completed as detailed in Table 1 until such time as approval has been granted from the District Manager and ultimately the Director as detailed in ECA Condition 8 (17).



# 5.0 Site Operations

As previously mentioned in Section 1.2, the Site is owned by the Township but the property is leased by Waste Connections for the operation of a waste transfer station. The Ministry inspection noted that Waste Connections replaced M&M Disposal Services (1017492 Ontario Limited) in 2018 but the Ministry has no correspondence on-file about this change as required by ECA Condition 1 (11, b). As such, the Township notified the Ministry about the change of operators in an email dated June 24, 2021 (Appendix C).

This section presents a summary of the 2021 site operations. More specifically, this section details the requirements specified in ECA Condition 6 (8).

- A monthly summary of the type and quantity of all incoming and outgoing waste. This
  includes the source of incoming waste and the destination of outgoing waste (Section 5.7
  and Appendix I).
- Any environmental or operational problems that could negatively impact the environment encountered during the operation of the Transfer Station and Site inspections, and any mitigative actions taken (Section 5.4).
- Any changes to Site documentation that has been approved by the Director since the last Annual Report (Section 5.8).
- Any recommendations to minimize environmental impacts or improve operations at the Site (Section 5.4).

# 5.1 Site Access and Security

The Site is not visible from County Road 6 as it is well screened by surrounding trees and thick vegetation. A lockable gate at the entrance controls access. Signage is posted at the gate which lists the hours of operation, the owner and operator, acceptable materials, a warning against illegal dumping, contact information for Waste Connections. An additional sign at the Site entrance was installed in 2021 as a result of the Ministry inspection to include the ECA number, prohibited waste types, and emergency and complaint contact information



(Appendix C). Following the installation of the secondary signage in 2021 the entrance signs met the requirements of ECA Condition 2 (2).

The Site is approved to accept waste generated within the boundaries of the County of Northumberland, the County of Peterborough, the City of Kawartha Lakes, the Regional Municipality of Durham, the County of Haliburton, and the County of Hastings. A site attendant is present during the hours of operation.

The hours of operation in 2021 were:

#### Year Round

Monday to Friday:......7:00 AM to 5:00 PM

## 5.2 Site Operations

In 2021, all transfer operations were conducted under the supervision and direction of the site attendant, employed by the Waste Connections. The site attendant was responsible for ensuring that the safe and orderly operation and maintenance of the Site complied with the requirements of the ECA and the Environmental Protection Act and its Regulations as administered by the Ministry. The site attendant's responsibilities included, but were not limited to the following:

- controlling admission of authorized vehicles with acceptable wastes
- ensuring proper daily litter control
- controlling collection and haulage of materials by a licensed hauler
- maintain a daily record of all operations which are available for inspection by the Ministry

Most of the incoming waste is from residential and light commercial construction sites within a 100 km radius of the Site. The waste is transported to the Site by licensed haulers. There are two main staging areas at the Site: one area is used for the collection and sorting of Construction and Demolition (C&D) materials, and the other is a tent with concrete pad for the collection of industrial, commercial, and institutional (IC&I) waste.

A sorting machine is used for the C&D materials, and any particles smaller than 5 cm are separated and sent to the Peterborough Waste Management Facility (Bensfort Road Landfill)



for disposal. All incoming C&D materials that is deemed residual is stockpiled on the north end of the Site and transferred daily. The remaining C&D materials are chipped on-site daily and removed. An occasional stockpile of chipped materials will be present when the amount of waste processed is outpacing the volume of material hauled off-site. This generally occurs from May to October when the Site is busier.

Waste collected at the Site is temporarily stored and transferred daily to the Peterborough Waste Management Facility by licensed haulers. Scrap metal and concrete is segregated from incoming waste upon arrival.

## 5.3 Training

Waste Connection ensures that all staff operating the Site are properly trained for the tasks they are expected to perform. In 2021, training including details of the ECA and appropriate legislation, waste screening procedures, nuisance control measures, Occupational Health and Safety, equipment use, and emergency procedures.

# 5.4 Site Inspections

This section discusses observations during site inspections conducted by Cambium, the Ministry, and Waste Connections in 2021.

In 2021, Waste Connections staff completed routine weekly inspections of the Transfer Station area as required by ECA Condition 6 (3). Records of the inspections were kept on-site in a logbook as required by ECA Condition 6 (5). During the Ministry inspection it was noted that although a logbook is being kept identifying that the inspections were being completed, it does not specifically specify which areas are being inspected. As such, a detailed site inspection form was created and submitted to the Ministry for review. Refer to Appendix C for a copy of the site inspection form.

Cambium staff conducted the required inspections to be completed in conjunction with the environmental monitoring in 2021 as detailed in ECA Condition 6 (4). The areas inspected are discussed in the following subsections.



The Ministry inspection noted that an on-site fuel tank, centrally located on the top of the eastern slope, was precariously supported with rocks, and was sitting on the ground. In response, the fuel tank was inspected by the Township and the installation area was graded and protective barriers were installed to protect the fuel tank from vehicle traffic. Furthermore, the Township informed the Ministry that the fuel tank is double walled (Appendix C)

Ministry inspection notes indicated that no nuisance pests were observed, that the driveway is swept to reduce dust, wood processing only occurs between 8:00 am to 5:00 pm, on-site equipment is relatively quiet, and there were no noticeable odours. As such, the Site is not causing nuisance effects to the surrounding properties.

## 5.4.1 Litter Control

During the 2021 monitoring events, Cambium staff observed litter on the eastern slope of the waste mound and into the adjacent treeline. A litter control fence is installed on the eastern slope of the waste mound to prevent the migration of windblown litter. Waste Connections reported that inspections for blown litter are conducted daily and clean up of blown litter is only completed when required.

During the Ministry inspection it was noted that the scrap metal bin was overflowing. Although this is not a compliance issue, it is recommended that scrap metal be managed in an appropriate manner. In response, the scrap metal was relocated to a concrete pad with walls for placement until the material is ready to be shipped (Appendix C).

The intent of good housekeeping practices is to protect the health and safety of Site users, to protect the surrounding environment from nuisance effects, and to minimize these nuisance effects by adopting measures as part of the Site operations. Regular housekeeping is essential to control such nuisances as:

- Blowing and loose litter
- Odour
- Rodents and insects
- Scavenging birds



**5.4.2 Roads** 

The access road has sufficient width at the entrance and within the Site to allow unimpeded winter travel and access for emergency and snow removal equipment. The site access roads were observed to be well maintained and graded and were reported to be regularly cleared of snow.

**5.4.3 Final Cover Integrity** 

A significant amount of time has passed since final closure activities in 2005 allowing for the vegetation cover to become well established. During the 2021 site visits, Cambium field staff noted that the vegetative cover was well established with no exposed waste observed. Minor orange staining was noted during the spring event, indicative of a leachate seep, east of TW4-2. This location should be inspected in 2021 to confirm the presence of a leachate seep and to determine if further action is warranted. As the vegetative cover is now established, the cover integrity is not expected to deteriorate. No post-closure repairs or maintenance was completed in 2021.

The integrity of the final cover should continue to be inspected in conjunction with the monitoring events and any evidence of erosion or leachate seeps should be addressed immediately.

5.5 Complaint and Incidents

Waste Connections reported there were no complaints or incidents at the Site in 2021.

5.6 Monitoring Well Security

All monitoring wells listed in Table 1 were inspected by Cambium personnel in 2021 for compliance with R.R.O. 1990 Regulation 903 – Wells (Reg.903). All monitoring wells received new padlocks in the autumn. As such, the wells complied with Reg. 903. Refer to Appendix F for photographs of the inspected monitoring wells.



## 5.7 Materials Summary

The following waste types are accepted at the Site. Refer to Figure 3 for the collection location of each material.

- IC&I solid non-hazardous waste
- C&D Materials
- Scrap Metal

ECA Condition 7 (5, 6, and 7) specifies the amount of waste permitted at the Site as followed:

- No more than 800 tonnes of dry waste per day shall be accepted at the Site.
- No more than 1,700 tonnes (6,400 m³) of dry waste, residual waste, and processed materials shall be stored at the Site at any time.
- The total amount of residual and IC&I waste leaving the Site shall not exceed 300 tonnes per day.

## 5.7.1 Site Usage

Site usage, as documented by the Waste Connections, is summarized in Embedded Table 5. More specifically, a monthly summary of all incoming and outgoing waste, and the hauling destination is provided in Appendix I. As reported by the Township, a new full length truck scale was installed in April 2021 to increase accuracy when weighing inbound/outbound vehicles.

**Embedded Table 5** Summary of Site Usage

	2021
IC&I and Residual Waste	35,542.53 tonnes
C&D Materials	11,801.95 tonnes
Wood <sup>1</sup>	454.99 tonnes

## Notes:

1. Wood is hauled off-site to BioMass in Gatineau, Quebec to be used as fuel.



## 5.7.2 Material Diversion

Embedded Table 6 provides a summary of materials diverted at the Site, as provided by Waste Connections.

## **Embedded Table 6** Summary of Site Usage

	2021
Leaf and Yard Waste	113.56 tonnes
Scrap Metal	71.27 tonnes

## 5.8 Site Documentation Reviews and Updates

The documents listed below are maintained by the Township and updated as required.

- Stoney Lake Road Landfill Site Transfer Station, Processing Site. Design, Operations and Maintenance Report (DOP) (Geo-Logic, 2014)
- Closure Plan, Stoney Lake Road (North) Waste Disposal Site (LR, 2000)
- Emergency Response Plan

The Ministry inspection report noted that there was no indication that the DOP has been updated since 2014. Furthermore, a copy of this document should be stored on-site (Appendix C). In response, the Township updated operator and emergency contact information and provided a copy of the DOP to be stored at the Site. Refer to Appendix C for further details.

# **5.9 Compliance with Ministry Approval**

Following the inspection, the Township of Douro-Dummer and Waste Connections completed the necessary requirements to ensure compliance with the ECA in 2021.



## 6.0 Conclusions

Based on the 2021 monitoring program, Cambium offers the following conclusions regarding the Stoney Lake Road Landfill.

- Groundwater flow beneath the Site in the overburden/upper bedrock and lower bedrock aquifer is to the southeast. The conceptual model for the Site indicates leachate impacted groundwater discharges to the unevaluated wetlands and Galesburg PSW to the southeast.
- A leachate plume is evident beneath and down-gradient the waste mound. Impacts were
  generally restricted to the overburden/upper bedrock aquifer. Natural attenuation is
  occurring at the Site as concentrations generally decrease with distance away from the
  waste mound. No impacts were apparent at the farthest down-gradient off-site monitors.
- An increasing trend for boron is evident at monitoring well TW07-2. No boron impacts have been observed at the closest down-gradient surface water location SW1 at this time.
- Numerous RUC exceedances were reported at the down-gradient overburden/upper bedrock and lower bedrock monitoring wells. Given that groundwater is anticipated to discharge to surface down-gradient of the waste mound, the intent of Ministry Guideline B-7 is satisfied.
- The surface water quality down-gradient of the waste mound has not been impacted by waste disposal operations. Where elevated concentrations were observed these can be attributed to poor sampling conditions (i.e., shallow, and stagnant) and/or outside influences (i.e., road de-icing activities, and wetland environments). The surface water trigger was not activated in 2021 and no further action was warranted.
- All landfill gas measurements at the perimeter monitoring wells were less than 2.5% methane by volume in 2021. Furthermore, landfill gas measurements conducted at the onsite structures were less than 1.0% methane by volume.
- The property is owned by the Township and leased to Waste Connections. About 35, 500 tonnes of IC&I and Residual waste, 11,800 tonnes of C&D materials, and 450 tonnes of wood was received at the Site in 2021.



- Site inspections completed by Cambium in 2021 noted that the vegetation on the waste mound was well established with no evidence of erosion. Minor orange staining was observed near the toe of the waste mound indicative of a leachate seep.
- A Ministry site inspection completed on December 11, 2020 noted numerous deficiencies.
   Following the inspection, the Township of Douro-Dummer and Waste Connections completed the necessary requirements to ensure compliance with the ECA in 2021.

## 6.1 Recommendations

Many aspects of the established monitoring program are considered redundant and/or unnecessary to determine Site compliance (i.e., sampling of deep bedrock monitoring wells, sampling of surface water stations SW3 and SW6, etc.). The proposed changes outlined herein include removal of redundant aspects of the established monitoring program.

Cambium has also identified potential compliance issues that could influence surface water receivers downstream of the Site to the southeast (i.e., increasing concentration of boron at well TW07-2). Therefore, in addition to the proposed modifications of the established monitoring program, a contingency plan that includes installing a shallow drivepoint piezometer and an accelerated (temporary) monitoring program is also proposed.

In Cambium's opinion, the reductions to the established monitoring program, and the proposed contingency plan should be completed in parallel, at the same time. The need for continued monitoring of the newly installed drivepoint piezometer, and any other mitigation measures to account for increasing boron concentrations in the areas southeast of the Site will be determined during and after the completion of the accelerated (temporary) monitoring program.

The groundwater, surface water, and landfill gas monitoring and reporting will continue to be completed as detailed in Table 1 until such time as approval has been granted from the District Manager and ultimately the Director as detailed in ECA Condition 8 (17).



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April 25, 2022

# **Glossary of Terms**

#### Active Face/Area

The portion of the landfill facility where waste is currently being deposited, spread and/or, compacted prior to the placement of cover material.

#### **Adverse Environmental Impact**

Any direct or indirect undesirable effect on the environment resulting from an emission or discharge that is caused or likely to be caused by human activity.

#### **Annual Report**

Report documenting the results of water quality, environmental quality, and operations monitoring for the year, or for a period as prescribed in the Certificate of Approval.

#### **Approved Design and Operations Plan**

The design of a landfill site and its facilities which have been submitted along with the application documents for which formal Ministry approval has been issued through the Certificate of Approval.

#### Approved Site or Facility

A landfill site/facility for which there is an existing and current Certificate of Approval.

#### Aquifer

A geologic unit (soil or rock) that contains sufficient saturated permeable material to yield measurable quantities of water to wells and springs.

#### Attenuation

Natural process through which the concentrations of landfill generated contaminants are reduced to safe levels.

#### **Borehole**

A hole drilled for soil sampling purposes.

#### **Buffer Area**

An area of land situated within the peripheral area surrounding an active filling area, but limited in extent to the property boundary, assigned to provide space for remedial measures, contaminant control measures, and for the reduction or elimination of adverse environmental impact caused by migrating contaminants.

#### **Certificate of Approval**

The license or permit issued by the Ministry for the operation of a landfill site. Issued to the owner of the site with conditions of compliance stated therein.

#### Contaminant

A compound, element, or physical parameter, usually resulting from human activity, or found at elevated concentrations that have or may have a harmful effect on public health or the environment.

## **Contaminant Migration Path**

Route by which a contaminant will move from the site into adjacent properties or the natural environment. Usually a route that offers the least resistance to movement.

#### **Contamination Attenuation Zone**

The zone beneath the surface, located beyond the landfill site boundary, where contaminants will be naturally attenuated to predetermined levels. Also, see Reasonable Use Policy.

## Contingency Plan

A documented plan detailing a co-ordinated course of action to be followed to control and remediate occurrences such as a fire, explosion, or release of contaminants in an uncontrolled manner that could threaten the environment and public health.

#### **Cover Material**

Material approved by the Ministry that is used to cover compacted solid waste. Usually, a soil with suitable characteristics for specific enduse.

#### Site Development Plan and Operations Report

Development and Operations Plan or Report is a document detailing the planned sequence of activities through the landfill site's active life, the control systems, site facilities and monitoring systems that are necessary. This document is required for obtaining a Certificate of Approval.

#### **Design Capacity**

The maximum amount of waste that is planned to be disposed of at a landfill site.

#### **Detection Limit**

Concentration under which a parameter cannot be quantitatively measured.

April 25, 2022

#### **EAA or EA Act**

Environmental Assessment Act, Revised Statutes of Ontario, 1990. One of the primary acts of legislation intended to protect, conserve, and wisely manage Ontario's environment through regulating planning and development.

#### **Environmental Compliance Approval**

The license or permit issued by the Ministry for the operation of a landfill site. Issued to the owner of the site with conditions of compliance stated therein.

#### **EPA**

Environmental Protection Act, Revised Status of Ontario, 1990. EPA is another of the primary pieces of Provincial legislation governing the protection of the natural environment of the Province.

#### Evapotranspiration

The evaporation of all water from soil, snow, ice, vegetation and other surfaces, including the water absorbed by plants, that is released to the atmosphere as vapour.

#### Fill Area

The area of a landfill site designed and designated for the disposal of waste.

#### Final Cover

Soil material or soil in combination with synthetic membranes, overlain by vegetation in a planned landscape, placed over a waste cell that has reached the end of its active life.

#### Groundwater

Subsurface water that occurs beneath the water table in soils and rocks that are fully saturated.

#### **Hydraulic Conductivity**

The rate of flow of water through a cross-section under a specific hydraulic gradient. It is a property of the geologic formation and the fluid, in hydrogeologic applications where the fluid is water (Units of m/day or cm/s).

#### **Hvdraulic Gradient**

The head drop per unit distance in the direction of flow, the driving force for groundwater flow.

#### Hydrogeology

The study of subsurface waters and related geologic aspects of surface waters.

#### Impermeable Fill

Soil material that is placed as filling material that is sufficiently cohesive and fine grained to impede and restrict the flow of water through it.

#### In situ Testing

Testing done on-site, in the field, of material or naturally occurring substances in their original state.

#### Landfill Gas

Combustible gas (primarily methane and carbon dioxide) generated by the decomposition of organic waste materials.

#### Landfill Site

A parcel of land where solid waste is disposed of in or on land for the purposes of waste management.

#### Leachate

Water or other liquid that has been contaminated by dissolved or suspended particles due to contact with solid waste.

#### Leachate Breakout

Location where leachate comes to the ground surfaces; a seep or spring.

## Limit of Filling

The outermost limit at which waste has been disposed of, or approved or proposed for disposal at a landfill.

#### Ministry

Ontario Ministry of the Environment, Conservation and Parks.

#### Monitoring

Regular or spontaneous procedures used to methodically inspect and collect data on the performance of a landfill site relating to environmental quality (i.e., air, leachate, gas, ground or surface water, unsaturated soils, etc.).

#### **Monitoring Well**

The constructed unit of casing (riser and screen) installed in a borehole.

#### **Multi-Level Monitoring Well**

More than one monitoring well installed at a given test well location.

#### **Native Soil**

Soil material occurring naturally in the ground at a location.

#### **Natural Attenuation**

Where contaminants are reduced to acceptable concentration levels by natural mechanisms (dilution, absorption onto the soil matrix, etc.), biological action, and chemical interaction.



April 25, 2022

#### Occupational Health and Safety Act

The primary act of legislation enacted by Ontario Ministry of Labour to regulate and control the safety in the workplace; also Occupational Health and Safety Act, Revised Statutes of Ontario, 1990.

#### **Odour Control**

Minimizing or eliminating the nuisance and undesirable impact of objectionable or unpleasant odours arising from waste disposal operations.

#### **Open Burning**

Burning any matter whereby the resultant combustion products are emitted directly to the atmosphere without passing through an adequate stack, duct, or chimney.

#### **Operations Plan**

A document detailing the waste disposal operations in a planned, and if necessary, a staged manner, that ensure compliance with regulatory provisions concerning the operations of a landfill site.

#### Operator (Site Operator)/Attendant

The individual or organization who, through ownership or under contract, manages and operates a landfill site for the purpose of waste disposal.

#### Owner

A person, persons, organization, or municipal authority who own a landfill facility or part of a landfill facility, and in whose name the Certificate of Approval for the site is issued.

#### Percolation

The movement of infiltrating water through soil.

#### Permeability

Often used interchangeable with hydraulic conductivity, but not strictly correct. Permeability is a property of the porous media only. Dependent upon media properties that affect flow, diameter, sphericity, roundness, and packing of the grains.

#### Piezometer

A well that intersects a confined aquifer.

#### Provisional Certificate of Approval (Provisional C of A)

Same as Certificate of Approval.

#### Reasonable Use Policy

A policy developed by the Ministry to stipulate limits to the level of groundwater quality impairment that may be permitted to occur at site property boundaries, to allow the reasonable use of adjacent properties or land without adversely affecting public health and the environment.

#### Recharge Zone

An area where precipitation or surface run-off infiltrates into the ground and then, through natural percolation enters an aquifer.

#### Recycling

Sorting, collecting or processing waste materials that can be used as a substitute for the raw materials in a process or activity for the production of (the same or other) goods. For example, the "Blue Box" system, in-plant scrap handling, or raw material recovery systems. Recycling is also the marketing of products made from recycled or recycled materials.

## Reduction (of waste or component of 3Rs program)

Those actions, practices, or processes that result in the production or generation of less waste.

#### Remedial Action

Corrective action taken to clean-up or remedy a spill, an uncontrolled discharge of a contaminant, or a breach in a facility or its operations, in order to minimize the consequent threat to public health and the environment.

#### Representative Sample

A small portion of soil, water, etc. which can be subjected to testing and analysis, that is expected to yield results that will reliably represent the identical characteristics of the source of the material or of a larger body of material.

## Reuse (component of 3Rs program)

The use of an item again in its original form, for a similar purpose as originally intended, or to fulfil a different function.

#### Run-off

The part of precipitation (rainwater, snowmelt) that flows overland and does not infiltrate the surface material (soil or rock).

#### **Saturated Zone**

The zone of a subsurface soil where all voids are filled with water.

#### Sedimentation

The deposition of fine grained soil in an undesirable location, caused by the scouring, erosion and transportation of earth materials by surface run-off.

2021 Annual Report, Stoney Lake Road Landfill 348 County Road 6, Lakefield The Corporation of the Township of Douro-Dummer

Cambium Reference: 12987-004 April 25, 2022

#### **Sensitive Land Use**

A land use where humans or the natural environment may experience an adverse environmental impact.

#### Settlement

The subsidence of the top surface and underlying waste of a landfill or waste cell as a result of densification under its own weight.

#### **Site Capacity**

The maximum amount of waste that is planned to be disposed (design capacity) or that has been disposed of at a landfill site.

#### Site Closure

The planned and approved cessation or termination of landfilling activities at a landfill site upon reaching its site capacity.

#### Site Life

The period from its inception through active period of waste disposal, to the time when a landfill site reaches its' site capacity, when it ceases to receive any further waste, including and up to closure.

#### **Solid Waste**

Any waste matter that cannot be characterized by its physical properties as a liquid waste product.

#### Solid Waste Disposal Site or Facility

A site or facility such as a landfill site where solid waste is disposed of.

#### Source Separation

The separation of various wastes at their point of generation for the purposes of recycling or further processing.

#### Standpipe

A monitoring well that intersects the water table aguifer.

#### Storm water

Run-off that occurs as a direct result of a storm event or thaw.

#### Storm water Detention

Control of storm water by the construction of impoundments of structures for the purpose of regulating storm water flows during high intensity rainfall events that would otherwise transport excessive amounts of sediment, cause soil erosion or cause flooding.

#### Stratigraphy

The geologic sub-structuring, usually layered with different distribution, deposition and age.

#### Surface Run-off (Drainage)

See Run-off.

#### **Surface Water**

Water that occurs at the earth's surface (ponds, streams, rivers, lakes, oceans).

#### Sub-Soil

Soil horizons below the topsoil.

#### Test hole

A hole drilled for soil sampling purposes.

#### Topsoil

The uppermost layer of the soil containing appreciable organic materials in mineral soils. Adequate fertility to support plant growth.

#### Unsaturated Zone

The zone (also vadose zone) in a porous sub-soil, where the voids are not completely water-filled, but contain some air-filled voids. Limited above by the land surface and below by the water table.

#### Vector

A disease carrier and transmitter; usually an insect or rodent.

#### VOC

Volatile organic compounds are those compounds that will readily volatilize (convert from liquid to gas phase) at conditions normally found in the environment.

#### Waste

Ashes, garbage, refuse, domestic waste, industrial waste, or municipal refuse and other used products as are designated or interpreted by the provisions of the Environmental Protection Act.

#### Waste Disposal Site (Facility)

Any land or land covered by water upon, into, in or through which, or building or structure in which, waste is deposited or processed and any machinery or equipment or operation required for the treatment or disposal of waste.

#### **Waste Management System**

All facilities, equipment and operations for the complete management of waste, including the collection, handling, transportation, storage, processing and disposal thereof, and may include one or more waste disposal sites.



April 25, 2022

#### **Water Table**

The water level attained in a monitoring well, which screens the surficial unconfined aquifer.

#### Water Balance

Amounts of water to various components in a system so that water entering the system equals the amount of water contained within and discharged out of a system.

## Water Level

The level of water in a well.

#### **Well Casing**

The pipe that is used to construct a well.

#### Well Screen

A filtering device used to keep sediment from entering a well.

#### Wetlands

Areas where water is at, near or above the land surface long enough to be capable of supporting aquatic or hydrolytic vegetation, and which have soils indicative of wet conditions.

April 25, 2022

# **Abbreviations**

RFP	Request For Proposal	ha	hectare
Ministry	Ontario Ministry of the Environment, Conservation and Parks	tonne	metric ton
MNRF	Ontario Ministry of Natural Resources and Forestry	t	metric tonne
ECA	Environmental Compliance Approval	μS	microSiemens
EPA	Environmental Protection Act	ODWQS	Ontario Drinking Water Quality Standards
EAA	Environmental Assessment Act	PC of A	Provisional Certificate of Approval
MW	monitoring well	PWQO	Provincial Water Quality Objectives
masl	metres above sea level	TOC	Total Organic Carbon
pg	picogram	VOC	Volatile Organic Compound
ng	nanogram	BTU	British Thermal Unit
μg	microgram	°C	temperature in degrees Celsius
g	gram	N/A	not available
kg	kilogram	%	percent
L	Litre	cfm	cubic feet per minute
mg/L	milligrams per litre	ppmdv	part per million by dry volume
mm	millimetre	ppmv	part per million by volume
m	metre	ppm	part per million
km	kilometre	min	minimum
$m^3$	cubic metre	max	maximum
m²	square metre		



## **Standard Limitations**

#### **Limited Warranty**

In performing work on behalf of a client, Cambium relies on its client to provide instructions on the scope of its retainer and, on that basis, Cambium determines the precise nature of the work to be performed. Cambium undertakes all work in accordance with applicable accepted industry practices and standards. Unless required under local laws, other than as expressly stated herein, no other warranties or conditions, either expressed or implied, are made regarding the services, work or reports provided.

#### Reliance on Materials and Information

The findings and results presented in reports prepared by Cambium are based on the materials and information provided by the client to Cambium and on the facts, conditions and circumstances encountered by Cambium during the performance of the work requested by the client. In formulating its findings and results into a report, Cambium assumes that the information and materials provided by the client or obtained by Cambium from the client or otherwise are factual, accurate and represent a true depiction of the circumstances that exist. Cambium relies on its client to inform Cambium if there are changes to any such information and materials. Cambium does not review, analyze or attempt to verify the accuracy or completeness of the information or materials provided, or circumstances encountered, other than in accordance with applicable accepted industry practice. Cambium will not be responsible for matters arising from incomplete, incorrect or misleading information or from facts or circumstances that are not fully disclosed to or that are concealed from Cambium during the provision of services, work or reports.

Facts, conditions, information and circumstances may vary with time and locations and Cambium's work is based on a review of such matters as they existed at the particular time and location indicated in its reports. No assurance is made by Cambium that the facts, conditions, information, circumstances or any underlying assumptions made by Cambium in connection with the work performed will not change after the work is completed and a report is submitted. If any such changes occur or additional information is obtained, Cambium should be advised and requested to consider if the changes or additional information affect its findings or results.

When preparing reports, Cambium considers applicable legislation, regulations, governmental guidelines and policies to the extent they are within its knowledge, but Cambium is not qualified to advise with respect to legal matters. The presentation of information regarding applicable legislation, regulations, governmental guidelines and policies is for information only and is not intended to and should not be interpreted as constituting a legal opinion concerning the work completed or conditions outlined in a report. All legal matters should be reviewed and considered by an appropriately qualified legal practitioner.

#### Site Assessments

A site assessment is created using data and information collected during the investigation of a site and based on conditions encountered at the time and particular locations at which fieldwork is conducted. The information, sample results and data collected represent the conditions only at the specific times at which and at those specific locations from which the information, samples and data were obtained and the information, sample results and data may vary at other locations and times. To the extent that Cambium's work or report considers any locations or times other than those from which information, sample results and data was specifically received, the work or report is based on a reasonable extrapolation from such information, sample results and data but the actual conditions encountered may vary from those extrapolations.

Only conditions at the site and locations chosen for study by the client are evaluated; no adjacent or other properties are evaluated unless specifically requested by the client. Any physical or other aspects of the site chosen for study by the client, or any other matter not specifically addressed in a report prepared by Cambium, are beyond the scope of the work performed by Cambium and such matters have not been investigated or addressed.

#### Reliance

Cambium's services, work and reports may be relied on by the client and its corporate directors and officers, employees, and professional advisors. Cambium is not responsible for the use of its work or reports by any other party, or for the reliance on, or for any decision which is made by any party using the services or work performed by or a report prepared by Cambium without Cambium's express written consent. Any party that relies on services or work performed by Cambium or a report prepared by Cambium without Cambium's express written consent, does so at its own risk. No report of Cambium may be disclosed or referred to in any public document without Cambium's express prior written consent. Cambium specifically disclaims any liability or responsibility to any such party for any loss, damage, expense, fine, penalty or other such thing which may arise or result from the use of any information, recommendation or other matter arising from the services, work or reports provided by Cambium.

#### **Limitation of Liability**

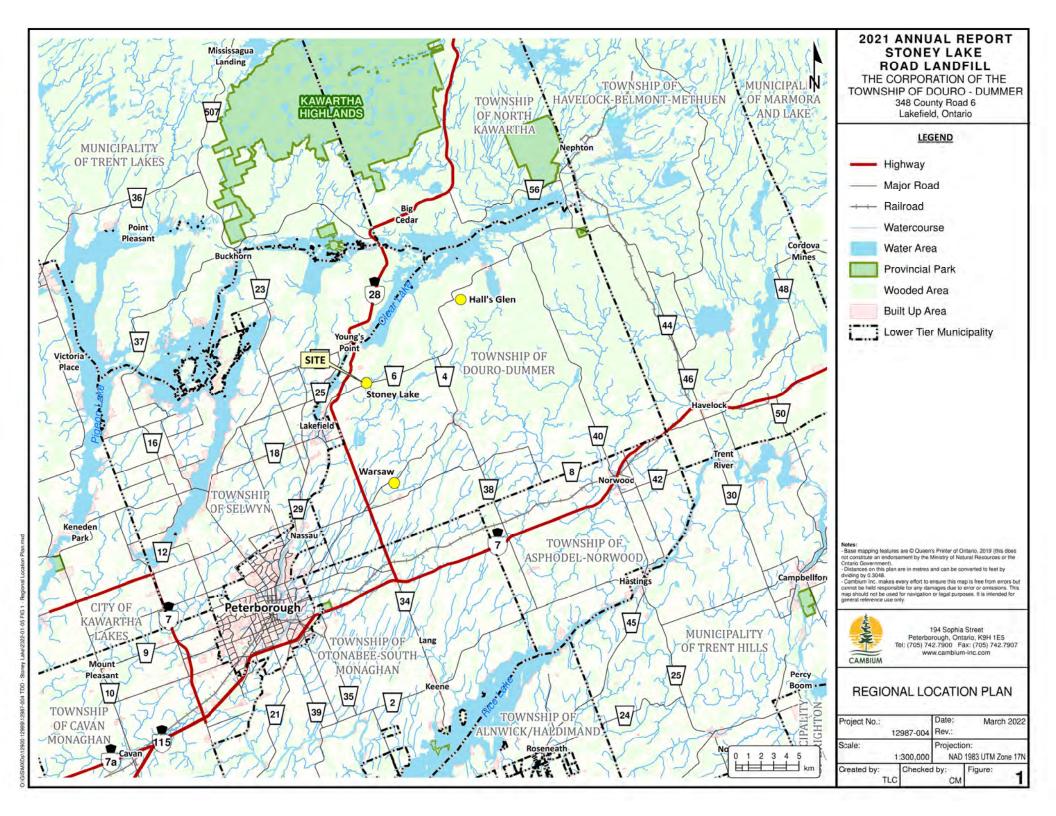
Potential liability to the client arising out of the report is limited to the amount of Cambium's professional liability insurance coverage. Cambium shall only be liable for direct damages to the extent caused by Cambium's negligence and/or breach of contract. Cambium shall not be liable for consequential damages.

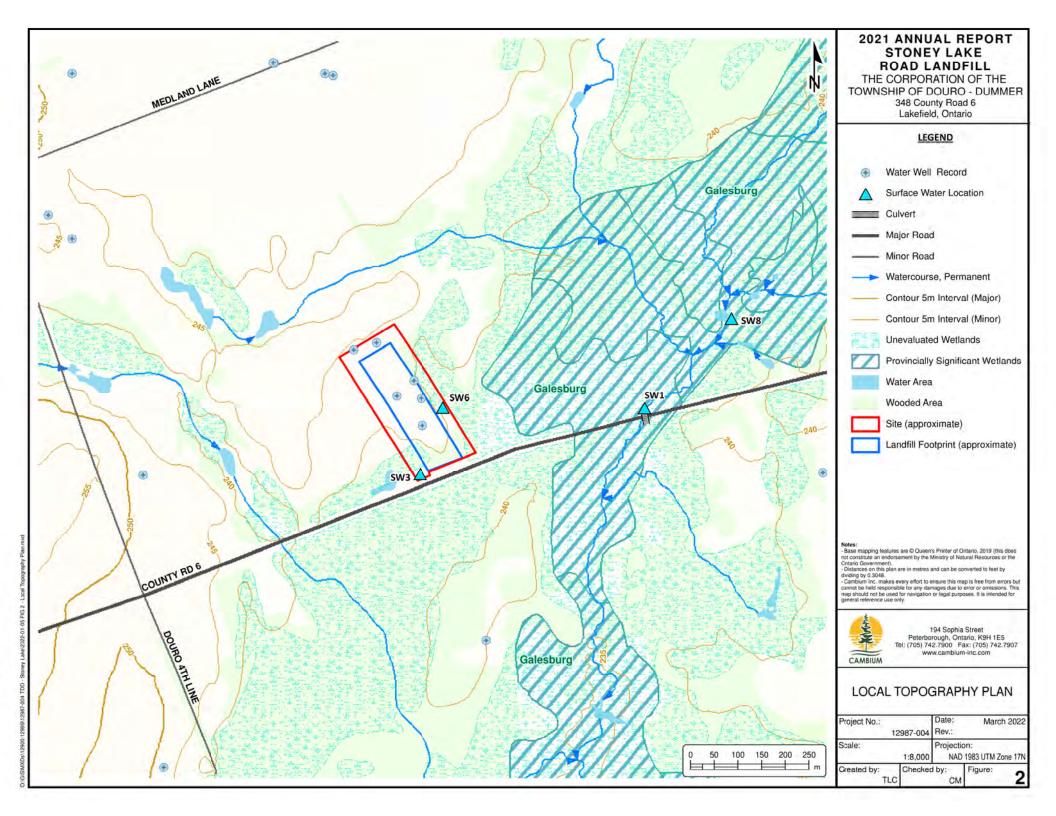
## Personal Liability

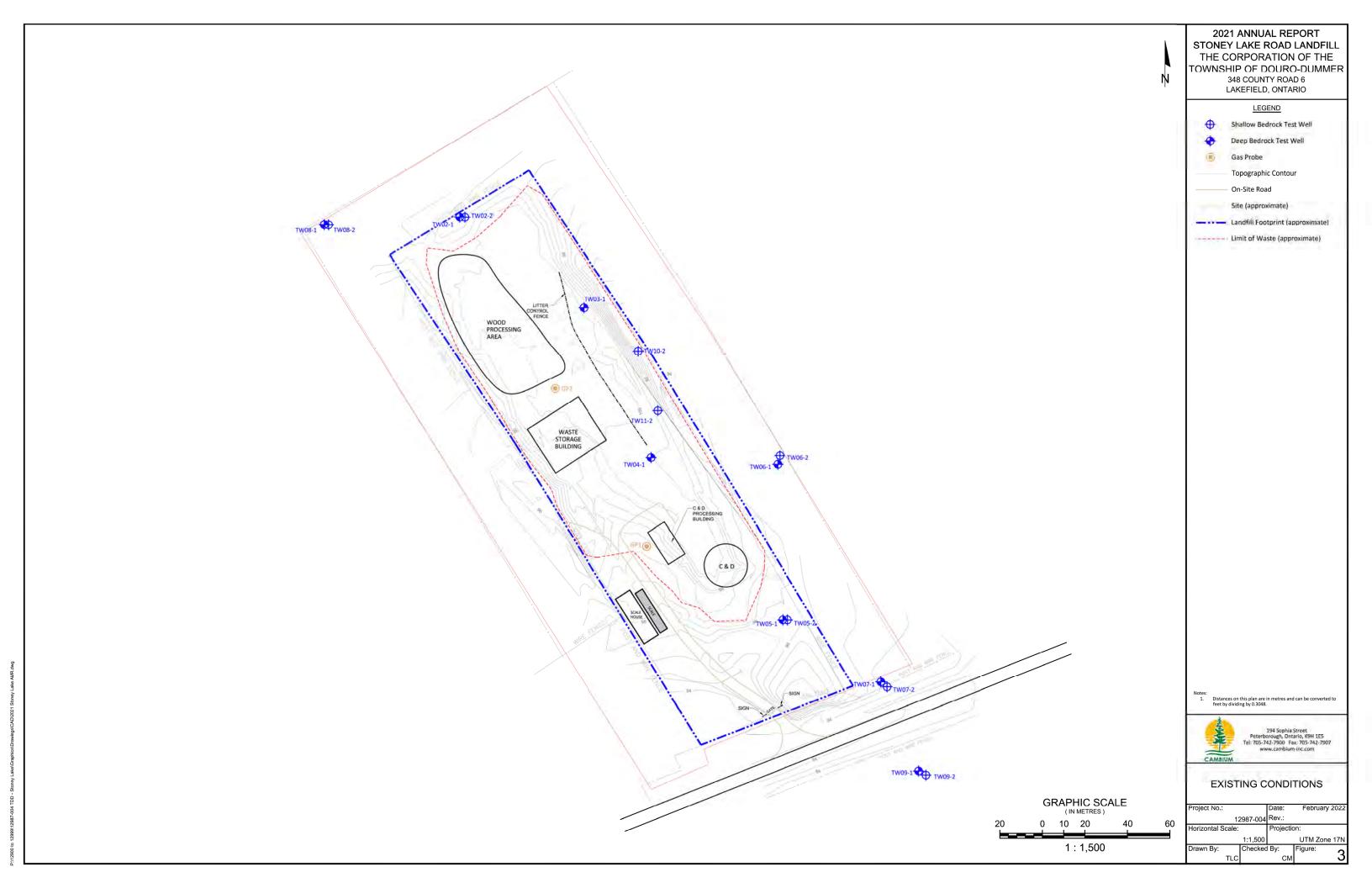
The client expressly agrees that Cambium employees shall have no personal liability to the client with respect to a claim, whether in contract, tort and/or other cause of action in law. Furthermore, the client agrees that it will bring no proceedings nor take any action in any court of law against Cambium employees in their personal capacity.

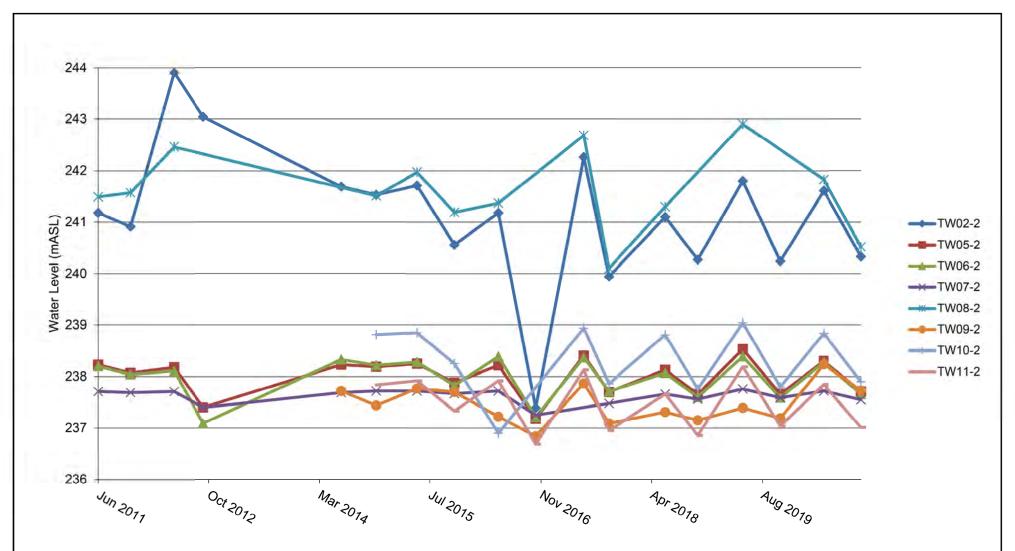


# Cambium Reference: 12987-004 April 25, 2022 **Appended Figures** Fully accessible appended figures are available upon request.









# **Groundwater Elevations - Overburden/Upper Bedrock**

2021 Annual Report, Stoney Lake Road Landfill 348 County Road 6, Lakefield The Corporation of the Township of Douro-Dummer

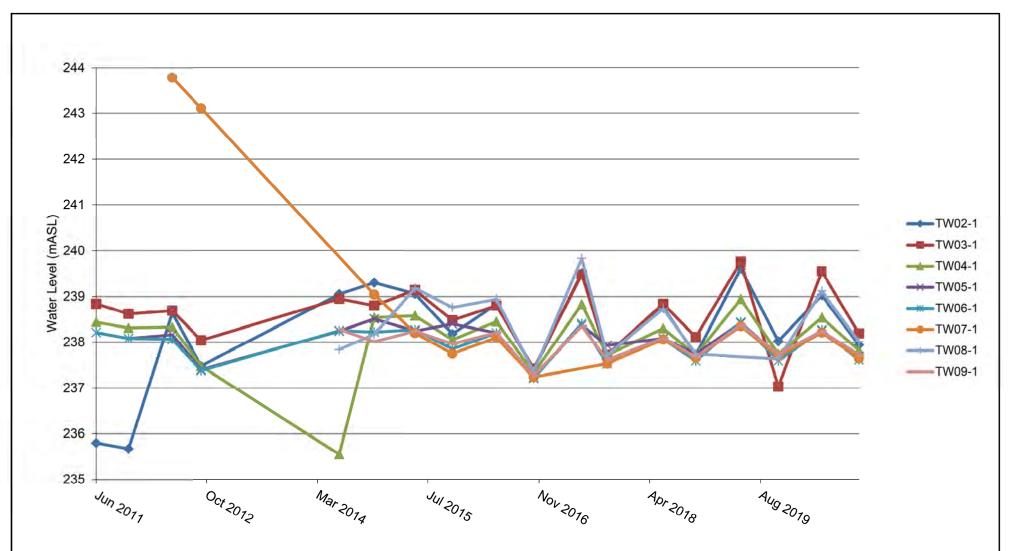
Figure:	4
Date:	8-Apr-22
Project Manager	r:

Cameron MacDougall

Project No.:

12987-004





# **Groundwater Elevations - Lower Bedrock**

2021 Annual Report, Stoney Lake Road Landfill 348 County Road 6, Lakefield The Corporation of the Township of Douro-Dummer

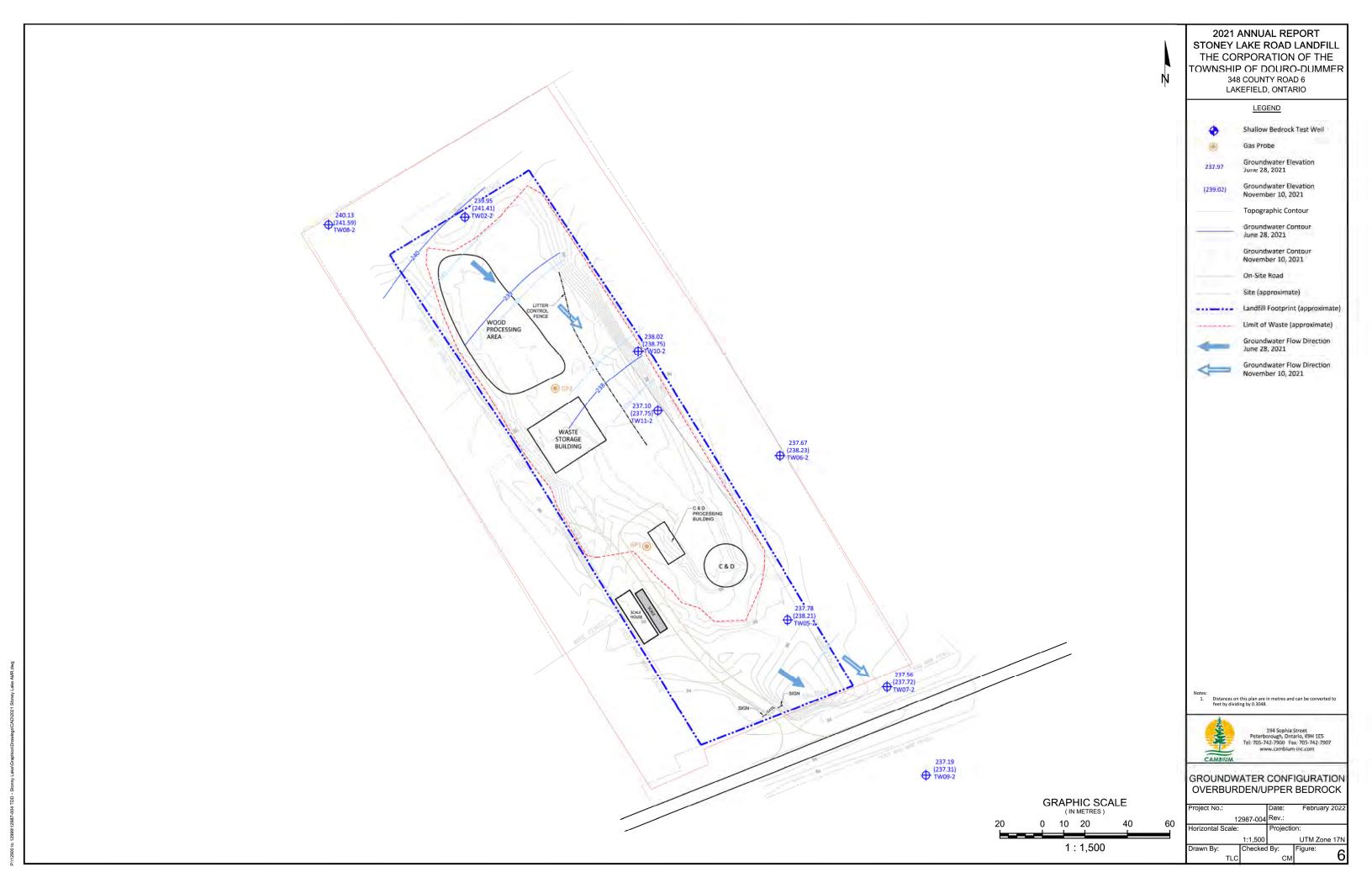
Apr-22

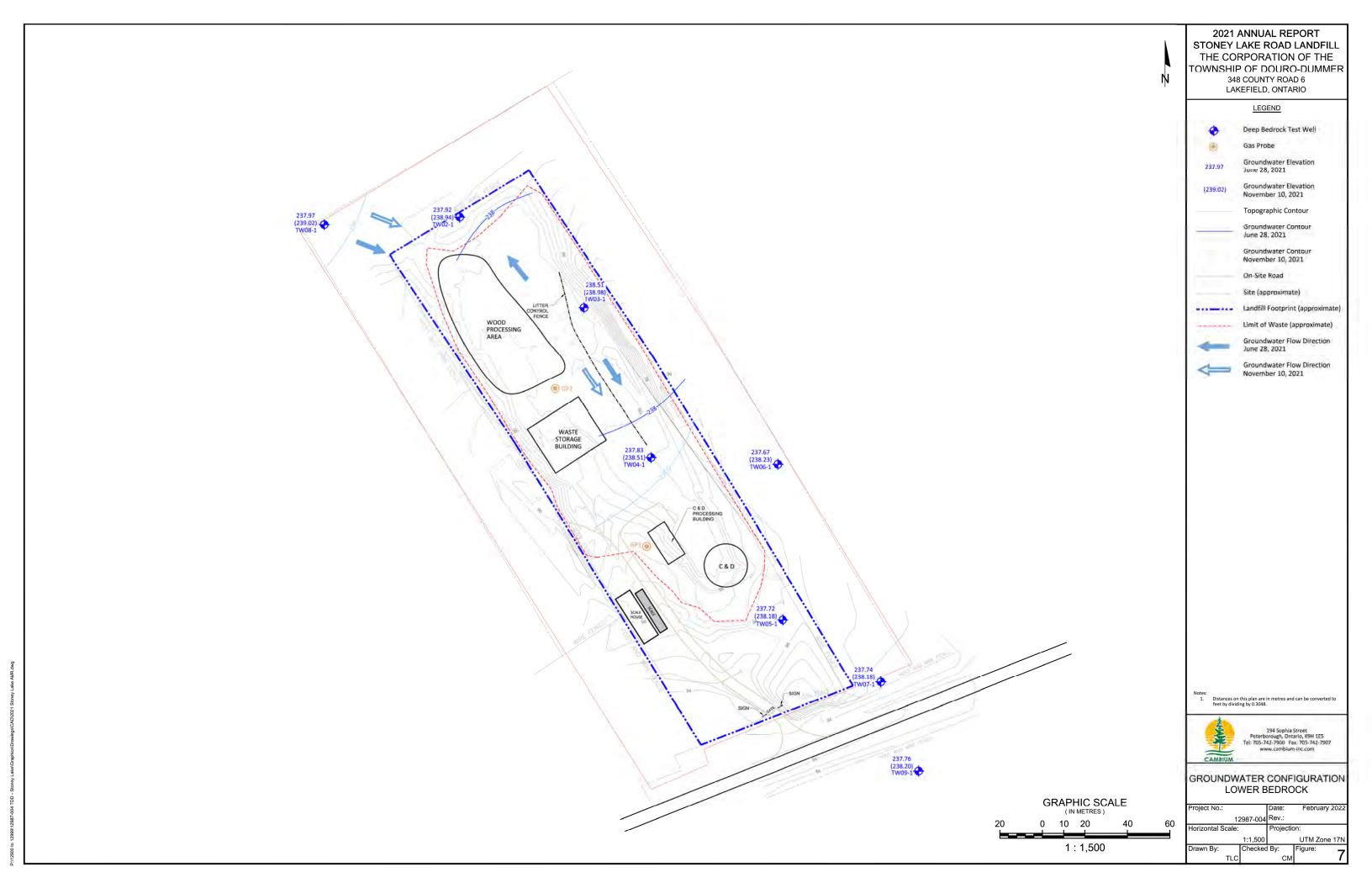
Project Manager: Cameron MacDougall

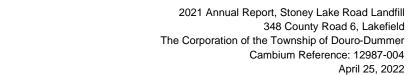
Project No.:

12987-004











Appended Tables
Fully accessible appended tables are available upon request.



**Table Notes** 

RDL - reported detection limit for the current year

RUC - Reasonable Use Criteria

ODWQS - Ontario Drinking Water Quality Standards, O.Reg. 169/03

PWQO - Water Management, Policies, Guidelines, Provincial Water Quality Objectives (MOEE, 1994b)

PWQO for cadmium, copper, and lead depends on hardness

"-" Parameter not analyzed or measured

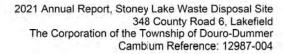
Unionized ammonia calculated using total ammonia and field data for pH and conductivity



Table 1 Groundwater and Surface Water Monitoring Program

Location	Task	Frequency	Analytical Parameters				
Groundwater							
TW02-2, TW05-2, TW06-2, TW07-2, TW08-2, TW09-2, TW10-2, TW11-2 1 QA/QC Duplicate	Measure groundwater levels     Groundwater sampling     Field measurements (pH, temperature, ORP, conductivity)	Twice Annually (Spring & Autumn)	alkalinity, ammonia, arsenic, barium, boron, cadmium, chloride, chromium, conductivity, copper, iron, lead, manganese, mercury, nitrite, nitrate, TKN, pH, total phosphorus, TSS, TDS sulphate, sodium, zinc, BOD, COD, phenols, hardness				
TW02-1, TW03-1, TW04-1, TW05-1 1 QA/QC Duplicate	Measure groundwater levels     Groundwater sampling     Field measurements (pH, temperature, ORP, conductivity)	Twice Annually (Spring & Autumn)	alkalinity, ammonia, barium, boron, calcium, chloride, conductivity, iron, manganese, magnesium, nitrate, pH, sodium, TDS, sulphate, COD, DOC, phenols, hardness				
TW06-1, TW07-1, TW08-1, TW09-1	Measure groundwater levels     Groundwater sampling     Field measurements (pH, temperature, ORP, conductivity)	Twice Annually (Spring & Autumn)	alkalinity, ammonia, arsenic, barium, boron, cadmium, calcium, chloride, chromium, conductivity, copper, iron, lead, magnesium, manganese, mercury, nitrite, nitrate, TKN, pH, total phosphorus, potassium, sodium, TDS, sulphate, zinc, COD, DOC, phenols, hardness  Benzene, 1-4- Dichlorobenzene, Dichloromethane, Toluene, Vinyl Chloride				
TW02-2, TW06-2 1 QA/QC Duplicate	• VOCs	Twice Annually (Spring & Autumn)	See List Below				
All Wells (listed above) Gas Probes (GP1, GP2) On-site structures (Office, and Sorting Building)	Landfill Gas Measurements	Twice Annually (Spring & Autumn)	CH4 and H2S				
Surface Water							
SW1, SW3, SW6, SW8 1 QA/QC Duplicate	Surface water sampling     Flow estimates     Field measurements (pH, temperature, conductivity, ORP, dissolved oxygen)	Three Times Annually (Spring, Summer, & Autumn)	alkalinity, ammonia, arsenic, barium, boron, cadmium, chloride, chromium, conductivity, copper, iron, lead, calcium, manganese, magnesium, potassium, sodium, dissolved mercury, nitrite, nitrate, TKN, pH, total phosphorus, TSS, TDS, sulphate, zinc, BOD, COD, phenols, hardness, unionized ammonia (field)				

<sup>\*</sup>Dissolved mercury to be lab filtered with a 0.45 micron filter for all surface water samples.





## VOCs to be analyzed

Bromodichloromethane

Bromoform

Dibromochloromethane

Bromomethane

Carbon tetrachloride

Chloroethane

Chloroform

Chloromethane

1,2-Dichlorobenzene

1,3-Dichlorobenzene

1,4-Dichlorobenzene

1,1-Dichloroethane

1,2-Dichloroethane

1,1-Dichloroethylene

1,2-Dichloropropane

trans-1,2-Dichloroethene

cis-1,2-Dichloroethene

cis-1,3-Dichloropropene

trans-1,3-Dichloropropene

Ethylenedibromide

Dichloromethane

Monochlorobenzene

Styrene

1,1,2,2-Tetrachloroethane

Tetrachloroethene

Trichloroethylene

Vinyl Chloride

Trichlorofluoromethane

1,1,1-Trichloroethane

1,1,2-Trichloroethane

1,1,1,2-Tetrachloroethane



**Table 2: Groundwater Elevations** 

Monitor	UTM Zone 17		Top of Casing	Ground Elevation	Measured	Well	Screened Unit				w	ater Level El	evation (mAS	SL)			
Monitor	Northing	Easting	Elevation (m)	(m)	Stick-Up (m)	(m)	Screened Offic	07-Jun-11	31-Oct-11	15-May-12	24-Sep-12	09-Jun-14	14-Nov-14	19-May-15	03-Nov-15	19-May-16	03-Nov-16
TW02-1	4926781	720806	245.05	244.50	0.55	9.78	Fard Grey Limestone Bedrock	235.8	235.67	238.64	237.48	239.05	239.3	239.06	238.18	238.83	237.39
TW02-2	4926780	720808	245.16	244.41	0.75	6.87	Limestone Bedrock, Hard Grey Limestone Pebbles	241.18	240.91	243.90	243.04	241.69	241.53	241.71	240.56	241.18	237.39
TW03-1	4926738	720864	244.84	244.16	0.68	7.42	Grey Broken Limestone, Grey Limestone Pebbles	238.84	238.62	238.69	238.04	238.95	238.80	239.14	238.48	238.80	237.42
TW04-1	4926667	720896	245.74	245.64	0.10	11.13	Grey Broken Limestone	238.44	238.31	238.33	237.48	235.55	238.54	238.58	238.05	238.45	237.32
TW05-1	4926590	720958	241.40	240.43	0.97	7.97	Grey Broken Limestone	238.21	238.08	238.16	237.40	238.24	238.51	238.24	238.40	238.20	237.23
TW05-2	4926591	720960	241.40	240.43	0.97	5.75	Grey and Brown Sand, Broken Limestone Bedrock	238.23	238.07	238.18	237.40	238.23	238.19	238.25	237.88	238.22	237.18
TW06-1	4926664	720956	240,57	239.80	0.77	5.88	Fractured Limestone Bedrock	238.21	238.08	238.06	237.38	238.25	238.22	238.27	237.85	238.20	237.21
TW06-2	4926668	720957	240.35	239.55	0.80	4.08	Brown Sand, Fractured Limestone Bedrock	238.20	238.04	238.11	237.09	238.33	238.22	238.28	237.83	238.39	237.21
TW07-1	4926561	721004	239.66	238.77	0.89	10.03	Fractured Limestone Bedrock	-	4-1	243.78	243,11		239.04	238.20	237.75	238,10	237.24
TW07-2	4926559	721007	239.86	238.80	1.06	5.24	Grey Sand, Fractured Limestone Bedrock	237.71	237.69	237.71	237.40	237.69	237.72	237.72	237.67	237.72	237.25
TW08-1	4926777	720742	245.37	244.59	0.78	11.59	Fractured Limestone Bedrock	- 6	100	391	5.0	237.84	238.17	239.18	238.76	238.94	237.36
TW08-2	4926777	720744	245.34	244.54	0.80	5.33	Fractured Limestone Bedrock	241.49	241,57	242.46	2.2	332	241,51	241.97	241.19	241.37	
TW09-1	4926519	721022	238.53	237.72	0.81	10.54	Limestone Bedrock	-	-	100	-	238.28	238.01	238.24	237.96	238.21	237.27
TW09-2	4926517	721026	238.20	237.18	1.02	4.29	Till	40	97	18	16	237.72	237.44	237.77	237.70	237.22	236.84
TW10-2	4926717	720890	241.20	240.38	0.82	3.78		- 4-	4	0.2.0	-2 -1	11.00	238.81	238.85	238.25	236.90	-
TW11-2	4926689	720899	242.09	241.24	0:85	6.83	-	-	-	- 4	- 4		237.84	237.92	237,33	237,92	236.69



**Table 2: Groundwater Elevations** 

Monitor	UTM Zone 17		Top of Casing	Ground Elevation	Measured	Well Depth	Screened Unit					Water	Level Elevati	on (mASL)			
monitor	Northing	Easting	Elevation (m)	(m)	Stick-Up (m)	(m)	Science Sinc	07-Jun-17	29-Sep-17	11-Jun-18	05-Nov-18	27-May-19	12-Nov-19	27-May-20	02-Nov-20	28-Jun-21	10-Nov-21
TW02-1	4926781	720806	245.05	244.50	0.55	9.78	Hard Grey Limestone Bedrock	239.51	237.69	238.76	237.72	239.61	238.02	239.03	237.94	237.92	238.94
TW02-2	4926780	720808	245.16	244.41	0.75	6.87	Limestone Bedrock, Hard Grey Limestone Pebbles	242.26	239.94	241.10	240.27	241.80	240.24	241.61	240.33	239.95	241.41
TW03-1	4926738	720864	244.84	244.16	0.68	7.42	Grey Broken Limestone, Grey Limestone Pebbles	239.48	237.72	238.84	238.11	239.76	237.03	239.55	238.19	238.51	238.98
TW04-1	4926667	720896	245.74	245.64	0.10	11.13	Grey Broken Limestone	238.83	237.71	238.30	237.72	238.94	237.74	238.54	237.82	237.83	238.51
TW05-1	4926590	720958	241.40	240.43	0.97	7.97	Grey Broken Limestone	238.37	237.93	238.08	237.74	238.42	237.71	238.25	237.69	237.72	238.18
TW05-2	4926591	720960	241,40	240.43	0.97	5.75	Grey and Brown Sand, Broken Limestone Bedrock	238.41	237.70	238.13	237.66	238.53	237.66	238,30	237.71	237.78	238.21
TW06-1	4926664	720956	240,57	239.80	0.77	5.88	Fractured Limestone Bedrock	238.41	237.53	238.07	237.59	238.44	237.59	238.27	237.61	237.67	238.23
TW06-2	4926668	720957	240.35	239,55	0.80	4.08	Brown Sand, Fractured Limestone Bedrock	238.37	237.71	238.07	237.60	238.39	237.59	238.28	237.66	237.67	238.23
TW07-1	4926561	721004	239.66	238.77	0.89	10.03	Fractured Limestone Bedrock	-	237.53	238.06	237.66	238.35	237.69	238,21	237.65	237.74	238.18
TW07-2	4926559	721007	239.86	238.80	1.06	5.24	Grey Sand, Fractured Limestone Bedrock		237.48	237.66	237.56	237.76	237.59	237.72	237.55	237.56	237.72
TW08-1	4926777	720742	245.37	244.59	0.78	11.59	Fractured Limestone Bedrock	239.83	237.71	238.73	237.74	130	237.63	239.12	238.01	237.97	239.02
TW08-2	4926777	720744	245.34	244.54	0.80	5.33	Fractured Limestone Bedrock	242.68	240.10	241.30	-	242.90	G	241.83	240.52	240.13	241.59
TW09-1	4926519	721022	238.53	237.72	0.81	10.54	Limestone Bedrock	238.35	237.61	238.09	237.67	238.38	237.75	238.24	237.73	237.76	238.20
TW09-2	4926517	721026	238.20	237.18	1.02	4.29	Till	237.87	237.09	237.31	237.15	237.39	237.19	237.33	237.17	237.19	237.31
TW10-2	4926717	720890	241.20	240.38	0.82	3.78		238.94	237.86	238.81	237.76	239.04	237.8	238.84	237 90	238 02	238.75
TW11-2	4926689	720899	242.09	241.24	0.85	6.83	~	238.13	236.95	237.66	236.86	238.19	237.04	237,85	237.01	237,10	237.75



## **Table 3: Vertical Gradients**

Monitor	Screened Unit	Difference in Elevation of Bottom		Vertical Gradient (+ downward gradient, - upward gradient)						
D		of Screen	07-Jun-11	31-Oct-11	15-May-12	24-Sep-12	09-Jun-14	14-Nov-14	19-May-15	03-Nov-15
TW02-1	Hard Grey Limestone Bedrock	2.00	1.78	1.74	474	4.04	0.07	0.74	0.88	0.70
TW02-2	Limestone Bedrock, Grey Limestone Pabbles	-3.02	1.78	1.74	1.74	1.84	0.87	0.74	0.88	0.79
TW05-1	Grey Broken Limestone	-2.22	0.01	0.00	0.01	0.00	0.00	-0.14	0.00	-0.23
TW05-2	Grey and Brown Sand, Broken Limestone Bedrock	-2.22	0.01	0.00	0.01	0.00	0.00	-0.14	0.00	-0.23
TW06-1	Fractured Limestone Bedrock	150	0.04	-0.03	0.00	-0.18	0.05	0.00	0.01	-0.01
TW06-2	Brown Sand, Fractured Limestone Bedrock	-1.58	-0.01	-0.03	0.03	-0.16	0.05	0.00	0.01	-0.01
TW07-1	Fractured Limestone Bedrock	-4.99			-1.22	-1.14	1.2	-0.26	-0.10	-0.02
TW07-2	Grey Sand, Fractured Limestone Bedrock	-4.99	7	-	-1.22	-1.14		-0.20	-0.10	-0.02
TW08-1	Fractured Limestone Bedrock	-6.23					1	nei	0.45	0.20
TW08-2	Limestone Bedrock	-0.23	-	-	-	-	-	0.54	0.45	0,39
TW09-1	Limestone Bedrock	-5.92					-0.09	-0.10	-0.08	-0.04
TW09-2	Till	-5.92	-	-	-	-	-0.09	-0.10	-0.06	-0.04



## **Table 3: Vertical Gradients**

Monitor	Screened Unit	Screened Unit	Difference in Elevation of Bottom		Vertical Gradient (+ downward gradient, - upward gradient)						
1000		of Screen	19-May-16	03-Nov-16	07-Jun-17	29-Sep-17	11-Jun-18	05-Nov-18	27-May-19	12-Nov-19	
TW02-1	Hard Grey Limestone Bedrock	-3.02	0.78	0.00	0.91	0.75	0.77	0.84	0.73	0.74	
TW02-2	Limestone Bedrock, Grey Limestone Pabbles	-3.02	0.78	0.00	0.91	0.75	0.77	0.84	0.73	0.74	
TW05-1	Grey Broken Limestone	-2.22	0.01	-0.02	0.02	-0.10	0.02	-0.04	0.05	-0.02	
TW05-2	Grey and Brown Sand, Broken Limestone Bedrock	-2.22	0.01	-0.02	0.02	-0.10	0.02	-0.04	0.05	-0.02	
TW06-1	Fractured Limestone Bedrock	1.50	450	0.12	0.00	-0.03	0.11	0.00	0.04	0.00	0.00
TW06-2	Brown Sand, Fractured Limestone Bedrock	-1.58	0.12	0.00	-0.03	0.11	0.00	0.01	-0.03	0.00	
TW07-1	Fractured Limestone Bedrock	-4.99	-0.08	0.00		-0.01	-0.08	-0.02	-0.12	-0.02	
TW07-2	Grey Sand, Fractured Limestone Bedrock	-4.99	-0.08	0.00	100	-0.01	-0.08	-0.02	-0.12	-0.02	
TW08-1	Fractured Limestone Bedrock	-6.23	0.39		0.46	0.38	0.44		- 6		
TW08-2	Limestone Bedrock	-0.23	0.39		0.40	0.36	0.41		-	-	
TW09-1	Limestone Bedrock	-5.92	-0.17	-0.07	-0.08	0.00	-0.13	-0.09	-0.17	-0.09	
TW09-2	Till	-5.92	-0.17	-0.07	-0.06	-0.09	-0.13	-0.09	-0.17	-0.09	



## **Table 3: Vertical Gradients**

Monitor	Screened Unit	Difference in Elevation of Bottom			downward gradient, gradient)	
		of Screen	27-May-20	02-Nov-20	28-Jun-21	10-Nov-21
TW02-1	Hard Grey Limestone Bedrock	-3.02	0.85	0.79	0.67	0.82
TW02-2	Limestone Bedrock, Grey Limestone Pabbles	-3.02	0.85	0.79	0.67	0.82
TW05-1	Grey Broken Limestone	-2.22	0.02	0.01	0.03	0.01
TW05-2	Grey and Brown Sand, Broken Limestone Bedrock	-2.22	0.02	0.01	0.03	0.01
TW06-1	Fractured Limestone Bedrock	4.50	0.01	0.03	0.00	0.00
TW06-2	Brown Sand, Fractured Limestone Bedrock	-1.58	0.01	0.03	0.00	0.00
TW07-1	Fractured Limestone Bedrock	-4.99	-0.10	-0.02	-0.04	-0.09
TW07-2	Grey Sand, Fractured Limestone Bedrock	-4.99	-0.10	-0.02	-0.04	-0.09
TW08-1	Fractured Limestone Bedrock	6.00	0.42	0.40	0.05	0.44
TW08-2	Limestone Bedrock	-6.23	0.43	0.40	0.35	0.41
TW09-1	Limestone Bedrock	-5.92	-0.15	-0.09	0.40	0.45
TW09-2	Till	-5.92	-0.15	-0.09	-0.10	-0.15

2021 Annual Report, Stoney Lake Road Landfill 348 County Road 6, Lakefield The Coporation of the Township of Douro-Dummer Cambium Reference:12987-004



Table 4: Groundwater Quality - Overburden/Upper Bedrock

	Unit	RDL	ODWQS	1.00	TW02-2	TW02-2 2012-05-16	TW02-2 2012-09-25	TW02-2 2013-06-04	TW02-2 2013-10-30	TW02-2 2014-06-09	TW02-2 2014-11-14	TW02-2 2015-05-19	TW02 2 2015-11-03	TW02-2 2016-05-19
etals	Ont	T			2011-10-01	2012-00-10	2012-08-20	2013-00-04	2010-10-00	2014-00-09	2014-11-14	2010-00-19	2010-11-03	2010-00-1
Aluminium (Filtered)	µg/L	10	100			1 .		1	1 .		1 .		1 -	T .
Antimony (Filtered)	µg/L	0.2	6			-		-			-	-	-	-
		0.1	25		0.4	0.3	0.6	0.3	1	<0.2	0.7	<0.2	3.8	<0.2
Arsenic (Filtered)	µg/L	0.01	1000	273	98.4	32.9	112	35.9	121	26.3	47.9	28.8	117	27.1
Barium (Filtered)	µg/L		5000	2507	29.4		36.7		35.1	6.7	1	163	278	54
Boron (Filtered)	µg/L	0.2	5000	2507		5.8	30.7	8.9	2.27		17	103		54
Beryllium (Filtered)	µg/L	0.02	-		-									-
Bismuth (Filtered)	µg/L	0.01			-		010.000		070.000		454.000	400,000	- 170,000	27.000
Calcium (Filtered)	μg/L	10	-		234,000	99,100	246,000	101,000	273,000	92,300	151,000	109,000	476,000	97,000
Cadmium (Filtered)	µg/L	0.003	5	400000	<0.003	<0.003	0.007	0.025	0.017	0.011	< 0.003	0.004	0.009	0.004
Chloride	μg/L	200	250000	126000	3300	1600	14,000	2500	19,000	2400	4300	2000	75,000	2000
Chromium (III+VI) (Filtered)	µg/L	0.03	50		0.7	<0.5	0.5	<0.5	1.7	0.17	0.13	<0.03	0.96	0.41
Cobalt (Filtered)	µg/L	0.002	-		-	-	-			-	-	-	1	-
Copper (Filtered)	μg/L	0.02	1000		1	0.7	0.7	0.6	0.7	0.93	0.75	0.72	0.22	0.91
Iron (Filtered)	µg/L	2	300	154	12,100	26	29,700	72	10,800	30	3070	15	36,800	23
Lithium (Filtered)	µg/L	1			100		-	-		-		-		1
Lead (Filtered)	µg/L	0.01	10		<0.02	<0.02	0.05	0.02	0.04	0.14	0.01	<0.01	0.04	0.02
Manganese (Filtered)	µg/L	0.01	50	25.52	2120	41.1	1790	94.6	2480	2.41	799	13.2	3330	1.46
Magnesium (Filtered)	µg/L	1			7440	2620	7750	2900	9440	2470	4620	3710	43,800	3050
Mercury (Filtered)	µg/L	0.01	1		< 0.1	<0.1	<0.1	0.03		+1-	14		0.05	< 0.01
Molybdenum (Filtered)	µg/L	0.01				14-		-	1	+ 1-		- 4		-
Nickel (Filtered)	µg/L	0.1				-	1-1	-	1	-	14.0	1.2	-	-
Phosphorus (Filtered)	µg/L	3		-	40	<30	<30	60	1 - 35	7-5	F	<30	<30	<3
Potassium (Filtered)	µg/L	2		-	1090	534	1050	587	1310	545	688	547	2280	648
Silicon (Filtered)	µg/L	10			F 52	-	-	-	1 2	1 2	-	-	-	-
Strontium (Filtered)	µg/L	0.1			(*)	-	-		~	-	-	- 15	-	- 4
Selenium (Filtered)	µg/L	1	50		-	-			-		-		-	-
Sodium (Filtered)	µg/L	10	200000	101070	2800	1590	5180	2180	10,400	1780	4200	2750	74,500	2300
Silver (Filtered)	µg/L	0.01	200000	101010	2000	1000	2,00	2100	10,400	7700	4200	2,00	74,000	2000
Tin (Filtered)	µg/L	0.01				+ -	1	1	-	-	1	-	+ -	1 3
Titanium (Filtered)	µg/L	0.1			-	-	-	-	-	-	-	_	-	-
Thallium (Filtered)	µg/L	0.2			-	1		-	<del>                                     </del>	-	<del>                                     </del>	-	1 -	<u> </u>
Uranium (Filtered)		0.001	20		-	<del>                                     </del>	<del>                                     </del>	+ -	+ -	<del>                                     </del>	+ -	<del>                                     </del>	<del>                                     </del>	<del>                                     </del>
	µg/L	0.001	20			1	-	-		-	1	- 4	1 -	12
Vanadium (Filtered)	µg/L	_	5000	_			· ·	3	5		_			_
Zinc (Filtered)	µg/L	2	5000	_	4	3	5	3	5	4	3	<2	6	4
organics	1	-		070	-			205		0.15	1 001	000	-	004
Alkalinity (as CaCO3)	mg/L	2	500	373	579	292	604	265	622	245	381	266	572	221
Hardness (as CaCO3) (Filtered)	mg/L	0.05	500		-	-	-		-	-		12.	-	-
Solids - Total Dissolved (TDS)	mg/L	3	500	389	649	191	717	303	837	274	471	340	2150	283
Oxygen Demand - Chemical (COD)	mg/L	5			<8	8	20	15	23	10	10	12	82	<8
Solids - Total Suspended (TSS)	mg/L	2	-		18	2		-		-	-	<2	35	<2
Organic Carbon - Dissolved (DOC) (Filtered)	mg/L	1	5		13.5	5.8	3.4	3.2	11.8	2.4	3.7	- 4	-	-
Oxygen Demand - Biological (BOD)	mg/L	2			13	<4					(4)	<4	10	<4
Phenois (4AAP)	mg/L	0.001			<0.002	0.014	<0.002	<0.002		-		<0.001	0.001	<0.001
Sulphate	mg/L	0.2	500	253	14	5.8	22	8.6	33	4.7	31	19	940	9
Ammonia	mg/L	0.01			0.1	0.1	0.3	0.1	0.2	<0.1	0.1	<0.1	0.8	<0.1
Nitrate (as N)	mg/L	0.05	10	3.31	0.06	0.56	<0.05	0.66	<0.06	0.93	<0.06	0.75	0.24	0.37
Nitrite (as N)	mg/L	0.03	1		<0.06	<0.06	<0.06	< 0.03	-	K	1	< 0.03	< 0.03	<0.03
Total Kjeldahl Nitrogen (TKN)	mg/L	0.1			<0.5	<0.5	0.5	<0.5		8		<0.5	2.1	<0.5
Conductivity (lab)	μS/cm	1			1080	545	1210	521	1260	458	739	507	2460	491
pH (Lab)	-	0.05	6.5-8.5		7.52	7.88	7.39	7.59	7.34	7.97	7.75	7.71	6.78	8.22
eld		19.1	The same of the sa										****	
DO (Field)	mg/L				-2	1 4	140	1	1	1 -	1 4	14	1	1 -
Redox Potential (Field)	mV		-		- 32		-		-	-	-	-	-	-
Temp (Field)	°C				1	<u> </u>	<del>                                     </del>	+ -	-	<del>                                     </del>	+	<del>-</del>	<del>                                     </del>	<del>-</del>
Conductivity (field)	µS/cm	1			-	1	<del>                                     </del>	+ -	+ -	<del>                                     </del>	+ -	<del>                                     </del>	<del>                                     </del>	<del>                                     </del>



Table 4: Groundwater Quality - Overburden/Upper Bedrock

	Unit	RDL	ODWQS	NUC	TW02-2 2016-10-26	TW02-2 2018-06-11	TW02-2 2018-11-05	TW02-2 2019-05-29	TW02-2 2019-10-28	TW02-2 2020-05-27	TW02-2 2020-11-12	TW02-2 2021-06-28	TW02-2 2021-11-1
etals		1.00	1000	-									
Aluminium (Filtered)	µg/L	10	100		-	-			-	-	-		-
Antimony (Filtered)	µg/L	0.2	6		-	-	-	-	-	-	-	-	-
Arsenic (Filtered)	μg/L	0.1	25		3.9	<0.2	0.7	<0.2	0.8	<0.2	1.7	0.2	0.1
Barium (Filtered)	µg/L	0.01	1000	273	264	31.7	145	28.7	125	25.5	116	56	37
Boron (Filtered)	µg/L	0.2	5000	2507	591	13	415	160	236	13	389	33	25
Beryllium (Filtered)	µg/L	0.02	-			-			-	-	-	-	-
Bismuth (Filtered)	µg/L	0.01			047		-		-		-	14	1
Calcium (Filtered)	μg/L	10			371,000	130,000	428,000	107,000	358,000	76,400	334,000		
Cadmium (Filtered)	μg/L	0.003	5	-	0.009	0.004	0.016	0.003	0.019	< 0.003	0.012	< 0.015	< 0.015
Chloride	µg/L	200	250000	126000	42,000	2000	18,000	2000	20,000	1000	16,000	4800	2200
Chromium (III+VI) (Filtered)	µg/L	0.03	50		1.29	0.04	0.39	0.13	0.34	<0.08	0.1	<1	2
Cobalt (Filtered)	µg/L	0.002			-	-	-			-		-	-
Copper (Filtered)	μg/L	0.02	1000		0.09	0.57	0.83	0.7	0.8	0.6	0.9	1.9	0.4
Iron (Filtered)	µg/L	2	300	154	33,400	<7	3460	106	68	<7	3360	1740	400
Lithium (Filtered)	µg/L	1	-	187	00,100	1-	-	-	-		-	-	-
Lead (Filtered)	µg/L	0.01	10		<0.01	0.02	0.09	0.01	0.03	<0.01	0.02	0.08	<0.02
Manganese (Filtered)	µg/L	0.01	50	25.52	3440	6.8	2800	8000	2410	0.16	2140		-
Magnesium (Filtered)	µg/L	1		20.02	31,600	2720	16,400	3190	14,800	1900	16,100	-	-
Mercury (Filtered)	µg/L	0.01	1		<0.01	0.04	<10	<10	<10	<10	<10	<0.02	<0.02
Molybdenum (Filtered)	µg/L	0.01	-		-0.01	0.04	-10	-10	-	-10	-10	-0.02	-0.02
Nickel (Filtered)	µg/L	0.01				-	-	1	-	-	+	-	1
Phosphorus (Filtered)		3	-		<30	<30	<30	<30	30	<30	<30	140	10
Potassium (Filtered)	µg/L	2			3750	504	1010	780	1010	488	1480	-	10
Silicon (Filtered)	µg/L	10		_	3/50	304	1010	760	1010	400	1460	-	-
	µg/L				_		_			-			-
Strontium (Filtered)	µg/L	0.1	50	_	-	~	-	-	-	-	-		-
Selenium (Filtered)	µg/L	10	Section 2012 Contract of	404070		-	-		45.000	-		-	-
Sodium (Filtered)	µg/L	10	200000	101070	51,000	2060	20,900	2340	15,800	1580	18,900		1.5
Silver (Filtered)	µg/L	0.01			-			-	-	-			
Tin (Filtered)	µg/L	0.01		_	-		_	-					-
Titanium (Filtered)	µg/L	0.1			-	-	-	-	-	-	-	-	-
Thallium (Filtered)	µg/L	0.2	-		-	-	-	-	-	-	-	-	-
Uranium (Filtered)	µg/L	0.001	20		-	-	-	-	-	-	-	-	-
Vanadium (Filtered)	µg/L	0.03	-				-	-		-	-		3-
Zinc (Filtered)	μg/L	2	5000		5	<2	3	2	4	<2	3	<5	<5
organics									-				
Alkalinity (as CaCO3)	mg/L	2	500	373	641	278	628	398	569	238	594	416	312
Hardness (as CaCO3) (Filtered)	mg/L	0.05	500		14.1	-				-	-	450	332
Solids - Total Dissolved (TDS)	mg/L	3	500	389	1630	326	1191	251	1140	226	1040	453	302
Oxygen Demand - Chemical (COD)	mg/L	5			73	9	16	<8	25	<8	48	25	12
Solids - Total Suspended (TSS)	mg/L	2			133	<2	7	32	3	25	17	109	11
Organic Carbon - Dissolved (DOC) (Filtered)	mg/L	1	5		-	-		~	-	-		-	-
Oxygen Demand - Biological (BOD)	mg/L	2			7	<4	<4	<4	<4	<4	8	<3	<3
Phenols (4AAP)	mg/L	0.001	Fig. 1		0.004	< 0.001	0.003	0.001	0.003	<0.001	< 0.001	< 0.002	< 0.002
Sulphate	mg/L	0.2	500	253	410	7	310	6	320	5	220	36	6
Ammonia	mg/L	0.01		7 7	1.1	<0.1	0.1	<0.1	<0.1	< 0.1	< 0.1	0.03	0.02
Nitrate (as N)	mg/L	0.05	10	3.31	0.09	0.23	<0.06	0.36	<0.06	0.69	<0.06	0.12	0.81
Nitrite (as N)	mg/L	0.03	1		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.05	< 0.05
Total Kjeldahl Nitrogen (TKN)	mg/L	0.1			2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	0.3
Conductivity (lab)	μS/cm	1			1940	526	1520	882	1480	447	1380	857	582
pH (Lab)	-	0.05	6.5-8.5	-	6.81	7.93	7.06	7.47	7.53	7.91	7.23	7.65	8.07
eld	-	1	The same of the same of										
DO (Field)	mg/L				140			5.4	5.3	6.6	6.3	9.69	6.25
Redox Potential (Field)	mV				-	-	1 - 4	76	139	155	15	110	64
Temp (Field)	°C				-	1 2	-	9.1	12	11.5	12	13.9	12.2
Conductivity (field)	µS/cm				-	1 2	-	365	1103	390	935	472	264
Conductivity (neit)	POVOIII	4				1 -	1	300	1100	330	000	412	204



Table 4: Groundwater Quality - Overburden/Upper Bedrock

	Unit	RDL	ODWQS	1.00	TW05-2 2011-10-01	TW05-2 2012-05-15	TW05-2 2012-09-25	TW05-2 2013-06-04	TW05-2 2013-10-30	TW05-2 2014-06-09	TW05-2 2014-11-14	TW05-2 2015-05-19	TW05-2 2015-11-03	TW05-2 2016-05-1
etals	Ont	T			2011-10-01	2012-03-15	2012-08-20	2013-00-04	12013-10-30	2014-00-09	2014-11-14	2010-00-19	2015-11-03	2010-00-1
Aluminium (Filtered)	Luga	10	100			1 .		T .	1 .		1 .	To the	1	1 .
Antimony (Filtered)	µg/L	0.2	6	_	_				-		-		-	-
	µg/L		25	-	1.0				0.7		2	0.2		0.3
Arsenic (Filtered)	µg/L	0.1	1000	273	1.3 60.4	37.5	1.1 55.5	29.9	36.7	1 40.7	44.8	51.6	0.8	35.5
Barium (Filtered)	µg/L	0.01						1000		43.7	4			
Boron (Filtered)	µg/L	0.2	5000	2507	643	328	842	871	890	1640	1590	1640	1710	3130
Beryllium (Filtered)	µg/L	0.02										-		-
Bismuth (Filtered)	µg/L	0.01			-	-			-	-		-	-	
Calcium (Filtered)	µg/L	10			465,000	551,000	579,000	465,000	561,000	436,000	496,000	487,000	603,000	909,00
Cadmium (Filtered)	µg/L	0.003	5	721111	0.017	<0.003	0.018	0.051	0.025	0.01	0.013	0.007	0.011	0.009
Chloride	µg/L	200	250000	126000	87,000	48,000	120,000	33,000	76,000	86,000	130,000	130,000	140,000	190,00
Chromium (III+VI) (Filtered)	µg/L	0.03	50		1.7	0.7	0.7	0.6	1.7	0.7	6.27	0.11	0.18	0.52
Cobalt (Filtered)	µg/L	0.002	-		-	-	-	-	-	-	1 2 2	-	-	-
Copper (Filtered)	μg/L	0.02	1000		3	3.1	3.3	2.8	3.2	3.29	5.96	3.17	1.66	6.7
Iron (Filtered)	µg/L	2	300	154	4450	26	7770	133	2440	889	3930	562	3750	35
Lithium (Filtered)	µg/L	1				1 - 2					2	-	12	-
Lead (Filtered)	µg/L	0.01	10		0.03	0.05	0.02	0.06	0.04	0.05	0.02	<0.01	0.05	0.09
Manganese (Filtered)	µg/L	0.01	50	25.52	2520	83.4	1960	137	1040	1080	1270	1250	1650	473
Magnesium (Filtered)	µg/L	1			47,300	37,300	57,400	32,400	45,900	47,400	52,100	52,700	71,800	77,70
Mercury (Filtered)	µg/L	0.01	1		< 0.1	<0.1	1.	0.13	-	-	-	-	0.01	<0.01
Molybdenum (Filtered)	µg/L	0.01				-			-	-	-	-	-	-
Nickel (Filtered)	µg/L	0.1				-	-		-	-	-	-	-	-
Phosphorus (Filtered)	µg/L	3	-	-	90		345	100	1 5-5	3-6	-	<30	<30	11
Potassium (Filtered)	µg/L	2		-	10,300	3350	10,200	2290	6280	6610	10,800	6970	10,000	3550
Silicon (Filtered)	µg/L	10			-	-	-		18	-	-	1 -	-	-
Strontium (Filtered)	µg/L	0.1			(*)	1-1	-		~	-	15	-	-	
Selenium (Filtered)	µg/L	1	50				-	-	-	-	-	-	-	-
Sodium (Filtered)	µg/L	10	200000	101070	54,100	42,300	75,600	33,200	64,600	61,300	80,200	75,000	117,000	124,00
Silver (Filtered)	µg/L	0.01	200000	101010	01,100	12,000	70,000			07,000	00,200	10,000	-	124,00
Tin (Filtered)	µg/L	0.01										1		
Titanium (Filtered)	µg/L	0.1			-	-	-	<u> </u>	-	-	<del> </del>	-	-	-
Thallium (Filtered)	µg/L	0.2			-		-	<del>                                     </del>	1 -	-	<del>                                     </del>	<del>                                     </del>	<del>-</del>	<del>                                     </del>
Uranium (Filtered)	µg/L	0.001	20			1 -	-	+ -	+ -	<del>-</del>	+	+ -	<del>                                     </del>	+ -
Vanadium (Filtered)		0.001	20			- 4	1	-	-	4	TA.	1	-	-
	µg/L	_	5000	_	11	6	6	2	1 1	2	5	<2	3	<2
Zinc (Filtered)	µg/L	2	5000	_	11	0	0	2	4		. 5	- <2	3	\
organics	l-cont	0	700	070	FOR	440	500	200	140	007	ron	470	ror	200
Alkalinity (as CaCO3)	mg/L	2	500	373	505	418	530	309	446	367	566	479	595	398
Hardness (as CaCO3) (Filtered)	mg/L	0.05	500		-		-	2000		-	-	2000	-	-
Solids - Total Dissolved (TDS)	mg/L	3	500	389	1960	2300	2140	2020	2230	2120	2300	2550	2530	3670
Oxygen Demand - Chemical (COD)	mg/L	5			24	21	39	<8	24	<8	43	32	42	51
Solids - Total Suspended (TSS)	mg/L	2	-		120			-		-		3	9	<2
Organic Carbon - Dissolved (DOC) (Filtered)	mg/L	1	5		10.4	12.3	15.8	11.7	8.9	10.7	16.1	-	-	
Oxygen Demand - Biological (BOD)	mg/L	2			<2	-	-	-	-			<4	<4	<4
Phenois (4AAP)	mg/L	0.001			<0.002			<0.002				0.001	0.001	<0.00
Sulphate	mg/L	0.2	500	253	880	1300	1000	960	1100	980	1000	1100	1100	2000
Ammonia	mg/L	0.01			1.5	0.2	2.2	<0.1	0.8	1.4	2.5	1.6	2.3	0.2
Nitrate (as N)	mg/L	0.05	10	3.31	0.24	0.15	0.16	0.09	0.07	0.14	0.1	0.19	0.07	4.22
Nitrite (as N)	mg/L	0.03	1		<0.06	<0.06	•<	< 0.03	133	K	-	< 0.03	<0.03	<0.03
Total Kjeldahl Nitrogen (TKN)	mg/L	0.1			2		-	< 0.5			-	2.3	3.1	1.4
Conductivity (lab)	µS/cm	1		-	2380	2540	2930	2130	2550	2320	2670	2920	2780	3860
pH (Lab)	-	0.05	6.5-8.5	-	7.62	7.59	7.28	7.37	7.73	7.68	7.76	7.34	7.26	7.67
eld		19.1	-							4-057				
DO (Field)	mg/L	1			-2	1 4	-	14.	1	F . 6.	1 4	1	1 4 -	1
Redox Potential (Field)	mV	1	-		- 2	-	-	-	-	-	-	-	-	-
Temp (Field)	°C	1			-		-	-	<u> </u>	-	<u> </u>	<del> </del> -	-	<del>  -</del>
		+	-					<del>  -</del>	<del>                                     </del>		<del>                                     </del>	+	+	<del>  -</del>
Conductivity (field)	uS/cm						-					-	I -	



Table 4: Groundwater Quality - Overburden/Upper Bedrock

	Unit	RDL	ODWQS	RUC	TW05-2 2016-10-26	TW05-2 2018-06-11	TW05-2 2018-11-05	TW05-2 2019-05-29	TW05-2 2019-10-28	TW05-2 2020-05-27	TW05-2 2020-11-12	TW05-2 2021-06-28	TW05-2 2021-11-1
etals	Unit	KUL		_	2010-10-26	2018-06-11	2018-11-05	2019-05-29	2019-10-28	2020-05-27	2020-11-12	2021-00-28	2021-11-1
1200	Livett	10	100		-	T	1 .	T .		1 .	1		1 -
Aluminium (Filtered)	µg/L		6	-	-	1							-
Antimony (Filtered)	µg/L	0.2	25	_	0.5						- 0.0		
Arsenic (Filtered)	µg/L	0.1	-	070	0.5 32.8	0.4	0.5	0.3	0.5	0.2	0.8	0.3	0.4
Barium (Filtered)	µg/L	0.01	1000	273	24.0	32.2	31.6	25.4	24.9	24.6	33.5		27
Boron (Filtered)	μg/L	0.2	5000	2507	3380	9120	10,000	49,600	10,200	6110	8950	10,200	9400
Beryllium (Filtered)	µg/L	0.02		_		-				•		-	
Bismuth (Filtered)	μg/L	0.01			-					1.		-	-
Calcium (Filtered)	μg/L	10			840,000	621,000	760,000	351,000	561,000	353,000	618,000	1.5	-
Cadmium (Filtered)	µg/L	0.003	5		0.011	0.008	0.013	0.006	0.014	0.007	0.009	<0.029	<0.02
Chloride	μg/L	200	250000	126000	230,000	61,000	180,000	140,000	210,000	140,000	250,000	120,000	149,00
Chromium (III+VI) (Filtered)	µg/L	0.03	50		0.49	0.22	0.41	0.31	0.33	0.3	0.21	<1	<1
Cobalt (Filtered)	µg/L	0.002				-		-	-		-		-
Copper (Filtered)	µg/L	0.02	1000		7.83	8.3	11.5	5.1	22.6	5	10.5	9.7	8.5
Iron (Filtered)	µg/L	2	300	154	30	15	24	440	11	<7	21	206	52
Lithium (Filtered)	µg/L	1					-		- 1	- L	-	-	11-12
Lead (Filtered)	µg/L	0.01	10		0.13	0.03	0.07	0.15	0.63	0.03	0.09	0.23	< 0.09
Manganese (Filtered)	µg/L	0.01	50	25.52	1190	67.7	199	44.2	52.9	16	22.8	-	
Magnesium (Filtered)	µg/L	1		-	102,000	119,000	204.000	113,000	210,000	122,000	230,000		-
Mercury (Filtered)	µg/L	0.01	1		<0.01	0.03	<10	<10	<10	<10	<10	<0.02	<0.02
Molybdenum (Filtered)	µg/L	0.01	-			-	-	-	2			-	-
Nickel (Filtered)	µg/L	0.1			-	1 4	1	-	1		-	-	-
Phosphorus (Filtered)	µg/L	3	-		<30	60	<30	30	100	<30	40	50	40
Potassium (Filtered)		2			7130	1950	3940	1550	2610	1470	2600	- 50	40
	µg/L			-	7130	1950	3940	1550	2010	1470	2600		1
Silicon (Filtered)	µg/L	10					-	-				-	_
Strontium (Filtered)	µg/L	0.1		_	-	-		-	*	× .	-	×	~
Selenium (Filtered)	µg/L	1	50	11.119.		/21.11				100000	-	-	-
Sodium (Filtered)	µg/L	10	200000	101070	170,000	151,000	242,000	108,000	206,000	120,000	213,000	14.	- 2
Silver (Filtered)	µg/L	0.01			-	-		-	4		-	-	- 3
Tin (Filtered)	µg/L	0.01			-		-	-		-			-
Titanium (Filtered)	μg/L	0.1				-	-	-	-	-	-	-	-
Thallium (Filtered)	µg/L	0.2			-	-	-	-	-	-	-	-	-
Uranium (Filtered)	µg/L	0.001	20		-	-	-	-	-	-	-	-	-
Vanadium (Filtered)	µg/L	0.03	1000		-	-		-	5	-		-	94
Zinc (Filtered)	µg/L	2	5000		5	<2	3	4	11	2	3	<10	<5
organics							_		*	-	-		
Alkalinity (as CaCO3)	mg/L	2	500	373	539	336	507	322	493	352	429	379	516
Hardness (as CaCO3) (Filtered)	mg/L	0.05	500					-	-			2270	2160
Solids - Total Dissolved (TDS)	mg/L	3	500	389	4040	3010	4489	1900	3690	3100	4070	2020	2110
Oxygen Demand - Chemical (COD)	mg/L	5		505	69	29	57	16	45	25	47	29	35
Solids - Total Suspended (TSS)	mg/L	2			<2	2	5	86	4	246	83	46	37
	-	14	5	_	-			- 00	- "	240	1	-	31
Organic Carbon - Dissolved (DOC) (Filtered)	mg/L	2	. 0	-	<4	<4	<4	<4	<4	<4	5	<3	<3
Oxygen Demand - Biological (BOD)	mg/L			-									
Phenois (4AAP)	mg/L	0.001		0.50	0.003	0.001	0.006	0.003	0.008	0.004	<0.001	<0.002	<0.00
Sulphate	mg/L	0.2	500	253	2100	1100	2400	880	2200	1600	2300	1680	1910
Ammonia	mg/L	0.01	-		0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.02	0.04
Nitrate (as N)	mg/L	0.05	10	3.31	3.84	5.72	11.3	2.62	5.89	5.76	7.25	7.2	6.04
Nitrite (as N)	mg/L	0.03	1		0.03	<0.03	<0.03	<0.03	<0.03	<0.03	< 0.03	<0.5	0.24
Total Kjeldahl Nitrogen (TKN)	mg/L	0.1			1.1	0.7	2.3	<0.5	0.7	0.9	1.4	1	1.2
Conductivity (lab)	μS/cm	1	-	-	3990	3040	4140	2070	3810	2880	4180	3610	3750
pH (Lab)	-	0.05	6.5-8.5		7.16	7.67	7.52	7.33	7.76	7.79	7.53	7.65	7.83
ld		11											
DO (Field)	mg/L				-	1 -		7.5	7.2	6.6	8.2	8.28	6.61
Redox Potential (Field)	mV	1	-		-	-	-	118	165	224	101	88	60
	°C				- W -	1 2	-	9.3	11.3	12.9	11.3	12.4	10.1
					4			0.0	11.0	12.0	4	12.7	10.1
Temp (Field) Conductivity (field)	µS/cm				-		1	1708	1058	2658	2827	2946	1393



Table 4: Groundwater Quality - Overburden/Upper Bedrock

	100	CI.	ODWQS	RUC	TW06-2	TW06 2								
100	Unit	RDL	1		2011-10-01	2012-05-15	2012-09-25	2013-06-04	2013-10-30	2014-06-09	2014-11-14	2015-05-19	2015-11-03	2016-05-1
etals		1	1000		10000							~		
Aluminium (Filtered)	µg/L	10	100		-			<10	1			-	-	-
Antimony (Filtered)	μg/L	0.2	6		100	-	-	<0.2	-	-	-	-	-	-
Arsenic (Filtered)	μg/L	0.1	25		0.5	0.5	0.4	0.7	0.6	0.4	0.6	<0.2	0.5	<0.2
Barium (Filtered)	µg/L	0.01	1000	273	256	121	227	109	280	136	132	127	232	131
Boron (Filtered)	µg/L	0.2	5000	2507	193	284	151	221	211	206	266	226	248	270
Beryllium (Filtered)	µg/L	0.02			-	100	140	< 0.02						-
Bismuth (Filtered)	µg/L	0.01						<0.01	5-1				-	-
Calcium (Filtered)	µg/L	10			195,000	160,000	168,000	143,000	183,000	163,000	171,000	151,000	225,000	163,000
Cadmium (Filtered)	µg/L	0.003	5	-	0.017	< 0.003	0.009	0.01	0.02	0.015	0.003	0.007	0.016	<0.003
Chloride	µg/L	200	250000	126000	46,000	26,000	30,000	23,000	36,000	31,000	28,000	23,000	49,000	27,000
Chromium (III+VI) (Filtered)	µg/L	0.03	50		1.1	<0.5	<0.5	0.6	1.8	0.69	1.66	0.08	0.18	0.46
Cobalt (Filtered)	µg/L	0.002			-	-		0.496		-	-		-	-
Copper (Filtered)	µg/L	0.02	1000		2.5	1.2	1.7	1.1	2.5	1.49	2.33	4.22	2.36	0.81
Iron (Filtered)	µg/L	2	300	154	4	<3	64	<3	22	<2	3	14	66	31
Lithium (Filtered)	µg/L	1	755	- 11				<1			120			-
Lead (Filtered)	µg/L	0.01	10		0.1	0.05	0.04	0.02	0.05	0.04	<0.01	0.04	0.08	< 0.01
Manganese (Filtered)	µg/L	0.01	50	25.52	926	54	1110	43.1	1240	47.6	7.44	122	1230	139
Magnesium (Filtered)	µg/L	1	- 00	20.02	11.900	13.000	10.200	10.600	11.800	12.100	14.500	12.200	20.300	11.800
Mercury (Filtered)	µg/L	0.01	1		- 11,800	10,000	10,200	- 10,000	< 0.01	<0.01	<0.01	12,200	<0.01	<0.01
Molybdenum (Filtered)	µg/L	0.01	-			1		0.08	-0.01		-0.01		-0.01	-0.01
Nickel (Filtered)	µg/L	0.01				-	1	2.4	1	-	-		1 :	1
Phosphorus (Filtered)	µg/L	3	-			-	-	<9	30	40	<30	<30	<30	6
Potassium (Filtered)		2			6230	15,300	5820	12,200	7020	12,700	11,900	10,600	5330	12,900
Silicon (Filtered)	µg/L	10		_	0230	15,300	5620	5090	7020	12,700	11,900	10,000	5550	12,800
	µg/L	_				-	_	395	_	_	-	_		_
Strontium (Filtered)	µg/L	0.1		_	74	1	- 75			~		74.	-	
Selenium (Filtered)	µg/L	1	50	404070	05.000		00.000	<1	00 400		07.000		44.400	00.500
Sodium (Filtered)	µg/L	10	200000	101070	25,200	27,200	22,900	17,000	23,100	22,800	37,000	20,600	44,400	23,500
Silver (Filtered)	µg/L	0.01				2 -	-	<0.01			-		-	- 2
Tin (Filtered)	µg/L	0.01				-	-	0.03	_	-	-	-		-
Titanium (Filtered)	µg/L	0.1			-		7	0.3	-	-	-	-	-	-
Thallium (Filtered)	µg/L	0.2	-		2.5	131		<0.2		-	-	-	-	-
Uranium (Filtered)	µg/L	0.001	20	-			-	0.824		-	-	-	-	-
Vanadium (Filtered)	µg/L	0.03	-			4.		0.38		~		35		-
Zinc (Filtered)	µg/L	2	5000		2	7	3	4	<2	3	<2	<2	<2	<2
organics											,			
Alkalinity (as CaCO3)	mg/L	2	500	373	491	451	420	371	468	458	366	391	601	354
Hardness (as CaCO3) (Filtered)	mg/L	0.05	500					400						-
Solids - Total Dissolved (TDS)	mg/L	3	500	389	666	566	557	549	611	634	694	563	820	563
Oxygen Demand - Chemical (COD)	mg/L	5			18	26	16	16	17	19	21	20	22	17
Solids - Total Suspended (TSS)	mg/L	2			15		2			-	-	2	<3	<2
Organic Carbon - Dissolved (DOC) (Filtered)	mg/L	1	5		12	13,5	5	12.1	9	10.1	6	- A	-	-
Oxygen Demand - Biological (BOD)	mg/L	2			2	-	-	-	-		4	<4	<4	<4
Phenois (4AAP)	mg/L	0.001						-	<0.002	< 0.002	< 0.002	< 0.001	0.001	<0.001
Sulphate	mg/L	0.2	500	253	52	35	34	29	34	46	170	58	64	72
Ammonia	mg/L	0.01			2.3	1	1.6	1	2.3	1.3	<0.1	0.4	0.6	0.7
Nitrate (as N)	mg/L	0.05	10	3.31	0.6	0.48	<0.05	0.16	0.06	0.44	4.22	0.16	0.06	0.23
Nitrite (as N)	mg/L	0.03	1		-	-		-	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Total Kjeldahl Nitrogen (TKN)	mg/L	0.1						-	2.4	1.6	<0.5	0.8	1.2	1.1
Conductivity (lab)	µS/cm	1			1110	941	981	812	1030	976	1040	811	1310	888
pH (Lab)	-	0.05	6.5-8.5	-	7.85	7.73	7.73	7.89	7.69	7.9	8.06	7.89	7.76	8.06
A Secretaria de la Constantina del Constantina de la Constantina d		1	-		1			1.00			2100			
blei		1				1 +	1		1 4	1	1 2		1 .	
DO (Field)	ma/l													
DO (Field)	mg/L	1			- 5	+			_	_				
DO (Field) Redox Potential (Field)	mV				J= 52	-	-	-	-	-	-	-	-	-
DO (Field)					-	+			-					



Table 4: Groundwater Quality - Overburden/Upper Bedrock

	Unit	RDL	ODWQS	,,00	TW06-2 2016-10-26	TW06-2 2018-06-11	TW06-2 2018-11-05	TW06-2 2019-05-29	TW06-2 2019-10-28	TW06-2 2020-05-27	TW06-2 2020-11-12	TW06 2 2021-06-28	TW06-2 2021-11-1
etals			1774	-	-								
Aluminium (Filtered)	µg/L	10	100			-							
Antimony (Filtered)	µg/L	0.2	6		-	-	-	-	-	-	-	-	-
Arsenic (Filtered)	μg/L	0.1	25		<0.2	0.2	<0.2	<0.2	<0.2	<0.2	0.4	0.2	0.2
Barium (Filtered)	µg/L	0.01	1000	273	360	152	354	114	287	157	241	237	128
Boron (Filtered)	µg/L	0.2	5000	2507	267	256	175	80	359	217	361	193	218
Beryllium (Filtered)	µg/L	0.02	-								- 1	1 - 1	-
Bismuth (Filtered)	µg/L	0.01					0.0						-
Calcium (Filtered)	µg/L	10			256,000	205,000	324,000	112,000	252,000	140,000	218,000	-	-
Cadmium (Filtered)	µg/L	0.003	5	-	0.021	0.007	0.012	0.007	0.012	0.004	0.014	0.017	< 0.013
Chloride	µg/L	200	250000	126000	58,000	35,000	180,000	5000	110,000	24,000	53,000	36,400	24,400
Chromium (III+VI) (Filtered)	µg/L	0.03	50		0.37	0.1	0.23	0.12	0.14	0.11	<0.08	<1	<1
Cobalt (Filtered)	µg/L	0.002				-	7	-	-		-	-	-
Copper (Filtered)	µg/L	0.02	1000		1.69	1.35	2.08	0.9	1.9	1.2	2.4	2.6	2.5
Iron (Filtered)	µg/L	2	300	154	17	<7	39	11	10	<7	18	17	11
Lithium (Filtered)	µg/L	1		704		-		1	10	-	10	- //	1
Lead (Filtered)	µg/L	0.01	10		<0.01	0.03	0.09	0.01	0.03	<0.01	0.03	0.06	<0.02
Manganese (Filtered)	µg/L	0.01	50	25.52	1970	34.9	1390	463	1320	74.7	781	-	
Magnesium (Filtered)	µg/L	1	30	20.02	16,200	12,700	17,500	5330	15,100	12,000	12,600	1	-
Mercury (Filtered)	µg/L	0.01	1		<0.01	0.03	<10	<10	<10	<10	<10	<0.02	<0.02
Molybdenum (Filtered)		0.01	-4		<0.01	-	-10	-10	- 10	- 10	- 10	40.02	-0.02
Nickel (Filtered)	µg/L	0.01	_			1	-	1	-	1	1	-	-
	µg/L		-							1	_		40
Phosphorus (Filtered)	µg/L	3		_	<30	50	<30	<30	30	40	<30	30	-
Potassium (Filtered)	µg/L	2	_		6840	11,400	5260	2320	4390	9650	5990		-
Silicon (Filtered)	µg/L	10			-			~			12	· >	-
Strontium (Filtered)	µg/L	0.1			-	K	×	7-	751			15	-
Selenium (Filtered)	µg/L	1	50	1111111	1000				1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2				
Sodium (Filtered)	µg/L	10	200000	101070	47,700	27,500	39,900	7510	36,600	20,600	37,800		2-
Silver (Filtered)	µg/L	0.01				-		1.0	- 6	-			1
Tin (Filtered)	µg/L	0.01			-	-		-				-	-
Titanium (Filtered)	µg/L	0.1			-	-	-	-	-	-	-	-	-
Thallium (Filtered)	µg/L	0.2			-	-	-	-	-	-	-	-	-
Uranium (Filtered)	µg/L	0.001	20		-	-	-	-	-	-	-	-	-
Vanadium (Filtered)	µg/L	0.03	1000		165	-	-			14.	14.	(A)	-
Zinc (Filtered)	µg/L	2	5000		2	<2	3	<2	2	2	<2	<5	<5
organics													
Alkalinity (as CaCO3)	mg/L	2	500	373	438	392	434	276	415	361	446	419	343
Hardness (as CaCO3) (Filtered)	mg/L	0.05	500		-			10	-	-		582	388
Solids - Total Dissolved (TDS)	mg/L	3	500	389	1010	577	1091	489	909	454	757	577	411
Oxygen Demand - Chemical (COD)	mg/L	5			10	19	14	<8	11	16	14	9	29
Solids - Total Suspended (TSS)	mg/L	2			<2	<2	14	7	3	15	20	24	56
Organic Carbon - Dissolved (DOC) (Filtered)	mg/L	1	5			- 2		- 0					-
Oxygen Demand - Biological (BOD)	mg/L	2			<4	<4	5	<4	<4	<4	<4	3	3
Phenols (4AAP)	mg/L	0.001			0.002	0.001	0.005	<0.001	0.004	0.001	< 0.001	< 0.002	< 0.002
Sulphate	mg/L	0.2	500	253	310	70	220	23	140	49	98	106	50
Ammonia	mg/L	0.01			1.2	1.2	1.1	0.4	0.7	1.3	1.6	0.16	0.1
Nitrate (as N)	mg/L	0.05	10	3.31	0.13	1.09	0.06	1.98	0.15	0.17	0.08	1.94	1.01
Nitrite (as N)	mg/L	0.03	1		< 0.03	<0.03	<0.03	<0.03	< 0.03	<0.03	0.07	<0.05	<0.05
Total Kjeldahl Nitrogen (TKN)	mg/L	0.1			1.6	1.5	1.1	0.6	0.6	1.6	1.8	0.6	0.5
Conductivity (lab)	µS/cm	1			1390	919	1550	572	1350	783	1110	1080	783
pH (Lab)	porcini	0.05	6.5-8.5		7.24	7.92	7.41	8.04	7.77	7.97	7.74	7.72	7.88
eld (Lab)	1-	0.00	0.0-0.5		7.24	1.02	7,44	0,04	1 1761	1.51	1 7.74	1.12	7.00
	ma/l	1					1	4.2	7	6.2	8.3	2.82	3.84
DO (Field)	mg/L	-				-	-		167	6.3	55		
Redox Potential (Field)	mV °C	-					_	118		124		53	29
Temp (Field)		-	-		-	-	-	8.6	11.3	12.5	11.3	12.1	9.5
Conductivity (field)	µS/cm	-			-	-		517	1006	626	731	1012	341
pH (Field)	-		6.5-8.5				7	7.71	7.01	7.27	7.4	7.16	7.12



Table 4: Groundwater Quality - Overburden/Upper Bedrock

	Unit	RDL	ODWQS	1.00	TW07-2 2011-10-01	TW07-2 2012-05-15	TW07-2 2012-09-25	TW07-2 2013-06-04	TW07-2 2013-10-30	TW07-2 2014-06-09	TW07-2 2014-11-14	TW07-2 2015-05-19	TW07-2 2015-11-03	TW07-2
etals	Ont	TUL			2011-10-01	2312-03-15	2012-08-20	2013-00-04	12013-10-30	2014-00-09	2014-11-14	2010-00-19	2013-11-03	2010-00-1
Aluminium (Filtered)	Lucil	10	100			T		50	1 .		1 .	1 .	1	1 .
Antimony (Filtered)	µg/L	0.2	6	-	-			<0.2		-				-
	µg/L		25	-		1		2						4.5
Arsenic (Filtered)	µg/L	0.1	1000	070	2.4	2.1	1.9	167	2.1	1.7	192	1.3	2.4	1.5
Barium (Filtered)	µg/L	0.01		273						100			202	
Boron (Filtered)	µg/L	0.2	5000	2507	590	669	416	358	421	418	615	479	513	821
Beryllium (Filtered)	µg/L	0.02	_		-		-	<0.02	-					
Bismuth (Filtered)	µg/L	0.01						<0.01		-	-	-		-
Calcium (Filtered)	µg/L	10			246,000	294,000	186,000	209,000	234,000	289,000	266,000	328,000	334,000	376,000
Cadmium (Filtered)	µg/L	0.003	5	222222	0.023	<0.003	<0.003	0.006	<0.003	<0.003	0.003	<0.003	<0.003	< 0.003
Chloride	µg/L	200	250000	126000	150,000	110,000	84,000	73,000	94,000	170,000	140,000	150,000	270,000	210,000
Chromium (III+VI) (Filtered)	µg/L	0.03	50		1.8	0.6	<0.5	<0.5	2.2	0.26	6.08	0.03	0.03	0.36
Cobalt (Filtered)	µg/L	0.002	-		-	-	-	1.4	-	-	-	-	-	
Copper (Filtered)	μg/L	0.02	1000		1.1	1.1	0.8	1.2	2.8	1.46	2.82	0.08	0.29	0.11
Iron (Filtered)	µg/L	2	300	154	7580	9420	5470	6840	7170	8520	7750	10,100	10,400	10,700
Lithium (Filtered)	µg/L	1				2		2			12-12-	1		
Lead (Filtered)	µg/L	0.01	10		<0.02	0.02	0.04	0.11	<0.02	0.11	0.02	<0.01	0.05	0.05
Manganese (Filtered)	µg/L	0.01	50	25.52	2030	2350	1460	1630	1880	1910	1940	2630	2480	2490
Magnesium (Filtered)	µg/L	1			26,000	31,900	20,100	23,700	24,800	32,300	27,900	35,600	38,100	37,400
Mercury (Filtered)	µg/L	0.01	1			4	140		< 0.01	<0.01	<0.01	-	<0.01	<0.01
Molybdenum (Filtered)	µg/L	0.01			-	-	40	0.37	1	-	-	-	-	-
Nickel (Filtered)	µg/L	0.1				4.	14-	4.9	1	-	-	-	-	-
Phosphorus (Filtered)	µg/L	3		-		1 - 6 -		12	40	<30	<30	180	<30	11
Potassium (Filtered)	µg/L	2		-	3040	3150	2330	2220	2860	2980	3450	2320	3060	2600
Silicon (Filtered)	µg/L	10			- 12.1	1	4.	6270	A	100	-		1	1 -
Strontium (Filtered)	µg/L	0.1			-	-	-	461	1	-	- 4	-	(*)	
Selenium (Filtered)	µg/L	1	50		-			<1		-		-		1
Sodium (Filtered)	µg/L	10	200000	101070	95,300	84,500	60,600	42,600	52,400	63,900	88,200	79,200	144,000	122,000
Silver (Filtered)	µg/L	0.01	200000	101010	50,000	- 04,000		<0.01	02,400	- 00,000	00,200	70,200	144,000	722,000
Tin (Filtered)	µg/L	0.01		_		1 - 5 -	1	0.04	+ -		-	1 2	1	1
Titanium (Filtered)	µg/L	0.1				-	5	3.6	1 4		-	-	-	<del> </del> -
Thallium (Filtered)	µg/L	0.2			-	1	-	<0.2	-		+ -	+ -	+ -	+
Uranium (Filtered)		0.001	20	_		-	- 2	0.648		1	+	+	+ -	+-:
	µg/L	0.001	20	-		1 2	120	0.646	1-	-	<del>                                     </del>	<del>                                     </del>	+ -	+
Vanadium (Filtered)	µg/L	-	5000	_			<2				7	<2	<2	<2
Zinc (Filtered)	µg/L	2	5000	_	3	5	<2	<2	<2	<2	/	<2	<2	<2
organics	1	-		070	010	I are	000	200		1 000		270	074	670
Alkalinity (as CaCO3)	mg/L	2	500	373	340	350	322	332	336	382	391	376	371	373
Hardness (as CaCO3) (Filtered)	mg/L	0.05	500			-	-	619		-	-	-	-	7.00
Solids - Total Dissolved (TDS)	mg/L	3	500	389	1200	1200	829	957	989	1390	1270	1380	1710	1650
Oxygen Demand - Chemical (COD)	mg/L	5			<8	11	14	<8	8	22	21	15	15	19
Solids - Total Suspended (TSS)	mg/L	2	-		17	-	3					40	20	23
Organic Carbon - Dissolved (DOC) (Filtered)	mg/L	1	5		6	8.8	4.1	5.6	3.7	6.6	5.1	-	100	-
Oxygen Demand - Biological (BOD)	mg/L	2			<2	-	-	-	-			<4	<4	<4
Phenois (4AAP)	mg/L	0.001			-	1			<0.002	<0.002	0.005	<0.001	0.002	<0.001
Sulphate	mg/L	0.2	500	253	410	190	220	280	310	410	460	380	490	550
Ammonia	mg/L	0.01			0.1	<0.1	<0.1	0.2	0.2	0.3	0.3	0.2	0.2	0.2
Nitrate (as N)	mg/L	0.05	10	3.31	<0.05	<0.05	0.25	<0.06	<0.06	1.16	<0.06	<0.06	< 0.06	< 0.06
Nitrite (as N)	mg/L	0.03	1		-	-		-	<0.03	< 0.03	<0.03	< 0.03	< 0.03	<0.03
Total Kjeldahl Nitrogen (TKN)	mg/L	0.1				-			<0.5	<0.5	<0.5	1.1	<0.5	<0.5
Conductivity (lab)	µS/cm	1		-	1740	1910	1330	1250	1440	1760	1770	1810	2230	2200
pH (Lab)	-	0.05	6.5-8.5	-	7.9	7.52	7.78	7.69	8.02	7.67	7.88	7.51	7.4	7.85
eld		177.1	-		-					***********			-	
DO (Field)	mg/L				41.	1 4		1 -	1 -	1 -	1	1	1 -	1
Redox Potential (Field)	mV		-		-		-	-	-	-	-	-	-	
Temp (Field)	°C	1			1	1	-	+ -	+	<del>                                     </del>	+ -	+ -	+	+
Conductivity (field)	uS/cm	1	-		- 1	1	<del>                                     </del>	<del>                                     </del>	+ -	-	<del>-</del>	<del>                                     </del>	+ -	+ -
Conductivity (field)	HOVEILL	1					1 -	1 -	1 -	1 -	1 -	1 -		



Table 4: Groundwater Quality - Overburden/Upper Bedrock

	1164	DDI	ODWQS	RUC	TW07-2								
etals	Unit	RDL			2016-10-26	2018-06-11	2018-11-05	2019-05-29	2019-10-28	2020-05-27	2020-11-12	2021-06-28	2021-11-10
CONT. The Contract of the Cont	Luga	10	100		_	1	1	1	1	1	1	1	1
Aluminium (Filtered)	µg/L	0.2		_						-	-	-	-
Antimony (Filtered)	µg/L		6 25	-		1							
Arsenic (Filtered)	μg/L	0.1	-	070	2.2	1.4	1.7	1.2	0.7	0.3	1	<3	1.7
Barium (Filtered)	μg/L	0.01	1000	273	143	132	128	128	96.5	55.3	96.2	105	100
Boron (Filtered)	μg/L	0.2	5000	2507	605	1100	939	1250	1490	1250	1390	1500	1560
Beryllium (Filtered)	μg/L	0.02									-	-	-
Bismuth (Filtered)	μg/L	0.01			-								
Calcium (Filtered)	μg/L	10			246,000	384,000	341,000	339,000	263,000	257,000	244,000	-	-
Cadmium (Filtered)	µg/L	0.003	5	-	<0.003	0.004	<0.003	0.004	0.005	<0.003	0.003	<0.3	<0.015
Chloride	µg/L	200	250000	126000	130,000	170,000	150,000	280,000	130,000	130,000	140,000	176,000	138,000
Chromium (III+VI) (Filtered)	µg/L	0.03	50		0.53	0.23	0.13	0.14	0.15	<0.08	0.14	<3	<1
Cobalt (Filtered)	μg/L	0.002			-	-	1 2 2 2	-	-	-		-	-
Copper (Filtered)	µg/L	0.02	1000		0.51	0.36	0.82	1.2	0.3	1.2	0.7	<2	0.1
Iron (Filtered)	µg/L	2	300	154	7250	9540	7630	8410	267	93	1520	6410	5580
Lithium (Filtered)	µg/L	1			-				-	-	-	-	-
Lead (Filtered)	µg/L	0.01	10		0.05	0.02	<0.01	0.01	0.03	<0.01	0.06	<0.9	<0.04
Manganese (Filtered)	µg/L	0.01	50	25.52	1950	2810	2550	2470	2250	754	1660	-	-0
Magnesium (Filtered)	µg/L	1			27,400	36,200	32,600	41,000	30,500	30,500	26,800	1	
Mercury (Filtered)	μg/L	0.01	1		< 0.01	0.09	<10	<10	<10	<10	<10	< 0.02	<0.02
Molybdenum (Filtered)	µg/L	0.01			2.	-			1		1.2	1	1
Nickel (Filtered)	µg/L	0.1				1	1	1 .	1 2	-	1 2	1 -	1
Phosphorus (Filtered)	µg/L	3	-		<30	50	<30	220	40	250	150	170	30
Potassium (Filtered)	µg/L	2			2450	2730	3000	2460	2480	2430	2800	- 170	
Silicon (Filtered)		10			2450	2750	3000	2400	2400	2430	2000	1	-
Strontium (Filtered)	µg/L	0.1			-	_	1 0	_	_	100		1	_
	µg/L	1	50		-		1	-	Ψ1	1	-	-	-
Selenium (Filtered)	µg/L		200000	404070		-	1			-		-	1
Sodium (Filtered)	µg/L	10	200000	101070	87,100	92,700	94,500	127,000	123,000	108,000	114,000		
Silver (Filtered)	µg/L	0.01						-		-	-	-	- 5
Tin (Filtered)	µg/L	0.01			-	-			-		-		-
Titanium (Filtered)	μg/L	0.1			7	-	-	-	-	-	-	-	-
Thallium (Filtered)	µg/L	0.2				-	-	-	-	-	-	-	-
Uranium (Filtered)	µg/L	0.001	20	-	-	-	-	-	-	-	-	-	-
Vanadium (Filtered)	µg/L	0.03	-			-	-	-	-	~	-	-	5
Zinc (Filtered)	µg/L	2	5000		6	2	3	4	5	<2	3	<5	<5
organics													
Alkalinity (as CaCO3)	mg/L	2	500	373	337	335	323	382	345	341	348	307	357
Hardness (as CaCO3) (Filtered)	mg/L	0.05	500									760	681
Solids - Total Dissolved (TDS)	mg/L	3	500	389	1070	1620	1351	1590	1320	1230	1200	939	888
Oxygen Demand - Chemical (COD)	mg/L	5			17	17	15	11	13	20	14	14	32
Solids - Total Suspended (TSS)	mg/L	2			19	23	16	224	19	254	200	134	44
Organic Carbon - Dissolved (DOC) (Filtered)	mg/L	1	5				-		1		1	-	1
Oxygen Demand - Biological (BOD)	mg/L	2			<4	<4	<4	<4	<4	<4	<4	<3	<3
Phenols (4AAP)		0.001			0.001	0.003	0.004	0.007	0.002	0.005	< 0.001	<0.002	<0.002
Sulphate	mg/L	0.2	500	253	400	560	490	520	460	470	410	362	360
Ammonia	mg/L	0.01		1	0.2	0.1	0.2	0.2	0.2	0.1	0.1	0.14	0.16
Nitrate (as N)	mg/L	0.05	10	3.31	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.06	<0.05
Nitrite (as N)	mg/L	0.03	1		<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05	<0.05
Total Kjeldahl Nitrogen (TKN)	mg/L	0.1			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	0.5	0.4
Conductivity (lab)	μS/cm	1			1460	1920	1740	2140	1730	1560	1610	17,100	1620
pH (Lab)	µS/Gil	0.05	6.5-8.5		7.39	7.65	7.42	7.07	7.78	7.53	7.61	7.59	7.87
	1-	0.05	0.0-0.0		7.59	7.05	1.42	7.07	1.10	7.55	7.01	1.58	1.01
eld	lance to	-			-	T	т	1 00		1 00	1	0.54	0.46
DO (Field)	mg/L				4	-	1 -	6.6	5.2	8.9	4.7	2.51	3.19
Redox Potential (Field)	mV	-		-		-	-	-15	162	211	-15	22	56
Temp (Field)	°C	-			- 5/	-		8.5	11.9	13,4	11.9	11.9	11
Conductivity (field)	µS/cm		-		~		-	1694	1751	1438	1065	1575	669
pH (Field)	-		6.5-8.5			-		7.03	6.35	7.17	7.57	7.02	6.92



Table 4: Groundwater Quality - Overburden/Upper Bedrock

	Unit	RDL	ODWQS	100	TW08-2 2014-12-23	TW08-2 2015-05-19	TW08-2 2015-11-03	TW08-2 2016-05-19	TW08-2 2019-05-29	TW08-2 2020-05-27	TW08-2 2020-11-12	TW08-2
etals	Ont	T			2014-12-20	2010-00-19	12010-11-00	2010-00-19	2019-00-29	2020-00-21	12020-11-12	2021-11-1
Aluminium (Filtered)	µg/L	10	100			Ι .	1 .	1	1 .	1	1	
Antimony (Filtered)	µg/L	0.2	6				-	-	-	-	-	_
Arsenic (Filtered)	µg/L	0.1	25		<0.2	<0.2	0.5	<0.2	<0.2	<0.2	0.3	<0.1
Barium (Filtered)	µg/L	0.01	1000	273	30.3	25.4	113	30.4	29.3	21.9	43.6	31
Boron (Filtered)	µg/L	0.2	5000	2507	8.5	30.7	21.9	11	13	6	93	10
Beryllium (Filtered)	µg/L	0.02	5000	2307	0.5	30.7	21.9	- 1	- 13	-	- 33	- 10
Bismuth (Filtered)	µg/L	0.02					-		-	1	-	
Calcium (Filtered)	µg/L	10			98,500	99,800	168,000	93,800	98,300	85,300	128,000	-
Cadmium (Filtered)		0.003	5		<0.003	<0.003	0.005	<0.003	<0.003	<0.003	<0.003	<0.015
Chloride	μg/L μg/L	200	250000	126000	1100	2000	5000	2000	2000	2000	3000	2800
Chromium (III+VI) (Filtered)	-	0.03	50	120000	<0.03	0.08	<0.03	0.36	0.2	0.19	<0.08	<1
Cobalt (Filtered)	µg/L	0.002	50	_	VU.U3	0.08	VU.03	0.36	0.2	0.19	V0.06	~1
Copper (Filtered)	µg/L	0.002	1000		0.84	0.3	0.74	1.07	0.7	0.5	1.3	0.4
Iron (Filtered)	µg/L	-	300	154	2	4	33	16	20	<7	<7	<5
	µg/L	2	300	154		4		10	20			40
Lithium (Filtered)	μg/L	1	40		201		0.00		0.02		0.00	
Lead (Filtered)	µg/L	0.01	10	05.50	0.01	<0.01	0.09	0.01		<0.01	0.02	<0.02
Manganese (Filtered)	µg/L	0.01	50	25.52	2.9	1.16	70.5	0.24	0.91	0.13	1.67	
Magnesium (Filtered)	µg/L	1 0.04	-	-	2950	2760	6720	2490	2820	2050	3050	
Mercury (Filtered)	μg/L	0.01	1	_	0.04	<0.01	<0.01	<0.01	<10	<10	<10	<0.02
Molybdenum (Filtered)	µg/L	0.01			-			144	-	-	-	
Nickel (Filtered)	µg/L	0.1				-	-	-	-	-	-	-
Phosphorus (Filtered)	µg/L	3		-	360	<30	<30	6	<30	220	770	820
Potassium (Filtered)	µg/L	2			584	463	2510	657	444	400	1180	*
Silicon (Filtered)	µg/L	10			-			-	19.	2.	- 8	340
Strontium (Filtered)	µg/L	0.1			-	Pr.	~		140			15
Selenium (Filtered)	µg/L	1	50				-	-		-		
Sodium (Filtered)	µg/L	10	200000	101070	1870	1890	4020	1800	2860	1610	2390	-
Silver (Filtered)	µg/L	0.01			-	36			40	8		36
Tin (Filtered)	µg/L	0.01			-				1	1	1	
Titanium (Filtered)	μg/L	0.1			-	-	-	-	-	-	-	-
Thallium (Filtered)	µg/L	0.2			-	-	-	-	-	-	-	-
Uranium (Filtered)	µg/L	0.001	20	-		-	-	-	-	-	-	-
Vanadium (Filtered)	µg/L	0.03			142	-	-	-2-	-	× -	× -	16-
Zinc (Filtered)	µg/L	2	5000		6	3	11	6	3	2	4	<5
organics												
Alkalinity (as CaCO3)	mg/L	2	500	373	258	246	446	207	229	236	1080	252
Hardness (as CaCO3) (Filtered)	mg/L	0.05	500	7 5 - 1 -		-			-		-	272
Solids - Total Dissolved (TDS)	mg/L	3	500	389	300	303	491	277	234	234	397	252
Oxygen Demand - Chemical (COD)	mg/L	5			<8	<8	<8	<8	<8	<8	9	5
Solids - Total Suspended (TSS)	mg/L	2					<2	<2	35		1350	3650
Organic Carbon - Dissolved (DOC) (Filtered)	mg/L	1	5		<1	<1		-	4.	1	-	-
Oxygen Demand - Biological (BOD)	mg/L	2				-	<4	<4	<4		<4	<3
Phenols (4AAP)	mg/L	0.001			< 0.002	<0.002	0.003	< 0.001	< 0.001	< 0.002	< 0.001	< 0.002
Sulphate	mg/L	0.2	500	253	5	5	23	5	8	4	7	4
Ammonia	mg/L	0.01		7.7	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.01
Nitrate (as N)	mg/L	0.05	10	3.31	1.58	1.22	0.17	0.67	0.61	1.08	1.18	1.94
Nitrite (as N)	mg/L	0.03	1		< 0.03	< 0.03	0.07	< 0.03	< 0.03	< 0.03	< 0.03	< 0.05
Total Kjeldahl Nitrogen (TKN)	mg/L	0.1			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.4
Conductivity (lab)	μS/cm	1			465	469	856	448	422	424	523	487
pH (Lab)	-	0.05	6.5-8.5		8.05	8.05	7.93	8.17	8.18	8	7.69	8.05
eld		7.0	The same of the same of									
DO (Field)	mg/L				140		1	-	5.7	8.3	9.9	9.69
Redox Potential (Field)	mV				-		-	-	0.7	45	83	56
Temp (Field)	°C				1	1	1	1	10.1	12.6	-	12.1
Conductivity (field)	µS/cm	1	-		1	-	1		404	365	413	219
pH (Field)	POVOITI		6.5-8.5					-	7.56	7.5	8.04	7.27



Table 4: Groundwater Quality - Overburden/Upper Bedrock

	Unit	RDL	ODWQS	RUC	TW09-2 2011-10-01	TW09-2 2012-05-15	TW09-2 2012-09-25	TW09-2 2013-06-04	TW09-2 2013-10-30	TW09-2 2014-06-09	TW09-2 2014-11-14	TW09-2 2015-05-19	TW09-2 2015-11-03	TW09-2 2016-05-1
etals	O. III	T			1001	120,2 00 10	30 12 00 20	120.00.04	120.001000	12000.00	PARTICIPITY.		12010 11:00	120.00-1
Aluminium (Filtered)	µg/L	10	100		-	1		20	1	1	1		-	
Antimony (Filtered)	µg/L	0.2	6				_	<0.2	_		_	_		-
Arsenic (Filtered)	µg/L	0.1	25		0.2	0.4	0.2	0.4	0.2	0.3	0.3	<0.2	0.4	<0.2
Barium (Filtered)		0.01	1000	273	329	337	297	274	334	108	258	289	292	303
	µg/L		-											1
Boron (Filtered)	µg/L	0.2	5000	2507	11.6	32	12.2	12.9	13.2	19.6	15.8	32.4	16.7	30
Beryllium (Filtered)	µg/L	0.02	_				14/	<0.02			-		_	-
Bismuth (Filtered)	µg/L	0.01			-			<0.01	-	-	-		-	-
Calcium (Filtered)	µg/L	10			101,000	97,200	92,200	98,000	101,000	105,000	103,000	104,000	98,800	109,00
Cadmium (Filtered)	µg/L	0.003	5	-	<0.003	<0.003	<0.003	< 0.003	0.005	0.01	<0.003	0.003	<0.003	0.003
Chloride	µg/L	200	250000	126000	4800	5200	5800	6600	7200	17,000	5600	5000	5000	5000
Chromium (III+VI) (Filtered)	µg/L	0.03	50		<0.5	0.5	< 0.5	<0.5	0.6	0.3	0.25	0.05	< 0.03	0.32
Cobalt (Filtered)	µg/L	0.002			-	-	-	0.09	-	-	-		-	-
Copper (Filtered)	µg/L	0.02	1000		<0.5	<0.5	0.7	<0.5	< 0.5	0.91	0.6	0.48	0.12	0.12
Iron (Filtered)	µg/L	2	300	154	150	72	118	179	117	3	187	228	129	262
Lithium (Filtered)	µg/L	1	700		1		1 2	2	1		1 .			-
Lead (Filtered)	µg/L	0.01	10		<0.02	0.04	0.04	<0.02	< 0.02	0.01	0.05	<0.01	0.01	0.C2
Manganese (Filtered)	µg/L	0.01	50	25.52	32.6	29.6	20.7	21.2	30.4	3.5	29.1	22.3	26.4	22.5
Magnesium (Filtered)	µg/L	1	30	20.02	3640	3620	3320	3820	3830	4890	3890	4000	4320	3600
Mercury (Filtered)	µg/L	0.01	1		3040	3020	3320	3620	<0.01	<0.01	0.05	4000	0.02	<0.01
			-		-	1		0.11	-0.01	VO.01	0.00		0.02	-0.01
Molybdenum (Filtered)	µg/L	0.01			_	-	-		-	-	-	1		-
Nickel (Filtered)	µg/L	0.1	-	_		-		0.8		-00	-20	-20	-20	40
Phosphorus (Filtered)	µg/L	3		-	-		-	12	50	<30	<30	<30	<30	15
Potassium (Filtered)	µg/L	2			890	873	757	849	905	1270	954	760	911	818
Silicon (Filtered)	µg/L	10		-	7.	4	-9.	3460	× -	-	-			- 5
Strontium (Filtered)	µg/L	0.1			PT.	- 4	4	223	×	-		24	~	
Selenium (Filtered)	µg/L	1	50					<1	1.					-
Sodium (Filtered)	µg/L	10	200000	101070	2920	2940	2860	3120	3210	7780	3540	3360	3870	3340
Silver (Filtered)	µg/L	0.01				- 4	2	< 0.01	100		-	2	1 3	1 2
Tin (Filtered)	µg/L	0.01	-			1:	-	0.03			-		1	
Titanium (Filtered)	µg/L	0.1			1 -	-	-	0.3	-	-	-	-	-	-
Thallium (Filtered)	µg/L	0.2			-	1	-	<0.2			-	-	-	_
Uranium (Filtered)	µg/L	0.001	20		-	1		0.178	-		<u> </u>	_	-	-
Vanadium (Filtered)	µg/L	0.03				4	-	0.66			140		1	1
Zinc (Filtered)	ug/L	2	5000	_	<2	3	2	<2	<2	3	2	2	-<2	<2
organics	IPg/L	-	5000	_	12	3			-2	3				1
Alkalinity (as CaCO3)	mail	2	500	373	252	252	228	216	236	250	266	230	266	235
	mg/L		500	3/3		1	1	261		230		230	_	-
Hardness (as CaCO3) (Filtered)	mg/L	0.05		200	-	-	-		-				-	774
Solids - Total Dissolved (TDS)	mg/L	3	500	389	309	326	300	306	280	363	300	286	303	311
Oxygen Demand - Chemical (COD)	mg/L	5			24	<8	10	17	<8	9	<8	10	<8	<8
Solids - Total Suspended (TSS)	mg/L	2	-		<2	-					-	<2	<2	<2
Organic Carbon - Dissolved (DOC) (Filtered)	mg/L	1	5		2.3	6.3	2	4	1.8	2.8	2.5	14.	-	-
Oxygen Demand - Biological (BOD)	mg/L	2			<2	-	-	-	-			<4	<4	<4
Phenols (4AAP)	mg/L	0.001							<0.002	< 0.002	0.005	0.005	< 0.001	<0.00
Sulphate	mg/L	0.2	500	253	12	15	13	16	13	22	15	16	13	16
Ammonia	mg/L	0.01	1		0.4	0.4	<0.1	<0.1	0.2	0.1	0.2	0.2	0.2	0.2
Nitrate (as N)	mg/L	0.05	10	3.31	<0.05	< 0.05	0.12	0.07	0.06	<0.06	<0.06	<0.06	<0.06	<0.06
Nitrite (as N)	mg/L	0.03	1		-	-		-	<0.03	<0.03	< 0.03	<0.03	<0.03	< 0.03
Total Kjeldahl Nitrogen (TKN)	mg/L	0.1			-	-	-	1 -	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Conductivity (lab)	µS/cm	1			517	505	494	463	499	543	524	444	521	502
pH (Lab)	µS/GH	0.05	6.5-8.5		7.95	7.89	8	7.8	8.2	7.94	8.07	7.64	7.82	8.25
Assert Assertation	1-	0.05	0.0-0.0		7.95	7.09	0	1.0	0.2	7.94	0.07	7.04	1.02	0.25
eld	1	1				r.	_	1	_		F			1
DO (Field)	mg/L				-				8	F	141			1
Redox Potential (Field)	mV				2	-	-	-	-	-	-	-	-	<del>-</del>
Temp (Field)	°C				100	J.D.	-	-	-	-	-	-	-	-
Conductivity (field)	μS/cm			-		-	-	-	-	-	-	-	-	-
pH (Field)	- 1-		6.5-8.5		1 - 2 -		-	-	-	-	-	-	-	T -



Table 4: Groundwater Quality - Overburden/Upper Bedrock

	Unit	RDL	ODWQS	RUC	TW09-2 2016-10-26	TW09-2 2018-06-11	TW09-2 2018-11-05	TW09-2 2019-05-29	TW09-2 2019-10-28	TW09-2 2020-05-27	TW09-2 2020-11-12	TW09-2 2021-06-28	TW09-2 2021-11-1
etals			1994										
Aluminium (Filtered)	µg/L	10	100			-			-		-		-
Antimony (Filtered)	µg/L	0.2	6		-	-	-	-	-	-	-	-	-
Arsenic (Filtered)	µg/L	0.1	25		0.2	<0.2	<0.2	0.4	<0.2	<0.2	0.2	<0.1	0.2
Barium (Filtered)	µg/L	0.01	1000	273	263	237	280	487	210	205	205	276	259
Boron (Filtered)	µg/L	0.2	5000	2507	16	25	10	26	11	8	58	14	12
		0.02	5000	2307	16	25	10	20	- "	0	56	14	12
Beryllium (Filtered)	µg/L		_			-			-	-	_	-	_
Bismuth (Filtered)	μg/L	0.01			-		-				-	-	-
Calcium (Filtered)	μg/L	10			90,700	106,000	117,000	281,000	86,800	88,300	108,000	-	-
Cadmium (Filtered)	µg/L	0.003	5	-	<0.003	0.011	<0.003	0.064	<0.003	0.005	<0.003	<0.015	<0.015
Chloride	µg/L	200	250000	126000	5000	4000	4000	4000	4000	4000	5000	4500	6200
Chromium (III+VI) (Filtered)	µg/L	0.03	50		0.07	0.06	0.12	4.01	0.09	0.1	<0.08	2	1
Cobalt (Filtered)	µg/L	0.002		-	-		-	-	-	-		-	-
Copper (Filtered)	μg/L	0.02	1000		0.41	0.33	0.26	8.1	0.7	0.9	0.5	0.2	1.9
Iron (Filtered)	µg/L	2	300	154	36	123	67	2820	17	<7	23	218	<5
Lithium (Filtered)	µg/L	1	955	107		120	-	-	-	-	-	-	-
Lead (Filtered)		0.01	10		0.01	0.04	<0.01	2.49	0.04	0.02	0.01	0.08	0.47
	µg/L			25.52								1	-
Manganese (Filtered)	µg/L	0.01	50	25.52	12.04	19.4	27.6	273	7.26	0.32	25.8	-	
Magnesium (Filtered)	µg/L	1	-		3610	3120	3510	8300	2870	2990	3670	1.5	-
Mercury (Filtered)	µg/L	0.01	1		<0.01	0.07	<10	<10	<10	<10	<10	<0.02	<0.02
Molybdenum (Filtered)	µg/L	0.01					-		-	-	-	-	
Nickel (Filtered)	µg/L	0.1			4.5	-	-		-	-	-		-
Phosphorus (Filtered)	µg/L	3	1	-	<30	<30	<30	730	≺30	300	290	680	640
Potassium (Filtered)	µg/L	2			908	674	858	1100	723	757	941	-	-
Silicon (Filtered)	µg/L	10				1 2	-	~	-	-	-	-	-
Strontium (Filtered)	µg/L	0.1			-	- 0	-	-	-		-	<u> </u>	<b>—</b>
Selenium (Filtered)	µg/L	1	50			1		-	1		-		
		10	200000	101070	3200	3230	3100	3000	3090	3010	3380		1
Sodium (Filtered)	µg/L		200000	101070								+	-
Silver (Filtered)	µg/L	0.01				- 6			-	-		-	
Tin (Filtered)	µg/L	0.01	-					-	_				-
Titanium (Filtered)	µg/L	0.1			-	-	-	-	-	-	-	-	-
Thallium (Filtered)	µg/L	0.2			-	-	-	-	-	-	-	-	-
Uranium (Filtered)	µg/L	0.001	20			-	-	-	-	-	-	-	-
Vanadium (Filtered)	µg/L	0.03	1000		4.		- 2	-	-	-	-	- 4	1-
Zinc (Filtered)	µg/L	2	5000		<2	3	<2	17	9	4	<2	<5	<5
organics	11-3-								-		-		-
Alkalinity (as CaCO3)	mg/L	2	500	373	225	235	241	340	215	237	531	228	256
Hardness (as CaCO3) (Filtered)	mg/L	0.05	500			200	-	0.10		-		282	260
		3	500	389	269	266	334	274	291	243	303	255	265
Solids - Total Dissolved (TDS)	mg/L	5	500	303	10	<8	<8	<8	<8	14	13	69	71
Oxygen Demand - Chemical (COD)	mg/L												
Solids - Total Suspended (TSS)	mg/L	2	-3		3	<2	3	2210	<2	3200	341	2000	1070
Organic Carbon - Dissolved (DOC) (Filtered)	mg/L	1	5		-	-	-			-	-	-	-
Oxygen Demand - Biological (BOD)	mg/L	2		-	<4	<4	<4	4	<4	4	<4	4	4
Phenois (4AAP)	mg/L	0.001	-		0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	< 0.002
Sulphate	mg/L	0.2	500	253	14	13	10	15	10	15	24	16	16
Ammonia	mg/L	0.01		100	0.1	0.2	0.2	0.2	0.1	0.1	0.2	0.22	0.26
Nitrate (as N)	mg/L	0.05	10	3.31	0.28	<0.06	<0.06	0.2	0.09	0.07	0.21	0.38	0.16
Nitrite (as N)	mg/L	0.03	1		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.03	< 0.05	< 0.05
Total Kjeldahl Nitrogen (TKN)	mg/L	0.1			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.6	1.7
Conductivity (lab)	µS/cm	1			456	473	475	448	384	472	478	493	512
	режен	0.05	6.5-8.5		7.91	7.99	7.91	7.96	8.26	8.02	7.86	7.83	8
pH (Lab)	1-	0.05	0.0-0.0		7.31	7.99	1.91	7.90	0.20	0.02	7.00	1.03	0
eld	1 2	-				,			7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7		-	1 500	-
DO (Field)	mg/L				141	-	-	4.1	6.7	6	5.9	9.85	8.19
Redox Potential (Field)	mV				-	-		115	167	214	220	56	11
Temp (Field)	°C				-	1 - 16	-	10.8	11.9	13.8	11.9	14.8	9.1
Conductivity (field)	µS/cm			-	-	-		362	339	388	302	463	235
pH (Field)	1		6.5-8.5		1 2		1 2	7.82	6.59	7.79	8.55	7.61	7.54



Table 4: Groundwater Quality - Overburden/Upper Bedrock

	Unit	RDL	ODWQS	,,,,,	TW10-2 2014-12-23	TW10-2 2015-05-19	TW10-2 2015-11-03	TW10-2 2016-05-19	TW10-2 2018-06-11	TW10-2 2019-05-29	TW10-2 2020-05-27	TW10-2 2020-11-12	TW10-2 2021-06-28	TW10-2 2021-11-1
etals	-	1.00	177		1									
Aluminium (Filtered)	µg/L	10	100		- 1	-	-	-	- 5	14				
Antimony (Filtered)	µg/L	0.2	6		-	I -	-	-	-	-	-	-	-	-
Arsenic (Filtered)	µg/L	0.1	25		2.5	1.5	0.9	0.6	1.8	1.6	0.3	0.4	0.9	1.1
Barium (Filtered)	µg/L	0.01	1000	273	487	438	447	355	410	398	193	279	344	301
Boron (Filtered)	µg/L	0.2	5000	2507	307	293	332	358	386	431	328	393	387	532
Beryllium (Filtered)	µg/L	0.02			-	1-1		-		-			1.	- 1
Bismuth (Filtered)	µg/L	0.01			- 2			-	-				1.	
Calcium (Filtered)	µg/L	10			284,000	278,000	246,000	252,000	186,000	197,000	179,000	241,000	1	1
Cadmium (Filtered)	µg/L	0.003	5		0.008	0.006	0.036	0.038	0.004	0.01	0.009	0.038	0.031	< 0.01
Chloride	µg/L	200	250000	126000	41,000	37,000	30,000	97,000	21,000	28,000	19,000	18,000	21,000	27.10
Chromium (III+VI) (Filtered)	µg/L	0.03	50	120000	0.54	0.47	0.21	1.11	0.79	0.92	0.3	0.16	1	<1
Cobalt (Filtered)	µg/L	0.002	-		0.07		0.2.1	1.11	- 0.10	0.02		0.10	-	
Copper (Filtered)	µg/L	0.02	1000		0.37	0.46	2	1.63	3.55	2	0.5	2.8	0.3	0.4
Iron (Filtered)	µg/L	2	300	154	70,100	44,400	2110	19,400	53,800	41,300	1380	840	30,500	20,30
Lithium (Filtered)	µg/L	1	000	707	70,700	44,100	-	13,400	00,000	47,000	1000	-	55,000	20,000
Lead (Filtered)	µg/L	0.01	10		0.02	0.02	0.05	0.07	0.05	1.29	0.02	0.01	0.07	0.11
Manganese (Filtered)	µg/L	0.01	50	25.52	3440	4390	2180	2000	1840	2490	2960	1250	- 0.07	0.11
Magnesium (Filtered)	µg/L	1	Ju	20.02	19,500	18.000	17,500	17,500	12,000	15.800	13,000	13.400		
Mercury (Filtered)	µg/L	0.01	1		0.14	-	0.01	<0.01	0.01	<10	<10	<10	<0.02	<0.02
Molybdenum (Filtered)	µg/L	0.01	-		0.14	1	0.01	<0.01	0.01	10	- 10	- 10	-U.UZ	~0.02
Nickel (Filtered)		0.01		_		1		-		1	1	1	-	-
Pro-	µg/L	-	-				-20							200
Phosphorus (Filtered)	µg/L	3			<30	<30	<30	20	<30	130	110	190	810	290
Potassium (Filtered)	µg/L	2			20,500	16,300	21,900	28,700	19,800	19,700	16,700	19,000		-
Silicon (Filtered)	µg/L	10			-	0.00	- 3	-	7	100	-			- 2
Strontium (Filtered)	µg/L	0.1	-				-		-		-		77	
Selenium (Filtered)	µg/L	1	50	404000		-	-	-	-			-		
Sodium (Filtered)	µg/L	10	200000	101070	29,100	31,900	32,200	74,200	24,000	28,200	22,200	24,200	-	
Silver (Filtered)	µg/L	0.01							- 6		-	-	35	-
Tin (Filtered)	µg/L	0.01			-			-	1 2	_		-		- 4
Titanium (Filtered)	µg/L	0.1			-	-	-	-	-	-	-	-	-	-
Thallium (Filtered)	µg/L	0.2			15	-	-	-	-	-	-	-	-	<u> </u>
Uranium (Filtered)	µg/L	0.001	20	-		-	-	-	-	-	-	-	-	-
Vanadium (Filtered)	µg/L	0.03	-			-5	9	4.0	-	Ψ	3-	1.5	34	- 5
Zinc (Filtered)	µg/L	2	5000		18	14	12	4	3	19	7	5	6	<5
organics														
Alkalinity (as CaCO3)	mg/L	2	500	373	722	730	606	688	577	628	575	637	563	652
Hardness (as CaCO3) (Filtered)	mg/L	0.05	500		-	-		-	-	-	-	-	525	655
Solids - Total Dissolved (TDS)	mg/L	3	500	389	1030	903	929	954	560	606	563	694	620	683
Oxygen Demand - Chemical (COD)	mg/L	5			46	38	25	62	32	35	31	44	85	57
Solids - Total Suspended (TSS)	mg/L	2			-	100	7	44	103	355	508	-	1280	6400
Organic Carbon - Dissolved (DOC) (Filtered)	mg/L	1	5		14.3			-	-		-	-	34	-
Oxygen Demand - Biological (BOD)	mg/L	2				<4	<4	<4	<4	<4	6	11	12	14
Phenols (4AAP)	mg/L	0.001			0.003	0.005	0.001	< 0.001	0.003	0.004	0.005	0.001	< 0.002	< 0.00
Sulphate	mg/L	0.2	500	253	160	100	160	82	4	8	13	83	7	32
Ammonia	mg/L	0.01		1	30,4	15.4	18	31.2	24.1	27.6	21.8	16.2	20.9	8.02
Nitrate (as N)	mg/L	0.05	10	3.31	< 0.06	< 0.06	9.64	0.16	<0.06	< 0.06	<0.06	3.41	0.52	<0.05
Nitrite (as N)	mg/L	0.03	1		< 0.03	< 0.03	0.06	< 0.03	< 0.03	< 0.03	< 0.03	0.25	< 0.05	<0.05
Total Kjeldahl Nitrogen (TKN)	mg/L	0.1			31.6	16.3	19	32.4	27.3	26.7	21.6	19.9	26	9.8
Conductivity (lab)	µS/cm	1			1520	1410	1530	1720	1080	1170	989	1190	1150	1260
pH (Lab)	-	0.05	6.5-8.5	-	7.45	7	7.3	7.65	7.39	7.49	7.02	7.55	7.34	7.52
eld	-	3.00	-		1	-			1		1	1	1 1.00	1.02
DO (Field)	mg/L	1			140	1	1	-	1 -	6.6	4.7	8.8	6.05	5.27
Redox Potential (Field)	mV	1				1 -		-	-	25	-33	-9	-33	50
		-				-								10.8
	90													
Temp (Field) Conductivity (field)	°C µS/cm	-			-	+ -	-	-	-	1000	913	799	1175	550



Table 4: Groundwater Quality - Overburden/Upper Bedrock

	Unit	RDL	ODWQS	RUC	TW11-2 2014-12-23	TW11-2 2015-05-19	TW11-2 2015-11-03	TW11-2 2016-05-19	TW11-2 2016-10-26	TW11-2 2018-06-11	TW11-2 2018-11-05	TW11-2 2019-05-29	TW11-2 2019-10-28	TW11-2 2020-05-27	TW11-2 2020-11-12	TW11-2 2021-06-28	TW11-2 2021-11-10
Metals		1	100														
Aluminium (Filtered)	µg/L	10	100			-	-		-	-	-					-	-
Antimony (Filtered)	µg/L	0.2	6		-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic (Filtered)	µg/L	0.1	25		<0.2	<0.2	0.9	2.1	1.8	0.9	0.4	<0.2	0.5	<02	0.6	1	0.2
Barium (Filtered)	µg/L	0.01	1000	273	22.2	19.1	195	372	616	539	308	28.3	404	78.4	272	574	96
Boron (Filtered)	µg/L	0.2	5000	2507	13.2	5.9	38.7	327	290	491	61	47	371	35	336	616	62
Beryllium (Filtered)	µg/L	0.02	1000					-	-	-		V-0		-			-
Bismuth (Filtered)	µg/L	0.01							-	-		-					-
Calcium (Filtered)	µg/L	10			110,000	106,000	106,000	188,000	215,000	276,000	239,000	118,000	212,000	100,000	176,000		-
Cadmium (Filtered)	µg/L	0.003	5	-	0.005	0.004	0.007	0.009	0.013	0.023	0.006	0.003	0.011	< 0.003	0.005	< 0.029	< 0.015
Chloride	µg/L	200	250000	126000	4400	3000	17,000	23,000	72,000	74,000	32,000	3000	56,000	2000	62,000	106,000	18,200
Chromium (III+VI) (Filtered)	µg/L	0.03	50		< 0.03	0.05	< 0.03	0.93	0.73	1.05	0.22	0.16	0.41	< 0.08	0.22	43	<1
Cobalt (Filtered)	µg/L	0.002			-		-	-	-	-		-		-			-
Copper (Filtered)	µg/L	0.02	1000		0.72	0.29	0.85	1.01	0.11	1.21	1.74	1	0.8	0.8	0.8	0.7	0.5
Iron (Filtered)	µg/L	2	300	154	76	<2	3570	50,000	26,800	34,700	296	67	8110	<7	5230	34,400	1130
Lithium (Filtered)	µg/L	1	755	107	1 2	1	-	1	-	-				1			
Lead (Filtered)	µg/L	0.01	10		< 0.01	0.02	0.08	0.08	0.1	0.13	0.04	0.03	0.04	0.02	0.02	0.17	0.07
Manganese (Filtered)	µg/L	0.01	50	25.52	8.13	5.05	325	2580	2770	1690	290	1.69	1520	1.43	652		-
Magnesium (Filtered)	µg/L	1		20.02	1910	1920	5060	12,300	18,300	26,000	7760	1870	24,500	1980	19,100		
Mercury (Filtered)	µg/L	0.01	1		0.16	-	0.02	< 0.01	0.01	<0.01	<10	<10	<10	<10	<10	<0.02	<0.02
Molybdenum (Filtered)	µg/L	0.01				1.0	-	1	-	-				12	1	-	
Nickel (Filtered)	µg/L	0.1				1		1 2	-	-	-	-	1	1	1 .	1	-
Phosphorus (Filtered)	µg/L	3	-		40	<30	<30	24	<30	40	<30	360	<30	270	140	1430	170
Potassium (Filtered)	µg/L	2			887	912	5480	20,300	28,900	38,500	7960	814	29,200	1200	20,500	1400	170
Silicon (Filtered)	µg/L	10		_	- 007	- 512	0400	20,000	20,000	00,000	1300	014	20,200	1200	20,000	1 2	
Strontium (Filtered)	µg/L	0.1		_	1	it.	- 2	-	-	-	-		-	-	-	-	1 8
Selenium (Filtered)	µg/L	1	50	_	-	-	1-0-	-	+-:-	- î	1 -	-	-		1	-	1
Sodium (Filtered)	µg/L	10	200000	101070	2460	2530	6660	25,900	52,200	82,100	15,300	2610	49,900	3100	39,000	1 2	1 1
Silver (Filtered)	µg/L	0.01	200000	101010	2400	2000	- 0000	25,500	32,200	02,100	15,500	2010	43,300	5100	39,000	1 4	
Tin (Filtered)		0.01		_	-	-	-	-	-	-	-	-	-	-	1	1	-
Titanium (Filtered)	µg/L	0.01		_	-	-	-	-	-	-	-		<u> </u>	-	-	-	-
Thallium (Filtered)	µg/L	0.1			_	<del>                                     </del>	<del>-</del>	<del>-</del>	<del>                                     </del>	<del>-</del>	+	-	+ -	-	+ -	+	+ -
Uranium (Filtered)	µg/L	0.001	20	_	-	<del>- :</del>	<del>                                     </del>	<del>-</del>	-	-	<del>                                     </del>	-	<del>-</del>	-	+ -	+	+ -
Vanadium (Filtered)	µg/L	0.001	20		-	<del></del>	-	-	-	-	-		+ -	-	+	+	+ -
	µg/L	2	E000	_	1	<2	5	9	7	5	5	1	4	-0		i de	<5
Zinc (Filtered)	µg/L	2	5000	_	4	<2	) 0	9	1 /	5	5	4	4	<2	<2	<5	<0
Inorganics Alkalinity (as CaCO3)	lma#	2	500	373	274	261	289	559	668	730	400	303	646	222	543	776	295
	mg/L	2	500	3/3	214	201	209	559	000	730	400	303	040		543		350
Hardness (as CaCO3) (Filtered)	mg/L	0.05	500	389	343	306	351	606	937	1030	663	311	204	246	746	772 1070	358
Solids - Total Dissolved (TDS)	mg/L	3	500	389						-			891			100000	
Oxygen Demand - Chemical (COD)	mg/L	5			<8	<8	14	42	41	48 55	15	<8 437	51	<8 854	39	128 2550	23 540
Solids - Total Suspended (TSS)	mg/L	2	-	-		<2	8	115	1	55	2	437	108	1	1 -	1	540
Organic Carbon - Dissolved (DOC) (Filtered)	mg/L	2	5		<1	<4	<4	<4	6	15	<4	<4	<4	6	12	17	6
Oxygen Demand - Biological (BOD)	mg/L	10		-	0.000	0.001	<0.001		0.001	0.004	0.002	0.002	0.004	0.002	<0.001	<0.002	<0.002
Phenois (4AAP)	mg/L	0.001	***	0.50	0.003			0.001									_
Sulphate	mg/L	0.2	500	253	5.3	5	13	15	150	120	130	9	170	5	69	102	10
Ammonia	mg/L	0.01	-		<0.1	<0.1	3.5	30.4	29.5	18.1	5.3	<0.1	33.4	<0.1	21.7	44.5	1.76
Nitrate (as N)	mg/L	0.05	10	3.31	3.23	1.54	3.8	0.08	<0.06	<0.06	0.17	2.14	<0.06	2.38	1.06	0.12	9.39
Nitrite (as N)	mg/L	0.03	1		<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.04	<0.05	<0.05
Total Kjeldahl Nitrogen (TKN)	mg/L	0.1			<0.5	<0.5	4.1	30.2	29.3	21.6	5.6	0.6	31.8	<0.5	23.6	47.1	2.2
Conductivity (lab)	μS/cm	1			511	486	659	1170	1580	1730	1010	516	1560	439	1280	1940	689
pH (Lab)	-	0.05	6.5-8.5	_	8.17	7.73	7.5	7.76	7.02	7.37	7.46	7.5	7.06	7.8	7.42	7.06	7.77
Field								,		-			_	-		1 100	_
DO (Field)	mg/L	-			141				-		-	8.1	5.8	8	5	4.05	5.48
Redox Potential (Field)	mV	-				-	-	-	-	~		193	-6	125	-35	-25	27
Temp (Field)	°C					4	-	-	-		-	7.7	10.9	11.5	10.9	17.6	10.1
Conductivity (field)	µS/cm		-	-	-	-	-	-	-	-	-	396	1266	361	890	1844	294
pH (Field)	-		6.5-8.5		9 - 9 -	-	-	-	-	9		7.7	6.64	7.58	7.24	6.64	7.12



Table 5: Groundwater Quality - Lower Bedrock

	Unit	RDL	ODWQS	NUC	TW02-1	TW02-1 2012-05-16	TW02-1 2012-09-25	TW02-1 2013-06-04	TW02-1 2013-10-30	TW02-1 2014-06-09	TW02-1	TW02-1 2015-05-19	TW02-1	TW02-1 2016-05-19	TW02-1 2016-10-26
etals	Olit	T		_	2011-10-01	2012-03-10	12012-05-25	2013-00-04	2013-10-30	2014-00-05	2014-11-14	2013-03-18	2013-11-03	2010-03-19	2010-10-2
Aluminium (Filtered)	lug/l	10	100	1		1 .		1	1	1	1	1			1
Antimony (Filtered)	µg/L	0.2	6	_		1			-	-				-	
Arsenic (Filtered)	μg/L	0.1	25		<0.2	0.2	<0.2	0.3	<0.2	0.2	0.3	<0.2	4.7	<0.2	<0.2
Barium (Filtered)	µg/L	0.01	1000	282	24	17.4	24	16.8	24.2	18.7	22.1	19.1	27.5	15.3	27.58
	µg/L		5000	2506	8.8	5.5	7.6	9	9.1	8.7	12.2		7.6	7	
Boron (Filtered)	µg/L	0.2	5000	2506	8.8		7.6	9				5.4	7.6		47
Beryllium (Filtered)	µg/L	0.02		_	-	-	-	-			-		1	1	
Bismuth (Filtered)	μg/L			_						92.700		07 200			
Calcium (Filtered)	μg/L	0.003	5	-	108,000 <0.003	89,400 <0.003	106,000	79,500	106,000	0.01	96,800	97,200	110,000 <0.003	81,900	108,000
Cadmium (Filtered) Chloride	µg/L	200	250000	126800	4300	2600	9800	3700	6600	2800	2800	2500	12.000	3000	23,000
	µg/L	0.03	50	120000	<0.5	<0.5	<0.5	<0.5	<0.5	0.16	<0.03	0.1	<0.03	0.42	0.4
Chromium (III+VI) (Filtered)	μg/L	0.002	50	-	<0.5	<0.5	<0.5	<0.5	<0.5	0.16	<0.03	0.1	<0.03	0.42	0.4
Cobalt (Filtered)	µg/L	0.002	1000		0.8	0.8	<0.5	0.6	<0.5	1.14	0.93	0.95	0.69	0.54	0.22
Copper (Filtered)	µg/L	_	300	160	70.00	1.6.16	<0.5	22		1,5,1,5	4	2 12 2		2723	19
Iron (Filtered)	μg/L	2	300	160	<3	8	8		<3	<2	-	22	<7	<7	-
Lithium (Filtered)	µg/L	0.01	10		<0.02	0.04	0.02	0.03	0.03	0.03	<0.01	0.34	0.02	<0.01	<0.01
Lead (Filtered)	µg/L		50	20.26								2.2	<0.02		1
Manganese (Filtered)	µg/L	0.01	50	30.28	1.57	C.24	0.03	0.24	0.42	0.2	0.74	2.44		0.07	1.17
Magnesium (Filtered)	µg/L	10.04			1950	1920	2130	1850	2030	2100	1870	2200	2500	2070	2180
Mercury (Filtered)	µg/L	0.01	1	-	<0.1	<0.1	<0.1	< 0.01		12	-	-	<0.01	< 0.01	<0.01
Molybdenum (Filtered)	µg/L	0.01		_	· ·	-	-		-	1.2	-	-		-	+
Nickel (Filtered)	µg/L	0.1		_			-	-		12	-	-	140	100	-
Phosphorus (Filtered)	µg/L	9			<30	<30	50	<30			-	7.0	7000	-	
Potassium (Filtered)	µg/L	2		_	906	711	869	617	901	749	952	748	1050	663	851
Silicon (Filtered)	µg/L	10		-		-	-	-	-	-	-	-	-	-	-
Strontium (Filtered)	µg/L	0.1	-			-	-	-	-	-	-	-	-	-	-
Selenium (Filtered)	µg/L	1	50		-	-	-	-	-	-	-	-	-	-	-
Sodium (Filtered)	µg/L	10	200000	101327	3740	2000	4750	1770	4410	2820	5590	2500	6600	2360	3940
Silver (Filtered)	µg/L	0.01			-	-	-		>-0	87	-3	-	-	191	-
Tin (Filtered)	µg/L	0.01				-	-			-	-	-		1-1	-
Titanium (Filtered)	µg/L	0.1			9.0	-	-	-	-	-	-	-	-	-	-
Thallium (Filtered)	μg/L	0.2	-		940	-	-	-	-	-	-	-	-	-	-
Uranium (Filtered)	µg/L	0.001	20		141	-	-	-	-	-	-	-	-	-	-
Vanadium (Filtered)	µg/L	0.03	-			-	-	-	-	-	-	-		-	-
Zinc (Filtered)	µg/L	2	5000		3	6	3	<2	2	3	5	<2	2	4	9
organics															
Alkalinity (as CaCO3)	mg/L	2	500	381	251	219	234	199	246	240	255	233	270	200	251
Hardness (as CaCO3) (Filtered)	mg/L	0.05	500			-	- 3					3.0		-	3
Solids - Total Dissolved (TDS)	mg/L	3	500	390	300	177	291	254	360	291	291	251	370	206	351
Oxygen Demand - Chemical (COD)	mg/L	5			<8	8	9	<8	<8	9	<8	<8	13	<8	13
Solids - Total Suspended (TSS)	mg/L	2			46	<4	-	-	.71	- 5	-	-	7	-	<u> </u>
Organic Carbon - Dissolved (DOC) (Filtered)		0.2	5		<1	5.6	2.9	2.7	1.9	3.6	1.2	2.3	1.4	1.7	1
Oxygen Demand - Biological (BOD)	mg/L	2			<2	<4	-	-		-	-	-		-	-
Phenols (4AAP)	mg/L	0.002	-		<0.002	0.011	<0.002	<0.002	- 2	-	-		-	140	-
Sulphate	mg/L	0.2	500	253	6.7	5.6	7	4.3	7.9	3.6	5.9	4.9	8	4	9
Ammonia	mg/L	0.01			<0.1	<0.1	<0.1	0.6	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1
Nitrate (as N)	mg/L	0.05	10	3.38	2.86	C.77	5.1	0.35	3.05	0.77	1.64	0.68	3.89	0.22	2.43
Nitrite (as N)	mg/L	0.03	1		<0.06	< 0.06	<0.06	< 0.03	-		-	-	-	-	-
Total Kjeldahl Nitrogen (TKN)	mg/L	0.1			2.7	<0.5	1.3	<0,5		1 2			4		- A
Conductivity (lab)	µS/cm	1	10000		525	429	562	399	525	455	490	424	575	416	562
pH (Lab)	-	0.05	6.5-8.5		8.03	8.06	7.97	7.79	8.16	7.97	8.08	7.69	7.99	8.12	7.63
eld															
DO (Field)	mg/L			1	Q-1	1	-	-	-	-	-	-	-	-	-
Redox Potential (Field)	mV				-	1	-	-	-	-	-	-	-	-	-
Temp (Field)	°C				-	-	-	-	-	-	-	-	-	-	-
Conductivity (field)	µS/cm				9		-	-	-	-	-	-	-	-	-
pH (Field)			6.5-8.5			-	-	-	-	-	-	-	-	-	_



Table 5: Groundwater Quality - Lower Bedrock

	Unit	RDL	ODWQS		TW02-1 2017-06-07	TW02-1 2017-09-29	TW02-1 2018-06-11	TW02-1 2018-11-05	TW02-1 2019-05-29	TW02-1 2019-10-28	TW02-1 2020-05-27	TW02-1 2020-11-12	TW02-1 2021-06-28	TW02-1 2021-11-1
etals	Unit	KUL			2017-00-07	2017-09-29	2010-00-11	2010-11-05	2019-05-29	2019-10-28	2020-05-27	2020-11-12	2021-00-28	12021-11-
Aluminium (Filtered)	a	10	100						1 -	1	1	1		1
	µg/L	0.2	6											
Antimony (Filtered)	μg/L		25	_	<0.2		<0.2	<0.2	<0.2	23	<0.2	<0.2		1000
Arsenic (Filtered)	µg/L	0.1	1000	282	18.6	<0.2	20.1		19.2	8	15.8	28.3		24
Barium (Filtered)	μg/L	0.01				25.1		23.6			1,010		21	
Boron (Filtered)	µg/L	0.2	5000	2506	11	20	6	12	7	112,000	36	23	7	9
Beryllium (Filtered)	µg/L	0.02		-		-	-					-	-	
Bismuth (Filtered)	μg/L	0.01		-	2 100		-	110.000	100.000		-	105.000		
Calcium (Filtered)	μg/L	10			91,100	115,000	103,000	113,000	102,000	<0.003	82,900	105,000	103,000	111,00
Cadmium (Filtered)	µg/L	0.003	5		<0.003	0.003	0.011	0.003	0.004	0.24	<0.003	<0.003		-
Chloride	μg/L	200	250000	126800	2000	4000	2000	12,000	3000	8000	2000	7000	5200	2900
Chromium (III+VI) (Filtered)	μg/L	0.03	50		0.55	0.51	0.16	0.13	0.16	0.€	0.28	0.21		1 10
Cobalt (Filtered)	µg/L	0.002	-		4.	- 9	-	-	- 4	9	+		- A	8.
Copper (Filtered)	µg/L	0.02	1000	-	0.52	0.66	0.38	0.59	0.7	129	0.6	0.8	-	(%
Iron (Filtered)	μg/L	2	300	160	<7	11	<7	<7	7	771	<7	17	8	5
Lithium (Filtered)	µg/L	1	-				-		~	200		18	-	1.00
Lead (Filtered)	μg/L	0.01	10		0.03	0.04	0.02	0.03	0.01	0.04	0.02	0.05	-	19
	μg/L	0.01	50	30.28	0.08	0.16	1.88	0.4	0.11	4620	0.02	0.26		
Magnesium (Filtered)	µg/L	1	0.000		1970	2370	2000	2000	2060	0.54	1850	1760	2210	1980
Mercury (Filtered)	µg/L	0.01	1		12	1:= -	-	-	<10	<0.2	-	-	-	-
Molybdenum (Filtered)	µg/L	0.01			12	1 -	-	-	-	-	-	-	-	-
Nickel (Filtered)	µg/L	0.1			)2	1	-	-	-	-	-	-	-	-
Phosphorus (Filtered)	µg/L	9				Y		1			<30		-	J
Potassium (Filtered)	µg/L	2			722	755	658	731	671	2100	628	851	76-	1
Silicon (Filtered)	µg/L	10			-	-	-	-	-	-	-	-	-	-
Strontium (Filtered)	µg/L	0.1	-			-	-	-	-	-	-	-	-	-
Selenium (Filtered)	µg/L	1	50			-	-	-	-	-	-	-	-	-
Sodium (Filtered)	µg/L	10	200000	101327	2210	3000	2450	6620	2190	<3	2020	4600	2300	2700
Silver (Filtered)	µg/L	0.01	-			-	1 0-	1	-	[	747	-	-	1
Tin (Filtered)	µg/L	0.01			7-		1 0-0	-		5 ·		-	-	1.
Titanium (Filtered)	µg/L	0.1			141		-	-	-	-	-	-	-	-
Thallium (Filtered)	μg/L	0.2				-	-	-	-	-	-	-	-	<u> </u>
Uranium (Filtered)	µg/L	0.001	20			111	-	-	-	-	-	-	-	T -
Vanadium (Filtered)	µg/L	0.03			-	-	-				-			
Zinc (Filtered)	µg/L	2	5000		<2	2	<2	2	2	3	2	1		1
organics	PS		-											
	mg/L	2	500	381	209	258	226	241	228	252	218	258	227	265
Hardness (as CaCO3) (Filtered)	mg/L	0.05	500	- 101			-	-	-			-	267	286
Solids - Total Dissolved (TDS)	mg/L	3	500	390	237	274	240	320	260	334	254	300	250	270
Oxygen Demand - Chemical (COD)	mg/L	5	000	330	<8	<8	<8	<8	<8	<8	<8	<8	11	9
Solids - Total Suspended (TSS)	mg/L	2				-	-	-	-		-	-	- 11	-
Organic Carbon - Dissolved (DOC) (Filtered)		0.2	5		2	1	2	1	1	<1	1	2	2.8	1.8
Oxygen Demand - Biological (BOD)	mg/L	2	- 3		-	+	-	<u> </u>	<u> </u>	- 1	+ :	-	2.0	1.0
Phenols (4AAP)	mg/L	0.002				1 - 1 -	<del>                                     </del>	<del>                                     </del>	<del>                                     </del>		1	1	<0.002	<0.00
Sulphate	mg/L	0.002	500	253	3	5	3	8	3	7	3	8	6	5
Ammonia		0.01	500	200	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.01	<0.01
Secretary Control	mg/L		10	3.38	0.41	2.61	0.19	3.61	0.96	3.71	0.57	2.68	1.47	1.52
Nitrate (as N)	mg/L	0.05	10	3,38			-	-			-	1		1.52
Nitrite (as N)	mg/L	0.03	-1	-	-		-		-		-	-	-	-
Total Kjeldahl Nitrogen (TKN)	mg/L	0.1		_	145	505	100	-	154	504	400		101	-
Conductivity (lab)	µS/cm	1 005	-	_	415	505	423	542	451	581	429	499	484	521
pH (Lab)	-	0.05	6.5-8.5		7.74	7.9	7.91	7.81	8.12	8.02	7.95	7.72	7.82	7.79
eld			-			-				m - 22	7	T	1.00	T
	mg/L				-		-		7.6	8.1	7.8	10.2	8.44	10.08
	mV				940		-	-	75	117	43	125	113	63
Temp (Field)	°C				/=	-	-	-	9.5	11.3	12,8	11.3	15.9	11
Conductivity (field)	µS/cm		and the same			1	18	51	343	502	419	332	681	225
pH (Field)	+	1	6.5-8.5		74	TT 2K	-	-	7.6	7.35	7.46	7.82	7.14	7.16



Table 5: Groundwater Quality - Lower Bedrock

			ODWQS	RUC	TW03-1	TW03-1	TW03-1	TW03-1	TW03-1	TW03-1	TW03-1	TW03-1
	Unit	RDL			2011-10-01	2012-05-16	2013-06-04	2013-10-30	2014-06-09	2014-11-14	2015-05-19	2015-11-03
etals			1270									
Aluminium (Filtered)	µg/L	10	100		- 2.	14-1		140		-	100	-
Antimony (Filtered)	μg/L	0.2	6			-	-	-	-	-	-	-
Arsenic (Filtered)	µg/L	0.1	25	1	6.2	17.6	2.3	1.2	0.3	15.9	3.3	54.3
Barium (Filtered)	µg/L	0.01	1000	282	417	450	226	235	96.4	425	276	2270
Boron (Filtered)	µg/L	0.2	5000	2506	256	232	209	172	87.3	251	230	221
Beryllium (Filtered)	µg/L	0.02	-			-		-				-
Bismuth (Filtered)	µg/L	0.01				1 2		140		141	1 - 2	
Calcium (Filtered)	µg/L	10			212,000	206,000	94,700	107,000	146,000	120,000	188,000	196,000
Cadmium (Filtered)	µg/L	0.003	5	-	0.007	0.136	0.009	0.009	0.008	0 071	0.007	0.021
Chloride	µg/L	200	250000	126800	44,000	21,000	14,000	15,000	17,000	20,000	30,000	55,000
Chromium (III+VI) (Filtered)		0.03	50	120000	1.9	2.3	1.7	13,000	0.25	4.6	0.63	1.81
	µg/L		50		_		+	-	0.25	4.0	0.03	1.01
Cobalt (Filtered)	µg/L	0.002	4000		-	-			0.00	4.05	0.45	
Copper (Filtered)	µg/L	0.02	1000		1	1	<0.5	0.6	0.82	1.35	0.45	0.83
Iron (Filtered)	µg/L	2	300	160	48,400	74,600	14,900	16,900	37	227,000	29,400	106,000
Lithium (Filtered)	µg/L	1				-	-	-	-	/*/-		-
Lead (Filtered)	µg/L	0.01	10		0.46	0.17	0.3	0.04	0.2	0.38	0.01	0.16
Manganese (Filtered)	μg/L	0.01	50	30.28	1290	880	577	344	75.8	552	705	323
Magnesium (Filtered)	µg/L	1			16,300	16,000	7910	8150	10,700	9430	14,500	15,300
Mercury (Filtered)	µg/L	0.01	1		< 0.1	<0.1	0,03	4-	-	-	-	<0.01
Molybdenum (Filtered)	µg/L	0.01			14	-		- 4	-	-	-	-
Nickel (Filtered)	µg/L	0.1			-	1		1	1	1	-	<u> </u>
Phosphorus (Filtered)	µg/L	9			70	40	40	-		-		-
Potassium (Filtered)	µg/L	2			24,600	26,000	15,800	17,200	2610	21,500	17,800	19,600
Silicon (Filtered)	µg/L	10			24,000	-	-	11,200	-	21,000	17,000	15,000
Strontium (Filtered)		0.1				1		+ -	-	<del>                                     </del>	+ -	
	µg/L	1	50		1	1 -	+ -	+ -	-	+	+ -	<del>                                     </del>
Selenium (Filtered)	µg/L	-		404207								
Sodium (Filtered)	µg/L	10	200000	101327	26,700	27,700	15,000	15,700	19,000	18,200	25,000	29,700
Silver (Filtered)	µg/L	0.01			-	-		-	-	-	1 7	7
Tin (Filtered)	µg/L	0.01				141		-				-
Titanium (Filtered)	µg/L	0.1			12.	-	-	-	-	-	-	-
Thallium (Filtered)	μg/L	0.2	-		1 - 6	-	-	-	-	-	-	-
Uranium (Filtered)	μg/L	0.001	20		16	-	-	-	-	-	-	-
Vanadium (Filtered)	µg/L	0.03				-			-4 -			
Zinc (Filtered)	µg/L	2	5000		4	6	3	<2	7	9	3	7
organics			-									
Alkalinity (as CaCO3)	mg/L	2	500	381	690	449	381	505	463	598	578	734
Hardness (as CaCO3) (Filtered)	mg/L	0.05	500	1100		1 2		-		1	1 -	1
Solids - Total Dissolved (TDS)	mg/L	3	500	390	751	321	371	680	431	586	571	871
Oxygen Demand - Chemical (COD)	mg/L	5	500	330	31	53	27	21	50	93	34	64
Solids - Total Suspended (TSS)	mg/L	2			2230	41		-	-	-		-
Organic Carbon - Dissolved (DOC) (Filtered)	mg/L	0.2	5		8.5	16.9	12.4	6.8	11.8	11.8	7.2	16.8
			9				7	1	1		7	
Oxygen Demand - Biological (BOD)	mg/L	2			21	<40	0.000	-		-		
Phenols (4AAP)	mg/L	0.002		250	<0.002	0.014	<0.002		-	-	-	
Sulphate	mg/L	0.2	500	253	6.6	3.7	2.6	2.7	2.3	0.4	34	52
Ammonia	mg/L	0.01			28.6	22.5	25.4	25	32.5	30.6	30.4	30.4
Nitrate (as N)	mg/L	0.05	10	3.38	0.29	0.06	<0.06	0.3	<0.06	<0.06	<0.06	<0.06
Nitrite (as N)	mg/L	0.03	_ 1		<0.06	<0.06	< 0.03	-	-		-	-
Total (Caldeb) Mitseens (TI/M)	mg/L	0.1			31.2	21.4	25.4	141	-	- 20	4	
Total Kjeldani Nitrogen (TKN)		1	The same of		1430	881	786	1170	914	1190	1070	1550
	µS/cm	1				1	7.57	7.45	7.51	7.25	7.04	7.18
Total Kjeldahl Nitrogen (TKN) Conductivity (lab) pH (Lab)	μS/cm -	0.05	6.5-8.5		7.71	7.58	1.31			1.20	7.44	
Conductivity (lab) pH (Lab)	μS/cm -	-	6.5-8.5		7.71	7.58	1,57	7.40	7.51	1.20	7.04	
Conductivity (lab) pH (Lab) eld	-	-	6.5-8.5		7.71	7.58	7.57	7.40	-	1.20	-	
Conductivity (lab) pH (Lab) eld DO (Field)	mg/L	-	6.5-8.5		-							
Conductivity (lab) pH (Lab) eled eled el DO (Field) Redox Potential (Field)	mg/L	-	6.5-8.5		1	-			-	-	-	-
Conductivity (lab) pH (Lab) eld DO (Field)	mg/L	-	6.5-8.5		-	1 .	-	-	-	-	-	-



Vanadium (Filtered)

Alkalinity (as CaCO3)

Zinc (Filtered)

Inorganics

Metals

Table 5: Groundwater Quality - Lower Bedrock

Unit RDL

µg/L

µg/L

mg/L

0.03

5000

381

ODWQS RUC

## Aluminium (Filtered) 100 µg/L 10 Antimony (Filtered) 0.2 μg/L 6 25 2.2 1.8 1.1 13 Arsenic (Filtered) µg/L 0.1 0.5 0.01 223 359 Barium (Filtered) 1000 282 152 299 161 639 142 µg/L Boron (Filtered) 0.2 5000 2506 181 204 164 266 171 298 µg/L 222 Beryllium (Filtered) 0.02 µg/L 0.01 Bismuth (Filtered) μg/L Calcium (Filtered) 10 108,000 110,000 135,000 135,000 114,000 122,000 194,000 µg/L 0.017 Cadmium (Filtered) 0.003 0.004 < 0.003 0.009 µg/L < 0.003 200 250000 126800 13.000 16.000 11.000 19.000 14.000 14.700 22,000 Chloride µg/L Chromium (III+VI) (Filtered) 0.03 50 0.8 1.18 0.37 3.71 0.41 µg/L Cobalt (Filtered) 0.002 µg/L Copper (Filtered) 1000 0.42 0.33 0.16 0.9 0.5 0.02 µg/L 160 15,200 140,000 9450 112,000 Iron (Filtered) µg/L 300 36,400 Lithium (Filtered) µg/L Lead (Filtered) μg/L 0.01 10 0.08 0.04 < 0.01 0.49 0.05 Manganese (Filtered) 0.01 50 30.28 429 323 503 646 525 Magnesium (Filtered) 8330 8500 8620 10,000 10,300 10.500 16,200 μg/L Mercury (Filtered) 0.01 < 0.01 10 µg/L Molybdenum (Filtered) 0.01 µg/L Nickel (Filtered) 0.1 µg/L \_ Phosphorus (Filtered) 9 660 μg/L Potassium (Filtered) 14,300 15,500 14,200 13,900 13,900 2 µg/L Silicon (Filtered) 10 µg/L Strontium (Filtered) μg/L 0.1 Selenium (Filtered) µg/L Sodium (Filtered) µg/L 10 200000 101327 14,000 15,700 11,900 18,600 15,700 17.700 21,200 0.01 Silver (Filtered) µg/L 0.01 Tin (Filtered) μg/L Titanium (Filtered) µg/L 0.1 Thallium (Filtered) 0.2 µg/L Uranium (Filtered) 0.001 20 µg/L

TW03-1

TW03-1

TW03-1

TW03-1

<2

6

483

4

382

2016-05-19 2017-06-07 2018-06-11 2019-05-29

TW03-1

TW03-1

2020-05-27 2021-06-28

TW03-1

2021-11-10

564

435

randamity (de odooo)	111. Sp		Annual Contract of the Contrac		110			100			
Hardness (as CaCO3) (Filtered)	mg/L	0.05	500			-		- 0		348	552
Solids - Total Dissolved (TDS)	mg/L	3	500	390	360	380	394	389	366	508	640
Oxygen Demand - Chemical (COD)	mg/L	5	1		19	26	25	78	104	2640	327
Solids - Total Suspended (TSS)	mg/L	2	-			-	- 4		-	-	-
Organic Carbon - Dissolved (DOC) (Filtered)	mg/L	0.2	5		4.6	7	5	6	7	17.8	21
Oxygen Demand - Biological (BOD)	mg/L	2				-					-
Phenols (4AAP)	mg/L	0.002				-				< 0.002	<0.002
Sulphate	mg/L	0.2	500	253	6	20	5	9	4	26	58
Ammonia	mg/L	0.01			19.2	19.7	16	21.3	18.3	21.3	21
Nitrate (as N)	mg/L	0.05	10	3.38	0.06	< 0.06	<0.06	< 0.06	0.06	0.15	< 0.05
Nitrite (as N)	mg/L	0.03	1		-	-		-		-	-
Total Kjeldahl Nitrogen (TKN)	mg/L	0.1				-	-	- 4	-		
Conductivity (lab)	µS/cm	1	December 1		787	801	758	822	771	954	1190
pH (Lab)	-	0.05	6.5-8.5		7.69	7.2	7.49	7.11	7.5	7.39	7.41
eld	2		1								
DO (Field)	mg/L							5	5.2	0.04	0.82
Redox Potential (Field)	mV							60	138	75	106
Temp (Field)	°C				÷	-	7	10.8	13.9	11.9	10.3
Conductivity (field)	µS/cm				-	-	7	686	634	894	530
pH (Field)	-		6.5-8.5		-	-	-	7.15	7.18	6.7	6.68

6

415

2021 Annual Report, Stoney Lake Road Landfill 348 County Road 6, Lakefield The Corporation of the Township of Douro-Dummer Cambium Reference: 12987-004



Table 5: Groundwater Quality - Lower Bedrock

	Unit	RDL	ODWQS	NUC	TW04-1	TW04-1 2012-05-16	TW04-1 2012-09-25	TW04-1 2013-06-04	TW04-1 2013-10-30	TW04-1 2014-06-09	TW04-1	TW04-1 2015-05-19	TW04-1 2015-11-03	TW04-1 2016-05-19	TW04-1 2016-10-26
etals	Onit	TUL		_	2011-10-01	2012-03-16	2012-09-25	2013-00-04	2013-10-30	12014-00-09	2014-11-14	2015-05-19	12010-11-03	2010-03-19	2010-10-2
Aluminium (Filtered)	lug/l	10	100	1		1 .		1	1	1	1		1		1
Antimony (Filtered)	µg/L	0.2	6	_			-			-	-			-	-
Arsenic (Filtered)	μg/L	0.1	25		<0.2	0.4	0.2	0.3	0.3	0.6	0.4	<0.2	2.4	<0.2	0.3
Barium (Filtered)	µg/L	0.01	1000	282	24.1	21.9	35.8	17.1	23	17.4	24.1	17.4	40.2	14.9	131
	µg/L	0.01	5000	2506	13.1	10.4	26.8	10.3	14.2	7.9	17.6	23	23	21	90
Boron (Filtered)	µg/L	0.02	5000	2506		10.4	20.8	10.3		7.9	17.0	23		21	90
Beryllium (Filtered)	µg/L	0.02	_			1		-	-	1		1	- 5		4.5
Bismuth (Filtered)	μg/L			_										90.600	202.00
Calcium (Filtered)	μg/L	0.003	5		111,000 <0.003	98,300	128,000	92,200	0.005	0.008	107,000	98,600	148,000	89,600 <0.003	292,00
Cadmium (Filtered) Chloride	µg/L	200	250000	126800	5100	5600	10.000	8400	5500	3500	3500	3000	16,000	4000	68.000
	µg/L	0.03	50	120000	<0.5	<0.5	<0.5	<0.5	<0.5	0.29	<0.03	0.06	<0.03	0.35	0.37
Chromium (III+VI) (Filtered)	μg/L	0.002	50	-	<0.5	<0.5	<0.5	<0.5	<0.5	0.29	<0.03	0.06	<0.03	0.35	0.37
Cobalt (Filtered)	µg/L	0.002	1000		0.9	0.6	0.6	0.7	<0.5	0.6	0.8	0.7	0.71	0.38	0.9
Copper (Filtered)	µg/L	_	300	160	70.00			9		30.00	1 - 1 - 1			94	284
Iron (Filtered)	μg/L	2	300	760	<3	<3	24		14	4	185	18	9		
Lithium (Filtered)	µg/L	0.01	10		0.06	C.02	0.04	0.06	<0.02	0.42	0.01	<0.01	0.02	0.01	0.18
Lead (Filtered)	µg/L		50	20.26	2000			1 212.0			2.83				63.4
Manganese (Filtered)	µg/L	0.01	50	30.28	9.79	7.77	21.7	1.17	2.03	1.46		0.62	14.3	0.19	
Magnesium (Filtered)	µg/L	10.04		_	1980	1730	2720	1630	2160	1760	2080	1780	3440	1730	9310
Mercury (Filtered)	µg/L	0.01	1	-	<0.1	<0.1	<0.1	<0.01	14.	- 02	-	-	<0.01	<0.01	<0.01
Molybdenum (Filtered)	µg/L	0.01		-		-				1.2		-			<del>  •</del>
Nickel (Filtered)	µg/L	0.1		_		-	-	-		12	1	-	1	100	-
Phosphorus (Filtered)	μg/L	9			50	<30	50	30	1700	-	4400		-	-	
Potassium (Filtered)	µg/L	2			1100	1000	2020	885	1700	941	1420	874	2380	823	3620
Silicon (Filtered)	µg/L	10			J+5 1		-	-	-	-	-	-	-	-	-
Strontium (Filtered)	µg/L	0.1	-			-	-	-	-	-	-	-	-	-	-
Selenium (Filtered)	µg/L	1	50		147	-	-	-	-	-	-	-	-	-	-
Sodium (Filtered)	µg/L	10	200000	101327	2220	2020	5140	2140	2890	2590	2600	2480	6430	2590	50,800
Silver (Filtered)	µg/L	0.01			-	-	-	15	3-1	2		-	-	3	75
Tin (Filtered)	µg/L	0.01			-	-	1.0		>	-	-	-	-	-	
Titanium (Filtered)	µg/L	0.1			-	-	-	-	-	-	-	-	-	-	<u> </u>
Thallium (Filtered)	µg/L	0.2	-			-	-	-	-	-	-	-	-	-	-
Uranium (Filtered)	µg/L	0.001	20			-	-	-	-	-	-	-	-	-	-
Vanadium (Filtered)	µg/L	0.03	-		-	-	-	-	-	-	-	-			
Zinc (Filtered)	µg/L	2	5000		2	4	<2	4	<2	3	2	<2	3	2	<2
organics															
Alkalinity (as CaCO3)	mg/L	2	500	381	239	235	301	213	171	254	270	265	316	219	548
Hardness (as CaCO3) (Filtered)	mg/L	0.05	500				- 1	13				-		-	-
Solids - Total Dissolved (TDS)	mg/L	3	500	390	343	269	394	234	286	329	337	274	403	220	1120
Oxygen Demand - Chemical (COD)	mg/L	5			<8	8	<8	27	<8	<8	<8	8	<8	9	18
Solids - Total Suspended (TSS)	mg/L	2			8	<2	-	-	7-	- 3	-	-	Ψ.	-	<u> </u>
Organic Carbon - Dissolved (DOC) (Filtered)		0.2	5		2.1	5.1	1.4	3	1.8	<1	1,9	1.9	2.6	<1	6
Oxygen Demand - Biological (BOD)	mg/L	2			<2	≺12	1			-	-				-
Phenols (4AAP)	mg/L	0.002	-		<0,002	0.013	<0.002	<0.002				-2	9-		-
Sulphate	mg/L	0.2	500	253	6	5.4	7	4.3	9.5	4.1	6	4.4	23	4	310
Ammonia	mg/L	0.01			0.1	<0.1	0.5	<0.1	0.2	0.3	<0.1	<0.1	0.5	<0.1	0.9
Nitrate (as N)	mg/L	0.05	10	3.38	7.8	4.25	2.9	2.8	3.34	2.65	2.53	1.4	3.25	0.75	0.16
Nitrite (as N)	mg/L	0.03	-1		<0.06	<0.06	<0.06	< 0.03		-				-	-
Total Kjeldahl Nitrogen (TKN)	mg/L	0.1			3.3	0.6	0,6	<0,5	-	12	1		4	-	-
Conductivity (lab)	µS/cm	1	Salar Contract		563	493	670	470	478	498	524	475	651	452	1540
pH (Lab)	-	0.05	6.5-8.5	1	8.03	7.99	7.81	7.84	8.13	7.98	8.03	7.72	7.91	8.15	7.09
eld															
DO (Field)	mg/L					1	-	-	-	-	-	-	-	-	-
Redox Potential (Field)	mV				+-	-	-	-	-	-	-	-	-	-	-
Temp (Field)	°C				J+1	-	-	-	-	-	-	-	-	-	-
Conductivity (field)	µS/cm		1000		141	-	-	-	-	-	-	-	-	-	-
pH (Field)			6.5-8.5		- 40	-	-	-	-	-	-	-	-	-	_



Table 5: Groundwater Quality - Lower Bedrock

	Unit	RDL	ODWQS	1.00	TW04-1 2017-06-07	TW04-1 2017-09-29	TW04-1 2018-06-11	TW04-1 2018-11-05	TW04-1 2019-05-29	TW04-1 2019-10-28	TW04-1 2020-05-27	TW04-1 2020-11-12	TW04-1 2021-06-28	TW04-1 2021-11-1
etals	Onit	KUL			2017-00-07	2017-09-29	2010-00-11	12010-11-05	2019-05-29	2019-10-20	2020-03-21	2020-11-12	2021-00-28	2021-11-
	a	10	100		-	1	1		1	1 .	1	T		_
	µg/L	0.2	6	_	1							-		-
	μg/L	0.1	25	-		<0.2	<0.2	0.3	<0.2	70.1	<0.2	<0.2		+
	µg/L		1000	282	<0.2	44.6	19.4	30.9	19	90		30	22	24
	μg/L	0.01	A STATE OF THE PARTY OF THE PAR		7.311	1 111					16.2			
	µg/L	0.2	5000	2506	15	33	22	1240	12	305,000	13	<2	13	11
	µg/L	0.02					-	-	-	-			-	-
	μg/L	0.01				150.000	-	-	100.000		-		111.000	10100
	µg/L	10			97,700	150,000	110,000	399,000	120,000	0.004	93,100	114,000	111,000	121,00
Cadmium (Filtered)	µg/L	0.003	5		<0.003	<0.003	0.01	0.005	<0.003	0.39	<0.003	<0.003	-	-
	μg/L	200	250000	126800	2000	11,000	2000	38,000	3000	43,000	2000	7000	6200	5600
Chromium (III+VI) (Filtered)	µg/L	0.03	50		0.56	0.75	0.23	0.23	0.14	1.2	0.22	0.14	14	-
Cobalt (Filtered)	µg/L	0.002	-		4			-	4	-	-		74	
	µg/L	0.02	1000	1	0.44	0.72	1.48	1.02	0.9	77	0.6	0.8	17	- 4
	μg/L	2	300	160	14	37	592	3030	42	1910	<7	21	12	6
	μg/L	1			1.5		-	E 1		-	-	-		-
Lead (Filtered)	μg/L	0.01	10		0.03	0.12	1.43	0.1	0.02	0.11	0.03	0.07	1-8	-
	μg/L	0.01	50	30.28	0.12	29	127	472	0.53	31,000	0.57	1.83		1000
	µg/L	1			1670	3650	1560	36,300	1880	31.3	1620	2490	2160	2190
Mercury (Filtered)	µg/L	0.01	1		- 72	4 := -	-	-	<10	0.4	-	-	-	-
Molybdenum (Filtered)	µg/L	0.01			12	-	-	-	-	-	-	-	-	-
Nickel (Filtered)	µg/L	0.1			12	1 -	-	-	-	-	-	-	-	-
Phosphorus (Filtered)	µg/L	9		-		- ×	-	4		-	40	-		-
	µg/L	2			871	2530	876	4310	820	7310	765	1360		1 16
Silicon (Filtered)	µg/L	10			-	-	-	-	-	-	-	-	-	-
	µg/L	0.1				-	-	-	-	-	-	-	-	-
	µg/L	1	50			-	-	<u> </u>	-	-	<del> </del> -	<del>  -</del>	-	<del>  -</del>
	µg/L	10	200000	101327	2910	9830	2360	78,500	2750	13	2420	3200	3700	2700
	µg/L	0.01	-		-	-	-	10,000	2.00	1 2	-	-	-	-
	µg/L	0.01				-		-	-	-	-	-	-	1
	µg/L	0.1			-		-	-			-	-		-
	µg/L	0.2	-				<del>                                     </del>	<b>—</b>	-	-	<b>.</b>	<u> </u>	-	<del>  .</del>
AND ADDRESS OF THE PARTY OF THE	µg/L	0.001	20	-	1	1	<u> </u>	<del>                                     </del>			<del>                                     </del>	<del>                                     </del>		+ -
	µg/L	0.03	20		-	-	-		-					-
	µg/L	2	5000		<2	2	<2	4	3	4	2	1	1 1	1
organics	pg/L	-	5000					4	, ,	-	- 2			_
	mall	2	500	381	249	325	231	407	272	436	233	271	241	272
	mg/L mg/L	0.05	500	301	248	323	231	407	- 212	430	200	2/.1	286	312
			500	390	243	391	257	1010	280	965	257	380	269	292
	mg/L	5	500	390	<8	9	<8		<8	24		<8		292
	mg/L			-		+	+	11		+	<8		<5	- 20
	mg/L	2	-				-		-		- 7	-	2.4	_
Organic Carbon - Dissolved (DOC) (Filtered)		0.2	5		1	2	2	8	2	8	1	2	3.4	2.3
Oxygen Demand - Biological (BOD)	mg/L	2					- 3		12		- 15	*	<0.002	<0.00
	mg/L	0.002		250										-
	mg/L	0.2	500	253	3	34	5	310	9	340	6	15	9	7
Ammonia	mg/L	0.01			<0.1	0.6	<0.1	0.6	<0.1	0.2	<0.1	<0.1	0.02	0.05
	mg/L	0.05	10	3.38	0.62	1.36	1.11	1.56	1.87	1.33	4.4	3.89	1.74	6.7
	mg/L	0.03	1		-		-		-	-		-	-	-
Total Kjeldahl Nitrogen (TKN)	mg/L	0.1		_	1	-	1	1	-	-	-	1		1
Conductivity (lab)	µS/cm	1	Andrew Co.		457	693	444	1320	529	1360	459	559	520	564
pH (Lab)	-	0.05	6.5-8.5		7.7	7.76	7.93	7.51	8.01	7.72	7.8	7.67	7.75	7.89
eld									- 13.0					
	mg/L			1	-	5 - 5			7.5	6.5	8.8	7.6	5.11	9,41
Redox Potential (Field)	mV				94c		-	-	189	155	103	196	57	11
Temp (Field)	°C				17	-	-	-	9.7	12.1	13.3	12.1	15,6	10
	µS/cm					10.04	100		400	1107	380	374	512	254
pH (Field)			6.5-8.5		.~	1 24	-	-	7.4	7.07	7.53	8.45	7.11	7.21



Table 5: Groundwater Quality - Lower Bedrock

	Linit	DDI	ODWQS	RUC	TW05-1										
etals	Unit	RDL		_	2011-10-01	2012-05-15	2012-09-25	2013-06-04	2013-10-30	2014-06-09	2014-11-14	2015-05-19	2015-11-03	2016-05-19	2016-10-26
Aluminium (Filtered)	Luga	10	100	1	_	1	1	1	1	1	1	T	1		
Antimony (Filtered)	µg/L	0.2	6	_	-						-				-
	μg/L	0.1	25	-	0.5	0.3	0.3	0.4	0.4	4.8	0.6	<0.2	2	<0.2	0.2
Arsenic (Filtered)	µg/L	0.01	1000	282	168	123	146	141	137	730	104	72.7	86	51.6	68.91
Barium (Filtered)	μg/L														
Boron (Filtered)	µg/L	0.2	5000	2506	86.7	94.8	72.4	76.7	77	217	114	151	160	239	322
Beryllium (Filtered)	µg/L	0.02	_	-		-	-	-			-			-	
Bismuth (Filtered)	μg/L	0.01		_		1110.000			107.000			-	100.000		-
Calcium (Filtered)	µg/L	10			165,000	110,000	129,000	121,000	137,000	182,000	159,000	189,000	198,000	146,000	238,000
Cadmium (Filtered)	µg/L	0.003	5	100000	< 0.003	<0.003	<0.003	0.05	<0.003	0.15	< 0.003	0.01	0.003	<0.003	0.011
Chloride	µg/L	200	250000	126800	35,000	18,000	27,000	28,000	33,000	36,000	51,000	51,000	81,000	40,000	150,000
Chromium (III+VI) (Filtered)	µg/L	0.03	50		<0.5	<0.5	<0.5	<0.5	1	4.45	1.59	0.06	<0.03	0.35	0.3
Cobalt (Filtered)	µg/L	0.002	-			-	- t-	75 1	14.	1.0	41	-	*	1 2	
Copper (Filtered)	µg/L	0.02	1000	1	0.8	0.6	<0.5	0.7	0,6	1.21	1.88	0.67	0.61	0,36	0.08
Iron (Filtered)	µg/L	2	300	160	2430	50	1320	17	1220	145,000	871	400	2600	45	3860
Lithium (Filtered)	µg/L	1				-		-			**			-	
Lead (Filtered)	µg/L	0.01	10		<0.02	0.07	0.02	4.65	0.07	0.26	0.03	0.12	<0.01	0.01	<0.01
Manganese (Filtered)	µg/L	0.01	50	30.28	248	8.22	340	3.35	297	648	132	74.8	367	2.01	520
Magnesium (Filtered)	µg/L	1	1 1 1 1 1 1		12,300	7900	9510	9200	10,200	13,400	11,800	14,700	16,600	12,800	23,200
Mercury (Filtered)	µg/L	0.01	1	1 :	<0.1	<0.1		<0.01	2			L	< 0.01	< 0.01	<0.01
Molybdenum (Filtered)	µg/L	0.01							-	112	4-	-			-
Nickel (Filtered)	µg/L	0.1						-	2		- 4	-	1 8		-
Phosphorus (Filtered)	µg/L	9			90	-	~	<30			-	-		-	-
Potassium (Filtered)	µg/L	2			2780	2290	2200	2340	2620	22,000	2780	2560	2790	2620	3300
Silicon (Filtered)	µg/L	10				-	-	-	-	-	-	-	-	-	-
Strontium (Filtered)	µg/L	0.1				-	-	-	-	-	-	-	-	-	-
Selenium (Filtered)	µg/L	1	50		100	-	-	-	-	-	-	-	-	-	-
Sodium (Filtered)	µg/L	10	200000	101327	14,600	11,900	13,100	12,800	15,600	23,500	20,700	26,300	30,700	30,500	43,600
Silver (Filtered)	µg/L	0.01	-		-	100	5-2	3-1		7-1		+2	-	-	7.5
Tin (Filtered)	µg/L	0.01			-	-		3-0		3-1			-	-	-
Titanium (Filtered)	µg/L	0.1					-	-	-	-	-	-	-	-	-
Thallium (Filtered)	µg/L	0.2				-	-	-	-	-	-	-	-	-	-
Uranium (Filtered)	µg/L	0.001	20			-	-	-	-	-	-	-	-	-	-
Vanadium (Filtered)	µg/L	0.03				1							-		-
Zinc (Filtered)	µg/L	2	5000		4	3	<2	2	<2	16	2	<2	3	5	3
organics	150		-			-				1 13					
Alkalinity (as CaCO3)	mg/L	2	500	381	299	269	287	255	320	308	365	339	392	309	408
Hardness (as CaCO3) (Filtered)	mg/L	0.05	500			-	-	-	-	-		-	-	- 2	-
Solids - Total Dissolved (TDS)	mg/L	3	500	390	520	369	511	463	683	671	803	711	1170	706	1940
Oxygen Demand - Chemical (COD)	mg/L	5		- 000	10	<8	12	<8	14	12	16	13	27	12	39
Solids - Total Suspended (TSS)	mg/L	2			43	-	12	-		12	10	10	-	-	
	mg/L	0.2	5		3	5.7	4	5.4	3.4	2.6	3.9	3.6	6.8	4.3	6
Oxygen Demand - Biological (BOD)	mg/L	2	- "		<2	-		5.4	5,4	-			-	4.5	
Phenols (4AAP)	mg/L	0.002			<0.002	- 2		< 0.002	1140	1 32	7	100		7.0	<del></del>
Sulphate	mg/L	0.002	500	253	86	41	75	62	96	100	170	160	350	84	770
Ammonia		0.01	500	255	0.2	<0.1	<0.1	<0.1	0.2	<0.1	0.2	<0.1	0.2	0.1	0.2
Section 2 Control	mg/L	0.01	10	3.38	<0.05	0.09	<0.05	0.42	<0.06	0.03			-		<0.06
Nitrate (as N)	mg/L			3,38						-	0.1	0.09	<0.06	0.13	
Nitrite (as N)	mg/L	0.03	- 1		<0.06	<0.06	-	<0.03		-	-				
Total Kjeldahl Nitrogen (TKN)	mg/L	0.1		-	<0.5			<0.5		2005	4400		4500	-	
Conductivity (lab)	µS/cm	1 0.05			841	631	911	683	1130	885	1180	1040	1520	1000	2230
pH (Lab)	-	0.05	6.5-8.5		7.97	7.87	7.81	7.67	8.01	7.9	7.83	7.84	7.67	7.8	7.16
eld	11.00	-	-												
DO (Field)	mg/L	-		-			-	-	-	-	-	-	-	-	-
Redox Potential (Field)	mV				+-	-	-	-	-	-	-	-	-	-	-
Temp (Field)	°C				140	-	-	-	-	-	-	-	-	-	-
Conductivity (field)	µS/cm		Sanda V	100000	14	-	-	-	-	-	-	-	-	-	-
pH (Field)		1	6.5-8.5		+-		-	-	-	-	-	-	-	-	-



Table 5: Groundwater Quality - Lower Bedrock

	Hall	DDI	ODWQS	RUC	TW05-1									
- C-C-	Unit	RDL			2017-06-07	2017-09-29	2018-06-11	2018-11-05	2019-05-29	2019-10-28	2020-05-27	2020-11-12	2021-06-28	2021-11-10
etals	1.7.4	1.0	124			_	1	r	4	1				
Aluminium (Filtered)	µg/L	10	100	-					-			-	-	-
Antimony (Filtered)	µg/L	0.2	6			-	-	-	-		-	-	-	-
Arsenic (Filtered)	µg/L	0.1	25		0.9	0.4	0.6	0.3	0.4	5.97	0.3	0.4		277
Barium (Filtered)	µg/L	0.01	1000	282	38.3	48.1	32.4	92	27.3	374	42.8	30.2	28	29
Boron (Filtered)	µg/L	0.2	5000	2506	1560	1000	1830	77	1490	57,900	2330	1570	4600	4070
Beryllium (Filtered)	µg/L	0.02			-	1	-	-		-	-	-		-
Bismuth (Filtered)	µg/L	0.01						-	-	1			4	
Calcium (Filtered)	µg/L	10			517,000	484,000	466,000	295,000	475,000	<0.003	533,000	482,000	444,000	449,000
Cadmium (Filtered)	µg/L	0.003	5		<0.003	<0.003	0.007	0.007	< 0.003	<0.08	<0.003	<0.003	124.545	700 000
Chloride	µg/L	200	250000	126800	150,000	150,000	97,000	150,000	160,000	170,000	230,000	190,000	158,000	157,000
Chromium (III+VI) (Filtered)	µg/L	0.03	50		0.84	0.93	0.26	0.21	0.25	<0.2	0.33	0.25	-2	-
Cobalt (Filtered)	µg/L	0.002				- 4	5.			14	-	7	14	-
Copper (Filtered)	µg/L	0.02	1000		0.45	1.25	0.74	1.11	2.3	1450	2.8	0.6	15.	-
Iron (Filtered)	µg/L	2	300	160	14,000	7180	6110	<7	6360	573	4160	3480	7460	3890
Lithium (Filtered)	μg/L	1			-		-		3	100		-	- K	-
Lead (Filtered)	µg/L	0.01	10		0.04	0.07	0.04	0.06	0.02	<0.01	0.07	0.06	9	-
Manganese (Filtered)	µg/L	0.01	50	30.28	1200	804	677	24.1	852	11,700	1180	547	200	0.00
Magnesium (Filtered)	µg/L	1	1000		62,700	43,900	52,600	7260	48,000	117	77,800	52,100	105,000	91,400
Mercury (Filtered)	µg/L	0.01	1		-	-	-	-	<10	<0.2	1 2 -		12	-
Molybdenum (Filtered)	µg/L	0.01				-	-	-	-				12	-
Nickel (Filtered)	µg/L	0.1			-	-	-	-	-		-		1/2	-
Phosphorus (Filtered)	µg/L	9		-			J	-		4	<30		-	-
Potassium (Filtered)	µg/L	2			7010	5430	6250	2690	4920	7950	6230	5710		-
Silicon (Filtered)	µg/L	10			-	-	-	-	-	-	-	-	-	-
Strontium (Filtered)	µg/L	0.1			1	-	-	-	-	-	-	-	-	-
Selenium (Filtered)	µg/L	1	50		-	-	-	-	-	-	-	-	-	-
Sodium (Filtered)	µg/L	10	200000	101327	99,100	73,100	91,600	22,800	82,900	3	251,000	85,400	143,000	132,000
Silver (Filtered)	µg/L	0.01			18	8			11		-		THE YEAR	-
Tin (Filtered)	µg/L	0.01			-	- ×			-		-	-	- ×	-
Titanium (Filtered)	µg/L	0.1				-	-	-	-	-	-	-	-	-
Thallium (Filtered)	µg/L	0.2			1	-	-	-	-	-	-	-	-	T -
Uranium (Filtered)	µg/L	0.001	20			-	-	-	-	-	-	-	-	-
Vanadium (Filtered)	µg/L	0.03			-									
Zinc (Filtered)	µg/L	2	5000		<2	3	<2	<2	3	<2	2		1 2	1 -
organics			10000										^	
Alkalinity (as CaCO3)	mg/L	2	500	381	418	425	405	445	451	413	435	412	450	496
Hardness (as CaCO3) (Filtered)	mg/L	0.05	500		-		-				-		1540	1500
Solids - Total Dissolved (TDS)	mg/L	3	500	390	2090	2240	1980	2480	2390	2670	2350	2560	1530	1500
Oxygen Demand - Chemical (COD)	mg/L	5		-	32	32	24	37	32	25	43	39	39	38
Solids - Total Suspended (TSS)	mg/L	2			-	-	7	~	-			1	14	-
Organic Carbon - Dissolved (DOC) (Filtered)		0.2	5		14	12	9	8	12	11	16	12	8.6	7.2
Oxygen Demand - Biological (BOD)	mg/L	2	-		-				-	1 4	1 -	1 3		T -
Phenols (4AAP)	mg/L	0.002			-	-	÷. –	- 2	- 4	1 - 1 -			< 0.002	<0.002
Sulphate	mg/L	0.2	500	253	930	760	460	940	950	1100	1100	1200	973	1010
Ammonia	mg/L	0.01			0.7	0.5	<0.1	1.2	0.7	0.6	1	0.8	1.29	1.34
Nitrate (as N)	mg/L	0.05	10	3.38	<0.06	0.84	0.38	0.34	<0.06	<0.06	<0.06	<0.06	1 1	< 0.05
Nitrite (as N)	mg/L	0.03	1		-	- 0.04	-	- 0.54	-		-		-	-
Total Kjeldahl Nitrogen (TKN)	mg/L	0.1			-	-	- 4		-	-	1		1	-
Conductivity (lab)	µS/cm	1			2930	2670	2250	2650	2570	2800	2620	2780	2750	2690
pH (Lab)	-	0.05	6.5-8.5		7.12	7.44	7.47	7.17	7.08	7.62	7.18	7.21	7.36	7.63
eld		10.00	0.0 0.0		1				7.00		, ,,,,,,,			7.00
DO (Field)	mg/L				1		7 - 4	F 4	5.7	6.9	6.1	5.6	5.98	5.74
Redox Potential (Field)	mV				-			+0	20	122	76	-8	85	63
Temp (Field)	°C				-	-	-	-	9.1	10.9	10.6	10.9	12.4	9.6
Conductivity (field)	uS/cm					1 - 2			2130	221	2072	1831	2354	1101
Consequently (nois)	POLOTH		the second second						2100	661	2012	1001	6001	1101



Table 5: Groundwater Quality - Lower Bedrock

	Unit	RDL	ODWQS	RUC	TW06-1	TW06-1 2012-05-15	TW06-1 2012-09-25	TW06-1 2013-06-04	TW06-1 2013-10-30	TW06-1 2014-06-09	TW06-1	TW06-1 2015-05-19	TW06-1	TW06-1 2016-05-19	TW06-1 2016-10-2
etals	Offit	T		_	2011-10-01	2012-05-15	2012-09-25	2013-00-04	2013-10-30	2014-00-09	2014-11-14	2015-05-19	2015-11-03	2010-05-19	2010-10-2
Aluminium (Filtered)	Lucal	10	100	1		1		<10	1		1 -	1	1	1	
Antimony (Filtered)	µg/L	0.2	6	_		1		<0.2	-		-			-	
Arsenic (Filtered)	µg/L	0.1	25		0.3	0.4	0.4	0.5	0.7	0.2	0,9	<0.2	0.4	<0.2	<0.2
Barium (Filtered)	µg/L	0.01	1000	282	416	260	362	282	484	148	355	318	490	313	341
	µg/L	0.01	5000	2506	143	98.4	110	73	193	52.5	150	80.7	156	134	115
Boron (Filtered)	µg/L	0.02	5000	2506		80.4	110	<0.02				80.7	100	134	113
Beryllium (Filtered)	µg/L	0.02				-	- :	<0.02		-		-	1	- 3	
Bismuth (Filtered)	µg/L			_				140,000						_	167,00
Calcium (Filtered)	µg/L	0.003	5		159,000	146,000 <0.003	174,000	0.026	186,000	109,000	182,000	146,000 0.026	189,000	189,000	0.009
Cadmium (Filtered) Chloride	µg/L	200	250000	126800	35,000	21,000	33,000	21,000	40.000	7000	40.000	24.000	44,000	35.000	31.00
	µg/L	0.03	50	120000	0.9	0.7	<0.5	<0.5	40,000	0.3	2.66	0.06	0.15	0.37	0.43
Chromium (III+VI) (Filtered)	µg/L	0.002	50	-	0.9	0.7	<0.5	1.31	- 2	1	2.00	0.06	0.15	0.37	0.43
Cobalt (Filtered)	µg/L	0.002	1000	-	1.5	1.6	1.4	1.51	2.3	1.23	2.88	1.93	1	1.69	0.86
Copper (Filtered)	µg/L		300	160	-	<3	1.4	<3	17		441,07.4	150.0		1,7,0	37
Iron (Filtered)	µg/L	2	300	760	126		1	1.00		7	12	<2	306	12	
Lithium (Filtered)	µg/L	0.01	10		0.05	0.1	0.08	<1 0.02	0.05	0.09	0.04	0.01	0.13	<0.01	0.05
Lead (Filtered)	µg/L			20.00											
Manganese (Filtered)	µg/L	0.01	50	30.28	3250	962	1930	1330	3250	363	1960	1860	6070	1350	2560
Magnesium (Filtered)	µg/L	10.04			9040	6980	9460	6680	11,400	3950	9740	7390	13,200	8710	8520
Mercury (Filtered)	µg/L	0.01	1	-	- 20	-	-	0.40	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.0
Molybdenum (Filtered)	µg/L	0.01		-	124		041	0.12	-				-	-	-
Nickel (Filtered)	µg/L	0.1			141		941	5.4	-			-	100	-	
Phosphorus (Filtered)	µg/L	9			11.000	-	-	<9	<30	<30	<30	30	70	<30	<30
Potassium (Filtered)	µg/L	2			11,200	5850	8880	5450	12,900	3780	8540	5380	11,500	4840	6400
Silicon (Filtered)	µg/L	10			J+5 1	-		3670			-	-	-	-	-
Strontium (Filtered)	µg/L	0.1	-			-	-	295	-		-	-	-	-	-
Selenium (Filtered)	µg/L	1	50		147		-	<1	- 2	~	-	-	-	-	-
Sodium (Filtered)	µg/L	10	200000	101327	21,000	15,900	21,600	11,900	27,400	5920	24,600	13,700	33,000	21,500	21,700
Silver (Filtered)	µg/L	0.01			-	-	1 200	<0.01		-	-	3	1 -	-	-
Tin (Filtered)	µg/L	0.01				-	3.0	0.05		-		-		× .	-
Titanium (Filtered)	µg/L	0.1	-		-	-	(-1	0.2	14		-	-	-	-	-
Thallium (Filtered)	μg/L	0.2	-			91	0.44	<0.2			-	-	-	-	-
Uranium (Filtered)	µg/L	0.001	20			-	341	0.291	-		-	-	-	-	-
Vanadium (Filtered)	µg/L	0.03	-					0.17				-	-	-	-
Zinc (Filtered)	µg/L	2	5000		4	3	3	6	2	3	2	4	5	3	2
organics	,		-						1 345	1 - 30	-		11 75/15		
Alkalinity (as CaCO3)	mg/L	2	500	381	419	353	455	326	471	283	478	385	562	403	414
Hardness (as CaCO3) (Filtered)	mg/L	0.05	500					377				1.5	-	222	500
Solids - Total Dissolved (TDS)	mg/L	3	500	390	497	449	551	494	754	351	609	474	674	677	557
Oxygen Demand - Chemical (COD)	mg/L	5			10	8	20	<8	17	<8	12	11	23	14	12
Solids - Total Suspended (TSS)	mg/L	2	1		122	-		17	- 3		17	-	-		-
Organic Carbon - Dissolved (DOC) (Filtered)		0.2	5		5.4	8.4	4.1	5	6.8	4.8	13.5	2.7	7.8	3,5	3
Oxygen Demand - Biological (BOD)	mg/L	2			14	-				-		-	-		-
Phenols (4AAP)	mg/L	0.002	-		2.		1.71	100	<0.002	<0.002	0.004	<0.002	0.007	0.002	<0.00
Sulphate	mg/L	0.2	500	253	24	57	35	36	28	9.7	42	28	50	-77	72
Ammonia	mg/L	0.01			5.7	0.4	3.3	2.6	8.3	0.9	3.1	2	7.6	0.8	2.7
Nitrate (as N)	mg/L	0.05	10	3.38	0.48	1.77	0.38	0.94	0.24	2.6*	0.1	0.61	0.19	0.15	0.24
Nitrite (as N)	mg/L	0.03	1	-		-			<0.03	< 0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Total Kjeldahl Nitrogen (TKN)	mg/L	0.1			-	-	-	-	8.2	1	3.6	2.2	8.1	1.1	2.8
Conductivity (lab)	µS/cm	1	Market Street		906	808	1050	759	1060	567	1020	809	1210	1010	924
pH (Lab)	-	0.05	6.5-8.5		7.8	7.59	7.49	7.8	7.77	7.9*	7.82	7.83	7.54	7.83	7.37
eld															
DO (Field)	mg/L				3.0	1	-	-	-	-	-	-	-	-	-
Redox Potential (Field)	mV				+-	-	-	-	-	-	-	-	-	-	-
Temp (Field)	°C				P+S	-	-	-	-	-	-	-	-	-	-
Conductivity (field)	µS/cm	1		1100000	1	-	-	-	-	-	-	-	-	-	-
pH (Field)			6.5-8.5							T -					



Table 5: Groundwater Quality - Lower Bedrock

	Unit	RDL	ODWQS	RUC	TW06-1 2017-06-07	TW06-1 2017-09-29	TW06-1 2018-06-11	TW06-1 2019-05-29	TW06-1 2019-10-28	TW06-1 2020-05-27	TW06-1 2020-11-12	TW06-1 2021-06-28	TW06-1 2021-11-
etals									-				-
Aluminium (Filtered)	µg/L	10	100		-		1	1 .	1 -	1	1		
Antimony (Filtered)	µg/L	0.2	6			1	-	T -	-	-	-	-	-
Arsenic (Filtered)	µg/L	0.1	25		<0.2	<0.2	<0.2	<0.2	0.6	<0.2	<0.2	<0.1	<0.1
Barium (Filtered)	µg/L	0.01	1000	282	138	297	225	117	393	103	279	296	301
Boron (Filtered)	µg/L	0.2	5000	2506	33	113	56	23	145	29	91	110	136
Beryllium (Filtered)	µg/L	0.02	5000	2000	- 00	110	- 50	20	140	- 20		110	- 100
Bismuth (Filtered)	μg/L	0.01		-	1 3	1		1 1	-	1	1 1		
Calcium (Filtered)	μg/L	10			103,000	166,000	149,000	115,000	253,000	105,000	178,000	178,000	160,00
Cadmium (Filtered)	µg/L	0.003	5	-	0.014	0.026	0.012	0.016	0.056	<0.003	0.026	0.019	0.024
Chloride	µg/L	200	250000	126800	3000	39.000	17,000	5000	55,000	5000	34.000	38,400	27,300
Chromium (III+VI) (Filtered)		0.03	50	720000	1.01	0.77	0.12	0.11	0.32	0.17	0.17	<1	<1
	μg/L	0.002	50	-		0.77	-		_		0.17		
Cobalt (Filtered)	µg/L		1000	-	0.77	3.11	1.07	1	1	0.9	0.9	1,9	1.1
Copper (Filtered)	µg/L	0.02		400				<del></del>					
Iron (Filtered)	µg/L	2	300	160	60	13	<7	12	221	13	132	17	26
Lithium (Filtered)	µg/L	1 0 04			7.40	-	-	-		-			
Lead (Filtered)	µg/L	0.01	10		0.16	0.2	<0.01	<3	0.34	0.05	0.1	0.05	0.08
Manganese (Filtered)	µg/L	0.01	50	30.28	241	950	374	568	4360	3.71	1210	1190	1390
Magnesium (Filtered)	µg/L	1			2990	7710	5050	3650	13,600	3680	9080	9900	10,50
Mercury (Filtered)	µg/L	0.01	1		<10	70	0.03	<10	<10	<10	<10	<0.02	<0.02
Molybdenum (Filtered)	µg/L	0.01					-		-	-	-		
Nickel (Filtered)	µg/L	0.1			1 - 2			19	-		4	22	1
Phosphorus (Filtered)	µg/L	9		-	<30	40	<30	<30	4	30	<3	90	30
Potassium (Filtered)	µg/L	2			2540	4520	4010	2330	8140	2280	7720	5000	7400
Silicon (Filtered)	µg/L	10			-	-	-	-	-	-	-	-	-
Strontium (Filtered)	µg/L	0.1				-	-	-	-	-	-	-	-
Selenium (Filtered)	µg/L	1	50	1		-	-	-	-	-	-	-	-
Sodium (Filtered)	µg/L	10	200000	101327	4210	17,300	8600	4200	38,000	5740	21,000	24,800	20,300
Silver (Filtered)	µg/L	0.01			-	-		1	11 8 -	1	-	-	25
Tin (Filtered)	µg/L	0.01			-/-		-	-	1 8			-	-
Titanium (Filtered)	µg/L	0.1			140		-	-	-	-	-	-	-
Thallium (Filtered)	µg/L	0.2				-	-	-	-	-	-	-	-
Uranium (Filtered)	µg/L	0.001	20			111	-	-	-	-	-	-	-
Vanadium (Filtered)	µg/L	0.03			-	-	-		-				
Zinc (Filtered)	µg/L	2	5000		2	3	<2	0.02	3	5	<2	<5	<5
organics	19.2		-		1			0.02	-				-
Alkalinity (as CaCO3)	mg/L	2	500	381	239	355	292	399	534	266	454	352	392
Hardness (as CaCO3) (Filtered)	mg/L	0.05	500	307	-	550		333	224	200	197	486	443
Solids - Total Dissolved (TDS)	mg/L	3	500	390	274	526	380	509	806	300	609	505	467
Oxygen Demand - Chemical (COD)	mg/L	5	500	330	<8	<8	<8	<8	16	<8	14	11	16
Solids - Total Suspended (TSS)	mg/L	2			-	-	-	100	10		14	-11	10
Organic Carbon - Dissolved (DOC) (Filtered)		0.2	5		2	2	3	2	8	2	5	5.9	4.2
			9	-		-			-		+	-	
Oxygen Demand - Biological (BOD)	mg/L	2			-0.000	<0.002	-0.000	<0.002	-0.000	<0.002	<0.002	<0.002	<0.00
Phenols (4AAP)	mg/L	0.002		250	<0.002		<0.002		<0.002			12/00/200	
Sulphate	mg/L	0.2	500	253	6	82	35	12	110	10	80	90	45
Ammonia	mg/L	0.01	12		0.2	0.7	0.5	0.6	5.4	<0.1	4.5	1.07	3.45
Nitrate (as N)	mg/L	0.05	10	3.38	1.19	0.16	1.85	2.58	0.08	3.43	0.98	1.03	3.5
Nitrite (as N)	mg/L	0.03	- 1		<0.03	< 0.03	0.22	0.16	<0.03	<0.03	0.44	0.19	0.07
Total Kjeldahl Nitrogen (TKN)	mg/L	0.1			<0.5	1.1	0.8	0.8	6,4	<0.5	5.4	1.4	4
Conductivity (lab)	µS/cm	1	San Control		483	862	656	817	1270	530	977	950	882
pH (Lab)	-	0.05	6.5-8.5		7.62	7.54	7.83	7.71	7.8	7.85	7.47	7.52	7.57
eld													
DO (Field)	mg/L			1	147			4.5	7	7	6.1	2.19	3.18
Redox Potential (Field)	mV				240		-	126	164	84	88	62	33
Temp (Field)	°C				17	J-4	-	9.6	11.4	13.9	11.4	14.8	10.4
Conductivity (field)	µS/cm	1	1000			10.040	-	650	959	438	660	890	383
pH (Field)	-		6.5-8.5		17	-	-	7.38	7.03	7.46	7.25	6.89	6.82
			THE RESERVE AND ADDRESS.				-						



Table 5: Groundwater Quality - Lower Bedrock

	Unit	RDL	ODWQS	1.00	TW07-1 2011-10-01	TW07-1 2012-05-15	TW07-1 2012-09-25	TW07-1 2013-06-04	TW07-1 2013-10-30	TW07-1 2014-06-09	TW07-1	TW07-1 2015-05-19	TW07-1	TW07-1 2016-05-1
etals	Ottit	T			2011-10-01	12-00-15	2012-09-25	12010-04	12010-10-30	2014-00-09	12014-11-14	2010-00-19	12010-11-03	2010-03-1
	ua/l	10	100					30	1		1 .		1	
	µg/L	0.2	6	_		-	-	0.4	1			-		-
	μg/L	0.1	25	-				0.4		_		<0.2	<0.2	<0.2
	µg/L		1000	282	<0.2 181	170	<0.2		0.5	<0.2	0.3	204	177	179
	μg/L	0.01	-					188						
	µg/L	0.2	5000	2506	25.8	47.6	20	21.8	21.5	19.1	26.3	37.6	16.4	29
	µg/L	0.02		_		-		<0.02	-		-		-	
	μg/L	0.01				-		<0.01	2			12122		-
	µg/L	10			94,700	93,600	94,300	87,200	92,400	94,000	94,000	101,000	94,600	97,000
	µg/L	0.003	5		0.058	<0.003	<0.003	0.005	0.005	0.011	<0.003	0.007	0.003	0.006
	µg/L	200	250000	126800	9400	9500	14,000	16,000	17,000	14,000	8900	15,000	14,000	16,000
	µg/L	0.03	50		<0.5	0.8	<0.5	<0.5	0.8	0.4	0.29	0.03	0.07	0.33
	µg/L	0.002	-		8.0	-	- 6	0.116	- 4	*		, b.	-	
	µg/L	0.02	1000		1	1,3	0.8	1	0.9	1.35	1.35	0.81	1.31	0.43
	µg/L	2	300	160	25	<3	11	<3	27	<2	28	85	26	162
	μg/L	1			- 1- 1-	8. 1		1	-	16	1.0	32 11	-	15.1
	μg/L	0.01	10		<0.02	<0.02	<0.02	<0.02	0.02	0.04	0.03	0.02	0.05	0.02
	μg/L	0.01	50	30.28	16.2	1.93	14.8	4.26	4.5	1.31	6.55	7.88	2.94	8.18
Magnesium (Filtered)	µg/L	1			4640	4760	4780	4560	4680	4730	4700	5090	5320	5140
Mercury (Filtered)	µg/L	0.01	1		20	-	340	· ·	<0.01	< 0.01	< 0.01	<0.01	0.02	<0.01
Molybdenum (Filtered)	µg/L	0.01			2.0	9	04.1	0.27	-				-	
Nickel (Filtered)	µg/L	0.1			144	-	941	1.4	- 4	7.				-
	µg/L	9		-		-		<9	30	<30	<30	<30	<30	<30
Potassium (Filtered)	µg/L	2			1300	1440	1340	1330	1400	1480	1420	1200	1380	1280
	µg/L	10					3.0	2830	1 4	2	-	-	-	-
	µg/L	0.1			2.		14	468	- 12	- 2	-	-	-	-
	µg/L	1	50					<1	1 2		-	-	-	-
	µg/L	10	200000	101327	7150	7500	7850	7790	8320	8300	8720	8220	9710	9150
	µg/L	0.01		10.020	- 1.00	-	1000	<0.01	1.5	-	100	-		100
	µg/L	0.01			-	-	-	0.04	-	-	-		-	
	µg/L	0.1					(-)	0.2	-	10002	-	-	-	-
	µg/L	0.2	-				141	<0.2			<u> </u>		-	<u> </u>
	µg/L	0.001	20			-	-	0.882	-	1	<del>                                     </del>	-	<del>                                     </del>	
	µg/L	0.03	20			-		0.14	-	-		-		-
	µg/L	2	5000	-	7	7	3	4	3	4	3	<2	8	4
organics	pg/L	-	3000	_	-		3		,5		3		0	- 4
	mi is B	2	500	381	235	241	224	214	124	240	247	247	245	218
	mg/L mg/L	0.05	500	301	235	241	- 224	236	124	240	241	241	240	210
		3	500	390	277	306	271	337	260	363	323	331	297	320
	mg/L		500	390		<8		<8		11			-	
	mg/L	5	-	-	<8 15	+	10	<8	<8	111	<8	<8	<8	<8
	mg/L		-			5			7	4.3			- 0.4	-
Organic Carbon - Dissolved (DOC) (Filtered)		0.2	5	_	2.1		2.3	4.1	2		3.4	<1	2.1	<1
Oxygen Demand - Biological (BOD)	mg/L	2		-	<2	-	-		<0.002	<0.002	0.004	-0.000	<0.002	0.002
	mg/L	0.002		250		- 45						<0.002		
	mg/L	0.2	500	253	14	15	15	18	16	17	16	17	15	18
	mg/L	0.01	- 12		<0.1	<0.1	<0.1	0.8	<0.1	<0.1	0.1	<0.1	<0.1	<0.1
	mg/L	0.05	10	3.38	0.06	0.19	0.1	0.36	0.1	0.37	<0.06	0.23	0.19	<0.06
	mg/L	0.03	1			-		1-1	<0.03	< 0.03	<0.03	<0.03	<0.03	<0.03
	mg/L	0.1				-	1.5	-	<0,5	<0.5	<0.5	<0.5	<0.5	<0.5
	µS/cm	1			506	524	540	509	486	517	511	523	531	534
pH (Lab)		0.05	6.5-8.5		8.03	7.88	7.97	7.88	8.24	8	8.08	7.7	7.76	8.04
eld														
DO (Field)	mg/L	-		1		-	-	-	-	-	-	-	-	-
	mV				+-	-	-	-	-	-	-	-	-	-
Temp (Field)	°C				140	-	-	-	-	-	-	-	-	-
	µS/cm	1			141	-	-	-	-	-	-	-	-	-
pH (Field)			6.5-8.5			-	† -	<u> </u>	T -	† -	<u> </u>	<u> </u>	<u> </u>	



Table 5: Groundwater Quality - Lower Bedrock

		-	ODWQS	RUC	TW07-1	TW07-1							
	Unit	RDL	-		2016-10-26	2017-09-29	2018-06-11	2019-05-29	2019-10-28	2020-05-27	2020-11-12	2021-06-28	2021-11-1
etals			1000			_					_		,
Aluminium (Filtered)	µg/L	10	100		-	100	-	-			-	04.1	1.41
Antimony (Filtered)	μg/L	0.2	6			1 1 -	-	-	-	-	-	-	-
Arsenic (Filtered)	µg/L	0.1	25		<0.2	<0.2	< 0.2	<0.2	<0.2	<0.2	<0.2	0.2	0.2
Barium (Filtered)	µg/L	0.01	1000	282	173	173	182	174	15.7	158	165	189	188
Boron (Filtered)	µg/L	0.2	5000	2506	21	24	68	24	2	24	9	25	41
Beryllium (Filtered)	µg/L	0.02							-		-	-	-
Bismuth (Filtered)	µg/L	0.01			1 2		-	12		1 .		1	1
Calcium (Filtered)	µg/L	10			97,700	102,000	123,000	102,000	14,100	91,400	97,300	98,500	101,000
Cadmium (Filtered)	µg/L	0.003	5		< 0.003	< 0.003	< 0.003	0.003	< 0.003	0.026	< 0.003	< 0.015	< 0.015
Chloride	µg/L	200	250000	126800	15,000	14,000	18,000	12,000	13,000	13,000	12,000	14,100	14,500
Chromium (III+VI) (Filtered)	µg/L	0.03	50		0.37	0.62	0.18	0.12	<0.08	0.19	0.08	<1	<1
Cobalt (Filtered)	µg/L	0.002	-		4		1	-	-	4	4	1	-
Copper (Filtered)	µg/L	0.02	1000		0.41	0.97	1.02	1.8	<0.2	1.7	1.6	0.4	0.4
Iron (Filtered)	µg/L	2	300	160	204	33	330	15	<7	<7	24	317	353
Lithium (Filtered)	µg/L	1		100	107			- 10	1 0	1	-	-	-
Lead (Filtered)	µg/L	0.01	10		0.05	0.05	<0.01	<3	<0.01	0.01	0.11	0.04	0.03
Manganese (Filtered)	µg/L	0.01	50	30.28	6.59	3.8	78.9	2.39	0.57	0.28	5.84	11	11
		1	50	30.20	4940	5260	5670	4860	668	4600	4070	4930	4910
Magnesium (Filtered)	µg/L	0.01	1	_	<0.01	30	<0.01	<10	<10	<10	<10	<0.02	<0.02
Mercury (Filtered)	µg/L		-	-		- 23	7						
Molybdenum (Filtered)	µg/L	0.01		-	-		-		-	-	-		
Nickel (Filtered)	µg/L	0.1					-	-	-		- 6	1.	
Phosphorus (Filtered)	µg/L	9			<30	40	<30	<30	<3	40	<3	20	<10
Potassium (Filtered)	µg/L	2			1170	1260	1390	1210	120	1240	1270	1100	1200
Silicon (Filtered)	µg/L	10				-	-	-	-	-	-	-	-
Strontium (Filtered)	µg/L	0.1	Toron .		-	-	-	-	-	-	-	-	-
Selenium (Filtered)	µg/L	1	50			-	-	-	-	-	-	-	-
Sodium (Filtered)	µg/L	10	200000	101327	8230	9080	10,600	8400	1300	9330	7340	9000	8900
Silver (Filtered)	µg/L	0.01	1	1	199	1-0	11 3		3		-	8.	1 3
Tin (Filtered)	µg/L	0.01			1.	1	-					-	-
Titanium (Filtered)	µg/L	0.1			+	-	-	-	-	-	-	-	-
Thallium (Filtered)	µg/L	0.2			1 9	-	-	-	-	-	-	-	-
Uranium (Filtered)	µg/L	0.001	20			1	-	-	-	-	-	-	-
Vanadium (Filtered)	µg/L	0.03			-				-		-	-	-
Zinc (Filtered)	µg/L	2	5000		3	<2	5	0.05	<2	5	4	<5	<5
organics			-		1			-	-				1
Alkalinity (as CaCO3)	mg/L	2	500	381	253	252	238	244	231	229	224	222	247
Hardness (as CaCO3) (Filtered)	mg/L	0.05	500		-		-	-	-		-	267	273
Solids - Total Dissolved (TDS)	mg/L	3	500	390	291	283	306	283	303	240	283	264	270
Oxygen Demand - Chemical (COD)	mg/L	5	200	330	11	<8	<8	<8	8	<8	<8	<5	12
Solids - Total Suspended (TSS)	mg/L	2			- 11		-	10	-	-	-	-0	12
		0.2	5		2	2	2	2	<1	2	2	3.5	2.8
Organic Carbon - Dissolved (DOC) (Filtered)			- 0	_		- 2	- 2	- 2	-	-		3,3	2,0
Oxygen Demand - Biological (BOD)	mg/L	0.002			<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Phenols (4AAP)	mg/L			250				721770					
Sulphate	mg/L	0.2	500	253	16	20	38	18	17	11	19	18	16
Ammonia	mg/L	0.01			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.02	0.01
Nitrate (as N)	mg/L	0.05	10	3,38	0.09	<0.06	0.17	<0.06	<0.06	<0.06	0.1	0.13	<0.05
Nitrite (as N)	mg/L	0.03	- 1		< 0.03	< 0.03	<0.03	< 0.03	<0.03	< 0.03	< 0.03	<0.05	<0.05
Total Kjeldahl Nitrogen (TKN)	mg/L	0.1			<0.5	<0.5	<0,5	<0.5	<0.5	<0.5	<0.5	0,2	0.2
Conductivity (lab)	µS/cm	1	Jane Berry		517	507	511	528	513	501	487	510	522
pH (Lab)	-	0.05	6.5-8.5		7.64	7.62	7.92	7.85	8.07	8.02	7.82	7.89	7.85
eld												2.72	
DO (Field)	mg/L				140	5 - 5 - E		10.3	6.3	5.5	3.9	2.23	4.56
Redox Potential (Field)	mV				940		-	-14	118	211	21	-4	21
Temp (Field)	°C				/7	276	-	8.9	11.7	147	11.7	11.9	9.2
Conductivity (field)	µS/cm				-	1	-	430	395	411	337	519	229
pH (Field)	1000	+	6.5-8.5		_	-	+	7.45	6.72	7.65	7.98	7.29	7.33



Table 5: Groundwater Quality - Lower Bedrock

			ODWQS	RUC	TW08-1	TW08-1	TW08-1	TW08-1	TW08-1	TW08-1	TW08-1	TW08-1	TW08-1	TW08-1	TW08-1	TW08-1	TW08-1
	Unit	RDL	-		2014-12-23	2015-05-19	2015-11-03	2016-05-19	2016-10-26	2017-06-07	2017-09-29	2018-06-11	2019-10-28	2020-05-27	2020-11-12	2021-06-28	2021-11-
Metals		-	120			-			1		_	1		1	-	7-	-
Aluminium (Filtered)	µg/L	10	100		-	-		-			1000			-	-	1 000	-
Antimony (Filtered)	μg/L	0.2	6			-	-	<u> </u>				-	<u> </u>		<u> </u>	-	
Arsenic (Filtered)	µg/L	0.1	25	-	<0.2	<0.2	0.3	<0.2	<0.2	<0.2	<0.2	<0.2	0.9	<0.2	<0.2	<0.1	<0.1
Barium (Filtered)	µg/L	0.01	1000	282	36.9	50	93	30.1	55.1	33.5	44.2	44	61.1	37.2	60.3	32	42
Boron (Filtered)	µg/L	0.2	5000	2506	9.4	46.3	18.6	10	12	23	14	35	15	8	<2	9	12
	µg/L	0.02				-	-					-		-		-	-
Bismuth (Filtered)	µg/L	0.01			-	-	-	-					-	-	-		-
Calcium (Filtered)	µg/L	10			101,000	99,400	134,000	89,900	114,000	90,500	105,000	109,000	120,000	86,800	106,000	98,300	114,000
Cadmium (Filtered)	µg/L	0.003	5		< 0.003	<0.003	0.005	<0.003	<0.003	0.003	0.003	0.03	0.017	< 0.003	<0.003	<0.015	<0.015
Chloride	µg/L	200	250000	126800	2900	6000	8000	2000	12,000	2000	5000	2000	7000	2000	7000	4300	2700
Chromium (III+VI) (Filtered)	µg/L	0.03	50		< 0.03	0.04	< 0.03	0.35	0.42	0.59	0.98	0.29	1.27	0.16	0.14	<1	<1
Cobalt (Filtered)	µg/L	0.002			4	-	14	-					.8.	91	3.47	1.8	i e
Copper (Filtered)	µg/L	0.02	1000	1	0.54	0.45	0.89	0.43	0.41	0.91	0,66	0.61	2.7	8.0	0.8	0.6	0.6
Iron (Filtered)	µg/L	2	300	160	5	129	96	<7	139	19	95	141	1050	<7	10	14	22
Lithium (Filtered)	μg/L	1				-	9.	1 34	1	5-0	- 2	-	-	100		100	
Lead (Filtered)	µg/L	0.01	10		< 0.01	0.05	0.03	<0.01	0.04	0.03	0.07	0.04	1.07	0.01	0.06	0.04	0.03
Manganese (Filtered)	µg/L	0.01	50	30.28	4.89	127	158	2.8	40.1	12.9	34.1	12.1	86.3	0.67	3.57	1	9
Magnesium (Filtered)	µg/L	1			3090	3420	5500	2570	2730	2230	2890	2440	2980	2160	2360	2560	3060
Mercury (Filtered)	µg/L	0.01	1		0.04	< 0.01	< 0.01	< 0.01	< 0.01	<10	80	0.03	<10	<10	<10	<0.02	<0.02
Molybdenum (Filtered)	µg/L	0.01			1 2	-	-		1 .		1		1 2				-
Nickel (Filtered)	µg/L	0.1			-		-	1			1 2		1	- 0	100	1	1 .
Phosphorus (Filtered)	µg/L	9			130	<30	60	<30	<30	<30	140	40	75	800	<3	120	270
Potassium (Filtered)	µg/L	2			628	908	2620	670	1330	645	993	667	1370	616	1700	600	700
Silicon (Filtered)	µg/L	10			020	-	-	-	-	-	-	-	-	-	-	-	-
Strontium (Filtered)	µg/L	0.1			1		<del>                                     </del>	<del>                                     </del>	<u> </u>	<del>-</del>	+ -	<del>                                     </del>	+ :	+ -	+ -	<u> </u>	+ -
Selenium (Filtered)		1	50		1		+ -	+	<del>                                     </del>	<del>                                     </del>	+ -	+ -	+ :-	+ -	+ :-	<del>                                     </del>	+ -
Sodium (Filtered)	µg/L	10	200000	101327	2610	3240	5900	2060	3750	1800	2950	1900	3340	1770	3060	2500	2700
	µg/L		200000	101321	-	-	-	+	1			-		_	-	-	_
Silver (Filtered)	µg/L	0.01				-	-	-	-	1 - 2- 1	3-0	-	-				-
Tin (Filtered)	μg/L	0.01				-	-	-	-	-		-	-	~		-	-
Titanium (Filtered)	µg/L	0.1	-			-	-	-	-	-	-	-	-	-	-	-	-
Thallium (Filtered)	μg/L	0.2	-			-	-	-	-	-	-	-	-	-	-	-	-
Uranium (Filtered)	μg/L	0.001	20		+	1 -	-	-	-	-	-	-	-	-	-	-	-
Vanadium (Filtered)	µg/L	0.03	-			-	-	-	-	-	-			- 20	-	-	-
	μg/L	2	5000		8	<2	13	<2	7	3	7	11	22	39	4	<5	<5
norganics																	
	mg/L	2	500	381	280	287	336	213	255	233	241	234	247	409	268	225	279
Hardness (as CaCO3) (Filtered)	mg/L	0.05	500		-	-		-		- 24		1	-		-	256	298
Solids - Total Dissolved (TDS)	mg/L	3	500	390	343	314	403	271	297	231	277	269	297	254	283	242	281
Oxygen Demand - Chemical (COD)	mg/L	5			8	<8	14	<8	<8	<8	<8	<8	<8	8	<8	<5	14
Solids - Total Suspended (TSS)	mg/L	2	1000			-	T				-	-	-	-	7	~	-
Organic Carbon - Dissolved (DOC) (Filtered)	mg/L	0.2	5		<1	<1	2.4	<1	<1	2	1	1	<1	1	1	2.6	1.7
Oxygen Demand - Biological (BOD)	mg/L	2			/+0	-		-	-	-	-	-	-	-		-	
Phenols (4AAP)	mg/L	0.002		11	< 0.002	0.004	< 0.002	0.002	<0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0,002	<0.002	< 0.002
Sulphate	mg/L	0.2	500	253	6	3	15	5	8	3	5	4	7	4	9	6	6
Ammonia	mg/L	0.01			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	0.01
Nitrate (as N)	mg/L	0.05	10	3.38	1.63	0.93	1.14	0.46	1.59	0.45	1.29	0.61	1.21	0.71	2	1.37	1.22
Nitrite (as N)	mg/L	0.03	1		< 0.03	< 0.03	0.04	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.05	< 0.05
Total Kjeldahl Nitrogen (TKN)	mg/L	0.1			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.3	0.4
Conductivity (lab)	µS/cm	1	1		512	550	662	453	527	423	487	438	522	455	483	469	542
pH (Lab)	-	0.05	6.5-8.5		8.15	7.97	7.52	8.12	7.48	7.68	7.87	7.94	8.03	8.02	7.85	7.85	7.73
Field		3.00	0.0.0.0		1	1,07	7.02	9.16	1,10		7.50	1.01	0.00		1.300	7.00	
Address of the Control of the Contro	mg/L				-	1	T -	T -	T -		1	17 3	7.2	7.6	8.6	8.18	6.62
Redox Potential (Field)	mV				1	-	+ -	+ -	<del>                                     </del>	<del></del>	-	1 - 1 -	118	166	106	114	57
Temp (Field)	°C				-	-	+ -	+ -	<del>                                     </del>	<del>-</del> -	-	1	12.1	10.6	12.1	12.4	10.4
		-				-	+ -	<del>-</del>	-		-	-	413	419	327	456	237
Conductivity (field) pH (Field)	µS/cm	-	6.5-8.5			-	+ -	+	<del>                                     </del>		7		7.23	7.84	7.96	7.42	7.2



Table 5: Groundwater Quality - Lower Bedrock

	Unit	RDL	ODWQS	NOC	TW09-1	TW09-1 2012-05-15	TW09-1 2012-09-25	TW09-1 2013-06-04	TW09-1 2013-10-30	TW09-1 2014-06-09	TW09-1	TW09-1 2015-05-19	TW09-1	TW09-1 2016-05-1
etals	Ullit	KUL			2011-10-01	2012-05-15	2012-09-25	2013-00-04	2013-10-30	2014-00-09	2014-11-14	2010-00-19	2015-11-03	2010-03-1
1702		40	100			1		<10	1		1			_
	µg/L	10				-	-				-			-
	μg/L	0.2	6	-	.00		-0.0	<0.2	*	0.3	0.4			-
	µg/L	0.1	25	200	<0.2	0.3	<0.2	0.4	0.3	259		<0.2	<0.2	<0.2
	µg/L	0.01	1000	282	111	101	106	114	113		98.8	111	111	106
	µg/L	0.2	5000	2506	32.2	45.6	31.8	24.3	28.5	13.6	29.7	75.1	18.1	19
	µg/L	0.02				-		<0.02						-
	µg/L	0.01						<0.01	12	-	-			-
	µg/L	10			105,000	98,200	96,300	99,900	103,000	101,000	98,600	107,000	98,400	104,00
	µg/L	0.003	5		<0.003	<0.003	<0.003	0.026	<0.003	0.006	<0.003	0.007	<0.003	< 0.003
	µg/L	200	250000	126800	14,000	11,000	14,000	19,000	17,000	5000	8900	15,000	14,000	17,000
	µg/L	0.03	50		<0.5	0.5	<0.5	<0.5	0.9	0.25	0.71	0.05	<0.03	0.28
	µg/L	0.002					1.6	0.131	4		. 161	15.	-	.5.
	µg/L	0.02	1000	1	1.4	<0.5	0.7	0.7	0.5	0.74	0.88	0.59	0.73	0.14
	µg/L	2	300	160	24	8	253	12	391	217	88	4	30	10
	μg/L	1				-	-	1		- 6		- 23	1	- 8
Lead (Filtered)	μg/L	0.01	10		0.03	<0.02	<0.02	0.07	< 0.02	0.03	<0.01	<0.01	0.02	<0.01
Manganese (Filtered)	μg/L	0.01	50	30.28	17.5	23.8	31.9	8.47	49.5	31.7	15	3.89	36.7	12.5
Magnesium (Filtered)	µg/L	1			5180	4530	5050	4770	5140	3770	4710	5060	5610	5230
Mercury (Filtered)	µg/L	0.01	1		100	-	34	4	< 0.01	< 0.01	<0.01	< 0.01	0.03	< 0.01
Molybdenum (Filtered)	µg/L	0.01			124		0.4	0.44				-21		
	µg/L	0.1			141		041	1.4	14	7-				
	µg/L	9			~	-	-	<9	40	50	<30	<30	60	<30
	µg/L	2			1350	1130	1260	1170	1260	855	1260	1120	1260	1130
	µg/L	10			5.0		3.0	3140	1	- 2	-	-	-	-
	µg/L	0.1			1		14- 4	367	1 - 10	- 3	<del> </del> -	-	<u> </u>	-
	µg/L	1	50					1	-	1	T -	-	-	<u> </u>
	µg/L	10	200000	101327	6850	5620	7160	6680	7480	3380	8460	7780	9040	8260
	µg/L	0.01	20000	101021		- 0020	1100	<0.01	7 100	-		1700	3010	-
	µg/L	0.01	-		-	-	-	0.06		-	-		-	
	µg/L	0.01				- 5	-	0.4	-		-	-		-
	µg/L	0.2	-				1.0	<0.2	-		<del>                                     </del>		<del>                                     </del>	
And the second s	μg/L	0.001	20	_		-	1	0.447	1		+ :-	-	<del>                                     </del>	<del>-</del>
	µg/L	0.03	20	_	-	-		0.447	-	-		-	-	-
	µg/L	2	5000		6	<2	3	3	<2	2	<2	3	3	<2
	µg/L	2	5000		-	12	3	3				3	3	
organics Alkalinity (as CaCO3)	n + 1 - 12	2	500	381	252	250	237	223	216	250	259	267	251	261
	mg/L	0.05	500	301	-		231	269	210	250	_	207		201
	mg/L	_		200	0.10	-	000		- 004	L.		- 004	-	0.10
	mg/L	3	500	390	340	314	303	334	331	329	334	331	331	340
	mg/L	5			<8	<8	9	12	<8	96	<8	<8	<8	9
	mg/L	2			9		-	- i		-	-	-		-
Organic Carbon - Dissolved (DOC) (Filtered)		0.2	5		2	4.7	1.5	4.1	3,2	4	3.2	1.3	1.7	1,3
Oxygen Demand - Biological (BOD)	mg/L	2			<2	-	-		-	-		-	-	
	mg/L	0.002		1		- 3	7.5		<0.002	<0.002	0.002	<0.002	<0.002	<0.002
	mg/L	0.2	500	253	23	18	18	21	22	20	17	18	17	22
	mg/L	0.01		100	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	<0.1	<0.1	<0.1	<0.1
	mg/L	0.05	10	3.38	<0.05	<0.05	<0.05	<0.06	<0.06	2.87	<0.06	<0.06	<0.06	<0.06
	mg/L	0.03	1						<0.03	< 0.03	< 0.03	<0.03	< 0.03	< 0.03
	mg/L	0.1			1	-	1.3	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Conductivity (lab)	µS/cm	1			569	533	545	531	521	498	524	555	551	559
pH (Lab)	- 1	0.05	6.5-8.5		7.97	7.81	7.97	7.92	8.14	7.96	8.08	8	8.08	8.08
eld					1									
	mg/L			1		1	-	-	-	-	-	-	-	-
	mV				-	-	-	-	-	-	-	-	-	-
Temp (Field)	°C				175	-	-	<del>  -</del>	-	-	<b>+</b> -	-	<del> </del> -	-
	µS/cm				- 4	-	-	-	-	-	-	-	-	-
pH (Field)			6.5-8.5		-		<del>                                     </del>	<b>—</b>	+	+	<b>—</b>		<u> </u>	<del> </del>



Table 5: Groundwater Quality - Lower Bedrock

	Unit	RDL	ODWQS	1.00	TW09-1 2016-10-26	TW09-1 2017-06-07	TW09-1 2017-09-29	TW09-1 2018-06-11	TW09-1 2019-05-29	TW09-1 2019-10-28	TW09-1 2020-05-27	TW09-1 2020-11-12	TW09-1 2021-06-28	TW09-1 2021-11-1
atala	Unit	KUL			2010-10-26	2017-00-07	2017-09-29	2018-00-11	2019-05-29	2019-10-28	2020-05-27	2020-11-12	2021-00-28	12021-11-
etals	lu-a	140	400					1	1	1	1	1	1	1
Aluminium (Filtered)	µg/L	10	100	_		-	- 2	147		-				-
Antimony (Filtered)	μg/L	0.2	6			-	-		-	-	-	-		<del>-</del>
Arsenic (Filtered)	µg/L	0.1	25		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1
Barium (Filtered)	µg/L	0.01	1000	282	106	112	107	134	110	109	112	118	116	110
Boron (Filtered)	µg/L	0.2	5000	2506	22	19	21	105	22	25	20	13	24	23
Beryllium (Filtered)	µg/L	0.02			7.	-	-	-		-		-	-	-
Bismuth (Filtered)	µg/L	0.01			-	-		-		-	-	-	-	-
Calcium (Filtered)	µg/L	10			108,000	101,000	114,000	132,000	114,000	108,000	102,000	104,000	105,000	101,00
Cadmium (Filtered)	µg/L	0.003	5		< 0.003	< 0.003	0.004	<0.003	<0.003	0.01	<0.003	0.004	<0.015	< 0.01
Chloride	µg/L	200	250000	126800	19,000	17,000	17,000	19,000	18,000	18,000	17,000	17,000	15,100	10,00
Chromium (III+VI) (Filtered)	µg/L	0.03	50		0.3	0.51	0.65	0.11	0.34	0.15	0.15	0.14	<1	<1
Cobalt (Filtered)	µg/L	0.002			14.	100	-	e.	-	1	4.	+	+	100
Copper (Filtered)	µg/L	0.02	1000		0.09	0.22	41.5	0.65	0.8	0.8	0.5	1	0.3	0.5
Iron (Filtered)	µg/L	2	300	160	156	25	122	<7	9	7	<7	44	10	15
Lithium (Filtered)	µg/L	1	-			-	-	-				1.0	-	1
Lead (Filtered)	µg/L	0.01	10		0.02	0.02	5.23	<0.01	<3	0.02	<0.01	0.05	0.03	0.03
Manganese (Filtered)	µg/L	0.01	50	30.28	38	9.94	13.1	1.13	1.94	3.4	0.05	27.5	11	12
Magnesium (Filtered)	µg/L	1			5260	4470	5490	5140	5290	5100	4870	4560	5010	4620
Mercury (Filtered)	µg/L	0.01	1		<0.01	<10	140	<0.01	<10	<10	<10	<10	<0.02	<0.02
Molybdenum (Filtered)	µg/L	0.01	-	_	- 0.01	-10	140	10.01	1 .	1 .	- 10	110	-	10,02
Nickel (Filtered)	µg/L	0.1		-	1	1		100	1	1	1	1	-	
Phosphorus (Filtered)	µg/L	9			<30	<30	40	<30	<30	<3	100	<3	<10	<10
Potassium (Filtered)		2			1040	1110	1130	1300	1240	1840	1040	1220	1000	1000
	µg/L	10			1040	1110	1130	1300	1240	1040	1040	1220	1000	1000
Silicon (Filtered)	µg/L			_	+		_	_	_	_				+
Strontium (Filtered)	μg/L	0.1		_		-	-	<del>-</del>	-	-	-	-	-	+
Selenium (Filtered)	µg/L	1	50		-		-		-		-		-	-
Sodium (Filtered)	µg/L	10	200000	101327	7740	7410	8320	8060	8590	9640	8160	7420	7300	6900
Silver (Filtered)	µg/L	0.01			-	- 8	3	-	-		-	-	-	
Tin (Filtered)	µg/L	0.01			-			-	-	-		-	-	
Titanium (Filtered)	µg/L	0.1			+	-	-	-	-	-	-	-	-	-
Thallium (Filtered)	µg/L	0.2			·	-	-	-	-	-	-	-	-	-
Uranium (Filtered)	µg/L	0.001	20			1	-	-	-	-	-	-	-	-
Vanadium (Filtered)	µg/L	0.03				-		-		-	-	-		T-
Zinc (Filtered)	µg/L	2	5000		2	<2	321	<2	0.01	3	<2	2	<5	<5
organics			SECTION 1											
Alkalinity (as CaCO3)	mg/L	2	500	381	268	254	243	253	251	237	241	235	229	256
Hardness (as CaCO3) (Filtered)	mg/L	0.05	500		-		-	-		-	-	-	283	271
Solids - Total Dissolved (TDS)	mg/L	3	500	390	334	297	320	343	300	303	343	300	276	265
Oxygen Demand - Chemical (COD)	mg/L	5		11 20 3	<8	10	<8	<8	<8	<8	12	<8	<5	7
Solids - Total Suspended (TSS)	mg/L	2			77	-	-	-	-	-	-	-	-	-
Organic Carbon - Dissolved (DOC) (Filtered)		0.2	5		1	1	2	2	1	<1	2	2	4.4	2
Oxygen Demand - Biological (BOD)	mg/L	2	-		-	-	1	- 2	-	1 4	<del>-</del>	<del>                                     </del>		<del>+ -</del>
Phenois (4AAP)	mg/L	0.002			0.002	0.004	<0.002	<0.002	<0.002	<0.002	0.004	<0.002	<0.002	< 0.002
Sulphate	mg/L	0.2	500	253	25	26	32	26	27	28	22	24	19	16
Ammonia	mg/L	0.01	300	200	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.03	0.02
Nitrate (as N)	mg/L	0.05	10	3.38	0.32	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.14	<0.05	<0.05
			1	3,30		<0.08		<0.08	<0.08	<0.08		<0.03		<0.05
Nitrite (as N)	mg/L	0.03	- 1		<0.03		<0.03				<0.03		<0.05	
Total Kjeldahl Nitrogen (TKN)	mg/L	0.1		_	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0,5	0.2	0.1
Conductivity (lab)	µS/cm	1	And the last		560	527	559	572	544	543	564	511	533	511
pH (Lab)	-	0.05	6.5-8.5		7.59	7.63	7.67	7.93	7.9	8.02	8.1	7.77	7.83	7.9
eld														
	mg/L				-	1	-		9.2	6.3	6.1	5	2.47	3.2
Redox Potential (Field)	mV				94c	-	-	-	85	179	209	204	61	16
Temp (Field)	°C				/=	-	-	-	9.1	12.5	13.2	12.5	11.5	8.8
Conductivity (field)	µS/cm					-	-	-	311	410	527	323	527	227
pH (Field)			6.5-8.5		74	-	-	-	7.59	6.42	7.62	8.2	7.25	7.29



Table 6: Groundwater Quality - VOCs

	I Ind	DD:	ODWQS		TW02-1	TW02-1	TW02-2	TW02-2	TW02-2	TW02-2	TW02-2	TW02-2	TW02-2	TW02-2	TW02-2	TW02-2	TW02-2	TW02-2
STEX	Unit	KUL		2012-05-16	2012-09-25	2013-06-04	2011-10-01	2012-05-16	2012-09-25	2013-06-04	2013-10-30	2014-06-09	2014-11-14	12015-05-19	2015-11-03	2016-05-19	2016-10-26	2018-06-
Benzene	µg/L	0.5	4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	<0.5
Ethylbenzene		0.5	140	<0.5	10.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	μg/L	0.5	60	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.4	<0.5	<0.5	<0.5	<0.5	1.3	<0.5
	µg/L	0.5	60		1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Xylene (m & p)					-													
Xylene (o)		0.5			-	<0.5 <0.5	<0.5	<0.5 <0.5	<0.5 <0.5	<0.5	<0.5 <0.5	<0.5 <0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5 <0.5
Xylene Total	µg/L	0.5	90	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
/OCs	1 -				1	1		T .		7	1	1	-		1	1	1	-
1,3,5-trimethylbenzene	µg/L						4-		1.3	-	- 6-					-	-	-
Acetone	µg/L	30			-						-	-		-		-	-	-
Bromomethane	μg/L	0.5	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Carbon tetrachloride	μg/L	02	2	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorobenzene	µg/L	0.5	80			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chloroform	µg/L		4	100	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chloroethane	μg/L	3				<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Chloromethane	μg/L			- 6	-	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Dichlorobenzene, 1,2-		0.5	200	9.	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichlorobenzene, 1,3-	µg/L	0.5		(*)		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichlorobenzene, 1,4-	µg/L	0.5	5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5
Dichlorodifluoromethane	µg/L			-	-	- 0	-	1.5	1	A				-	387	-	-	
Dichloroethane, 1,1-	µg/L	0.5		- 4	-	<0.5	<0.5	<0.5	<0.5	<0.5	≺0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethane, 1,2-	µg/L	0.5	5	-	-	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethylene, 1,1-	µg/L	0.5	14		-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethylene, 1,2-cis-		0.5		196.	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethylene, 1,2-trans-	µg/L	0.5			-	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloropropane, 1,2-	µg/L				-	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	<0.5
Dichloropropylene, 1,3-trans-	µg/L	0.5		-	1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloropropene, 1,3-(cis+trans)	µg/L	0.5		-	-		-	-	172	-	1 1 7 7 1	-	-	-	-	-	-	-
Dichloropropylene, 1,3-cis-	µg/L	0.5		-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylene dibromide	µg/L	0.2		-	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Hexane		5		-	-		-	-	-	-			-	-	1	-	-	-
Methyl Ethyl Ketone	µg/L				†	<u> </u>	<del>  -</del>	<u> </u>	<u> </u>	†	<del> </del> -	<del> </del> -	<del>                                     </del>	<b>—</b>	-	<u> </u>	<del> </del> -	<del>-</del>
Methyl Isobutyl Ketone	µg/L				T -	-	<u> </u>	-	<u> </u>	T -	-	T -	<del> </del> -	<u> </u>	-	<u> </u>	<u> </u>	<del>-</del>
MTBE	µg/L	2			-	-	-	-	-	-	-	-			-	-		
Methylene chloride	µg/L	0.5	50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	<0.5
Styrene	µg/L		-	-0.0	10,0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethane, 1,1,1,2-	μg/L				1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	VO.0
Tetrachloroethane, 1,1,2,2-	µg/L			1		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethylene	μg/L	0.5	10		1 - 1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethane, 1,1,1-	µg/L		10	- :	1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethane, 1,1,1-	µg/L			- 1	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
		05	5	_	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethylene			. 5	-	-	<5	<0.5	<0.5		<5	<0.5		<0.5		414		<5	
Trichlorofluoromethane	P3 -	5	-	-0.0	-0.0			<0.2	<5 <0.2			<5		<5	<5	<5		<5 <0.2
Vinyl chloride	µg/L	02		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2



Table 6: Groundwater Quality - VOCs

			ODWQS		TW02-2	TW02-2	TW02-2	TW02-2	TW02-2	TW03-1	TW03-1	TW04-1	TW04-1	TW04-1	TW05-1	TW05-2	TW06-1	TW06-1
	Unit	RDL		2018-11-05	2019-10-28	2020-05-27	2020-11-12	2021-06-28	2021-11-10	2012-05-16	2013-03-04	2012-05-16	2012-09-25	2013-06-04	2013-06-04	2013-06-04	2013-10-30	2014-11-
TEX		7									V. The							
Benzene		0.5	1	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	0.52	1	<0.5	<0.5	<0.5	< 0.5	< 0.5	<0.5	< 0.5
Ethylbenzene	μg/L	0.5	140	<0.5	<0.5	<0.5	<0.5		< 0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5		
Toluene	μg/L	0.5	60	<0.5	<0.5		<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	< 0.5
Xylene (m & p)	µg/L	0.5		<0.5	<0.5	<0.5	<0.5		<1	- 14	<0.5		-	<0.5	<0.5	<0.5	-	- ÷
Xylene (o)	µg/L	0.5	100,000	<0.5	<0.5	<0.5	<0.5	100	<0.5	1.0	<0.5	0.00		<0.5	<0.5	<0.5	-	-
Xylene Total	µg/L	0.5	90	<0.5	<0.5	<0.5	<0.5		<1.1		<0.5	-	-	<0.5	<0.5	<0.5	-	-
OCs		100	1000															
1,3,5-trimethylbenzene	µg/L	01		- 4	47	124	1 - 2 -	7 -	<0.1		1	-	-	-	-	-	-	Τ -
Acetone	µg/L	30			4.	4.5	1	-	<30		1	-	-				-	
Bromomethane	μg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5		-	<0.5	<0.5	<0.5	-	-
Carbon tetrachloride	μg/L	02	2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	340	<0.2	540		<0.2	< 0.2	<0.2	1	3-0
Chlorobenzene	µg/L		80	<0.5	<0.5	<0.5	<0.5	187	4	141	13	2	4	<0.5	<0.5	<0.5		
Chloroform	µg/L			<0.5	<0.5	<0.5	<0.5	<1	<1	- 77	<0.5	740	-	<0.5	<0.5	<0.5	-	~
Chloroethane	µg/L			<5	<5	<5	<5	<3	<3		<5	0.00	-	<5	<5	<5	-	
Chloromethane	µg/L			<5	<5	<5	<5	<2	<2	247	<5		-	<5	<5	<5	-	- 10
Dichlorobenzene, 1,2-	µg/L		200	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1-2	<0.5	194	74.1	<0.5	< 0.5	<0.5	- 2	
Dichlorobenzene, 1,3-	µg/L			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-		<0.5	<0.5	<0.5	1	-
Dichlorobenzene, 1,4-	µg/L	0.5	5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.
Dichlorodifluoromethane	µg/L	2			-	-	-	12	<2	121	1 2	1 2	14.	1	1 2	-	1	1 2
Dichloroethane, 1,1-	µg/L			< 0.5	<0.5	<0.5	<0.5	< 0.5	<0.5		< 0.5			<0.5	<0.5	<0.5		
Dichloroethane, 1,2-	µg/L		5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	1 .	-	<0.5	<0.5	<0.5		1 .
Dichloroethylene, 1,1-	μg/L	0.5	14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5		-	<0.5	<0.5	<0.5	-	~
Dichloroethylene, 1,2-cis-	μg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	20-20	- 4-	<0.5	< 0.5	<0.5		
Dichloroethylene, 1,2-trans-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	14	<0.5		-	<0.5	<0.5	<0.5	1 2	1
Dichloropropane, 1,2-	µg/L			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	14	<0.5	1 - 2	-	<0.5	<0.5	<0.5	1 1	1 2
Dichloropropylene, 1,3-trans-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1	<0.5		-	<0.5	<0.5	<0.5	1 :	1 3
Dichloropropene, 1,3-(cis+trans)	µg/L	0.5		-	7	-		<0.5	<0.5	1-1	-	10-0	-	-	-	-	-	
Dichloropropylene, 1,3-cis-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	54	<0.5		-	<0.5	<0.5	<0.5	-	-
Ethylene dibromide	μg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2		-	<0.2	<0.2	<0.2	-	-
Hexane	µg/L	5		70.2	-	- 70.2		+	<5	- 4	1	-	-		-0.2		-	-
Methyl Ethyl Ketone	μg/L				-	-		1	<20	-	1	-	<u> </u>	-	<del> </del> -	<del>  -</del>	<u> </u>	<del>  -</del>
Methyl Isobutyl Ketone	μg/L	20			-	-			<20			<u> </u>	<b>—</b>	<b>—</b>	<b>+</b> -	+ -	+ -	+
MTBE	µg/L	2					-	-	<2	-			-			-	-	-
Methylene chloride	µg/L		50	<0.5	<0.5	<0.5	<0.5	<5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.
Styrene	μg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	40,0	<0.5	10,0	10.0	<0.5	<0.5	<0.5	10,0	-0.1
Tetrachloroethane, 1,1,1,2-	µg/L	0.5		<b>10,0</b>	<0.5	<0.5	<0.0	×0.5	<0.5	1	<0.5	-	1	<0.5	<0.5	<0.5	-	-
Tetrachloroethane, 1,1,2,2-	µg/L			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5		-	<0.5	<0.5	<0.5	-	-
Tetrachloroethylene	μg/L	0.5	10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	1	1 -	<0.5	<0.5	<0.5	1 :	1 0
Trichloroethane, 1,1,1-	μg/L	0.5	10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1	<0.5		1	<0.5	<0.5	<0.5		1
Trichloroethane, 1,1,2-	μg/L			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	-	1 - 1	<0.5	<0.5	<0.5	-	-
Trichloroethylene	μg/L		5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	-	1	<0.5	<0.5	<0.5	1	1
Trichlorofluoromethane		5		<5	<5	<5	<5	<5	<5	_	<5	-	-	<5	<5	<5	-	+
Vinyl chloride	μg/L μg/L		131	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
VIII VIII VIII VIII VIII VIII VIII VII	Ihd/r	102		10.6	10,2	10.2	10.2	1 50.2	10.2	10.2	-V.2	NU.2	3,07	>0,2	10.2	-0.2	10.2	10.7



Table 6: Groundwater Quality - VOCs

			ODWQS		TW06-1	TW06-1	TW06-1	TW06-1	TW06-1	TW06-1	TW06-1	TW06-1	TW06-1	TW06-1	TW06-2	TW06-2	TW06-2	TW06-2
	Unit	RDL	100	2015-05-19	2015-11-03	2016-05-19	2016-10-26	2017-06-07	2017-09-29	2018-06-11	2019-10-28	2020-11-12	2021-06-28	2021-11-10	2011-10-01	2012-05-15	2012-09-25	2013-06-0
TEX					-	- O-												
Benzene	μg/L	0.5	1	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	< 0.5	<0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	<0.5
Ethylbenzene	μg/L	0.5	140				-	-	-	-					<0.5	<0.5	< 0.5	< 0.5
Toluene	µg/L	0.5	60	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	<0.5
Xylene (m & p)	µg/L	0.5			3	-	13.	Jac X	11 2	111			1-04.		<0.5	<0.5	<0.5	<0.5
Xylene (o)	µg/L	0.5	40.00		-		-	-	-			-	1.	-	<0.5	<0.5	<0.5	< 0.5
Xylene Total	µg/L	0.5	90				-		-	-		-	-	-	<0.5	<0.5	<0.5	<0.5
VOCs																		
1,3,5-trimethylbenzene	µg/L	01			7.2	2	-	-	-	-	-	-	-	-	T -		757	
Acetone	µg/L	30				- 2-	-	-	-	-	-		-	-	-		12.00	100
Bromomethane	µg/L	0.5		-	1 2	-	1 -	-	-	-		-	-		<0.5	<0.5	<0.5	<0.5
Carbon tetrachloride	µg/L		2	-	1.0		-	-	-	-			94	100	<0.2	<0.2	<0.2	<0.2
Chlorobenzene	µg/L	0.5	80	-	1 2	1 -		-	-	T -	-	-	1	E-	<0.5	<0.5	<0.5	<0.5
Chloroform	µg/L	0.5			-	-	-	<u> </u>	-	<del> </del> -	-	-	-	- 70	<0.5	<0.5	<0.5	<0.5
Chloroethane	µg/L				<u> </u>	<u> </u>	<u> </u>	-	-	<del> </del> -	-	-	-	-	<5	<5	<5	<5
Chloromethane	µg/L				-	-	<del>-</del>	-	_	<del> </del> -	-	-	3.	-	<5	<5	<5	<5
Dichlorobenzene, 1,2-	µg/L	0.5	200			194	04)		D-1	14		-	(2)		<0.5	<0.5	<0.5	<0.5
Dichlorobenzene, 1,3-	µg/L	0.5	200	-	-	-	-				1 .	-		-	<0.5	<0.5	<0.5	<0.5
Dichlorobenzene, 1,4-	µg/L	0.5	5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane	µg/L		-		40.0	-0.0	- 40.0					40.0		40.0	-0.5	40.0	-0.0	40.0
Dichloroethane, 1,1-	µg/L			-	1 5			<del> </del>		+ -		1			<0.5	<0.5	<0.5	< 0.5
Dichloroethane, 1,2-	µg/L		5	-	1		1	+	+	+ :	-	-			<0.5	<0.5	<0.5	<0.5
Dichloroethylene, 1,1-	μg/L	0.5	14	- :	-	-	1	+ - :	+	+ -		-	-	-	<0.5	<0.5	<0.5	<0.5
Dichloroethylene, 1,2-cis-	µg/L	0.5	-	-				+	<del>-</del>	+ -	-		-		<0.5	<0.5	<0.5	<0.5
Dichloroethylene, 1,2-trans-	μg/L	0.5			10-0		-	+ -	+ -	+ -		-		0	<0.5	<0.5	<0.5	<0.5
	µg/L	0.5		_	+ -	_	_	+ -	_			1		+	<0.5	<0.5	<0.5	<0.5
Dichloropropane, 1,2-	µg/L	0.5		-	+	-	-	-	-	-		-	-	-	<0.5	<0.5	<0.5	<0.5
Dichloropropylene, 1,3-trans-	µg/L	0.5		-		-	-	+ -	<del>-</del>	-		-	9+0	2				-
Dichloropropene, 1,3-(cis+trans)	µg/L	0.5			-		-	+ -	<del>-</del>	-	-			-	<0.5	-0.F	<0.5	<0.5
Dichloropropylene, 1,3-cis-	µg/L	0.5		-	-	-	-	-	-	-	-	-	-			<0.5		
Ethylene dibromide	μg/L			-	-	-	-	-	-	-	-	-	-	-	<0.2	<0.2	<0.2	<0.2
Hexane	µg/L			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methyl Ethyl Ketone	μg/L	20		-	<del>  -</del>	-	-	-	-	-	-	-	-	-	-	-	-	-
Methyl Isobutyl Ketone	μg/L	20		-	+ -	-	-	+ -	+ -	-	-	-	-	-	-	-	-	-
MTBE	μg/L		-		-				-				-	-				
Methylene chloride	µg/L		50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<5	<0.5	<0.5	<0.5	<0.5
Styrene	µg/L	0.5				12-			-		-	-	1.	-	<0.5	<0.5	<0.5	<0.5
Tetrachloroethane, 1,1,1,2-	µg/L	0.5			-	1 -	-	-	10	de .		-	-	-	<0.5	<0.5	<0.5	<0.5
Tetrachloroethane, 1,1,2,2-	μg/L		- 55	-:-		-	-	-	-	-	<	-	3.	- 10	<0.5	<0.5	<0.5	<0.5
Tetrachloroethylene	μg/L		10			-	-	-	-	-	-	-	-		<0.5	<0.5	<0.5	<0.5
Trichloroethane, 1,1,1-	µg/L				-		-	-	-	-	-	-		~	<0.5	<0.5	<0.5	<0.5
Trichloroethane, 1,1,2-	µg/L	0.5	1000			19-	-	-	-	-	-	-	-		<0.5	<0.5	<0.5	<0.5
Trichloroethylene	μg/L	0.5	5	-	18	360	-	-	-	-		-		-	<0.5	<0.5	<0.5	<0.5
Trichlorofluoromethane	μg/L	5		-	- 6	-	-	-	-	-		-		8.	<5	<5	<5	<5
Vinyl chloride	µg/L		1	<0.2	<0.2	<0.2	<0.2	< 0.2	< 0.2	<0.2	< 0.2	<0.2	< 0.2	< 0.2	<0.2	< 0.2	< 0.2	<0.2



Table 6: Groundwater Quality - VOCs

		227	ODWQS		TW06-2	TW06-2	TW06-2	TW06-2	TW06-2	TW06-2	TW06-2	TW06-2	TW06-2	TW06-2	TW06-2	TW06-2	TW06-2
	Unit	RDL	-	2013-10-30	2014-06-09	2014-11-14	2015-05-19	2015-11-03	2016-05-19	2016-11-02	2018-06-11	2018-11-05	2019-10-28	2020-05-27	2020-11-12	2021-06-28	2021-11-1
TEX	-																
Benzene	µg/L	0.5	1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	<0.5
Ethylbenzene	µg/L	0.5	140	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5
Toluene	μg/L	0.5	60	<0.5	1.8	1.1	<0.5	<0.5	<0.5	<0.5	8.0	<0.5	<0.5	94	<0.5	<0.5	<0.5
Xylene (m & p)	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	11 - 2 -	<1
Xylene (o)	µg/L	0.5	1000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5
Xylene Total	µg/L	0.5	90	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<1.1
OCs		150															
1,3,5-trimethylbenzene	µg/L	01				7-24	1.	- 27	- 4			- 14	100			- 3 -	< 0.1
Acetone	µg/L	30				124			-			-	-				<30
Bromomethane	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Carbon tetrachloride	μg/L	02	2	<0.2	<0.2	<0.2	<0.2	<0.2	< 0.2	<0.2	< 0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorobenzene	µg/L	0.5	80	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	<0.5	<0.5		14
Chloroform	µg/L	05		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1
Chloroethane	µg/L	3		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<3	<3
Chloromethane	µg/L	2		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<2	<2
Dichlorobenzene, 1,2-	µg/L	0.5	200	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	< 0.5	<0.5
Dichlorobenzene, 1,3-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichlorobenzene, 1,4-	µg/L	0.5	5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane	µg/L	2		- 2	-	-	- 2			- 5	- 12	1 2	~	~	-		<2
Dichloroethane, 1,1-	µg/L	0.5		<0.5	<0.5	<0.5	< 0.5	<0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5
Dichloroethane, 1,2-	µg/L	0.5	5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethylene, 1,1-	μg/L	0.5	14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethylene, 1,2-cis-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethylene, 1,2-trans-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloropropane, 1,2-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloropropylene, 1,3-trans-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloropropene, 1,3-(cis+trans)	µg/L	0.5				-0.5	-				-0.5					<0.5	<0.5
Dichloropropylene, 1,3-cis-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylene dibromide	μg/L	0.3	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Hexane	μg/L	6	_	VU.2	-0.2	V0.2	-0.2			-0.2	70.2	-0.2	-0.2	VU.2		VU.2	<5
Methyl Ethyl Ketone	μg/L			-:-	<del>-</del>	+ -	<del>                                     </del>	<del>-</del>	-	+	<del>-</del>	<del>-</del>	<u> </u>	<del>-</del>	+ :	1	<20
	μg/L	20		<del>- : -</del>	+	+	<del>                                     </del>	-	-	+ -	<del>                                     </del>	+ -	+	+ -	+ :		<20
Methyl Isobutyl Ketone MTBE	μg/L	20			-	-	-	-	-	-	-	-	-	-		-	<20
	µg/L	0.5	50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<5
Methylene chloride	µg/L	0.5	50			10000	222222										<0.5
Styrene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Tetrachloroethane, 1,1,1,2-	μg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		-	<0.5	<0.5	- 60	-	<0.5
Tetrachloroethane, 1,1,2,2-	μg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethylene	μg/L	0.5	10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethane, 1,1,1-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethane, 1,1,2-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethylene	μg/L	0.5	5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Trichlorofluoromethane	µg/L	5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	µg/L	02	1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	< 0.2	<0.2	<0.2	< 0.2	<0.2	<0.2



Table 6: Groundwater Quality - VOCs

	11-14		ODWQS		TW07-1	TW07-1	TW07-1 2015-11-03	TW07-1 2016-05-19	TW07-1 2016-10-26	TW07-1 2017-09-29	TW07-1 2018-06-11	TW07-1	TW07-1 2020-05-27	TW07-1	TW07-1 2021-06-28	TW07-1 2021-11-10
TEX	Unit	KUL		2013-10-30	2014-11-14	2015-05-19	2015-11-03	2016-05-19	2016-10-26	2017-09-29	2018-06-11	2019-10-28	2020-05-27	2020-11-12	2021-06-28	2021-11-1
Benzene	I.v.	0.5	1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	μg/L	0.5	140				-		+					_	+	
Ethylbenzene	µg/L						-	-	-	- 0.5		-	- 0.5	-	-	
Toluene	μg/L	0.5	60	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1	<0.5	<0.5	<0.5	<0.5	<0.5
Xylene (m & p)	µg/L				-		0.40	-		7	-				77	-
Xylene (o)	µg/L				-	-	1-5	-		-	-			-	771	-
Xylene Total	µg/L	0.5	90	-	-	1		-	-	-	-	-	-	-	-	-
OCs		100														
1,3,5-trimethylbenzene	µg/L					1 - 1	-	-	-	-	-	-	-	-	-	-
Acetone	µg/L	30		1-0-		2	-	-	-	-	-	-	-	-	-	-
Bromomethane	µg/L	0.5				-	-	-	-	-	-	-	-	-	-	-
Carbon tetrachloride	μg/L	0.2	2		-	-	-	-	-	-	-	-	-	-	-	-
Chlorobenzene	µg/L	0.5	80	4	-		-	-	-	-	-	-	-	-	-	-
Chloroform	µg/L	0.5		-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroethane	µg/L			-	-	-	-	-	-	-	-	-	-	-	-	-
Chloromethane	µg/L			-	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,2-	µg/L	0.5	200	100	· · · · ·		19.	1.6	( £60	-				9.	0.57	-
Dichlorobenzene, 1,3-	µg/L		-			-	-	-	1.	-				1 .	-	-
Dichlorobenzene, 1,4-	µg/L		5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane	µg/L							-		-		-	-	-	-	-
Dichloroethane, 1,1-	µg/L			- 4	1 -	-		-	<u> </u>	-	<u> </u>	T .	<b>—</b>		· .	-
Dichloroethane, 1,2-	µg/L		5		1 2	-	1	<b>—</b>	<b>—</b>		<b>—</b>	1 -	<del>                                     </del>	+ -		<del>                                     </del>
Dichloroethylene, 1,1-	µg/L	0.5	14		1 -	-	-	<del>                                     </del>	<del>                                     </del>	<del>                                     </del>	+ -	+	+	+	+ - : -	+ - : -
Dichloroethylene, 1,2-cis-	µg/L			-		-		<del>                                     </del>	<del>                                     </del>	<del>                                     </del>	<del>                                     </del>	<del>-</del>	<del>                                     </del>	<del>-</del>	+	+ -
Dichloroethylene, 1,2-trans-	μg/L				1 0	-	1 :	<del>                                     </del>	<del>                                     </del>	+ -	+ :	+	+	+ -	+	+-:
				_	_		+ -		_	_		+	_	+ -	+	_
Dichloropropane, 1,2-	μg/L	0.5		-	-	-	<del>  -</del>	-	-	-	-	_	-	+	<del>  -</del>	+
Dichloropropylene, 1,3-trans-	µg/L	0.5		-	-	<u> </u>	-	-	<del>-</del>	-	-	-	-	-	-	-
Dichloropropene, 1,3-(cis+trans)	µg/L	0.5	-		-		-	-	<del>-</del>	-	-	-	-	-	-	-
Dichloropropylene, 1,3-cis-	µg/L				-	-	-	-	-	-	-	-	-	-	-	-
Ethylene dibromide	μg/L				-	-	-	-	-	-	-	-	-	-	-	-
Hexane	μg/L			-	-	-	-	-	-	-	-	-	-	-	-	-
Methyl Ethyl Ketone	μg/L	20			-	-	-	-	-	-	-	-	-	-	-	-
Methyl Isobutyl Ketone	μg/L			-	-	-	-	-	-	-	-	-	-	-	-	-
MTBE	µg/L			-	-	-		-		-	-		-	-	100	-
Methylene chloride	μg/L		50	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<5
Styrene	µg/L	0.5	1	4.	4	- 4	12			27	-	1	2	-	- 4	-
Tetrachloroethane, 1,1,1,2-	µg/L				-	-			01	-	-		101 -2	4	-	-
Tetrachloroethane, 1,1,2,2-	μg/L				- 8	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethylene	μg/L	0.5	10	1 2		-	I -	-	-	-	-	-	-	-	-	-
Trichloroethane, 1,1,1-	µg/L			-	-		-	-	<u> </u>	-	-	-	-	-	-	-
Trichloroethane, 1,1,2-	µg/L		1			-	-	-	-	-	-	-	-	-	-	-
Trichloroethylene	µg/L		5			-		-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	μg/L			-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl chloride	µg/L	0.2	1	<0.2	<0.2	<0.2	<0.2	< 0.2	<0.2	<0.2	<0.2	< 0.2	<0.2	<0.2	< 0.2	<0.2



Table 6: Groundwater Quality - VOCs

			ODWQS		TW07-2	TW08-1	TW08-1	TW08-1	TW08-1	TW08-1	TW08-1	TW08-1	TW08-1	TW08-1	TW08-1	TW08-1	TW08-1	TW08-1
	Unit	RDL		2013-10-30	2014-11-14	2014-12-23	2015-05-19	2015-11-03	2016-05-19	2016-10-26	2017-06-07	2017-09-29	2018-06-11	2019-10-28	2020-05-27	2020-11-12	2021-06-28	2021-11-1
BTEX	-					-	-						_					
Benzene	μg/L	0.5	1	<0.5	<0.5	<0.5	3.9	<0.5	<0.5	< 0.5	<0.5	<0.5	< 0.5	1	< 0.5	< 0.5	<0.5	<0.5
Ethylbenzene	μg/L	0.5	140				-	-	-	-	-	-	-	-	-	-	-	-
Toluene	µg/L	0.5	60	<0.5	<0.5	<0.5	1.9	- 1	1.1	1.2	<0.5	1.1	1.6	<0.5	<0.5	<0.5	<0.5	<0.5
Xylene (m & p)	µg/L			- 1	-	-			- 3 -	3		10-	- 3	1	-	3	-	
Xylene (o)	µg/L	0.5			-	-	-		-		-	-	-	-	-	7	-	
Xylene Total	µg/L	0.5	90			-	_	-	-	-	-	-	-	-	-	-	-	-
/OCs		15.0	1000															
1,3,5-trimethylbenzene	µg/L	01	1	9-	12.	1 - 1	-	-	-	-	-	-	-	-	-	-	-	-
Acetone	µg/L	30				2		-	-	-	-	-	-	-	-	-	-	-
Bromomethane	µg/L	0.5			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon tetrachloride	μg/L	02	2	- 62				-	-	-	-	-	-	-	-	-	-	-
Chlorobenzene	µg/L	0.5	80	-	-		1 -	-	<u> </u>	-	-	-	-	-	-	T -	<u> </u>	_
Chloroform	µg/L	0.5			-		-	_	<u> </u>		_	<del>  .</del>	<u> </u>	-	_	<b>—</b>		
Chloroethane	µg/L					<b>—</b>	<b>—</b>		<b>—</b>			<b>—</b>				<b>—</b>		-
Chloromethane	µg/L				<del>                                     </del>	<del>-</del>	+ -	<del>                                     </del>	+ -	-	-	+	-	<u> </u>	_	<del>-</del>	+	-
Dichlorobenzene, 1,2-	µg/L		200	1.00	-	lean.	100		7.40		-	1 7.2. 7	027	-				
Dichlorobenzene, 1,3-	µg/L		200	1	1 :	1	1		1 .		1	1	1 .	1 :		1	1	1
Dichlorobenzene, 1,3-	μg/L	0.5	5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane	µg/L	0.5	0		1	-	-	+		+	1	-	-	+	_	-	-	_
	µg/L			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichloroethane, 1,1-	µg/L		-	-		-	-	-	-	-	-	-	-	-	-	-	-	-
Dichloroethane, 1,2-	μg/L	0.5	5		100	-	-	-	-	-	-	-	-	-	-	-	-	
Dichloroethylene, 1,1-	μg/L	0.5	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichloroethylene, 1,2-cis-	μg/L	0.5		1		-	-	-	-	-	-	-	-	-	-	-	-	-
Dichloroethylene, 1,2-trans-	μg/L	0.5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichloropropane, 1,2-	μg/L	0.5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichloropropylene, 1,3-trans-	µg/L	0.5			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichloropropene, 1,3-(cis+trans)	µg/L	0.5		1-7-		- 3	-	-	-	-	-	-	-	-	-	-	-	-
Dichloropropylene, 1,3-cis-	µg/L	0.5			-	1	-	-	-	-	-	-	-	-	-	-	-	-
Ethylene dibromide	μg/L	0.2		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexane	µg/L	5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methyl Ethyl Ketone	μg/L			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methyl Isobutyl Ketone	μg/L	20		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MTBE	µg/L				-	-				-	-			-	-	-		-
Methylene chloride	µg/L	0.5	50	<0.5	<0.5	<0.5	<0.5	1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<5
Styrene	µg/L			4.	-	1	-	1.0		-	-	1	-	-	-	1	-	-
Tetrachloroethane, 1,1,1,2-	μg/L				1	1 1	1	1	1 -	1	1 1	1	1	1	1	1 :-		1
Tetrachloroethane, 1,1,2,2-	μg/L	0.5			1		1 .	1 .			-	1 .	-	-	T .	1 :	1	-
Tetrachloroethylene	μg/L	0.5	10		1	-	1	<del>                                     </del>	+	<del>                                     </del>	<del>-</del>	+ -	+ -	+ -	+ -	+ -	+ -	<del>-</del>
Trichloroethane, 1,1,1-	µg/L	0.5	10	-	1	1	+	+	+ -	<del>                                     </del>	<del>                                     </del>	+ -	+ -	+ -	+ -	+ -	+ -	+ -
Trichloroethane, 1,1,2-	μg/L					-	-	<del>  -</del>	+	-	-	-	-	-	-	+ -	+ -	-
	µg/L	0.5	5	-	-	+	_	+	+ -	_			+	+	+		+ -	
Trichloroethylene	μg/L		5		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	μg/L		1		-	-		-	-	-	-		-	-		-		-
Vinyl chloride	µg/L	02		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2



Table 6: Groundwater Quality - VOCs

	11-9	001	ODWQS	TW08-2	TW08-2	TW08-2	TW09-1	TW09-1	TW09-1	TW09-1	TW09-1	TW09-1	TW09-1
TEX	Unit	KUL		2014-12-23	2015-05-19	2020-05-27	2013-10-30	2014-11-14	2015-05-19	2015-11-03	2016-05-19	2016-10-26	2017-06-0
	E. or	0.5		-0.5	1 65	1 05	0.5	1 05	1 05	1 05	1 05	1 05	1 05
Benzene	μg/L		1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	μg/L		140					-	-		-		
Toluene	μg/L		60	<0.5	<0.5	1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Xylene (m & p)	µg/L	0.5			-						V1	-	-
Xylene (o)	µg/L	0.5	1		-	771	-	-	-	-	-	-	-
Xylene Total	µg/L	0.5	90	-			1	-	-	-		-	-
OCs	-	-				_	-						
1,3,5-trimethylbenzene	µg/L						-	-	-	-	-	-	-
Acetone	µg/L			-			-	-	-	-	-	-	-
Bromomethane	µg/L				-	-	-	-	-	-	-	-	-
Carbon tetrachloride	μg/L		2	- F	1.0		-	-	-	-	-	-	-
Chlorobenzene	µg/L		80	- 45	- +		-	-	-	-	-	-	-
Chloroform	µg/L			· ·	-	-	-	-	-	-	-	-	-
Chloroethane	µg/L	3			-	-	-	-	-	-	-	-	-
Chloromethane	μg/L	2		-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,2-	μg/L		200	7-1		1 5		-	1.60			1.0	0.0
Dichlorobenzene, 1,3-	µg/L	0.5										2.5	(*)
Dichlorobenzene, 1,4-	µg/L	0.5	5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane	µg/L	2		-	14.	12.	-	-	-	-	-	-	-
Dichloroethane, 1,1-	µg/L	0.5		- 4			-	-	-	-	-	-	T -
Dichloroethane, 1,2-	µg/L		5	- 4			1 -	-	-	-	-	-	-
Dichloroethylene, 1,1-	µg/L	0.5	14	-			1 -	-	-	-	-	-	-
Dichloroethylene, 1,2-cis-	µg/L	0.5			10-01	100	-	-	-	-	-	-	-
Dichloroethylene, 1,2-trans-	µg/L			-	-	-	-	-	-	-	-	-	-
Dichloropropane, 1,2-	µg/L			-	-	-	-	-	-	-	-	-	-
Dichloropropylene, 1,3-trans-	µg/L	0.5			-	-	-	-	-	-	-	-	T -
Dichloropropene, 1,3-(cis+trans)	µg/L	0.5		7-1	100	1.0	-	-	-	<del>-</del>	-	-	<del> </del> -
Dichloropropylene, 1,3-cis-	µg/L			1	100	1	1 .	-	<u> </u>	<del>  -</del>	<u> </u>	<u> </u>	<del>  -</del>
Ethylene dibromide	µg/L					-		-	-	-	<u> </u>	-	T -
Hexane	µg/L			-	-	-	<b>-</b>	-	-	-	-	-	T -
Methyl Ethyl Ketone	μg/L				T .	<u> </u>	<b>—</b>		-	<u> </u>		-	T .
Methyl Isobutyl Ketone	µg/L				<b>—</b>	<b>—</b>	<b>—</b>	-	-	<u> </u>	-	-	<del>  .</del>
MTBE	µg/L	2				-	-					+ -	<del>-</del>
Methylene chloride	µg/L	0.5	50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5
Styrene	µg/L		00	-0.5	-0.5	40.5	40.5	10.0	-0,5	0.5	30.5		
Tetrachloroethane, 1,1,1,2-	µg/L	0.5			-	1	1	1		1		+ -	<del>-</del>
Tetrachloroethane, 1,1,2,2-	µg/L			-	1	-	<u> </u>	-	-	-	-	+	+ -
Tetrachloroethylene	μg/L	0.5	10	-5-		+	<del>                                     </del>	-	<del>                                     </del>	<del>                                     </del>	<del>                                     </del>	+ -	+ -
	µg/L	0.5	10	_	1		_		_				_
Trichloroethane, 1,1,1- Trichloroethane, 1,1,2-	µg/L			-		-	- :	-	-	+ :-	-	<del>  -</del>	-
	μg/L		-		-7-	-	_	+	_	+	_		
Trichloroethylene	μg/L		5		-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	µg/L		-		-0.0	-0.0	-0.0	-0.0	-0.0	-0.0		-0.0	-0.0
Vinyl chloride	µg/L	02	1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2



Table 6: Groundwater Quality - VOCs

	11-9	001	ODWQS		TW09-1	TW09-1	TW09-1	TW09-1	TW09-1	TW09-1	TW09-2	TW09-2	TW10-2	TW11-2
TEV	Unit	KUL		2017-09-29	2018-06-11	2019-10-28	2020-05-27	2020-11-12	2021-06-28	2021-11-10	2013-10-30	12014-11-14	2014-12-23	2014-12-2
TEX	1000				1 200	1		1 00		1	1	1	F 29	1 22
Benzene	µg/L		1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	< 0.5
Ethylbenzene	µg/L		140				-	-	-	-		-	-	-
Toluene	μg/L		60	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Xylene (m & p)	μg/L	0.5		-	-	18 2			14				-	-
Xylene (o)	µg/L	0.5	100		-	-	-		1.0	- 1			-	
Xylene Total	µg/L	0.5	90		-:-	-			-	-		-	-	-
OCs		is.												
1,3,5-trimethylbenzene	µg/L	01	1	- 2"		724	-	-	-	-	-	-	-	-
Acetone	µg/L	30				7.24	-	-	-	-	-	-	-	-
Bromomethane	µg/L	0.5			-	-	-	-	-	-	-	-	-	-
Carbon tetrachloride	µg/L		2	- 4	-	-	-	-	-	-	-	-	-	-
Chlorobenzene	µg/L		80		-			-	-	-	-	-	-	T -
Chloroform	µg/L	0.5			-	-	-	-	-	-	-	-	-	-
Chloroethane	µg/L	3			-	-	-	-	-	-	-	-	-	T -
Chloromethane	µg/L	2			<u> </u>	-	<u> </u>	<u> </u>	-	<del>-</del>	-	<del>-</del>	-	<del>  -</del>
Dichlorobenzene, 1,2-	µg/L	0.5	200					1 2		- 21		100	4.5	100
Dichlorobenzene, 1,3-	µg/L		200		-			-	-			-	-	1 -
Dichlorobenzene, 1,4-	µg/L		5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane	µg/L	2	-	-0.0		~0.5			-0.5	-0.0	-0.5	-0.0	-0.5	0.0
Dichloroethane, 1,1-	µg/L	0.5		-	1 2	100	+ :	+ -	-	<del>                                     </del>	<u> </u>	+ -	-	+ -
Dichloroethane, 1,1-	µg/L		5		+	+	+ :	+	<del>-</del>	+ -	<del>-</del>	+ :	<del>-</del>	+ -
Dichloroethylene, 1,1-	µg/L		14		-		-	+ -	_			+		
			14	_	-	-	-		-	-	-	<del>  -</del>	-	-
Dichloroethylene, 1,2-cis-	µg/L	0.5		- 1	-	257	-	-	-	-	-	-	-	-
Dichloroethylene, 1,2-trans-	μg/L			<u> </u>	-	-	-	-	-	-	-	-	-	-
Dichloropropane, 1,2-	μg/L	0.5			-	-	-	-	-	-	-	-	-	-
Dichloropropylene, 1,3-trans-	µg/L	0.5		-	-	-	-	-	-	-	-	-	-	-
Dichloropropene, 1,3-(cis+trans)	µg/L	0.5					-	-	-	-	-	-	-	-
Dichloropropylene, 1,3-cis-	µg/L	0.5		- 5	-	-	-	-	-	-	-	-	-	-
Ethylene dibromide	μg/L			-	-	-	-	-	-	-	-	-	-	-
Hexane	µg/L	5		-	-	-	-	-	-	-	-	-	-	-
Methyl Ethyl Ketone	μg/L	20			-	-	-	-	-	-	-	-	-	-
Methyl Isobutyl Ketone	μg/L	20		-	-	-	-	-	-	-	-	-	-	-
MTBE	µg/L	2				-			~					
Methylene chloride	µg/L	0.5	50	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<5	<0.5	<0,5	<0.5	<0.5
Styrene	µg/L	0.5		2			-		- 2	- 21				
Tetrachloroethane, 1,1,1,2-	µg/L	0.5		- 2	-	-		4	-	-	-	-	-	
Tetrachloroethane, 1,1,2,2-	µg/L	0.5			-	-	-	-	-	-	-	-	-	T -
Tetrachloroethylene	μg/L	0.5	10		1 -	-	-	-	-	-	-	-	-	T -
Trichloroethane, 1,1,1-	µg/L	0.5	-	-	1 -	1	1	<u> </u>	-	<del> </del> -	<u> </u>	<del>  -</del>	<u> </u>	<u> </u>
Trichloroethane, 1,1,2-	µg/L	0.5		-	-	-	-	-	-	<del> </del> -	· .	<u> </u>	<u> </u>	-
Trichloroethylene	µg/L	0.5	5		1 1	-		-	-	<u> </u>	-	<u> </u>	-	<del>  -</del>
Trichlorofluoromethane	µg/L		-	-		-	<b>†</b> .	_	-	<del>                                     </del>		<del>                                     </del>		
Vinyl chloride	µg/L	0.2	1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
The property of	har	35		-7.6	-0,2	-0.2	70.6	40.6	70/6	-0.6		-0.2	-7.6	1 -0.6



Table 7: Groundwater Quality - PWQO

	Unit	RDL	PWQO		TW06-2 2012-05-15	TW06-2 2012-09-25	TW06-2 2013-06-04	TW06-2 2013-10-30	TW06-2 2014-06-09	TW06-2 2014-11-14	TW06-2 2015-05-19	TW06-2 2015-11-03	TW06-2 2016-05-19
etals	Oill	T	-	2011-10-01	2012-03-13	12012-03-23	12010-04	12010-10-30	2014-00-05	12014-11-14	2010-00-19	12013-11-03	2010-03-1
Aluminium (Filtered)	µg/L	10	15175	-		T .	<10	1 3	1	1	1	1	1
Antimony (Filtered)	µg/L	0.2	20	-	-	-	<0.2	1 -	1 -	-		1 -	
Arsenic (Filtered)	µg/L	0.1	5	0.5	0.5	0.4	0.7	0.6	0.4	0.6	<0.2	0.5	<0.2
Barium (Filtered)		0.01	- 0	256	121	227	109	280	136	132	127	232	131
	µg/L		200	193	284	151	221	211	206	266	226	248	270
Boron (Filtered) Beryllium (Filtered)	µg/L	0.2	11	193	204	101	<0.02	211	206	200	220	240	270
	µg/L		- 13			-	<0.02		1 -	1 -	-		-
Bismuth (Filtered)	µg/L	0.01				400,000		400,000	100,000	474.000			400.000
Calcium (Filtered)	µg/L	10	0 410 5	195,000	160,000 <0.003	168,000	143,000	183,000	163,000	171,000	151,000 0.007	225,000	163,000
Cadmium (Filtered)	µg/L	0.003	0.1 0.5	0.017								0.016	
Chloride	µg/L	200	0.0	46,000	26,000	30,000	23,000	36,000	31,000	28,000	23,000	49,000	27,000
Chromium (III+VI) (Filtered)	µg/L	0.03	8.9	1,1	<0.5	<0.5	0.6	1.8	0.69	1.66	0.08	0.18	0.46
Cobalt (Filtered)	µg/L	0.002	0.9	0.5	10	4.7	0.496	0.5	1.10		4.00	0.00	0.04
Copper (Filtered)	µg/L	0.02	1 5	2.5	1.2	1.7	1.1	2.5	1.49	2.33	4.22	2.36	0.81
Iron (Filtered)	µg/L	2	300	4	<3	64	<3	22	<2	3	14	66	31
Lithium (Filtered)	µg/L	1		-	2.00	-	<1	+		-	-	-	
Lead (Filtered)	µg/L	0.01	1 3 5	0.1	0.05	0.04	0.02	0.05	0.04	<0.01	0.04	0.08	<0.01
Manganese (Filtered)	µg/L	0.01		926	54	1110	43.1	1240	47.6	7.44	122	1230	139
Magnesium (Filtered)	µg/L	1	-	11,900	13,000	10,200	10,600	11,800	12,100	14,500	12,200	20,300	11,800
Mercury (Filtered)	µg/L	0.01	0.2		-	-		<0.01	<0.01	<0.01		<0.01	<0.01
Molybdenum (Filtered)	µg/L	0.01	40	- 2	-	-	0.08		9	-	-	-	1
Nickel (Filtered)	µg/L	0.1	25	1 8		-	2.4	-	-	-	-	-	
Phosphorus (Filtered)	µg/L	3	30	7	7-1		<9	30	40	<30	<30	<30	6
Potassium (Filtered)	µg/L	2		6230	15,300	5820	12,200	7020	12,700	11,900	10,600	5330	12,900
Silicon (Filtered)	μg/L	10			-		5090	-	-	-	-		-
Strontium (Filtered)	µg/L	0.1		F			395				0		1
Selenium (Filtered)	µg/L	1	100			-	<1				-	-	5
Sodium (Filtered)	µg/L	10		25,200	27,200	22,900	17,000	23,100	22,800	37,000	20,600	44,400	23,500
Silver (Filtered)	μg/L	0.01	0.1	7	165	le l	<0.01	-		~		-	1 6
Tin (Filtered)	µg/L	0.01					0.03	-	-	98 -	-	-	-
Titanium (Filtered)	µg/L	0.1	Corp.	8	-	A	0.3	-	8	III -	-	-	-
Thallium (Filtered)	µg/L	0.2	0.3		3.5	~ _	<0.2		2.1	(E	-	-	-
Uranium (Filtered)	µg/L	0.001	5	4-		1 - 12 - 1	0.824	2-	4	99 -	-	-	-
Vanadium (Filtered)	µg/L	0.03	6	- A-	1 4	-	0.38	2	1		-	-	-
Zinc (Filtered)	µg/L	2	20	2	7	3	4	<2	3	<2	<2	<2	<2
organics													
Alkalinity (as CaCO3)	mg/L	2		491	451	420	371	468	458	366	391	601	354
Hardness (as CaCO3) (Filtered)	mg/L	0.05			1 2		400	7.	-	-			
Solids - Total Dissolved (TDS)	mg/L	3		666	566	557	549	611	634	694	563	820	563
Oxygen Demand - Chemical (COD)	mg/L	5		18	26	16	16	17	19	21	20	22	17
Solids - Total Suspended (TSS)	mg/L	2		15		1 1	1	-		1 - 2	2	<3	<2
Organic Carbon - Dissolved (DOC) (Filtered)	mg/L	1		12	13.5	5	12.1	9	10.1	6		-	
Oxygen Demand - Biological (BOD)	mg/L	2		2	- 12	-0-	1	1			<4	<4	<4
Phenols (4AAP)	mg/L	0.001	0.001	-	1	-	1 .	<0.002	<0.002	<0.002	<0.001	0.001	<0.001
Sulphate	mg/L	0.2		52	35	34	29	34	46	170	58	64	72
Ammonia	mg/L	0.01		2.3	1	1.6	1	2.3	1.3	<0.1	0.4	0.6	0.7
Nitrate (as N)	mg/L	0.05	-	0.6	0.48	<0.05	0.16	0.06	0.44	4.22	0.16	0.06	0.23
Nitrite (as N)	mg/L	0.03	-		0.10	0.00	0.10	<0.03	<0.03	< 0.03	<0.03	<0.03	< 0.03
Total Kjeldahl Nitrogen (TKN)	mg/L	0.1		-				2.4	1.6	<0.5	0.8	1.2	1.1
Conductivity (lab)	µS/cm	1		1110	941	981	812	1030	976	1040	811	1310	888
pH (Lab)	po/cill	0.05	6.5-8.5		7.73	7.73	7.89	7.69	7.9	8.06	7.89	7.76	8.06
ph (Lab)	1.	0.05	0.0-0.0	7.00	1.13	1.10	1.09	1.09	1.9	0.00	7.09	7.70	0.00
	lmc/l	-	5-50	- 0		Τ .	T -	1		Τ.			
DO (Field)	mg/L	-	5-50			-	-	+		-	-	-	-
Redox Potential (Field)	mV	-	-	- 44	-	-		-	-				
Temp (Field)	°C	-				-	-	-	-	-	-	-	-
Conductivity (field)	µS/cm		-			-	-	-	-	-	-	-	-
pH (Field)	-		6.5-8.5			1	-				-		



Table 7: Groundwater Quality - PWQO

	Unit	RDL	PWQO	TW06-2 2016-10-26	TW06-2 2018-06-11	TW06-2 2018-11-05	TW06-2	TW06-2 2019-10-28	TW06-2 2020-05-27	TW06-2 2020-11-12	TW06-2 2021-06-28	TW06-2 2021-11-1
etals	Offit	NUL.	-	2010-10-20	2010-00-11	2010-11-03	2019-03-29	2019-10-20	2020-03-27	2020-11-12	2021-00-20	2021-11-1
Aluminium (Filtered)	Lung	10	15 75	-	F 12		1	1	1	1	1	1
	µg/L		the Contract of the Contract o			-	-	-	-	-	-	+
Antimony (Filtered)	μg/L	0.2	5							0.4		0.2
Arsenic (Filtered)	µg/L	0.1	- 5	<0.2	0.2	<0.2	<0.2	<0.2	<0.2		0.2	
Barium (Filtered)	µg/L	0.01		360	152	354	114	287	157	241	237	128
Boron (Filtered)	µg/L	0.2	200	267	256	175	80	359	217	361	193	218
Beryllium (Filtered)	µg/L	0.02	11		7	-	-		· · ·	-		-
Bismuth (Filtered)	µg/L	0.01		Ψ	7	-	-	-	7	13		-
Calcium (Filtered)	µg/L	10		256,000	205,000	324,000	112,000	252,000	140,000	218,000	100	-
Cadmium (Filtered)	µg/L	0.003	0.1 0.5	0.021	0.007	0.012	0.007	0.012	0.004	0.014	0.017	<0.015
Chloride	µg/L	200		58,000	35,000	180,000	5000	110,000	24,000	53,000	36,400	24,400
Chromium (III+VI) (Filtered)	µg/L	0.03	8,9	0.37	0.1	0.23	0.12	0.14	0.11	<0.08	<1	<1
Cobalt (Filtered)	µg/L	0.002	0.9		- 4	-				4	- 6	
Copper (Filtered)	µg/L	0.02	1 5	1.69	1.35	2.08	0.9	1.9	1.2	2.4	2.6	2.5
Iron (Filtered)	µg/L	2	300	17	<7	39	11	10	<7	18	17	11
Lithium (Filtered)	µg/L	1										
Lead (Filtered)	µg/L	0.01	1 3 5	<0.01	0.03	0.09	0.01	0.03	<0.01	0.03	0.06	<0.02
Manganese (Filtered)	µg/L	0.01		1970	34.9	1390	463	1320	74.7	781	2	-
Magnesium (Filtered)	µg/L	1	1	16,200	12,700	17,500	5330	15,100	12,000	12,600	-1	- *
Mercury (Filtered)	µg/L	0.01	0.2	<0.01	0.03	<10	<10	<10	<10	<10	<0.02	<0.02
Molybdenum (Filtered)	µg/L	0.01	40	-		-		0-1		-	-	-
Nickel (Filtered)	μg/L	0.1	25			-	-			1 -	-	-
Phosphorus (Filtered)	µg/L	3	30	<30	50	<30	<30	30	40	<30	30	40
Potassium (Filtered)	µg/L	2		6840	11,400	5260	2320	4390	9650	5990	191	-
Silicon (Filtered)	µg/L	10			1	-	-		-	-	-	-
Strontium (Filtered)	µg/L	0.1	_		- 4		-	-			-	-
Selenium (Filtered)	µg/L	1	100			-		-		-	-	-
Sodium (Filtered)	µg/L	10	100	47,700	27,500	39,900	7510	36,600	20,600	37,800	1.0	-
Silver (Filtered)	μg/L	0.01	0.1	47,700	27,500	55,500	7310	50,000	20,000	57,000	1	1
Tin (Filtered)	µg/L	0.01	0.1	-7					-	-		-
Titanium (Filtered)		0.01	=	- 1	-	<del></del>	<del>-</del>	+	+ -	<del>                                     </del>	<del>                                     </del>	+
	µg/L		0.3		17	-	-	<del>                                     </del>	<del>                                     </del>	<del>                                     </del>	-	+
Thallium (Filtered)	µg/L	0.2	5	- 2		-	-	+ -	<del>                                     </del>	-	<del>-</del>	+ -
Uranium (Filtered)	µg/L					_	+		+	+	-	+
Vanadium (Filtered)	µg/L	0.03	6		-	-	-	-	-	-	-	-
Zinc (Filtered)	µg/L	2	20	2	<2	3	<2	2	2	<2	<5	<5
organics	17.0			100		100	1 070	1.00		1 116	1 240	1 010
Alkalinity (as CaCO3)	mg/L	2		438	392	434	276	415	361	446	419	343
Hardness (as CaCO3) (Filtered)	mg/L	0.05		1010	1.2		-		-		582	388
Solids - Total Dissolved (TDS)	mg/L	3		1010	577	1091	489	909	454	757	577	411
Oxygen Demand - Chemical (COD)	mg/L	5	-	10	19	14	<8	11	16	14	9	29
Solids - Total Suspended (TSS)	mg/L	2		<2	<2	14	7	3	15	20	24	56
Organic Carbon - Dissolved (DOC) (Filtered)	mg/L	1			/	-	-	-	-	-	-	-
Oxygen Demand - Biological (BOD)	mg/L	2		<4	<4	-5	<4	<4	<4	<4	3	3
Phenols (4AAP)	mg/L	0.001	0.001	0.002	0.001	0.005	<0.001	0.004	0.001	<0.001	<0.002	<0.002
Sulphate	mg/L	0.2		310	70	220	23	140	49	98	106	50
Ammonia	mg/L	0.01		1.2	1.2	1,1	0.4	0.7	1.3	1.6	0.16	0.1
Nitrate (as N)	mg/L	0.05		0.13	1.09	0.06	1.98	0.15	0.17	0.08	1.94	1.01
Nitrite (as N)	mg/L	0.03		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.07	< 0.05	< 0.05
Total Kjeldahl Nitrogen (TKN)	mg/L	0.1		1.6	1.5	1.1	0.6	0.6	1.6	1.8	0.6	0.5
Conductivity (lab)	µS/cm	1		1390	919	1550	572	1350	783	1110	1080	783
pH (Lab)		0.05	6.5-8.5	7.24	7.92	7.41	8.04	7.77	7.97	7.74	7.72	7.88
eld			-	-	1/25		715.5				100	
DO (Field)	mg/L		5-50		12	1	4.2	7	6.3	8.3	2.82	3.84
Redox Potential (Field)	mV			1.0			118	167	124	55	53	29
Temp (Field)	°C				4	-	8.6	11.3	12.5	11.3	12.1	9.5
Conductivity (field)	uS/cm				-	-	517	1006	626	731	1012	341
pH (Field)	Porum	1	6.5-8.5	_		-	7.71	7.01	7.27	7.4	7.16	7.12



Table 7: Groundwater Quality - PWQO

	Unit	RDL	PWQO	TW07-2 2011-10-01	TW07-2	TW07-2 2012-09-25	TW07-2 2013-06-04	TW07-2 2013-10-30	TW07-2 2014-06-09	TW07-2 2014-11-14	TW07-2 2015-05-19	TW07-2 2015-11-03	TW07-2
etals	Offit	T	-	2011-10-01	2012-03-13	2012-03-23	2013-00-04	12013-10-30	2014-00-03	12014-11-14	2015-05-15	2013-11-03	2010-05-18
Aluminium (Filtered)	µg/L	10	15175	7.7		1 2	50	1 2	1	1		1	
Antimony (Filtered)	µg/L	0.2	20			-	<0.2	1 .	-	1 -		-	
Arsenic (Filtered)		0.1	5	2.4	2.1	1.9	2	2.1	1.7	2.7	1.3	2.4	1.5
Barium (Filtered)	µg/L	0.01	- 0	244	240	165	167	203	198	192	205	202	163
	µg/L	0.01	200	590	669	416	358	421	418	615	479	513	821
Boron (Filtered)	µg/L		11			410	<0.02	421	410	010	35.4	513	021
Beryllium (Filtered)	µg/L	0.02	-11			-	<0.02		-				-
Bismuth (Filtered)	µg/L	0.01		246.000		100,000	209,000	224.000	200,000	200,000			270.000
Calcium (Filtered) Cadmium (Filtered)	µg/L	0.003	0.1 0.5	0.023	294,000 <0.003	186,000	0.006	234,000 <0.003	289,000 <0.003	266,000 0.003	328,000 <0.003	334,000 <0.003	376,000 <0.003
Chloride Chloride	µg/L	200	0.10.5				73,000	94,000			150,000	270,000	210,00
	µg/L	0.03	8.9	150,000	110,000	84,000 <0.5	<0.5	2.2	170,000	140,000	0.03	0.03	0.36
Chromium (III+VI) (Filtered)	µg/L					<0.5		2,2	0.26	6.08	0.03	0.03	0.36
Cobalt (Filtered)	µg/L	0.002	0.9	- 11			1.4	200	1.10	2.82	0.08	0.29	0.11
Copper (Filtered)	µg/L	0.02	1 5	1.1	1.1	0.8	1.2	2.8	1.46				
Iron (Filtered)	µg/L	2	300	7580	9420	5470	6840	7170	8520	7750	10,100	10,400	10,700
Lithium (Filtered)	µg/L	1	41010	-0.00	- 0.00	-	2	-0.00			- 0.04	- 0.05	- 0.05
Lead (Filtered)	µg/L	0.01	1 3 5	<0.02	0.02	0.04	0.11	<0.02	0.11	0.02	<0.01	0.05	0.05
Manganese (Filtered)	µg/L	0.01		2030	2350	1460	1630	1880	1910	1940	2630	2480	2490
Magnesium (Filtered)	µg/L	1		26,000	31,900	20,100	23,700	24,800	32,300	27,900	35,600	38,100	37,400
Mercury (Filtered)	µg/L	0.01	0.2		- 1-	-		<0.01	<0.01	<0.01		<0.01	<0.01
Molybdenum (Filtered)	µg/L	0.01	40	-	-		0.37	-	9	-	9-	-	1
Nickel (Filtered)	µg/L	0.1	25		1.5	-	4.9			-	-	-	
Phosphorus (Filtered)	µg/L	3	30	-	7-1	0.0	12	40	<30	<30	180	<30	11
Potassium (Filtered)	µg/L	2		3040	3150	2330	2220	2860	2980	3450	2320	3060	2600
Silicon (Filtered)	μg/L	10			1991	7.1	6270	194		-	-		
Strontium (Filtered)	µg/L	0.1		(F)		-	461	34	1				1 2
Selenium (Filtered)	μg/L	1	100			-	<1		1			-	-
Sodium (Filtered)	µg/L	10	1000	95,300	84,500	60,600	42,600	52,400	63,900	88,200	79,200	144,000	122,000
Silver (Filtered)	μg/L	0.01	0.1		100		< 0.01				(3)		-
Tin (Filtered)	µg/L	0.01		2		1 -4-	0.04		-	-	-	-	-
Titanium (Filtered)	µg/L	0.1	1000	- 8		1.0	3.6	-		-	-	-	-
Thallium (Filtered)	µg/L	0.2	0.3		2+7		<0.2			-	-	-	-
Uranium (Filtered)	µg/L	0.001	5	6-	6	1-2	0.648	2	4	99 -	-	-	-
Vanadium (Filtered)	µg/L	0.03	6		-	-	0.41	2.		-	-	-	-
Zinc (Filtered)	µg/L	2	20	3	5	<2	<2	<2	<2	7	<2	<2	<2
organics											J. 200		
Alkalinity (as CaCO3)	mg/L	2		340	350	322	332	336	382	391	376	371	373
Hardness (as CaCO3) (Filtered)	mg/L	0.05		1 - 2 -	1 - 2		619	7-	1				
Solids - Total Dissolved (TDS)	mg/L	3		1200	1200	829	957	989	1390	1270	1380	1710	1650
Oxygen Demand - Chemical (COD)	mg/L	5		<8	11	14	<8	8	22	21	15	15	19
Solids - Total Suspended (TSS)	mg/L	2		17	100	· · · · · · · · · · · · · · · · · · ·		140	1000		40	20	23
Organic Carbon - Dissolved (DOC) (Filtered)	mg/L	1		6	8.8	4.1	5.6	3.7	6.6	5.1		-	
Oxygen Demand - Biological (BOD)	mg/L	2		<2	0.11	U	0	-	11 2 1	-	<4	<4	<4
Phenols (4AAP)	mg/L	0.001	0.001		-	L 4.1		<0.002	<0.002	0.005	< 0.001	0.002	< 0.001
Sulphate	mg/L	0.2		410	190	220	280	310	410	460	380	490	550
Ammonia	mg/L	0.01		0.1	<0.1	<0.1	0.2	0.2	0.3	0.3	0.2	0.2	0.2
Nitrate (as N)	mg/L	0.05		<0.05	< 0.05	0.25	< 0.06	< 0.06	1.16	<0.06	< 0.06	<0.06	<0.06
Nitrite (as N)	mg/L	0.03	-	-				<0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Total Kjeldahl Nitrogen (TKN)	mg/L	0.1			-	-		<0.5	<0.5	<0.5	1.1	<0.5	<0.5
Conductivity (lab)	µS/cm	1		1740	1910	1330	1250	1440	1760	1770	1810	2230	2200
pH (Lab)	-	0.05	6.5-8.5	7.9	7.52	7.78	7.69	8.02	7.67	7.88	7.51	7.4	7.85
eld (Lab)	1	0.00	3.0-0.0	1.0	1.52	15.00	1.00	0.02	1 -1,01	7.00	1.371	1.7	7.00
DO (Field)	mg/L	1	5-50		1 -0	Ι.		Τ -	Τ.	Τ .			T .
Redox Potential (Field)	mV	1	0-00	-	-	- :	<del>                                     </del>	<del>                                     </del>	<del>-</del>	+ -	-	<del>                                     </del>	<del>                                     </del>
Temp (Field)	°C	1		-	-	<u> </u>	<del>-</del>	<del>-</del>	<del>-</del>	+ -	-	-	<del>-</del>
Conductivity (field)	µS/cm	1		-			-	-	-	<del>  -</del>	-	-	-
CONGUCTIVITY (HEIG)	rue/cm		District Control			and the second							



Table 7: Groundwater Quality - PWQO

	Unit	RDL	rwao	TW07-2 2016-10-26	TW07-2 2018-06-11	TW07-2 2018-11-05	TW07-2 2019-05-29	TW07-2 2019-10-28	TW07-2 2020-05-27	TW07-2 2020-11-12	TW07-2 2021-06-28	TW07-2 2021-11-1
etals	Offit	T	-	2010-10-20	2010-00-11	2010-11-03	2013-03-23	2019-10-20	2020-03-21	2020-11-12	2021-00-20	2021-11-1
Aluminium (Filtered)	µg/L	10	15 75	-	1		1	10	1	1 -	1	1
Antimony (Filtered)	µg/L	0.2	20			<b>—</b> —	-	<u> </u>		-	-	1
Arsenic (Filtered)	µg/L	0.2	5	2.2	1.4	1.7	1.2	0.7	0.3	1	<3	1.7
		0.01	- 0	143	132	128	128	96.5	55.3	96.2	105	100
Barium (Filtered)	µg/L		200	605	1100	939	1250	1490	1250	1390	1500	1560
Boron (Filtered)	µg/L	0.2	-	7.77	2000	707	10000	2,17.7	100.7	2233	4 27.7.7	67.75
Beryllium (Filtered)	µg/L	0.02	11	Ψ	-		-	-	Ť		-	-
Bismuth (Filtered)	µg/L	0.01		-		-	200.000	200 000	057.000	211.000		
Calcium (Filtered)	µg/L	10	0.410.0	246,000	384,000	341,000	339,000	263,000	257,000	244,000	-	- 0.015
Cadmium (Filtered)	µg/L	0.003	0.1 0.5	<0.003	0.004	<0.003	0.004	0.005	<0.003	0.003	<0.3	<0.015
Chloride	µg/L	200	-	130,000	170,000	150,000	280,000	130,000	130,000	140,000	176,000	138,000
Chromium (III+VI) (Filtered)	µg/L	0.03	8,9	0.53	0.23	0.13	0.14	0.15	<0.08	0.14	<3	<1
Cobalt (Filtered)	µg/L	0.002	0.9	1.4		~		-				-
Copper (Filtered)	µg/L	0.02	1 5	0.51	0.36	0.82	1.2	0.3	1.2	0.7	<2	0.1
Iron (Filtered)	µg/L	2	300	7250	9540	7630	8410	267	93	1520	6410	5580
Lithium (Filtered)	µg/L	1		21	127		100	-		1-1-		1
Lead (Filtered)	µg/L	0.01	1 3 5	0.05	0.02	< 0.01	0.01	0.03	< 0.01	0.06	<0.9	< 0.04
Manganese (Filtered)	µg/L	0.01		1950	2810	2550	2470	2250	754	1660	4.5	-
Magnesium (Filtered)	µg/L	1		27,400	36,200	32,600	41,000	30,500	30,500	26,800	-1	
Mercury (Filtered)	µg/L	0.01	0.2	< 0.01	0.09	<10	<10	<10	<10	<10	<0.02	<0.02
Molybdenum (Filtered)	µg/L	0.01	40	- 4	-	-		0.		-	4	-
Nickel (Filtered)	µg/L	0.1	25		-		-	-		-		-
Phosphorus (Filtered)	µg/L	3	30	<30	50	<30	220	40	250	150	170	30
Potassium (Filtered)	µg/L	2		2450	2730	3000	2460	2480	2430	2800	-	
Silicon (Filtered)	µg/L	10		1 21 1	1 2	12					1 2	1 -
Strontium (Filtered)	µg/L	0.1					1.6	1	-		4.	
Selenium (Filtered)	µg/L	1	100	-		-		-	-			-
Sodium (Filtered)	µg/L	10	100	87,100	92,700	94,500	127,000	123,000	108,000	114,000	<u> </u>	+ -
Silver (Filtered)	μg/L	0.01	0.1	- 07,100	32,700	54,500	127,000	120,000	100,000	-	<del>                                     </del>	+ -
Tin (Filtered)	µg/L	0.01	0.1	- 7	-	-	-	-	-		<u> </u>	+ -
Titanium (Filtered)		0.1		- 1	1-	<del></del>	-	-	<del>                                     </del>	-	<u> </u>	+ -
Thallium (Filtered)	µg/L	0.1	0.3		100	<del></del>	-	<del>                                     </del>	<del>                                     </del>	<del>                                     </del>	<del>                                     </del>	+
Uranium (Filtered)	µg/L	0.001	5	- 2		-:-	1			1 - 2	1 2-	
Programme and the second secon	µg/L	0.001	6	-		- :		- :	1 1	1	2	+ -
Vanadium (Filtered)	µg/L		The state of the s		2		1					-
Zinc (Filtered)	µg/L	2	20	6	2	3	4	5	<2	3	<5	<5
organics	1-659	0	-	202	005	200	000	0.45	244	040	007	0.57
Alkalinity (as CaCO3)	mg/L	2		337	335	323	382	345	341	348	307	357
Hardness (as CaCO3) (Filtered)	mg/L	0.05		1000	1000	1001	1000		1999	-	760	681
Solids - Total Dissolved (TDS)	mg/L	3	-	1070	1620	1351	1590	1320	1230	1200	939	888
Oxygen Demand - Chemical (COD)	mg/L	5	-	17	17	15	11	13	20	14	14	32
Solids - Total Suspended (TSS)	mg/L	2		19	23	16	224	19	254	200	134	44
Organic Carbon - Dissolved (DOC) (Filtered)	mg/L	1				-	-	-	-	-	-	-
Oxygen Demand - Biological (BOD)	mg/L	2		<4	<4	<4	<4	<4	<4	<4	<3	<3
Phenols (4AAP)	mg/L	0.001	0.001	0.001	0.003	0.004	0.007	0.002	0.005	<0.001	<0.002	<0.002
Sulphate	mg/L	0.2		400	560	490	520	460	470	410	362	360
Ammonia	mg/L	0.01		0.2	0.1	0.2	0.2	0.2	0.1	0.1	0.14	0.16
Nitrate (as N)	mg/L	0.05		< 0.06	< 0.06	< 0.06	<0.06	< 0.06	< 0.06	< 0.06	0.06	<0.05
Nitrite (as N)	mg/L	0.03		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.05	< 0.05
Total Kjeldahl Nitrogen (TKN)	mg/L	0.1		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	0.5	0.4
Conductivity (lab)	µS/cm	1		1460	1920	1740	2140	1730	1560	1610	17,100	1620
pH (Lab)	-	0.05	6.5-8.5	7.39	7.65	7.42	7.07	7.78	7.53	7.61	7.59	7.87
eld			-						-			
DO (Field)	mg/L		5-50		1.2		6,6	5.2	8.9	4.7	2.51	3.19
Redox Potential (Field)	mV			- 40	14		-15	162	211	-15	22	56
Temp (Field)	°C				-	-	8.5	11.9	13.4	11.9	11.9	11
Conductivity (field)	uS/cm			-	-		1694	1751	1438	1065	1575	669
pH (Field)	Porum		6.5-8.5		-		7.03	6.35	7.17	7.57	7.02	6.92



Table 7: Groundwater Quality - PWQO

	Unit	RDL	PWQO	TW09-2 2011-10-01	TW09-2 2012-05-15	TW09-2 2012-09-25	TW09-2 2013-06-04	TW09-2 2013-10-30	TW09-2 2014-06-09	TW09-2	TW09-2 2015-05-19	TW09-2 2015-11-03	TW09-2 2016-05-19
Metals	Offit	T	-	2011-10-01	2012-03-13	2012-05-25	2013-00-04	2013-10-30	2014-00-03	2014-11-14	2013-03-19	2015-11-03	12010-03-1
Aluminium (Filtered)	Tuent.	10	15175			T 1	20	I 2	1 4	T		1	1
Antimony (Filtered)	µg/L	0.2	20	-		+ -	<0.2	<u> </u>	-	1 -	_	1 -	
Arsenic (Filtered)	µg/L	0.1	5	0.2	0.4	0.2	0.4	0.2	0.3	0.3	<0.2	0.4	<0.2
Barium (Filtered)	µg/L	0.01	- 0	329	337	297	274	334	108	258	289	292	303
	µg/L		200	11.6	32	12.2	12.9	13.2	19.6	15.8	32.4	16.7	303
Boron (Filtered) Beryllium (Filtered)	µg/L	0.2	11	11.0	- 32	12.2	<0.02	13.2	19.0	13.0	32.4	10.7	30
Bismuth (Filtered)	µg/L	0.02	- 10			-	<0.02	-	1	1 - 2 -	-	-	1
Calcium (Filtered)	µg/L	10		101,000	97,200	92,200	98,000	101,000	105,000	103,000	104,000	98,800	109.000
Cadmium (Filtered)	μg/L μg/L	0.003	0.1 0.5	< 0.003	<0.003	<0.003	<0.003	0.005	0.01	<0.003	0.003	<0.003	0.003
Chloride		200	0.110.0	4800	5200	5800	6600	7200	17,000	5600	5000	5000	5000
Chromium (III+VI) (Filtered)	µg/L	0.03	8.9	<0.5	0.5	<0.5	<0.5	0.6	0.3	0.25	0.05	<0.03	0.32
Cobalt (Filtered)	µg/L	0.002	0.9		0.5	<0.5	0.09	0.0	0.3	0.23	0.03	<0.03	0.32
Copper (Filtered)	μg/L	0.002	1 5	<0.5	<0.5	0.7	<0.5	<0.5	0.91	0.6	0.48	0.12	0.12
Iron (Filtered)	µg/L	2	300	150	72	118	179	117	3	187	228	129	262
Lithium (Filtered)	µg/L	1	300	- 150	12	110	2	317	-	107	- 220	129	202
Lead (Filtered)	µg/L	0.01	1 3 5	<0.02	0.04	0.04	<0.02	<0.02	0.01	0.05	<0.01	0.01	0.02
Manganese (Filtered)	µg/L		11312	32.6	29.6	20.7	21.2	30.4	3.5	29.1	22.3	26.4	22.5
Magnesium (Filtered)	µg/L	0.01	-	3640	3620	3320	3820	30,4	4890	3890	4000	4320	3600
	µg/L	0.01	0.2		1		1	<0.01	<0.01	0.05		0.02	<0.01
Mercury (Filtered)	µg/L				-	-	0.44	<b>~0.01</b>			-	0.02	~0.01
Molybdenum (Filtered) Nickel (Filtered)	μg/L	0.01	40 25		-		0.11	-		-		-	-
	µg/L	0.1	30	-	-	-	1 4.14						_
Phosphorus (Filtered)	µg/L	3	30			757	12 849	905	<30	<30	<30	<30	15
Potassium (Filtered)	μg/L	2		890	873	757			1270	954	760	911	818
Silicon (Filtered)	µg/L	10		-		-	3460	130	-	-		-	-
Strontium (Filtered)	µg/L	0.1					223	190	-				3
Selenium (Filtered)	µg/L	1	100			-	<1	7	7700	-	~	-	
Sodium (Filtered)	μg/L	10	-	2920	2940	2860	3120	3210	7780	3540	3360	3870	3340
Silver (Filtered)	μg/L	0.01	0.1			1/4 1	<0.01	7	-	-		-	-
Tin (Filtered)	µg/L	0.01			-		0.03	-	-	-	-	-	-
Titanium (Filtered)	µg/L	0.1	distantia.	- 8	-	100	0.3		>.	-	-	-	-
Thallium (Filtered)	µg/L	0.2	0.3			_ <	<0,2			<del>-</del>	-	-	-
Uranium (Filtered)	µg/L	0.001	5			1	0.178	2	-	-	-	-	-
Vanadium (Filtered)	µg/L	0.03	6	- 4			0.66	3	-	-	-	-	-
Zinc (Filtered)	µg/L	2	20	<2	3	2	<2	<2	3	2	2	<2	<2
organics	1.0.4				1 222	11 000	T 2	1		1 222		1 222	
Alkalinity (as CaCO3)	mg/L	2		252	252	228	216	236	250	266	230	266	235
Hardness (as CaCO3) (Filtered)	mg/L	0.05				-	261	-			-		
Solids - Total Dissolved (TDS)	mg/L	3		309	326	300	306	280	363	300	286	303	311
Oxygen Demand - Chemical (COD)	mg/L	5	-	24	<8	10	17	<8	9	<8	10	<8	<8
Solids - Total Suspended (TSS)	mg/L	2		<2	-		-	-	-		<2	<2	<2
Organic Carbon - Dissolved (DOC) (Filtered)	mg/L	1		2.3	6.3	2	4	1.8	2.8	2.5	3	-	-
Oxygen Demand - Biological (BOD)	mg/L	2	-	<2		-	-	-	-	-	<4	<4	<4
Phenols (4AAP)	mg/L	0.001	0.001		2			<0.002	<0.002	0.005	0.005	<0.001	<0.001
Sulphate	mg/L	0.2		12	15	13	16	13	22	15	16	13	16
Ammonia	mg/L	0.01		0.4	0.4	<0.1	<0.1	0.2	0.1	0.2	0.2	0.2	0.2
Nitrate (as N)	mg/L	0.05		<0.05	<0.05	0.12	0.07	0.06	<0.06	<0.06	<0.06	<0.06	<0.06
Nitrite (as N)	mg/L	0.03		1	17 11		4	<0.03	<0.03	<0.03	< 0.03	<0.03	<0.03
Total Kjeldahl Nitrogen (TKN)	mg/L	0.1		5.11		-	-	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Conductivity (lab)	µS/cm	1	Service Land	517	505	494	463	499	543	524	444	521	502
pH (Lab)	-	0.05	6.5-8.5	7.95	7.89	8	7.8	8.2	7.94	8.07	7.64	7.82	8.25
eld	-												
DO (Field)	mg/L		5-50	1	-47	1	-	-	-	-	-	-	-
Redox Potential (Field)	mV	1		ÁŁ.	1 -6	1 -	-	-	-	-	-	-	-
Temp (Field)	°C				1 1	-	-	-	-	-	-	-	-
Conductivity (field)	µS/cm		Lane of	1-0		-	-	-	-	-	-	-	-
pH (Field)	1		6.5-8.5			-	-	T -	T -	T -	_	T .	



Table 7: Groundwater Quality - PWQO

	Unit	RDL F	PWQO	TW09-2 2016-10-26	TW09-2	TW09-2 2018-11-05	TW09-2	TW09-2 2019-10-28	TW09-2 2020-05-27	TW09-2	TW09-2 2021-06-28	TW09-2 2021-11-10
etals	Unit	KUL		2010-10-26	2010-00-11	2010-11-05	2019-05-29	2019-10-28	2020-05-27	2020-11-12	2021-06-28	2021-11-10
Aluminium (Filtered)	µg/L	10	15 75		1 12		1	1		1	1 2-	
Antimony (Filtered)	µg/L	0.2	20	-	-			-	_	-	-	-
Arsenic (Filtered)		0.1	5	0.2	<0.2	<0.2	0.4	<0.2	<0.2	0.2	<0.1	0.2
	µg/L	0.01	0	263	237	280	487	210	205	205	276	259
Barium (Filtered)	µg/L		200									
Boron (Filtered)	µg/L	0.2	200	16	25	10	26	-11	8	58	14	12
Beryllium (Filtered)	µg/L	0.02	11	- Y	7	-	-		· ·	-	-	-
Bismuth (Filtered)	µg/L	0.01		1 4	7 1	-	-	-	~	1 17	-	-
Calcium (Filtered)	µg/L	10		90,700	106,000	117,000	281,000	86,800	88,300	108,000	150	-
Cadmium (Filtered)	µg/L		0.1 0.5	<0.003	0.011	<0.003	0.064	< 0.003	0.005	<0.003	<0.015	< 0.015
Chloride	µg/L	200		5000	4000	4000	4000	4000	4000	5000	4500	6200
Chromium (III+VI) (Filtered)	µg/L	0.03	8,9	0.07	0.06	0.12	4.01	0.09	0.1	<0.08	2	1
Cobalt (Filtered)	µg/L	0.002	0.9		4	*	1	2		142	4.	- 1
Copper (Filtered)	µg/L	0.02	1 5	0.41	0.33	0.26	8.1	0.7	0.9	0.5	0.2	1.9
Iron (Filtered)	µg/L	2	300	36	123	67	2820	17	<7	23	218	<5
Lithium (Filtered)	µg/L	1			+	-		-		1		
Lead (Filtered)	µg/L	0.01	1 3 5	0.01	0.04	< 0.01	2.49	0.04	0.02	0.01	0.08	0.47
Manganese (Filtered)	µg/L	0.01		12.04	19.4	27.6	273	7.26	0.32	25.8	1 2	1 -
Magnesium (Filtered)	µg/L	1		3610	3120	3510	8300	2870	2990	3670		
Mercury (Filtered)	µg/L	0.01	0.2	<0.01	0.07	<10	<10	<10	<10	<10	<0.02	<0.02
Molybdenum (Filtered)	µg/L	0.01	40		0.07	-	- 10	-	- 10	- 10	-0.02	-0.02
Nickel (Filtered)		0.01	25					-	-	-		
	µg/L	3	30	<30	<30	<30	730	<30	300	290	680	640
Phosphorus (Filtered)	µg/L		30									
Potassium (Filtered)	μg/L	2	_	908	674	858	1100	723	757	941	-	-
Silicon (Filtered)	µg/L	10		-	+	-	12.		- 2	-	-	-
Strontium (Filtered)	µg/L	0.1		*	+		1.5	J-		-	-	-
Selenium (Filtered)	µg/L	1	100		4		- 3	-		-	- 3	-
Sodium (Filtered)	µg/L	10		3200	3230	3100	3000	3090	3010	3380	1410	-
Silver (Filtered)	μg/L	0.01	0.1	1-0			17.		-		- 5	
Tin (Filtered)	µg/L	0.01				-	-	-	-	-	-	-
Titanium (Filtered)	µg/L	0.1		- 4	1.7	-	-	-	-	-	-	-
Thallium (Filtered)	µg/L	0.2	0.3			-	-	-	-	-	-	-
Uranium (Filtered)	µg/L	0.001	5	2-	- 2				-	- I	-	-
Vanadium (Filtered)	µg/L	0.03	6		- 2	-			- 4	-	-	-
Zinc (Filtered)	µg/L	2	20	<2	3	<2	17	9	4	<2	<5	<5
organics	IPS-			1				-		-		
Alkalinity (as CaCO3)	mg/L	2		225	235	241	340	215	237	531	228	256
Hardness (as CaCO3) (Filtered)	mg/L	0.05	_	LLO	200	241		2.10	207	001	282	260
Solids - Total Dissolved (TDS)	mg/L	3	_	269	266	334	274	291	243	303	255	265
Oxygen Demand - Chemical (COD)	mg/L	5	-	10	<8	<8	<8	<8	14	13	69	71
Solids - Total Suspended (TSS)			-	3	<2	3	2210	<2	3200	341	2000	1070
	mg/L	2		3	<2	3	2210	<2	3200	341	2000	1070
Organic Carbon - Dissolved (DOC) (Filtered)	mg/L	1	_				-				-	
Oxygen Demand - Biological (BOD)	mg/L	2		<4	<4	<4	4	<4	4	<4	4	4
Phenols (4AAP)	mg/L	0.001	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002
Sulphate	mg/L	0.2		14	13	10	15	10	15	24	16	16
Ammonia	mg/L	0.01		0.1	0.2	0.2	0.2	0.1	0.1	0.2	0.22	0.26
Nitrate (as N)	mg/L	0.05		0.28	<0.06	<0.06	0.2	0.09	0.07	0.21	0.38	0.16
Nitrite (as N)	mg/L	0.03		< 0.03	<0.03	< 0.03	<0.03	< 0.03	< 0.03	0.03	< 0.05	< 0.05
Total Kjeldahl Nitrogen (TKN)	mg/L	0.1		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.6	1.7
Conductivity (lab)	µS/cm	1		456	473	475	448	384	472	478	493	512
pH (Lab)		0.05	6.5-8.5	7.91	7.99	7.91	7.96	8.26	8.02	7.86	7.83	8
eld	-		-									-
DO (Field)	mg/L		5-50		1.2	7.77	4.1	6.7	6	5.9	9.85	8.19
Redox Potential (Field)	mV		0.00	-	14	-	115	167	214	220	56	11
Temp (Field)	°C	-		-	1	-	10.8	11.9	13.8	11.9	14.8	9.1
Conductivity (field)	uS/cm	-			-		362	339	388	302	463	235
Conductivity (neid)	(ho/cit)	1			-	-	302	222	200	302	403	200



**Table 8: Surface Water Quality** 

			PWQO		SW1	SW1													
	Unit	RDL	1000	Trigger	2011-10-01	2012-05-15	2012-07-11	2012-09-25	2013-05-29	2013-08-09	2013-10-30	2014-06-09	2014-07-29	2014-11-14	2015-05-19	2015-07-29	2015-11-03	2016-05-16	2016-07-
etals																			
Aluminium	µg/L	10			*	-		-	<10	54	3.0	-	34	-	-	-	1,4	-	-
Antimony	µg/L	0.2	20		2 2 2	-	4 6	- 8	<0.2	19	- 3	P							3
Arsenic	μg/L	0.1	5	0.8		-			0.5		0.6	0.7	0.8	0.4	0.7	1.4	0.3	0.3	1.1
Barium		0.01	Sec.	88.5	- V	-	1 2	-	66.9		58.9	77.1	91.5	50,5	71.2	121	59.1	64.8	111
Boron	µg/L	0.2	200	22.35				1	10.1		7.1	16.6	19	7	19.6	18.1	9.6	10	18
Beryllium	µg/L	0.02	11			-	1 .	1 2	<0.02	1 .	1	1	1	1 4	1		-	-	1 -
Bismuth	µg/L	0.01			-	-		-	<0.01	-	(2)			1 2 1	-	-			1
Calcium	µg/L	10		98000	-	-	1		79,800			1		1	98,900	-	72,000	81,500	108,00
Cadmium		0.003	0.1 0.5	0.012	-	-	+	1	0.004	1	0.01	0.003	< 0.003	<0.003	0.009	0.011	0.01	0.005	<0.00
Chloride	µg/L	200	0.110.5	22000	12,000	11,000	8500	13,000	11,000	7900	13,000	8300	13,000	15,000	13,000	27,000	23,000	22,000	15,00
	µg/L		0.0		12,000	11,000	9800	13,000		7900									
Chromium (III+VI)	µg/L	0.03	8.9	0.52		-		-	<0.5		<0.5	0.05	0.2	1.65	<0.03	0.08	0.04	0.42	0.41
Cobalt	µg/L	0.002	0.9			-			0.091		*		- 04	. × .	-		(**)	-	-
Copper	µg/L	0.02	1 5	0.94		-		-	<0.5		<0.5	6.01	0.73	0.58	0.43	0.94	1.97	0.37	0.61
Iron	µg/L	2	300	410	73	149	1850	1440	135	460	60	315	496	66	211	2270	123	78	2300
Lithium	µg/L	1	1000						<1		- 6-						1 - 15 -	1 2	
Lead	µg/L	0.01	1 3 5	0.13	8 1		1	81	0.11		0.03	0.46	0.08	0,1	0.06	0.8	0.1	0.07	0.05
Manganese		0.01	1981	154				- 2	45.5		-	111	109	15.6	81.5	1	24.7	17.4	986
Magnesium	µg/L	1		2950	1.04				2170		04.0	1	4.		2400		2470	2460	3110
Mercury (Filtered)	µg/L	0.01	0.2	10	22.0	1 - 2		1 -		-			1	-	<0.01	< 0.01	<0.01	< 0.01	<0.0
Molybdenum	µg/L	0.01	40	- 10	1 121			1 2	0.13	-	-	1		1 2 1	-	-		10.01	-
Nickel		0.1	25		-	-	1		0.8	-	-			1 3	-	1	-	1	1
Phosphorus total (P2O5)	µg/L	3	30	40	60	<30	<30	40	80	<30	30	40	40	<30	15	40	<30	<30	110
Potassium		3	30	873			-30		857	- 30	- 30			-30	705	40	1050	585	731
	1-9-			0/3	-	-	+		2490	+	1	-	-	-	1	+	1	+	
Silicon	µg/L	10			-	-	-	-		-	-	-	-		-	-		-	-
Strontium		0.1			- ×	-	-		152		-	<u> </u>	-	-	-	-	-	-	-
Selenium	µg/L	1	100			-		-	<1		17.5	-			-	-		+	-
Sodium	µg/L	10		13100		-			6850		-	-			7610	-	12,400	12,000	11,20
Silver	μg/L	0.01	0.1			7			< 0.01	14	141		+4	2-			14	-	-
Tin	µg/L	0.01							0.02		1.0	-			-		-		-
Titanium	µg/L	0.1	200		1 - 1-1			-	0.2	1.	45.1	ji -	-	-	-	-	-	-	-
Thallium	µg/L	0.2	0.3			-			<0.2		3+0	T -	-	-	-	-	-	-	-
Uranium		0.001	5			-	1	4.7	0.049	1	-		-	-	-	-	-	-	-
Vanadium	µg/L	0.03	6		10000	-		-	0.22	-		1							
Zinc	µg/L	1	20	5		-			<2		<2	11	2	<2	2	3	7	4	3
organics	pg-L	-	20	-					1		-	1				1 9			
Alkalinity (as CaCO3)	I made	2	-	213	197	201	229	232	179	206	182	226	227	202	226	266	178	183	248
	mg/L	0.05			197	201	229	1		1	-	220	-	-	220	1	_	103	240
Hardness (as CaCO3)		0.05	=	1197	210		200	-	208		001		240	nr.		-	210		740
Solids - Total Dissolved (TDS)	mg/L	1	-	300	249	226	286	303	271	280	234	277	343	251	314	334	240	263	340
Oxygen Demand - Chemical (COD)	mg/L	5		37.8	41	17	31	32	18	35	24	<8	29	24	24	37	30	10	35
Solids - Total Suspended (TSS)	mg/L	2		14.3	<2	<2	6	4	<2	3	2	2	<2	<2	<2	7	<2	<2	8
Organic Carbon - Dissolved (DOC) (Filtered		1							1 35			1 - 5 -		100	13.2				-
Oxygen Demand - Biological (BOD)	mg/L	2		4	<2	<4	5	<4	<4	<4	<4	<4	3	<4	6	5	<4	<4	<4
Phenols (4AAP)		0.001	0.001	0.003	0.002	0.001	0.004	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	0.002	0.003	0.001	<0.001	<0.00
Sulphate	mg/L	0.2	6.0334	2	2.7	0.9	0.3	7.4	2.8	1.2	3	1.6	1.7	3.6	<1	<1	<1	1	<1
Ammonia, Unionized (Field)	mg/L	0.01	0.02				1	-			-								1 5.
Ammonia		0.01		0.1	<0.1	0.2	<0.1	0.1	<0.1	<0.1	<0.1	0.2	0.1	1 8	<0.1	<0.1	<0.1	0.1	0.2
Nitrate (as N)		0.05		0.13	<0.05	<0.05	< 0.05	<0.05	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.15	0.18	<0.0
Nitrite (as N)		0.03		0.03	<0.06	<0.06	<0.06	<0.06	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.0
Total Kjeldahl Nitrogen (TKN)		0.03		0.03	<0.5	<0.5	0.6	0.8	0.6	0.7	<0.03	<0.5	<0.5	<0.5	<0.5	0.6	<0.03	<0.5	0.7
Conductivity (lab)	µS/cm			429	405	409	454	530	425	424	394	440	474	422	449	560	411	444	510
pH (Lab)	-	0.05	6.5-8,5		8.01	8.04	7.87	8.04	8.12	7.91	8.21	7.99	7.94	8.2	7.84	8.1	8.14	8.26	7.8
eld							_												
DO (Field)	mg/L		5-50		28			-	-	-	-	-	-	-	-	-	-	-	-
Redox Potential (Field)	mV	-			- 7.5		-	-	-	-	-	-	T -	-	-	-	-	-	-
Temp (Field)	°C					-		-	-	-	-	-	-	-	-	-	-	-	-
Conductivity (field)	µS/cm	1			-	-	T.	-	-	-	-	-	-	-	-	-	-	-	-
			6.5-8.5																-



**Table 8: Surface Water Quality** 

			PWQO		SW1	SW1	SWI	SW1	SW1	SW1	SW1	SW1	SW1	SW1	SW1	SW1	SW1	SW1	SW1
	Unit	RDL	100	Trigger	2017-06-07	2017-08-03	2017-09-29	2018-06-11	2018-08-16	2019-05-29	2019-09-02	2019-10-28	2020-05-27	2020-07-07	2020-07-13	2020-11-12	2021-06-28	2021-08-26	2021-1
etals																			
Aluminium	µg/L	10			1 4	-			-	-	32.1	-	14.	-		~	1	14.	
Antimony		0.2	20		12		-	-				-				2.	-		1
Arsenic		0.1	5	0.8	0.2	0.4	0.5	0.3	1.2	0.2	0.5	0.5	0.5	1.1	1.1	0.5	0.6	0.6	0.
Barium	µg/L			88.5	61.3	79.1	110	60.9	153	60.8	95.5	59.9	77	119	119	69.9	76	82	60
Boron		0.2	200	22.35	13	11	15	24	19	16	34	18	15	26	26	14	29	23	9
	µg/L		11	22.55		1 11	10	24	13	10	34			-	20	17	23	25	- 0
Beryllium		0.02	- 11			-		-	-		+	-			-	_	1	-	+ -
Bismuth		0.01	_	20000	- 05 400	440,000	445.000	00.500	444.000	70.000	447.000	04.000	71.500	400.000	400.000	404.000		-	- 05
Calcium	µg/L	10		98000	85,100	112,000	115,000	96,500	141,000	70,800	117,000	81,000	74,500	132,000	132,000	104,000	89,400		85,4
Cadmium		0.003	0.1 0.5		0.009	0.008	0.008	0.003	0.02	<0.003	0.019	0.003	0.003	<0.003	<0.003	<0.003	<0.015	<0.015	<0.0
Chloride	µg/L	200		22000	11,000	9000	17,000	7000	14,000	12,000	13,000	24,000	22,000	9000	9000	19,000	12,700	12,900	17,2
Chromium (III+VI)	µg/L	0.03	8.9	0.52	0.57	0.67	0.66	<0.03	0.61	0.11	0.21	0.15	0.3	<0.08	<0.08	<0.08	<1	<1	<
Cobalt	µg/L	0.002	0.9					-	- F	· ·		A	-	500				704.0	
Copper	µg/L	0.02	1 5	0.94	0.39	0.21	1.08	0.22	0.59	< 0.2	0.9	0.5	0.4	0.7	0.7	0.5	0.4	<0.1	0.
Iron	µg/L	2	300	410	69	180	786	100	2970	71	1510	106	34	934	934	119	603	707	12
Lithium	µg/L	1	1000						-		-			-		1		-	1
Lead	µg/L	0.01	1 3 5	0.13	0.05	0.01	0.13	0.64	0.48	< 0.01	0.09	0.12	0.02	< 0.01	<0.01	0.09	0.08	0.04	0.7
Manganese		0.01	7,71	154	10.7	81.4	1320	36.7	2280	19.3	639	16.8	53.3	826	826	34.7	172		1
Magnesium	μg/L	1		2950	2500	2710	2740	2160	3520	1960	2810	2390	2380	3390	3390	2810	2540		24
Mercury (Filtered)		0.01	0.2	10	200	<10	<10	0.03	<0.01	<10	<10	<10	<10	<10	<10	<10	<0.02	<0.02	<0
Molybdenum		0.01	40	70	200	×10	~10	0.00	<0.01	<10	V10	-10	10	-10	>10	10	-0.02	~0.02	70
Nickel		0.01	25		1	-	-	1	-		-	-	1.	1	-	- 0	-	-	+
	150	7.1	30	40		+20	40	-20		<3	27	44			-		30	-10	-
Phosphorus total (P2O5)	µg/L	3	30	40	<30	<30		<30	157		37	14	24	61	61	<3		<10	5
Potassium	1130			873	161	290	528	111	1320	581	660	2060	989	688	688	553	200	-	30
Silicon	µg/L	10			-				-							-		-	
Strontium		0.1			-	-		-	-	-	-	-	-	-	-	-	-	-	<u> </u>
Selenium	µg/L	1	100				-		100		2.70		200	4					
Sodium	µg/L	10	5.00	13100	7950	6770	9890	5460	8270	6560	7640	10,900	13,400	8410	8410	10,200	8800		96
Silver	µg/L	0.01	0.1			4	1		12	1.2			-	141	-	4	- 2	17	-
Tin		0.01					-	-			100			-	-		-		
Titanium		0.1	200					-	-	-	-	-	-	-	-	-	-	-	-
Thallium	µg/L	0.2	0.3					-	-	-	-	-	-	-	-	-	-	-	-
Uranium		0.001	5					<u> </u>	<u> </u>	T -	<u> </u>	<del>                                     </del>	<b>—</b>	<u> </u>	<b>+</b> -	<b>—</b>	<b>+</b> -	<u> </u>	<del>                                     </del>
Vanadium		0.03	6				1 2			12					-	- 147	1-12-	320 -	1000
Zinc	µg/L	1	20	5	4	<2	12	<2	6	2	9	<2	3	<2	<2	2	14	19	13
The state of the s	pgr	1	20	- 3	- 4		1 12	-2		- 2	, ,	~2	3		12		14	15	- 15
organics	1			040	200	T 545	1 070	1 045	0.04	1 004	670	1 404	1 005		1 000	1 140	1 047	1 000	1 00
Alkalinity (as CaCO3)	mg/L	2		213	202	248	276	215	331	204	273	164	205	295	295	218	247	269	20
Hardness (as CaCO3)	mg/L	0.05		197	-			-	4	14.0		-		4			234	253	22
Solids - Total Dissolved (TDS)	mg/L	1		300	280	334	323	286	440	206	329	286	283	363	363	283	254	271	23
Oxygen Demand - Chemical (COD)	mg/L	5		37.8	25	31	39	30	53	19	27	27	22	38	38	27	26	26	33
Solids - Total Suspended (TSS)	mg/L	2		14.3	<2	<2	8	<2	24	14	13	2	<2	7	7	12	3	4	6
Organic Carbon - Dissolved (DOC) (Filtere	d) mg/L	1				D				1	9.				- 2:				
Oxygen Demand - Biological (BOD)	mg/L	2		4	<4	<4	<4	<4	12	<4	5	<4	<4	4	4	<4	<3	<3	<
Phenois (4AAP)	mg/L		0.001	0.003	0.001	< 0.001	<0.001	0.001	0.011	0.003	0.006	<0.001	0.003	<0.001	<0.001	< 0.001	<0.001	< 0.001	<0.0
Sulphate	mg/L			2	<2	<2	<2	<2	<2	6	3	33	<2	<2	<2	4	3	4	9
Ammonia, Unionized (Field)	mg/L		0.02		1	1			-				1		1	-	<0.01	<0.01	<0
Ammonia	mg/L		0.02	0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	0.05	0.03	0.
Nitrate (as N)	mg/L			0.13	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.05	0.1	<0
Nitrite (as N)	mg/L			0.03	<0.03	<0.03	<0.03	<0.03	<0.00	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05	0.06	<0
				0.03	<0.03	<0.03	0.03	<0.03	1		0.9	<0.03	<0.03	0.8		<0.03		0.06	
Total Kjeldahl Nitrogen (TKN)	mg/L									<0.5			1277		0.8		0.5		0
Conductivity (lab)	µS/cm		-	429	417	485	529	417	613	407	543	402	424	529	529	454	490	524	45
pH (Lab)	-	0.05	6.5-8,5		7.82	7.74	7.76	7.94	7.88	8.17	8	8.17	7.94	7.66	7.66	7.67	7.96	8.01	7.
ld			1000		17														
DO (Field)	mg/L		5-50		-	2	-	-	8	6.3	4.57	5.98	6.01	-	4.66	6.21	6.49	6.48	9.
Redox Potential (Field)	mV					3-			1	111		225	25	- 2	120	210	67	130	2
Temp (Field)	°C					1			-	13	21.2	11.8	20.5	1	25.7	6.9	26.8	28	6
Conductivity (field)	µS/cm	1					1 .	-	-	324	749	411	414		550	321	485	545	20
pH (Field)	1000		6.5-8.5	9			1			7.74	7.38	7,71	7.6	1	7.84	8.8	7.31	7.34	7.



**Table 8: Surface Water Quality** 

	i tata	DDI	PWQO		SW3	SW3												
etals	Unit	RDL		Trigger	2011-10-01	2012-05-15	2013-05-29	2013-10-30	2014-06-09	2014-11-14	2015-05-19	2016-05-16	2017-06-07	2017-08-03	2018-06-11	2019-05-29	2020-05-27	2021-11-1
	Lund	10			-	1	40	1	T	T .	1	1	1	1	1	1 3	1	1
Aluminium Antimony	µg/L	0.2	20			-	<0.2		-	-		-	- 5	54.7	-	1		-
	µg/L	0.1	5	0.8	- 0	-	0.7	1	0.8	0.6	0.9	0.5	0.4	0.5	1.1	0.2	0.4	0.8
Arsenic Barium	µg/L	0.01	3	88.5	Ů.	_	74.8	68	93.8	69.2	71.9	61.9	53.8	89.6	59.6	57.7	56.3	62
			200		_	-					7.119							
Boron	µg/L	0.2	200	22.35		-	118	298	176	53.9	209	307	225	328	822	126	371	287
Beryllium	µg/L	0.02	11				<0.02	-								-		-
Bismuth	µg/L	0.01			10000	-		-	1.0	-	447.000	404.000	400.000	451.000	*******	*******	400.000	440.000
Calcium	µg/L	10	2 112 2	98000		-	132,000			-	147,000	134,000	128,000	154,000	196,000	113,000	122,000	113,000
Cadmium	µg/L	0.003	0.1 0.5		40.000	-	0.008	0.04	0.361	0.016	0.012	0.026	0.015	0.017	0.019	0,003	0.011	0.016
Chloride	µg/L	200		22000	19,000	37,000	61,000	34,000	71,000	43,000	51,000	53,000	42,000	67,000	74,000	62,000	76,000	80,300
Chromium (III+VI)	µg/L	0.03	8.9	0.52	-	-	<0.5	0.6	0.47	0.97	0.13	0.61	0.77	0.58	0.46	0.24	0.43	<1
Cobalt	µg/L	0.002	0.9			-	0.252	1	- 3			1	1					
Copper	µg/L	0.02	1 5	0.94		-	1	3.1	0.98	1.94	0.58	3.04	0.97	0.65	1.39	8.0	0.8	1.5
Iron	µg/L	2	300	410	82	168	226	172	136	175	219	184	114	214	470	64	177	181
Lithium	µg/L	1				-	<1	-				-	1 - 25 -	1 2		1		7
Lead		0.01	1 3 5	0.13		-	0.5	2.1	1.59	1.56	0.4	0.58	1.43	0.78	1.23	<0.01	0.17	0.41
Manganese	µg/L	0.01	1000	154		-	88	-	60.6	22	132	55.2	11.5	44.6	374	7.7	104	83
Magnesium	µg/L	1		2950	1 14	-	8230	141			9570	9920	7610	11,200	16,100	6710	10,600	8100
Mercury (Filtered)	µg/L	0.01	0.2	10	2	-					<0.01	0.01	150	<10	0.08	<10	<10	<0.02
Molybdenum	µg/L	0.01	40		1.191	-	0.11	4	-47	1 02	181	-	2	- 4		1 2	4	81
Nickel	µg/L	0.1	25		-3-	100	2	131	- 3	25	- 3		~	1		8		3
Phosphorus total (P2O5)	µg/L	3	30	40	70	30	110	80	60	<30	35	40	40	<30	80	137	44	80
Potassium	µg/L	3		873	1 -3 -	-	3340	1 2	-	17.	3180	3100	3000	1480	4730	1680	3270	9000
Silicon	µg/L	10			-	-	2690			1	-	1		1				
Strontium	µg/L	0.1			~	-	378	-	-	-	-	-	-	-	-	-	-	-
Selenium	µg/L	1	100			-	<1		-	5-6-00	-		1	LTO.		1.00		1
Sodium	µg/L	10	500	13100		-	34,300	3			31,100	32,000	29,500	47,200	57,900	28,400	44,700	34,700
Silver	µg/L	0.01	0.1				< 0.01	1		1 4	-	-	14			1		-
Tin	µg/L	0.01			-	-	0.05	-		-	-	-	-			-		
Titanium	µg/L	0.1	1000		100		2.1			-	(2)	-	-	-	-	-	-	-
Thallium	µg/L	0.2	0.3			-	<0.2	- 4	-	1 2	-	-	-	-	-	-	-	-
Uranium	µg/L	0.001	5			1	0.205	-	-	1	120	† ·	-	-	-	-	-	<b>-</b>
Vanadium	µg/L	0.03	6		1000		0.34	100	1.0	- 5-			1-12-	10.75		12		
Zinc	µg/L	1	20	5		-	3	13	9	4	3	14	7	3	5	4	3	17
organics	lb8.c	-	-					1.0								-		
Alkalinity (as CaCO3)	mg/L	2	200	213	172	293	231	78	305	187	301	250	249	308	328	251	260	209
Hardness (as CaCO3)		0.05		1197	112	200	364	-	500	107	307	250	240	300	520	201	200	316
Solids - Total Dissolved (TDS)	mg/L	1		300	563	446	543	671	657	586	503	551	454	1070	749	425	540	420
Oxygen Demand - Chemical (COD)	mg/L	5	-	37.8	26	29	40	38	<8	22	25	17	27	31	39	14	32	46
Solids - Total Suspended (TSS)	mg/L	2		14.3	5	<2	3	35	6	10	<2	5	62	31	17	2	10	26
Organic Carbon - Dissolved (DOC) (Filtere		1		14.5		-2	3	- 35	-	- 10	10.8	-	02	31	- "	-	10	20
Oxygen Demand - Biological (BOD)		2		4	5	15	<4	5	<4	<4	<4	7	<4	<4	<4	<4	4	<3
Phenols (4AAP)		0.001	0.001	0.003	<0.001	0.001	<0.001	<0.001	<0.001	0.001	0.001	0.001	0.005	0.002	0.007	0.004	0.009	<0.001
			0.001	2	180	49	81	280	110	190	76	110	82	99	160	53	93	67
Sulphate		0.2	0.00	- 2			1	1	1					_	1			
Ammonia, Unionized (Field)	mg/L	0.01	0.02	0.1	- 40.1	-0.1	0.9	-0.1	0.2		-0.1	-01	-0.1	-0.1		-0.1	-0.1	<0.01
Ammonia	mg/L	0.01		0.1	<0.1	<0.1	0.3	<0.1	0.2	-0.00	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	0.04
Nitrate (as N)	mg/L	0.05		0.13	<0.05	<0.05	<0.06	<0.06	0.07	<0.06	<0.06	0.15	<0.06	<0.06	<0.06	<0.06	<0.06	<0.05
Nitrite (as N)	mg/L	0.03		0.03	<0.06	<0.06	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05
Total Kjeldahl Nitrogen (TKN)	mg/L			0.7	0.7	<0.5	1.7	1	0.8	1	0.6	0.7	0.5	<0.5	0.9	<0.5	<0.5	0.7
Conductivity (lab)	µS/cn			429	761	728	820	857	954	824	811	834	717	953	1080	724	814	800
pH (Lab)	-	0.05	6.5-8,5		8.01	8.11	8.18	8.06	8.04	8	7.95	4.76	8.09	7.79	7.92	8.17	7.88	7.72
eld							_							,				
DO (Field)	mg/L		5-50			-	-	-	-	-	-	-		-	-	9.2	6.04	8.06
Redox Potential (Field)	mV		200		- 8	-	-	-	-	-	-			11-14-		115	60	43
Temp (Field)	°C							-	-	-	-	-		1.0		13.1	20,2	6.7
Conductivity (field)	µS/cm	1	Sec. 2		-	-	-	-	-	-	-	-	1			586	817	372
pH (Field)			6.5-8.5			-	-	-	-	I -	-	1.41	-			7.95	4.42	7.55



**Table 8: Surface Water Quality** 

			PWQO		SW6	SW6	SW6	SW6	SW6	SW8	SW8	SW8	SW8	SW8	SW8	SWB	SW8	SW8	SW8
	Unit	RDL	1	Trigger	2017-06-07	2019-09-02	2020-05-25	2020-05-27	2021-11-10	2012-05-15	2012-07-11	2013-05-29	2013-08-09	2013-10-30	2014-06-09	2014-11-14	2015-05-19	2015-11-03	2016-05
etals		T																	
Aluminium	µg/L	10			1 2		1 2		1 3	1 :	1 -	20	1 5	1 4		1 -	1 -		1 -
Antimony		0.2	20			-		-	-		-	<0.2		- 0	-				
Arsenic	μg/L	0.1	5	0.8	0.4	0.4	0.7	0.7	0.6	-		0.5		0.8	0.5	0.4	0.5	0.2	0.3
Barium		0.01	-	88.5	80.4	110	131	131	85	1	-	67.1	1	83.8	77.9	69.9	80.5	55.3	62.
	µg/L		200					226											
Boron	µg/L	0.2	200	22.35	138	189	226		183		-	11.2	-	12.6	23,1	53,6	22.1	8.9	29
Beryllium	µg/L	0.02	11		-	4	4		-	-	-	0.02		+	-	-	+		
Bismuth	µg/L	0.01			-		1	-	1.2		-	<0.01	-		-	-		-	
Calcium	µg/L	10		98000	149,000	164,000	128,000	128,000	139,000		-	74,800	-	1	-	-	90,800	69,200	76,8
Cadmium	µg/L	0.003	0.1 0.5	0.012	0.027	0.005	0.013	0.013	0.033	100		0.005	- 4	0.02	< 0.003	< 0.003	0.011	0.024	<0.0
Chloride	µg/L	200	-	22000	14,000	19,000	17,000	17,000	26,400	8700	7200	19,000	16,000	17,000	5200	22,000	15,000	29,000	17.0
Chromium (III+VI)	µg/L	0.03	8.9	0.52	0.91	0.71	0.85	0.85	<1		1 -	1.4	1	< 0.5	0.07	3.19	< 0.03	0.05	0.4
Cobalt	µg/L	0.002	0.9			-	1		1	1		0.073	-	-			-		
Copper	µg/L	0.002	1 5	0.94	1.06	0.8	1	1	2.4			2.1	1 2	<0.5	0.85	0.25	0.97	1.19	0.4
		0.02	300	410	82	1050	562	562	256	206	2650	58	255	1140		174	155	32	95
Iron	µg/L	2	200	410	02		1	502	200					1	211			32	_
Lithium	µg/L	1	44000	411	211			224	-	100	-	<1	-		-	-	-	177	-
Lead		0.01	1 3 5	0.13	0.94	0.16	0.26	0.26	2.1	-	-	0.19	8	0.14	0.1	0.03	0.03	0.11	0.
Manganese	µg/L	0.01	1000	154	128	1350	634	634	466	-		10.5	2.7	-	117	47.6	89.9	6.93	24
Magnesium	µg/L	1	100	2950	7610	11,600	11,600	11,600	10,400			2410	- F	-	140	-	2710	2470	257
Mercury (Filtered)	µg/L	0.01	0.2	10	150	<10	10	10	< 0.02		_ >						< 0.01	< 0.01	<0.
Molybdenum	µg/L	0.01	40		-	1 - 12 1	-	-	1.51		-	0.42	- 4	144			-	14	-
Nickel	µg/L	0.1	25			-		-			-	0.9	-	1 2	- 2	2	-	12-	
Phosphorus total (P2O5)	µg/L	3	30	40	50	36	116	3400	70	<30	<30	60	50	50	40	<30	28	<30	<3
Potassium	μg/L	3		873	6240	10,400	11,800	11,800	12,200		-	407	-		-		760	1210	65
Silicon		10		0/3	0240		1		12,200	1	-	2600	1 2	1		1 2	760	1210	+
	µg/L				-	-	-	-			_		+	-		_			-
Strontium	µg/L	0.1	-		-	-	-	-	-	-	-	152	- 2	_ ~		-	-	-	-
Selenium	μg/L	1	100		-		-			-		<1	-		-	-		-	-
Sodium	µg/L	10	5000	13100	14,100	21,200	22,500	22,500	16,900	-	-	13,100		-	-		9640	14,800	931
Silver	µg/L	0.01	0.1			4	14	14	(4)		11-11	< 0.01	4-	4-	4			-	
Tin	µg/L	0.01			-		-			-	-	0.05				-		-	-
Titanium	µg/L	0.1	1000		1 .			-	-	-	-	0.2	-	-	-	-	-	-	T -
Thallium	µg/L	0.2	0.3					-	-	-	-	<0.2	1 4		1 2		-	-	T -
Uranium	µg/L	0.001	5			1					-	0.019	4.7	4.	-				<u> </u>
Vanadium	µg/L	0.03	6				1 2	-0.2	100		1121 -	0.47	1	1			100000	1 120 -0	100
Zinc		4.00	20	5	6	5	3	3	15	+	+	4	1	<2	9	<2	2	11	8
Control of the Contro	µg/L	11	20	- 5		5	3	3	15	-		9	-	< <u>Z</u>	9	<2	- 2	11	- 0
organics							-		1	,	,			-		7			_
Alkalinity (as CaCO3)	mg/L			213	356	417	366	366	355	189	159	169	217	207	212	214	204	170	170
Hardness (as CaCO3)		0.05		197	- 4	4		1	390		1	197					1		
Solids - Total Dissolved (TDS)	mg/L	1	5	300	503	491	451	451	438	243	211	274	306	271	260	291	257	260	25
Oxygen Demand - Chemical (COD)	mg/L	5		37.8	23	17	26	26	58	23	51	37	72	30	21	23	27	27	17
Solids - Total Suspended (TSS)	mg/L	2		14.3	49	3	6	6	62	<2	145	8	6	15	5	4	9	3	6
Organic Carbon - Dissolved (DOC) (Filter							1 5		1		-		1 .	-	1 -	1 :-	14		
Oxygen Demand - Biological (BOD)	mg/L			4	11	<4	6	6	3	<4	11	<4	<4	<4	<4	<4	<4	<4	10
Phenols (4AAP)			0.001	0.003	0.01	0.003	0.011	0.011	<0.001	0.002	0.004	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0
		0.001	0.001	2	46	41	36	36	46	0.002	1.7	0.6	2	2.2	0.5	1.5	<1	<1	<'
Sulphate (Field)	mg/L		0.00	- 2	40		-	36		1	1			-	0.5		1	_	_
Ammonia, Unionized (Field)	mg/L		0.02		17.5	5.5			<0.01	17.5			-		-	-			
Ammonia	mg/L			0.1	0.7	1.6	2.2	2.2	0.07	0.3	0.1	<0.1	<0.1	<0.1	0.4	-	<0.1	<0.1	<0
Nitrate (as N)		0.05		0.13	0.44	0.52	0.15	0.15	0.6	<0.05	<0.05	<0.06	<0.06	<0.06	<0.06	0.13	<0.06	0.77	0.
Nitrite (as N)	mg/L	0.03		0.03	0.03	0.03	0.07	0.07	< 0.05	< 0.06	< 0.06	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	<0
Total Kjeldahl Nitrogen (TKN)	mg/L	0.1		0.7	1.4	2.4	3.4	3.4	1.4	<0.5	1.3	0.7	0.7	0,6	0.6	<0.5	<0.5	<0.5	<0
Conductivity (lab)	µS/cm			429	795	860	743	743	832	386	323	428	461	456	398	458	422	405	41
pH (Lab)	-	0.05	6.5-8,5		8.03	7.69	8.01	8.01	8.08	8.03	7.52	8.11	8.08	8.17	8.02	8.1	8.07	8.14	8.
eld		3.00	0.0-0,0		0.00	1.00	0.01	0.01	0.00	0.00	1.02	0.11	0.00	0.77	0.02	9,1	0.07	0,14	0.
DO (Field)	in a f		5.50			0.24	1	6.67	F 24	1		1	1		1		1		_
	mg/L	-	5-50		-	9.24	-		5.21	-	-	-	-	-	<del>-</del>	-	-	-	-
Redox Potential (Field)	mV				-	115	-	-2	28	-	-	-	-	-	-	-	-	-	<del>  -</del>
Temp (Field)	°C				-	12.1		18.8	6		1.4	-	-	-	-	-	-	-	-
Conductivity (field)	µS/сл	1	100			656		754	365	-	-	-	-	-	-	-	-	-	-
pH (Field)			6.5-8.5			7.63		7.17	7.87	1 2 -	-		-		-				



**Table 8: Surface Water Quality** 

	Unit	RDL	PWQO	SW Trigger	SW8 2016-07-06	SW8 2017-06-07	SW8 2017-08-03	SW8 2017-09-29	SW8 2018-06-11	SW8 2019-05-29	SW8 2019-09-02	SW8 2019-10-28	SW8 2020-05-27	SW8 2020-07-07	SW8 2020-07-13	SW8	SW8 2021-06-28	SW8 2021-11-1
etals	Oint	T		ringger	2010-01-00	2017-00-07	12011-00-00	2011-03-20	2010-00-11	2010-00-20	2010-03-02	2010-10-20	2020-00-21	2020-01-01	2020-01-10	12020-11-12	12021-00-20	2021-11
Aluminium	µg/L	10		1	1 4	-	1 .	1 .	-	-	T a	1	-	1 2	14.		1 a	
Antimony	µg/L	0.2	20		-	-	-		-	-	-	-	-	2	-	10.1		-
Arsenic	µg/L	0.1	5	0.8	0.8	0.3	0.6	0.7	0.6	0.2	2.6	0.5	0.4	1.2	1.2	0.8	1	0.4
Barium	µg/L	0.01	-	88.5	74.8	70.3	103	108	81	51.3	88	60.5	72	109	109	90	49	64
Boron	µg/L	0.2	200	22.35	13	18	16	10	37	11	30	15	20	15	15	12	18	7
		0.02	11	ZZ.33	15	- 10	10	10	- 57	1 1	30	10	20	10	10	12	10	-
Beryllium Bismuth	µg/L	0.02	-11			1	-	-	-		1	-	-	-	1	1	-	
	µg/L	10	_	98000	82,900	79,700	110,000	98,300	92,700	74,800	71,600	68,900	69,800	105,000	105,000	98,000	70,500	79,600
Calcium	µg/L	_	0.410.5	_					_									
Cadmium	µg/L	0.003	0.1 0.5		<0.003	0.006	0.004	0.005	0.013	0.006	0.01	0.098	<0.003	<0.003	<0.003	0.098	<0.015	<0.015
Chloride	µg/L	200		22000	3000	26,000	22,000	8000	17,000	63,000	16,000	22,000	19,000	3000	3000	15,000	4500	14,500
Chromium (III+VI)	µg/L	0.03	8.9	0.52	0.41	0.57	0.39	0.82	0.12	0.15	0.14	0.17	0.17	<0.08	<0.08	0.88	<1	<1
Cobalt	µg/L	0.002	0.9		-	-			-						100	1-1-1	-	-
Copper	µg/L	0.02	1 5	0.94	0.82	1.08	0.54	0.62	0.93	<0.2	0.6	0.4	0.2	0.5	0.5	2.4	0.5	0.3
Iron	µg/L	2	300	410	402	80	433	660	371	67	1230	36	72	345	345	749	262	257
Lithium	μg/L	1	2000		1	1 - 1	1				1					- o fic	1.	
Lead	µg/L	0.01	1 3 5	0.13	0.04	0.12	0.04	0.08	0.08	80.0	0.38	0.15	< 0.01	0.06	0.06	3.23	0.09	0.34
Manganese	µg/L	0.01	100	154	171	24.2	318	109	137	21.1	494	10.1	45.3	236	236	78.9	34	84
Magnesium	µg/L	1		2950	2910	2620	3070	2970	2420	1810	2950	2310	2180	2960	2960	2870	2440	2460
Mercury (Filtered)	µg/L	0.01	0.2	10	<0.01	120	<10	<10	0.06	<10	<10	<10	<10	<10	<10	<10	<0.02	<0.02
Molybdenum	µg/L	0.01	40		-	- W-		4	-		-	100	-	-	12	1	1 2	- 8
Nickel	µg/L	0.1	25			-			-	12		-	16-11	~	34.0	- P	140	-
Phosphorus total (P2O5)	µg/L	3	30	40	40	30	70	<30	<30	28	286	26	<500	38	38	106	40	30
Potassium	μg/L	3		873	217	259	326	621	256	1300	8640	1970	550	202	202	373	200	200
Silicon	µg/L	10		0.0	4.17		020	02.	1200	1000	9414	1010			1 202	1 - 1	200	1 200
Strontium	µg/L	0.1			-	-		-	<u> </u>	<u> </u>	<u> </u>	<b>—</b>	<b>—</b>		<b>—</b>	<b>—</b>	-	+ -
Selenium	µg/L	1	100			-					740			1.4	14 70 -			4
Sodium	μg/L	10	100	13100	2940	15,100	13,800	5110	10,300	35,300	5860	8620	10,400	3500	3500	8480	3800	8700
Silver		0.01	0.1	13100		-	-	3110	-	1	1	1	10,400	3300	3500	0400	-	
	μg/L		0.1	_		-		1	-	-	12.	-	_	-	_	-	-	-
Tin	µg/L	0.01	-	_	-	-	-		-	- 9		-	-	-				-
Titanium	µg/L	0.1	4.0			-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium	µg/L	0.2	0.3			-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	µg/L	0.001	5				-	-	-	-	-	-	-	-	-	-	-	-
Vanadium	µg/L	0.03	6			-	-		-	-	-	1.0	-				-	-
Zinc	µg/L	1	20	5	<2	5	3	10	3	3	4	<2	<2	4	. 4	12	21	11
organics					1							_						
Alkalinity (as CaCO3)	mg/L	2	200	213	194	192	235	223	196	195	168	139	179	256	256	202	177	191
Hardness (as CaCO3)	mg/L	0.05		197	1.4	-				41	14			4.			186	209
Solids - Total Dissolved (TDS)	mg/L	1		300	249	274	351	300	274	303	300	274	243	306	306	291	175	215
Oxygen Demand - Chemical (COD)	mg/L	5		37.8	35	32	40	42	32	19	70	30	19	40	40	36	37	45
Solids - Total Suspended (TSS)	mg/L	2		14.3	8	4	14	4	10	8	83	3	- 4	137	137	23	6	6
Organic Carbon - Dissolved (DOC) (Filtere	ed) mg/L	1				1										-		
Oxygen Demand - Biological (BOD)	mg/L	2		4	<4	<4	<4	<4	<4	<4	34	<4	<4	<4	<4	<4	<3	<3
Phenois (4AAP)		0.001	0.001	0.003	0.001	0.003	<0.001	0.003	0.003	0.004	0.009	0.003		<0.001	<0.001	< 0.001	< 0.001	<0.001
Sulphate	mg/L	0.2	6,133	2	<1	<2	<2	<2	<2	<2	3	32	<2	<2	<2	3	7	1
Ammonia, Unionized (Field)	mg/L	0.01	0.02					1		< 0.005	0.013	< 0.005	< 0.005		0.006	0.009	<0.01	< 0.01
Ammonia	mg/L	0.01		0.1	<0.1	<0.1	<0.1	<0.1	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.03	0.03
Nitrate (as N)	mg/L	0.05		0.13	0.07	0.16	< 0.06	0.21	<0.06	<0.06	< 0.06	1.65	<0.06	0.13	0.13	<0.06	<0.05	<0.05
Nitrite (as N)	mg/L	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	<0.05	<0.05
Total Kjeldahl Nitrogen (TKN)	mg/L			0.7	0.7	0.7	<0.5	0.8	1.5	0.7	1.7	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	0.6
Conductivity (lab)	uS/cn			429	373	426	502	432	411	558	358	372	379	424	424	421	341	417
pH (Lab)	расп	0.05	6.5-8,5		8.2	7.83	7.85	7.86	7.98	7.71	8.64	7.82	7.93	7.94	7.94	7.87	8.27	7.76
pH (Lab) eld	-	0.05	0.5-6,5		0,2	7.03	1.00	7.00	1.80	1.71	0.04	1.02	7.93	7.94	7,94	7.07	0.21	1.76
	inna/l	-	5-50		-	F 2	1	1	1 -	9.4	7.91	8.86	6,69	1 - 5 -	0.02	9.65	1200	10.05
DO (Field)	mg/L	-	3-50		-	-	-	_	1		7.81			-	9.03		13.88	10.35
Redox Potential (Field)	mV	-	-				-		-	140	-	203	73		115	208	67	20
Temp (Field)	°C	1			-	-	-	-	-	16.1	24.4	11.6	19.4	-	29	5.3	29.5	6.6
Conductivity (field)	µS/cn	1			-	1			-	480	323	305	380	-	459	248	340	191
pH (Field)			6.5-8.5						-	7.78	8.45	7.9	7.69	1.4	7.95	8.91	8.4	7.72



**Table 9: Landfill Gas Measurements** 

Well ID		TW02-1	TW02-2	TW03-1	TW04-1	TW05-1	TW05-2	TW06-1	TW06-2	TW07-1	TW07-2	TW08-1	TW08-2	TW09-1	TW09-2	TW10-2	TW11-2	GP1	GP2		-
Top of Screen Elevation	(m)	236.84	239.81	238.86	237.66	234.95	237.17	236,21	237.79	231.15	236.14	235.83	241.53	229.51	235.43	238.94	236.78		[4]	Office	Sorting
Water Elevation (mAS	L)	238.49	238.49	238.49	238.49	238.49	238.49	238.49	238.49	238.49	238.49	233.49	238.49	238.49	238.49	238.49	238.49	-	744	11.000	building
Screen Saturated	0.1.	yes	no	no	yes	no	yes	yes	no	yes	no	no	4								
Percent Methane by Volume	28-Jun-21	< 0.05	< 0.05	12	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.05	12.5	8	- 1-	< 0.05
Hydrogen Sulphide (ppm)	28-Jun-21	<0.1	<0.1	<0.1	< 0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	<0.1	< 0.1	< 0.1	7-6	< 0.1
Percent Methane by Volume	10-Nov-21	<0.1	<0.1	1.15	< 0.1	<0.1	< 0.1	< 0.1	< 0.1	<0.1	< 0.1	<0.1	<0.1	<0.1	<0.1	1.85	3.95	19	12	<0.1	<0.1
Hydrogen Sulphide (ppm)	10-Nov-21	< 0.1	< 0.1	<0.1	< 0.1	<0.1	< 0.1	< 0.1	<0.1	< 0.1	< 0.1	<0.1	<0.1	< 0.1	<0.1	< 0.1	<0.1	< 0.1	< 0.1	<0.1	<0.1



Appendix A

# Monitoring and Screen Checklist

Fully accessible appended items are available upon request.

# Appendix D-Monitoring and Screening Checklist General Information and Instructions

General Information: The checklist is to be completed, and submitted with the Monitoring Report.

**Instructions:** A complete checklist consists of:

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

### **Definition of Groundwater CEP:**

For groundwater, the CEP must have expertise in hydrogeology and meet one of the following:

- (a) the person holds a licence, limited licence or temporary licence under the Professional Engineers Act; or
- (b) the person holds a certificate of registration under the *Professional Geoscientists Act, 2000* and is a practicing member, temporary, member or limited member of the Association of Professional Geoscientists of Ontario. O. Reg. 66/08, s. 2..

#### **Definition of Surface water CEP:**

A CEP for surface water assessments is a scientist, professional engineer or professional geoscientist as described in (a) and (b) above with demonstrated experience and post-secondary education, either a diploma or degree, in hydrology, aquatic ecology, limnology, aquatic biology, physical geography with specialization in surface water, and/or water resource management.

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

	Monitoring Report and Site Information					
Waste Disposal Site (WDS) Name	Stoney Lake Road Landfill					
Location (e.g. street address, lot, concession)	348 County Road 6, Lakefield					
GPS Location (taken within the property boundary at front gate/ front entry)	Zone 17, 720969 m east, 4926536 m north					
Municipality	The Township of Douro-Dummer					
Client and/or Site Owner	The Corporation of the Township of Douro-Dummer					
Monitoring Period (Year)	2021					
This	Monitoring Report is being submitted under the following:					
Environmental Compliance Approval (ECA) Number (formerly "Certificate of Approval" (C of A)):						
Director's Order No.:						
Provincial Officer's Order No.:						

Other:						
Report Submission Frequency	C Other  Specify (Type Here):					
The site is: (Operation Status)	Open Closed					
Is there an active waste transfer station at the site?	♠ Yes No					
Does this WDS have a Closure Plan?	<ul> <li>○ Not yet submitted</li> <li>○ Submitted and under review</li> <li>○ Submitted and approved</li> </ul>					
Total Approved Capacity	54,000	Units	Cubic Metres			
Maximum Approved Fill Rate		Units				
Total Waste Received within Monitoring Period (Year)		Units				
Total Waste Received within Monitoring Period (Year) Describe the methodology used to determine this quantity						
Estimated Remaining Capacity		Units				
<b>Estimated Remaining Capacity</b> Describe the methodology used to determine this quantity						
Estimated Remaining Capacity Date Last Determined	Select Date					
Non-Hazardous Approved Waste Types	☐ Domestic ☐ Industrial, Commercial & Institutional (IC&I) ☐ Source Separated Organics (Green Bin) ☐ Tires	Contaminated Soil  Wood Waste  Blue Box Material  Processed Organics  Leaf and Yard Waste	Food Processing/Preparation Operations Waste  Hauled Sewage  Other: C&D Materials, Scrap Metal			
Subject Waste Approved Waste Classes: Hazardous & Liquid Industrial (separate waste classes by comma)						

<b>Year Site Opened</b> (enter the Calendar Year <u>only</u> )		Current ECA Issue Date	9-Jun-2016			
Is your Site required to submit Fina	nncial Assurance?	← Yes				
Describe how your WDS is designe	d.	Natural Attenuation only     Fully engineered Facility     Partially engineered Facility				
Does your Site have an approved C	Contaminant Attenuation Zone?	( ·	Yes No			
If closed, specify ECA, control or audate:	thorizing document closure	Closure Plan Dated September 2000				
Has the nature of the operations at the site changed during this monitoring period?						
If yes, provide details:						

Have any measurements been taken since the last reporting period that indicate landfill gas volumes have exceeded the MOE limits for subsurface or adjacent buildings? (i.e. exceeded the LEL for methane)  Groundwater WDS Verifi	cation:	<ul><li>✓ Yes</li><li>⑥ No</li></ul>					
	Based on all available information about the site and site knowledge, it is my opinion that:  Sampling and Monitoring Program Status:						
1) The monitoring program continues to effectively characterize site conditions and any groundwater discharges from the site. All monitoring wells are confirmed to be in good condition and are secure:	<ul><li></li></ul>						
2) All groundwater, leachate and landfill gas sampling and monitoring for the monitoring period being reported on was successfully completed as required by ECA or other relevant authorizing/control document(s):		If no, list exceptions below o	or attach information.				
Groundwater Sampling Location	Description/Explanation for cha (change in name or location, ad		Date				

<ol> <li>a) Some or all groundwater, le sampling and monitoring requ established or defined outside or control document.</li> </ol>		← Yes ♠ No ← Not Applic	able
completed in accordance with	ng reported on was successfully established protocols, rameters developed as per the	<ul><li>✓ Yes</li><li>✓ No</li><li>⑥ Not Applicable</li></ul>	If no, list exceptions below or attach additional information.
Groundwater Sampling Location	Description/Explanation for ch (change in name or location, ad		Date

4)	All field work for groundwater investigations was done in accordance with Standard Operating Procedures (SOP) as established/outlined per the Technical Guidance Document (including internal/external QA/QC requirements) (Note: A SOP can be from a published source, developed internally by the site owner's consultant, or adopted by the consultant from another organization):	<ul><li></li></ul>	Ilts/WDS Conditions and Assessment:
5)	The site has an adequate buffer, Contaminant Attenuation Zone (CAZ) and/or contingency plan in place. Design and operational measures, including the size and configuration of any CAZ, are adequate to prevent potential human health impacts and impairment of the environment.	← Yes <b>⑥</b> No	Refer to Section 4.5 of the Annual Report. Reductions to the established monitoring program are proposed. A new shallow piezometer should be installed east of the Site and sampled to determine water quality that discharges to surface.
6)	The site meets compliance and assessment criteria.	<ul><li><b>⑥</b> Yes</li><li><b>⑥</b> No</li></ul>	Refer to Section 4.2.6 of the Annual Report. Groundwater is interpreted to discharge to surface, as such the intent of Guideline B-7 is considered to be satisfied.
7)	The site continues to perform as anticipated. There have been no unusual trends/changes in measured leachate and groundwater levels or concentrations.	○ Yes ⑥ No	Boron concentrations are increasing at monitoring well TW07-2.

following risk reduction practices in place at the site:  (a) There is minimal reliance on natural attenuation of leachate due to the presence of an effective waste liner and active leachate collection/ treatment; or  (b) There is a predictive monitoring program inplace (modeled indicator concentrations projected over time for key locations); or  (c) The site meets the following two conditions (typically achieved after 15 years or longer of site operation):  i.The site has developed stable leachate mound(s) and stable leachate plume geometry/ concentrations; and ii.Seasonal and annual water levels and water quality fluctuations are well understood.	<ul><li></li></ul>	Note which practice(s):	「 (a) 「 (b)  ▼ (c)
contingency plans or site	<ul><li>○ Yes</li><li>○ No</li><li>⑥ Not Applicable</li></ul>		
Groundwater CEP Declara	ation:		

I am a licensed professional Engineer or a registered professional geoscientist in Ontario with expertise in hydrogeology, as defined in Appendix D under Instructions. Where additional expertise was needed to evaluate the site monitoring data, I have relied on individuals who I believe to be experts in the relevant discipline, who have co-signed the compliance monitoring report or monitoring program status report, and who have provided evidence to me of their credentials.

I have examined the applicable Environmental Compliance Approval and any other environmental authorizing or control documents that apply to the site. I have read and followed the Monitoring and Reporting for Waste Disposal Sites Groundwater and Surface Water Technical Guidance Document (MOE, 2010, or as amended), and associated monitoring and sampling guidance documents, as amended from time to time. I have reviewed all of the data collected for the above-referenced site for the monitoring period(s) identified in this checklist. Except as otherwise agreed with the ministry for certain parameters, all of the analytical work has been undertaken by a laboratory which is accredited for the parameters analysed to ISO/IEC 17025:2005 (E)- General requirements for the competence of testing and calibration laboratories, or as amended from time to time by the ministry.

If any exceptions or potential concerns have been noted in the questions in the checklist attached to this declaration, it is my opinion that these exceptions and concerns are minor in nature and will be rectified for the next monitoring/reporting period. Where this is not the case, the circumstances concerning the exception or potential concern and my client's proposed action have been documented in writing to the Ministry of the Environment District Manager in a letter from me dated:

Sel	ect	Date

Recommendations:						
Based on my technical review of the monitoring results for the waste disposal site:						
No changes to the monitoring program are recommended  The following change(s) to	Refer to Section 4.5 of the Annual Report. Reductions to the established monitoring program are proposed. A new shallow piezometer should be installed east of the Site and sampled to determine water quality that discharges to surface.					
• the monitoring program is/ are recommended:						
No Changes to site design and operation are recommended						
The following change(s) to the site design and operation is/are recommended:						
Name:	Cameron MacDougall, P. Geo.					
Seal:	Add Image  AD 2 TO ZZ  CAMERON J. MacDOUGALL  PRACTISING MEMBER  2676					

Signature:		Date:	<b>25</b> -Apr-2022					
CEP Contact Information:	Cameron MacDougall, P. G	Cameron MacDougall, P. Geo.						
Company:	Cambium Inc.	Cambium Inc.						
Address:	194 Sophia St Peterborough, Ontario K9H 1E5	Peterborough, Ontario						
Telephone No.:	705-742-7900 x 212	Fax No. :	705-742-7907					
E-mail Address:	cameron.macdougall@can	cameron.macdougall@cambium-inc.com						
Co-signers for additional expe	rtise provided:							
Signature:		Date:	Select Date					
Signature:		Date:	Select Date					
Surface Water WDS Vo	erification:							
Provide the name of surface waterbody (including the near			fluent and the approximate distance to th					
Name (s)	unevaluated wetlands the Galesburg Provincially	unevaluated wetlands the Galesburg Provincially Significant Wetland						

Distance(s)	partially on-site to the east and southwest 125 m east					
Based on all available information	and site knowledge, it is my opi	nion that:				
	Sampling and Monitor	ing Program Status				
The current surface water monitoring program continues to effectively characterize the surface water conditions, and includes data that relates upstream/background and downstream receiving water conditions:	<ul><li><b>⑥</b> Yes</li><li><b>○</b> No</li></ul>					
2) All surface water sampling for the monitoring period being reported was successfully completed in accordance with the ECA or relevant authorizing/control document(s) (if applicable):	Yes  If no, specify below or provide details in an attachment.  Not applicable					
Surface Water Sampling Location	Description/Explanation for change (change in name or location, additions, deletions)		Date			
3) a) Some or all surface water sampling and monitoring program requirements for the monitoring period have been established outside of a ministry ECA or authorizing/control document.		<ul><li>Yes</li><li>No</li><li>Not Applicable</li></ul>	le			
b) If yes, all surface water samp under 3 (a) was successfully co the established program from protocols, frequencies, locatio developed per the Technical G	the site, including sampling ns and parameters) as	<ul><li>○ Yes</li><li>○ No</li><li>○ Not Applicable</li></ul>	If no, specify below or provide details in an attachment.			

Surface Water Sampling Location	Description/Explanation for change (change in name or location, additions, deletions)	Date
	•	
4) All field work for surface water investigations was done in accordance with SOP, including internal/external QA/QC requirements, as established/outlined as per the Technical Guidance Document, MOE 2010, or as amended. (Note: A SOP can be from a published source, developed internally by the site owner's consultant, or adopted by the consultant from another organization):	<ul><li>(♠ Yes</li><li>○ No</li></ul>	
Sampling and Mo	onitoring Program Results/WDS Condition	s and Assessment:
assessment criteria: i.e., there regulations, Water Manageme	ts surface water-related compliance criteria and are no exceedances of criteria, based on MOE legislation, nt Policies, Guidelines and Provincial Water Quality ent criteria (e.g., CWQGs, APVs), as noted in Table A or nce Document (Section 4.6):	← Yes ⑥ No
If no, list parameters that exceed of following page or provide details i	riteria outlined above and the amount/percentage of the en	exceedance as per the table on the

Parameter	Compliance or Assessment Criteria or Background	Amount by which Compliance or Assessment Criteria or Background Exceeded
e.g. Nickel	e.g. ECA limit, PWQO, background	e.g. X% above PWQO
iron total phosphorus boron	PWQO	Refer to Table 8
6) In my opinion, any exceedances listed in Question 5 are the result of non-WDS related influences (such as background, road salting, sampling site conditions)?		Where PWQO exceedances were observed these can be attributed to poor sampling conditions (i.e., shallow, and stagnant) and/or outside influences (i.e., road de-icing activities, and wetland environments).

7)	All monitoring program surface water parameter concentrations fall within a stable or decreasing trend. The site is not characterized by historical ranges of concentrations above assessment and compliance criteria.	<b>⑥ Yes ○ No</b>	
8)	For the monitoring program parameters, does the water quality in the groundwater zones adjacent to surface water receivers exceed assessment or compliance criteria (e.g., PWQOs, CWQGs, or toxicity values for aquatic biota (APVs)):	<ul><li>✓ Yes</li><li>⑥ No</li><li>✓ Not Known</li><li>✓ Not Applicable</li></ul>	Refer to Section 4.2.5
9)	Have trigger values for contingency plans or site remedial actions been exceeded (where they exist):	<ul><li>Yes</li><li>♠ No</li><li>♠ Not Applicable</li></ul>	Refer to Section 4.3.3.4 of the Annual Report.

# **Surface Water CEP Declaration:**

I, the undersigned hereby declare that I am a Competent Environmental Practitioner as defined in Appendix D under Instructions, holding the necessary level of experience and education to design surface water monitoring and sampling programs, conduct appropriate surface water investigations and interpret the related data as it pertains to the site for this monitoring period.

I have examined the applicable Environmental Compliance Approval and any other environmental authorizing or control documents that apply to the site. I have read and followed the Monitoring and Reporting for Waste Disposal Sites Groundwater and Surface Water Technical Guidance Document (MOE, 2010, or as amended) and associated monitoring and sampling guidance documents, as amended from time to time. I have reviewed all of the data collected for the above-referenced site for the monitoring period(s) identified in this checklist. Except as otherwise agreed with the ministry for certain parameters, all of the analytical work has been undertaken by a laboratory which is accredited for the parameters analysed to ISO/IEC 17025:2005 (E)- General requirements for the competence of testing and calibration laboratories, or as amended from time to time by the ministry.

If any exceptions or potential concerns have been noted in the questions in the checklist attached to this declaration, it is my opinion that these exceptions and concerns are minor in nature or will be rectified for future monitoring events. Where this is not the case, the circumstances concerning the exception or potential concern and my client's proposed action have been documented in writing to the Ministry of the Environment District Manager in a letter from me dated:

documented in writing to the Ministry of the Environment District Manager in a letter from me dated: Select Date **Recommendations:** Based on my technical review of the monitoring results for the waste disposal site: No Changes to the monitoring program are recommended Refer to Section 4.5 of the Annual Report. Reductions to the established monitoring program are proposed. A new shallow piezometer should be installed east of the Site and sampled to determine water quality that discharges to surface. The following change(s) to the monitoring program is/are recommended: No changes to the site design and operation are recommended The following change(s) to the site design and operation is/ are recommended:

CEP Signature			
Relevant Discipline	Physical Geography		
Date:	25-Apr-2022		
CEP Contact Information:	Cameron MacDougall, P. Geo.		
Company:	Cambium Inc.		
Address:	194 Sophia St Peterborough, Ontario K9H 1E5		
Felephone No.:	(705) 742-7900 x212		
Fax No. :	(705) 742-7907		
E-mail Address:	cameron.macdougall@cambium-inc.com		
Save As		Print Form	



Appendix B

**Environmental Compliance Approval No.: A340901** 

Fully accessible appended items are available upon request.

# **Content Copy Of Original**



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

# AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER A340901 Issue Date: June 9, 2016

The Corporation of the Township of Douro-Dummer

894 South St P.O. Box 92 Warsaw, Ontario K0L 3A0

Site Location: Stoney Lake Road Landfill

Lot 21, Concession 4

Douro-Dummer Township, County of Peterborough

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

the use and operation of a 1.6 hectare site *Waste Disposal Site (landfill/processing/transfer)* within a total site area of 4.25 hectares.

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

- " Approval" means this Environmental Compliance Approval and any Schedules to it, including the application and supporting documentation listed in Schedule "A";
- "Clean Wood" means waste that is wood or a wood product that is not contaminated with chromated copper arsenate, ammoniacal copper arsenic pentachlorophenol, creosote or other wood preservative.
- " *Director*" means any *Ministry* employee appointed in writing by the Minister pursuant to section 5 of the EPA as a Director for the purposes of Part II.1 of the *EPA*;
- " District Manager" means the District Manager of the local district office of the Ministry in which the Site is geographically located;
- "Dry Waste" means municipal waste, limited to clean wood, concrete and masonry, bricks, cardboard, plaster and drywall, scrap metal, glass, plastic, shingles, ceramics and furniture from home and light commercial activity.
- " EPA " means Environmental Protection Act, R.S.O. 1990, c. E. 19, as amended;
- "Ministry" means the Ontario Ministry of the Environment and Climate Change;
- "Municipal Waste" means the definition that is specified in Regulation 347 of the Environmental Protection Act.
- " NMA " means Nutrient Management Act, 2002, S.O. 2002, c. 4, as amended;
- " Operator" means any person, other than the Owner's employees, authorized by the Owner as

having the charge, management or control of any aspect of the *Site* and includes its successors or assigns;

- " *Owner*" means any person that is responsible for the establishment or operation of the *Site* being approved by this *Approval*, and includes The Corporation of the Township of Douro-Dummer and its successors and assigns;
- "OWRA" means the Ontario Water Resources Act, R.S.O. 1990, c. O.40, as amended;
- "PA" means the Pesticides Act, R.S.O. 1990, c. P-11, as amended;
- "Provincial Officer" means any person designated in writing by the Minister as a provincial officer pursuant to Section 5 of the OWRA, Section 5 of the EPA, Section 17 of the PA, Section 4 of the NMA, or Section 8 of the SDWA;
- "Putricible Waste" means waste of vegetable or animal origin of a similar nature and characteristics, that is liable to become putrid, rotten or decayed;
- " Regional Director " means the Regional Director of the local Regional Office of the Ministry in which the Site is located;
- " Regulation 347 " means Regulation 347, R.R.O. 1990, made under the EPA, as amended;
- "Regulation 903" means Regulation 903, R.R.O. 1990, made under the OWRA, as amended;
- " Residual Waste" means waste that is destined for final disposal;
- " SDWA" means Safe Drinking Water Act, 2002, S.O. 2002, c. 32, as amended;
- " Site " means the entire waste disposal site, including the buffer lands, and contaminant attenuation zone at Stoney Lake Road Landfill, Lot 21, Concession 4, Douro-Dummer Township, County of Peterborough;
- "Trained Personnel" means any operator at the Transfer Station who is knowledgeable and able to carry out any necessary duties, in the following through instruction and practice;
  - (i) relevant waste management legislation, regulations and guidelines;
  - (ii) occupational health and safety concerns pertaining to the waste to be handled;
  - (iii) any environmental concerns pertaining to the *Transfer Station* and wastes to be transferred;
  - (iv) emergency management procedures for the waste to be handled;
  - (v) use and operation of any equipment to be used;
  - (vi) operation and management of the *Transfer Station*, or areas within the *Transfer Station*, as per the specific job requirements of each individual *operator*, and which include procedures for receiving, screening, refusal, and handling of waste;
  - (vii) use of the Emergency Response Plan, and in the procedures to be employed in the event of an emergency;
  - (viii) Transfer Station specific operations and/or procedures; and
  - (ix) the requirements of this Approval; and

"Transfer Station" means the operation and infrastructure comprising the processing of *dry waste* and the transfer station described in Items 7, 9, 10, 11, 12 and 13 of Schedule "A".

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

#### **TERMS AND CONDITIONS**

#### 1. GENERAL

# Compliance

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

#### In Accordance

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

# Interpretation

- (4) Where there is a conflict between a provision of any document listed in Schedule "A" in this *Approval*, and the conditions of this *Approval*, the conditions in this *Approval* shall take precedence.
- (5) Where there is a conflict between the application and a provision in any document listed in Schedule "A", the application shall take precedence, unless it is clear that the purpose of the document was to amend the application and that the *Ministry* approved the amendment.
- (6) Where there is a conflict between any two documents listed in Schedule "A", the document bearing the most recent date shall take precedence.
- (7) The conditions of this *Approval* are severable. If any condition of this *Approval*, or the application of any condition of this *Approval* to any circumstance, is held invalid or unenforceable, the application of such condition to other circumstances and the remainder of this *Approval* shall not be affected thereby.

# **Other Legal Obligations**

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

### **Adverse Effect**

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

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

# **Change of Ownership**

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

# **Registration on Title Requirement**

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

# Inspections by the Ministry

- (16) No person shall hinder or obstruct a *Provincial Officer* from carrying out any and all inspections authorized by the *OWRA*, the *EPA*, the *PA*, the *SDWA* or the *NMA*, of any place to which this *Approval* relates, and without limiting the foregoing:
  - (a) to enter upon the premises where the approved works are located, or the location where the records required by the conditions of this *Approval* are kept;
  - (b) to have access to, inspect, and copy any records required to be kept by the conditions of this *Approval*;
  - (c) to inspect the Site, related equipment and appurtenances;
  - (d) to inspect the practices, procedures, or operations required by the conditions of this *Approval;* and
  - (e) to sample and monitor for the purposes of assessing compliance with the terms and conditions of this *Approval* or the *EPA*, the *OWRA*, the *PA*, the *SDWA* or the *NMA*.

#### Information and Record Retention

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

#### 2. SITE OPERATION

#### Operation

(1) The Site shall be operated and maintained at all times including management and disposal of all

waste, in accordance with the *EPA*, *Regulation 347*, and the conditions of this *Approval*. At no time shall the discharge of a contaminant that causes or is likely to cause an adverse effect be permitted.

# **Signage**

- (2) A sign shall be posted and maintained at the *Transfer Station* in a manner that is clear and legible, and shall include the following information:
  - (a) the name of the Transfer Station and Owner;
  - (b) this Approval number;
  - (c) the name of the Operator;
  - (d) the normal hours of operation;
  - (e) the allowable and prohibited waste types;
  - (f) a telephone number to which complaints may be directed;
  - (g) a twenty-four (24) hour emergency telephone number (if different from above); and
  - (h) a warning against dumping outside the *Transfer Station*.
- (3) The Owner shall install and maintain signs to direct vehicles to appropriate areas.
- (4) All waste storage containers at the *Transfer Station* shall have a label or sign clearly identifying the contents.

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

- (5) The *Site* shall be operated and maintained such that the vermin, vectors, dust, litter, odour, noise and traffic do not create a nuisance.
- (6) If at any time noise and vibration nuisances are generated at the *Transfer Station*, resulting in complaints received by this *Ministry* and validated by a Provincial Officer, the *Owner* shall take remedial action immediately.

# **Burning Waste Prohibited**

(7) Burning of waste at the *Site* is prohibited.

#### **Hours of Operation**

- (8) (a) Waste may be accepted at the *Transfer Station* between the hours of 7:00 a.m. and 5:00 p.m., Monday through Friday, except statutory holidays.
  - (b) Notwithstanding condition 2(7)(a) above, operation of grinding equipment and sorting machine shall not be carried out from 7 a.m. to 8 a.m.
- (9) With the prior written approval of the *District Manager*, the time periods may be extended to accommodate seasonal or unusual quantities of waste.

### **Site Security**

(10) No waste shall be received, processed or removed from the *Site* unless a site supervisor or an attendant is present and supervises the operations during operating hours. The *Site* shall be closed when a site attendant is not present to supervise landfilling operations.

- (11) The *Transfer Station* shall be operated and maintained in a safe and secure manner. During non-operating hours, the *Site* entrance and exit gates shall be locked and the *Site* shall be secured against access by unauthorized persons.
- (12) If the introduction of waste containing *Putricible Waste* leads to attracting bears, the *Owner* shall take actions to bear proof the *Site* or discontinue accepting such waste.

### 3. EMPLOYEE/OPERATOR TRAINING

- (1) A training plan for all employees that operate any aspect of the *Transfer Station* shall be developed and implemented by the *Owner* or the *Operator*.
- (2) The Owner shall ensure that Trained personnel are available at all times during the hours of operation of this Transfer Station. Trained personnel shall supervise all transfer or processing of waste material at the Transfer Station.
- (3) The *Owner* shall maintain a written or electronic record at the *Transfer Station* of training that was provided including:
  - (i) date of training;
  - (ii) name and signature of person who has been trained; and
  - (iii) description of the training provided and who it was delivered by.
- (4) Training records shall be made available to a *Provincial Officer* upon request.

### 4. COMPLAINTS RESPONSE PROCEDURE

- (1) If at any time, the *Owner* receives complaints regarding the operation of the *Transfer Station*, the *Owner* shall respond to these complaints according to the following procedure:
  - (a) The *Owner* shall record and number each complaint, either electronically or in a separate log book, along with the following information:
    - (i) the nature of the complaint;
    - (ii) if the complaint is odour or nuisance related, the weather conditions and wind direction at the time of the complaint;
    - (iii) the name, address and telephone number of the complainant (if provided); and
    - (iv) the time and date of the complaint;
  - (b) The *Owner*, upon notification of the complaint, shall initiate appropriate steps to determine all possible causes of the complaint, proceed to take the necessary actions to eliminate the cause of the complaint, notify the *District Manager* of the complaint within 48 hours of receiving the complaint, and forward a formal reply to the complainant; and
  - (c) The *Owner* shall complete and retain on-site a report written within one (1) week of the complaint date, listing the actions taken to resolve the complaint and any recommendations for remedial measures, and managerial or operational changes to reasonably avoid the recurrence of

### 5. EMERGENCY RESPONSE PLAN

- (1) The Emergency Response Plan in the Design and Operations Report shall be implemented as required. The *Owner* shall provide copies of the Emergency Response Plan to the local Municipality and to the Fire Department within thirty (30) days of the date of issuance of this *Approval*.
- (2) The Emergency Response Plan shall be kept up to date, and a copy shall be retained and accessible to all staff at all times. Changes to the Emergency Response Plan shall be submitted to the *Director* for approval.
- (3) The equipment, materials and personnel requirements outlined in the Emergency Response Plan shall be immediately available on the *Transfer Station* at all times. The equipment shall be kept in a good state of repair and in a fully operational condition.
- (4) All staff that operate the *Transfer Station* shall be fully trained in the use of the contingency and Emergency Response Plan, and in the procedures to be employed in the event of an emergency.
- (5) The *Owner* shall immediately take all measures necessary to contain and clean up any spill or leak which may result from the operation of this *Transfer Station* and immediately implement the emergency response plan if required.

### 6. INSPECTIONS, RECORD KEEPING AND REPORTING

- (1) Any information requested, by the *Director* or a *Provincial Officer*, concerning the *Site* and its operation under this *Approval*, including but not limited to any records required to be kept by this *Approval* shall be provided to the *Ministry*, upon request. **Waste Records**
- (2) A log shall be maintained, either electronically or in written format, and shall include the following information as a minimum:
  - (a) the date;
  - (b) quantity and source of waste received;
  - (c) quantity of waste at the *Transfer Station* at the end of the operating week;
  - (d) quantities and destination of each type of waste shipped from the *Transfer Station*;
  - (e) a record of inspections required by this Approval;
  - (f) a record of any spills or process upsets at the site, the nature of the spill or process upset and the action taken for the clean up or correction of the spill, the time and date of the spill or process upset, and for spills, the time that the *Ministry* and other persons were notified of the spill in fulfilment of the reporting requirements in the *EPA*;
  - (g) a record of any waste refusals which shall include; amounts, reasons for refusal and actions taken; and
  - (h) the signature of the *Trained Personnel* conducting the inspection and completing the report.

### Inspection - Transfer Station

(3) An inspection of the entire *Transfer Station* and all equipment on the *Transfer Station* shall be conducted each week the *Transfer Station* is in operation to ensure that: the *Transfer Station* is

secure; that the operation of the *Transfer Station* is not causing any nuisances; that the operation of the *Transfer Station* is not causing any adverse effects on the environment; and that *the Transfer Station* is being operated in compliance with this *Approval*. Any deficiencies discovered as a result of the inspection shall be remedied immediately, including temporarily ceasing operations at the *Transfer Station* if needed.

### Inspections - Site

- (4) The *Owner* shall inspect the *Site* for the following during the environmental monitoring time and after major storm events:
- (a) a visual inspection of
  - (i) integrity of the landfill cover;
  - (ii) buffer area and adjacent properties;
  - (iii) entrance gate and perimeter fencing;
  - (iv) monitoring wells; and
  - (v) storm water system;
  - (b) visual scan for evidence of leachate breakout/seepage; and
  - (c) litter pick-up.

### Log Book

- (5) A record of the inspections, including the following information, shall be kept in the weekly log book:
  - (a) the name and signature of person that conducted the inspection;
  - (b) the date and time of the inspection;
  - (c) a list of any deficiencies discovered;
  - (d) any recommendations for remedial action; and
  - (e) the date, time and description of actions taken.
- (6) A record shall be kept in the daily log book of all refusals of waste shipments, the reason(s) for refusal, and the origin of the waste, if known.

### **Annual Report**

- (7) A written report on the development, operation and monitoring of the *Site*, shall be completed annually (the "Annual Report"). The Annual Report shall be submitted to the *District Manager*, by March 31st of the year following the period being reported upon.
- (8) The Annual Report shall include but not be limited to the following information:
  - (a) a drawing(s) of the Landfill indicating all landfill gas, groundwater and surface water monitoring locations;
  - (b) tables outlining monitoring locations, analytical parameters sampled and the frequency of sampling and measurements;
  - (c) an analysis and interpretation of the groundwater and surface water monitoring data, a review of the adequacy of the monitoring programs, conclusions of the monitoring data, and recommendations for any changes in monitoring programs that may be necessary;
  - (d) an assessment of surface water quality in respect to the PWQO;

- (e) an assessment of groundwater quality in relation to the Guideline and the Ontario Drinking Water Standard:
- (f) Landfill gas monitoring data;
- (g) a detailed monthly summary of the type and quantity of all incoming (including the source of the waste) and outgoing wastes at the *Transfer Station* and the destination of all outgoing wastes;
- (h) any environmental and operational problems, that could negatively impact the environment, encountered during the operation of the *Transfer Station* and during the facility inspections and any mitigative actions taken;
- (i) any changes to the Emergency Response Plan, the Design, Operations and Maintenance Report and the Closure Plan that have been approved by the *Director* since the last Annual Report; and
- (j) any recommendations to minimize environmental impacts from the operation of the *Transfer Station* and to improve *Transfer Station* operations and monitoring programs in this regard.

### 7. TRANSFER STATION DESIGN AND OPERATION

### **Approved Waste Types**

- (1) (a) Only dry waste shall be accepted at the Transfer Station for processing.
  - (b) The *Owner* may accept Municipal Solid Non-Hazardous waste from Industrial, commercial and Institutions and residential apartment buildings for transfer. This waste shall only be unloaded onto a pad within the covered receiving building.
  - (c) An asphalt or concrete pad with concrete retaining walls shall be constructed for waste received as in condition 7 (1) (b), residual waste and cover material. The *Owner* may increase this area as necessary to operate the *Site* in an environmentally acceptable and safe manner as long as other approved activities are not compromised.
- (2) All incoming and outgoing wastes shall be inspected by *Trained personnel* prior to being received, transferred and/or shipped to ensure wastes are being managed and disposed of in accordance with this *Approval*, the *EPA* and *Reg. 347*.
- (3) The *Owner* shall ensure that all loads of waste are properly inspected by *Trained personnel* prior to acceptance at the *Site* and that the waste vehicles are directed to the appropriate areas for disposal or transfer of the waste. In the event that any waste load is refused, a record shall be made in the daily log book of the reason the waste was refused and the origin of the waste, if known.

#### **Service Area**

(4) Only waste that is generated within the boundaries of the County of Northumberland, the County of Peterborough, the City of Kawartha Lakes, the Regional Municipality of Durham, the County of Haliburton and the County of Hastings may be accepted at the *Transfer Station*.

### Capacity

- (5) No more than 800 tonnes of *dry waste* per day shall be accepted at the *Transfer Station*.
- (6) No more than 1,700 tonnes (6400 cubic meters) of dry waste, residual waste and processed materials, shall be stored or be present at the *Transfer Station* at any time. If for any reason waste and processed materials cannot be transferred from the *Transfer Station*, the *Transfer Station* shall

cease accepting waste.

(7) The total amount of *Residual Waste* arising out of the processing operations and ICI waste received and leaving the *Transfer Station* for final disposal shall not exceed 300 tonnes per day.

### **Shredding and Grinding**

- (8) Grinding at the *Transfer Station* is restricted to grinding shingles and *clean wood*.
- (9) The *Owner* shall obtain an Environmental Compliance Approval for the grinding operation for the activities under Section 9 of the *EPA* (Air and Noise).

#### **Residual Waste**

- (10) (a) The total amount of *Residual Waste* arising out of the processing operations and leaving the *Transfer Station* for final disposal shall not exceed 300 tonnes per day.
  - (b) Residual Waste at the Transfer Station shall be stored within the receiving building.
  - (c) Residual waste shall be moved off-site from the Transfer Station within fourteen (14) days of its receipt.
  - (d) If residual waste contains putrescible waste, it shall be moved off-site from the *Transfer Station* within 72 hours of its receipt. If any adverse effects occur as a result of the presence of putrescible waste, the waste must be removed from the *Transfer Station* immediately.

### **Waste Diversion**

(11) The *Owner* may remove material as necessary to improve waste diversion (e.g. wood, metal, cardboard etc.) from waste received under the condition 7 (1)(b).

### **Design, Operation and Maintenance Report**

- (12) The Design, Operation and Maintenance of the Transfer Station shall be in accordance with the documents in Schedule "A".
- (13) The Design, Operations and Maintenance Report shall be retained at the *Site*, kept up to date through periodic revisions, and made available for inspection by *Ministry* staff. Changes to the Design, Operations and Maintenance Report shall be submitted to the *Director* for approval.

### 8. LANDFILL MONITORING

### **Compliance - Landfill Gas**

- (1) The Site shall be operated in such a way as to ensure compliance with the following:
  - (a) The concentration of methane gas below the surface of the land at the boundary of the site must be less than 2.5 per cent by volume;

- (b) The concentration of methane gas must be less than 1.0 per cent by volume in any on-site building or enclosed structure, and in the area immediately outside the foundation or basement floor of the building or structure, if the building or structure is accessible to any person or contains electrical equipment or a potential source of ignition; and
- (c) The concentration of methane gas from the site must be less than 0.05 per cent by volume in any off-site building or enclosed structure, and in the area immediately outside the foundation or basement floor of the building or structure, if the building or structure is accessible to any person or contains electrical equipment or a potential source of ignition.

### **Compliance - Surface Water and Groundwater**

- (2) The Site shall be operated in such a way as to ensure compliance with the following:
  - (a) Reasonable Use Guideline B-7 for the protection of the groundwater at the Site; and
  - (b) Provincial Water Quality Objectives included in the July 1994 publication entitled *Water Management Policies, Guidelines, Provincial Water Quality Objectives,* as amended from time to time or limits set by the *Regional Director,* for the protection of the surface water at and off the *Site.*

#### Landfill Gas

- (3) The *Owner* shall ensure that any buildings or structures at the *Site* contain adequate ventilation systems to relieve any possible landfill gas accumulation to prevent methane concentration reaching the levels within its explosive range. Routine monitoring for explosive methane gas levels shall be conducted in all buildings or structures at the *Site*, especially enclosed structures which at times are occupied by people.
- (4) The *Owner* shall ensure that all on-Site enclosed buildings are equipped with appropriate dedicated gas monitoring devices.
- (5) The *Owner* shall monitor landfill gas according to the environmental monitoring program outlined in Schedule "B".

### **Surface Water and Groundwater**

- (6) The *Owner* shall monitor surface water and ground water in accordance with the monitoring programs outlined in Schedule "B".
- (7) A certified Professional Geoscientist or Engineer possessing appropriate hydrogeologic training and experience shall execute or directly supervise the execution of the groundwater monitoring and reporting program.

#### **Groundwater Wells and Monitors**

- (8) The *Owner* shall ensure that all groundwater monitoring wells which form part of the monitoring program are properly capped, locked and protected from damage.
- (9) Any groundwater monitoring well included in the on-going monitoring program that is damaged

shall be assessed, repaired, replaced or decommissioned by the Owner, as required.

- (10) The *Owner* shall repair or replace any monitoring well which is destroyed or in any way made to be inoperable for sampling such that no more than one regular sampling event is missed.
- (11) All monitoring wells which are no longer required as part of the groundwater monitoring program, and have been approved by the *Director* for abandonment, shall be decommissioned by the *Owner*, as required, in accordance with *O.Reg. 903*, to prevent contamination through the abandoned well. A report on the decommissioning of the well shall be included in the Annual Report for the period during which the well was decommissioned.

### **Trigger Mechanisms and Contingency Plans**

- (12) (a) Trigger mechanisms shall be in accordance with Schedule "C".
  - (b) Contingency plan in the event of a confirmed exceedance of a site-specific trigger level relating to leachate mounding or groundwater or surface water impacts due to leachate shall be in accordance with Schedule "C".
- (13) In the event of a confirmed exceedance of a site-specific trigger level relating to leachate mounding or groundwater or surface water impacts due to leachate, the *Owner* shall immediately notify the *District Manager*, and an investigation into the cause and the need for implementation of remedial or contingency actions shall be carried out by the *Owner* in accordance with the approved trigger mechanisms and associated contingency plans.
- (14) If monitoring results, investigative activities and/or trigger mechanisms indicate the need to implement contingency measures, the *Owner* shall ensure that the following steps are taken:
  - (a) The *Owner* shall notify the *District Manager*, in writing of the need to implement contingency measures, no later than 30 days after confirmation of the exceedances;
  - (b) Detailed plans, specifications and descriptions for the design, operation and maintenance of the contingency measures shall be prepared and submitted by the *Owner* to the *Director* for approval; and
  - (c) The contingency measures shall be implemented by the *Owner* upon approval by the *Director*.
- (15) The *Owner* shall ensure that any proposed changes to the site-specific trigger levels for leachate impacts to the surface water or groundwater, are approved in advance by the *Director* via an amendment to this *Approval*.

### **Changes to the Monitoring Plan**

- (16) The *Owner* may request to make changes to the monitoring program(s) to the *District Manager* in accordance with the recommendations of the annual report. The *Owner* shall make clear reference to the proposed changes in a separate letter that shall accompany the annual report.
- (17) Within fourteen (14) days of receiving the written correspondence from the *District Manager* confirming that the *District Manager* is in agreement with the proposed changes to the environmental monitoring program, the *Owner* shall forward a letter identifying the proposed changes and a copy of the correspondences from the *District Manager* and all other correspondences and responses related to the changes to the monitoring program, to the *Director* requesting the *Approval* be amended to approve the proposed changes to the environmental monitoring plan prior to implementation.
- (18) In the event any other changes to the environmental monitoring program are proposed outside of

the recommendation of the annual report, the *Owner* shall follow current *Ministry* procedures for seeking approval for amending the *Approval*.

#### 9. CLOSURE PLAN

### Closure Plan-Landfill

- (1) Except as otherwise provided by these conditions, the *Site* shall be closed in accordance with the report titled "Closure Plan, Stoney Lake Road (North) Waste Disposal Site, prepared by Lakefield Research Limited, dated September 2000".
- (2) This landfill has been closed for disposal of waste since July 31, 2001 and no waste shall be accepted for disposal at the *Site*.

### **Closure Plan-Transfer Station**

- (3) A Closure Plan shall be submitted to the *Director* for approval, with a copy to the *District Manager*, no later than six (6) months before the planned closure date of the *Transfer Station*. The Closure Plan shall include, at a minimum, a description of the work that will be done to facilitate closure of the *Transfer Station* and a schedule for completion of that work.
- (4) The *Transfer Station* shall be closed in accordance with the approved Closure Plan.
- (5) Within 10 days after closure of the *Transfer Station*, the *Owner* shall notify the *Director*, in writing, that the *Transfer Station* is closed and that the approved Closure Plan has been implemented.

### **SCHEDULE "A"**

- 1. Application for a Provisional Certificate of Approval for a Waste Disposal Site signed by Mr. David Clifford, C.A.O. Clerk-Treasurer, Township of Douro-Dummer, dated April 07, 2002.
- 2. Closure Plan, Stoney Lake Road (North) Waste Disposal Site, prepared by Lakefield Research Limited, dated September 2000.
- 3. Township of Douro-Dummer, Report Addendum, prepared by Lakefield Research Limited, dated March 31, 2003.
- 4. Transfer/Deed of Land for Part of Lot 21, Concession 4, designated as Parts 1 & 2, Plan 45R-10681, dated February 27, 1996.
- 5. Memo from B.W. Metcalf, MOE, Water Resources Unit Surface Water, Technical Support Section, Eastern Region, Re: Closure Plan review comments, dated March 19, 2001.
- 6. Memo from S. Ryan, MOE, Technical Support Section, Eastern Region, Re: Closure Plan review comments, dated June 13, 2001.
- 7. Application for a Provisional Certificate of Approval for a Waste Disposal Site dated February 14, 2007, and signed by David Clifford, C.A.O., including the attached report entitled "Stoney Lake Road Landfill Site Transfer Station: Design, Operations and Maintenance Report" and all supporting documentation.
- 8. Fax dated May 8, 2007 from Mike Mundell, M & M Disposal Service, to Andrew Neill, MOE, with an alternate disposal location.

- 9. Application for a Provisional Certificate of Approval for a Waste Disposal Site dated November 20, 2007, and signed by David Clifford, C.A.O., including the attached report entitled "Stoney Lake Road Transfer Station and Waste Processing Site. Design, Operations and Maintenance Report. November 2007."
- 10. e-mails from Kelly Dechert, Manager, Environmental Management Group Totten Sims Hubicki Associates to Senior Review Engineer Jim Chisholm dated December 12, 2007, January 4, 2008, January 10, 2008 (4:04pm) with attachment, January 18, 2008, and Feb. 4, 2008 (4:34pm).
- 11. e-mails from Senior Review Engineer Jim Chisholm to Kelly Dechert dated January 3, 2008, January 4, 2008 (2:33pm), January 10, 2008, January 11, 2008, January 18, 2008 (2:58pm), January 30, 2008 and Feb. 4, 2008 (4:17pm).
- 12. Letters signed by Kelly Dechert addressed to Senior Review Engineer Jim Chisholm dated December 12, 2007, January 3, 2008, January 15, 2008 and January 28, 2008.
- 13. Letter dated January 8, 2008 from Senior Review Engineer Jim Chisholm to David Clifford, C.A.O., the Corporation of the Township of Douro-Dummer.
- 14. Application for an Approval for a Waste Disposal Site signed by David Clifford, The Township of Douro-Dummer, dated September 28, 2011.
- 15. E-mail dated February 1, 2013 from Steven Gagne, Geo-Logic Inc. to Roman Lysiak, MOE with attached updated Design and Operations report dated January 2013, to address storm water and to include the addition of ICI waste.
- 16. Environmental Compliance Approval Application dated June 18, 2014 and signed David Clifford, CAO

The Corporation of the Township of Douro-Dummer, including the attached report titled "Stoney Lake Road Landfill Site Transfer Station, Processing Site. Design, Operations and Maintenance Report" dated May 2014.

- 17. Letter dated March 3, 2016 from Steven Gagne, Geo-Logic Inc. to Ranjani Munasinghe, P.Eng., MOECC.
- 18. Electronic mail dated April 06, 2016 (12:31 p.m.) from Steven Gagne, Geo-Logic Inc. to Ranjani Munasinghe, P.Eng., MOECC.

Schedule "B"
Groundwater Monitoring Program

Croanawater memtering rrogiani		
Sampling Location	Parameters	Frequency
Short Suite Monitoring	water level, alkalinity, ammonia, barium,	semi-annual basis (spring
TW-2-1, TW-3-1, TW-4-	boron, calcium, chloride, conductivity, iron, magnesium, nitrate, pH, sodium, suspended solids (leachate only), Total Dissolved Solids, sulphate, Biochemical Oxygen	and fall)
	Demand (leachate only), Chemical Oxygen Demand, Dissolved Organic Carbon, manganese	
	Field Parameters: pH, conductivity	
Extended Suite Monitoring	water level, alkalinity, mmonia, arsenic,	semi-annual basis (spring

Wells:	barium, boron, cadmium, chloride,	and fall)
TW-1-2, TW-2-2, TW-3-2,	chromium, conductivity, copper, iron, lead,	
II · · · · · · · · · · · · · · · · · ·	mercury, nitrate, nitrite, TKN, pH, total	
TW-11-2	phosphorus, suspended solids (leachate	
	only), Total Dissolved Solids, sulphate, zinc,	
	Biochemical Oxygen Demand (leachate	
	only), Chemical Oxygen Demand, Phenol,	
	manganese	
	Field Parameters:	
	temperature, pH, conductivity,	
	Dissolved Oxygen, flow	
TW-6-2, TW-7-2, TW-8-2,	water level, alkalinity, ammonia, arsenic,	semi-annual basis (spring
TW-9-2,	barium, boron, cadmium, calcium, chloride,	and fall)
	chromium, conductivity, copper, iron, lead,	,
	magnesium, manganese, mercury, nitrate,	
	nitrite, TKN, pH, total phosphorus,	
	potassium, sodium, suspended solids	
	(leachate only), Total Dissolved Solids,	
	sulphate, zinc, benzene, 1,4	
	dichlorobenzene, dichloromethane, toluene,	
	vinyl chloride, Biochemical Oxygen Demand	
	(leachate only), Chemical Oxygen Demand,	
	dissolved oxygen carbon, Phenol	
	Field Parameters:	
	pH, conductivity	
VOC Monitoring Wells:	In addition to the above noted parameters,	semi-annual basis (spring
TW2-2, TW6-2	these wells will also be analyzed for VOCs	and fall)

**Surface Water Monitoring Program** 

Cartago Water memering Fogican		
Sampling Location	Parameters	Frequency
SW1, SW3, SW4, SW8	water level, alkalinity,	three times per year (spring
	ammonia, arsenic, barium,	run-off, low flow period and
	boron, cadmium, chloride,	late fall flow period)
	chromium, conductivity,	
	copper, iron, lead, mercury,	
	nitrate, nitrite, TKN, pH,	
	total phosphorus,	
	suspended solids (leachate	
	only), Total Dissolved	
	Solids, sulphate, zinc,	
	Biochemical Oxygen	
	Demand (leachate only),	
	Chemical Oxygen Demand,	
	Phenol, manganese	
	Field Parameters:	
	temperature, pH,	
	conductivity,	
	Dissolved Oxygen, flow	

## **Landfill Gas Monitoring**

Sampling Location	Parameters	Frequency
TW-1, TW-2, TW-3, TW-4,	methane	semi-annually concurrent
TW-5, GP-1, GP-2		with groundwater sampling

# Schedule "C" Trigger Mechanism and Contingency Plan

### Tier I - "Alert"

If the downstream concentration of any of the defined trigger mechanism parameters exceeds the 75th percentile of the upstream results in a given sampling year, then the trigger is activated. If the exceedance occurs three sampling events in a row, then Tier II is activated.

### Tier II - "Confirmation"

Sampling shall be conducted on a monthly basis for three (3) months. If the exceedance is confirmed, the *Owner* shall initiate discussion with the MOE to define the optimum course of remedial action with six (6) months of the activation of the Tier II trigger.

### Tier II - "Compliance"

Implementation of the remedial actions as agreed upon with the MOECC.

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

### **GENERAL**

- The reason for Conditions 1(1), (2), (4), (5), (6), (7), (8), (9), (10), (17), (18) and (19) is to clarify the legal rights and responsibilities of the *Owner* and *Operator* under this *Approval*.
- The reasons for Condition 1(3) are to ensure that the *Site* is designed, operated, monitored and maintained in accordance with the application and supporting documentation submitted by the *Owner*, and not in a manner which the *Director* has not been asked to consider.
- The reasons for Condition 1(11) are to ensure that the *Site* is operated under the corporate name which appears on the application form submitted for this *approval* and to ensure that the *Director* is informed of any changes.
- The reasons for Condition 1(12) are to restrict potential transfer or encumbrance of the *Site* without the approval of the *Director* and to ensure that any transfer of encumbrance can be made only on the basis that it will not endanger compliance with this *Approval*.
- The reason for Condition 1(13) is to ensure that the successor is aware of its legal responsibilities.
- The reasons for Condition 1(14) and (15) are that the Part II.1 *Director* is an individual with authority pursuant to Section 197 of the Environmental Protection Act to require registration on title and provide any person with an interest in property before dealing with the property in any way to give a copy of the *Approval* to any person who will acquire an interest in the property as a result of the dealing.
- The reason for Condition 1(16) is to ensure that appropriate Ministry staff has ready access to the Site for inspection of facilities, equipment, practices and operations required by the conditions in this *Approval*. This Condition is supplementary to the powers of entry afforded a Provincial Officer pursuant to the *Act*, the *OWRA*, the *PA*, the *NMA* and the *SDWA*.
- Condition 1 (20) has been included in order to clarify what information may be subject to the

Freedom of Information Act.

### SITE OPERATION

- The reasons for Conditions 2(1), 2(5) and 2(6) are to ensure that the *Site* is operated, inspected and maintained in an environmentally acceptable manner and does not result in a hazard or nuisance to the natural environment or any person.
- The reason for Conditions 2 (2), 2(3) and 2(4) is to ensure that users of the *Site* are fully aware of important information and restrictions related to *Site* operations and access under this *Approval*.
- The reasons for Condition 2(7) are open burning of municipal waste is unacceptable because of concerns with air emissions, smoke and other nuisance effects.
- The reasons for Condition 2(8) and 2(9) are to specify the hours of operation for the landfill site and a mechanism for amendment of the hours of operation, as required.
- The reasons for Condition 2(10) are to ensure that the *Site* is supervised by properly trained staff in a manner which does not result in a hazard or nuisance to the natural environment or any person and to ensure the controlled access and integrity of the *Site* by preventing unauthorized access when the Site is closed and no site attendant is on duty.
- The reason for conditions 2(11) and 2 (12) is to ensure the *Site* is operated in a manner ensuring the public safety.

### **EMPLOYEE TRAINING**

- The reason for Condition 3 is to ensure that the *Site* is supervised and operated by properly trained staff in a manner which does not result in a hazard or nuisance to the natural environment or any person.

### **COMPLAINTS RESPONSE PROCEDURE**

- The reason for Condition 4 is to ensure that any complaints regarding landfill operations at this *Site* are responded to in a timely and efficient manner.

### **EMERGENCY RESPONSE**

- Condition 5 is included to ensure that emergency situations are handled in a manner to minimize the likelihood of an adverse effect and to ensure public health and safety and environmental protection.

### RECORD KEEPING AND REPORTING

- The reason for Conditions 6(1) and 6(2) is to ensure that accurate waste records are maintained to ensure compliance with the conditions in this *Approval* (such as storage capacity, record keeping, annual reporting, and financial assurance requirements), the *EPA* and its regulations.
- The reasons for Conditions 6(3), 6(4), 6(5) and 6(6) are to ensure that routine Transfer Station inspections are completed, and that detailed records of Transfer Station inspections are recorded and maintained for inspection and information purposes.
- The reasons for Conditions 6(7) and 6(8) are to ensure that regular review of site development, operations and monitoring data is documented and any possible improvements to site design, operations or monitoring programs are identified. An annual report is an important tool used in

reviewing site activities and for determining the effectiveness of site design.

### TRANSFER STATION DESIGN AND OPERATION

- The reason for Conditions 7(1) to 7(5) and 7 (7) is to specify the approved areas from which waste may be accepted at the *Site* and the types and amounts of waste that may be accepted at the *Site* for processing and transfer, based on the *Owner's* application and supporting documentation.
- The reason for Condition 7(6) is to specify the amount of waste and processed material that may be stored at the *Transfer Station*.
- The reason for Conditions 7(8) to 7(13) inclusive is to ensure that the *Transfer Station* is operated in a manner which does not result in a nuisance or a hazard to the health and safety of the environment or people.

### LANDFILL MONITORING

- Condition 8 (1) is included to provide landfill gas limits to protect the health and safety of the public.
- Condition 8 (2) is included to provide groundwater and surface water limits to prevent water pollution at the Site.
- Reasons for Conditions 8(3), 8(4) and 8(5) are to ensure that off-site migration of landfill gas is monitored and all buildings at the *Site* are free of any landfill gas accumulation, which due to a methane gas component may be explosive and thus create a danger to any persons at the *Site*.
- Conditions 8(6) and 8(7) are included to require the Owner to demonstrate that the *Site* is performing as designed and the impacts on the natural environment are acceptable. Regular monitoring allows for the analysis of trends over time and ensures that there is an early warning of potential problems so that any necessary remedial/contingency action can be taken.
- Conditions 8(8), 8(9), 8(10) and 8(11) are included to ensure the integrity of the groundwater monitoring network so that accurate monitoring results are achieved and the natural environment is protected.
- Conditions 8(12) to 8(15) inclusive are added to ensure the *Owner* has a plan with an organized set of procedures for identifying and responding to potential issues relating to groundwater and surface water contamination at the *Site's* compliance point.
- Conditions 8(16), 8(17) and 8(18) are included to streamline the approval of the changes to the monitoring plan.

### **CLOSURE PLAN**

- The reasons for Condition 9 are to ensure that final closure of the *Site* is completed in an aesthetically pleasing manner, in accordance with Ministry standards, and to ensure the long-term protection of the health and safety of the public and the environment.

Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). A340901 issued on September 11, 2003 and associated notices of amendment.

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

hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

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

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

The Notice should also include:

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

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

This Notice must be served upon:

The Secretary\*
Environmental Review Tribunal
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 and Climate Change 135 St. Clair Avenue West, 1st Floor Toronto, Ontario M4V 1P5

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

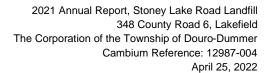
The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 9th day of June, 2016

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

RM/

c: District Manager, MOECC Peterborough Nyle McIlveen, The Corporation of the Township of Douro-Dummer





Appendix	C
Corresponden	се

Fully accessible appended items are available upon request.



Stoney Lake Road Landfill LOT:21, CONCESSION:4, GEOTOWNSHIP:DOURO, DOURO-DUMMER, ON,

## **Inspection Report**

System Number: 4442-5LNQ29 Inspection Start Date: 12/11/2020 Inspection End Date: 04/28/2021

Inspected By: Sarah Bellamy

Badge #:

Naralifetter

(signature)

### NON-COMPLIANCE/NON-CONFORMANCE ITEMS

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

### Question Group: Operations

Question ID	1-DYPBQR		
Question		Question Type	Legislative Requirement
	g operated in compliance with the site ccess, and entrance/exit signage n the ECA?	Legislative	EPA   186   (1),EPA   186   (3)
Observation/	Corrective Action(s)		

Question ID 1-E16YBZ		
Question	Question Type	Legislative Requirement
Are the entrance and exit signs legible and displayed as specified in the ECA?	Legislative	EPA   186   (1),EPA   186   (3)

### Observation/Corrective Action(s)

The entrance sign does not display the ECA Number, does not list prohibited waste types, and does not identify a 24 hour emergency telephone number to call, or a complaint reporting telephone number to call, as required by condition 2. (2) of ECA A340901.

A telephone number for "Inquiries 705-652-3505" is listed, which is a telephone number for Waste Connections.

### Action:

The Township must enhance the entrance sign to include the specified required information, and must provide a photograph of the revised sign to the Ministry, within 30 days of receipt of this Report.

### Question Group: Operations Manuals

Question	Question Type	Legislative Requirement
Is the operational plan complete with the required information and kept up to date?	Legislative	EPA   186   (1),EPA   186   (3)
Observation/Corrective Action(s)	·	

2014. A review of the Report indicates that several of the listed contacts are no longer appropriate.

Question	Question Type	Legislative Requirement
Is the operational plan readily available at the Site for inspection and for Site personnel?	Legislative	EPA   186   (1),EPA   186   (3)

Waste Connections staff indicated that they had not received a copy of the Report from the previous Operator or from the Township.

### Question Group: Other Inspection Findings

Question ID 949100			
Question	Question Type	Legislative Requirement	
Were the inspection questions sufficient to address other identified non-compliance items?	Legislative	Not Applicable	

### Observation/Corrective Action(s)

The items identified herein are not specifically non-compliance.

### Additional Observations:

It was noted that the waste storage bins for metals, at the rear of the site, were overflowing. Metals separated from mixed waste for recycling should be contained within bins or within a bunker on a concrete pad.

It was noted that the on site fuel tank was located at the top of a hill, was precariously supported in place with rocks, and was sitting on dirt. It is acknowledged that this is a fuel tank, but I feel I must highlight this situation and recommend improvements be made, to avoid contamination or a spill, requiring clean up measures.

### Question Group: Records / Reports

Question ID 1-DYPBPC		
Question	Question Type	Legislative Requirement
Was the ministry notified of any changes in ownership, operator, or address, as required?	Legislative	EPA   186   (1),EPA   186   (3)

#### Observation/Corrective Action(s)

During 2018 Waste Connections became the site Operator, replacing M & M Disposal Service (1017492 Ontario Limited).

A notification for the change in Operator, as required by section 1.(11) of Environmental Compliance Approval (ECA) A340901, issued to The Corporation of the Township of Douro-Dummer on June 9, 2016, has not been located in Ministry files.

### Action:

The Corporation of the Township of Douro-Dummer (the Township) must resubmit any previous Notification made regarding the change of Operator for the Site.

OR

The Township must notify the Director in writing, and forward a copy of the notification to the District Manager.

The written notification must be provided by the Township within 30 days of receipt of this Report.

Event Number: 1-13691805

### INSPECTION DETAILS

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

Ministry Program: Regulated Activity: WASTE: Receiver Transfer Processing

Question Type	Legislative Requirement
Information	Not Applicable
	Type

The "Operator" of the Transfer - Processing component of this Site has changed.

According to the "2018 Operational Report," received on March 29, 2019, Waste Connections operated the site for the second half of the year. The previous Operator was M & M Disposal Service.

Question ID 1-I	DYPBPC		
Question		Question Type	Legislative Requirement
Was the ministry n operator, or addres	otified of any changes in ownership, s, as required?	Legislative	EPA   186   (1), EPA   186   (3)
Observation	******	-	-

During 2018 Waste Connections became the site Operator, replacing M & M Disposal Service (1017492 Ontario Limited).

A notification for the change in Operator, as required by section 1.(11) of Environmental Compliance Approval (ECA) A340901, issued to The Corporation of the Township of Douro-Dummer on June 9, 2016, has not been located in Ministry files.

### Action:

The Corporation of the Township of Douro-Dummer (the Township) must resubmit any previous Notification made regarding the change of Operator for the Site.

### OR

The Township must notify the Director in writing, and forward a copy of the notification to the District Manager.

The written notification must be provided by the Township within 30 days of receipt of this Report.

Question ID	1-DYPBQR	
Question ID	DITBOK	

Question	Question Type	Legislative Requirement
Is the site being operated in compliance with the site security, site access, and entrance/exit signage requirements in the ECA?	Legislative	EPA   186   (1), EPA   186   (3)
Observation		

Question ID 1-E1CEVU		
Question Type	Legislative Requirement	
Legislative	EPA   186   (1), EPA   186   (3)	
	Type	

### Observation

Waste Connections staff indicated that regular (weekly) inspections are performed, and a copy of an Inspection log sheet was provided. While the log sheet provided meets the information requirements of the log book (condition 6 (5)), there is no detail provided to indicate that the items listed for inspection in condition 6 (3) are actually being inspected.

Listing individual items for inspection and providing direction regarding compliance, will assist site staff with performing a complete and accurate inspection, which will ensure areas of concern are promptly identified and remediated.

Also, providing more detail on the Inspection log sheet will serve to demonstrate compliance with the requirements in ECA A340901.

### Action:

The Township should work with the site Operator to create an Inspection log sheet that helps to ensure and maintain proper site operation, and submit a copy of the revised Inspection log sheet to the Ministry within 30 days of receipt of this Report.

Question ID 1-E1CEWD		
Question	Question Type	Legislative Requirement
Is the site complying with the approved service area requirements, as specified in the ECA?	Legislative	EPA   186   (1), EPA   186   (3)

### Observation

The site is approved to receive waste from the county it is located in (Peterborough County) as well as the counties which surround Peterborough County (Haliburton, Hastings, Northumberland, and City of Kawartha Lakes/former Victoria County).

It is unlikely that waste is transported to this site from beyond the listed service area, as such transport would not be cost or time effective.

Page 7 of 15

Question ID	1-E1CEWL		V =
Question		Question Type	Legislative Requirement
Is the Site requ	nired by the ECA to have an Operational plan?	Information	Not Applicable
Observation			Tarrest Photogram

The ECA A340901, condition 7(12), requires the site Design, Operation and Maintenance be in accordance with the documents in Schedule A, which lists the Stoney Lake Road Landfill Site Transfer Station Design, Operations and Maintenance Report dated May 2014.

Question ID 1-E1CEWT		
Question	Question Type	Legislative Requirement
Is the operational plan complete with the required information and kept up to date?	Legislative	EPA   186   (1), EPA   186   (3)

### Observation

There is no indication that the Design, Operation and Maintenance Report has been updated since 2014. A review of the Report indicates that several of the listed contacts are no longer appropriate.

Question	Question Type	Legislative Requirement
Is the operational plan readily available at the Site for inspection and for Site personnel?	Legislative	EPA   186   (1), EPA   186   (3)

Waste Connections staff indicated that they had not received a copy of the Report from the previous Operator or from the Township.

Question	Question Type	Legislative Requirement
Is the Site constructed in accordance with the site plan?	Legislative	EPA   186   (1), EPA   186   (3)
Observation	·	

Question ID 1-E1FX38		
Question	Question Type	Legislative Requirement
Are there any changes to the Site requiring an application to amend the approval or notification to the ministry?	Information	Not Applicable
Observation		

Event Number: 1-13691805

Question ID 1-E1GHI5		
Question	Question Type	Legislative Requirement
Are training requirements being met as specified by the ECA or any other supporting documents?	Legislative	EPA   186   (1), EPA   186   (3)
Observation		

Waste Connections staff indicated that staff receive general waste management training, site specific training and training for the use of site equipment.

Question	Question Type	Legislative Requirement
Have training recordkeeping requirements been met as specified in the ECA?	Legislative	EPA   186   (1), EPA   186   (3)
Observation		

Question ID 1-E1GHQN  Question	Question Type	Legislative Requirement
Is the Site operated and maintained such that vermin, vectors, dust, litter, odour, noise and/or traffic do not create a nuisance?	Legislative	EPA   186   (1), EPA   186   (3)

Waste Connections staff indicated that vectors, vermin, dust litter, odour noise and traffic are not a concern, or are managed to avoid creating a nuisance.

A pest control company maintains rodent traps on site, birds and other animals are not populous, the driveway is swept to reduce dust, grinding only takes place between 8:00 am and 5:00 pm, equipment back up alarms are not needlessly loud, other equipment is fairly quiet, , odour is not a concern (waste is constantly moving off-site), and the site is somewhat remote.

Question	Question Type	Legislative Requirement
Does the Site require an Emergency Plan?	Information	Not Applicable
Observation	·	

Qu	GZQG

Question	Question Type	Legislative Requirement
Has an Emergency Plan been developed?	Legislative	EPA   186   (1), EPA   186   (3)
Observation —	***	

Question ID 1-E1H1SB		
Question	Question Type	Legislative Requirement
Has the Emergency Plan been implemented?	Legislative	EPA   186   (1), EPA   186   (3)

### Observation

A copy of the Emergency Response Plan was available on-site. A later (almost identical) version of the Emergency Response Plan is contained within the Design, Operation and Maintenance Report, dated May 2014, which must used as the official version.

### Action:

The Township must review the Emergency Response Plan to ensure contact names and telephone numbers are up to date etc., and must provide a copy of the updated plan to the Ministry within 30 days of receipt of this Report.

Question ID 1-E1H5C2		
Question	Question Type	Legislative Requirement
Have site inspection recordkeeping requirements been met as specified in the ECA?	Legislative	EPA   186   (1), EPA   186   (3)

### Observation

Site Inspection Records related to the Transfer/Processing operation are retained and meet the listed requirements.

Site Inspection requirements listed for the closed landfill and related to site monitoring, were not reviewed as part of this inspection, which focused on the Transfer/Processing component of the site.

Question ID 1-E1H7XM		
Question	Question Type	Legislative Requirement
Have spill and emergency recordkeeping requirements been met as specified in the ECA?	Legislative	EPA   186   (1), EPA   186   (3)

### Observation

Waste Connections staff indicated that they are not aware of any spills or emergency situations, but would ensure proper procedures and record keeping are in place.

Question ID 1-E1HGH0		
Question	Question Type	Legislative Requirement
Is an annual report required?	Information	Not Applicable
Observation	7	

In addition to the Annual Report, the ECA requires that a written or electronic log be maintained which includes the date, the quantity and source of waste coming into the site, and the quantity and destination of waste leaving the site.

An electronic log is maintained with dates, weights, and type of waste material coming in and leaving the site. Please ensure that the weight/quantity and destination for metals, cover material and processed (ground) wood (reportedly sent for fuel), is also recorded to the electronic log.

Please also ensure that sufficient information is captured from the log, for inclusion in the Annual Report, to meet Annual Report Requirements.

The Daily Record for November 16, 2020 was reviewed.

The ECA also requires that a record be created of the total amount of waste on the site, at the end of each week. Mr. Joosse indicated that the waste quantity on site was assessed when Waste Connections began operating the site, and a tally of waste weight coming in, and going out of the site has been maintained ever since that time. It is used to report the weight of waste on site at the end of the day each Friday.

Records for several weeks in November 2020 and January 2021 were provided for review. It was noted that the November record values did not match the spread sheet when they were calculated by this reviewer.

### Action:

The Records for 2020 must be reviewed for accuracy and the source of the discrepancy identified. The findings of the review must be reported to the Ministry within 30 days of receipt of this Report.

The January values and calculation appeared to be accurate. It is recommended that the accuracy of these records be verified periodically.

Question	Question Type	Legislative Requirement
Is there an ECA condition requiring financial assurance?	Information	Not Applicable
Observation		A-2-7-7-7-1

Question ID 949100
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Question	Question Type	Legislative Requirement
Were the inspection questions sufficient to address other identified non-compliance items?	Legislative	Not Applicable

#### Observation

The items identified herein are not specifically non-compliance.

### Additional Observations:

It was noted that the waste storage bins for metals, at the rear of the site, were overflowing. Metals separated from mixed waste for recycling should be contained within bins or within a bunker on a concrete pad.

It was noted that the on site fuel tank was located at the top of a hill, was precariously supported in place with rocks, and was sitting on dirt. It is acknowledged that this is a fuel tank, but I feel I must highlight this situation and recommend improvements be made, to avoid contamination or a spill, requiring clean up measures.

Question ID 1-E1HKEM		
Question	Question Type	Legislative Requirement
Was a copy of the annual report available or submitted to the ministry, as specified in the ECA?	Legislative	EPA   186   (1), EPA   186   (3)

#### Observation

An Annual Monitoring Report and an Annual Operational Report are submitted to the Ministry as required.

Annual Reports must be submitted to the District Manager by March 31st of the year following the year being reported on.

Question	Question Type	Legislative Requirement
Was the annual report complete with the required information, as specified in the ECA?	Legislative	EPA   186   (1), EPA   186   (3)

### Observation

The 2018 Monitoring Report was not reviewed during this Inspection, as this Inspection is focussed on the Transfer/Processing Operation and not the closed landfill.

A review of the 2018 Operational Report indicates that it meets the listed requirements, however the Township should obtain, and report, more detail about the source of incoming waste as well as the destination of outgoing residual waste for final disposal, small size waste for landfill cover, wood grindings for fuel, metal for recycling, and tires.

It was noted that the 2018 Report indicates that C & D waste residuals are relocated to the north end of the site (and placed on bare ground) and are moved off site daily. Currently the C & D

residuals are relocated to the covered ICI receiving area and are transferred off site with other ICI wastes according to an appropriate timeline, as required by the ECA.

Also it was noted that the 2018 Report indicates that C & D waste is loaded into a sorting machine to separate out small sized waste (for landfill cover) and that residual waste is removed by hand at the picking station. At the time of the Inspection, site operations had been revised by the current operator, who is not sorting out small size cover material, and who is sorting waste and removing materials such as metal for recycling with the use of heavy equipment such as a backhoe and excavator.

The review of the 2018 Operational Report indicates that the currently formatted (and repeated) Annual Operations Report is in need of a review and up date, to ensure that the Annual Report is accurately reflecting current site operations.

Question ID 1-E16YBZ	
Question Type	Legislative Requirement
Legislative	EPA   186   (1), EPA   186   (3)
	Type

### Observation

The entrance sign does not display the ECA Number, does not list prohibited waste types, and does not identify a 24 hour emergency telephone number to call, or a complaint reporting telephone number to call, as required by condition 2. (2) of ECA A340901.

A telephone number for "Inquiries 705-652-3505" is listed, which is a telephone number for Waste Connections.

#### Action:

The Township must enhance the entrance sign to include the specified required information, and must provide a photograph of the revised sign to the Ministry, within 30 days of receipt of this Report.

Question	Question Type	Legislative Requirement
Is the site secure, as specified in the ECA?	Legislative	EPA   186   (1). EPA   186   (3)
Observation	'	

Question ID	1-E16YDJ		
Question		Question Type	Legislative Requirement
Is the site acco	ess limited as specified in the ECA?	Legislative	EPA   186   (1),

(0)

Ministry Program: Regulated Activity: WASTE: Receiver Transfer Processing

Question ID 1-E2RB6B  Question	Question Type	Legislative Requirement
Is the site only accepting wastes limited to the types specified in the ECA?	Legislative	EPA   186   (1), EPA   186   (3), EPA   27   (1), EPA   40

### Observation

The site accepts Construction-Demolition waste which is sorted to remove wood, metal and other materials for recycling/reuse. The site may also sort small diameter waste pieces out for use as landfill cover. The residual waste is bulked and shipped off site.

Metal is transferred to a metal recycler and wood is put through a grinder and shipped off site for use as fuel.

The site accepts mixed waste from Industrial-Commercial-Institutional sources including apartment buildings. This waste is mostly received in bags. The waste is placed on a concrete pad with a roof structure overtop of it. Waste is bulked and shipped off site for disposal.

Question	Question Type	Legislative Requirement
Is waste received at the Site within the approved limits as specified in the ECA?	Legislative	EPA   186   (1). EPA   186   (3). EPA   27   (1), EPA   40

#### Observation

Daily Records reviewed for November 16, 2020 and weekly on-site waste totals for November 2020 and January 2021, were reviewed. The records indicated that the site is in compliance with quantity limits for incoming waste, outgoing waste, and the amount of waste on-site at any time, as indicated by the Friday waste tally.

Question	Question Type	Legislative Requirement
Are wastes stored and handled in accordance with the ECA conditions?	Legislative	EPA   186   (1) EPA   186   (3)
Observation		
During the inspection segregated metal waste was overflow	ing the storage r	oll off bin. Meta

wastes stored for transfer to a metal recycler, should be stored within waste bins or within a bunker with a concrete pad.

Question ID 1-E2TOAX		
Question	Question Type	Legislative Requirement
Are wastes processed in accordance with the ECA conditions?	Legislative	EPA   186   (1), EPA   186   (3)

### Observation

Wastes are sorted to remove metal, wood etc. for recycling or reuse. Wood is processed by grinding for use as fuel. Previously waste was processed to remove small pieces for landfill cover but such processing has not been undertaken recently. Residual waste is bulked into larger loads and shipped for disposal.

Question ID 1-E2TOBP		
Question	Question Type	Legislative Requirement
Are waste areas of the site being inspected, as specified in the ECA?	Legislative	EPA   186   (1), EPA   186   (3)

### Observation

Inspections are taking place and deficiencies are noted. It was recommended during the inspection that the log sheet be enhanced to provide further direction regarding which areas need inspection and the standards to be met.

Question ID 1-E2TOBY Question	Question Type	Legislative Requirement
Are trained/competent personnel inspecting the waste areas, as specified in the ECA?	Legislative	EPA   186   (1), EPA   186   (3)
Observation	Ů.	

Staff receive general waste training, site specific waste training, and training on the use of equipment.

Question ID 1-E2TOCQ Question	Question Type	Legislative Requirement
Is the site maintaining records on incoming, outgoing, and waste storage amounts, as specified in the ECA?	Legislative	EPA   186   (1), EPA   186   (3)

Electronic log records are kept of waste coming in, going out, and on site total quantities of waste at the end of each week.

Question	Question Type	Legislative Requirement
Were the inspection questions sufficient to address other identified non-compliance items?	Legislative	Not Applicable
Observation		

Event Number: 1-13691805



### Township of Douro-Dummer

894 South Street PO Box 92 Warsaw ON KOL 3A0

www.dourodummer.on.ca

**Administration Department** 

Elana Arthurs, CMO Chief Administrative Officer Ph 705-652-8392 Ext. 206 F 705-652-5044

elanaa@dourodummer.on.ca

June 24, 2021

Ministry of the Environment, Conservation and Parks Attention: Environmental Compliance Approval, Director Client Services and Permissions Branch 135 St. Clair Avenue West, 1st Floor Toronto Ontario M4V 1P5

Via email - enviropermissions@ontario.ca

Re: Stoney Lake Road Landfill – Inspection Report

In response to the inspection completed by Sarah Bellamy at the Stoney Lake Road Landfill site, please see our comments to the observations and corrective actions required.

### Question ID - 1-E16YBZ

Please see the photograph attached of the entrance sign to include the specified required information.

### Question ID - 1-E1CEWT

The Design, Operation and Maintenance Report has not been updated since 2014. The following changes shall be made.

- 3.2 Waste Quantities M&M Disposal should read Waste Connections of Canada
- **4.3.2. Facility Management** M&M Disposal should read Waste Connections of Canada **Emergency Response Plan**
- 1.0 Introduction M&M Disposal should read Waste Connections of Canada
- 2.0 Emergency Response Numbers Dave Clifford, CAO should read Elana Arthurs, CAO
- **2.1 Assessing Emergencies** Mr. Mike Mundell should read Mr. Adrian Joosse (Waste Connections of Canada) 705-742-4268

**Question ID – 1-E1CKMW –** The Township has supplied the Waste Connections Staff with a copy of the Township of Douro-Dummer Stoney Lake Road Landfill Site Transfer Station Design, Operations and Maintenance Report Geo-Logic Inc. Project No. G024824 E1 dated May 2014 as well as the Ministry of the Environment and Climate Change Amended Environmental Compliance Approval Number A340901 Issued Date: June 9, 2016

**Question ID – 1-E1CEVU –** The Operator has provided an Inspection log sheet to ensure and maintain proper site operation. A copy has been attached to this letter.

**Question ID 949100** – The overflowing bins of scrap metal have been cleaned up and the scrap metal has been sent to a recycler.

The fuel tank was checked and is a double walled tank. The spot it was sitting on was graded with gravel and has been protected with cement barriers to avoid it being hit. As well, the

backside has been protected with concrete blocks to avoid it being able to be bumped down the hill. The base has concrete blocks buried in the gravel to support the tank. (Pictures are attached)

**Question ID 1-DYPBPC** – The Township has provided notification to the Director in writing, and forwarded a copy to the District Manager of the change in ownership and supporting documents.

**Question 1-E1H1SB** – The Township has updated the information as follows:

- 1.0 Introduction M&M Disposal should read Waste Connections of Canada
- 2.0 Emergency Response Numbers Dave Clifford, CAO should read Elana Arthurs, CAO
- **2.1 Assessing Emergencies** Mr. Mike Mundell should read Mr. Adrian Joosse (Waste Connections of Canada) 705-742-4268

This information has been provided to the Contractor as the official version of the Emergency Response Plan.

**Question 1-E1HGH0** – The Contractor has indicated a review of their previous tracking sheets which were reviewed by the Ministry for 2020 showed that there was a slight discrepancy possible between months depending on when loads that were loaded at the site were delivered to the landfill. For example, a load may have been loaded onto a truck on a Friday at the end of the month for delivery to the landfill on Monday which would have been a new month and week.

In April, 2021 a new scale was installed at the site. This is a full length truck scale that allows a much more accurate weight of transport trucks coming in an leaving the site. Historically they used to "split weigh" transport trucks and then wait for confirmation on the weights from the final landfill destination. There was always a slight variance due to the split weighing. With the new scale, outbound tonnes are recorded as they leave the sight and split weigh trucks are no longer used. The recorded weight and the delivered weight are very close so they rely on weight tickets. This eliminates the need to wait for final outbound tonnes from a landfill. Also, they have switched to a weekly tracker in an Excel format rather than subtoals for each week from a monthly tracker. There were some issues realized as they turned over a new month that did not necessarily end on a Friday. The new tracker only looks at Monady to Friday tonnes and does not care about the months turning over.

**Question 1-E2TK4P** - The scrap bunker has been set up on the C&D pad and scrap is now stored in these bunkers with concrete slab floors and walls until a load is ready to ship to the scrap recycler. (Pictures are attached)

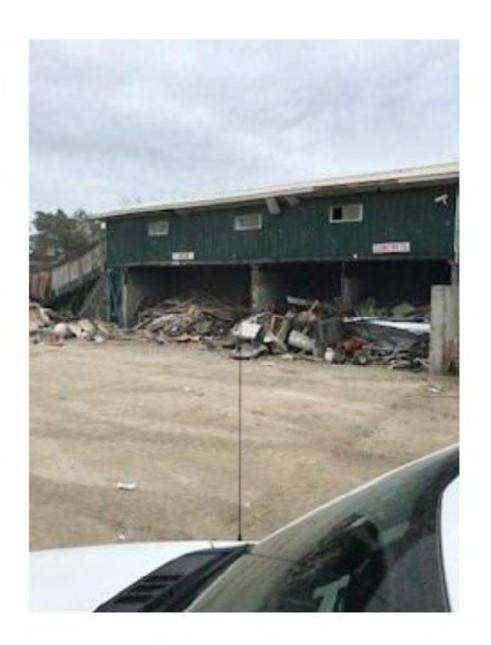
Sincerely,

Elana Arthurs

Elana Arthurs, CMO C.A.O.













# Transfer Station Inspection

Facility:	Stoney Lake Road Landfill	Permit NO:	A340901
Address:	Lot 21, Concession 4 Douro-Dummer Township	Date:	
Inspector(s):		Time:	

e conditions	Recommended Action	
	re conditions	Recommended Action



### Township of Douro-Dummer

894 South Street PO Box 92 Warsaw ON KOL 3A0

#### www.dourodummer.on.ca

**Administration Department** 

Elana Arthurs, CMO
Chief Administrative Officer
Ph 705-652-8392 Ext. 206
F 705-652-5044
elanaa@dourodummer.on.ca

June 24, 2021

Ministry of the Environment, Conservation and Parks Attention: Environmental Compliance Approval, Director Client Services and Permissions Branch 135 St. Clair Avenue West, 1st Floor Toronto Ontario, M4V 1P5

Via Email – enviropermissions@ontario.ca

Re: Stoney Lake Road Landfill – Change in Operator Notification

In response to the Inspection Report conducted at the Stoney Lake Road Landfill Site:

System Number:

4442-5LNQ29

Inspection Start Date:

12/11/2020

Inspection End Date:

04/28/2021

Inspected By:

Sarah Bellamy

#### Ouestion ID 1-DYPBPC

Was the ministry notified of any changes in ownership, operator, or address, as required?

I have not been able to locate a letter from the Township of Douro-Dummer to the Director or the District Manager within 30 days providing notice of the change to the Operator of the Site.

Effective September 4, 2018, the Operator of the Stoney Lake Road Landfill site located in, and owned by, the Township of Douro-Dummer was transferred from M & M Recyclers Inc. to

Waste Connections of Canada 610 Applewood Cres., 2<sup>nd</sup> Floor Vaughan, ON L4K 0E3

I have included the previous agreement and the amended agreement along with the Township By-law to this effect.

I trust this serves as the required notice, although if there is anything additional, please contact me directly.

Sincerely,

#### Elana Arthurs

Elana Arthurs, CMO C.A.O.

# CORPORATION OF THE TOWNSHIP OF DOURO-DUMMER BY-LAW NUMBER 2007-40

Being a By-law to authorize the execution of a Lease with

M & M Recyclers Inc.

(Lease of former Stoney Lake Road Landfill property
Lot 21, Concession 4, Douro Ward)

Whereas the Corporation of the Township of Douro-Dummer deems it expedient and necessary to enter into a Lease with the M & M Recyclers Inc.;

Now Therefore the Council of the Corporation of the Township of Douro-Dummer enacts as follows:

- That the Corporation of the Township of Douro-Dummer enter into that
  certain Lease in writing attached hereto as Appendix 'A' and forming part of
  this by-law, between the Corporation of the Township of Douro-Dummer,
  and M & M Recyclers Inc. upon and subject to the terms and conditions therein
  stated.
- That the Reeve and the Clerk be and are hereby authorized and directed to execute that certain Lease and affix the Corporate Seal thereto.
- That any by-laws or parts thereof that conflict with this by-law be hereby repealed.

Passed in open council this 5th day of June, 2007

Deputy Reeve, Karl Moher

C.A.O., David Clifford

#### THIS LEASE made the 28th day of May, 2007.

#### IN PURSUANCE OF THE SHORT FORMS OF LEASES ACT AND THE COMMERCIAL TENANCY ACT, R.S.O. 1990 c. L7 (formerly The Landlord and Tenant Act)

#### BETWEEN:

#### THE CORPORATION OF THE TOWNSHIP OF DOURO-DUMMER,

hereinafter called the "Landlord"

AND

OF THE FIRST PART

#### M & M RECYCLERS INC.

hereinafter called the "Tenant"

OF THE SECOND PART

AND

#### MICHAEL MUNDELL

Hereinafter called the "Indemnifier or Guarantor"

OF THE THIRD PART

IN CONSIDERATION of the rents reserved and the covenants and agreements herein on the part of the Tenant, the Landlord leases to the Tenant the premises (the "Premises") in the geographic Township of Douro, situated in the Township of Douro-Dummer, Province of Ontario as more particularly described in Schedule AA@ annexed hereto.

#### 1. Term

To hold the Premises for the term (the "Term"), of ten (10) years to be computed from the 1st day of June, 2007, and fully to be complete on the 31st day of May, 2017.

#### 2. Rent

The Tenant paying therefor during the term to the Landlord at its offices, 894 South Street, Warsaw, Ontario K0L 3A0 or at the place that the landlord may hereinafter designate, the following rental. The first payment is to be made on the 1st day of June, 2007.

Year One \$1.00 per tonne for material received at the site with a minimum monthly payment of \$500.00 plus GST

Year Two \$1.30 per tonne for material received at the site with a minimum monthly payment of \$650.00 plus GST

Year Three \$1.65 per tonne for material received at the site with a minimum monthly payment of \$825.00 plus GST

Year Four \$1.70 per tonne for material received at the site with a minimum monthly payment of \$850.00 plus GST

\$1.75 per tonne for material received at the site with a minimum monthly payment of Year Five \$876.00 plus GST

Year Six \$1.80 per tonne for material received at the site with a minimum monthly payment of \$903.00 plus GST

Year Seven \$1.86 per tonne for material received at the site with a minimum monthly payment of \$931.00 plus GST

Year Eight \$1.91 per tonne for material received at the site with a minimum monthly payment of \$959.00 plus GST

Year Nine \$1.97 per tonne for material received at the site with a minimum monthly payment of

\$988.00 plus GST

Year Ten \$2.03 per tonne for material received at the site with a minimum monthly payment of

\$1,017.64

The minimum monthly rental shall be paid on the 1<sup>st</sup> day of each and every month throughout the term of the lease. Each and every three months throughout the term of the lease, the tenant shall file a report with the Clerk setting out the weight of all material received during the previous three months and shall provide payment where applicable, in those cases where the rental calculated per ton exceeds the minimum monthly rental heretofore paid.

#### 3. Tax adjustment

#### (1) In this paragraph:

(a) "Tax" means all taxes, rates, duties and assessments whether municipal, provincial, federal or otherwise, charged upon the demised premises or upon the Landlord on account thereof including municipal taxes for local improvements.

#### 4. Recovery of adjustments

The Landlord has the same rights and remedies in the event of default by the Tenant in payment of an amount payable by him pursuant to paragraph 3, as the Landlord has in the case of default in payment of rent.

#### 5. Tenant's covenants

The Tenant and the indemnifiers/guarantors covenant with the Landlord:

(1) Rent -- to pay rent:

(2) Utility charges -- to pay any and all utility charges;

(3) Business and school taxes -- to pay business and other taxes, charges, rates, duties and assessments levied in respect of the Tenant's occupancy of the Premises or in respect of the personal property or business of the Tenant on the Premises as and when they become due; if the Tenant or any assignee or subtenant of the Tenant elects to have the Premises or any part thereof assessed for separate school taxes, the Tenant shall pay to the Landlord, as soon as the amount of the separate school taxes is ascertained, the amount by which the separate school taxes exceed the amount which would have been payable for school taxes had such election not been made:

(4) Repair -- to repair, reasonable wear and tear and damage by fire, lightning and tempest only excepted; and to permit the Landlord to enter and view the state of repair and to repair according to notice in writing, reasonable wear and tear and damage by fire, lightning and tempest only excepted; and to leave the Premises in good repair, reasonable wear and tear and damage by

fire, lightning and tempest excepted;

(5) Cost of repair where Tenant at fault -- that if the Premises become damaged or destroyed through the negligence, carelessness or misuse of the Tenant, or anyone permitted by him to be on the Premises, the expense of any necessary repairs, replacements or alterations shall be paid by the Tenant to the Landlord forthwith on demand;

(6) Assigning or subletting -- not to assign, sublet or part with possession of any part of the Premises without the consent in writing of the Landlord.

(7) Rules and regulations -- that the Tenam and his employees and all persons visiting or doing business with them on the Premises are bound of and will observe and perform the rules and regulations made from time to time by the Landlord of which notice in writing shall be given to the Tenant and that all such rules and regulations are deemed to be incorporated in and form part of this lease;

- (8) Use of Premises and insurance -- (a) not to use the Premises except for the purposes of a licenced transfer station for which a certificate of approval has issued from the Ministry of the Environment wherein a transfer station is a facility for accepting only solid non-hazardous waste limited to construction and demolition debris and not to carry on or permit to be carried on therein any other trade or business; (b) not to do, omit, or permit any activity upon the Premises which causes the rate of insurance to be increased; (c) if the rate of insurance is increased by the use made of the Premises or by anything done, omitted or permitted by the Tenant or by anyone permitted by the Tenant to be upon the Premises, the Tenant shall pay to the Landlord the amount of the increase; (d) if any insurance policy is canceled by the insurer because of the use of the Premises by the Tenant or by any assignee or subtenant of the Tenant or by anyone permitted by the Tenant to be upon the Premises the Landlord may at its option determine this lease forthwith by leaving upon the Premises notice in writing of its intention to terminate and thereupon rent and any other payments for which the Tenant is liable under this lease shall be apportioned and paid in full to the date of determination and the Tenant shall immediately deliver up possession of the Premises to the Landlord and the Landlord may re-enter and repossess them;
- (9) Observance of law -- in his use and occupation of the Premises, not to violate any law or ordinance or any order, rule, regulation or requirement of any federal, provincial or municipal government or any department, commission, board or officer thereof;
- (10) Waste and nuisance -- not to do or suffer any waste or damage, disfiguration or injury to the Premises or the fixtures and equipment therein; and not to use or permit the use of any part of the Premises for any dangerous, noxious or offensive trade or business and not to cause or maintain any nuisance on the Premises;
- (11) Entry by Landlord -- to permit the Landlord or its agents to enter upon the Premises at any time and from time to time for the purpose of inspecting and of making repairs, alterations or improvements to the Premises, and the Tenant is not entitled to compensation for any inconvenience, nuisance or discomfort occasioned thereby;
- (12) Indemnity -- to indemnify the Landlord against all claims by any person, firm, or corporation arising from the conduct of work by or through any act of negligence of the Tenant or any assignee, subtenant, agent, contractor, servant, employee or licensee of the Tenant, and against all costs, counsel fees, expenses and liabilities incurred in any claim or action or proceeding brought thereon;
- (13) Exhibiting Premises to permit the Landlord or its agents to exhibit the Premises to prospective tenants at a mutually agreeable time or times during the last twelve months of the Term;
- (14) Alterations, etc. -- not to make or erect in or to the Premises any installation, alteration, addition, or partition without submitting plans and specifications to the Landlord and obtaining the Landlord's prior written consent; the work shall if the Landlord so elects be performed by employees of or contractors designated by the Landlord; in the absence of the election, the work may be performed with the Landlord's consent in writing by contractors engaged by the Tenant but in each case only under written contract approved in writing by the Landlord and subject to all conditions which the Landlord may impose; the Tenant shall submit to the Landlord's supervision over construction and promptly pay to the Landlord or the Tenant's contractors, when due the cost of all work and of all materials, labour and services involved therein and of all decoration and all changes in the Premises, its equipment or services, necessitated thereby;
- (15) Signs -- not to paint, display, inscribe or affix any sign, picture, advertisement, notice, lettering or direction on any part of the Premises; save

- and except for an identification sign the colour, size, style, character and material of the same shall be as the Landlord determines.
- (16) Name of Building -- not applicable.
- (17) Janitor service not applicable.
- (18) Sidewalks and Parking Lot -- to keep both the sidewalks and the parking lot about the premises clear of snow and ice and of all other obstructions.
- (19) Liability Insurance --
  - (1) at its sole cost and expense, take out and maintain in full force and effect, at all times throughout the Term, the following insurance:
  - (a) fire and extended perils under a standard extended form of fire insurance policy, in such amounts and on such terms and conditions as would be carried by a prudent owner of a similar project, having regard to the size, age and location of the project on the Lands, and such insurance shall add the Landlord as an additional insured, with coverage to the full insurable value thereof at all times (to be computed upon a replacement cost basis with deduction only of the cost of excavation and foundations);
  - (b) general liability and property damage insurance, including personal liability, contractual liability, tenants' legal liability, non-owned automobile liability and owners' and contractors' protective insurance coverage with respect to the Lands, written on a comprehensive basis with inclusive limits of at least ten million dollars (\$10,000,000.00) on an annual aggregate basis with an incident limit of five million dollars (\$5,000,000.00) with the Township as a named insured for each occurrence, or such higher limit as the Landlord, acting reasonably, or any Mortgagee requires from time to time;
  - (c) INTENTIONALLY DELETED; and
  - (d) any other form of insurance with whatever limits the Tenant, the Landlord, acting as a prudent owner, or any Mortgagee reasonably requires from time to time, in such form and amounts and for risks against which a prudent tenant under similar circumstances would insure.
  - (2) All public liability insurance shall contain a provision for cross liability or severability of interest as between the Landlord and the Tenant. All the foregoing property policies shall contain a waiver of any right of subrogation or recourse by the Tenant's insurers against the Landlord or its contractors, agents and employees, whether or not any loss is caused by the act, omission or negligence of the Landlord, its contractors, agents or employees. The Tenant shall obtain, from the insurers, undertakings to notify the Landlord in writing at least thirty (30) days prior to any cancellation thereof. The Tenant shall furnish to the Landlord, upon written request, certificates of all such policies. The Tenant agrees that if the Tenant fails to take out or to keep in force such insurance or provide a certificate of every policy and evidence of continuation of coverage as herein provided, the Landlord shall have the right to take out such insurance and to pay the premium thereof and, in such event, the Tenant shall pay to the Landlord the amount paid as premium plus fifteen percent (15%), which payment shall be deemed to be Additional Rent payable on the first day of the next month following the said payment by the Landlord.

#### 6. Landlord's covenants

The Landlord covenants with the Tenant:

(1) Quiet enjoyment -- for quiet enjoyment;

#### 7. Provisos

Provided always and it is agreed as follows:

(1) Fixtures. The Tenant may remove his fixtures.

- (2) Fire. In case of damage to the Premises by fire, lightning or tempest, rent ceases until the Premises are rebuilt; and the Landlord, instead of rebuilding or making the Premises fit for the purpose of the Tenant, may at its option determine this lease on giving to the Tenant within thirty days after the damage notice in writing and thereupon rent and all other payments for which the Tenant is liable shall be apportioned and paid to the date of the damage and the Tenant shall immediately deliver up possession of the Premises to the Landlord.
- (3) Damage to property. The Landlord is not liable nor responsible in any way for any loss of or damage or injury to any property belonging to the Tenant or to its employees or to any other person while the property is on the Premises or in the yard unless the loss, damage or injury is caused by the negligence of the Landlord or of its employees, servants or agents and the Landlord is not liable in any event for damage to the property caused by steam, water, rain or snow from any other place or quarter nor for any damage caused by or attributable to the condition or arrangement of any electric or other wiring nor for any damage caused by anything done or omitted by any other Tenant.
- (4) Impossibility of performance. It is agreed that whenever the Landlord is unable to fulfill, or is delayed or restricted in fulfilling any obligation hereunder for the supply or provision of any service or utility or the doing of any work or the making of any repairs because it is unable to obtain the material, goods, equipment, service, utility or labour required to enable it to fulfill the obligation or by reason of any statute, law or order-in-council or any regulation or order passed or made pursuant thereto or by reason of the order or direction of any administrator, controller or board, or of any government department or officer or other authority, or by reason of not being able to obtain any permission or authority required thereby, or by reason of any other cause beyond its control, the Landlord is relieved from the fulfillment of the obligation and the Tenant is not entitled to compensation for any inconvenience, nuisance or discomfort thereby occasioned.
- (5) Default of Tenant. If the rent is not paid when due, whether lawfully demanded or not, or in case of breach or non-observance or non-performance of any of the covenants or agreements or rules or regulations herein contained or referred to on the part of the Tenant to be observed and performed, or in case the Premises are vacated or remain unoccupied or in case the Term is taken in execution or attachment for any cause, then the Landlord is entitled to enter upon the Premises or any part thereof in the name of the whole and to repossess and enjoy the Premises as of its former estate.
- (6) Bankruptcy of Tenant. In the event, without the written consent of the Landlord, the Premises remain vacant or not used for the period of fifteen days or are used by a person other than the Tenant or for any other purpose than that for which they were let or in case the Term or any of the goods and chattels of the Tenant are seized in execution or attachment by a creditor of the Tenant or if the Tenant makes any assignment for the benefit of creditors or any bulk sale or becomes bankrupt or insolvent or takes the benefit of any act for bankrupt or insolvent debtors, then this lease shall at the option of the Landlord cease and the Term shall immediately be forfeited and the current month's rent and the next ensuing three months' rent shall immediately become due and payable and the Landlord may re-enter and take possession of the Premises as though the Tenant or other occupant of the Premises was holding over after the expiration of the Term.
- (7) Distress. The Tenant waives the benefit of any present or future statute taking away or limiting the Landlord's right of distress, and agrees that none of the goods and chattels of the Tenant on the Premises at any time during the Term is exempt from levy by distress for rent in arrears.
- (8) Right of re-entry. On the Landlord's becoming entitled to re-enter the Premises under any of the provisions of this lease, the Landlord, in addition to all other rights, may do so as

the agent of the Tenant, using force if necessary, without being liable for prosecution therefor, and may relet the Premises as agent of the Tenant, and receive the rent therefor, and as agent of the Tenant may take possession of furniture or other property on the Premises and sell it at pubic or private sale without notice and apply the proceeds of sale and rent derived from reletting the Premises upon account of the rent under this lease, and the Tenant is liable to the Landlord for any deficiency.

- (9) Right of termination. On the Landlord's becoming entitled to re-enter the Premises under any of the provisions of this lease, the Landlord, in addition to all other rights, has the right to determine this lease forthwith by leaving upon the Premises notice in writing of its intention, and thereupon rent and any other payments for which the Tenant is liable under this lease shall be computed, apportioned and paid in full to the date of such determination, and the Tenant shall immediately deliver up possession of the Premises to the Landlord, and the Landlord may re-enter and repossess the Premises.
- (10) Non-waiver. Any condoning, excusing or overlooking by the Landlord of any default, breach or non-observance by the Tenant of any covenant, proviso or condition herein contained does not operate as a waiver of the Landlord's rights hereunder in respect of subsequent defaults, breaches or non-observances and does not defeat or affect in any way the rights of the Landlord herein in respect of any subsequent defaults or breaches.
- (11) Overholding. If the Tenant continues to occupy the Premises after the expiration of this lease with or without the consent of the Landlord, and without any further written agreement, the Tenant shall be a monthly tenant at the rent and on the terms and conditions herein set out except as to length of tenancy.
- (12) Notice. Any notice required by this lease is deemed sufficiently given if contained in writing enclosed in a sealed envelope addressed, in the case of notice to the Landlord, to it at The Corporation of the Township of Douro-Dummer, 894 South Street, P.O. Box 92, Warsaw, Ontario KOL 3AO and in the case of notice to the Tenant, at 1017492 Ontario Limited c/o as M & M Disposal Service, 1513 County Road #4, Warsaw, Ontario KOL 3AO, attention: Michael and Gary Mundell, and deposited in one of Her Majesty's post offices in registered and postage prepaid. The date of receipt of the notice shall be deemed to be on the 5<sup>th</sup> day after mailing thereof. Provided that either party may, by notice to the other, designate another address in Canada to which notices mailed or delivered more than ten days thereafter shall be addressed.
- (13) Right of First Refusal. In the event that the Landlord wishes to sell the demised Premises, it shall firstly offer same to the Tenant by notice in writing at the appraised value therefor. The Tenant shall have ten (10) days following receipt of the notice of the Landlord=s intention to sell to deliver to the Landlord notice of its intention to purchase upon the terms set forth in the Landlord=s notice with closing to take place thirty (30) days thereafter. In the event that the Tenant refuses or neglects to accept the Landlord=s offer to sell as aforesaid, the Landlord shall be at liberty to sell the subject premises to a third party without further notice to the Tenant, notwithstanding the Tenant's option to purchase set out below which shall come to an end if the Landlord exercises its right of first refusal herein. It is acknowledged that the transfer of the property from the Landlord to the Tenant must follow the Landlord's policies for the disposition of real property as may be in full force and effect at the time.
- Option to Purchase. Provided that the Tenant is not in default under this lease, the Tenant shall have a one time option to purchase (the purchase option) the Premises as follows:

   (i) the Purchase Option shall be open for exercise by the Tenant throughout the term of the within lease;
  - (ii) the purchase price shall be the fair market value of the Premises, payable by certified cheque on closing. If the Landlord and Tenant do not agree on such fair market value at least thirty (30) days prior to closing, then the fair market value shall be determined by each of the

Landlord and Tenant obtaining an appraisal prepared by a qualified Accredited Appraiser of the Canadian Institute (AACI) with the purchase price being an average of the two appraisals. Each party shall retain a qualified appraiser within five (5) days it being determined that an appraisal is required as the parties were unable to agree upon the fair market value. In the event that the appraisers have not make a determination by the date scheduled for closing, then closing shall be extended to five (5) business days following the determination of the fair market value.

- (iii) the Tenant shall exercise the Purchase Option by written notice to the Landlord of its election to do so within the Purchase Option Period. Such notice to be accompanied by a deposit in the amount of Ten Thousand Dollars (\$10,000.00) payable to the Landlord. The notice from the Tenant exercising the Purchase Option shall constitute a binding agreement of purchase and sale;
- (iv) the closing of the Purchase Option shall be on the thirtieth day following the exercise of the Purchase Option, unless such date is not a business day, in which case the closing shall be on the next business day;
- (v) the Purchase Option shall be null and void and of no further force or effect if not exercised within the Purchase Option Period, and
- (vi) the terms of a standard Ontario real estate association agreement of purchase and sale form in effect at the time that the Purchase Option is exercised shall apply to the Purchase Option, to the extend applicable and where not inconsistent with the terms hereof.

It is acknowledged that the transfer of the property from the Landlord to the Tenant must follow the Landlord's policies for the disposition of real property as may be in full force and effect at the time.

- (15) GST shall be in addition to the rental set out herein.
- (16) Security. To provide the Landlord sufficient security to ensure compliance with the Certificate of approval for the use of the property as a construction waste recycling transfer station and to further insure compliance with any existing certificate of approval, the Tenant shall maintain an irrevocable letter of credit in favour of the Landlord in the amount of Fifty Thousand Dollars (\$50,000.00) throughout the term of the within lease and for a period of One (1) year thereafter. The letter of credit shall issue from a Schedule 1 Chartered Canadian Bank.
- (17) Traffic Study. The Tenant covenants and agrees that it shall cause a traffic study to be completed by a recognized traffic engineer. It is understood and agreed that any recommendations made at the conclusion of the traffic study, such as entrance improvements, signage, etcetera, that may be necessary shall be completed at the cost of the Tenant.
- (18) Certificate of Approval. Prior to taking possession of the property, the Tenant covenants and agrees, at its expense, to obtain a certificate of approval from the Ministry of the Environment to utilize the property for a construction waste recycling transfer station. Any conditions imposed upon the Certificate by the Ministry of the Environment shall be implemented at the sole and only cost of the Tenant.
- (19) Early Cancellation of Lease. It is understood and agreed that either the Landlord or the Tenant may cancel the within lease upon providing six (6) months' written notice to the other as set out in Paragraph 7(12) of the within lease. It is agreed that the lease shall come to an end six (6) months after delivery of the aforesaid notice and the provisions herein for right of first refusal and option to purchase shall terminate on the date that the notice to terminate is delivered.

#### (20) Indemnity and Guarantee

In consideration of the Landlord entering into this Lease with the Tenant, the Indemnifier, Michael Mundell, covenants and agrees to indemnify and save the Landlord

harmless against any and all liabilities, claims, damages, interest, penalties, fines, monetary sanctions, losses, costs and expenses whatsoever (including, without limitation, counsel and solicitor's fees on a substantial indemnity basis, reasonable costs of professional advisors, consultants and experts) arising from injury to property or injury to any person, firm, partnership or corporation, caused by the use, occupancy or presence of the Tenant or any other person, firm, partnership or corporation at, in, on or upon the lands.

#### 8. Headings

The headings in this lease have been inserted as a matter of convenience and for reference only and in no way define, limit or enlarge the scope or meaning of this lease nor of any provisions hereof.

#### 9. Effect of lease

This lease and everything herein contained shall extend to and bind and may be taken advantage of by the heirs, executors, administrators, successors and assigns, of each of the parties hereto, subject to the granting of consent by the Landlord to any assignment or sublease, and where there is more than one Tenant or there is a female party or a corporation, the provisions hereof shall be read with all grammatical changes thereby rendered necessary and all covenants are deemed joint and several.

WITNESS our hands and seals.

SIGNED, SEALED AND DELIVERED in the presence of:	) )
0 11	) M & M RECYCLERS INC.
Clillen Bahn -	Per:  Michael Mundell, President
	) I have authority to bind the corporation.
	) THE CORPORATION OF THE
	) TOWNSHIP OF DOURO-BUMMER ) Per:
Weland	Reeve - J. Murray Jones
Ewiland	) Clerk - Linda Moher
	Mark
(lelin )	) Michael Mundell - Guarantor/Indemnifier
	,

#### **SCHEDULE AA@**

#### Legal Description

Part of Lot 21, Concession 4, geographic Township of Douro, now in the Township of Douro-Dummer, County of Peterborough, Province of Ontario designated as Part 1 and Part 2 on Plan 45R-10681 and being all of PIN 28184-0162 (LT).

#### **Corporation of the Township of Douro-Dummer**

By-law Number 2013-27

Being a By-law to authorize the execution of a Lease Agreement with

M & M Disposal – 1017492 Ontario Ltd.
(Lease of former Stoney Lake Road Landfill property
Lot 21, Concession 4, Douro Ward)

Whereas the Corporation of the Township of Douro-Dummer deems it expedient and necessary to enter into a Lease with M & M Disposal — 1017492 Ontario Ltd.;

Now Therefore the Council of the Corporation of the Township of Douro-Dummer enacts as follows:

- That the Corporation of the Township of Douro-Dummer enter into that certain Lease In writing attached hereto as Appendix 'A' and forming part of this by-law, between the Corporation of the Township of Douro-Dummer, and M & M Disposal – 1017492 Ontario Ltd. upon and subject to the terms and conditions therein stated.
- That the Mayor and the Clerk be and are hereby authorized and directed to execute that certain Lease and affix the Corporate Seal thereto.
- 3. That any by-laws or parts thereof that conflict with this by-law be hereby repealed.

Passed in open council this 7th day of May, 2013

Mayor, J. Murray Jones

Clerk, Linda G. Moher

#### THIS AGREEMENT MADE IN DUPLICATE THIS 7th day of May, 2013.

BETWEEN:

#### THE CORPORATION OF THE TOWNSHIP OF DOURO-DUMMER.

hereinafter called the "Landlord"

OF THE FIRST PART

AND

**M&M RECYCLERS INC.** hereinafter called the "Tenant"

OF THE SECOND PART

AND

MICHAEL MUNDELL

hereinafter called the "Indemnifier or Guarantor"

OF THE THIRD PART

AND

1017492 Ontario LTD. hereinafter called the "Assignee"

OF THE FORTH PART

WHEREAS the Landlord, the Tenant, and the Indemnifier entered into a Lease for the premises more particularly described in "Schedule A" annexed hereto dated the 28<sup>th</sup> day of May 2007.

AND WHEREAS the parties desire to amend the terms of the Lease as set out within the Amending Agreement.

NOW THEREFORE in consideration of the sum of \$1.00 now paid by each party to the other the receipt and sufficiency whereof is hereby by each of them respectively acknowledged and in further consideration of the mutual provisos and covenants hereinafter set out, the parties hereto covenant and agree as follows:

- Paragraph 1 of the Lease dated the 28<sup>th</sup> day of May, 2007, is amended to extend the term thereof for a further 5 years and shall now end on the 31<sup>st</sup> day of May 2022.
- Paragraph 2 of the Lease dated the 28<sup>th</sup> day of May, 2007, is amended by adding thereto the rental that will be payable for years 11 through 15 of the lease as more particularly set out immediately below:

Year Eleven

\$2.06 per tonne for material received at the site with a minimum monthly payment of \$1,048.66 plus HST. \$2.12 per tonne for material received at the site with a minimum monthly payment of \$1,079.60 plus HST.

Year Twelve
Year Thirteen

\$2.18 per tonne for material received at the site with a minimum monthly payment of \$1,111.98 plus HST. \$2.25 per tonne for material received at the site with a

Year Fourteen
Year Fifteen

minimum monthly payment of \$1,145.33 plus HST. \$2.31 per tonne for material received at the site with a minimum monthly payment of \$1,179.68 plus HST.

3. The parties acknowledge that the current Lease references the subject property being utilized as a transfer station for accepting only solid non hazardous waste limited to construction and demolition debris. The parties further acknowledge that the Certificate of Approval for the subject property was amended on March 5th, 2013 to permit the subject lands to receive domestic type waste generated at

ICI (industrial, commercial, institutional) facilities.

It is, therefore, understood and agreed that the reference in the Lease dated the 28<sup>th</sup> day of May 2007 to the property being utilized as a transfer station for solid non hazardous waste limited to construction and demolition debris shall now be

amended throughout to reference the property being utilized as a transfer station for domestic type waste generated at ICI facilities.

- 4. By the within Agreement, M&M Recyclers Inc. assigns the within Lease, as amended, unto 1017492 Ontario Ltd., the Assignee. The Landlord consents to the assignment to the Assignee. The Assignee accepts the assignment and acknowledges that it shall be hence forth responsible for all of the obligations of the tenant as set forth in the Lease, as amended.
- 5. The Landlord grants unto the Tenant a right to renew the within Lease, as amended, for a further term of five additional years beyond the 31<sup>st</sup> day of May, 2022, upon the same terms and conditions as the Lease herein save and except for the amount of the rental that shall be mutually agreed upon by the parties to be effective June 1<sup>st</sup>, 2022, and further, save and except that there shall be no further options to renew. The Tenant shall notify the Landlord of its intention to renew the Lease no less than 6 months prior to the expiry date of the current Lease, as amended, by delivering written notice of its intention so to do to the Landlord at the address set forth in the Lease or such other address as the Landlord may provide to the Tenant during the term of the Lease.
- Save and except as amended by the within Agreement, the parties ratify and confirm that the terms set forth in the Lease dated the 20<sup>th</sup> day of May 2007 remain in full force and affect.
- This Agreement shall enure to the benefit of and be binding upon the heirs, executors, administrators, successors, and assigns of the parties hereto.

WITNESS our hands and seals.

SIGNED, SEALED AND DELIVERED in the presence of:

M&M RECYCLERS INC.

Per:

Michael Mundell, President
I have authority to bind the corporation.

1017492 Ontario LTD.

Per:

Per: Michael Mundell, President I have authority to bind the corporation.

THE CORPORATION OF THE TOWNSHIP OF DOURO-DUMMER

Per:

Mayor- J. Myrray Jones

Clerk-Linda Moher

Michae Mundell- Guarantor/Indemnifier

#### SCHEDULE A

**Legal Description** 

Part of Lot 21, Concession 4, geographic Township of Douro, now in the Township of Douro-Dummer, County of Peterborough, Province of Ontario designated as Part 1 and Part 2 on Plan 45R-10681 and being all of PIN 28184-0162(LT).

#### The Corporation of the Township of Douro-Dummer

#### By-law Number 2018-52

Being a By-law to authorize the execution of a Lease Amending Agreement with Waste Connections of Canada Inc. (Lease of Former Stoney Lake Road Landfill Property — Lot 21, Concession 4, Douro Ward)

**Whereas** The Corporation of the Township of Douro-Dummer deems it expedient and necessary to enter Into a Lease Amending Agreement for the Former Stoney Lake Road Landfill Property with Waste Connections of Canada Inc.;

**Now Therefore** the Council of The Corporation of the Township of Douro-Dummer enacts as follows:

- That The Corporation of the Township of Douro-Dummer enter into that certain Lease Amending Agreement in writing attached hereto as Appendix 'A' and forming part of this by-law, between The Corporation of the Township of Douro-Dummer, and Waste Connections of Canada Inc.; upon and subject to the terms and conditions therein stated.
- 2. That Appendix 'A' of By-law No. 2013-27, is amended by the Lease Amending Agreement which is attached to this by-law as Appendix 'A'.
- 3. In all other respects By-law No. 2013-27, is hereby confirmed.
- 4. That the Mayor and the Clerk be hereby authorized to execute such Agreement and affix the Corporate Seal thereto.

Passed in Open Council this 4th day of September, 2018.

Mayor, J. Murray Jones

Deputy Clerk, Martina Chait-Hartwig

#### LEASE AMENDING AGREEMENT

September This Agreement made as of August \_ 2018 (the 'Effective Date')

BETWEEN:

The Corporation of the Township of Douro-Dummer,

(hereinafter called the "Landlord")

OF THE FIRST PART

- and -

Waste Connections of Canada Inc. (hereinafter called the " Successor Tenant")

OF THE SECOND PART

#### WHEREAS:

- A. By a lease dated May 28th, 2007, (as amended from time to time, the "Lease"), the Landlord, and M & M Recyclers Inc. (the "Original Tenant") entered into a lease with respect to the premises in the geographic Township of Douro, situated in the Township of Douro-Dummer, Province of Ontario as more particularly described in Schedule "A" attached hereto (the "Demised Premises"), for a term expiring May 31st, 2017 (the "Term");
- B. The Lease was extended for an additional period of five (5) years pursuant to a Lease Amending Agreement dated May 7th. 2013 (the "Extended Term");
- C. The Original Tenant through its successor corporation and the Successor Tenant executed an agreement wherein the Successor Tenant will acquire substantially all of the assets and interests of the Original Tenant and its successor corporation, 1017492 Ontario Limited; and
- D. The Landlord and Successor Tenant agree to amend the Lease as set out herein.

NOW THEREFORE in consideration of the mutual covenants and agreements herein contained and the sum of ONE DOLLAR (\$1.00) now paid by each of the parties to the other, the receipt and sufficiency of which is hereby acknowledged, the parties agree as follows:

- The Landlord consents to the substitution of the Original Tenant for the Successor Tenant on the same terms and conditions contained in the Lease, except as specifically amended herein.
- 2. Paragraph 7(12) of the Lease is hereby amended to provide that address for service of the Landlord and Tenant are as follows:

To the Landlord at:

The Corporation of the Township of Douro-Dummer 894 South Street, P.O. Box 92, Warsaw, ON K0L 3A0

Attention: David Clifford, CAO

To the Successor Tenant at: Waste Connections of Canada Inc. 610 Applewood Cres., 2nd Floor, Vaughan, ON L4K 0E3 Attention: Legal Department

- 3. Paragraph 7(20) of the Lease is deleted in its entirety.
- The parties acknowledge that the Successor Tenant is in possession of the Demised Premises and that the parties are not in material default of any of their obligations as set out in the Lease.
- Except as modified by this Agreement, the terms, covenants, and conditions of the Lease shall remain unchanged and in full force and effect.
- This Agreement shall enure to the benefit of and be binding upon the parties hereto and their respective heirs, executors, administrators, successors and assigns.
- 7. Time shall be of the essence.

This Agreement may be signed in any number of counterparts, each of which is an original, and all of which taken together constitute one single document.

IN WITNESS WHEREOF the parties hereto have duly executed this Agreement as of the date first above written.

THE CORPORATION OF THE TOWNSHIP OF DOURO-DUMMER

1130000

11/1/

avor 1 Murray Jones

Clerk - Crystal McMillan

vve have authority to bind the corporation.

WASTE CONNECTIONS OF CANADA INC.

Per: \_\_\_\_

Name:

Title:

I have authority to bind the corporation.

#### SCHEDULE "A"

#### Legal Description:

Part of Lot 21, Concession 4, geographic Township of Douro, now Township of Douro-Dummer, County of Peterborough, Province of Ontario designated as Part 1 and Part 2 on Plan 45R10681 and being all of PIN 28184-0162 (LT).



Cambium Reference: 12987-004 April 25, 2022

# Appendix D Field Sheets and Climate Data

Fully accessible appended items are available upon request.



DATE: June 28, 2021

WEATHER (SAMPLE DAY): 22°C Sun 29°C

PROJECT NUMBER: 12987-004

SAMPLED BY: N. Morin and M. Pion

WEATHER (PREVIOUS DAY): 28°C Rain

#### FIELD SHEET – GROUNDWATER DEVELOPMENT & SAMPLING

Sample	Water	B.H. Depth	B.H. Dia.	Stick - Up	Purge V (L		Temp	рН	Cond.	DO	ORP	CH4	H2S			Obs	ervations	
Location	Level	(m)	(mm)	(m)	Needed	Actual	(°C)	(units)	(µS/cm)	(mg/L)	(mV)	(% lel)	(ppm)	Clarity	Colour	Odour	Sheen	Other
TW02-1	7.13	9.78	50.8	0.55	16	Dry x1 10	15.9	7.14	681	8.44	113	<1	<0.1	Cloudy	Brown	None	None	
TW02-2	5.21	6.87	50.8	0.75	10	Dry x1 4	13.9	7.33	472	9.69	110	<1	<0.1	Clear	None	None	None	QA/QC #1 QA/QC - VOCs
TW03-1	6.33	7.42	50.8	0.68	6	Dry x1	11.9	6.70	894	0.04	75	12 % vol	<0.1	Opaque	Orange	None	None	
TW04-1	7.91	11.13	50.8	0.10	18	18	15.6	7.11	512	5.11	57	<1	<0.1	Clear	None	None	None	QA/QC #2
TW05-1	3.68	7.97	50.8	0.97	24	Dry x1 12	12.4	6.90	2354	5.98	85	<1	<0.1	Cloudy	Grey	None	None	
TW05-2	3.62	5.75	50.8	0.97	12	Dry x1	12.4	7.20	2946	8.28	88	<1	<0.1	Cloudy	None	None	None	
TW06-1	2.90	5.88	32.1	0.77	7.5	Dry x1	14.8	6.89	890	2.19	62	<1	<0.1	Clear	None	None	None	
TW06-2	2.68	4.08	50.8	0.80	9	Dry x1	12.1	7.16	1012	2.82	53	<1	<0.1	Clear	None	None	None	
TW07-1	1.92	10.03	25.4	0.89	9	9	11.9	7.29	519	2.23	-4	<1	<0.1	Clear	None	None	None	
TW07-2	2.30	5.24	50.8	1.06	18	Dry x1 10	11.9	7.02	1575	2.51	22	<1	<0.1	Cloudy	Orange	None	None	
TW08-1	7.40	11.59	50.8	0.78	-17	17	12.4	7.42	456	8,18	114	<1	<0.1	Opaque	Grey	None	None	
TW08-2	5.21	5.33	50.8	0.80	1.5	1	i i	- 1		<u> </u>		<1	<0.1	11 11	-	<u>.</u>	- A	Insufficient Volume
TW09-1	0.77	10.54	50.8	0.81	54	54	11.5	7.25	527	2.47	61	<1	<0.1	Clear	None	None	None	
TW09-2	1.01	4.29	50.8	1.02	18	Dry x1	14.8	7.61	463	9.85	56	<1	<0.1	Opaque	Grey	None	None	
TW10-2	3.18	3.78	50.8	0.82	3	Dry x1 1.5	14.0	6.70	1175	6.05	-33	<1	<0.1	Opaque	Orange	None	None	
TW11-2	4.99	6.83	50.8	0.85	12	12	17.6	6.64	1844	4.05	-25	9	<0.1	Opaque	Orange	None	None	



DATE: June 28, 2021

WEATHER (SAMPLE DAY): 2°C Sun 12°C

PROJECT NUMBER: 12987-004

SAMPLED BY: N. Morin and M. Pion

WEATHER (PREVIOUS DAY): 10°C Sun

FIELD SHEET – GROUNDWATER DEVELOPMENT & SAMPLING

Sample	Water	B.H. Depth	B.H. Dia.	Stick - Up	Purge V (L		Temp	рН	Cond.	DO	ORP	CH4	H2S			Obs	ervations	
Location	Level	(m)	(mm)	(m)	Needed	Actual	(°C)	(units)	(µS/cm)	(mg/L)	(mV)	(% lel)	(ppm)	Clarity	Colour	Odour	Sheen	Other
GP1	4.17	4.31	50.8	0.84				<u>-</u> 1	<u></u>			12.5 % vol	<0.1		-		_	
GP2	4.21	4.41	50.8	0.78	0	L 51-	Je Z	7	1.0.1	106		8 % vo	<0.1	-	-	-	-	
Sorting Building	100	P-1	-	-	-	-	-	-	-	-	-	<1	<0.1	-	-	-	-	
Office	÷	(2)	-	-	-	-	-	-	-	-	-	-	-	-	-	-		Did not measure due to COVID-19



DATE: November 10, 2021

WEATHER (SAMPLE DAY): 2°C Sun 12°C

PROJECT NUMBER: 12987-004

SAMPLED BY: W. Verduyn

N. Morin, M. Pion and

WEATHER (PREVIOUS DAY): 10°C Sun

#### FIELD SHEET - GROUNDWATER DEVELOPMENT & SAMPLING

Sample	Water	B.H. Depth	B.H. Dia.	Stick - Up	Purge V		Temp	рН	Cond.	DO	ORP	CH4	H2S			0	bservation	s
Location	Level	(m)	(mm)	(m)	Needed	Actual	(°C)	(units)	(µS/cm)	(mg/L)	(mV)	(% lel)	(ppm)	Clarity	Colour	Odour	Sheen	Other
TW02-1	6.11	9.78	50.8	0.55	23	23	11.0	7.16	225	10.08	63	<1	<0.1	Clear	None	None	None	
TW02-2	3.75	6.87	50.8	0.75	19	Dry x 1	12.2	6.94	264	6.25	64	<1	<0.1	Clear	None	None	None	
TW03-1	5.86	7.42	50.8	0.68	10	Dry x 1	10.3	6.68	530	0.82	106	23	<0.1	Opaque	Brown	Leachate	None	
TW04-1	7.23	11.13	50.8	0.10	24	24	10.0	7.21	254	9.41	11	1	<0.1	Clear	None	None	None	QA/QC #1
TW05-1	3.22	7.97	50.8	0.97	29	Dry x 1 10	9.6	6.86	1101	5.74	63	<1	<0.1	Cloudy	None	None	None	
TW05-2	3.19	5.75	50.8	0.97	16	Dry x 1	10.1	6.90	1393	6.61	60	<1	<0.1	Clear	None	None	None	
TW06-1	2.34	5.88	32.1	0.77	9	9	10.4	6.82	383	3.18	33	<1	<0.1	Cloudy	None	None	None	
TW06-2	2.12	4.08	50.8	0.80	12	12	9.5	7.12	341	3.84	29	<1	<0.1	Clear	None	None	9	QA/QC #2 QA/QC - VOCs
TW07-1	1.48	10.03	25.4	0.89	14	14	9.2	7.33	229	4.56	21	<1	<0.1	Clear	None	None	None	
TW07-2	2.14	5.24	50.8	1.06	19	19	11.0	6.92	669	3.19	56	<1	<0.1	Cloudy	None	None	None	
TW08-1	6.35	11.59	50.8	0.78	38	38	10.4	7.20	237	6.62	57	<1	<0.1	Cloudy	Grey	None	None	
TW08-2	3.75	5.33	50.8	0.80	10	10	12.1	7.27	219	9.69	56	<1	<0.1	Cloudy	Grey	None	None	
TW09-1	0.33	10.54	50.8	0.81	63	63	8.8	7.29	227	3.20	16	<1	<0.1	Clear	None	None	None	
TW09-2	0.89	4.29	50.8	1.02	21	Dry x 1	9.1	7.54	235	8.19	11	<1	<0.1	Opaque	Grey	None	None	
TW10-2	2.45	3.78	50.8	0.82	9	Dry x 1.	10.8	6.69	550	5.27	50	37	<0.1	Cloudy	Grey	None	None	
TW11-2	4.34	6.83	50.8	0.85	16	16	10.1	7.12	294	5.48	27	79	<0.1	Cloudy	Orange	None	None	



DATE: November 10, 2021

N. Morin, M. Pion and

WEATHER (SAMPLE DAY): 2°C Sun 12°C

PROJECT NUMBER: 12987-004

SAMPLED BY: W. Verduyn

WEATHER (PREVIOUS DAY): 10°C Sun

FIELD SHEET – GROUNDWATER DEVELOPMENT & SAMPLING

Sample	Water	B.H. Depth	B.H. Dia.	Stick - Up	Purge V (L		Temp	рН	Cond.	DO	ORP	CH4	H2S			0	bservations	
Location	Level	(m)	(mm)	(m)	Needed	Actual	(°C)	(units)	(µS/cm)	(mg/L)	(mV)	(% lel)	(ppm)	Clarity	Colour	Odour	Sheen	Other
GP1	4.20	4.31	50.8	0.84		.51	12					19.0 % vol	<0.1	<u>-</u>	1	<u> </u>	I <u>-</u> 1	
GP2	4.31	4.41	50.8	0.78	2	(5)	8		= = =	- 1	11 -4	12 % vol	<0.1	-	-	-	-	
Sorting Building	24	W	-	-	-	-	-	-	-	-	-	<1	<0.1	-	-	-	-	
Office	(3)	121	-	-	-	-	-	-	-	-	-	<1	<0.1	-	-	-	-	



DATE: June 28, 2021

WEATHER (SAMPLE DAY): 22°C Sun 29°C

PROJECT NUMBER: 12987-004

SAMPLED BY: M. Pion and N. Morin

WEATHER (PREVIOUS DAY): 28°C Rain

#### FIELD SHEET – SURFACE WATER SAMPLING

Sample	Depth	Width (m)	Velocity	Discharge	Temp	pH	Cond.	DO	ORP				Observations	
Location	(m)	Width (iii)	(m/s)	(m³/s)	(°C)	(units)	(µS/cm)	(mg/L)	(mV)	Clarity	Colour	Odour	Sheen	Other
SW1	0.37	0.75	and the same of th	lo Observable Flow	26.8	7.31	485	6.49	67	Clear	None	None	None	QA/QC
SW3	1.5	113	-	-	-	-	-	-	-	-	-	-	-	Dry
SW6	1.00	2:	-	-	-	-	-	-	-	-	-	-	-	Dry
SW8	0.15	Ponde	d - No Observ	able Flow	29.5	8.40	340	13.88	67	Clear	Yellow	None	None	



DATE: August 26, 2021

WEATHER (SAMPLE DAY): 19°C Sun 30°C

PROJECT NUMBER: 12987-004

SAMPLED BY: M. Pion

WEATHER (PREVIOUS DAY): 30°C Sun

#### FIELD SHEET – SURFACE WATER SAMPLING

Sample	Depth	Width	Velocity	Discharge	Temp	рН	Cond.	DO	ORP			Obs	ervations	
Location	(m)	(m)	(m/s)	(m³/s)	(°C)	(units)	(µS/cm)	(mg/L)	(mV)	Clarity	Colour	Odour	Sheen	Other
SW1	1.74	Ponded - No	Observable F	Flow	28.0	7.34	545	6.48	130	Clear	Yellow	None	None	QA/QC
SW3			-		-	-	-	-	-	-	-	-	-	Dry
SW6			-		-	-	-	-	-	-	-	-	-	Dry
SW8			-		-	-	-	-	-	-	-	-	-	Dry



DATE: November 10, 2021

WEATHER (SAMPLE DAY): 2°C Sun 12°C

PROJECT NUMBER: 12987-004

SAMPLED BY: W. Verduyn

M. Pion, N. Morin and

WEATHER (PREVIOUS DAY): 10°C Sun

#### FIELD SHEET - SURFACE WATER SAMPLING

Sample	Depth	Width (m)	Velocity	Discharge	Temp	pН	Cond.	DO	ORP				Observations	
Location	(m)	Wider(iii)	(m/s)	(m³/s)	(°C)	(units)	(µS/cm)	(mg/L)	(mV)	Clarity	Colour	Odour	Sheen	Other
SW1	0.60	0.75	0.10	0.045	6.8	7.58	204	9.17	20	Clear	None	None	None	QA/QC Culvert damaged
SW3	0.05	Ponde	Ponded - No Observable Flow			7.55	372	8.06	43	Clear	None	None	None	
SW6	0,15	Ponde	Ponded - No Observable Flow			7.87	365	5.21	28	Clear	None	None	None	
SW8	0.15	Ponde	d - No Observ	able Flow	6.6	7.72	191	10.35	20	Clear	None	None	None	Area flooded

<u>Home</u> > <u>Environment and natural resources</u> > <u>Weather, Climate and Hazard</u> > <u>Past weather and climate</u> > <u>Historical Data</u>

#### Daily Data Report for June 2021

#### PETERBOROUGH TRENT U ONTARIO Current <u>Station Operator</u>: <u>ECCC - MSC</u>

 Latitude:
 44°21'00.000" N
 Longitude:
 78°18'00.000" W
 Elevation:
 216.00 m

 Climate ID:
 6166456
 WMO ID:
 71672
 TC ID:
 TPQ

DAY	<u>Max</u> <u>Temp</u> °C ✓	Min Temp °C '~	<u>Mean</u> <u>Temp</u> ≗C ✓	Heat Deg <u>Days</u>	Cool Deg Days	Total Rain <u>mm</u>	Total Snow cm	Total Precip <u>mm</u> Lul	Snow on Grnd cm	Dir of Max Gust 10's deg	<u>Spd of Max</u> <u>Gust</u> <u>km/h</u> եւև
<u>01</u>	25.6	8.2	16.9	1.1	0.0			0.2		25	35
<u>02</u>	25.9	5.8	15.8	2.2	0.0			0.5			
<u>03</u>	22.0	12.3	17.2	0.8	0.0			8.8			
<u>04</u>	26.3	10.9	18.6	0.0	0.6			4.2			
<u>05</u>	31.5	12.8	22.2	0.0	4.2			0.0		26	35
<u>06</u>	32.8	16.0	24.4	0.0	6.4			0.0		21	35
<u>07</u>	30.1	14.2	22.1	0.0	4.1			0.0		22	31
<u>08</u>	28.5	20.8	24.7	0.0	6.7			0.9			
<u>09</u>	31.3	12.9	22.1	0.0	4.1			0.0			
<u>10</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>			<u>M</u>		<u>M</u>	<u>M</u>
<u>11</u>	24.0	14.6	19.3	0.0	1.3			0.2			
<u>12</u>	28.3	11.6	19.9	0.0	1.9			0.0			
<u>13</u>	28.9	11.2	20.0	0.0	2.0			0.0			
<u>14</u>	22.6	13.0	17.8	0.2	0.0			1.1			
<u>15</u>	24.1	11.2	17.7	0.3	0.0			2.6			
<u>16</u>	22.1	8.4	15.3	2.7	0.0			0.0		26	33
<u>17</u>	26.3	6.9	16.6	1.4	0.0			0.0			
<u>18</u>	22.8	10.8	16.8	1.2	0.0			7.4		21	40
<u>19</u>	28.1	12.5	20.3	0.0	2.3			0.0		25	33
<u>20</u>	28.3	11.5	19.9	0.0	1.9			0.0			
<u>21</u>	29.8	12.4	21.1	0.0	3.1			2.5		31	46
<u>22</u>	19.2	5.7	12.5	5.5	0.0			0.0		25	31
<u>23</u>	23.8	3.9	13.8	4.2	0.0			0.2			
<u>24</u>	27.3	10.0	18.7	0.0	0.7			0.0		13	37
<u>25</u>	23.9	18.0	21.0	0.0	3.0			10.9			
<u>26</u>	25.7	17.4	21.5	0.0	3.5			16.6		19	40
<u>27</u>	30.2	21.7	26.0	0.0	8.0			4.3		22	38
<u>28</u>	31.3	18.2	24.8	0.0	6.8			0.2			
<u>29</u>	28.0	18.1	23.0	0.0	5.0			33.7			
<u>30</u>	27.6	16.4	22.0	0.0	4.0			0.0		26	36
Sum				19.6 <u>^</u>	69.6 <u>^</u>			94.3 <u>^</u>			

<u>Home</u> > <u>Environment and natural resources</u> > <u>Weather, Climate and Hazard</u> > <u>Past weather and climate</u> > <u>Historical Data</u>

Daily Data Report for August 2021

#### PETERBOROUGH TRENT U ONTARIO Current <u>Station Operator</u>: <u>ECCC - MSC</u>

 Latitude:
 44°21'00.000" N
 Longitude:
 78°18'00.000" W
 Elevation:
 216.00 m

 Climate ID:
 6166456
 WMO ID:
 71672
 TC ID:
 TPQ

DAY	Max Temp °C ✓	Min Temp °C ~	Mean Temp °C ~	Heat Deg Days	Cool Deg Days	Total Rain mm	Total Snow cm	Total <u>Precip</u> mm	Snow on Grnd cm	Dir of Max Gust 10's deg	Spd of Max Gust km/h
<u>01</u>	18.2	12.8	15.5	2.5	0.0			0.0			
<u>02</u>	24.0	10.5	17.3	0.7	0.0			0.0			
<u>03</u>	26.5	8.8	17.6	0.4	0.0			0.0			
<u>04</u>	27.3	11.1	19.2	0.0	1.2			0.0			
<u>05</u>	28.3	10.6	19.4	0.0	1.4			0.2			
<u>06</u>	28.6	11.9	20.3	0.0	2.3			0.0			
<u>07</u>	27.8	16.4	22.1	0.0	4.1			0.0			
<u>08</u>	26.9	15.8	21.3	0.0	3.3			0.0			
<u>09</u>	30.2	17.4	23.8	0.0	5.8			0.0			
<u>10</u>	27.1	19.3	23.2	0.0	5.2			0.0			
<u>11</u>	31.6	18.7	25.2	0.0	7.2			0.0			
<u>12</u>	30.0	18.2	24.1	0.0	6.1			1.3			
<u>13</u>	29.9	15.8	22.8	0.0	4.8			6.4			
14	23.7	11.9	17.8	0.2	0.0			0.2		25	35
<u>15</u>	23.8	8.7	16.2	1.8	0.0			0.0			
<u>16</u>	25.2	8.5	16.9	1.1	0.0			0.0			
<u>17</u>	26.6	16.9	21.8	0.0	3.8			1.1			
<u>18</u>	27.8	18.3	23.1	0.0	5.1			0.0			
<u>19</u>	31.5	18.2	24.8	0.0	6.8			0.0			
<u>20</u>	31.3	18.3	24.8	0.0	6.8			0.0			
<u>21</u>	30.3	19.1	24.7	0.0	6.7			0.2			
22	31.4	19.0	25.2	0.0	7.2			0.0			
<u>23</u>	31.4	19.2	25.3	0.0	7.3			0.0			
<u>24</u>	31.6	16.0	23.8	0.0	5.8			0.2			
<u>25</u>	31.3	16.9	24.1	0.0	6.1			0.0			
<u>26</u>	32.6	19.1	25.9	0.0	7.9			0.0			
<u>27</u>	27.0	16.6	21.8	0.0	3.8			0.0		4	33
<u>28</u>	28.1	16.7	22.4	0.0	4.4			0.0			
<u>29</u>	29.0	19.8	24.4	0.0	6.4			9.7		21	35
<u>30</u>	28.5	17.6	23.1	0.0	5.1			1.3		25	34
<u>31</u>	25.7	13.9	19.8	0.0	1.8			0.0			
Sum				6.7	126.4			20.6			

<u>Home</u> > <u>Environment and natural resources</u> > <u>Weather, Climate and Hazard</u> > <u>Past weather and climate</u> > <u>Historical Data</u>

#### Daily Data Report for November 2021

#### PETERBOROUGH TRENT U ONTARIO Current <u>Station Operator</u>: <u>ECCC - MSC</u>

 Latitude:
 44°21′00.000″N
 Longitude:
 78°18′00.000″N
 Elevation:
 216.00 m

 Climate ID:
 6166456
 WMO ID:
 71672
 TC ID:
 TPQ

		0100		111110	<u> </u>	7107		101		4	
DAY	Max Temp °C ✓	Min Temp ≗C	Mean Temp °C	Heat Deg Days	Cool Deg Days	Total Rain mm	Total Snow cm	Total Precip mm	Snow on Grnd cm	Dir of Max Gust 10's deg	Spd of Max Gust km/h
<u>01</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>			<u>M</u>		<u>M</u>	<u>M</u>
<u>02</u>	8.1	-2.2	3.0	15.0	0.0			0.7		<u></u>	<u></u>
<u>03</u>	7.4	-5.1	1.2	16.8	0.0			0.0			
<u>04</u>	5.8	-5.6	0.1	17.9	0.0			0.0			
<u>05</u>	8.8	-6.0	1.4	16.6	0.0			0.2	2		
<u>06</u>	10.9	-5.3	2.8	15.2	0.0			0.0			
<u>07</u>	16.1	-3.6	6.3	11.7	0.0			0.0			
08	16.5	-1.9	7.3	10.7	0.0			0.0			
09	13.4	2.5	8.0	10.0	0.0			0.0	1		
<u>10</u>	12.6	-2.5	5.1	12.9	0.0			0.0			
<u>11</u>	10.9	-3.1	3.9	14.1	0.0			0.0		7	35
<u>12</u>	12.4	1.7	7.1	10.9	0.0			8.5		21	33
<u> 13</u>	7.4	1.4	4.4	13.6	0.0			0.8	0	22	34
<u>14</u>	5.0	0.1	2.5	15.5	0.0			8.5			
<u>15</u>	4.4	-3.0	0.7	17.3	0.0			1.1	1		
<u>16</u>	4.6	-4.1	0.2	17.8	0.0			0.2			
<u>17</u>	14.9	-4.0	5.5	12.5	0.0			5.3		23	35
<u>18</u>	14.8	0.6	7.7	10.3	0.0			0.5	1	25	39
<u>19</u>	4.1	-6.0	-1.0	19.0	0.0			2.9	3		
<u>20</u>	4.8	-5.9	-0.5	18.5	0.0			0.7			
<u>21</u>	8.4	-1.8	3.3	14.7	0.0			4.6		25	40
<u>22</u>	4.9	-7.0	-1.1	19.1	0.0			5.5		24	37
<u>23</u>	0.0	-12.3	-6.1	24.1	0.0			0.0			
<u>24</u>	5.9	-11.2	-2.6	20.6	0.0			0.0	1		
<u>25</u>	5.6	2.8	4.2	13.8	0.0			2.8	0		
<u> 26</u>	3.7	-6.5	-1.4	19.4	0.0			0.2		30	37
<u>27</u>	-0.1	-7.9	-4.0	22.0	0.0			0.2			
<u>28</u>	-3.0	-10.3	-6.6	24.6	0.0			3.9			
<u>29</u>	-2.0	-14.0	-8.0	26.0	0.0			0.2	0		
<u>30</u>	1.3	-5.7	-2.2	20.2	0.0			2.6	0		
Sum				480.8 <u>^</u>	0.0^			49.4 <u>^</u>			



Appendix E Laboratory Certificates of Analysis

Fully accessible appended items are available upon request.



# **CERTIFICATE OF ANALYSIS**

Final Report

C.O.C.: G098358 REPORT No. B21-20225 (i)

Report To:

**Cambium Environmental** 

194 Sophia St.,

Peterborough ON K9H 1E5 Canada

Attention: Cameron MacDougall

DATE RECEIVED: 30-Jun-21

DATE REPORTED: 13-Jul-21

SAMPLE MATRIX: Groundwater

**Caduceon Environmental Laboratories** 

285 Dalton Ave

Kingston Ontario K7K 6Z1

Tel: 613-544-2001 Fax: 613-544-2770

JOB/PROJECT NO.: Stoney Lake WDS

P.O. NUMBER: 12987-004

WATERWORKS NO.

			Client I.D.		TW8-1	TW2-2	GW_QAQC1	TW2-1
			Sample I.D.		B21-20225-1	B21-20225-2	B21-20225-3	B21-20225-4
			Date Collecte	d	28-Jun-21	28-Jun-21	28-Jun-21	28-Jun-21
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed				
Alkalinity(CaCO3) to pH4.5	mg/L	5	SM 2320B	05-Jul-21/O	225	416	420	227
Conductivity @25°C	µmho/cm	1	SM 2510B	05-Jul-21/O	469	857	861	484
pH @25°C	pH Units		SM 4500H	05-Jul-21/O	7.85	7.65	7.62	7.82
Total Dissolved Solids	mg/L	3	SM 2540D	07-Jul-21/O	242	453	455	250
Total Suspended Solids	mg/L	3	SM2540D	06-Jul-21/K		109	96	
Dissolved Organic Carbon	mg/L	0.2	EPA 415.2	05-Jul-21/O	2.6			2.8
BOD(5 day)	mg/L	3	SM 5210B	02-Jul-21/K		< 3	< 3	
COD	mg/L	5	SM5220C	02-Jul-21/K	< 5	25	32	11
Phenolics	mg/L	0.002	MOEE 3179	06-Jul-21/K	< 0.002	< 0.002	< 0.002	< 0.002
Chloride	mg/L	0.5	SM4110C	06-Jul-21/O	4.3	4.8	4.8	5.2
Ammonia (N)-Total	mg/L	0.01	SM4500- NH3-H	05-Jul-21/K	< 0.01	0.03	0.03	0.01
Sulphate	mg/L	1	SM4110C	06-Jul-21/O	6	36	36	6
Nitrite (N)	mg/L	0.05	SM4110C	06-Jul-21/O	< 0.05	< 0.05	< 0.05	
Nitrate (N)	mg/L	0.05	SM4110C	06-Jul-21/O	1.37	0.12	0.12	1.47
Mercury	mg/L	0.00002	SM 3112 B	06-Jul-21/O	< 0.00002	< 0.00002	< 0.00002	
Total Kjeldahl Nitrogen	mg/L	0.1	E3199A.1	08-Jul-21/K	0.3	0.7	1.4	
Hardness (as CaCO3)	mg/L	1	SM 3120	06-Jul-21/O	256	450	442	267
Arsenic	mg/L	0.0001	EPA 200.8	06-Jul-21/O	< 0.0001	0.0002	0.0002	
Barium	mg/L	0.001	SM 3120	06-Jul-21/O	0.032	0.056	0.055	0.021
Boron	mg/L	0.005	SM 3120	06-Jul-21/O	0.009	0.033	0.033	0.007
Cadmium	mg/L	0.000015	EPA 200.8	06-Jul-21/O	< 0.000015	< 0.000015	< 0.000015	
Calcium	mg/L	0.02	SM 3120	06-Jul-21/O	98.3			103
Chromium	mg/L	0.001	EPA 200.8	06-Jul-21/O	< 0.001	< 0.001	< 0.001	
Copper	mg/L	0.0001	EPA 200.8	06-Jul-21/O	0.0006	0.0019	0.0021	
Iron	mg/L	0.005	SM 3120	06-Jul-21/O	0.014	1.74	1.71	0.008
Lead	mg/L	0.00002	EPA 200.8	06-Jul-21/O	0.00004	0.00008	0.00008	1
Magnesium	mg/L	0.02	SM 3120	06-Jul-21/O	2.56			2.21

M. Duci

R.L. = Reporting Limit

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

Michelle Dubien Lab Manager



# **CERTIFICATE OF ANALYSIS**

**Final Report** 

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Report To:

**Cambium Environmental** 

194 Sophia St.,

Peterborough ON K9H 1E5 Canada Attention: Cameron MacDougall

DATE RECEIVED: 30-Jun-21

DATE REPORTED: 13-Jul-21

SAMPLE MATRIX: Groundwater

**Caduceon Environmental Laboratories** 

285 Dalton Ave

Kingston Ontario K7K 6Z1

Tel: 613-544-2001 Fax: 613-544-2770

JOB/PROJECT NO.: Stoney Lake WDS

P.O. NUMBER:

12987-004

WATERWORKS NO.

		- 1	Client I.D.		TW8-1 B21-20225-1	TW2-2 B21-20225-2	GW_QAQC1 B21-20225-3	TW2-1 B21-20225-4
			Sample I.D.	-				
			Date Collected		28-Jun-21	28-Jun-21	28-Jun-21	28-Jun-21
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed				
Manganese	mg/L	0.001	SM 3120	06-Jul-21/O	0.001			
Phosphorus-Total	mg/L	0.01	E3199A.1	08-Jul-21/K	0.12	0.14	0.14	
Potassium	mg/L	0.1	SM 3120	06-Jul-21/O	0.6			
Sodium	mg/L	0.2	SM 3120	06-Jul-21/O	2.5			2.3
Zinc	mg/L	0.005	SM 3120	06-Jul-21/O	< 0.005	< 0.005	< 0.005	

M.Duri



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285 Dalton Ave

Kingston Ontario K7K 6Z1

Tel: 613-544-2001 Fax: 613-544-2770

JOB/PROJECT NO.: Stoney Lake WDS

P.O. NUMBER: 12987-004

WATERWORKS NO.

		1	Client I.D.		TW3-1	TW11-2	TW4-1	GW_QAQC2
		44.1	Sample I.D.		B21-20225-5	B21-20225-6	B21-20225-7	B21-20225-8
			Date Collecte	ed	28-Jun-21	28-Jun-21	28-Jun-21	28-Jun-21
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed				
Alkalinity(CaCO3) to pH4.5	mg/L	5	SM 2320B	05-Jul-21/O	435	776	241	244
Conductivity @25°C	µmho/cm	1	SM 2510B	05-Jul-21/O	954	1940	520	527
pH @25°C	pH Units		SM 4500H	05-Jul-21/O	7.39	7.06	7.75	7.75
Total Dissolved Solids	mg/L	3	SM 2540D	07-Jul-21/O	508	1070	269	273
Total Suspended Solids	mg/L	3	SM2540D	06-Jul-21/K		2550		
Dissolved Organic Carbon	mg/L	0.2	EPA 415.2	05-Jul-21/O	17.8		3.4	3.1
BOD(5 day)	mg/L	3	SM 5210B	02-Jul-21/K		17		
COD	mg/L	5	SM5220C	02-Jul-21/K	2640	128	< 5	< 5
Phenolics	mg/L	0.002	MOEE 3179	06-Jul-21/K	< 0.002	< 0.002	< 0.002	< 0.002
Chloride	mg/L	0.5	SM4110C	06-Jul-21/O	14.7	106	6.2	6.4
Ammonia (N)-Total	mg/L	0.01	SM4500- NH3-H	05-Jul-21/K	21.3	44.5	0.02	0.03
Sulphate	mg/L	1	SM4110C	06-Jul-21/O	26	102	9	10
Nitrite (N)	mg/L	0.05	SM4110C	06-Jul-21/O		< 0.05		
Nitrate (N)	mg/L	0.05	SM4110C	06-Jul-21/O	0.15	0.12	1.74	1.62
Mercury	mg/L	0.00002	SM 3112 B	06-Jul-21/O		< 0.00002		
Total Kjeldahl Nitrogen	mg/L	0.1	E3199A.1	08-Jul-21/K		47.1		
Hardness (as CaCO3)	mg/L	1	SM 3120	06-Jul-21/O	348	772	286	304
Arsenic	mg/L	0.0001	EPA 200.8	06-Jul-21/O	-	0.0010		
Barium	mg/L	0.001	SM 3120	06-Jul-21/O	0.223	0.574	0.022	0.023
Boron	mg/L	0.005	SM 3120	06-Jul-21/O	0.222	0.616	0.013	0.012
Cadmium	mg/L	0.000015	EPA 200.8	06-Jul-21/O		< 0.000029		1
Calcium	mg/L	0.02	SM 3120	06-Jul-21/O	122		111	118
Chromium	mg/L	0.001	EPA 200.8	06-Jul-21/O		0.043		
Copper	mg/L	0.0001	EPA 200.8	06-Jul-21/O		0.0007		
Iron	mg/L	0.005	SM 3120	06-Jul-21/O	9.45	34.4	0.012	< 0.005
Lead	mg/L	0.00002	EPA 200.8	06-Jul-21/O		0.00017		
Magnesium	mg/L	0.02	SM 3120	06-Jul-21/O	10.5	100	2,16	2.22

M. Duci

R.L. = Reporting Limit

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

Michelle Dubien Lab Manager

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



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285 Dalton Ave

Kingston Ontario K7K 6Z1

Tel: 613-544-2001 Fax: 613-544-2770

JOB/PROJECT NO.: Stoney Lake WDS

P.O. NUMBER: 12987-004

WATERWORKS NO.

			Client I.D.		TW3-1	TW11-2	TW4-1	GW_QAQC2
			Sample I.D.	-	B21-20225-5	B21-20225-6	B21-20225-7	B21-20225-8
			Date Collect	ed	28-Jun-21	28-Jun-21	28-Jun-21	28-Jun-21
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed				
Manganese	mg/L	0.001	SM 3120	06-Jul-21/O				
Phosphorus-Total	mg/L	0.01	E3199A.1	08-Jul-21/K		1.43		
Potassium	mg/L	0.1	SM 3120	06-Jul-21/O				
Sodium	mg/L	0.2	SM 3120	06-Jul-21/O	17.7		3.7	3.7
Zinc	mg/L	0.005	SM 3120	06-Jul-21/O		< 0.005		



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Tel: 613-544-2001 Fax: 613-544-2770

JOB/PROJECT NO.: Stoney Lake WDS

P.O. NUMBER: 12987-004

WATERWORKS NO.

		- 1	Client I.D.		TW10-2	TW6-1	TW6-2	TW7-1	
			Sample I.D.		B21-20225-9	B21-20225- 10	B21-20225- 11	B21-20225-12	
			Date Collecte	ed	28-Jun-21	28-Jun-21	28-Jun-21	28-Jun-21	
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed					
Alkalinity(CaCO3) to pH4.5	mg/L	5	SM 2320B	05-Jul-21/O	563	352	419	222	
Conductivity @25°C	µmho/cm	1	SM 2510B	05-Jul-21/O	1150	950	1080	510	
pH @25°C	pH Units		SM 4500H	05-Jul-21/O	7.34	7.52	7.72	7.89	
Total Dissolved Solids	mg/L	3	SM 2540D	07-Jul-21/O	620	505	577	264	
Total Suspended Solids	mg/L	3	SM2540D	06-Jul-21/K	1280		24		
Dissolved Organic Carbon	mg/L	0.2	EPA 415.2	05-Jul-21/O		5.9		3.5	
BOD(5 day)	mg/L	3	SM 5210B	02-Jul-21/K	12		3		
COD	mg/L	5	SM5220C	02-Jul-21/K	85	11	9	< 5	
Phenolics	mg/L	0.002	MOEE 3179	06-Jul-21/K	< 0.002	< 0.002	< 0.002	< 0.002	
Chloride	mg/L	0.5	SM4110C	06-Jul-21/O	21.0	38.4	36.4	14.1	
Ammonia (N)-Total	mg/L	0.01	SM4500- NH3-H	05-Jul-21/K	20.9	1.07	0.16	0.02	
Sulphate	mg/L	1	SM4110C	06-Jul-21/O	7	90	106	18	
Nitrite (N)	mg/L	0.05	SM4110C	06-Jul-21/O	< 0.05	0.19	< 0.05	< 0.05	
Nitrate (N)	mg/L	0.05	SM4110C	06-Jul-21/O	0.52	1.03	1.94	0.13	
Mercury	mg/L	0.00002	SM 3112 B	06-Jul-21/O	< 0.00002	< 0.00002	< 0.00002	< 0.00002	
Total Kjeldahl Nitrogen	mg/L	0.1	E3199A.1	08-Jul-21/K	26.0	1.4	0.6	0.2	
Hardness (as CaCO3)	mg/L	1	SM 3120	06-Jul-21/O	525	486	582	267	
Arsenic	mg/L	0.0001	EPA 200.8	06-Jul-21/O	0.0009	< 0.0001	0.0002	0.0002	
Barium	mg/L	0.001	SM 3120	06-Jul-21/O	0.344	0.296	0.237	0.189	
Boron	mg/L	0.005	SM 3120	06-Jul-21/O	0.387	0.110	0.193	0.025	
Cadmium	mg/L	0.000015	EPA 200.8	06-Jul-21/O	0.000031	0.000019	0.000017	< 0.000015	
Calcium	mg/L	0.02	SM 3120	06-Jul-21/O		178		98.5	
Chromium	mg/L	0.001	EPA 200.8	06-Jul-21/O	0.001	< 0.001	< 0.001	< 0.001	
Copper	mg/L	0.0001	EPA 200.8	06-Jul-21/O	0.0003	0.0019	0.0026	0.0004	
Iron	mg/L	0.005	SM 3120	06-Jul-21/O	30.5	0.017	0.017	0.317	
Lead	mg/L	0.00002	EPA 200.8	06-Jul-21/O	0.00007	0.00005	0.00006	0.00004	

M. Duci

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Michelle Dubien Lab Manager



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JOB/PROJECT NO.: Stoney Lake WDS

P.O. NUMBER: 12987-004

WATERWORKS NO.

			Client I.D.		TW10-2	TW6-1	TW6-2	TW7-1		
			Sample I.D.		B21-20225-9	0225-9 B21-20225- B21-20225- B21-20				
			Date Collect	ed	28-Jun-21	28-Jun-21	28-Jun-21	28-Jun-21		
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed						
Magnesium	mg/L	0.02	SM 3120	06-Jul-21/O		9.90		4.93		
Manganese	mg/L	0.001	SM 3120	06-Jul-21/O	1	1.19		0.011		
Phosphorus-Total	mg/L	0.01	E3199A.1	08-Jul-21/K	0.81	0.09	0.03	0.02		
Potassium	mg/L	0.1	SM 3120	06-Jul-21/O		5.0		1.1		
Sodium	mg/L	0.2	SM 3120	06-Jul-21/O		24.8		9.0		
Zinc	mg/L	0.005	SM 3120	06-Jul-21/O	0.006	< 0.005	< 0.005	< 0.005		



**Final Report** 

C.O.C.: G098358 REPORT No. B21-20225 (i)

Report To:

**Cambium Environmental** 

194 Sophia St.,

Peterborough ON K9H 1E5 Canada Attention: Cameron MacDougall

DATE RECEIVED: 30-Jun-21

DATE REPORTED: 13-Jul-21

SAMPLE MATRIX: Groundwater

**Caduceon Environmental Laboratories** 

285 Dalton Ave

Kingston Ontario K7K 6Z1

Tel: 613-544-2001

Fax: 613-544-2770

JOB/PROJECT NO.: Stoney Lake WDS

P.O. NUMBER: 12987-004

WATERWORKS NO.

		- 1	Client I.D.		TW7-2	TW5-1	TW5-2	TW9-1
			Sample I.D.		B21-20225- 13	B21-20225- 14	B21-20225- 15	B21-20225-16
			Date Collecte	d	28-Jun-21	28-Jun-21	28-Jun-21	28-Jun-21
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed		A		
Alkalinity(CaCO3) to pH4.5	mg/L	5	SM 2320B	05-Jul-21/O	307	450	379	229
Conductivity @25°C	µmho/cm	1	SM 2510B	05-Jul-21/O	17100	2750	3610	533
pH @25°C	pH Units		SM 4500H	05-Jul-21/O	7.59	7.36	7.65	7.83
Total Dissolved Solids	mg/L	3	SM 2540D	07-Jul-21/O	939	1530	2020	276
Total Suspended Solids	mg/L	3	SM2540D	06-Jul-21/K	134		46	
Dissolved Organic Carbon	mg/L	0.2	EPA 415.2	05-Jul-21/O	+	8.6		4.4
BOD(5 day)	mg/L	3	SM 5210B	02-Jul-21/K	< 3		< 3	1 1 1 2 2
COD	mg/L	5	SM5220C	02-Jul-21/K	14	39	29	< 5
Phenolics	mg/L	0.002	MOEE 3179	06-Jul-21/K	< 0.002	< 0.002	< 0.002	< 0.002
Chloride	mg/L	0.5	SM4110C	06-Jul-21/O	176	158	120	15.1
Ammonia (N)-Total	mg/L	0.01	SM4500- NH3-H	05-Jul-21/K	0.14	1.29	0.02	0.03
Sulphate	mg/L	1	SM4110C	06-Jul-21/O	362	973	1680	19
Nitrite (N)	mg/L	0.05	SM4110C	06-Jul-21/O	< 0.05		< 0.5	< 0.05
Nitrate (N)	mg/L	0.05	SM4110C	06-Jul-21/O	0.06	1.00	7.20	< 0.05
Mercury	mg/L	0.00002	SM 3112 B	06-Jul-21/O	< 0.00002		< 0.00002	< 0.00002
Total Kjeldahl Nitrogen	mg/L	0.1	E3199A.1	08-Jul-21/K	0.5		1.0	0.2
Hardness (as CaCO3)	mg/L	1	SM 3120	06-Jul-21/O	760	1540	2270	283
Arsenic	mg/L	0.0001	EPA 200.8	06-Jul-21/O	< 0.003	-	0.0003	< 0.0001
Barium	mg/L	0.001	SM 3120	06-Jul-21/O	0.105	0.028	0.028	0.116
Boron	mg/L	0.005	SM 3120	06-Jul-21/O	1.50	4.60	10.2	0.024
Cadmium	mg/L	0.000015	EPA 200.8	06-Jul-21/O	< 0.00030		< 0.000029	< 0.000015
Calcium	mg/L	0.02	SM 3120	06-Jul-21/O		444		105
Chromium	mg/L	0.001	EPA 200.8	06-Jul-21/O	< 0.003		< 0.001	< 0.001
Copper	mg/L	0.0001	EPA 200.8	06-Jul-21/O	< 0.002		0.0097	0.0003
Iron	mg/L	0.005	SM 3120	06-Jul-21/O	6.41	7.46	0.206	0.010
Lead	mg/L	0.00002	EPA 200.8	06-Jul-21/O	< 0.0009		0.00023	0.00003

M. Duci

R.L. = Reporting Limit

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

Michelle Dubien Lab Manager



**Final Report** 

C.O.C.: G098358 REPORT No. B21-20225 (i)

Report To:

**Cambium Environmental** 

194 Sophia St.,

Peterborough ON K9H 1E5 Canada

Attention: Cameron MacDougall

DATE RECEIVED: 30-Jun-21

DATE REPORTED: 13-Jul-21

SAMPLE MATRIX: Groundwater

**Caduceon Environmental Laboratories** 

285 Dalton Ave

Kingston Ontario K7K 6Z1

Tel: 613-544-2001 Fax: 613-544-2770

JOB/PROJECT NO.: Stoney Lake WDS

P.O. NUMBER: 12987-004

WATERWORKS NO.

			Client I.D.		TW7-2	TW5-1	TW5-2	TW9-1
			Sample I.D.		B21-20225- 13	B21-20225- 14	B21-20225- 15	B21-20225-16
			Date Collecte	ed	28-Jun-21	28-Jun-21	28-Jun-21	28-Jun-21
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed				
Magnesium	mg/L	0.02	SM 3120	06-Jul-21/O		105		5.01
Manganese	mg/L	0.001	SM 3120	06-Jul-21/O				0.011
Phosphorus-Total	mg/L	0.01	E3199A.1	08-Jul-21/K	0.17		0.05	< 0.01
Potassium	mg/L	0.1	SM 3120	06-Jul-21/O				1.0
Sodium	mg/L	0.2	SM 3120	06-Jul-21/O		143		7.3
Zinc	mg/L	0.005	SM 3120	06-Jul-21/O	< 0.005		< 0.01	< 0.005

M.Duci



**Final Report** 

C.O.C.: G098358 REPORT No. B21-20225 (i)

Report To:

**Cambium Environmental** 

194 Sophia St.,

Peterborough ON K9H 1E5 Canada Attention: Cameron MacDougall

DATE RECEIVED: 30-Jun-21

DATE REPORTED: 13-Jul-21

SAMPLE MATRIX: Groundwater

Caduceon Environmental Laboratories

285 Dalton Ave

Kingston Ontario K7K 6Z1

Tel: 613-544-2001 Fax: 613-544-2770

JOB/PROJECT NO.: Stoney Lake WDS

P.O. NUMBER: 12987-004

WATERWORKS NO.

		9.1	Client I.D.		TW9-2		
			Sample I.D.		B21-20225- 17		
			Date Collecte	d	28-Jun-21		
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed			
Alkalinity(CaCO3) to pH4.5	mg/L	5	SM 2320B	05-Jul-21/O	228		
Conductivity @25°C	µmho/cm	1	SM 2510B	05-Jul-21/O	493		
pH @25°C	pH Units		SM 4500H	05-Jul-21/O	7.83		
Total Dissolved Solids	mg/L	3	SM 2540D	07-Jul-21/O	255		
Total Suspended Solids	mg/L	3	SM2540D	06-Jul-21/K	2000		
Dissolved Organic Carbon	mg/L	0.2	EPA 415.2	05-Jul-21/O			
BOD(5 day)	mg/L	3	SM 5210B	02-Jul-21/K	4		
COD	mg/L	5	SM5220C	02-Jul-21/K	69		
Phenolics	mg/L	0.002	MOEE 3179	06-Jul-21/K	< 0.002		
Chloride	mg/L	0.5	SM4110C	06-Jul-21/O	4.5		
Ammonia (N)-Total	mg/L	0.01	SM4500- NH3-H	05-Jul-21/K	0.22		
Sulphate	mg/L	1	SM4110C	06-Jul-21/O	16		
Nitrite (N)	mg/L	0.05	SM4110C	06-Jul-21/O	< 0.05		
Nitrate (N)	mg/L	0.05	SM4110C	06-Jul-21/O	0.38		
Mercury	mg/L	0.00002	SM 3112 B	06-Jul-21/O	< 0.00002		
Total Kjeldahl Nitrogen	mg/L	0.1	E3199A.1	08-Jul-21/K	1.6		
Hardness (as CaCO3)	mg/L	1	SM 3120	06-Jul-21/O	282		
Arsenic	mg/L	0.0001	EPA 200.8	06-Jul-21/O	< 0.0001		
Barium	mg/L	0.001	SM 3120	06-Jul-21/O	0.276		
Boron	mg/L	0.005	SM 3120	06-Jul-21/O	0.014		
Cadmium	mg/L	0.000015	EPA 200.8	06-Jul-21/O	< 0.000015		
Calcium	mg/L	0.02	SM 3120	06-Jul-21/O			
Chromium	mg/L	0.001	EPA 200.8	06-Jul-21/O	0.002		
Copper	mg/L	0.0001	EPA 200.8	06-Jul-21/O	0.0002		
Iron	mg/L	0.005	SM 3120	06-Jul-21/O	0.218		
Lead	mg/L	0.00002	EPA 200.8	06-Jul-21/O	0.00008		

R.L. = Reporting Limit

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

Michelle Dubien Lab Manager



**Final Report** 

C.O.C.: G098358 REPORT No. B21-20225 (i)

Report To:

**Cambium Environmental** 

194 Sophia St.,

Peterborough ON K9H 1E5 Canada Attention: Cameron MacDougall

DATE RECEIVED: 30-Jun-21

DATE REPORTED: 13-Jul-21

SAMPLE MATRIX: Groundwater

**Caduceon Environmental Laboratories** 

285 Dalton Ave

Kingston Ontario K7K 6Z1

Tel: 613-544-2001 Fax: 613-544-2770

JOB/PROJECT NO.: Stoney Lake WDS

P.O. NUMBER: 12987-004

WATERWORKS NO.

		9 1	Client I.D.		TW9-2		
			Sample I.D.		B21-20225- 17		
			Date Collect	ed	28-Jun-21		
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed			
Magnesium	mg/L	0.02	SM 3120	06-Jul-21/O	1		
Manganese	mg/L	0.001	SM 3120	06-Jul-21/O			
Phosphorus-Total	mg/L	0.01	E3199A.1	08-Jul-21/K	0.68		
Potassium	mg/L	0.1	SM 3120	06-Jul-21/O			
Sodium	mg/L	0.2	SM 3120	06-Jul-21/O			
Zinc	mg/L	0.005	SM 3120	06-Jul-21/O	< 0.005		



**Final Report** 

C.O.C.: G098358 REPORT No. B21-20225 (ii)

Report To:

**Cambium Environmental** 

194 Sophia St.,

Peterborough ON K9H 1E5 Canada

Attention: Cameron MacDougall

DATE RECEIVED: 30-Jun-21

DATE REPORTED: 13-Jul-21

SAMPLE MATRIX: Groundwater

Caduceon Environmental Laboratories

285 Dalton Ave

Kingston Ontario K7K 6Z1

Tel: 613-544-2001 Fax: 613-544-2770

ax. 613-544-2770

JOB/PROJECT NO.: Stoney Lake WDS

P.O. NUMBER:

12987-004

WATERWORKS NO.

			Client I.D.		TW8-1	TW2-2	GW_QAQC1	TW6-1
			Sample I.D.	Ç	B21-20225-1	B21-20225-2	B21-20225-3	B21-20225-10
			Date Collecte	ed	28-Jun-21	28-Jun-21	28-Jun-21	28-Jun-21
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed				
Benzene	µg/L	0.5	EPA 8260	02-Jul-21/R	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	μg/L	2	EPA 8260	02-Jul-21/R		< 2	< 2	
Bromoform	μg/L	5	EPA 8260	02-Jul-21/R		< 5	< 5	1
Bromomethane	µg/L	0.5	EPA 8260	02-Jul-21/R		< 0.5	< 0.5	
Carbon Tetrachloride	µg/L	0.2	EPA 8260	02-Jul-21/R		< 0.2	< 0.2	
Chloroethane	µg/L	3	EPA 8260	02-Jul-21/R		< 3	< 3	
Chloroform	µg/L	1	EPA 8260	02-Jul-21/R		< 1	< 1	
Chloromethane	µg/L	2	EPA 8260	02-Jul-21/R		< 2	< 2	
Dibromochloromethane	µg/L	2	EPA 8260	02-Jul-21/R		< 2	< 2	
Dibromoethane,1,2- (Ethylene Dibromide)	µg/L	0.2	EPA 8260	02-Jul-21/R		< 0.2	< 0.2	
Dichlorobenzene,1,2-	µg/L	0.5	EPA 8260	02-Jul-21/R		< 0.5	< 0.5	
Dichlorobenzene,1,3-	µg/L	0.5	EPA 8260	02-Jul-21/R		< 0.5	< 0.5	
Dichlorobenzene,1,4-	µg/L	0.5	EPA 8260	02-Jul-21/R	< 0.5	< 0.5	< 0.5	< 0.5
Dichloroethane,1,1-	µg/L	0.5	EPA 8260	02-Jul-21/R		< 0.5	< 0.5	
Dichloroethane,1,2-	μg/L	0.5	EPA 8260	02-Jul-21/R		< 0.5	< 0.5	
Dichloroethylene,1,1-	µg/L	0.5	EPA 8260	02-Jul-21/R		< 0.5	< 0.5	
Dichloroethene, cis-1,2-	μg/L	0.5	EPA 8260	02-Jul-21/R		< 0.5	< 0.5	
Dichloroethene, trans-1,2-	μg/L	0.5	EPA 8260	02-Jul-21/R	-	< 0.5	< 0.5	
Dichloromethane (Methylene Chloride)	μg/L	5	EPA 8260	02-Jul-21/R	< 5	< 5	< 5	< 5
Dichloropropane,1,2-	μg/L	0.5	EPA 8260	02-Jul-21/R		< 0.5	< 0.5	
Dichloropropene 1,3- cis+trans	µg/L	0.5	EPA 8260	02-Jul-21/R		< 0.5	< 0.5	
Dichloropropene, trans-1,3-	μg/L	0.5	EPA 8260	02-Jul-21/R		< 0.5	< 0.5	
Dichloropropene, cis-1,3-	µg/L	0.5	EPA 8260	02-Jul-21/R		< 0.5	< 0.5	
Monochlorobenzene (Chlorobenzene)	μg/L	0.5	EPA 8260	02-Jul-21/R		< 0.5	< 0.5	

M.Duri

R.L. = Reporting Limit

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

Michelle Dubien Lab Manager



**Final Report** 

C.O.C.: G098358 REPORT No. B21-20225 (ii)

Report To:

**Cambium Environmental** 

194 Sophia St.,

Peterborough ON K9H 1E5 Canada Attention: Cameron MacDougall

DATE RECEIVED: 30-Jun-21

DATE REPORTED: 13-Jul-21

SAMPLE MATRIX: Groundwater

Caduceon Environmental Laboratories

285 Dalton Ave

Kingston Ontario K7K 6Z1

Tel: 613-544-2001 Fax: 613-544-2770

JOB/PROJECT NO.: Stoney Lake WDS

P.O. NUMBER:

12987-004

WATERWORKS NO.

			Client I.D.		TW8-1	TW2-2	GW_QAQC1	TW6-1
			Sample I.D.		B21-20225-1	B21-20225-2	B21-20225-3	B21-20225-10
			Date Collect	ed	28-Jun-21 28-Jun-21 28		28-Jun-21	28-Jun-21
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed				
Styrene	μg/L	0.5	EPA 8260	02-Jul-21/R		< 0.5	< 0.5	
Tetrachloroethane,1,1,2,2-	μg/L	0.5	EPA 8260	02-Jul-21/R		< 0.5	< 0.5	
Tetrachloroethylene	μg/L	0.5	EPA 8260	02-Jul-21/R		< 0.5	< 0.5	
Toluene	μg/L	0.5	EPA 8260	02-Jul-21/R	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethane,1,1,1-	µg/L	0.5	EPA 8260	02-Jul-21/R		< 0.5	< 0.5	
Trichloroethane,1,1,2-	μg/L	0.5	EPA 8260	02-Jul-21/R		< 0.5	< 0.5	
Trichloroethylene	µg/L	0.5	EPA 8260	02-Jul-21/R		< 0.5	< 0.5	
Trichlorofluoromethane	μg/L	5	EPA 8260	02-Jul-21/R		< 5	< 5	
Vinyl Chloride	μg/L	0.2	EPA 8260	02-Jul-21/R	< 0.2	< 0.2	< 0.2	< 0.2

M.Duci

Page 2 of 4.



**Final Report** 

C.O.C.: G098358 REPORT No. B21-20225 (ii)

Report To:

**Cambium Environmental** 

194 Sophia St.,

Peterborough ON K9H 1E5 Canada

Attention: Cameron MacDougall

DATE RECEIVED: 30-Jun-21

DATE REPORTED: 13-Jul-21

SAMPLE MATRIX: Groundwater

Caduceon Environmental Laboratories

285 Dalton Ave

Kingston Ontario K7K 6Z1

Tel: 613-544-2001 Fax: 613-544-2770

JOB/PROJECT NO.: Stoney Lake WDS

P.O. NUMBER: 12987-004

WATERWORKS NO.

			Client I.D.		TW6-2	TW7-1	TW9-1	
			Sample I.D.		B21-20225- 11	B21-20225- 12	B21-20225- 16	
			Date Collect	ed	28-Jun-21	28-Jun-21	28-Jun-21	
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed				
Benzene	µg/L	0.5	EPA 8260	02-Jul-21/R	< 0.5	< 0.5	< 0.5	
Bromodichloromethane	μg/L	2	EPA 8260	02-Jul-21/R	< 2			
Bromoform	µg/L	5	EPA 8260	02-Jul-21/R	< 5			
Bromomethane	μg/L	0.5	EPA 8260	02-Jul-21/R	< 0.5			
Carbon Tetrachloride	μg/L	0.2	EPA 8260	02-Jul-21/R	< 0.2			
Chloroethane	μg/L	3	EPA 8260	02-Jul-21/R	< 3			
Chloroform	μg/L	1	EPA 8260	02-Jul-21/R	< 1			
Chloromethane	μg/L	2	EPA 8260	02-Jul-21/R	< 2			
Dibromochloromethane	µg/L	2	EPA 8260	02-Jul-21/R	< 2			
Dibromoethane,1,2- (Ethylene Dibromide)	μg/L	0.2	EPA 8260	02-Jul-21/R	< 0.2			
Dichlorobenzene,1,2-	μg/L	0.5	EPA 8260	02-Jul-21/R	< 0.5			
Dichlorobenzene,1,3-	μg/L	0.5	EPA 8260	02-Jul-21/R	< 0.5			
Dichlorobenzene,1,4-	μg/L	0.5	EPA 8260	02-Jul-21/R	< 0.5	< 0.5	< 0.5	
Dichloroethane,1,1-	µg/L	0.5	EPA 8260	02-Jul-21/R	< 0.5			
Dichloroethane,1,2-	µg/L	0.5	EPA 8260	02-Jul-21/R	< 0.5			
Dichloroethylene,1,1-	µg/L	0.5	EPA 8260	02-Jul-21/R	< 0.5			
Dichloroethene, cis-1,2-	μg/L	0.5	EPA 8260	02-Jul-21/R	< 0.5			
Dichloroethene, trans-1,2-	μg/L	0.5	EPA 8260	02-Jul-21/R	< 0.5	-		
Dichloromethane (Methylene Chloride)	μg/L	5	EPA 8260	02-Jul-21/R	< 5	< 5	< 5	
Dichloropropane,1,2-	μg/L	0.5	EPA 8260	02-Jul-21/R	< 0.5			
Dichloropropene 1,3- cis+trans	µg/L	0.5	EPA 8260	02-Jul-21/R	< 0.5			
Dichloropropene, trans-1,3-	µg/L	0.5	EPA 8260	02-Jul-21/R	< 0.5			
Dichloropropene, cis-1,3-	μg/L	0.5	EPA 8260	02-Jul-21/R	< 0.5			

M.Duri

R.L. = Reporting Limit

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

Michelle Dubien Lab Manager



**Final Report** 

C.O.C.: G098358 REPORT No. B21-20225 (ii)

Report To:

**Cambium Environmental** 

194 Sophia St.,

Peterborough ON K9H 1E5 Canada Attention: Cameron MacDougall

DATE RECEIVED: 30-Jun-21

DATE REPORTED: 13-Jul-21

SAMPLE MATRIX: Groundwater

**Caduceon Environmental Laboratories** 

285 Dalton Ave

Kingston Ontario K7K 6Z1

Tel: 613-544-2001 Fax: 613-544-2770

JOB/PROJECT NO.: Stoney Lake WDS

P.O. NUMBER:

12987-004

WATERWORKS NO.

			Client I.D.		TW6-2	TW7-1	TW9-1	
			Sample I.D.	Sample I.D.		B21-20225- 12	B21-20225- 16	
			Date Collected 28-Jun-21 28-Jun-21		28-Jun-21	28-Jun-21		
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed				
Monochlorobenzene (Chlorobenzene)	µg/L	0.5	EPA 8260	02-Jul-21/R	< 0.5			
Styrene	μg/L	0.5	EPA 8260	02-Jul-21/R	< 0.5			
Tetrachloroethane,1,1,2,2-	μg/L	0.5	EPA 8260	02-Jul-21/R	< 0.5			
Tetrachloroethylene	μg/L	0.5	EPA 8260	02-Jul-21/R	< 0.5			
Toluene	μg/L	0.5	EPA 8260	02-Jul-21/R	< 0.5	< 0.5	< 0.5	
Trichloroethane,1,1,1-	μg/L	0.5	EPA 8260	02-Jul-21/R	< 0.5			
Trichloroethane,1,1,2-	μg/L	0.5	EPA 8260	02-Jul-21/R	< 0.5			
Trichloroethylene	μg/L	0.5	EPA 8260	02-Jul-21/R	< 0.5			
Trichlorofluoromethane	μg/L	5	EPA 8260	02-Jul-21/R	< 5			
Vinyl Chloride	μg/L	0.2	EPA 8260	02-Jul-21/R	< 0.2	< 0.2	< 0.2	



Final Report

C.O.C.: G098359 REPORT No. B21-20219

Rev. 2

Report To:

Cambium Environmental

194 Sophia St.,

Peterborough ON K9H 1E5 Canada Attention: Cameron MacDougall

DATE RECEIVED: 30-Jun-21

DATE REPORTED: 30-Mar-22

SAMPLE MATRIX: Surface Water

Caduceon Environmental Laboratories

285 Dalton Ave

Kingston Ontario K7K 6Z1

Tel: 613-544-2001 Fax: 613-544-2770

JOB/PROJECT NO.: Stoney Lake WDS

P.O. NUMBER: 12987-004

WATERWORKS NO.

			Client I.D.		SW-1	SW_QAQC	SW-8	
		- 1	Sample I.D.		B21-20219-1	B21-20219-2	B21-20219-3	
			Date Collecte	ed	28-Jun-21	28-Jun-21	28-Jun-21	
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed				
Alkalinity(CaCO3) to pH4.5	mg/L	5	SM 2320B	05-Jul-21/O	247	249	177	
Conductivity @25°C	µmho/cm	1	SM 2510B	05-Jul-21/O	490	491	341	
pH @25°C	pH Units		SM 4500H	05-Jul-21/O	7.96	7.90	8.27	
Total Dissolved Solids	mg/L	1	SM 2540D	07-Jul-21/O	254	254	175	
Total Suspended Solids	mg/L	3	SM2540D	06-Jul-21/K	3	4	6	
BOD(5 day)	mg/L	3	SM 5210B	02-Jul-21/K	< 3	< 3	< 3	
COD	mg/L	5	SM5220C	02-Jul-21/K	26	27	37	
Phenolics	mg/L	0.001	MOEE 3179	06-Jul-21/K	< 0.001	< 0.001	< 0.001	
Chloride	mg/L	0.5	SM4110C	06-Jul-21/O	12.7	11.9	4.5	
Ammonia (N)-Total	mg/L	0.01	SM4500- NH3-H	05-Jul-21/K	0.05	0.04	0.03	
Ammonia (N)-unionized	mg/L	0.01	CALC	05-Jul-21/K	< 0.01	< 0.01	< 0.01	
Sulphate	mg/L	1	SM4110C	06-Jul-21/O	3	3	7	
Nitrite (N)	mg/L	0.05	SM4110C	06-Jul-21/O	< 0.05	< 0.05	< 0.05	
Nitrate (N)	mg/L	0.05	SM4110C	06-Jul-21/O	0.05	< 0.05	< 0.05	
Total Kjeldahl Nitrogen	mg/L	0.1	E3516.2	08-Jul-21/K	0.5	0.5	0.6	
Mercury	mg/L	0.00002	SM 3112 B	06-Jul-21/O	< 0.00002	< 0.00002	< 0.00002	
Hardness (as CaCO3)	mg/L	1	SM 3120	05-Jul-21/O	234	239	186	
Arsenic	mg/L	0.0001	EPA 200.8	05-Jul-21/O	0.0006	0.0006	0.0010	
Barium	mg/L	0.001	SM 3120	05-Jul-21/O	0.076	0.077	0.049	
Boron	mg/L	0.005	SM 3120	05-Jul-21/O	0.029	0.028	0.018	
Cadmium	mg/L	0.000015	EPA 200.8	05-Jul-21/O	< 0.000015	< 0.000015	< 0.000015	
Calcium	mg/L	0.02	SM 3120	05-Jul-21/O	89.4	91.3	70.5	
Chromium	mg/L	0.001	EPA 200.8	05-Jul-21/O	< 0.001	< 0.001	< 0.001	
Copper	mg/L	0.0001	EPA 200.8	05-Jul-21/O	0.0004	0.0004	0.0005	
Iron	mg/L	0.005	SM 3120	05-Jul-21/O	0.603	0.618	0.262	
Lead	mg/L	0.00002	EPA 200.8	05-Jul-21/O	0.00008	0.00007	0.00009	
Magnesium	mg/L	0.02	SM 3120	05-Jul-21/O	2.54	2.56	2.44	

M.Duri

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



**Final Report** 

C.O.C.: G098359 REPORT No. B21-20219

Rev. 2

Report To:

Cambium Environmental

194 Sophia St.,

Peterborough ON K9H 1E5 Canada Attention: Cameron MacDougall

DATE RECEIVED: 30-Jun-21

DATE REPORTED: 30-Mar-22

SAMPLE MATRIX: Surface Water

Caduceon Environmental Laboratories

285 Dalton Ave

Kingston Ontario K7K 6Z1

Tel: 613-544-2001 Fax: 613-544-2770

JOB/PROJECT NO.: Stoney Lake WDS

P.O. NUMBER: 12987-004

WATERWORKS NO.

			Client I.D.		SW-1	SW_QAQC	SW-8	
			Sample I.D.		B21-20219-1	B21-20219-2	B21-20219-3	
			Date Collect	ed	28-Jun-21	28-Jun-21	28-Jun-21	
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed				
Manganese	mg/L	0.001	SM 3120	05-Jul-21/O	0.172	0.176	0.034	
Phosphorus-Total	mg/L	0.01	E3516.2	08-Jul-21/K	0.03	0.02	0.04	
Potassium	mg/L	0.1	SM 3120	05-Jul-21/O	0.2	0.2	0.2	
Sodium	mg/L	0.2	SM 3120	05-Jul-21/O	8.8	8.8	3.8	
Zinc	mg/L	0.005	SM 3120	05-Jul-21/O	0.014	0.013	0.021	

<sup>1</sup> Revised to include additional parameters



**Final Report** 

C.O.C.: G100147 REPORT No. B21-27416

Rev. 1

Report To:

Cambium Environmental

194 Sophia St.,

Peterborough ON K9H 1E5 Canada Attention: Cameron MacDougall

DATE RECEIVED: 27-Aug-21

DATE REPORTED: 20-Jan-22

SAMPLE MATRIX: Surface Water

Caduceon Environmental Laboratories

285 Dalton Ave

Kingston Ontario K7K 6Z1

Tel: 613-544-2001

Fax: 613-544-2770

JOB/PROJECT NO.: Stoney Lake WDS

P.O. NUMBER: 12987-004

WATERWORKS NO.

			Client I.D.		SW1	SW_QAQC	
		- 1	Sample I.D.	-	B21-27416-1	B21-27416-2	
			Date Collecte	ed	26-Aug-21	26-Aug-21	
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed			·
Alkalinity(CaCO3) to pH4.5	mg/L	5	SM 2320B	30-Aug-21/O	269	268	
Conductivity @25°C	µmho/cm	1	SM 2510B	30-Aug-21/O	524	521	
pH @25°C	pH Units		SM 4500H	30-Aug-21/O	8.01	8.10	
Total Dissolved Solids	mg/L	3	SM 2540D	31-Aug-21/O	271	270	
Total Suspended Solids	mg/L	3	SM2540D	30-Aug-21/K	4	4	
BOD(5 day)	mg/L	3	SM 5210B	30-Aug-21/K	< 3	< 3	
COD	mg/L	5	SM5220C	31-Aug-21/K	26	29	
Phenolics	mg/L	0.001	MOEE 3179	01-Sep-21/K	< 0.001	< 0.001	
Chloride	mg/L	0.5	SM4110C	01-Sep-21/O	12.9	13.5	
Ammonia (N)-Total	mg/L	0.01	SM4500- NH3-H	03-Sep-21/K	0.03	0.04	
Ammonia (N)-unionized	mg/L	0.01	CALC	03-Sep-21/K	< 0.01	< 0.01	
Sulphate	mg/L	1	SM4110C	01-Sep-21/O	4	4	
Nitrite (N)	mg/L	0.05	SM4110C	01-Sep-21/O	0.06	< 0.05	
Nitrate (N)	mg/L	0.05	SM4110C	01-Sep-21/O	0.10	< 0.05	
Total Kjeldahl Nitrogen	mg/L	0.1	E3199A.1	01-Sep-21/K	0.6	0.6	
Mercury	mg/L	0.00002	SM 3112 B	01-Sep-21/O	< 0.00002	< 0.00002	
Hardness (as CaCO3)	mg/L	1	SM 3120	31-Aug-21/O	253	255	
Arsenic	mg/L	0.0001	EPA 200.8	01-Sep-21/O	0.0006	0.0005	
Barium	mg/L	0.001	SM 3120	31-Aug-21/O	0.082	0.082	
Boron	mg/L	0.005	SM 3120	31-Aug-21/O	0.023	0.025	
Cadmium	mg/L	0.000015	EPA 200.8	01-Sep-21/O	< 0.000015	< 0.000015	
Chromium	mg/L	0.001	EPA 200.8	01-Sep-21/O	< 0.001	< 0.001	
Copper	mg/L	0.0001	EPA 200.8	01-Sep-21/O	< 0.0001	0.0002	
Iron	mg/L	0.005	SM 3120	31-Aug-21/O	0.707	0.707	
Lead	mg/L	0.00002	EPA 200.8	01-Sep-21/O	0.00004	0.00002	
Phosphorus-Total	mg/L	0.01	E3199A.1	01-Sep-21/K	< 0.01	< 0.01	
Zinc	mg/L	0.005	SM 3120	31-Aug-21/O	0.019	0.016	

M. Duci

R.L. = Reporting Limit

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

Michelle Dubien Lab Manager



**Final Report** 

C.O.C.: G100147 REPORT No. B21-27416

Rev. 1

Report To:

Cambium Environmental

194 Sophia St.,

Peterborough ON K9H 1E5 Canada Attention: Cameron MacDougall

DATE RECEIVED: 27-Aug-21

DATE REPORTED: 20-Jan-22

SAMPLE MATRIX: Surface Water

Caduceon Environmental Laboratories

285 Dalton Ave

Kingston Ontario K7K 6Z1 Tel: 613-544-2001

Fax: 613-544-2770

JOB/PROJECT NO.: Stoney Lake WDS

P.O. NUMBER: 12987-004

WATERWORKS NO.

			Client I.D.		SW1	SW_QAQC	
			Sample I.D.		B21-27416-1	B21-27416-2	
			Date Collecte	d	26-Aug-21	26-Aug-21	
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed			

<sup>1</sup> Revised to include U-NH3



**Final Report** 

C.O.C.: G100969 REPORT No. B21-37314 (i)

Report To:

**Cambium Environmental** 

194 Sophia St.,

Peterborough ON K9H 1E5 Canada Attention: Cameron MacDougall

DATE RECEIVED: 12-Nov-21

DATE REPORTED: 05-Jan-22

SAMPLE MATRIX: Groundwater

Caduceon Environmental Laboratories

285 Dalton Ave

Kingston Ontario K7K 6Z1

Tel: 613-544-2001

Fax: 613-544-2770

JOB/PROJECT NO.: Stoney Lake WDS

P.O. NUMBER: 12987-004

WATERWORKS NO.

			Client I.D.		TW2-2	TW2-1	TW8-1	TW8-2
		- 1	Sample I.D.		B21-37314-1	B21-37314-2	B21-37314-3	B21-37314-4
			Date Collecte	ed	10-Nov-21	10-Nov-21	10-Nov-21	10-Nov-21
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed				
Alkalinity(CaCO3) to pH4.5	mg/L	5	SM 2320B	01-Dec-21/O	312	265	279	252
Conductivity @25°C	µmho/cm	1	SM 2510B	01-Dec-21/O	582	521	542	487
pH @25°C	pH Units		SM 4500H	01-Dec-21/O	8.07	7.79	7.73	8.05
Total Dissolved Solids	mg/L	3	SM 2540D	01-Dec-21/O	302	270	281	252
Total Suspended Solids	mg/L	3	SM2540D	15-Nov-21/K	11			3650
Dissolved Organic Carbon	mg/L	0.2	EPA 415.2	01-Jan-22/O		1.8	1.7	
BOD(5 day)	mg/L	3	SM 5210B	12-Nov-21/K	< 3			< 3
COD	mg/L	5	SM5220C	25-Nov-21/K	12	9	14	5
Phenolics	mg/L	0.002	MOEE 3179	19-Nov-21/K	< 0.002	< 0.002	< 0.002	< 0.002
Chloride	mg/L	0.5	SM4110C	20-Nov-21/O	2.2	2.9	2.7	2.8
Ammonia (N)-Total	mg/L	0.01	SM4500- NH3-H	26-Nov-21/K	0.02	< 0.01	0.01	0.01
Sulphate	mg/L	1	SM4110C	20-Nov-21/O	6	5	6	4
Nitrite (N)	mg/L	0.05	SM4110C	20-Nov-21/O	< 0.05		< 0.05	< 0.05
Nitrate (N)	mg/L	0.05	SM4110C	20-Nov-21/O	0.81	1.52	1.22	1.94
Total Kjeldahl Nitrogen	mg/L	0.1	E3199A.1	08-Dec-21/K	0.3		0.4	0.4
Mercury	mg/L	0.00002	SM 3112 B	17-Nov-21/O	< 0.00002		< 0.00002	< 0.00002
Hardness (as CaCO3)	mg/L	1	SM 3120	18-Nov-21/O	332	286	298	272
Arsenic	mg/L	0.0001	EPA 200.8	02-Dec-21/O	0.0001		< 0.0001	< 0.0001
Barium	mg/L	0.001	SM 3120	18-Nov-21/O	0.037	0.024	0.042	0.031
Boron	mg/L	0.005	SM 3120	18-Nov-21/O	0.025	0.009	0.012	0.010
Cadmium	mg/L	0.000015	EPA 200.8	02-Dec-21/O	< 0.000015		< 0.000015	< 0.000015
Calcium	mg/L	0.02	SM 3120	18-Nov-21/O		111	114	
Chromium	mg/L	0.001	EPA 200.8	02-Dec-21/O	0.002		< 0.001	< 0.001
Copper	mg/L	0.0001	EPA 200.8	02-Dec-21/O	0.0004		0.0006	0.0004
Iron	mg/L	0.005	SM 3120	18-Nov-21/O	0.400	0.005	0.022	< 0.005
Lead	mg/L	0.00002	EPA 200.8	02-Dec-21/O	< 0.00002		0.00003	< 0.00002
Magnesium	mg/L	0.02	SM 3120	18-Nov-21/O		1.98	3.06	

M.Duri

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



Final Report

C.O.C.: G100969 REPORT No. B21-37314 (i)

Report To:

Cambium Environmental

194 Sophia St.,

Peterborough ON K9H 1E5 Canada Attention: Cameron MacDougall

DATE RECEIVED: 12-Nov-21

DATE REPORTED: 05-Jan-22

SAMPLE MATRIX: Groundwater

Caduceon Environmental Laboratories

285 Dalton Ave

Kingston Ontario K7K 6Z1

Tel: 613-544-2001 Fax: 613-544-2770

JOB/PROJECT NO.: Stoney Lake WDS

P.O. NUMBER: 12987-004

WATERWORKS NO.

			Client I.D.		TW2-2	TW2-1	TW8-1	TW8-2
			Sample I.D.		B21-37314-1	B21-37314-2	B21-37314-3	B21-37314-4
			Date Collect	ed	10-Nov-21	10-Nov-21	10-Nov-21	10-Nov-21
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed				
Manganese	mg/L	0.001	SM 3120	18-Nov-21/O			0.009	
Phosphorus-Total	mg/L	0.01	E3199A.1	08-Dec-21/K	0.01		0.27	0.82
Potassium	mg/L	0.1	SM 3120	18-Nov-21/O			0.7	
Sodium	mg/L	0.2	SM 3120	18-Nov-21/O		2.7	2.7	
Zinc	mg/L	0.005	SM 3120	18-Nov-21/O	< 0.005		< 0.005	< 0.005
Benzene	µg/L	0.5	EPA 8260	19-Nov-21/R			< 0.5	
Dichlorobenzene, 1,4-	μg/L	0.5	EPA 8260	19-Nov-21/R			< 0.5	
Dichloromethane (Methylene Chloride)	μg/L	5	EPA 8260	19-Nov-21/R			< 5	
Toluene	µg/L	0.5	EPA 8260	19-Nov-21/R			< 0.5	
Vinyl Chloride	µg/L	0.2	EPA 8260	19-Nov-21/R			< 0.2	



**Final Report** 

C.O.C.: G100969 REPORT No. B21-37314 (i)

Report To:

Cambium Environmental

194 Sophia St.,

Peterborough ON K9H 1E5 Canada Attention: Cameron MacDougall

DATE RECEIVED: 12-Nov-21

DATE REPORTED: 05-Jan-22

SAMPLE MATRIX: Groundwater

Caduceon Environmental Laboratories

285 Dalton Ave

Kingston Ontario K7K 6Z1

Tel: 613-544-2001

Fax: 613-544-2770

JOB/PROJECT NO.: Stoney Lake WDS

P.O. NUMBER: 12987-004

WATERWORKS NO.

			Client I.D.		TW3-1	TW11-2	TW10-2	TW6-2
		. 19	Sample I.D.		B21-37314-5	B21-37314-6	B21-37314-7	B21-37314-8
			Date Collecte	ed	10-Nov-21	10-Nov-21	10-Nov-21	10-Nov-21
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed				
Alkalinity(CaCO3) to pH4.5	mg/L	5	SM 2320B	01-Dec-21/O	564	295	652	343
Conductivity @25°C	µmho/cm	1	SM 2510B	01-Dec-21/O	1190	689	1260	783
pH @25°C	pH Units		SM 4500H	01-Dec-21/O	7.41	7.77	7.52	7.88
Total Dissolved Solids	mg/L	3	SM 2540D	01-Dec-21/O	640	358	683	411
Total Suspended Solids	mg/L	3	SM2540D	15-Nov-21/K		540	6400	56
Dissolved Organic Carbon	mg/L	0.2	EPA 415.2	01-Jan-22/O	21.0			
BOD(5 day)	mg/L	3	SM 5210B	12-Nov-21/K		6	14	3
COD	mg/L	5	SM5220C	25-Nov-21/K	327	23	57	29
Phenolics	mg/L	0.002	MOEE 3179	19-Nov-21/K	< 0.002	< 0.002	< 0.002	< 0.002
Chloride	mg/L	0.5	SM4110C	20-Nov-21/O	22.0	18.2	27.1	24.4
Ammonia (N)-Total	mg/L	0.01	SM4500- NH3-H	26-Nov-21/K	21.0	1.76	8.02	0.10
Sulphate	mg/L	1	SM4110C	20-Nov-21/O	58	10	32	50
Nitrite (N)	mg/L	0.05	SM4110C	20-Nov-21/O		< 0.05	< 0.05	< 0.05
Nitrate (N)	mg/L	0.05	SM4110C	20-Nov-21/O	< 0.05	9.39	< 0.05	1.01
Total Kjeldahl Nitrogen	mg/L	0.1	E3199A.1	08-Dec-21/K		2.2	9.8	0.5
Mercury	mg/L	0.00002	SM 3112 B	17-Nov-21/O		< 0.00002	< 0.00002	< 0.00002
Hardness (as CaCO3)	mg/L	1	SM 3120	18-Nov-21/O	552	350	655	388
Arsenic	mg/L	0.0001	EPA 200.8	02-Dec-21/O		0.0002	0.0011	0.0002
Barium	mg/L	0.001	SM 3120	18-Nov-21/O	0.359	0.096	0.301	0.128
Boron	mg/L	0.005	SM 3120	18-Nov-21/O	0.298	0.062	0.532	0.218
Cadmium	mg/L	0.000015	EPA 200.8	02-Dec-21/O		< 0.000015	< 0.000015	< 0.000015
Calcium	mg/L	0.02	SM 3120	18-Nov-21/O	194			
Chromium	mg/L	0.001	EPA 200.8	02-Dec-21/O		< 0.001	< 0.001	< 0.001
Copper	mg/L	0.0001	EPA 200.8	02-Dec-21/O		0.0005	0.0004	0.0025
Iron	mg/L	0.005	SM 3120	18-Nov-21/O	112	1.13	20.3	0.011
Lead	mg/L	0.00002	EPA 200.8	02-Dec-21/O		0.00007	0.00011	< 0.00002
Magnesium	mg/L	0.02	SM 3120	18-Nov-21/O	16.2			

M.Duri

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



**Final Report** 

C.O.C.: G100969 REPORT No. B21-37314 (i)

Report To:

Cambium Environmental

194 Sophia St.,

Peterborough ON K9H 1E5 Canada Attention: Cameron MacDougall

DATE RECEIVED: 12-Nov-21

DATE REPORTED: 05-Jan-22

SAMPLE MATRIX: Groundwater

Caduceon Environmental Laboratories

285 Dalton Ave

Kingston Ontario K7K 6Z1

Tel: 613-544-2001 Fax: 613-544-2770

JOB/PROJECT NO.: Stoney Lake WDS

P.O. NUMBER: 12987-004

WATERWORKS NO.

			Client I.D.		TW3-1	TW11-2	TW10-2	TW6-2
			Sample I.D.		B21-37314-5	B21-37314-6	B21-37314-7	B21-37314-8
			Date Collect	ed	10-Nov-21	10-Nov-21	10-Nov-21	10-Nov-21
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed				
Manganese	mg/L	0.001	SM 3120	18-Nov-21/O				
Phosphorus-Total	mg/L	0.01	E3199A.1	08-Dec-21/K		0.17	0.29	0.04
Potassium	mg/L	0.1	SM 3120	18-Nov-21/O				
Sodium	mg/L	0.2	SM 3120	18-Nov-21/O	21.2			
Zinc	mg/L	0.005	SM 3120	18-Nov-21/O		< 0.005	< 0.005	< 0.005
Benzene	µg/L	0.5	EPA 8260	19-Nov-21/R				
Dichlorobenzene,1,4-	μg/L	0.5	EPA 8260	19-Nov-21/R				
Dichloromethane (Methylene Chloride)	μg/L	5	EPA 8260	19-Nov-21/R				
Toluene	µg/L	0.5	EPA 8260	19-Nov-21/R				
Vinyl Chloride	µg/L	0.2	EPA 8260	19-Nov-21/R		1		



Final Report

C.O.C.: G100969 REPORT No. B21-37314 (i)

Report To:

Cambium Environmental

194 Sophia St.,

Peterborough ON K9H 1E5 Canada Attention: Cameron MacDougall

DATE RECEIVED: 12-Nov-21

DATE REPORTED: 05-Jan-22

SAMPLE MATRIX: Groundwater

Caduceon Environmental Laboratories

285 Dalton Ave

Kingston Ontario K7K 6Z1

Tel: 613-544-2001 Fax: 613-544-2770

JOB/PROJECT NO.: Stoney Lake WDS

P.O. NUMBER: 12987-004

WATERWORKS NO.

			Client I.D.		GW_QAQC3	TW6-1	TW4-1	GW_QAQCB
		-11	Sample I.D.	1	B21-37314-9	B21-37314- 10	B21-37314- 11	B21-37314-12
	-		Date Collect	ed	10-Nov-21	10-Nov-21	10-Nov-21	10-Nov-21
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed				
Alkalinity(CaCO3) to pH4.5	mg/L	5	SM 2320B	01-Dec-21/O	342	392	272	271
Conductivity @25°C	µmho/cm	1	SM 2510B	01-Dec-21/O	771	882	564	565
pH @25°C	pH Units		SM 4500H	01-Dec-21/O	7.91	7.57	7.89	7.85
Total Dissolved Solids	mg/L	3	SM 2540D	01-Dec-21/O	404	467	292	293
Total Suspended Solids	mg/L	3	SM2540D	15-Nov-21/K	64			
Dissolved Organic Carbon	mg/L	0.2	EPA 415.2	01-Jan-22/O		4.2	2.3	2.2
BOD(5 day)	mg/L	3	SM 5210B	12-Nov-21/K	< 3			
COD	mg/L	5	SM5220C	25-Nov-21/K	22	16	20	13
Phenolics	mg/L	0.002	MOEE 3179	19-Nov-21/K	< 0.002	< 0.002	< 0.002	< 0.002
Chloride	mg/L	0.5	SM4110C	20-Nov-21/O	24.4	27.3	5.6	5.5
Ammonia (N)-Total	mg/L	0.01	SM4500- NH3-H	26-Nov-21/K	0.06	3.45	0.05	0.04
Sulphate	mg/L	1	SM4110C	20-Nov-21/O	50	45	7	7
Nitrite (N)	mg/L	0.05	SM4110C	20-Nov-21/O	< 0.05	0.07		
Nitrate (N)	mg/L	0.05	SM4110C	20-Nov-21/O	1.06	3.50	6.70	6.64
Total Kjeldahl Nitrogen	mg/L	0.1	E3199A.1	08-Dec-21/K	0.5	4.0		
Mercury	mg/L	0.00002	SM 3112 B	17-Nov-21/O	< 0.00002	< 0.00002		
Hardness (as CaCO3)	mg/L	1	SM 3120	18-Nov-21/O	399	443	312	309
Arsenic	mg/L	0.0001	EPA 200.8	02-Dec-21/O	0.0002	< 0.0001		
Barium	mg/L	0.001	SM 3120	18-Nov-21/O	0.132	0.301	0.024	0.024
Boron	mg/L	0.005	SM 3120	18-Nov-21/O	0.220	0.136	0.011	0.009
Cadmium	mg/L	0.000015	EPA 200.8	02-Dec-21/O	< 0.000015	0.000024		70.12.20.1
Calcium	mg/L	0.02	SM 3120	18-Nov-21/O		160	121	120
Chromium	mg/L	0.001	EPA 200.8	02-Dec-21/O	< 0.001	< 0.001		
Copper	mg/L	0.0001	EPA 200.8	02-Dec-21/O	0.0024	0.0011		
Iron	mg/L	0.005	SM 3120	18-Nov-21/O	0.007	0.026	0.006	0.006
Lead	mg/L	0.00002		02-Dec-21/O	< 0.00002	0.00008		

M. Duri

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



Final Report

C.O.C.: G100969 REPORT No. B21-37314 (i)

Report To:

Cambium Environmental

194 Sophia St.,

Peterborough ON K9H 1E5 Canada Attention: Cameron MacDougall

DATE RECEIVED: 12-Nov-21

DATE REPORTED: 05-Jan-22

SAMPLE MATRIX: Groundwater

Caduceon Environmental Laboratories

285 Dalton Ave

Kingston Ontario K7K 6Z1

Tel: 613-544-2001 Fax: 613-544-2770

JOB/PROJECT NO.: Stoney Lake WDS

P.O. NUMBER: 12987-004

WATERWORKS NO.

			Client I.D.		GW_QAQC3	TW6-1	TW4-1	GW_QAQCB	
		-1	Sample I.D.		B21-37314-9	B21-37314- 10	B21-37314- 11	B21-37314-12	
			Date Collect	ed	10-Nov-21	10-Nov-21	10-Nov-21	10-Nov-21	
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed					
Magnesium	mg/L	0.02	SM 3120	18-Nov-21/O		10.5	2.19	2.17	
Manganese	mg/L	0.001	SM 3120	18-Nov-21/O		1.39			
Phosphorus-Total	mg/L	0.01	E3199A.1	08-Dec-21/K	0.04	0.03			
Potassium	mg/L	0.1	SM 3120	18-Nov-21/O		7.4			
Sodium	mg/L	0.2	SM 3120	18-Nov-21/O		20.3	2.7	2.7	
Zinc	mg/L	0.005	SM 3120	18-Nov-21/O	< 0.005	< 0.005			
Benzene	μg/L	0.5	EPA 8260	19-Nov-21/R		< 0.5			
Dichlorobenzene,1,4-	µg/L	0.5	EPA 8260	19-Nov-21/R		< 0.5			
Dichloromethane (Methylene Chloride)	μg/L	5	EPA 8260	19-Nov-21/R		< 5			
Toluene	µg/L	0.5	EPA 8260	19-Nov-21/R		< 0.5			
Vinyl Chloride	µg/L	0.2	EPA 8260	19-Nov-21/R		< 0.2			



Final Report

C.O.C.: G100969 REPORT No. B21-37314 (i)

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Cambium Environmental

194 Sophia St.,

Peterborough ON K9H 1E5 Canada Attention: Cameron MacDougall

DATE RECEIVED: 12-Nov-21

DATE REPORTED: 05-Jan-22

SAMPLE MATRIX: Groundwater

Caduceon Environmental Laboratories

285 Dalton Ave

Kingston Ontario K7K 6Z1

Tel: 613-544-2001

Fax: 613-544-2770

JOB/PROJECT NO.: Stoney Lake WDS

P.O. NUMBER: 12987-004

WATERWORKS NO.

			Client I.D.		TW5-1	TW5-2	TW7-1	TW7-2
		-1	Sample I.D.		B21-37314- 13	B21-37314- 14	B21-37314- 15	B21-37314-16
			Date Collect	ed	10-Nov-21	10-Nov-21	10-Nov-21	10-Nov-21
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed				
Alkalinity(CaCO3) to pH4.5	mg/L	5	SM 2320B	01-Dec-21/O	496	516	247	357
Conductivity @25°C	µmho/cm	1	SM 2510B	01-Dec-21/O	2690	3750	522	1620
pH @25°C	pH Units		SM 4500H	01-Dec-21/O	7.63	7.83	7.85	7.87
Total Dissolved Solids	mg/L	3	SM 2540D	01-Dec-21/O	1500	2110	270	888
Total Suspended Solids	mg/L	3	SM2540D	15-Nov-21/K		37		44
Dissolved Organic Carbon	mg/L	0.2	EPA 415.2	01-Jan-22/O	7.2		2.8	
BOD(5 day)	mg/L	3	SM 5210B	12-Nov-21/K		< 3		< 3
COD	mg/L	5	SM5220C	25-Nov-21/K	38	35	12	32
Phenolics	mg/L	0.002	MOEE 3179	19-Nov-21/K	< 0.002	< 0.002	< 0.002	< 0.002
Chloride	mg/L	0.5	SM4110C	20-Nov-21/O	157	149	14.5	138
Ammonia (N)-Total	mg/L	0.01	SM4500- NH3-H	26-Nov-21/K	1.34	0.04	0.01	0.16
Sulphate	mg/L	1	SM4110C	20-Nov-21/O	1010	1910	16	360
Nitrite (N)	mg/L	0.05	SM4110C	20-Nov-21/O		0.24	< 0.05	< 0.05
Nitrate (N)	mg/L	0.05	SM4110C	20-Nov-21/O	< 0.05	6.04	< 0.05	< 0.05
Total Kjeldahl Nitrogen	mg/L	0.1	E3199A.1	08-Dec-21/K		1.2	0.2	0.4
Mercury	mg/L	0.00002	SM 3112 B	17-Nov-21/O		< 0.00002	< 0.00002	< 0.00002
Hardness (as CaCO3)	mg/L	1	SM 3120	18-Nov-21/O	1500	2160	273	681
Arsenic	mg/L	0.0001	EPA 200.8	02-Dec-21/O		0.0004	0.0002	0.0017
Barium	mg/L	0.001	SM 3120	18-Nov-21/O	0.029	0.027	0.188	0.100
Boron	mg/L	0.005	SM 3120	18-Nov-21/O	4.07	9.40	0.041	1.56
Cadmium	mg/L	0.000015	EPA 200.8	02-Dec-21/O		< 0.000029	< 0.000015	< 0.000015
Calcium	mg/L	0.02	SM 3120	18-Nov-21/O	449		101	
Chromium	mg/L	0.001	EPA 200.8	02-Dec-21/O		< 0.001	< 0.001	< 0.001
Copper	mg/L	0.0001	EPA 200.8	02-Dec-21/O		0.0085	0.0004	0.0001
Iron	mg/L	0.005	SM 3120	18-Nov-21/O	3.89	0.052	0.353	5.58
Lead	mg/L	0.00002	EPA 200.8	02-Dec-21/O		< 0.00009	0.00003	< 0.00004

R.L. = Reporting Limit

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Final Report

C.O.C.: G100969 REPORT No. B21-37314 (i)

Report To:

Cambium Environmental

194 Sophia St.,

Peterborough ON K9H 1E5 Canada Attention: Cameron MacDougall

DATE RECEIVED: 12-Nov-21

DATE REPORTED: 05-Jan-22

SAMPLE MATRIX: Groundwater

Caduceon Environmental Laboratories

285 Dalton Ave

Kingston Ontario K7K 6Z1

Tel: 613-544-2001 Fax: 613-544-2770

JOB/PROJECT NO.: Stoney Lake WDS

P.O. NUMBER: 12987-004

WATERWORKS NO.

			Client I.D.		TW5-1	TW5-2	TW7-1	TW7-2
		-1	Sample I.D.		B21-37314- 13	B21-37314- 14	B21-37314- 15	B21-37314-16
			Date Collect	ed	10-Nov-21	10-Nov-21	10-Nov-21	10-Nov-21
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed				
Magnesium	mg/L	0.02	SM 3120	18-Nov-21/O	91.4		4.91	
Manganese	mg/L	0.001	SM 3120	18-Nov-21/O			0.011	
Phosphorus-Total	mg/L	0.01	E3199A.1	08-Dec-21/K		0.04	< 0.01	0.03
Potassium	mg/L	0.1	SM 3120	18-Nov-21/O			1.2	
Sodium	mg/L	0.2	SM 3120	18-Nov-21/O	132		8.9	
Zinc	mg/L	0.005	SM 3120	18-Nov-21/O		< 0.005	< 0.005	< 0.005
Benzene	μg/L	0.5	EPA 8260	19-Nov-21/R			< 0.5	
Dichlorobenzene,1,4-	µg/L	0.5	EPA 8260	19-Nov-21/R			< 0.5	
Dichloromethane (Methylene Chloride)	μg/L	- 5	EPA 8260	19-Nov-21/R			< 5	
Toluene	µg/L	0.5	EPA 8260	19-Nov-21/R			< 0.5	
Vinyl Chloride	µg/L	0.2	EPA 8260	19-Nov-21/R			< 0.2	



Final Report

C.O.C.: G100969 REPORT No. B21-37314 (i)

Client I D

Report To:

Cambium Environmental

194 Sophia St.,

Peterborough ON K9H 1E5 Canada

Attention: Cameron MacDougall

DATE RECEIVED: 12-Nov-21

DATE REPORTED: 05-Jan-22

SAMPLE MATRIX: Groundwater

Caduceon Environmental Laboratories

285 Dalton Ave

Kingston Ontario K7K 6Z1

Tel: 613-544-2001 Fax: 613-544-2770

JOB/PROJECT NO.: Stoney Lake WDS

TW9-2

P.O. NUMBER: 12987-004

WATERWORKS NO.

TW9-1

		7.1	Client I.D.		1009-1	1009-2	
		-1	Sample I.D.		B21-37314- 17	B21-37314- 18	
			Date Collecte	ed	10-Nov-21	10-Nov-21	
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed			
Alkalinity(CaCO3) to pH4.5	mg/L	5	SM 2320B	01-Dec-21/O	256	256	
Conductivity @25°C	µmho/cm	1	SM 2510B	01-Dec-21/O	511	512	
pH @25°C	pH Units		SM 4500H	01-Dec-21/O	7.90	8.00	
Total Dissolved Solids	mg/L	3	SM 2540D	01-Dec-21/O	265	265	
Total Suspended Solids	mg/L	3	SM2540D	15-Nov-21/K		1070	
Dissolved Organic Carbon	mg/L	0.2	EPA 415.2	01-Jan-22/O	2.0		
BOD(5 day)	mg/L	3	SM 5210B	12-Nov-21/K		4	
COD	mg/L	5	SM5220C	25-Nov-21/K	7	71	
Phenolics	mg/L	0.002	MOEE 3179	19-Nov-21/K	< 0.002	< 0.002	
Chloride	mg/L	0.5	SM4110C	20-Nov-21/O	10.0	6.2	
Ammonia (N)-Total	mg/L	0.01	SM4500- NH3-H	26-Nov-21/K	0.02	0.26	
Sulphate	mg/L	1	SM4110C	20-Nov-21/O	16	16	
Nitrite (N)	mg/L	0.05	SM4110C	20-Nov-21/O	< 0.05	< 0.05	
Nitrate (N)	mg/L	0.05	SM4110C	20-Nov-21/O	< 0.05	0.16	
Total Kjeldahl Nitrogen	mg/L	0.1	E3199A.1	08-Dec-21/K	0.1	1.7	
Mercury	mg/L	0.00002	SM 3112 B	17-Nov-21/O	< 0.00002	< 0.00002	
Hardness (as CaCO3)	mg/L	1	SM 3120	18-Nov-21/O	271	260	
Arsenic	mg/L	0.0001	EPA 200.8	02-Dec-21/O	< 0.0001	0.0002	
Barium	mg/L	0.001	SM 3120	18-Nov-21/O	0.110	0.259	
Boron	mg/L	0.005	SM 3120	18-Nov-21/O	0.023	0.012	
Cadmium	mg/L	0.000015	EPA 200.8	02-Dec-21/O	< 0.000015	< 0.000015	
Calcium	mg/L	0.02	SM 3120	18-Nov-21/O	101		
Chromium	mg/L	0.001	EPA 200.8	02-Dec-21/O	< 0.001	0.001	
Copper	mg/L	0.0001	EPA 200.8	02-Dec-21/O	0.0005	0.0019	
Iron	mg/L	0.005	SM 3120	18-Nov-21/O	0.015	< 0.005	
Lead	mg/L	0.00002	EPA 200.8	02-Dec-21/O	0.00003	0.00047	

M. Duri

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



Final Report

C.O.C.: G100969 REPORT No. B21-37314 (i)

Report To:

Cambium Environmental

194 Sophia St.,

Peterborough ON K9H 1E5 Canada Attention: Cameron MacDougall

DATE RECEIVED: 12-Nov-21

DATE REPORTED: 05-Jan-22

SAMPLE MATRIX: Groundwater

Caduceon Environmental Laboratories

285 Dalton Ave

Kingston Ontario K7K 6Z1

Tel: 613-544-2001 Fax: 613-544-2770

JOB/PROJECT NO.: Stoney Lake WDS

P.O. NUMBER: 12987-004

WATERWORKS NO.

			Client I.D.		TW9-1	TW9-2	
	Sample I.D.				B21-37314- 17	B21-37314- 18	
			Date Collected		10-Nov-21	10-Nov-21	
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed			
Magnesium	mg/L	0.02	SM 3120	18-Nov-21/O	4.62		
Manganese	mg/L	0.001	SM 3120	18-Nov-21/O	0.012		
Phosphorus-Total	mg/L	0.01	E3199A.1	08-Dec-21/K	< 0.01	0.64	
Potassium	mg/L	0.1	SM 3120	18-Nov-21/O	1.0		
Sodium	mg/L	0.2	SM 3120	18-Nov-21/O	6.9		
Zinc	mg/L	0.005	SM 3120	18-Nov-21/O	< 0.005	< 0.005	
Benzene	μg/L	0.5	EPA 8260	19-Nov-21/R	< 0.5		
Dichlorobenzene,1,4-	µg/L	0.5	EPA 8260	19-Nov-21/R	< 0.5		
Dichloromethane (Methylene Chloride)	μg/L	- 5	EPA 8260	19-Nov-21/R	< 5		
Toluene	µg/L	0.5	EPA 8260	19-Nov-21/R	< 0.5		
Vinyl Chloride	µg/L	0.2	EPA 8260	19-Nov-21/R	< 0.2		



Final Report

C.O.C.: G100969 REPORT No. B21-37314 (ii)

Report To:

Cambium Environmental

194 Sophia St.,

Peterborough ON K9H 1E5 Canada Attention: Cameron MacDougall

DATE RECEIVED: 12-Nov-21

DATE REPORTED: 05-Jan-22

SAMPLE MATRIX: Groundwater

Caduceon Environmental Laboratories

285 Dalton Ave

Kingston Ontario K7K 6Z1

Tel: 613-544-2001 Fax: 613-544-2770

JOB/PROJECT NO.: Stoney Lake WDS

P.O. NUMBER: 12987-004

WATERWORKS NO.

			Client I.D.		TW2-2	TW6-2	GW_QAQC3	1,
			Sample I.D.		B21-37314-1	B21-37314-8	B21-37314-9	
			Date Collect	ed	10-Nov-21	10-Nov-21	10-Nov-21	
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed				
Acetone	μg/L	30	EPA 8260	19-Nov-21/R	< 30	< 30	< 30	
Benzene	µg/L	0.5	EPA 8260	19-Nov-21/R	< 0.5	< 0.5	< 0.5	
Bromodichloromethane	μg/L	2	EPA 8260	19-Nov-21/R	< 2	< 2	< 2	
Bromoform	µg/L	5	EPA 8260	19-Nov-21/R	< 5	< 5	< 5	1: = = = = =
Bromomethane	μg/L	0.5	EPA 8260	19-Nov-21/R	< 0.5	< 0.5	< 0.5	
Carbon Tetrachloride	µg/L	0.2	EPA 8260	19-Nov-21/R	< 0.2	< 0.2	< 0.2	
Chloroethane	μg/L	3	EPA 8260	19-Nov-21/R	< 3	< 3	< 3	
Chloroform	μg/L	1	EPA 8260	19-Nov-21/R	< 1	<1	< 1	
Chloromethane	μg/L	2	EPA 8260	19-Nov-21/R	< 2	< 2	< 2	
Dibromochloromethane	µg/L	2	EPA 8260	19-Nov-21/R	< 2	< 2	< 2	
Dibromoethane,1,2- (Ethylene Dibromide)	μg/L	0.2	EPA 8260	19-Nov-21/R	< 0.2	< 0.2	< 0.2	1
Dichlorobenzene,1,2-	μg/L	0.5	EPA 8260	19-Nov-21/R	< 0.5	< 0.5	< 0.5	
Dichlorobenzene,1,3-	µg/L	0.5	EPA 8260	19-Nov-21/R	< 0.5	< 0.5	< 0.5	
Dichlorobenzene,1,4-	µg/L	0.5	EPA 8260	19-Nov-21/R	< 0.5	< 0.5	< 0.5	1.0
Dichlorodifluoromethane	µg/L	2	EPA 8260	19-Nov-21/R	< 2	< 2	< 2	
Dichloroethane,1,1-	µg/L	0.5	EPA 8260	19-Nov-21/R	< 0.5	< 0.5	< 0.5	
Dichloroethane,1,2-	μg/L	0.5	EPA 8260	19-Nov-21/R	< 0.5	< 0.5	< 0.5	
Dichloroethylene,1,1-	µg/L	0.5	EPA 8260	19-Nov-21/R	< 0.5	< 0.5	< 0.5	
Dichloroethene, cis-1,2-	µg/L	0.5	EPA 8260	19-Nov-21/R	< 0.5	< 0.5	< 0.5	
Dichloroethene, trans-1,2-	μg/L	0.5	EPA 8260	19-Nov-21/R	< 0.5	< 0.5	< 0.5	
Dichloromethane (Methylene Chloride)	μg/L	5	EPA 8260	19-Nov-21/R	< 5	< 5	< 5	
Dichloropropane,1,2-	µg/L	0.5	EPA 8260	19-Nov-21/R	< 0.5	< 0.5	< 0.5	
Dichloropropene 1,3- cis+trans	µg/L	0.5	EPA 8260	19-Nov-21/R	< 0.5	< 0.5	< 0.5	
Dichloropropene,1,1-	μg/L	0.2	EPA 8260	19-Nov-21/R	< 0.2	< 0.2	< 0.2	
Dichloropropene, trans-1,3-	μg/L	0.5	EPA 8260	19-Nov-21/R	< 0.5	< 0.5	< 0.5	

M. Duci

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



**Final Report** 

C.O.C.: G100969 REPORT No. B21-37314 (ii)

Report To:

Cambium Environmental

194 Sophia St.,

Peterborough ON K9H 1E5 Canada

Attention: Cameron MacDougall

DATE RECEIVED: 12-Nov-21

DATE REPORTED: 05-Jan-22

SAMPLE MATRIX: Groundwater

Caduceon Environmental Laboratories

285 Dalton Ave

Kingston Ontario K7K 6Z1

Tel: 613-544-2001 Fax: 613-544-2770

JOB/PROJECT NO.: Stoney Lake WDS

P.O. NUMBER: 12987-004

WATERWORKS NO.

			Client I.D.		TW2-2	TW6-2	GW_QAQC3	
			Sample I.D.		B21-37314-1	B21-37314-8	B21-37314-9	
			Date Collect	ed	10-Nov-21	10-Nov-21	10-Nov-21	
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed				
Dichloropropene, cis-1,3-	μg/L	0.5	EPA 8260	19-Nov-21/R	< 0.5	< 0.5	< 0.5	
Ethylbenzene	μg/L	0.5	EPA 8260	19-Nov-21/R	< 0.5	< 0.5	< 0.5	
Hexane	µg/L	5	EPA 8260	19-Nov-21/R	< 5	< 5	< 5	
Xylene, m,p-	μg/L	1.0	EPA 8260	19-Nov-21/R	< 1.0	< 1.0	< 1.0	
Methyl Ethyl Ketone	μg/L	20	EPA 8260	19-Nov-21/R	< 20	< 20	< 20	
Methyl Isobutyl Ketone	μg/L	20	EPA 8260	19-Nov-21/R	< 20	< 20	< 20	
Methyl-t-butyl Ether	μg/L	2	EPA 8260	19-Nov-21/R	< 2	< 2	< 2	
Monochlorobenzene (Chlorobenzene)	μg/L	0.5	EPA 8260	19-Nov-21/R	< 0.5	< 0.5	< 0.5	
Xylene, o-	µg/L	0.5	EPA 8260	19-Nov-21/R	< 0.5	< 0.5	< 0.5	
Styrene	μg/L	0.5	EPA 8260	19-Nov-21/R	< 0.5	< 0.5	< 0.5	
Tetrachloroethane,1,1,1,2-	µg/L	0.5	EPA 8260	19-Nov-21/R	< 0.5	< 0.5	< 0.5	
Tetrachloroethane,1,1,2,2-	μg/L	0.5	EPA 8260	19-Nov-21/R	< 0.5	< 0.5	< 0.5	
Tetrachloroethylene	μg/L	0.5	EPA 8260	19-Nov-21/R	< 0.5	< 0.5	< 0.5	
Toluene	μg/L	0.5	EPA 8260	19-Nov-21/R	< 0.5	< 0.5	< 0.5	
Trichloroethane,1,1,1-	μg/L	0.5	EPA 8260	19-Nov-21/R	< 0.5	< 0.5	< 0.5	
Trichloroethane,1,1,2-	µg/L	0.5	EPA 8260	19-Nov-21/R	< 0.5	< 0.5	< 0.5	
Trichloroethylene	µg/L	0.5	EPA 8260	19-Nov-21/R	< 0.5	< 0.5	< 0.5	
Trichlorofluoromethane	µg/L	5	EPA 8260	19-Nov-21/R	< 5	< 5	< 5	
Trimethylbenzene,1,3,5-	µg/L	0.1	EPA 8260	19-Nov-21/R	< 0.1	< 0.1	< 0.1	
Vinyl Chloride	µg/L	0.2	EPA 8260	19-Nov-21/R	< 0.2	< 0.2	< 0.2	
Xylene, m,p,o-	μg/L	1.1	EPA 8260	19-Nov-21/R	< 1.1	< 1.1	< 1.1	

M.Duri

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



Final Report

C.O.C.: G100970 REPORT No. B21-37311

Rev. 2

Report To:

Cambium Environmental

194 Sophia St.,

Peterborough ON K9H 1E5 Canada Attention: Cameron MacDougall

DATE RECEIVED: 12-Nov-21

DATE REPORTED: 30-Mar-22

SAMPLE MATRIX: Surface Water

Caduceon Environmental Laboratories

285 Dalton Ave

Kingston Ontario K7K 6Z1

Tel: 613-544-2001 Fax: 613-544-2770

JOB/PROJECT NO .: Stoney Lake WDS

P.O. NUMBER: 12987-004

WATERWORKS NO.

			Client I.D.		SW-6	SW-3	SW-8	SW-1
		- 1	Sample I.D.		B21-37311-1	B21-37311-2	B21-37311-3	B21-37311-4
			Date Collecte	ed	10-Nov-21	10-Nov-21	10-Nov-21	10-Nov-21
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed				
Alkalinity(CaCO3) to pH4.5	mg/L	5	SM 2320B	30-Nov-21/O	355	209	191	203
Conductivity @25°C	µmho/cm	1	SM 2510B	30-Nov-21/O	832	800	417	458
pH @25°C	pH Units		SM 4500H	30-Nov-21/O	8.08	7.72	7.76	7.79
Total Dissolved Solids	mg/L	3	SM 2540D	01-Dec-21/O	438	420	215	237
Total Suspended Solids	mg/L	3	SM2540D	15-Nov-21/K	62	26	6	6
BOD(5 day)	mg/L	3	SM 5210B	12-Nov-21/K	3	< 3	< 3	< 3
COD	mg/L	5	SM5220C	25-Nov-21/K	58	46	45	32
Phenolics	mg/L	0.001	MOEE 3179	19-Nov-21/K	< 0.001	< 0.001	< 0.001	< 0.001
Chloride	mg/L	0.5	SM4110C	20-Nov-21/O	26.4	80.3	14.5	17.2
Ammonia (N)-Total	mg/L	0.01	SM4500- NH3-H	25-Nov-21/K	0.07	0.04	0.03	0.02
Ammonia (N)-unionized	mg/L	0.01	CALC	25-Nov-21/K	< 0.01	< 0.01	< 0.01	< 0.01
Sulphate	mg/L	1	SM4110C	20-Nov-21/O	46	67	1	9
Nitrite (N)	mg/L	0.05	SM4110C	20-Nov-21/O	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (N)	mg/L	0.05	SM4110C	20-Nov-21/O	0.60	< 0.05	< 0.05	< 0.05
Total Kjeldahl Nitrogen	mg/L	0.1	E3516.2	09-Dec-21/K	1.4	0.7	0.6	0.5
Mercury	mg/L	0.00002	SM 3112 B	16-Nov-21/O	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Hardness (as CaCO3)	mg/L	1	SM 3120	17-Nov-21/O	390	316	209	224
Arsenic	mg/L	0.0001	EPA 200.8	25-Nov-21/O	0.0006	0.0008	0.0004	0.0003
Barium	mg/L	0.001	SM 3120	17-Nov-21/O	0.085	0.062	0.064	0.060
Boron	mg/L	0.005	SM 3120	17-Nov-21/O	0.183	0.287	0.007	0.009
Cadmium	mg/L	0.000015	EPA 200.8	25-Nov-21/O	0.000033	0.000016	< 0.000015	< 0.000015
Calcium	mg/L	0.02	SM 3120	17-Nov-21/O	139	113	79.6	85.4
Chromium	mg/L	0.001	EPA 200.8	25-Nov-21/O	< 0.001	< 0.001	< 0.001	< 0.001
Copper	mg/L	0.0001	EPA 200.8	25-Nov-21/O	0.0024	0.0015	0.0003	0.0004
Iron	mg/L	0.005	SM 3120	17-Nov-21/O	0.256	0.181	0.257	0.125
Lead	mg/L	0.00002	EPA 200.8	25-Nov-21/O	0.00210	0.00041	0.00034	0.00072
Magnesium	mg/L	0.02	SM 3120	17-Nov-21/O	10.4	8.10	2.46	2.49

M.Duri

R.L. = Reporting Limit

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

Michelle Dubien Lab Manager



**Final Report** 

C.O.C.: G100970 REPORT No. B21-37311

Rev. 2

Report To:

Cambium Environmental

194 Sophia St.,

Peterborough ON K9H 1E5 Canada Attention: Cameron MacDougall

DATE RECEIVED: 12-Nov-21

DATE REPORTED: 30-Mar-22

SAMPLE MATRIX: Surface Water

Caduceon Environmental Laboratories

285 Dalton Ave

Kingston Ontario K7K 6Z1

Tel: 613-544-2001 Fax: 613-544-2770

JOB/PROJECT NO.: Stoney Lake WDS

P.O. NUMBER: 12987-004

WATERWORKS NO.

			Client I.D.		SW-6	SW-3	SW-8	SW-1
			Sample I.D.		B21-37311-1	B21-37311-2	B21-37311-3	B21-37311-4
			Date Collect	ed	10-Nov-21	10-Nov-21	10-Nov-21	10-Nov-21
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed				
Manganese	mg/L	0.001	SM 3120	17-Nov-21/O	0.466	0.083	0.084	0.015
Phosphorus-Total	mg/L	0.01	E3516.2	09-Dec-21/K	0.07	0.08	0.03	0.05
Potassium	mg/L	0.1	SM 3120	17-Nov-21/O	12.2	9.0	0.2	0.3
Sodium	mg/L	0.2	SM 3120	17-Nov-21/O	16.9	34.7	8.7	9.6
Zinc	mg/L	0.005	SM 3120	17-Nov-21/O	0.015	0.017	0.011	0.013

<sup>1</sup> Revised to include additional parameters



**Final Report** 

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Kingston Ontario K7K 6Z1

Tel: 613-544-2001 Fax: 613-544-2770

JOB/PROJECT NO.: Stoney Lake WDS

P.O. NUMBER: 12987-004

WATERWORKS NO.

			Client I.D.		SW_QAQC	
		. 14	Sample I.D.		B21-37311-5	
Parameter			Date Collected		10-Nov-21	
	Units	R.L.	Reference Method	Date/Site Analyzed		·
Alkalinity(CaCO3) to pH4.5	mg/L	5	SM 2320B	30-Nov-21/O	203	
Conductivity @25°C	µmho/cm	1	SM 2510B	30-Nov-21/O	461	
pH @25°C	pH Units		SM 4500H	30-Nov-21/O	7.75	
Total Dissolved Solids	mg/L	3	SM 2540D	01-Dec-21/O	238	
Total Suspended Solids	mg/L	3	SM2540D	15-Nov-21/K	4	
BOD(5 day)	mg/L	3	SM 5210B	12-Nov-21/K	< 3	
COD	mg/L	5	SM5220C	25-Nov-21/K	35	
Phenolics	mg/L	0.001	MOEE 3179	19-Nov-21/K	< 0.001	
Chloride	mg/L	0.5	SM4110C	20-Nov-21/O	17.6	
Ammonia (N)-Total	mg/L	0.01	SM4500- NH3-H	25-Nov-21/K	0.02	
Ammonia (N)-unionized	mg/L	0.01	CALC	25-Nov-21/K	< 0.01	
Sulphate	mg/L	1	SM4110C	20-Nov-21/O	2	
Nitrite (N)	mg/L	0.05	SM4110C	20-Nov-21/O	< 0.05	
Nitrate (N)	mg/L	0.05	SM4110C	20-Nov-21/O	< 0.05	
Total Kjeldahl Nitrogen	mg/L	0.1	E3516.2	09-Dec-21/K	0.4	
Mercury	mg/L	0.00002	SM 3112 B	16-Nov-21/O	< 0.00002	
Hardness (as CaCO3)	mg/L	1	SM 3120	17-Nov-21/O	220	
Arsenic	mg/L	0.0001	EPA 200.8	25-Nov-21/O	0.0003	
Barium	mg/L	0.001	SM 3120	17-Nov-21/O	0.060	
Boron	mg/L	0.005	SM 3120	17-Nov-21/O	0.009	
Cadmium	mg/L	0.000015	EPA 200.8	25-Nov-21/O	< 0.000015	
Calcium	mg/L	0.02	SM 3120	17-Nov-21/O	84.1	
Chromium	mg/L	0.001	EPA 200.8	25-Nov-21/O	< 0.001	
Copper	mg/L	0.0001	EPA 200.8	25-Nov-21/O	0.0005	
Iron	mg/L	0.005	SM 3120	17-Nov-21/O	0.117	
Lead	mg/L	0.00002	EPA 200.8	25-Nov-21/O	0.00058	
Magnesium	mg/L	0.02	SM 3120	17-Nov-21/O	2.42	

M.Duri

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



Final Report

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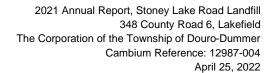
JOB/PROJECT NO.: Stoney Lake WDS

P.O. NUMBER: 12987-004

WATERWORKS NO.

			Client I.D. Sample I.D.		SW_QAQC	11.0	
					B21-37311-5		
			Date Collect	ed	10-Nov-21		
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed			
Manganese	mg/L	0.001	SM 3120	17-Nov-21/O	0.013		
Phosphorus-Total	mg/L	0.01	E3516.2	09-Dec-21/K	0.01		
Potassium	mg/L	0.1	SM 3120	17-Nov-21/O	0.3		
Sodium	mg/L	0.2	SM 3120	17-Nov-21/O	9.4		
Zinc	mg/L	0.005	SM 3120	17-Nov-21/O	0.014		

<sup>1</sup> Revised to include additional parameters





Appendix F Photographs

Fully accessible appended items are available upon request.





Photograph 1: Monitors TW2-1 and TW2-2, November 2021



Photograph 2: Monitor TW3-1, November 2021



Photograph 3: Monitor TW4-1, November 2021



Photograph 4: Monitors TW5-1 and TW5-2, June 2021





Photograph 5: Monitors TW6-1 and TW6-2, November 2021



Photograph 6: Monitors TW7-1 and TW7-2, November 2021



Photograph 7: Monitors TW8-1 and TW8-2, November 2021



Photograph 8: Monitors TW9-1 and TW9-2, November 2021





Photograph 9: Monitors TW10-2, June 2021



Photograph 10: Monitors TW11-2, November 2021



Photograph 11: Surface water station SW-1, August 2021



Photograph 12: Surface water station SW-1, August 2021





Photograph 13: Surface water station SW-1, November 2021



Photograph 14: Dry - Surface water station SW-3, June 2021



Photograph 15: Dry - Surface water station SW-3, August 2021



Photograph 16: Surface water station SW-3, November 2021





Photograph 17: Dry - Surface water station SW-6, June 2021



Photograph 18: Dry - Surface water station SW-6, August 2021



Photograph 19: Surface water station SW-6, November 2021



Photograph 20: Dry - Surface water station SW-8, August 2021





Photograph 21: Dry - Surface water station SW-8, August 2021



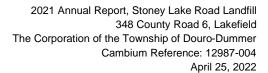
Photograph 22: Surface water station SW-8, November 2021



Photograph 23: Gas Probe GP-1, November 2021



Photograph 24: Gas Probe GP-2, November 2021



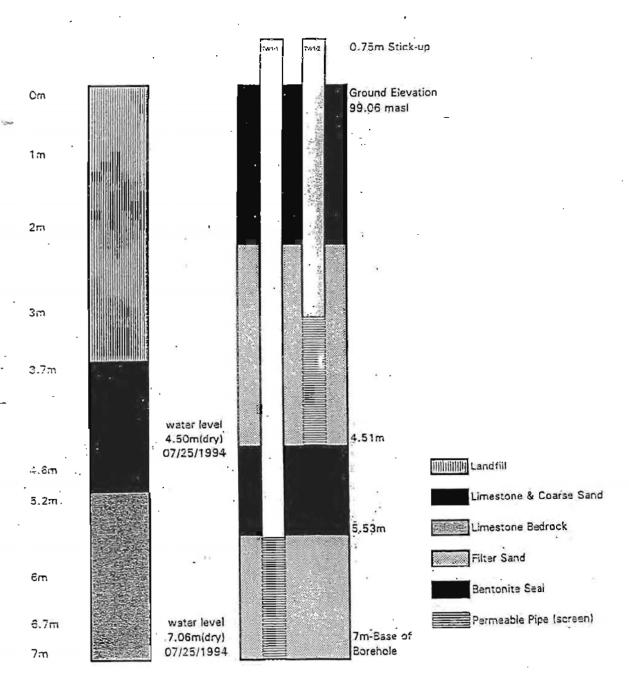


Appendix G Borehole Logs

Fully accessible appended items are available upon request.

Well Log and As-Built Diagrams for TW1 @Stoney Lake Road Landfill (Douro North) 7777-096

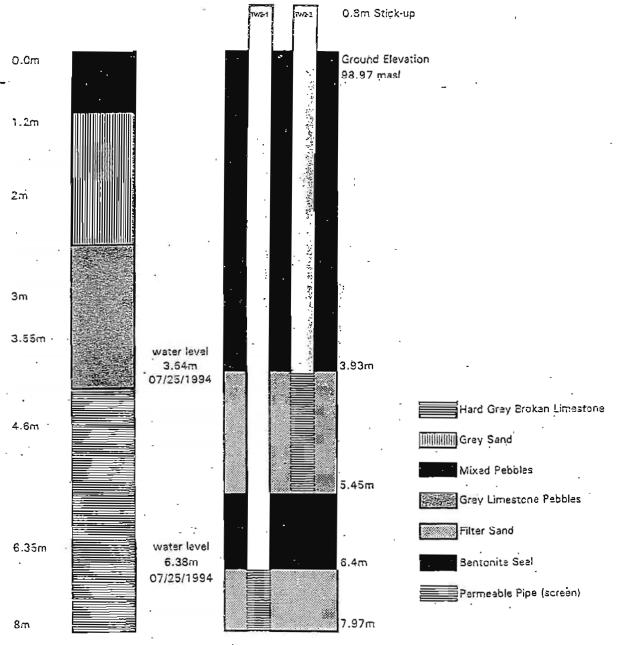
Date Drilled: July 21 1994



Not to Scale

Well Log and As-Built Diagrams for TW2 @Stoney Lake Road Landfill (Douro North) 7777-096

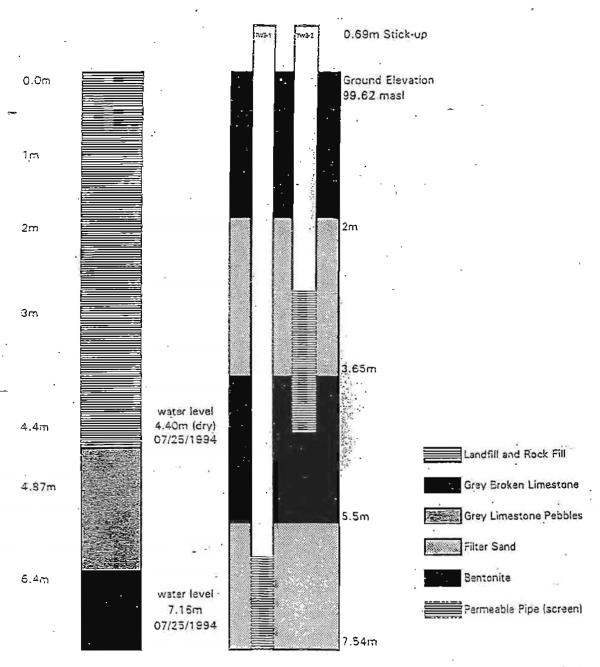
Date Drilled: July 21 1994



Not to Scale

Well Log and As-Built Diagrams for TW3 @Stoney Lake Road Landfill (Douro North) 7777-096

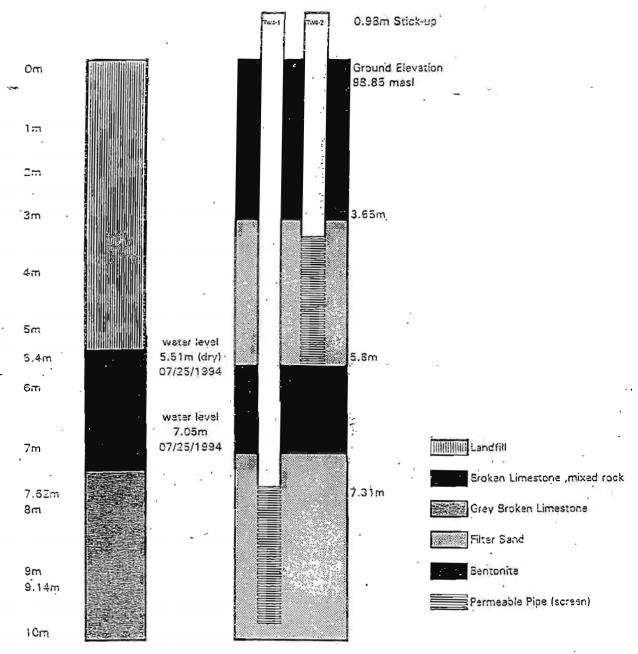
Data Drilled: July 21 1994



Not to Scale

Well Log and As-Built Diagrams for TW4 @Stoney Lake Road Landfill (Dourn North) 7777-096

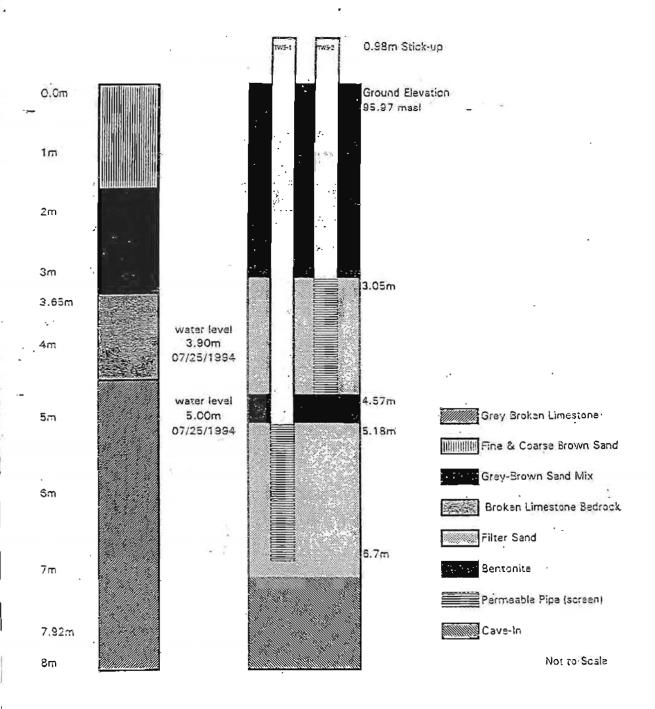
Date Drilled: July 21 1994



Not to Scale

Well Log and As-Built Diagrams for TW5 @Stoney Lake Road Landfill (Dours North) 7777-096

Date Drilled: July 21 1994



BOREHOLE LOG # TW 5-1	PROJECT NAME DOURD NORTH	LANDFILL SITE	LOGGED BY	). BUCHOLTZ
DRILLING METHOD AUGER'S		DATE DRILLED NOV 18, 1995	ELEVATION 95.258	SCALE

Water measurer taken after composition of well installation of well inst	DESCRIPTION CONSTRUCTION SAMPLE COMMENTS	TIGRAPHIC DESC	STRATIO	STRAT-	OEP THE
filter sand  filter sand  lock was installed cemented in place of the pipe and screen installed.  Screen is 5' (1.52m) in length	protective locking cosing  Cement  Dentanite  Trative fill  Mells were dedicate at completion of drilling with Water a tubing and foot value filter sand  Fifter sand  Trative file  Trative file  Dentanite  Den	loose brown	Crganic SAND Ioo		-7 -13 -14 -15 -17 -13 -14 -15 -17 -13 -14 -15 -17 -18



185 CONCESSION STREET LAKEFIELD, CHTARIO, CAMADA

21, 1st avenue Schumacher, chtaric, carada

BOREHOLE LOG # TW 8-2	PROJECT NAME DOURO NORTH	H LANDFILL SITE	LOGGED BY D. BUCHOLTZ		
DRILLING METHOD AUGERS	11	DATE DRILLED NOV 17, 1995	ELEVATION 95.02	SCALE 4 NTS	

1							
	DEPTH	STRAT-	STRATIGRAPHIC	DESCRIPTION	CONSTRUCTION DETAILS	SAMPLE TYPE VALUE	COMMENTS
	[.	-			protective locking cosing		Stick-up is 0.87m
	<u> </u> 		Organia		cement - 2002 2000 bentonite		Water measurement taken after completion of well installation
	1 .		SAND loose brown	 	notive fil	-	Wells were dedicated at completion of drilling with Waterra tubing and foot valves.
1	3		BEDROCK fractured	limestone			Protective casing with lack was installed and cemented in place.
2	,5 -5					]  - 	2" PVC schedule 80 pipe and screen was installed.
1	-7						Screen is 5' (1.52m) in langth.
-	-a						3.35m bottom of hole
١	-10		<sub>-</sub> -				
	-11 -12					:	
1	-13			·			
	-14 -15		-				
l	-15				·		·
	-17 -13						
-	~19	<u> </u>	~ — — —	~ <del>-</del>			



185 CONCESSION STREET LAKEFIELD, ONTAFIO, CAMADA

21, 1st avenue Schumacher, Catagio, Canada

BOREHOLE LOG # TW 7-1	PROJECT NAME	H LANDFILL SITE	LOGGED BY	D. BUCHOLTZ	=
DRILLING WETHOD AUGERS	PROJECT No 7777-225	NOV 20, 1995	ELEVATION 94.31	SCALE NTS	_

= 22	em, s		CONSTRUCTION	SAMPLE	
DEPT	STRAT- IGRAPHY	STRATIGRAPHIC DESCRIPTION	DETAILS	TYPE VALUE	COMMENTS
			protective lacking casing	.	Stick-up is 0.32m
10	2-14	Organic SANO dark brown with Organics	cement Sic Sic bentonite		taken after completion of well installation
2		Silt compact grey			Wells were dedicated at completion of drilling with Waterra tubing and foot volves.
3   4			native fill		Protective casing with lack was installed and cemented in place.
5			bentonite		1 1/4°PVC schedule 80 pipe and screen was installed.
-7 -8		BEDROCK freetured limestons	Titer sand		Screen is S' (1.52m) in length.
9					9.25m bottom of hole
11					
12	-			•	
15	<sup>;</sup> } 				
16				:	
17					*
19					.
<u> </u>	1 .	<u> </u>			



185 CONCESSION STREET LAKETHELD, ONTARIO, CAMADA

21, 15 AVENUE SCHUMACHER, ONTARIO, CANADA

ļ-

BOREHOLE LOG \*\* TW 7~2 | PROJECT NAME | LOGGED BY | DOURO NORTH LANDFILL SITE | D. BUCHOLTZ |

DRILLING METHOD | AUGERS | PROJECT No. | DATE DRILLED | ELEVATION | SCALE |

7777-225 | NOV 20, 1995 | 94.395 | NTS

F	/A1				
нина	STRAT-	STRATIGRAPHIC DESCRIPTION	CONSTRUCTION - DETAILS	SAMPLE TYPE VALUE	COMMENTS
			protective locking casing		Stick-up is 1.02m
-		Grgania SAND dark brown with Organias	Cement		Water measurement taken after completion of well installation
$\frac{1}{1}$		Silt compact grey	bentonite		Wells were dedicated at completion of drilling with Waterra
-3  -4			filter sond		tubing and foot valves.  Protective casing with lock was installed and cemented in place.
5 5					2" PVC schedule SO pipe and screen was installed.
 		BESROCK fractured limestone			Screen is 5' (1.52m) in length.
- 5 					4.27m bottom of hole
10				'	
11	 			-  -	
13					
14					
15				.} [	
17					·
18					
<u></u> 1∃	\ \				
					<u>_·</u> ⊔



135 CONCESSION STREET LAKEFIELD, CNTAPIO, CANADA

21, 1st AVENUE SCHUMACHER, ONTARIO, CARACA

BOREHOLE LOG # TW 8-1	PROJECT NAME DOURO NORTA	H LANDFILL SITE	LOGGED BY	BUCHOLTZ
DRILLING METHOD AUGERS	24 10 10 10 10 10 10 10 10 10 10 10 10 10	NOV 30, 1995	Landin	SCALE NTS

DEPTH	STRAT- ICRAPKY	STRATIGRAPHIC DESCRIPTION	CONSTRUCTION DETAILS	SAMPLE TYPE VALUE	COMMENTS
].			protective locking casing		Stick-up is 1.33m Water measurement
†°		Organic	cement bentonite		taken after completion of well installation
1 2		SAND grey with GRAVEL	native जी।		Wells were dedicated at completion of drilling with Waterra tubing and foot valves.
4. 19			bentonite		Protective acsing with lock was installed and cemented in place.
3 5		- <del> </del>	native fill		1 1/4°PVC schedule 80 pipe and screen was installed.
7		BEDROCK instance limestone			Screen is 5' (1.52m) in length.
2			bentonite		10.97m bottom of hole
10 1			filter sand		
-12	<del> </del> <del> </del>				ē
14					
-15 -	-  -				-
17					
-13 -    -18 -					



185 CONCESSION STREET LAKEFIELD, ONTARIO, CANADA

21, 18 AVENUE . SCHLMACHER, CATARIC, CANADA

BOREHOLE LOG # TW 8-2	PROJECT NAME DOURO NORTH LANDFILL SITE	LOGGED BY . D. BUCHOLTZ
DRILLING METHOD AUGERS	PROJECT No DATE DRILLED NOV 30, 1995	ELEVATION SCALE 100.094 NTS

DEPTH	STRAT-	STRATIGRAPHIC DESCRIPTION	CONSTRUCTION DETAILS	SAMPLE TRE VALUE	COMMENTS
			protective locking casing	-	Stick-up is 1.33m
0		Organic	cement experience bentonite		Water measurement taken after completion of well installation
1. 2		CLAY dark brown  SAND gray with GRAVEL			Wells were dedicated at completion of drilling with Waterra
S 4			native fill	निरस्कार	tubing and foot valves  Protective casing with lock was installed and cemented in place.
N N					2" PVC schedule 80 pipe and screen was installed.
		BEDROCK fractured limestone	bentonite	].	Screen is 5' (1.52m) in length.
TH'NITINI			filter sand		4.32m bottom of hole
1				<u>-</u>	
2					
<b>+</b>				<u> </u>	· .
5 - 6 -	-  -				-
7	<del> </del>  -				
9				<u> </u>	



135 CONCESSION STREET LAKEFIELD, CNTARIO, CANADA

21, 1st avenue Schumacher, Cntario, Canada

BOREHOLE LOG	# BH9-1		E OF DOURO AKE ROAD LANDFILL		D. BUCHOLTZ ESEARCH LIMITED
DRILLING METHOD HOLLOW	PROJECT No 7777-371	DATE DRILLED AUGUST 19, 1997	GROUND ELEV.	SCALE MTS	

Dr P Th	STRAT-	STRATIGRAPHIC DESCRIPTION	CONSTR DET	CUCTION AILS	SAMPLE TYPE VALUE	COMMENTS
		•	PROTECTIVE . CASING			Drilling commenced 08:00hrs, Aug 19/97
  -  -			CEMENT			Well instrumented with dedicated inertic pump upon completion.
		ORGANIC, overburden	<u>-</u>			TW9-1 has 50MM PVC Schedule 40 riser pipe and 1.52m No.10
1 2						- slotted screen
13			BENTONITE		,	
Ī					-	
5		BEDROCK, limestone				
 		BEDRUCK, IIMESTONE	<u> </u>			
-7						
<u> </u> 8			SILCA SAND		.}. •	Water was encountered @ 8.84m (29ft) below
9.						grade.  Bottom of hole at 9.60m (31.5ft) below
1			<u>-</u>			grade.



185 CONCESSION STREET LAKEFIELD, ONTARIO, CANADA

21, 1st AVENUE SCHUMACHER, ONTARYO, CANADA

BOREHOLE LOG #BH9-2		E OF DOURD AKE ROAD LANDFILL	LOGGED BY	D. BUCHOLTZ RESEARCH LII	
DRILLING METHOD HOLLOW STEM AUGER	PROJECT No 7777-371	DATE DRILLED AUGUST 19, 1997	GROUND ELEV.		NTS

		<del></del>			
DEPTH	STRAT-	STRATIGRAPHIC DESCRIPTION	CONSTRUCTION DETAILS	SAMPLS TYPE VALUE	COMMENTS
			PROTECTIVE CASING		Drilling commenced 13: 30hrs. Aug 19/97
10			CEMENT		Well instrumented with dedicated inertia pump upon completion.
		ORGANIC, overburden			TW9-2 has 50MM PVC Schedule 40 riser pipe and 1.52m No.10 slotted screen
-2. -3.		SILT, till, grey, wat	SILCA SAND BENTONITE		Water was encountered © 1.83m (6ft) below grade.
		· i_			Bottom of hole at 3.51m (11.5ft) below grade.
-5 					
5		BEDROCK, limestone		-	
7	7				. •
3	4				
	7		<b>~</b>	-	
			·		



185 CONCESSION STREET LAKEFIELD, ONTARIO, CANADA

21, 1st AVENUE SCHUMACHER, ONTARIO, CANADA

Aailing Addre	ess (Street Nymber/Nar	me) (	, ,		Municipality		- Dummer	Postal Code		Telephone I		ell Owner area code
Vell Locati		reet			Warsq	W	070	14940	AO			
ddress of W	Vell Location (Street Nu	mber/Name	206		Township			Lot	1	Concession	1	
	ct/Municipality	They be	W O		City/Town/Vil	llane			Provin	100	Poets	l Code
					Yours Manicipal Pla		7		Ont		1	
	ates Zone Easting	81512 N	forthing	690	Manicipal Pla	an and Suble	ot Number		Other			
NAD 8	and Bedrock Materi				ord (see instr	uctions on the	e back of this form)	STANCE VIE	31.12	C ROCE	201	90.00
General Colo		non Materia			her Materials			eral Description	i i		Dep	oth (m/ft)
PU	6RNEL	-					100	95€-			0	-2
BRN	SILT					507	7.			2	6	
Chy	CLAN			570	-		Sor	=-			6	7
Elk	FILL						500	-7.			Z	17
( - t							.,,,,,					
		Annula	r Space		BANG ALL	T ( ( ) ( ) ( )	ISAM IN	Results of We	ell Yiel	d Testing	0.000.27	2.750
Depth Set a	at (m/fi) To	12 12 14 14 14 14 14 14 14 14 14 14 14 14 14	alant Used			e Placed	After test of well yield	d, water was:	Dr	aw Down Water Leve		Recovery Water Le
1	6 GENTON				100	,	Other, specify	11.000	(min)	(m/ft)	(min)	(m/ft)
5	12 SAND						If pumping discontinu	ued, give reason:	Static Level		1	
							Pump intake set at (	(m/ft)	2		2	
		-					Pumping rate (Vmin)	/ GPM)	3		3	
											-	
	d of Construction	д Пр	ublic	Well U		Notused			4		4	
Cable Tool Rotary (Cor	Diamono		omestic	Comm	ercial	Not used Dewatering	Duration of pumping	9	4 5		4	
Cable Tool Rotary (Cor	Diamono			Comm	ercial	Dewatering Monitoring	Duration of pumping	g min	5		5	
Cable Tool Rotary (Cor Rotary (Rev Boring Air percussi	Diamond		omestic vestock rigation dustrial	Comm Munici Test H	ercial D	Dewatering Monitoring	Duration of pumping hrs + Final water level end	g min of pumping (m/11)	5		5	
Cable Tool Rotary (Cor Rotary (Rev Boring Air percussi	Diamond oventional) Jetting overse) Driving Diagong city AUGG		omestic vestock rigation dustrial ther, specify	Comm Munici Test H	ercial pal cole g & Air Conditi	Dewatering Monitoring oning	Duration of pumping	g min of pumping (m/11)	5 10 15		5 10 15	
Cable Tool Rotary (Cor Rotary (Rev Boring Air percussi JOther, spec	nventional)	De   Lin   In   In   Oil   Cecord - Ca	omestic vestock rigation dustrial ther, specify using	Comm Munici Test H	ercial  pel  ole  g & Air Conditi  Status  Water	Monitoring oning of Well Supply	Duration of pumping hrs + Final water level end	g min of pumping (m/ll) I/min / GPM)	5 10 15 20		5 10 15 20	
Cable Tool Rotary (Cor Rotary (Rev Boring Air percussi Jother, spec	Diamono oventional) Jetting verse) Driving Digging sion city full- Construction R Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steet)	De	omestic vestock rigation dustrial ther, specify using	Comm Munici Test H	ercial  pel  ole  g & Air Conditi  Status  Water	Dewatering Moritoring oning of Well Supply sement Well	Duration of pumping hrs + Final water level end If flowing give rate (I	min of pumping (mill) Wmin / GPM) np depth (m/ll)	5 10 15 20 25		5 10 15 20 25	
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Cable Tool Rotary (Cor Rotary (Cor Rotary (Rev Rotary	Diamono oventional) Jetting versie) Driving Digging sion city Auded—  Construction R Open Hole OR Material (Galvanizad, Fibregales, Concrete, Plastic, Steel)  Construction R  Material Plastic, Gelvanizad, Steel)  Water De at Depth Kind of Wate () Gas Other, spo at Depth Kind of Wate ()	talls  Stot No.  Continues (continues)  Conti	comestic vestock rigistion dustrial ther, specify ising Dept From + 3  Unitested Unite	Comm   Municipal   Municipal	Status  g & Air Conditi  Status  g & Air Conditi  Water:  Replac  Test H Rechai  Other,  Other,  Hole Diame  pth (m/ll)  To  CZ  ation  Ational  At	Dewatering Tiforitoring oning  of Well Supply sement Well off orige Well artion and/or ring Hole ion ruction) oned, self poor Quality oned, other,  specify  ter  Diameter (amin)	Duration of pumping hrs. + Final water level end If flowing give rate (i Recommended pum (limin / GPM) Well production (limin Disinfected? Yes No Please provide a maj	min of pumping (mill)  Ilmin / GPM)  mp depth (m/ft)  mp rate  min / GPM)  Map of W  up below following	5 10 15 20 25 30 40 50 60 instruct	Minte	5 10 15 20 25 30 40 50 60	e Only 0.30

First Name	mer's Info	A 14	ast Name (	Organization		oofs	\0116a-	Dumme (					Constructed ell Owner
Mailing Ad	dress (Stre	et Number/Nan		(())		Municipality	JUNIO	Province	Postal Code		Telephone I		area code)
899	Sour	N SHEG	1			Wars	aw	60	MOT13	HO		Ш	
	Well Local	tion (Street Nym	nber/Name)		1	rownship			Lot		Concession	1	
346	(60,00)	1 106				75 - 75 0 E				Donate		In. (	
County/Di	strict/Munic	ipality				City/Town/Vi		<u> </u>		Onta		Posta	Code
UTM Coord	finates Zon			orthing	100	Municipal Pl	g forma	ot Number		Other			
	831	10	106 4	1926	6K10							Ex. (5.27)	
General C		Most Comm				ner Material:		back of this form) Gene	ral Description	TENIN A	202-10-	Dep	th (m/ll)
B21		Ric			-			Loosi	7		_	From	To
BAN		SILT			CANEL COURT!		HY FORT:		7-			6	
Co.,		CLAY			570	7		5077				6	7
BUK		FILL										Z	21
		1100											
-													
			Annular	Space	1,64 JE	CARE T	- W. S. A.M.	100000000000000000000000000000000000000	Results of We	ell Yiel	d Testing	134	STEWN FOR
Depth S From	et at (m/ft)		Type of Sei				e Placed	After test of well yield,  Clear and sand f		-	aw Down		ecovery Water Level
Br	30		(motorial ar	id typuj		(1)	,,,,	Other, specify	00	(min)	(m/R)	(min)	(m/ft)
B	5	BENTAL	w.					If pumping discontinue	d, give reason:	Static Level			
-	11	SPAND	ue							1		1	
0	100	26000				-		Pump intake set at (r.	n/ft)	2		2	
								Pumping rate (Vmin /	GPM)	3		3	
Met ☐ Cable T		onstruction  Diamond	ПР	hlic	Well Us		Not used		2000	4			
Rotary (	Conventions	al) Jetting	□ Do	mestic	☐ Municip	al [	Dewatering	Duration of pumping hrs + r	nin	5		5	
☐ Rotary (☐ Boring	(Reverse)	☐ Driving ☐ Digging		restock gation	Test Ho	& Air Conditi	Monitoring loning	Final water level end of			_	10	
Air pero	specify _/	24682		fustrial her, specify_							_		
perior, o		nstruction Re				Status	s of Well	If flowing give rate (V)	nin / GPM)	15		15	
Inside Diameter	Open Ho	e OR Material ed, Fibreglass,	Wali Thickness	1	h (m/ll)	☐ Water	Supply	Recommended pump	depth (m/ft)	20		20	
(cm/in)	Concrete	, Plastic, Steel)	(cm/in)	From	То	- Replac	ole	Recommended pump	rate	25		25	
	Put	STIL		103	6	Recha		(I/min / GPM)	71010	30		30	
	1					Dobsen	ration and/or	Well production (Vmir	/ GPM)	40		40	
						☐ Alterat	ring Hole ion	Disinfected?		50		50	
	1					Const	ruction) oned,	Yes No		60		60	
		Construction R	ecord - Scr	en			cient Supply oned, Poor	\$ 1/12 T X 12/2	Map of W	ell Loc	ation	KE (	
Outside Diameter		Asterial alvanized, Steel)	Slot No.	1077000	h (m/lt)	Water	Quality oned, other,	Please provide a map				oack.	
(cm/in)	-			From	То	specify		50	Mus )	270	199		
0	Per	+STIL	10	6	//	Other,	specify		1.00				
	,					-			140				
Water four	nd at Denth	Water Det		1 Interted		tole Diame	Diameter		Con 5	)			
		Other, spe		Onested	From	То	(an/in)		picos /				
		Kind of Water		Untested	0	11	6						
		Other, spe		Untested									
		Other, spe	The second										
Duning		fell Contracto	r and Well	Technicia		and the latest and th	a I louven Ma						
CAVA.	TI CA	Ontractor Sav	nolin	Ci	W	oll Contractor's	V /						
Business A		eet Number/Na		1	Mi	unicipality ,	1	Comments:					
Province	SNH	Postal Code	Busines	s E-mail Add	Irone	Mark	nom						
40	) [	13K19U	2 Susmesi	- C-mail AGC	e was			Well owner's Date P	ackage Delivere	bd		try Us	e Only
Bus.Teleph	one No. (inc.	area code) Na						information package delivered	Ja wilai	00	Audit No.Z	20	0301
Well-Technic	140° dan's Ljoeng	No. Signature		an and/or Co		EMIZ te Submitted		Yes Date V	Vork Completed				
37	2/4	0 7	-		9	015	11 DB	□ No 26	1412	12	Received		
0506E (2007)	/12) © Que	en's Printer for Only	erio, 2007			Minist	ry's Copy						

Well Owner's First Name	Dave	ast Name /		ownsl	nip o	f Doi	E-mail Address	mel				Constructed
Mailing Address (	Street Number/Nan	Stree-		V	Municipality Nats	ant	Province	KIOLI3		Telephone I	No. (inc.	area code)
Well Location	-0-1111				10415	SULW	010	MUIN	1114			
0	ocation (Street Nun	nber/Name)		17	Township			Lot		Concession	1:	
Ounty/District/M					City/Town/Vi				Provin	ice	Postal	Code
ENA Consideration	Tana Fastian	61	a eth la e		you is	In and Suble			Ont	ario		
MAD   8   3	17 72019		orthing	6651	Municipal P	an and Sublo	ot Number		Other			
	d Bedrock Materia	the state of the s	onment Se	aling Reco	ord (see insti	ructions on the	back of this form)		150	E47. O.	Sal 1	Tex. 12
General Colour	Most Comm	on Material		Oth	ner Materials	5		neral Description	ì		Dep From	th (m/ft) To
BAN	TEP 5	EIL					100	5E			0	2
SPN	FILL					-	100	TE-			2	9
RY	LINESTONE	-				BEDAG	CK			2	9	20
-												
		Annular	Space		K. P. C.			Results of We	ell Yiel	d Testing	ade un	2000
Depth Set at (m	vn)	Type of Sea (Material ar	alant Used			e Placed	After test of well yie		-	aw Down Water Leve	-	ecovery Water Lev
0 9			1,740)			,	Other, specify		(min)	(m/ll)	(min)	(m/ll)
9 20							If pumping discontin	nued, give reason:	Static Level			
1					1				1		1	
							Pump Intake set at	t (m/lt)	2		2	
Mathad a	4 Countries	-	-	Well Us		5559819597	Pumping rate (l/mi	n / GPM)	3		3	
Cable Tool	of Construction  Diamond	□ Pu	thlic	Comme		Notused	Direction of suscept		4		4	
Rotary (Convers			mestic restock	Municip		Dewstering	Duration of pumple hrs +		5		5	
Boring	Digging	☐ Imi	gation		& Air Conditi		Final water level en	d of pumping (m/ft)	10		10	
Air percussion Other, specify			dustrial her, <i>specify</i> ,				If flowing give rate	(Venin / CDM)	15		15	
	Construction Re	acord - Cas	sing		Status	of Well	In nowing give rate	printer or my	20		20	
Diameter (Gal	en Hole OR Material Ivanized, Fibreglass,	Wall Thickness	2000	h (m/ll)	☐ Water	Supply sement Well	Recommended pu	mp depth (m/ft)	25		25	
	crete, Plastic, Steel)	(cm/in)	From +3	To	Test H	ole	Recommended pu	imp rate	30		30	
1	USTIC		ナフ	16	Recha		(Vmin / GPM)					
1						ration and/or ring Hole	Well production (Vi	min / GPM)	40	_	40	
					☐ Alterat		Disinfected?		50		50	
					Aband		Yes No		60		60	
Outside	Construction Re	ecord - Scre	1		_ Aband	oned, Poor	Please provide a m	Map of W	No. of Street,	The second secon	nack	
Dispostor	Material tic, Galvanized, Steel)	Slot No.	From	h ( <i>m/ll</i> )	☐ Aband	Quality oned, other,	Contract Second Processing	114 O 144 114 11 114 114 114 114 114				
2	Avery	10	10	20	specify			TEENE	204	com		
	gwisi/c		10		Other,	specify		NAY MAY (mw4	0			
	Water Det	ails		1	lole Diame	ter		Lucus	()			
later found at D	epth Kind of Water		Untested		th (m/ft)	Diameter (cm/in)		( , , , ,	/			
	Gas Other, spe epth Kind of Water		Untester		9	5"						
	Gas Other, spe			9	20	3.5						
	epth Kind of Water		Untested	1								
(m/n)	Gas Other, spe Well Contracto		Technicis	an Informa	tion	- 7						
usiness Name o	Well Contractor				all Contractor's	s Licence No.	1					
Shutu	(Street Nymber/Na	(M) DI	rie	BA:	unicipality	4	Comments:					
65 S	helds	Cell-	+ '	1	2 2 1 1	am						
rovince	Postal Code	Business	s E-mail Ad	dress			Well owner's Date	e Packaga Deliven	nd 1	Minte	try Use	Qoly
us.Telephope No.	(inc. area code) Na				First Name	-	information package	1 1 1 1 1	1	Audit No.Z	20	000
05) 194	9-79191	recor	escite	2 8	entic	_	delivered	e Work Completed	2.4.0		20	029
el Technician's Li	oence No. Signalure.	el Technicia	an and/or C	ontractor Da	te Submitted	NDR	Yes I	ALL 10/ 112	12			
	-			10	UIU	1 9 1	-	11 411	C 70	Readyed		

Well Ow First Name		Dave C	ast Name /		wnst	io of Dou	0 - Summ					Constructed ell Owner
Mailing Add	dress (Stre	et Number/Nar	/ / /			Municipality	Province	Postal Code		Telephone N		
894	5	outh	Stree	T		Narsaw	ON	KIOH3	AIQ			
Address of		tion (Street Nu	mber/Name)			Township		Lot		Concession	E	
County/Dis					(	City/Town/Village			Provin		Posta	l Code
UTM Coord	inates Zor	ne , Easting	- C. No	orthing	- 1	Voulles y t	ot Number		Onta	arıo	Ш	
NAD		7 71201	P181814		3/2/3	yanopai i tan ano oas	oc manno		Culei			
		edrock Materi	als/Abando			ord (see instructions on th	e back of this form)	DESIGNATION.		MENE:	1210	alai is
General C	olour	Most Comm	non Material		Ott	ner Materials	General Description				Dep From	oth (m/ft)
Ber		TOP	50.6				600	5E.		(	9	2
BON		510			CCH	fy	SOFT. BEDVOCK			0	2	3
301		1.405000	E		Book	OCA	BEDILO	ce			3	10
		<i></i>										
		11000	Appula	Space			1	Results of W	all Viel	d Tostina	Zepin.	9 S 1 1 S 1 C 1
Depth S	et at (m/ft)	1	Annular Type of Sea			Volume Placed	After test of well yield			aw Down	R	decovery
From	То		(Material ar			$(m^3/ll^3)$	Clear and sand	free	Time (min)	Water Level		Water Level
0	4	PENTER	WEE-				Other, specify_ If pumping discontinu	and also reasons	Static	(msi)	(min)	lund
4	10	SAND					in positioning discortain	acu, give reasons	Level			
									1		1	<u></u>
		1					Pump intake set at	(m/ft)	2		2	
1.00					THE GRAD		Pumping rate (Vmin	/ GPM)	3		3	
Meti		Onstruction  Diamone	i DPu	htte	Well Us				4		4	
	Convention			mestic	☐ Municip		Duration of pumping		5		5	
Rotary (	Reverse)	☐ Driving		restock .	- Test Ho	SeMonitoring & Air Conditioning	Final water level end	min of numoing (m/ll)				
Boring Air perce	ussion	Digging	☐ Imi	justrial	☐ cooms	a Air Conditioning	I isal water level end	or branchasti fusio	10		10	
Other, s	pecify		_ 0	her, specify			If flowing give rate (	l/min / GPM)	15		15	
		onstruction R		-		Status of Well			20		20	
Inside Diameter	(Galvani)	ole OR Material zed, Fibreglass,	Wall Thickness	From	h (m/lt)	☐ Water Supply ☐ Replacement Well	Recommended pur	np depth (m/ft)	25		25	
(cm/in)	_	e, Plastic, Steel)	(cm/in)	111000		Test Hole	Recommended pur	mp rate	-			
	10	ESTIC		+3	5	Recharge Well  Dewatering Well	(l/min / GPM)		30		30	
	1					Observation and/or	Well production (I/m	nin / GPM)	40		40	
						Monitoring Hole Alteration	Protofout 40		50		50	
						(Construction)  Abandoned,	Disinfected?		60		60	
		Construction R	acord - Scr	100		Insufficient Supply	1 1 100 1 100	Map of W	ell Loc	ation	7 (18)	20,000,00
Outside		Material	200000000000000000000000000000000000000	_	h (m/ft)	Abandoned, Poor Water Quality	Please provide a me				ack.	
Diameter (cm/in)		Salvanized, Steel)	Slot No.	From	То	Abandoned, other, specify	57	10000	44	2		
2	PLA	51/C	10	5	18	Other, specify		MAP.				
		Water De	tails			Hole Diameter	1 /	403	)			
		h Kind of Wate	r: Fresh	Untested		th (m/ft) Diameter To (am/in)		pour	/			
		S Other, spen h Kind of Water		Untested		3 5						
		s Other, spe	and the same of th		3	10 97	11					
		h Kind of Wate		Untested			1					
(n		s Other, spe		Tashalak	un Informa	tion						
Business N		Vell Contractor	and well	reconnicia		ell Contractor's Licence No.	1					
Shat	a Sc	sil Sar	mplin	ly		712141						
Business A		reet Number Na	(me)	1	M	unicipality,	Comments:					
rovince	Shiel	Postal Code	Business	E-mail Ad	dress	MUI KNOW	-[]					
140		13/R191	2 Susilies	s scatter MO	, r to 00			Package Deliver	ed	Minis	try Us	e Only
us.Telephy	one No. (inc	area code) Na				First Name)	Information package	i i bid		Audit No.Z	20	0300
100)	1401	1919	yeacht ?			ue.	delivered Date	Work Completed			20	0501
gir pecnes	an's Liopho	J. Signature	of Technicis	an author C	onuacity Da	TVIS ALLDO	No 24	4/1/17	02	Danelurid		
506E (2007/	12) 60	oun FPrintectof On	Carrier T			MIDIOIPE	120	1171/10		Regulved		

Well Ow First Name		formation	ast Name /,	Organizatio	r Leit	8/1251	-	E-mail Add	ress	_		144-11	
Cholon	Se 1	ave Cli	fford			nip C	of Dour	0-Dum			-		Constructed ell Owner
	dress (Stre	SWCC	ne)			Municipality NO(S	ty	Province	Postal Code		Telephone N	lo. (inc.	area code)
Well Loc	ation					140/10	0144		Mond	110			
		ition (Street Nur	mber/Name)			Township			Lot		Concession	3	
County/Dis	strict/Munic	cipality				City/Town	Village			Provin	nce	Posta	il Code
						Your	Ls for	T.		Ont			
		P Easting		orthing	TRE	Municipal	Plan and Subl	ot Number		Other			
	8 3 C	the state of the s				ord (see in	istructions on the	a back of this form)		15677	Me in	500	457462 011
General C	-		non Material		AND DESCRIPTION OF THE PARTY OF	ther Materi			General Description	1		Deg	oth (m/lt)
Rail		TO 1.50	3/4					2	co; E.			0	<b>■.</b> 2
BRU		5rd			e	CAY		5	of.		0	2	8
ERY	1	MESTAR	16		Be	prock		BED	ROCK		8	3	85
-													
		- 10.5	Annular	Space		T-TOMESI		ERSET 1	Results of W	ell Yiel	ld Testing		(2-5+free)
Depth S From	et at (m/ft)		Type of Sea (Material an	alant Used			me Placed (m³/fl³)	After test of well	yield, water was:	-	aw Down	-	Recovery Water Level
8	24	Reston	***************************************	u rypoj			imm)	Other, spe		(min)	(m/lt)	(min)	(m/ft)
a it	-		ac.					If pumping disco	ontinued, give reason:	Static Level			
24	175	SAND						-		1		1	
	-							Pump intake so	et at (m/lt)	2		2	
		1						Pumping rate (	Ifmin / GDM	3		3	
		onstruction			Well			Fumping rate (	unui i Gi-wi	4		4	
Cable To		Diamono al) Jetting		mestic	☐ Comn		☐ Not used ☐ Dewatering	Duration of pur		5	-	5	
Rotary (	Reverse)	☐ Driving ☐ Diaging	Liv	estock	Coolin	Hole ng & Air Con	Monitoring	hrs +	min l end of pumping (m/ll)	-			
Boring All Deco			☐ Ind	tustrial	LI COOM	g a 74 con	onornig	T HIST HOUSE FOR	construction of freed	10		10	
Other, S			100	her, specify		1		If flowing give r	ate (I/min / GPM)	15		15	
Inside	7	onstruction R	ecord - Cas Wall	_	h (m/ft)	_	tus of Well er Supply	Recommended	pump depth (m/ft)	20		20	
Diameter (cm/ln)	(Gawani	ized, Fibreglass, e, Plastic, Steel)	Thickness (cm/in)	From	To		lacement Well			25		25	
				+3	25	☐ Rec	harge Well	Recommended (I/min / GPM)	pump rate	30		30	
				( )	10-2		vatering Well servation and/or			40		40	
-						Mon	itoring Hole	Well production	(Vmin / GPM)	50		50	
							nstruction)	Disinfected?		60		60	
							ndoned, dicient Supply	Yes !			a stinu		
Outside		Construction R	ecord - Scre		h ( <i>m/ft</i> )		ndoned, Poor er Quality	Please provide	Map of W a map below following			ack.	1 1 1 1 1 1 1 1 1
Diameter (cm/in)		Material Salvanized, Steel)	Slot No.	From	То		ndoned, other,		SEE AT		100		
2			10	25	35	350	ony		sec no	are			
			20			Oth	er, specify		144				
_		Water De	talle	_	1	Hole Diar	motor	-	/ /				
Water four	nd at Dept	h Kind of Wate		Untested		epth (m/fi)	Diameter	1	/ TW-80	)			
		Other, spe			From	To	(cm/in)			/			
		th Kind of Water		Untested	0	20	3.5	-					
		h Kind of Wate		Untested	C	35	5.3	-					
(1)		s Other, spe											
Business A		Well Contractor ell Contractor	or and Well	Technicia			tor's Licence No.	-					
Shat	TA St	oil Saw	1 pline	1		76	741						
Business A	Address (S	treet Number/Na	Tarri	1	1	Municipality	lance	Comments:					
Province	SUL	Postal Code	Business	s E-mail Ad	dress	Mark	nam						
01	7	431R190	Q					Well owner's information	Date Package Deliver	ed		try Us	e Only
Bus.Teleph	one No. (in	c area code) Na	///		Last Nam			package delivered	- 7 x 5 u su	of o	Audit No.Z	20	0305
Wellstechnik	cian's Ligens	oe No. Signature	of Technicis	an and/or C	entractorii	Date Submitt		Yes	Date Work Completed				KANDO CONTRA
127	4/1	6 #				7015	101 DB	□ No 🤌	01412	46	Received		
0506E (2007)	/12) © Qu	een's Printer for One	and, 2007			Mini	stry's Copy						

First Name	1	nformation D.V.C. Cliff	ast Name /		ńship	of	Douro	E-mail Address					Constructed
Mailing Add	iress (S	treet Number/Nar				Municipality		Province	Postal Code		Telephone N	-	
Well Loca		South S	street			Wat	Saw	00	KIOL 13	AU			
Address of	Well Lo	cation (Street Nu	mber/Name)			Township			Lot		Concession		
County/Dis	trict/Mi	ff 6				City/Town/Vi	Hage			Provin	108	Posta	Code
countyrote	O ICO IIII	morpality				Yours	Pt.			Ont			
		Zone Easting	16510	orthing C	100	Municipal Pl	and Suble	ot Number		Other			
NAD		Bedrock Materi	als/Abando	nment Se	7 CP	ord (see instr	ructions on the	hack of this form!	0.2556.19	BOA TO	-all Nassan	W/SIG	500
General Co			non Material			ther Materials			ral Description		T	Dep	th (m/ft)
Per.		TOD 501	12					1000	E.			0	2
RPN		SUT			CLAY			5087.				2	8
Ry		LIMESTON	E				BEDI	cock			1	3	15
			Annular	Space		a Title Section			Results of We	ell Yiel	d Testing	(S)(S)	BW6550
Depth Se From	et at (m/		Type of Sea (Material ar	alant Used			e Placed	After test of well yield,  Clear and sand f		and the same of the same of	aw Down Water Level	-	ecovery Water Leve
0	9	BENTON		11-1				Other, specify_		(min)	(m/lt)	(min)	(m/ll)
9	15	SAND						If pumping discontinue	d, give reason;	Static Level			
-	(3)	310								1		1	
						1		Pump intake set at (r	n/ft)	2		2	
Math	and of	Construction	_		Well U	le o		Pumping rate (Vmin /	GPM)	3		3	
Cable To		Construction  Diamond	d DPu	iblic	Comm		Not used			4		4	
Rotary (C				omestic vestock	Munici		Downlering Monitoring	Duration of pumping hrs + r	nin	5		5	
Boring		Digging	☐ Imi	igation	-	g & Air Conditi		Final water level end of	f pumping (m/lt)	10		10	
Other, sp				dustrial her, <i>specify</i>				If flowing give rate (I/r	nin / GPM	15		15	
		Construction R	ecord - Ca	sing		Status	of Well	I in norming girls rate (a)	tarr ca my	20		20	
Inside Diameter	(Galv	Hole OR Material anized, Fibreglass,	Wall Thickness	0.000	h (m/ft)	☐ Water	Supply cement Well	Recommended pump	depth (m/ft)	25		25	
(cm/in)	-	rete, Plastic, Steel)	(cm/in)	From	To	☐ Test H	ole	Recommended pump	o rate	30		30	
	fl	ASTIC		+3	10	Recha		(l/min / GPM)					
	1						ration and/or ring Hole	Well production (Vmir	/ GPM)	40		40	
						☐ Alterati		Disinfected?		50		50	
						☐ Aband	oned,	Yes No		60		60	
		Construction R	ecord - Scre			Abend	cient Supply oned, Poor	Please em ide a man	Map of W			Mark.	Mark.
Outside Diameter (cm/in)	(Plastic	Material c, Galvanized, Steel)	Slot No.	From	h (m/ll)		Quality oned, other,	Please provide a map	EE PAZ				
2	8	USTIC	10	16	15	Other,		11	May 111-8)		20.17		
		Water De				Hole Diame	-	1	-				
		opth Kind of Wate		Untested	From	pth (m/ft) To	Diameter (cm/in)		TW-8)				
		Gas Other, spents of Water		Untested	6	BB	5						
		Gas Other, spe		Our.	8	15	3.5						
		opth Kind of Wate Gas Other, spe		Untested									
- 100		Well Contracto		Technicia	an Informa	ation							
usiness N	ame of	Well Contractor	inal	inc	V	fell Contractor's	s Licence No.						
usiness A	ddress	Street Number/Na	ame)	1	M	lunicipality	1	Comments:					
5	Sh	ielas	Ceilis	t		Mark	nam						
rovince		Postal Code	Business	s E-mail Ad	dress			Well owner's   Date P	ackage Delivere	ed l	Minist	ry Us	Only
us.Talepho	ne No.	(inc. area code) Na	ame of Well	Technician (	Last Name	, First Name)		information package )		in.	Audit No.Z	20	030
105) F	140	+ 79 (Q) ence No. Signature		Miller Co				delivered	Vork Completed			£ U	000
ell Technica	7/	6 Signature	or reconica:	and/oc.c	aguacior D	Dry K	MUR	□ No	14/12	11	Received		
506E (2007/1	12) 0	Queen's Printer for Ont	tario, 2007			Minist	ry's Copy		1716				



## The Ontario Water Resources Act WATER WELL RECORD

0506 (07/94) Front Form 9

County or District		Township/Borough/Cit	r/Town/Village	Con block tract sur	vey, etc. Lot	200
PETER	Bo RouCH First name	Address	RO	Date	100	0
TOWNS			011.	complete	day mo	on Type
1	y Zone	Easting Northing	RC Elevation	RC Basin Code		: <u>.</u>
	LOG	OF OVERBURDEN AND BE	DROCK MATERIALS (see insti	uctions)	Dog	pth - feet
General colour	Most common material	Other material	Ger	neral description	From	To
BLACK	ORCANIC	PRAT			0	5-1
RFY	SIXT	TILL	WEATHA		5.75	10
	LIMESTONE	BATROCK.	WAATHA	EX KU.	10	11-5
Vater found 1 - feet 2  15 18 1 2  20.23 1 2  25-28 1 2	Salty	Material thickness	Depth - feet	3" BANTO	Depth at top  G - S  LING RECOF  Abandonn  Cerment grout, b	of screen
Pumping test 1 Pump : Static level 19-21 19-21 11 feet 11 flowing give	Water level end of pumping 22-24 15 minutes 30 minutes feet test	tes H8 minutes 60 minutes  1eet feet feet feet Clear Cloudy 42-45 Recommended pump rate	In diagram below s Indicate north by a	LOCATION OF WELL		line.
FINAL STATI Waters Doserv Floathon Rechar  WATER USE Stock Industr  METHOD OF Cable Cable	US OF WELL supply   Abandoned, insuff   Abandoned, poor   Abandoned (Other ge well   Dewatering    stic   S   Commercial   Municipal   Cooling & air conditions   Cooling & air conditions   Coorrections   Coorrections	, ☐ Not used , ☐ Other	P780 Cour	TY RD# 6.	™ © BH-9	
□ Rotary □ Rotary		7 4 7				

0

## The Ontario Water Resources Act WATER WELL RECORD

Print only in spaces provided.

Mark correct box with a checkmark, where applicable.

11	51	17	57	3
1 2				

Municipality	Con.		
51007	CON	1-1-0-	04
10 14	15	22	23 2

County or District			Township/	Borough/City	Town/Villag	je		Con bloc	tract surve	y, etc. L	20
Owner's surname	BOROUG//- e set 47 First name		Address	TV I					Date	19	28 9
Town:			D	OUR.	0	RC Elevation	on RC	Basin Code	completed	day	month ye
21	Zone	Easting	27	Vorumg	74	25 26	30	31			
	LOG	OF OVE	RBURDE	N AND BEI	ROCK M	ATERIALS (s				1 - 1	epth - feet
General colour	Most common material		Oth	ner materials			General	description		From	То
BLACK.	ORGANIC	DX	AT							0	5-7
CRAY	SILT	FI	ルデ	STON	F	71%	1/4	121		5-7	5 10
	LIMESTONE	Br	DR	00 K	<b>'</b>					10	31.5
		E	Don	00/K	No	KE				31.5	5
	:										
					110						
									12-14-17		
	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \					<del> </del>					
				1 1 1	1.1		11	11.1.	1 . 1		
31		المناد		L-L-1	:		الملكات الث	:   ,			
32 1 W	ATER RECORD 51		CASING &	OPEN HO	E RECO	RD	Sizes of o	pening	31-33 Diameter	34 39 Le	ingth 75
Water found at - feet	Kind of water dian	de i	Material	Wall thickness		th - feet To	(Slot No.)	2	2"	Inches	5 1
0 a 1		10 H 1 🖸	Steel #2	SC H	1 1 1 1	)3 16	Material a	nd type		Depth at t	op of screen
V /	Gas Gas 2	:8	Open hole	40	+3	26.5	" P. U		7 7 3 -	26	-) feet
1	☐ Salty 6 ☐ Gas	7.18 1 D	Plastic Steel 19	7 -		20-23	61	Annular space	NG & SEALI	NG RECO	
	Fresh   Sulphur 21   Minerals   Salty   Gas	3 D	Galvanized Concrete Open hole				Depth set at -	feet	terial and type (C	Cement grout	, bentonite, è
25 28 0	☐ Fresh a ☐ Sulphur 29 ☐ Salty ■ ☐ Minerals ☐ Gas	5 🗆	Plastic		-		O10-13	100	EMEN	17	
	Gas  Gresh Gas  Sulphur 34 88	2 🗆	Steel % Galvanized Concrete	l		97.30	1 18 21 2	1.3 2	BKNTO 2 FULL	0011	X
	☐ Salty ☐ Minerals ☐ Gas	1.0	Open hole Plastic				2133	1.5 7	2 FILT	FR 51	AND.
Pumping test			ration of pump		7		LO	CATION O	F WELL		
71 Dump	Water level			☐ Recovery	-	In diagram	below show rth by arrow.	distances	of well from r	oad and k	ot line.
Static level	22-24 15 minutes 30 minutes	ites 45	minutes	60 minutes		indicate no	nn by arrow.	- FF	VCK .		·
SH Feet	leet leet	29-31 feet	32-34 feet	as a					10D F	111	
19-21  SULVEY STATE OF THE STAT			ter at end of te	El Cloudy	11			XM	DD FI ARK	1	
Recommend	ed pump type Recommended pump setting	45-45 Re	commended mp rate	46.4				•	HKKI	, .	
© Shallow	□ Deep	teet		GPN	71						1
FINAL STATE	US OF WELL 54		DE germanele		īl .						
□ Water s	ation well 6 Abandoned, poor	quality	y ∘ □ Ontini	cement well	P	780	court	VRI	#6.		
3 ☐ Test ho 4 ☐ Rechar	rge well 8 Dewatering				-	<	1200	TWF	RD #A	7	× 3°
WATER USE			。 □ Notus	sed . —	]		7		,	(	0) -
, C Stock	6 ☐ Municipal on i ☐ Public supply		10 Other	7.57	·				Ž	3H 9	<b>/</b> -/
4 🗆 Industr	rial 8 Cooling & air cond	ditioning							•		
METHOD OF	tool 3 Air percussion		9 🗌 Drivin	q							
□ Rotary     □ Rotary	(conventional) & D Soring (reverse) Diamond	- 0	10 🗌 Diggir		.]]				1	.713	11
, 🗆 Rotary	(air) a 🗀 Jetting	- 4	Augk	2312	JL					. 1 1 3	) <del>                                    </del>
Name of Well Co	•	.	Well Contract	tor's Licence N	٥. ک	ata	Sa Contracctor			P 1 C	1007
TRIA C	DUA DRKLING		6/1	8	l 8	ate of inspection	67	78	5	P 1 9	199/
RR#	2 JAKETIK	20	on	M	asu.				-		
Part D	CH O'BRIE	U	T 7/	S S	MINISTRYUSE	Remarks					W
Signature of Tech	hnician/Contractor		Submission of	80							-7
VI	du		day mt	y1/						0506 (07)	94) Front Fo

### The Ontario Water Resources Act

## WATER WELL RECORD

COUNTY OR DISTRICT		RECT BOX WHERE APPLICABLE	1 2	116648	14 15		1,0,4
Peterb	orough	Douro	IDWN VILLAGE	CON. BLOCK, TRA	CT. SURVEY, ETC		22
OWNER ISURNAME FIL	eld Resegach	ADDRESS	Lakofi	eld, Ont.	DATE COM		-51
21	ZONE EASTING	NORTHING	RC.	ELEVATION RC BASIN CODE		MO U /	YR 94
1 2	M 10 12	17 18	24 25	26 30 31			1 1 1
CENERAL COLOUR	Most	T		MATERIALS ISEE INSTRUCTIO	NS)	DEPTH -	EEET
GENERAL COLOUR	COMMON MATERIAL	OTHER MATE	RIALS	GENERAL DESCRI	PTION	FROM	ТО
Reddish	Soil					0	1
Reddibh	Sndy. loam					1	5
		snd. / lenses	of clay			5	12
Brwn.	Lime. (Bedr	ock)				12	26
				3'STIKUP {			
				c enesi			
				13 E NT.			
				10'-			
-				PHLK :	10.00		
				15%		15'2	
		Presoneter top	sair 2"	in deaneter	BEN	T SEAL	
			1845 (1			17'	
31	شيا ليليليل	انتيا ليليليل	با لتلتليا		I LE LENON		<u>.</u>
32	عبيا لطاعإيا	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	يا لىلىلىا ل	للنبيا لتلتلثلين	ا الناب	ابانظم	J L
WATER FOUND AT - FEET 10-13 1	FRESH 3 SULPHUR SALTY 6 GAS	INSIDE DIAM INCHES MATERIAL 1  10-II 1 STEEL 12 2 GALVANIZED 3 CONCRETE 4 COPEN HOLE	WALL DEPT	TO MATERIAL AND TYP	E	INCHES DEPTH TO TOP OF SCREEN	FEET   FEET
20.77	SALTY 6 GAS  FRESH 3 DSULPHUR	17-18 1 DSTEEL		20:25 DEPTH SET AT - FEET	MATERIAL AND	TYPE (CEMENT	GROUT
3 0	SALTY 6 D GAS	3 □ CONCRETE 4 □ OPEN HOLE		FROM TO 10-13 14	i-17	LEAD PACKE	R. ETC )
[ · U	SALTY 6 DGAS	5 DPLASTIC		27-30 18-21 22	-25		
	FRESH 3 DSULPHUR 34 O 4 DMINERALS SALTY 6 GAS	2 GALVANIZED 3 CONCRETE 4 COPEN HOLE 5 OPLASTIC		26-29 30	-33 45		
PUMPING TEST METH		1) 14 BURATION OF PUMP	17-18	LOCATIO	N OF WELL		
STATIC LEVEL 18-21	WATER LEVEL 25	GPM HOURS  1 PU  2 RE  30 MINUTES AS MINUTES  29-31 32-34		IN DIAGRAM BELOW SHOW DI LOT LINE INDICATE NORT		ROM ROAD AND	1
IF FLOWING. GIVE RATE  BECOMMENDED PUNI	FEET FEE	FEET FEET FEET	FEET 42		(_	$\sim$	
S RECOMMENDED PUNI	PUMP	43-45 RECOMMENDED PUMPING	46-49	4.	1	1	
SHALLOW	DEEP SETTING	FEET RATE	GPM	74		7-4-	5
FINAL	WATER SUPPLY	S ABANDONED, INSUFFIC	LENT SUPPLY	3.	. ]	754 -W-	
STATUS OF WELL	OBSERVATION WELL TEST HOLE RECHARGE WELL	# ABANDONED POOR DU.   Topinished   Dewatering		3 4 KM			
WATER USE	STOCK INTRIGATION INDUSTRIAL OTHER	DUNICIPAL DUBLIC SUPPLY COOLING OR AIR CONDITIO			77 100 E		<b>-</b>
METHOD OF	CABLE TOOL ROTARY (CONVENTI			LAMETIELD			
CONSTRUCTIO		9 DRIVING	1	TW-5 Douro Landf	111	1480	)47
MANE OF WELL CO	ntario Drill	LICENCE	NUMBER 22	SOURCE 51 COMPACTOR 2	2 Alig	2 4 1994	63 64 BO
ADDRESS	101 Fenelon	Falls, Ont. KO		GATE OF INSPECTION INSPE	CTOR	2 7 IJJT	
Phil I	ECHNICIAN/CONTRACTOR	SUBMISSION DATE	035 S			COO	re ·
Mul	Moun	DAY 09 NO U	4 YR 9/ 0	•		C22.	じり

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506 (11/86) FORM 9

MINISTRY OF THE ENVIRONMENT COPY

The Ontario Water Resources Act

FORM NO. 0506 (11/86) FORM 9

Ontario		SPACES PROVIDED RECT BOX WHERE APPLICABLE	Ċ	11	5116	647	5,1,0,0,7	CON,	1 1 1	10
Poterbo		TOWNSHIP, BOROUGH.		VILLAGE		CON BL	OCK. TRACT SURVE	Y. ETC	2	25-27
		Δ.	300 T	akofi	.eld, On		<u> </u>	DATE COMPLETED	48-	
		NG		NG.	ELEVATION		ASIN CODE	DAY	III I	YR
1 2	H 10 12	17 18		24 25	25		<u>, IIIII</u>			111
GENERAL COLOUR	MOST	OG OF OVERBURDE	MATERIALS		CK MATERI		DESCRIPTION		DEPTH -	FEET
1102101	COMMON MATERIAL		ANTERIALS			GENERAL	DESCRIPTION		FROM	то
During	Garbage & b		-#-						0	19
Brwn. Brwn.	Lime. (Brok								19	22
DI WII •	Lime. (Bedi	JCK /				3'5.u.	7 1	1	22	31
				-3	-	CEM.				
····				·		Brot				
	7-74					PACK				
						122				
						PHCK			-	
						20'		20	',"	
		Piesomet	er 1.	us ai	re 2"	el en	+0-	13847 5	CAL	
		with a :			in the		. 1	24	4	
31 [111	Hilifellin	Hilibilio	illi	lili			11113	MACK	Lilil	111
32	سيا لىلىلىل	32		ليليا	43			11/19/	ليليا	ا ليد
20-23 1 D 20-23 1 D 21 D 25-21 1 D 2 D 30-13 1 D	1 D BAILER  WATER LEVEL END OF WATER LE PUNPING  22-24 IS MINUTES	GPH H	PUMPING 15-16 10URS 1 PUMPING 1 RECOVER	RY MINUTES	20-21 27-30 IN DI	0 DEPTH SET 180M 10-12 18-21 26-29 L O (	10 M 18-17 22-25 30-33 80 CATION O	OF WELL FROM	CEMENT LEAD PACKE	GROUT R. ETC )
FEET IF FLOWING. GIVE RATE  RECOMMENDED FUM  SHALLOW	PUMP	FEET WATER AT EN	AR 2	35-37 -FEET 4Z CLOUDY 45-49 GPM	47 4 7				x	4
FINAL STATUS OF WELL SS. WATER USE	WATER SUPPLY  WATER SUPPLY  STORY  BY CONTROL  WATER SUPPLY  SERVICE  CONTROL  CONTROL  WATER SUPPLY  CONTROL  CONTROL  WATER SUPPLY  CONTROL  CONTROL  WATER SUPPLY  CONTROL  CONTROL	ABANDONED INS ABANDONED POE TO UNFINISHED DEWATERING  COMMERCIAL MUNICIPAL DUBLIC SUPPLY COOLING OR AIR CON	OR BUALITY		THE PLANT OF THE PROPERTY OF T	21	CTY R		1	
METHOD OF ONSTRUCTIO	CABLE TOOL ROTARY (CONVENT) ROTARY (REVERSE)	*   NI  6   BORING ONAL) 7   DIAMONE	OT USED		TW-4		Landfill		1480	) <b>4</b> €
NAME OF WELL C		LICI	L CONTRA		> DATA SOURCE	" "5	ก็วลั	AUC O A		53.64
ADDRESS	tario Drilli 101 Fenelon F	alls, Ont.	5022 ROM	1NO	SOURCE  DATE OF INSPE	_	INSPECTOR	AUG 24	1994	
	Brown ECHNICIAN/CONTRACTOR	Lic	T-00	35	NEMARKS				100	r C
The	Proun	DAY D NO	03	YR 7/	<u> </u>				DD.	P D

The Ontario Water Resources Act

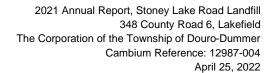
		INT ONLY IN SPACES ECK 🗵 CORRECT BO	PROVIDED X WHERE APPLICABLE	11	5116	646	5,1,0	97 (20	N <sub>L</sub>	194
Peterbo	г		Douro	OWN VILLAGE			BLOCK, TRACT, S	UNVEY ETC		23 23 24
OWNER ISURNAME F	IRST)	28-47	ADDRESS				U4	DATE COMP	Agricultural Control of the Control	22
21	eld Rese	EASTING	Box 4300	Lakef	ield, On	t.	BASIN CODE	DAY 26	мо_07	yr <u>94</u>
1 2	T 10	12	<u> </u>	24 [	با پ	10	11			47
	1		F OVERBURDEN A	ND BEDR	OCK MATERIA	ALS (SEE	INSTRUCTIONS			
GENERAL COLOUR	COMMON MA		OTHER MATER	HALS		GENE	RAL DESCRIPTIO	N	DEPTH FROM	FEET
	Garbage	e & backi	fill						0	12
Brwn.	Lime.	(Broken)							12	15
Brwn.	Lime.	(Bedrock)	)						15	24
						0	33 5 4			
						CEM.				
						7 SEAL				
					5	4"				
						PAK	<b>*</b>			
							",	30-40-5-	19	
								BENT	SEAL	
			Piesumete.	1.75	are 2	in di	aneter		17'4"	
			with a 5	Ser cen	or rid			2		
31		عللسا إ	للبيأ ليليا		لللللا	التلثا	اللبيا	E PYSK		
32	14 15				43	البلا	54	- بيا الما	-12211	یا لیا
	TER RECORD		CASING & OF	11		Z   5176.0	S) OF DELNING	31-33 DIAMETI	R 34-38 L	NGTH 39-40
AT - FEET	FRESH 3 SUL	TA INCHE	S MATERIAL T	HICANIEL	OEPTH - FEET	S MATE	RIAL AND TYPE		DEPTH TO TOP	41-44 10
2.0	SALTY 6 GAS	ERALS	1 STEEL 12 GALVANIZED		13-16	S				FEET
	□ FRESH 3 □SUL □ SALTY 6 □GAS	ERALS	3 OCONCRETE 4 OPEN HOLE 5 OPLASTIC			61		ING & SEALI	NG RECO	RD
	FRESH 3 DOUL	PHUR 14	1 DSTEEL 2 DGALVANIZED 3 DCONCRETE		20-23	FROM	SET AT - FEET	MATERIAL AND		T GROUT KER. ETC >
25-28	FRESH 3 Daul	PHUR 25	4 DOPEN HOLE 5 DPLASTIC		27-30		-13 14-17			
10.11	GAS	PHUS 14 10	1 STEEL 2 GALVANIZED 3 CONCRETE		27-30	26-	22 25	••		
	SALTY 6 GAS	ERALS	5 DPEN HOLE				30-33			
71 PUMPING TEST HE	THOD 10 ,	PUMPING RATE	11-14 OURATION OF PUMPI	NG 17-18		L	O C A T HO M	OF WELL		
STATIC	WATER LEVEL 21	WATER LEVELS OF	JRING HOURS		IN DI.	AGRAM BELO	OW SHOW DISTA	NCES OF WELL FI	ROM ROAD AN	D <b>N</b>
TEST	PUMPING 12-24	15 MINUTES   30 MI	NUTES 45 MINUTES 29-31 32-34	60 MINUTES			NONTE HONTH B	ARROW.		7
		FEET	FEET FEET	FEET						′
FEET FLOWING. GIVE RATE  RECOMMENDED PU	GPM	OMF INTAKE SET AT	FEET 1 D CLEAR 2						$\overline{}$	
SHALLOW	MP TYPE N	ECOMMENDED- UMP ETTING	43-85 RECOMMENDED PUMPING	45-49				{	× 7/2-3	
i0-53	- C DEEF 3		FEET RATE	GPM	20			\ /	2 ora)'	
FINAL	WATER		ABANDONED INSUFFIC		2	4	4 KM		<u> </u>	
OF WELL	D DESERVE	OLE 7	ABANDONED POOR DUA	LITY	34	v	7 11			
	DOMES		DEWATERING COMMERCIAL		1					
WATER	2 STOCK 3 RRIGA	TION 7 🗆	MUNICIPAL Public Supply				CTY	20. 6		
USE	•   INDUST		COOLING OR AIR CONDITION				. , ,			
METHOD	1 D CABLE		6 D BORING	b	X XMA	EFIEL	D			
OF CONSTRUCTION	3 D ROTARY	(CONVENTIONAL) (REVERSE)	7 DIAMOND 4 DIETTING		TW-3	Douro	Landfi			. 1
CONSTRUCTION	5 AIR PE		9   DRIVING	OTHER	DRILLERS REMARK		Danul I.		148	045
NAME OF WELL		1.0	LICENCE		> DATA SOURCE	58 00	5022	DATE RECEIVED	\ L	63-64 80
Tri-Or	ntaRIO D	rilling	502	2	SOURCE DATE OF INSPEC		5022	AUG 2	<u>2 4 1994</u>	
Box 11	01 Fene	lon Falls	s, Ont KON	1NO	S REMARKS					
Phil B	Brown		T-0	NUMBER 035	E MANKE					
SIGNATURE OF	THE WALL	RACTOR	DAY OF NO O	8 ,91	OFFICE			(	CSS.I	ES

### The Ontario Water Resources Act

2. CHECK 🖾 CORE	SPACES PROVIDED RECT BOX WHERE APPLICABLE	1 2	116645 5,1,0,0	7 CON. 22 23
Peterborough	Douro	TOWN VILLAGE	CON BLOCK TRACT. SUR	VEY. ETC LOT 25.
OWNER ISURNAME FIRST! 26-47  Lakefield Research	ADDRESS	I also Si a I .		DATE COMPLETED 48-53
ZONE EASTING	NORTHING	Lakefield	ELEVATION RC BASIN CODE	25 MO 07 YR9
21	11 11	124 25	يبليا لما لينيا	<u> </u>
L	DG OF OVERBURDEN	AND BEDROCK	MATERIALS (SEE INSTRUCTIONS)	
SENERAL COLOUR COMMON MATERIAL	OTHER MATE	RIALS	GENERAL DESCRIPTION .	DEPTH - FEET FROM TO
Lime. (Brok	en) / layers o	of sand		0 6
Lime. (Bedr				6 27
		(vitros) Mosson		
			3'5 €.	
			Cent.	
			2'-	
			8'6" SEAL	
			PACK	
			7407	
			15'7'	PAUT SEAL
	Pour due d			214
			in dia with a	
3	11.1.1.11	1 1 1/1	cend.	PAICK
2			<u> </u>	146 11111111111111111111111111111111111
WATER RECORD	51 CASING & OF	PEN HOLE REC	OPD SIZE IST OF OPENING	31:33 UIAMETER 34-38 LENGTH 39
ATER FOUND KIND OF WATER	INSIDE		· FEET	INCHES F
10-13   FRESH 3 SULPHUR 2 SALTY 4 MINERALS	10-11 1 DSTEEL 12	INCHES RUM	13-16 MATERIAL AND TYPE	DEPTH TO TOP 41-44 OF SCREEN
15-18 1   FRESH 3   SULPHUR 19	2 GALVANIZED 3 GONCRETE 4 GOPEN HOLE			10.0.0541/110.0550000
2 G SALTY 6 GAS	5 PLASTIC		61 PLUGGIN	IG & SEALING RECORD
PRESH 3 DSULPHUR 4 DMINERALS SALTY 6 DGAS	3 GALVANIZED 3 GONCRETE		FROM TO 10-13 14-17	MATERIAL AND TYPE LEAD PACKER, ETC 1
25-28 T FRESH 3 SULPHUR 25 4 MINERALS 5 SALTY 6 GAS	5 DPLASTIC 26		27-30 18-21 22-25	
30-13 . PACSE 3 DSULPHUR 34 10	2 GALVANIZED 3 GCONCRETE 4 DOPEN HOLF		26-29. 30-33 80	
PUMPING TEST METHOD 10 PUMPING RATE	5 DPLASTIC			
PUMP 2   BAILER	15-16 GPMHOURS	17-18 MINS	LOCATION	OF WELL
	EVELS DURING # 1 Pu		IN DIAGRAM BELOW SHOW DISTANC LOT LINE INDICATE NORTH BY A	
19-21 22-20 IS MINUTES 10-20	30 MINUTES 45 MINUTES 12-34	69 MINUTES 35-37	1	
FEET FEET FEET  IF FLOWING 38-41 PUMP INTAKE S  GYE RATE  GPM  RECOMMENDED PUMP TYPE  RECOMMENDED PUMP TYPE  RECOMMENDED PUMP TYPE		FEET 42		( x 7w72
GPM	FEET   CLEAR	₹ □ CLOUDY	1	(1500)
RECOMMENDED FUMP TYPE  ACCOMMENDED PUMP SETTING	43-45 RECOMMENDED PUMPING FEET RATE	46-45 GPM		(   )
50-53			4	
FINAL WATER SUPPLY	S ABANDONED, INSUFFIC		3/ 24KM.	
STATUS  J EST HOLE  OF WELL  GRECHARGE WELL	7 DEWATERING	ALITY	3/	
55-56 1 DOMESTIC	S COMMERCIAL			
WATER  2  STOCK 3  IRRIGATION	MUNICIPAL  D PUBLIC SUPPLY			0.6
USE   INDUSTRIAL   OTHER	• COOLING OR AIR CONDITIO		CFY N	
METHOD 1 CABLE TOOL	6 ☐ BORING		LAKEFIELD	
METHOD X ROTARY (CONVENT)	■ □ JETTING		*	
S AIR PERCUSSION	9 □ DRIVING □ DIGGING □	DTHER DRII	TW-2 Douro Landfil	148044
NAME OF WELL CONTRACTOR		ONTRACTOR'S	DATA SE CONTRACTOR 59-62	DATE RECEIVED 64.68
Tri-Ontario Drilli	ing 50	22   2	DATE OF INSPECTION INSPECTOR	AUG 2 4 1994
Box 1101 Fenelon I	Falls, Ont. KO	M INO S		
Tri-Ontario Drilli ADDRESS  Box 1101 Fenelon I NAME OF WELL TECHNICIAN  Phil Brown  SIGNATURE OF TECHNICIAN/CONTRACTOR			REMARKS	
SIGNATURE OF TECHNICIAN/CONTRACTOR	SUBMISSION DATE	8 94		CSS ES
I LAUT ITECOM	1 nav # // //	9 Un 771 ICI1		

# The Ontario Water Resources Act WATER WELL RECORD

Ontario		SPACES PROVIDED RECT BOX WHERE APPLICABLE	<u> </u>	6644	ORTI COM	11166
COUNTY OR DISTRICT		TOWNSHIP, BOROUGH CITY, T	OWN, VILLAGE	CON . BLOCK, TRA	CT, SURVEY. ETC	LOT 25-27
			1000	04	DATE COMPLETED	
		Box	4300 Lakef	field, Ont.		40 07 YR 94
1 2	M 10 12	17 18	24 25 26	30 31		
		OG OF OVERBURDEN A	ND BEDROCK MA	TERIALS ISEE INSTRUCTIO	NS)	
GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATER	IALS	GENERAL DESCRIP	PTION	DEPTH · FEET FROM TO
	Backfill &	garbage		<del>:</del>		0 12
Brwn.	Lime. (Brok	en)				12 14
Brwn.	Lime. (Bedi	ock)		7/-	·	14 22
			7 6 7	354.		
				2 Gent		
				7'7" 500/		
				7 7 7 1 5 12	**	
				13.7"	2 3'7	, "
	· · · · · ·				Bent Sea	/.
		l'esometer 1.	ps (11 2	" in dia	15/2	
		Presometer 1.	Scicens on e	1d 5'x2"	PACK	
	· · · · · · · · · · · · · · · · · · ·		1	Tir	(1) 20 2	
31					بسابالسبا	البلبلا
2 10	14 15	32	43	54 SIZE ST OF OPENING	45 45 31-33   DIAMETER	34-36 LENGTH 39-
WATER FOUND	ER RECORD	INSIDE	EN HOLE RECORE	Z 15(01 NO 1		INCHES FE
	FRESH 3 DSULPHUR	INCHES 12	INCHES FROM	10 MATERIAL AND TY		TO TOP 41-44
_	SALTY 4 MINERALS 6 GAS  FRESH 3 SULPHUR 4 MINERALS	2 GALVANIZED 3 GONCRETE				FEET
	SALTY 6 GAS	4 OPEN HOLE 5 PLASTIC 17-18 1 OSTEEL		61 PLU	GGING & SEALING	
,   2	FRESH 3 SULPHUR 4 MINERALS SALTY 6 GAS	2 GALVANIZED 3 GONCRETE 4 GOREN HOLE		FROM TO	MATERIAL AND TYPE	LEAD PACKER ETC 1
	FRESH 3 SULPHUR 25 SALTY 6 GAS	5 DPLASTIC		27-30 18-21 22	2-25	
	PRESH 3 DEDITHUR 34 10	2 DGALVANIZED 3 DCONCRETE 4 DOPEN HOLE		26-29 30	9-33 40	
PUMPING TEST NETH		5 DPLASTIC	76			
71 1 0 PUMP 2		15-16 GPMHOURS_	17-18 MINS		ON OF WELL	BOAR AND N
STATIC	PUMPING	EVELS DURING 2 D RE	COVERY	IN DIAGRAM BELOW SHOW D LOT LINE INDICATE NOR		ROAD AND
T B II	22-24 IS MINUTES 26-2	30 MINUTES 45 MINUTES 37-34	80 MINUTES 35.37	1		
IF FLOWING, GIVE RATE	FEET FE		PEET 42	1	,	
IF FLOWING. GIVE RATE  RECOMMENDED PUMP	GPM P TYPE RECOMMENDE	FEET   D CLEAR	Cronos	u <sub>n</sub>	}	{
SHALLOW	PUMP	PUMPING FEET RATE	GPM ·	2,		
30-53				3	}×	J-1
FINAL	1 WATER SUPPLY 2 NO OBSERVATION WEL		A CONTRACTOR OF THE PROPERTY O	- 2	4 4111 - 3/10	00
OF WELL	TEST HOLE  RECHARGE WELL	7 UNFINISHED DEWATERING		K	1	
153	DOMESTIC STOCK	S COMMERCIAL MUNICIPAL			RD. 6	
WATER	1   IRRIGATION	PUBLIC SUPPLY  COOLING OR AIR CONDITIO		CTY	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
	OTHER	9	ED	1		
METHOD	CABLE TOOL ROTARY (CONVENT	6   BORING TIONAL) 7   DIAMOND		* KAKEFIELD		
OF CONSTRUCTIO	N ROTARY (REVERSE	DRIVING		-1 DOURD L	ANDFILL	148043
NAME OF WELL CO			OTHER DRILLERS	REMARKS 58 CONTRACTOR		
1 .	ntario Drill	LICENCE	NUMBER SOUR	502	2 AUG 2	4 1994
ADDRESS			100	- V V	ectos	
NAME OF WELL	101 Fenelon	LICENCE	M INO	RKS		
Phil E	Brown ECHNICIAN/CONTRACTOR	SUBMISSION DATE	8 94			70 70
- ///	Brown	DAY 24 MO 1	8 494 0		CS	SS.ES





Appendix H
Well Records

Fully accessible appended items are available upon request.

MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act

WATER WELL RECORD

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK SCORRECT BOX WHERE APPLICABLE

COUNTY OR DISTRICT
Peterboro ugh
OWNER ISURRANE FIRST)

ADDRESS
H & L Poles Ltd

Constant Supplicable

Constant

Peterboro	ugh	Do	uro					4			021
H & L Po	RST) 26-47		DDRESS	Deliv	erv	y, <sup>L</sup> akef	ielo	d. Ont.	DATE COM	M/3	YR <b>76</b>
	720	200	4926		<u>5.</u> 5	ELEVATION OF 26		SIN CODE	n	m .	(v.
21	, 10 12	17	/ERBURDEN	24	25	26	30 S 19FF	31			47
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1	COMMON MATERIAL	Char		30:03		Pools				FROM	2
Brown	Clay	Ston	es			Packe		a a md		2	48
Grey	Limestone					Porou	is, i	naru		2	40
			The same								
					•		***				
32 JO WA	12.60.5/2.79 00.4 14.15 TER RECORD  KIND OF WATER	82/58 51 INCHES	CASING & C	DPEN HOLE WALL THIRTHESS INCHES	_	PTH - FEET	CREEN	SE COST OPENING OF NO.	31-33 DIAM	INCHES  DEPTH TO TOP OF SCREEN	75 8 LENGTH 39-4
tested 15-18 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	FRESH 3   SULPHUR 19     SALTY 4   MINERAL     FRESH 3   SULPHUR 19     SALTY 4   MINERAL     FRESH 3   SULPHUR 24     SALTY 4   MINERAL     FRESH 3   SULPHUR 29	06 17-18	2 GALVANIZED 1 CONCRETE 1 OPEN HOLE		0	10 13-16 0010 20-23	FROM	1 SET AT - FEET 10 10-13 14-17	NG & SEA		PRET DRD
30-33	☐ SALTY 4 ☐ MINERAL ☐ FRESH 3 ☐ SULPHUR <sup>34</sup> ☐ SALTY 4 ☐ MINERAL	24-25	TO STEEL 26  2 GALVANIZED  3 CONCRETE  4 OPEN HOLE			27-30		18-21 22-25 26-29 30-33 8			
TI UMINI TRETT		TE.	15-14 DURATION OF PU	IMPING	٦٢			LOCATION	OF WEI	L 202	
STATIC LEVEL  STATIC LEVEL  19-  O 22 PET PROWING GIVE RATE	BAILER DOG 6  WATER LEVEL END OF PUMPING  11 22-24 15 MINUTES  26 22 6  38-81 PUMP INTAKI  GPM 43  UNP TYPE RECOMBENDIP PUMP SETTING	S 30 MINUT	ES 45 MINUTES 32-31 32-32 FEET 022 FEET 150 CLEAR 3-45 POUMPING	PUMPING RECOVERY  60 MINUTES 35 22 FEI OF TEST 2 CLOUDY	37 ET 42	IN DIAL	GRAM BE	LOW SHOW DISTAN	CES OF WELI		14
FINAL STATUS OF WELL	13 WATER SUPPLY 2 OBSERVATION WI 3 TEST HOLE 4 RECHARGE WELL 55-56	, D 7 D	ABANDONED, INSUF ABANDONED POOR UNFINISHED			/	28	>		15	X e WEL
WATER USE ()	2 STOCK	€ □ MU	MMERCIAL NICIPAL SLIC SUPPLY DLING OR AIR CONDI			, m	1EL09			-	9/
METHOD OF DRILLING	L S ROTARY (REVERS	SE)	6 BORING 7 DIAMOND 8 JETTING 9 DRIVING			PE		- 1.1		1	

NAME OF WELL CONTRACTOR

Faulkner Well Drilling Co.Ltd 2104

789 Erskine Ave., Peterborough, Ont.

NAME OF DRILLER OR BORER

Edward Taylor

Gignalung of contractor

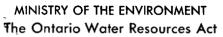
DAY 12 MO. 3 176

DATA SOURCE 1 SB CONTRACTOR 59-62 DATE RECEIVED 63-62 80

OATE OF INSPECTION INSPECTOR

RENARKS:

P
WI





B

Ontario	1. PRINT ONLY IN 2. CHECK 🗵 CORR	SPACES PROVIDED SECT BOX WHERE APPLICABLE		5106892	5100	CON	
PETERB	oro	Douro	WN. VILLAGE	3 9	CON. BLOCK TRACT SURV	Y. EYC. TV	022
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	10 12	2711	50 4	OB 20	RC. BASIN CODE	n-	0);
	LC	G OF OVERBURDEN A	ND BEDRO	CK MATERIALS	(SEE INSTRUCTIONS)		
GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERI	ALS	-11	GENERAL DESCRIPTION		DEPTH - FEET
0	Books of PREDG			PREVI	lously Du		0 20
GREY	LIMESTONE					2	0 86
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	*				10M	RU T	
					10		
					18	E	
					<u> </u>		
0024	d 123 1 1 1 10108V						
2 10	14 15	32	ا لىلىلى	43	54	65	
TER FOUND	TER RECORD	CASING & OP		ECORD	SIZE(S) OF OPENING (SLOT NO.)		34-38 LENGTH 3
AT - FEET	FRESH 3 SULPHUR 14	DIAM. MATERIAL TH	WALL DE	м то 13-16	MATERIAL AND TYPE	DEPTH OF SCR	TO TOP 41-44
1	FRESH 3 SULPHUR 19	DE SALVANIZED		0022		0.0.0541410	FEET
486 20	SALTY 4 MINERAL FRESH 3 SULPHUR 24	17-18 1 DER HOLE	188 0	22	DEPTH SET AT FEET	G & SEALING	(CEMENT GROUT LEAD PACKER, ETC.)
2 🗆	SALTY 4 MINERAL FRESH 3 D SULPHUR 29	2 GALVANIZED 3 CONCRETE 4 OPEN HOLE			10-13 14-17		LEAD PACKER, ETC.)
2 □	SALTY 4 MINERAL	24-25 1 G STEEL 26 2 GALVANIZED		27-30	18-21 22-25		
z []	FRESH 3   SULPHUR 34 80	3. OPEN HOLE			25-29 30-33 80		
PUMPING TEST MET		(1) (5.16	30 17-18		LOCATION C	F WELL	2027
STATIC LEVEL	WATER LEVEL 25	EVELS DURING 1 PUM		IN DIAGR	AM BELOW SHOW DISTANCE		ROAD AND
020	22-24 IS MINUTES 20 0 2 0 2 0	30 MINUTES   45 MINUTES	60 MINUTES 22 0 35-37			4523	A
FEET IF FLOWING. GIVE RATE	FEET FEET SEET STATE S	SET AT WATER AT END OF TE				LOT > 20	)
RECOMMENDED PUM		FEET 1 CLEAR 2	46-49		<i> </i>	29 -> 1°	
SHALLOW	M DEEP SETTING OF		<b>GPN</b>	12	A A	12 mile 44	JELL L
FINAL	54 1 WATER SUPPLY	5 ABANDONED, INSUFFICE	ENT SUPPLY		45	mile 11/	/ *
STATUS OF WELL	2 OBSERVATION WEL 3 TEST HOLE 4 RECHARGE WELL	L 6 ABANDONED, POOR QUA 7 UNFINISHED	LITY	+ LAKEF	ELD W	11/	-/1
	DOMESTIC	5 COMMERCIAL	Mark Sept.				$=$ $\frac{1}{2}$
WATERO	2 STOCK 3 SHRIGATION 4 NOUSTRIAL	6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITION	IING	•	STONEY LAKE	F RD	
	□ OTHER	<sup>9</sup> □ NOT USE	. d				/
METHOD OF	CABLE TOOL POTARY (CONVENT ROTARY (REVERSE)						1
DRILLING	4 D ROTARY (ALEXE) 5 D AIR PERCUSSION	9 DRIVING		DRILLERS REMARKS:			
NAME OF WELL O			NUMBER	> DATA	58 CONTRACTOR 59-62	DATE RECEIVED U	o 7A 53-61
ADDRESS			02	DATE OF INSPECTIO		210	o/T
PP#10	R OR BORER		NUMBER	MAY, L3	3/95 1		
ANTON ADDRESS  NAME OF DRILLE  HEINZ SIGNATURE OF FR	URBAN	SUBMISSION DATE		OFFICE	.4.		P/J-13
Ant	an Mrba	W DAY 25 MO. JAN	V VR. 74	P		٠.	WI JU

### MINISTRY OF THE ENVIRONMENT The Ontario Water Resources Act

31 D/8E

### VELL RECORD

5107090 ! 5,1,007 1. PRINT ONLY IN SPACES PROVIDED Z. CHECK S CORRECT BOX WHERE APPLICABLE OUNTY OR DISTRICT Douro PETERBORD LAKEFIELD 0.8.20 LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS) MOST COMMON MATERIAL GENERAL COLOUR OTHER MATERIALS GENERAL DESCRIPTION FROM 0 86 PREVIOUSLY DRILLED 86 GREY 124 LIMESTONE 124 RED GRANITE 175 OWRE 0086 24 0124215 0175721 31 32 41) 51 WATER RECORD CASING & OPEN HOLE RECORD SCREEN DEPTH - FEET WATER FOUND AT - FEET KIND OF WATER FROM TO DEPTH TO TO OF SCREEN FRESH 3 SULPHUR 13-16 2 SALTY 4 MINERAL ローフス 2 GALVANIZED
3 CONCRETE 1 FRESH 3 SULPHUR
2 SALTY 4 MINERAL 0175 86 PLUGGING & SEALING RECORD 4 DOEN HOLE 1 STEEL 2 GALVANIZED AT . FEET FRESH 3 SULPHUR
SALTY 4 MINERAL S CONCRETE I C FRESH 3 SULPHUR 4 [] OPEN HOLE 27-30 I D STEEL 2 GALVANIZED
3 G CONCRETE 1 | FRESH 3 | SULPHUR 2 | SALTY 4 | MINERAL 26-29 30-33 OPEN HOLE LOCATION OF WELL 2127 I I PUMP 2 KBAILER 000 WATER LEVEL END OF PUMPING 22-24 PUMPING RECOVERY 120T23 125 COT 22 55 POMP 172 X DEEP Q Q Q . Q . GPM. FE SPECIFIC CAPACITY 5 ABANDONED, INSUFFICIENT SUPPLY
6 ABANDONED, POOR QUALITY
7 UNFINISHED WATER SUPPLY FINAL OBSERVATION WELL 2 OBSERVATION WE
3 TEST HOLE
4 RECHARGE WELL STATUS OF WELL DOMESTIC 2 STOCK STONY LAKE RD. 5 COMMERCIAL WATER O/ 6 MUNICIPAL 3 | IRRIGATION
4 | INDUSTRIAL 7 DUBLIC SUPPLY USE 8 COOLING OR AIR CONDITIONING ☐ OTHER 9 D NOT USED 6 | BORING
7 | DIAMOND
8 | JETTING 1 X CABLE TOOL METHOD 2 ROTARY (CONVENTIONAL)
3 ROTARY (REVERSE) OF 4 | ROTARY LAIR 9 DRIVING DRILLING DATE RECEIVED 10 74 LICENCE NUMBER OFFICE USE ONLY RBAN 5/02 5102 MAY, 13 5.8 ICENCE NUMBER /T.B MO SEPT YR

MINISTRY OF THE ENVIRONMENT COPY

## MINISTRY OF THE ENVIRONMENT

The Ontario Water Resources Act

## ELL RECORD

31D/8E

THE ENVIRONMENT COPY

The Ontario Water Resources Commission Act

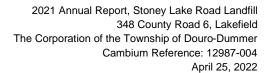
31 D/8 E

COUNTY OR DISTRICT	2. CHECK CORRECT	T BOX WHERE APPLICABLE  TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	1310	CON., BLOCK, TRACT, SURVEY, ETC.	ZAN.	22 23 LOT 25-27
<i></i>	rencero	8. R. # 2 12.6.18.5.10	Laker ELEVATION H 10181010	DATE OF DAY OF THE PROPERTY OF	22 MO	VR.70
	MOST	G OF OVERBURDEN AND BEDR		ALS (SEE INSTRUCTIONS)	DEPTH	4 - FEET
GENERAL COLOUR	COMMON MATERIAL	OTHER MATERIALS		GENERAL DESCRIPTION	FROM	ТО
brown 1	lay	stones of boulders			0.	25'
from L	mation Rock				25'	59'
January (						
		·				
31 00250	astral13 1005	danst II III III				75 8
WATER COUND AT - FEET KIN COUNTY TO THE STATE OF THE STAT	Y 4 ☐ MINERAL	DIAM MATERIAL THICKNESS INCHES	E RECORD  DEPTH - FEET  ROM TO  255	SIZE(S) OF OPENING 31-33 DI WIND MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN	LENGTH 39-
2 SALT 20-23	SH 3 SULPHUR 24  Y 4 MINERAL  SH 3 SULPHUR 29  Y 4 MINERAL  SH 3 SULPHUR 24  SH 3 SULPHUR 24  SH 3 SULPHUR 24	17-18 1 STEEL 19 2 GALVANIZED 3 CONCRETE 4 OPEN HOLE 24-25 1 STEEL 26 2 GALVANIZED 3 CONCRETE 4 OPEN HOLE	20-23 0059 27-30	DEPTH SET AT - FEET   MATERIAL A   10-13   14-17   18-21   22-25   26-29   30-33   80	AND TYPE (CE	MENT GROUT, PACKER, ETC.;
STATIC LEVEL 19-21  O 30 FEET 044  IF FLOWING, GIVE RATE  RECOMMENDED PUMP TYPI	22-24 15 MINUTES 26-28 26-28 38-41 PUMP INTAKE SI GPM.	## PEET 035   FEET 030   FEET    WATER AT END OF TEST   42    FEET   12   CLEAR   2   CLOUDY    43-45   RECOMMENDED   46-49    PUMPING 0004   GPM.		LOCATION OF W		
STATUS OF WELL 95-56 WATER	WATER SUPPLY  OBSERVATION WELL  TEST HOLE  COMMENTIC  DOMESTIC  STOCK  INRIGATION  INDUSTRIAL  OTHER	5 ABANDONED, INSUFFICIENT SUPPLY 6 ABANDONED, POOR QUALITY 7 UNFINISHED  5 COMMERCIAL 6 MUNICIPAL 7 PUBLIC SUPPLY 8 COOLING OR AIR CONDITIONING 9 NOT USED		Ly My CTY	<u>( Rp</u>	
OF	CABLE TOOL CABLE TOOL CONVENTION	6 BORING  DNAL) 7 DIAMOND  8 JETTING  9 DRIVING	DRILLERS REMAR	(S:	-	
ADDRESS  NAME OF DRILLER DR  SIGNATURE OF CONTRA	114 11 1 -	terboro  LICENCE NUMBER  48/4  terboro  LICENCE NUMBER  SUBMISSION DATE  LICENCE NUMBER  AND DAY 2 MO NOTE YR. 70	DATA SOURCE / DATE OF INSPEC	4814	2311	70 · · · · · · · · · · · · · · · · · · ·

UTM 17+2 720043 E  WATER WI  Basin 2 A   Parish Country or District  Con. Lot 2 N	Towns	RECC	Act ORD wn or City	ONTARIO RESOURCES COM	ATER MMISSION
Casing and Screen Record			Pumpin	g Test	
Inside diameter of casing  Total length of casing  Type of screen  Length of screen  Depth to top of screen  Diameter of finished hole	Te Pu Du Wa	est-pumping rat imping level iration of test pu ater clear or close ecommended pu	e umping udy at end of umping rate	76 3 kes test	G.P.M.
Well Log				Water	r Record
Overburden and Bedrock Record		From ft.	To ft.	Depth(s) at which water(s) found	Kind of water (fresh, salty, sulphur)
grung clay 1 staris to the		10	10 80	Paise '	
For what purpose(s) is the water to be used?  Farm  Is well on upland, in valley, or on hillside?  Drilling or Boring Firm				of Well distances of well icate north by	3 1 01
Drilling or Boring Firm  Address 487 March 1997  Licence Number 579		*24	High were	<u>.</u>	CON. CON. TV
Name of Driller or Borer  Address  Date  (Signature of Licensed Drilling or Boring Contractor)  Form 7 15M Sets 60-5930			10T 21	WELL Of J.l.	.lmi
OWRC COPY				Canted	

Ontario			PACES PROVIDED	LICABLE	11	51	1158	33	5,1,0	0.7	.O.N	104
COUNTY OR DISTRICT		1	TOWNSHIP, BOR		TOWN, VILL	AGE		CON	BLOCK, TRACT.	URVEY ETC		2/
				p	# 9		0 0 0	. 1	C./L	DATE C	OMPLETED 8	7" 01
				<i>// /</i>	#2,	*C	apeli	celd	BASIN CODE	DAY	. "	· '*7/
1 2	M 10	iz	17 18	سبب	112		8 1 1	30	n 1 1 1	<u>ELL.</u>	<u> </u>	1111
·			G OF OVERB	URDEN	AND BE	DROCK	MATERIA	LS (SEE IN	STRUCTIONS		DEPT	H · FEET
GENERAL COLOUR	COMMON MA		0	THER MATE	RIALS			GENERA	L DESCRIPTIO	N	FROM	то
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31   111	<u> </u>	ببناك						البلد	11.			
1 2 10	TER RECOR		51) CAS	ING & C	PEN HO	OLE RECO	ORD	Z 5/2E15	or orening	51-33	AMETER 34-38	15 80 LENGTH 39-40
WATER FOUND	KIND OF WATE		INSIDE	TERIAL	WALL	DEPTH	· FEET		IAL AND TYPE		DEPTH TO TOP	FEET
53'-62':6	CALTE A DN	ILPHUR M	INCHES 1 OSTE	12	INCHES	FROM	21111	SCI			OF SCREEN	FEET 10
	6 □61 1 FRESH 3 □51	ILPHUR 19	64 3000	CRETE EN HOLE	188	01'	62'	61	PLUG	SING & SE	ALING REC	ORD
***	6 00	INERALS AS ULPHUR 24	6 4 5 DPL	EL 19		2/	60d 20-23		ET AT PEET	MATERIAL	AND TYPE ICEN	NENT GROUT
2 (	SALTY 6 G	INERALS AS	3 □ coi	EN HOLE				10-				
	SALTY 6 G	ULPHUR 29 INERALS AS	24-25 1 DSTE				27-30	18-	21 22-29			
	FRESH 3 G	ULPHUR 34 EG INERALS A5	3 D.co	HCRETE EN HOLE				26-1	30-33	80		
71 PUMPING TEST MET	гнов цо	PUMPING RATE	11-14 00	RATION OF PU				L	CATIO	N OF WE	ELL	
1 D PUMP	MATER LEVEL	7	GPM	2 IS-16		17-16 MINS	IN DI				LL FROM ROAD	AND
LEVEL	POMPING	WATER LI	1 30 MINUTES	45 MINUTES	RECOVERY   60 MINU	165	LOT L	INE IND	CATE NORTH	BY ARROW.	<b>′</b> \	
#2" #2"	20	40 16.21	112	42	////	95-27 FEET				/		
S IF FLOWING GIVE RATE	38-41	PUMP INTAKE	ET AT	ATER AT END O		42					ı	
NECOMMENDED PU	MP TYPE	MECOMMINDED PUMP	\$3.45 HE	COMMENDED	0 000	44-49						
SHALLOW	DEEP	SETTING	58 1111 4		6	GPM						
	54 1 6- WAT	ED CHIPPLY	& ABANDO	ONEN INCHE	ECCIENT SUP	. v	1				120	
FINAL STATUS		ERVATION WEL		DNED POOR							1	
QF WELL	4	HARGE WELL	DEWATE		<u></u>	-	* *	· *		# · · · · · · · · · · · · · · · · · · ·	-   A = 4.	to be und
WATER	1 5 500	CK	MUNICIPAL Dublic Sur								\$	
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	57 1 21 CABI			BORING							J	
METHOD OF	Z ROT	ARY (CONVENT	IONAL) 7 🗆				CHE	ESE TORE	500	TH STO	ONEY LA	KE AD,
CONSTRUCTION	ON . O ROT	ARY IAIR) PERCUSSION	, 🗆	DRIVING DIGGING	OTHER	DR	S /				11	0207
NAME OF WELL	CONTRACTOR /	111	1000 0	1. WELL	CONTRACT	OR'S	DATA		HERACTOR	SP-62 DATE RECE		43-44 40
O ADDRESS	Stocke	tale I	dl Dull	ing 4	814	ONLY	DATE OF INSPE	ECTION	181		AY 0 6 19	92
ON THE STATE OF SECTION OF SECURITIES OF SEC	#/	Done	mel			8				-		
T NAME OF SE	A TECHNICIAN	took.	lalo	LICEN	CE NUMBE	2   B	REMARKS				,	
SIGNATURE OF	TECHNICIAN/CO	NTRACTOR	00	HON DATE	UUJ	5 OFFICE					CSS	S.ES
Alle	RY OF THE	ocpas	C DAY_	Mo	VS		<u> </u>				FORM NO. 0506	/11 /96) FORM 9

(V) Ontario	Ministry of the Environment	ell Tag Num	042186		Well Reco
nstructions for Completi	ng Form	AO	12186		page of
<ul> <li>For use in the Province</li> <li>All Sections must be co</li> <li>Questions regarding co</li> <li>All metre measurement</li> </ul>	of Ontario only. This dompleted in full to avoid despleting this application at shall be reported to	elays in processing can be directed to t	. Further instructions	. Please retain for future refe and explanations are available gement Coordinator at 416-2	on the back of this for 235-6203.
<ul> <li>Please print clearly in bl</li> <li>Well Owner's Information</li> </ul>		Information	MUN	Ministry Use Only	LOT
Heter boro	10.10		Douro	40	4
RR#/Street Number/Name	· · · ·		ty/Town/Village	Site/Compartmen	ated Averaged
og of Overburden and E General Colour Most common	<u> </u>	instructions) er Materials	Ger	neral Description	Depth Motor
Brown Clay. Grey Limes		ulders	Layered	t + Packed ard	6 25 25 5°
• / /		3			
Hole Diameter	1 1	Construction Recor	d Fee	⊥ Test of W	/ell Yield
Depth Metres Diameter From To Centimetres	Inside Material	Wall thickness	Depth Metres	Pumping test method Dra	w Down Recovery Water Level Time Water L
0 20 8"	centimetres	Casing	From To	SUB PUHP min Pump intake set at - Static (metres) 5544 Level	26-2"
0 59 614	, , , , , , , , , , , , , , , , , , ,	eglass	4 36	Pumping rate - 1	26.4" 1 30"
Water Record  Vater found Kind of Water	Galvanized	2100	0 25		26'8" 2 29
27 m Fresh Sulphur	Steel Fibr	-			27'2" 3 27"
Gas Salty Minerals Other: Wresh Sulphur	Steel			Recommended pump 4  type. Shallow Poeep	27.3" 4 27
Gas Salty Minerals	Plastic Con	crete		depth. 55 metres	27'5" 5 27'
m Fresh Sulphur Gas Salty Minerals	Steel	Screen eglass Slot No.		Recommended pump 10 15	29'8" 10 27 31'4" 15 26
Other:  After test of well yield, water was Clear and sediment free	diam Plastic Con	crete		If flowing give rate - 20 (litres/min) 25  If pumping discontinued, give reason. 30	32'5" 20 26'3 33'1" 25 26'3 33'2" 30 1
Other, specify Chlorinated Fes No	Open hole	No Casing or Scree	25′ 59′	50	33 4" 40 J 34'1" 50 J 34'3" 60 26'.
Plugging and S Depth set at - Metres Material and t	ealing Record	t clums) etc. Volume		Location of We selow show distances of well from roa	
From To Watcher and	thite Sluri	(cubic)	SAL (28)	STONY LAKE	+6 A
				The same of the sa	.3
Cable Tool Rotary Rotary (conventional) Air pe Rotary (reverse) Boring	rcussion Jettir	ng 🗀 (	Digging Other		
Domestic   Indus   Stock   Comr   Irrigation   Munic	nercial Not u ipal Cooli		Other Audit No.	*	Completed NMM
Test Hole Abandone	d, insufficient supply Dewa	atering acement well	was the we package de	all owner's information Date Delivivered?	2550 03
CONTRACTOR OF THE PARTY OF THE	ntractor/Technician Information Drilling Liber, city etc.	Well Contractor's Li	7		
Name of Well Technician, (last name	; first name)	Well Technician's Li			ord Number
x Amb Kans	Contractor's Copy	2006	07//	Cette formul	





	Appendix I
Monthly	<b>Waste Quantities</b>

Fully accessible appended items are available upon request.

#### **Materials Received**

2021	C&D	Waste	Tires	Green Waste	Wood	Total
January	829.23	2,153.35	100	1.47	32.12	3,016.17
February	512.30	2,017.93	-	0.18	27.76	2,558.17
March	849.39	2,818.72	-	1.42	38.92	3,708.45
April	1,212.42	2,821.64		6.07	36.63	4,076.76
May	1,020.47	2,930.42		13.93	47.52	4,012.34
June	903.50	3,386.87	-	10.56	34.09	4,335.02
July	861.92	3,543.30	L-1	12.88	40.96	4,459.06
August	1,193.73	3,517.65	-	32.32	29.97	4,773.67
September	1,231.29	3,486.99	-	16.84	38.66	4,773.78
October	1,496.15	3,269.30	-	6.61	41.16	4,813.22
November	1,032.64	3,072.81		7.74	46.82	4,160.01
December	658.91	2,523.55		3,54	40.38	3,226.38
Totals	11,801.95	35,542.53		113.56	454.99	47,913.03
Total Tonna	ge Received	47,913.03				

**Material Shipped Out** 

Month	Waste	Wood	Tires	Metal	Cover	Mixed C&D	Total
January	1,957.12	80.32	1.0	24.65		1,338.88	3,400.97
February	1,832.20	112.28	4.0			954.29	2,898.77
March	2,009.51	188.70	11 50	19.26	1	1,702.13	3,919.60
April	2,381.83					1,814.85	4,196.68
May	2,098.82		11 4 24			2,134.37	4,233.19
June	2,406.95		1	7.07	1 91	1,856.45	4,270.47
July	2,824.59	+	1 = 5	8.12	b 020	1,704.04	4,536.75
August	2,670.04		H. Lie	4.75		1,771.56	4,446.35
September	2,586.92		-	3.57	- X	1,938.19	4,528.68
October	2,570.03				Ş.,	2,564.78	5,134.81
November	2,256.27		1000	3.85	9	1,908.51	4,168.63
December	2,019.51		-			1,109.33	3,128.84
	27,613.79	381.30	11 3-2	71.27	1-0	20,797.38	48,863.74
	Total Tonnage Shipped Out			48,863.74			

#### Destination

Month	001037 - Waste Connections- Ridge Landfill	001039 - Waste Connections - Ottawa Landfill	001071 - BIOMASS	001121 - GFL - MOOSE CREEK	001002 - Waste Connections to Ptbo Iron & Metal	Grand Total
January	1,679.72	1,406.64	80.32	209.64	24.65	3,400.97
February	1,563.42	918.11	112.28	304.96		2,898.77
March	1,868.31	1,429.95	188.70	413.38	19.26	3,919.60
April	3,130.45	588.44		477.79		4,196.68
May	3,189.76	716.91		326.52		4,233.19
June	3,044.88	732.68		485.84	7.07	4,270.47
July	3,713.71	360.01		454.91	8.12	4,536.75
August	3,854.92	333.49		253.19	4.75	4,446.35
September	3,736.86	565.53		222.72	3.57	4,528.68
October	3,634.21	1,463.62		36.98		5,134.81
November	2,976.53	1,188.25			3.85	4,168.63
December	2,179.98	917.70		31.16	h	3,128.84
<b>Grand Total</b>	34,572.75	10,621.33	381.30	3,217.09	71.27	48,863.74