2024 Annual Monitoring Report

Waste Diversion Site, City of Orillia

Submitted to:

City of Orillia

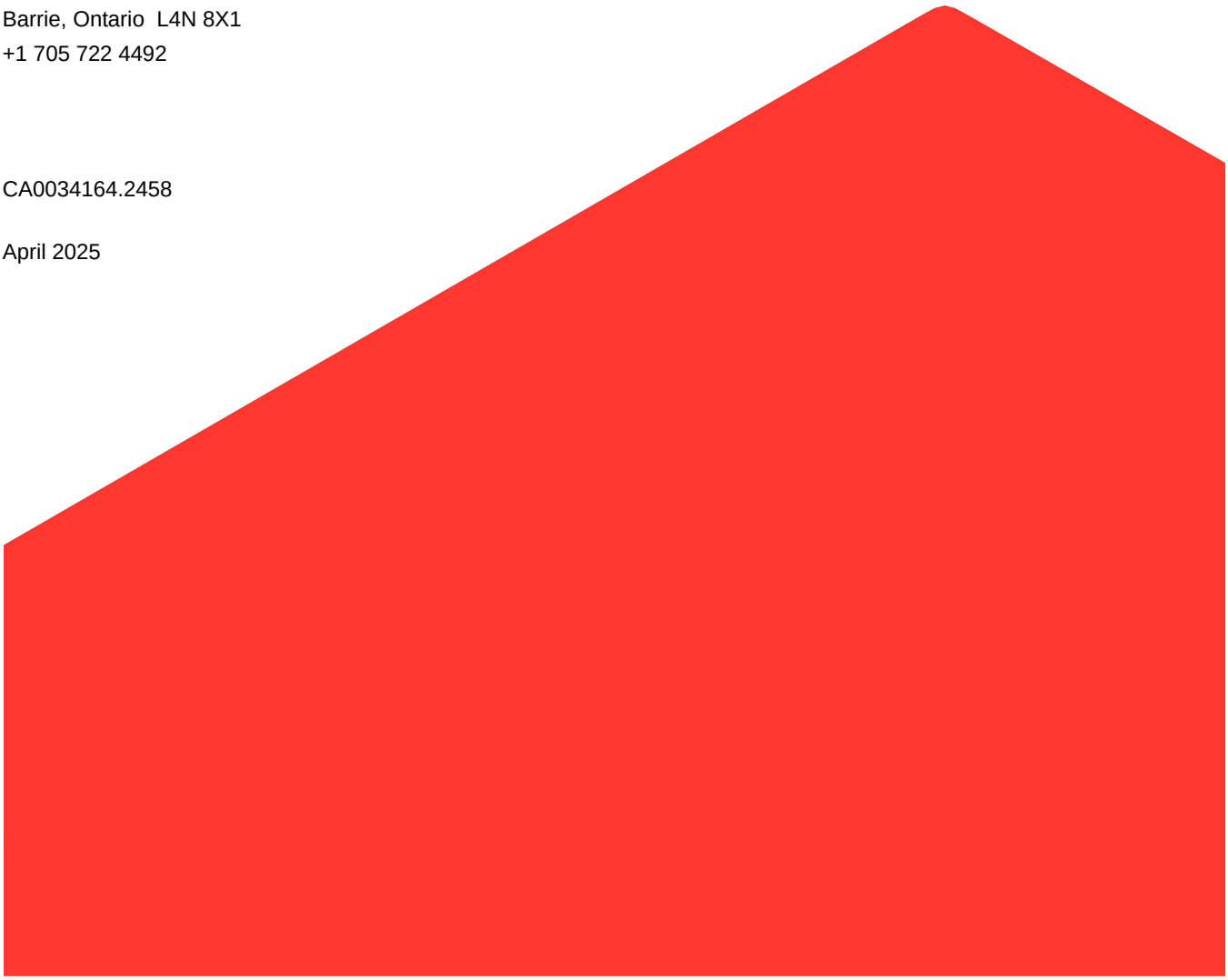
50 Andrew Street South
Suite 300
Orillia, ON L3V 7T5

Submitted by:

WSP Canada Inc.
121 Commerce Park Drive, Unit L
Barrie, Ontario L4N 8X1
+1 705 722 4492

CA0034164.2458

April 2025



Distribution List

e-copy - City of Orillia

e-copy - Ministry of Environment, Conservation and Parks

e-copy - WSP Canada Inc.

Table of Contents

1.0 INTRODUCTION 1

1.1 Background and Scope 1

1.2 Landfill Design and Capacity 1

2.0 2024 OPERATIONS SUMMARY 3

3.0 2024 MONITORING PROGRAM 5

3.1 Monitoring Network 5

3.2 Off-Site Water Supplies 5

3.3 Schedule and Analysis 6

3.4 Water Quality/Quantity Sampling Protocols 6

3.5 Quality Assurance/Quality Control (QA/QC) 6

4.0 SITE CONDITIONS 8

4.1 Physiography and Drainage 8

4.2 Geology 8

4.3 Hydrogeology 9

4.3.1 Hydrostratigraphy 9

4.3.2 Water Level Monitoring 10

4.3.3 Shallow Groundwater Flow 11

4.3.4 Confined Sand Aquifer 12

4.4 Surface Water 12

4.5 Landfill Gas 13

5.0 GROUNDWATER QUALITY 15

5.1 Concentration Profiles and Indicator Distribution 16

5.2 Leachate Quality 17

5.3 Shallow Groundwater 18

5.3.1 Upgradient 18

5.3.2 Toe of Landfill 19

5.3.3 Downgradient of Compost Pad 20

5.3.4 Downgradient of the Landfill 21
5.4 Confined Sand Aquifer 22
5.4.1 Upgradient 22
5.4.2 Landfill Vicinity 23
5.4.3 Downgradient of Compost Pad 25
5.4.4 Downgradient of Landfill 26
5.4.5 Upper Confining Unit 27
5.5 VOC Monitoring Results 27
6.0 SURFACE WATER QUALITY 29
6.1 Ben's Ditch North of Highway 12 30
6.2 Mill Creek Diversion 31
6.3 Ben's Ditch and WWTC Outfall 31
6.4 Lake Simcoe 32
6.5 CN Rail Bed Drain 33
6.6 Surface Water Quality Summary 33
6.7 On-Site Stormwater Runoff Sampling 34
7.0 TRIGGER AND CONTAMINANT LOADING ASSESSMENT 36
7.1 Groundwater Trigger Mechanism and Assessment 36
7.2 2024 Contaminant Loading Evaluation 37
7.2.1 Groundwater Flux 37
7.2.2 Leachate Source Concentration 38
7.2.3 Contaminant Loading Calculation 38
8.0 CONCLUSIONS 40
9.0 RECOMMENDATIONS 41
10.0 BIBLIOGRAPHY 43
11.0 SITE CONTACT INFORMATION 46

TABLES (IN TEXT)

Table 4.1: Hydrostratigraphic Unit Summary....10
Table 5.1: Shallow Groundwater Monitoring Wells by Location....16
Table 5.2: Confined Sand Aquifer Monitoring Wells by Location....16
Table 5.3: 2024 KWDS Leachate Quality - Selected Average Indicator Parameter Concentrations....17
Table 5.4: Upgradient Shallow Groundwater (Background) Water Quality....19
Table 5.5: Toe of Landfill, Shallow Groundwater Quality (2024)....19
Table 5.6: Downgradient of Compost Pad, Shallow Overburden Groundwater Quality....20
Table 5.7: Downgradient Shallow Overburden Groundwater Quality – Selected Average Indicator Parameters (2024)....21
Table 5.8: Upgradient Confined Sand Aquifer Water Quality – Selected Average Indicator Parameters (2024)....23
Table 5.9: Landfill Vicinity Confined Sand Aquifer Water Quality – Selected 2024 Average Indicator Parameters....24
Table 5.10: Downgradient of Compost Pad, Sand Aquifer Water Quality Average Concentrations (2024)....25
Table 5.11: Downgradient Sand Aquifer Water Quality – Selected 2024 Average Indicator Parameters....26
Table 6.1: Climate Conditions Prior to and During Surface Water Monitoring Events....30
Table 6.2: Un-ionized Ammonia Concentrations at Stormwater Runoff Locations....35
Table 7.1: Groundwater Trigger Parameters....36
Table 7.2: Trigger Parameter Concentrations....36
Table 7.3: Groundwater Fluxes....37
Table 7.4: Average Leachate Concentrations - Selected Indicator Parameters....38
Table 7.5: 2024 Contaminant Loading Calculations....38
Table 7.6: Combined Contaminant Loading - Shallow Overburden Groundwater Discharge to Mill Creek and Ben's Ditch....39
Table 7.7: 2024 Contaminant Loading Calculations....39

APPENDICES

APPENDIX A
Figures

APPENDIX B
Tables

APPENDIX C
Water Level Hydrographs

APPENDIX D
Water Quality, Major Ions and Indicators

APPENDIX E
Water Quality, Metals/Special

APPENDIX F
Documentation

APPENDIX G
Certificates of Analysis

APPENDIX H
Field Notes and Procedures

1.0 INTRODUCTION

1.1 Background and Scope

WSP Canada Inc. (WSP) was retained by the City of Orillia (City) to prepare the 2024 Annual Monitoring Report for the Kitchener Street Waste Diversion Site located in Orillia, Ontario (hereafter referred to as WDS or "the Site").

The City owns and operates the WDS, located within the southern part of the City limits adjacent to Lake Simcoe along the shores of Shingle Bay (Figure 1), under Environmental Compliance Approval (ECA) No. 5204-B4RRK2, last issued December 23, 2022 (Appendix F).

The Site consists of a 24.3 hectare (ha) licensed landfill area within a 40.5 ha property (Figure 2). Landfilling began in 1967 and is ongoing. The Site is licensed to receive domestic, commercial and solid non-hazardous industrial waste from the City.

The various boundaries pertaining to the WDS are outlined on Figure 2. The Site is bounded by a former CN railroad to the west, the Highway 12 Bypass (Hwy 12B) and Mill Creek to the north, Ben's Ditch to the east and Lake Simcoe to the south. The Orillia Wastewater Treatment Centre (WWTC) is located to the east of the Site.

The landfill is a natural attenuation site, and monitoring is undertaken to evaluate the impact of the Site on the surrounding groundwater and surface water. This report presents and discusses the results of the 2024 monitoring program, undertaken by City staff, which consists of monitoring of groundwater elevations and groundwater and surface water sample collection and analysis.

This report has been prepared by WSP on behalf of the City for submission to the Ontario Ministry of the Environment, Conservation and Parks (MECP, Ministry) by April 30, 2025 as required by Condition 61 of the ECA for the Site. As required by Condition 61, this report presents and interprets the monitoring data for the period from January 1 to December 31, 2024.

A summary of incoming waste accepted during the reporting period, as well as a discussion regarding the status of progress under, and deviations from, the Operations Plan is also included in this report. This summary is modified from the City of Orillia 2024 Solid Waste Management Annual Report (City of Orillia, 2024).

1.2 Landfill Design and Capacity

The landfill is divided into twelve cells (i.e., Cells 1 to 12); the locations of the waste disposal cells and the topographic surface contours are shown on Figure 2. Filling of the site from 1967 until 1985 consisted of placement of waste across the entire footprint. Since that time, waste has been placed sequentially in each of the cells and completed with interim or final cover.

The landfill does not have an engineered base liner/leachate collection system. The landfill was designed and approved as a monitored natural attenuation facility, utilizing the local hydrogeological conditions, in particular the underlying peat and clayey soils, to control contaminant releases to surrounding groundwater and surface water.

In October 2018, the Ministry approved the City's plan to cap Cells 1 to 4 with an engineered geosynthetic cap incorporating a passive landfill gas venting system. Installation of the geomembrane cap commenced in 2021. This construction program, which included upgrades to the perimeter road and stormwater infrastructure, was completed in February 2022.

In 2022, interim cover fill was placed on Cell 8 and landfilling resumed in the southern portion of Cell 5. Interim cover over Cells 5 to 12 consists of imported soil materials ranging from silty sand to clayey soils. The intermediate cover does not include a landfill gas venting system. The top surface area over these cells is typically at a slope of less than 2%. Progressive placement of a final geosynthetic cover over the completed areas of the landfills is intended to be completed in future years.

A landfill volume update was conducted based on a full Site landfill volume survey, last completed in July 2023. Based on records provided by the City, approximately 729,243 cubic metres (m^3) of fill (waste plus cover soil) was landfilled at the site between September 1985 and July 2023. The volume of waste placed prior to 1985 is unknown but is considered minor compared to the overall fill volume capacity of the landfill at final contours. The remaining landfill capacity as of May 2019 was estimated to be 459,226 m^3. The estimated landfill life from July 2023 was accordingly estimated at 42 years, based on an average future filling rate of 11,035 m^3/y. In 2024, the projected landfill lifespan is estimated to be approximately 41 years. While The City states that while major variables remain unknown, (e.g., U.S. border closing to Canadian waste shipments, increased waste diversion, increased/decreased future service area, etc.) precise calculations of landfill life are inappropriate given the available information. .

The landfill site is bounded by wetland features that provide both storm water management quantity and quality control (i.e., filtering and settling of particulates) prior to runoff reaching the adjacent water bodies. These water bodies consist of the Mill Creek Diversion to the north, Ben's Ditch to the east, and Lake Simcoe to the south. The stormwater controls at the Site consist of cell slopes and ditches, which direct runoff away from the landfill towards the adjacent wetland boundaries to the north, east and south. A series of corrugated-steel pipe (CSP) culverts provide drainage routes under access roads and paths to the wetlands.

2.0 2024 OPERATIONS SUMMARY

The following operations summary is provided by the City of Orillia.

Site activities in 2024 included waste placement, windrow composting, collection of household hazardous waste and the operation of various depots for other diversion program materials. The City has implemented a progressive tipping fee structure that serves to encourage recycling and the separation of waste materials. Trained City staff direct and monitor the disposal of all materials entering the Site.

Many of the operations within the Industrial, Commercial, and Institutional (IC&I) business sector in Orillia manage their own recycling programs and many of those operations contracted their waste management to private waste management companies that collect IC&I waste and haul to disposal sites outside of the City. The majority of this commercial waste is hauled outside the City, which contributes to the reduction of commercial waste received at the Site. The volume of waste shipped out of the City by these private waste management companies is difficult to estimate.

During 2024, a total weight of 7,052 tonnes of material was landfilled at the Site. This included 4,507 tonnes of Municipal Solid Waste (MSW) for landfilling as waste and 2,545 tonnes of cover material.

The MSW landfilled in 2024 (4,507 tonnes) remained similar to the amount landfilled in 2023 (4,727 tonnes), decreasing by 220 tonnes. In recent years, overall MSW tonnages has been on a declining trend as a result of the introduction of the green bin program for food waste in 2008 and 2009 and the expanded recycling bin program in 2010. In September 2015, the City implemented every other week garbage collection. In 2022, the City implemented a clear garbage bag program and a reduction in the allowable percentage of divertible materials within a garbage bag.

Cover material utilized at the Site includes spill cleanup material, street sweeping sand, clean fill, compost overs, and wood chips. These materials were stockpiled and utilized as daily cover if immediate disposal was not required. Amounts of cover material received in 2024 were as follows: street sweeping sand (204 tonnes), clean fill (874 tonnes), compost overs (634 tonnes), and wood chips (442 tonnes). In addition to this daily cover material, two large heavy-duty vinyl membrane covered frames are available to cover waste overnight. The two frames had not been used for several years but were repaired early in 2024. They are now being utilized as part of daily operations which has resulted in the need for less daily cover fill.

There were 390 tonnes of spill cleanup material received at the Site in 2024. This material was also used as cover material. Where applicable, contaminated soils were tested prior to landfilling to determine compliance with O.Reg. 347; testing confirmed these materials to be non-hazardous. Further information regarding 2024 and historical waste disposal operations are provided in the Solid Waste Management Annual Report (City of Orillia, 2024).

Several programs have been put into place by the City to promote recycling, composting, and waste diversion including an expanded Green Bin Program, which was fully implemented by 2009 at households with up to five residential units. In 2022, the City implemented a clear garbage bag program to discourage the disposal of recyclable and compostable material in the garbage. The City also reduced the allowable quantity (from 30% down to 10%) of divertible materials in the clear garbage bags. If clear garbage bags showed more than 10% divertible materials, they would not be picked up with curb-side collection service. The provision of green bins has increased the capture rate of compostable organic material, further extending the lifespan of the landfill. Other programs include waste diversion depots, a garbage tag program, a recycling box program, as well as a household hazardous waste and re-use depot. In 2024, 11,203 tonnes of material were diverted through recycling

and composting initiatives. This is a decrease of 665 tonnes from 11,863 tonnes of material diverted in 2023. The tonnage of diverted material represents 71% of the total weight of waste collected or dropped off at the Site (not including clean fill, street sweepings, compost overs, or spill clean up material). Diversion activities include recycling of asphalt, brush/tree wood, concrete, kitchen and yard waste (composted on-site), electronics, mattresses and box springs, fluorescent light tubes, gypsum drywall, household hazardous waste, other wood, plastic pails, recycling box materials, refrigeration equipment, scrap metal, shingles, textiles, and tires. The total weight of recyclable materials collected through recycling box collection program was 3,051 tonnes, a slight decrease from that collected in 2023 (3,199 tonnes).

An outdoor windrow composting program commenced at the site in 1993, initially located southeast of Cells 11 and 12, and now located on Cells 9 and 10. Compostable food (including meat and dairy products) and yard waste was collected and managed through the windrow composting operations during the reporting period. A total of 4,821 tonnes of compostable material was accepted in 2024, decreasing slightly from the 4,933 tonnes of compostable materials collected in 2023. Residents are also encouraged to operate backyard composters to further minimize waste production.

It is noted that the City received Ministry approval to relocate the composting operation, through ECA approvals for the new composting pad and associated swale. The composting pad (located towards the southwest area, adjacent to Cell 9) became operational in 2014. The subgrade of the swale, where the runoff water from the pad flows, was covered with a geotextile and covered with a protective sand layer. After the gravel base was prepared, geotextile was laid, and then crushed recycled asphalt was graded above the geotextile to form the composting pad. Litter fencing was installed and some final grading work surrounding the pad was completed. Following the significant amount of snowmelt and rainfall that occurs in the spring, the swale fills up with water on a regular basis. In February 2017, a new forcemain was constructed from the composting pad swale to the United Drive sanitary sewer for treatment through the WWTC. It is used to directly pump swale water in the wet spring and fall periods. In 2024, the City pumped 13,500 m^3 of excess water from the compost pad swale to the sanitary sewer. In 2024, maintenance work was completed on the composting pad and swale. Further details are provided in the Solid Waste Management Annual Report (City of Orillia, 2024).

There were two odour-related complaints related to the Waste Diversion Site in 2024; the first, in September, was received after turning operations had been completed for the day and brush chip cover had already been applied to the windrows. The second complaint, in October, was left on a social media post. Staff in the City's communications department advised staff at the Site and compost turning was stopped for the day and additional brush chips were added to the windrow. No formal complaint was received in this instance, but the complaint was documented.

The Household Hazardous Waste (HHW) Depot operations accept materials including pesticides, automotive products, paints, solvents, glues, household cleaning products, batteries, propane cylinders and pool chemicals. Paint, oil, antifreeze, fluorescent lamps, all types of batteries, fertilizers, fire extinguishers, empty automotive containers, used propane cylinders/tanks, mercury containing devices, and non-PCB ballasts are recycled. Used oil filters are emptied, crushed, and included with scrap metal.

Further information on all Site operation activities and recycling programs are discussed by the City in the 2024 Solid Waste Management Annual Report (City of Orillia, 2024).

3.0 2024 MONITORING PROGRAM

The objectives of the annual monitoring report (AMR) program at the Site are:

i) To assess the direction and rate of groundwater movement, as well as to monitor the height of the leachate mound within the landfill

ii) To monitor leachate and groundwater quality and determine the impact of the landfill on the underlying groundwater and adjacent water bodies

iii) To monitor the surface water quality in Lake Simcoe and the adjacent ditches and creeks to assess the impact of the landfill and differentiate this from off-site influences

iv) To provide recommendations for changes in the monitoring program or remedial measures required to maintain the site within environmental compliance guidelines

3.1 Monitoring Network

The 2024 monitoring network consisted of 56 individual groundwater monitoring wells at 31 locations, and 18 permanent surface water monitoring locations (Figure 2). Monitoring well details are summarized in Table B-1.

The groundwater monitoring wells are constructed primarily in the shallow sand/peat units and an underlying Sand Aquifer. At all monitoring well nests, the deepest screens are denoted with the suffix 'I'. Successive shallower screens at the same location are noted with 'II', 'III', and 'IV", etc. Dedicated tubing and inertial foot valves are installed at most wells, with a few exceptions where dedicated bailers are used. All monitoring well locations were reported to be good condition and in compliance with Ontario Regulation 903 (as amended) of the Ontario Water Resources Act.

Surface water quality is monitored at twelve permanent locations: two stations on Mill Creek, four on Ben's Ditch, one at the mouth of Ben's Ditch, two at the southernmost culverts crossing beneath the former CN rail bed, one at the WWTC, and two on Lake Simcoe (Figure 2). Water levels are monitored with staff gauges at S-1 (Ben's Ditch), S-2 (WWTC discharge), S-7 (Mill Creek) and S-8 (Ben's Ditch). Flow measurements are conducted at S-7.

Monitoring locations located within on-Site ditches (D-1, D-2, D-3, D-4, D-5 and D-6; see Figure 2) are sampled during significant storm events. As presented in the WDS Assessment report (Golder, 2011c), to better assess the influence of runoff events on stream quality, sampling for the major ion and indicator and trace metals analyses is undertaken during one or two larger rainfall-runoff events (e.g., anticipated rainfall over 24 hours of at least 25 millimetres [mm] or conditions that generate sufficient runoff for sample collection) at the surface water stations. In addition, stream sampling locations S-1 through S-4, S-6 through S-8 and S-11 on Lake Simcoe are sampled to provide locations to assess water quality downstream of D-1 through D-6. These stream/lake locations are sampled during the same storm event after the samples from the landfill area are collected. A summer sampling event is also undertaken to assess changes to long term trends in baseflow stream quality.

3.2 Off-Site Water Supplies

As discussed in Dixon Hydrogeology (1995), a total of 11 recorded private water supply wells are located within a one-kilometre (km) radius of the Site. The majority of these wells are installed in the bedrock underlying the till unit, including four wells constructed at or near Kitchener Park. Based on a 1996 survey by City staff, it was concluded that none of the recorded private water supply wells near the Site are currently in use. The City obtains its municipal water supply from surface water (Lake Couchiching), two municipal groundwater supply wells

located approximately 2.5 km north of the Site and a third well (the West Orillia Well), located approximately 2.1 km to the northwest. These locations are outside of the inferred impact area of the landfill (Golder, 2005a).

3.3 Schedule and Analysis

The 2024 sampling schedules for the groundwater monitoring locations and surface water stations are shown in Tables B-2 and B-3, respectively. Water quality is monitored three times per year (spring, summer and fall) or annually (summer), depending upon location. Water levels are obtained three times per year at all monitoring wells and staff gauges. In addition, flow in Mill Creek is measured three times per year at S-7 and is recorded daily at the discharge of the WWTC outlet (S-2), as summarized in Table B-10. Water level data are contained in Appendix C. Water quality data are contained in Appendix D (Major Ions and Indicators) and Appendix E (Metals).

A total of 90 groundwater and leachate samples were obtained in 2024, exclusive of duplicates, and analyzed for major ions and indicators. Additionally, 36 groundwater samples were analyzed for extended metals at the locations listed in Table B-2. Volatile organic compound (VOC) analyses were performed on 12 groundwater samples and benzene, toluene, ethyl benzene and xylene (BTEX) were analyzed on an additional 25 groundwater samples. A total of 32 surface water samples were collected for major ion and indicator analyses, and trace metals. There were no VOC analyses of surface water samples.

Water quality samples were collected by City staff and analyzed by TestMark Laboratories Ltd. of Mississauga, Ontario (TestMark). TestMark is compliant with ISO/IEC 17025(2017) standards. Analysis for Chemical Oxygen Demand (COD) is also completed by the City's laboratory at the WWTC. Duplicate samples were obtained for quality assurance/quality control (QA/QC) purposes and are discussed in Section 3.5.

3.4 Water Quality/Quantity Sampling Protocols

The monitoring program was undertaken by City staff, following standard procedures outlined in the "Waste Diversion Site Ground and Surface Water Monitoring Protocols" (City of Orillia, 2018). Where possible, purging of three well volumes was completed subsequent to water level measurement and prior to water quality sampling. Wells that were purged dry were allowed to recover, purged dry again and allowed to again recover prior to sampling.

The flow in Mill Creek at S-7 was measured three times in 2024 by City personnel by means of measurements along a five-metre reach of the stream. Flow is calculated based on measurement of stream depths and velocity estimates obtained using a semi-submerged float.

3.5 Quality Assurance/Quality Control (QA/QC)

During the 2024 water quality monitoring program, a total of 18 samples were obtained for QA/QC, including 12 duplicates for groundwater and 6 duplicates for surface water. Of the 12 groundwater duplicates, all were analyzed for major ions and indicators, four were analyzed for trace metals and two were analyzed for VOC or a limited number of VOC compounds (i.e., BTEX). All six surface water samples were analyzed for major ions, trace metals and indicator parameters. The 18 duplicate samples represent approximately 14% of the total number of samples collected (127 samples in total, 90 groundwater and 37 surface water) in 2024. The samples consisted of duplicate sets of groundwater and surface water collected at the same time as the regular samples using a split-sample technique.

Reliability of analytical results is evaluated based partly on ion balance, which is a measure of the electrical balance of the cations and anions in solution. In 2024, 86 of the 127 samples exhibited a calculated ion balance error of greater than 5%, whereas 32 samples exhibited a calculated ion balance error greater than 10%. The City

notes that future samples will be submitted to a different laboratory for analysis. The proportion of samples with an elevated ion balance (greater than 5%) was higher than that observed in 2023; the number of samples with ion balance errors greater than 10% was also higher than 2023. Ion balance errors of 5% to 10% are common in natural waters, or where geochemical parameters that constitute a large percentage of the anions or cations are not analyzed. The proportion of samples with high ion balance errors is considered to be more than typically expected for samples of this nature. The C Samples with strongly elevated ion balance (20+%, 11 samples) are interpreted with caution in the data.

Duplicate analyses and calculated relative percent difference (RPD) values are presented in Tables B-7 (Major Ions and Indicators), B-8 (Metals) and B-9 (VOC). Comparison of duplicate analytical results for major ions, expanded metals and BTEX indicates generally acceptable agreement between the results reported by the laboratory for the original or primary samples. The agreement tends to be slightly higher for major ions and indicators with elevated concentrations (e.g., chloride, sodium, etc.) whereas variance (reported as RPD) is higher for lower parameter concentrations near the analytical method detection limit (e.g., ammonia, phenols, etc.). A higher variance is also for ammonia and total kjeldahl nitrogen (TKN) in 2024. The results for these nutrient parameters are interpreted with caution in the 2024 data.

Surface water tends to have more parameters (typically metals) with elevated RPD, which is considered to reflect, in part, dissolution of sediments in the non-filtered samples by the acid preservative, and the overall lower concentrations of metal parameters in surface water.

On the basis of the duplicate QA/QC, the data are considered acceptable.

4.0 SITE CONDITIONS

4.1 Physiography and Drainage

The topography at the Site and environs was described by Dixon Hydrogeology (2004). The landfill is situated on a flat, low-lying swampy area that has a natural elevation of approximately 219 metres above sea level (masl) to 221 masl (Figure 2), which is only slightly higher (one to three metres, typically) than the level of adjacent Lake Simcoe (218 masl). This flat area extends north of the landfill, where a natural wetland is present. The elevation of the landfill is approximately 234 masl at its highest point near borehole BH3 and is lowest along the southern perimeter near BH16 (221 masl). The estimated maximum waste thickness is 13 m to 15 m. The wetlands east and west of the Site have been filled with various materials, raising the ground surface by up to five metres. The adjacent WWTC and Kitchener Park are situated on this fill; as noted in Golder (2011a), Kitchener Park is predominantly situated on waste and fill materials. Lake Simcoe is located southeast the Site.

A prominent localized highland located southwest of the Site rises to an elevation of 250 masl. To the west and northwest of the Site, the land surface rises to a broader area of rolling hills and uplands, with elevations ranging from 250 masl to 290 masl. Mill Creek flows between these two areas, across the north part of the Site (Figure 1). The lands to the east are relatively flat-lying, generally at elevations less than 225 masl. The landfill is bounded by surface streams to the north and east, Lake Simcoe to the south, and the CN Rail bed to the west. The tracks of the former CN railroad along the west side of the Site were removed in 1996 and the CN Rail bed is now utilized as a recreational trail. Much of the area west of the CN Rail bed is also part of a wetland.

Urbanized areas surround the Site within a one-kilometre radius, predominantly residential developments present to the north and east, whereas commercial, industrial, and institutional lands are located to the west. Further to the west (greater than one kilometre), agricultural land and woodlands dominate, along with aggregate extraction.

There are several watercourses and surface water features adjacent to the Site (indicated on Figures 1 and 2), the most prominent of which is Lake Simcoe to the southeast. Mill Creek, a small creek originating in the upland area to the west, flows along the northern boundary and merges with Ben’s Ditch in the northeast corner of the Site. The Ben’s Ditch watercourse then flows southeast along the eastern boundary of the Site and widens as it approaches Lake Simcoe. The Orillia WWTC treated effluent discharges to Ben’s Ditch to the east of the Site. A smaller drainage ditch is located beside the former CN Rail bed and is referred to as the CN Rail bed Drain. On the west side of the Site, a drainage divide exists midway between Highway 12 and surface water monitoring location S-18 (Figure 2), whereby water to the north flows towards Mill Creek and water to the south flows directly into Lake Simcoe via the CN Rail bed Drain.

On the Site, surface water runoff on the northern and eastern portions of the Site flows toward Mill Creek and Ben’s Ditch. In the southern portions of the Site, surface water flows to Lake Simcoe, whereas surface water on the western portions flows toward the CN Rail bed Drain.

4.2 Geology

The overburden consists of Quaternary age materials, presumably deposited along the Wisconsinan glaciations, overlying Palaeozoic carbonate bedrock. The thickness of the overburden varies from approximately 5 m to 35 m, with the thinnest soils interpreted to the east near a bedrock high. The bedrock lies more than 10 m below ground surface (mbgs) at the Site and does not outcrop in the vicinity of the Site. Two geologic cross-sections of overburden materials at the Site are provided: a north-south section (A-A’, Figure 3) and an east-west section (B-B’, Figure 4). Cross-section locations are shown on Figure 2.

The uppermost unit consists of earth fill material, up to 3 m thick, with the exception of completed and active landfilling areas where refuse (waste) has been placed to a maximum thickness of 13 m to 15 m. This fill and refuse material directly overlies a layer of peat, up to 2.5 m thick. Sand beach ridges have formed as a result of near-shore erosional and depositional processes along the Lake Simcoe shoreline.

The surficial peat unit is underlain by a glaciolacustrine silt to silty clay confining unit, in turn underlain by a fine to coarse grained Sand Aquifer unit, which is further underlain by a lower confining unit consisting of sand to silt till, overlying bedrock. There are no boreholes that penetrate the entire thickness of the lower confining unit; however, regional bedrock mapping indicates that the elevation of the top of bedrock ranges from 205 masl to 215 masl (Golder, 2005a). Consequently, the lower confining unit is likely not more than 10 m thick. The stratigraphy of the overburden units is continuous beneath most of the Site, with the exception of the Lake Simcoe shoreline, where erosion and deposition has resulted in re-working of the sediments. A clayey sandy silt unit was encountered within the Sand Aquifer unit at monitoring well nest BH16.

The highlands to the west of the Site consist of sand to silty sand till. The lands surrounding the wetlands at the landfill Site are comprised primarily of glaciolacustrine silt and clay to the east, and glaciolacustrine sands to the west between the till ridges (Finnemore and Bajc, 1984).

The bedrock in the vicinity of the City of Orillia consists of fine to coarse grained fossiliferous limestone. This bedrock is the upper member of the Bobcaygeon Formation, which is of Ordovician age. A local bedrock high is present immediately east of the Site, near Kitchener Park.

4.3 Hydrogeology

4.3.1 Hydrostratigraphy

As shown on the cross-sections (Figures 3 and 4), the surficial peat unit (Unit P) is interpreted to underlie the entire Site, except for the southern portion along the shore of Lake Simcoe. The peat unit is hydraulically connected to both the landfill and the fill materials, which together form an unconfined unit. The thickness of the overburden units is variable across the Site. The upper confining layer, which is up to 10 m thick, is found at elevations ranging from 209 masl to 223 masl. It is thickest under the north and south parts of the landfill. It is thinnest under the central part of the landfill (BH3, 1.2 m), to the west (BH4, 0.3 m) where the unit rises, and to the extreme south where it is thin or absent (BH26).

The Sand Aquifer appears to be thickest under the central portion of the Site, thinning out to the north and west. It is found at an elevation of approximately 208 masl to 221 masl and rises to the west (Section B-B', Figure 4). This unit is absent to the northwest as determined at BH15 (Figure 7). This aquifer consists primarily of very fine to fine sand; however, coarser sand and gravel are reported to the south at BH16 and BH17, and to the east at BH2. This aquifer corresponds to the regionally extensive aquifer described in Dixon Hydrogeology (1995), which is reported to be thin and discontinuous adjacent to the landfill.

Single well response testing was completed in 1990 (GLL, 1990) at 15 monitoring wells to determine the hydrogeological properties of the principal hydrostratigraphic units at the Site. Testing was conducted at four locations within the shallow overburden (Unit P), four locations within the upper confining unit (Unit C), and seven locations in the confined Sand Aquifer (Unit SA). Hydraulic conductivities for each unit are summarized in Table 4.1. Also presented are hydraulic conductivity values used in a subsequent water budget modelling study (Golder, 2005b).

Table 4.1: Hydrostratigraphic Unit Summary

Hydrostratigraphic Unit	Inferred Range in Thickness Beneath Site (m)1	Geometric Mean Horizontal Hydraulic Conductivity (cm/s)1	Range of Hydraulic Conductivity (cm/s)1	Hydraulic Conductivity in Modelling Study (cm/s)2	2010 Range of Hydraulic Conductivity (cm/s)3
Peat Unit (Unit P)	0.6 – 2.4	2.1 x 10-4	4.7 x 10-5 to 2.1 x 10-4	1.4 x 10-3	7.4 x 10-4 to 2.2 x 10-3
Upper Confining Unit, silt to silty clay (Unit C)	1 – 7	1.6 x 10-5	1.1 x 10-5 to 2.0 x 10-5	1.9 x 10-5 (Horizontal) 1.9 x 10-6 (Vertical)	9.6 x 10-6 to 2.7 x 10-5
Confined Sand Aquifer, confined (Unit SA)	0 – 10	1.6 x 10-4	9.1 x 10-6 to 3.9 x 10-3	3.9 x 10-3	2.3 x 10-4 to 6.1 x 10-4
Lower Confining Unit, glacial till (Unit LCL)	ND	ND	ND	ND	ND
Bedrock, fine to coarse grained fossiliferous limestone	ND	ND	ND	ND	ND

[1] Gartner Lee Ltd, 1990
[2] Golder Associates Ltd, 2005
[3] Golder Associates Ltd, 2011

ND – Not Determined
m - metres
cm/s – centimetres per second

The hydraulic conductivities determined from the aquifer testing undertaken as part of the 2010 WDS assessment update (Golder, 2011b) confirmed the original hydraulic conductivity estimates and validated the conservative (i.e., maximum) values used in the 2005 modelling. As part of the 2014 well construction program (i.e., the installation of monitoring wells at BH29 and BH30), laboratory estimates of hydraulic conductivity were carried out on soil samples from the upper confining unit. The results of this testing indicated a vertical hydraulic conductivity of the material tested on the order of 2 x 10^{-7} centimetres per second (cm/s). It is noted that this estimate is approximately one order of magnitude lower than that estimated in the hydraulic conductivity modelling study, as reported in the table above. It is noted that the analysis was based on two discrete and relatively small samples collected at these two borehole locations, and conditions may vary throughout the Site.

4.3.2 Water Level Monitoring

Water level monitoring was carried out in three events in 2024; spring, summer, and fall. Based on the climate data obtained from Environment Canada for the Barrie-Oro DDD (Station Number 6117700)[1] summarized in Appendix F), the 2024 monitoring events were carried out in primarily dry weather conditions. The total precipitation in 2024 was 963 millimetres (mm), which is slightly higher than reported in the previous year (955 mm in 2023).

[1] Environment Canada, Barrie Oro DDD, Station 6117700, https://climate.weather.gc.ca/; last accessed: March 24, 2025.

Hydrographs of current and historical water level monitoring are contained in Appendix C. During 2024, water levels monitored within the shallow overburden, upper confining layer, Sand Aquifer and lower till remained relatively stable with respect to levels monitored in recent years.

Within the waste, water levels in the waste at BH3-IIR and BH20 remained relatively stable in 2024; levels have not notably been influenced by placement of geosynthetic cover in 2022. The October 2024 water level at BH27-IIR was approximately 1.0 m lower than recent values and may be anomalous, requiring reassessment in 2025. Water levels at BH16-III and IV have been quite variable since 2011, reflecting the thin waste and location generally lower within the waste pile where runoff may accumulate.

The water level fluctuation at BH16-I (sand aquifer) in 2024 (216.72 to 221.26 masl) are notably variable, similar to 2023. It is noted that in July 2025, a portion of the stick-up of BH16-I was damaged from debris falling onto the well. The portion of the well stick-up that was broken off was reattached with the use of a PVC coupling. The levels at this location have significantly fluctuated since 2014 and suggest that the annular seal at this location may be compromised. Given its location within the landfill footprint, replacement of the well at a location further south should be considered.

Since 2022, water levels at BH24R are unusually low in the summer or fall; this location is off site and may be influenced by local changes to drainage. Water levels at BH27-I (peat), which increased by approximately 1.5m in 2020, are slightly higher than those reported prior to 2018 and have remained relatively stable in recent years.

4.3.3 Shallow Groundwater Flow

The configuration of the shallow water table under the Site is shown on Figure 6. The groundwater elevation contours are based upon interpretation of water levels obtained in the fall of 2024 from the shallowest screen at wells installed in peat, refuse or fill, and at the surface water staff gauges.

Groundwater flow within the water table roughly reflects topography. This is evident below the landfill mound and along the low-lying stream channels, Mill Creek and Ben's Ditch. Groundwater flow diverges radially outwards from the landfill, except along portions of the western boundary, and flows towards surface water features to the north, east, and south of the Site, where discharge to surface water occurs. The elevation of the confining unit rises to the west, which prevents shallow groundwater flow in this direction. This trend is consistent with that reported in previous annual monitoring reports. A large portion of the shallow groundwater in the shallow overburden on-site infiltrates into the Sand Aquifer (Golder, 2005b).

Estimated horizontal hydraulic gradients in the shallow aquifer were previously calculated to range from approximately 0.005 metre per metre (m/m) to 0.03 m/m (Golder, 2005b). Gradients are highest at the edge of the landfill and along the eastern landfill boundary divide, and lowest to the north, west, and south of the leachate mound where the topography is nearly flat (GLL, 1990). Based on the reported mean hydraulic conductivity of 2.1×10^{-4} cm/s, and an assumed porosity of 0.8 for peat, a corresponding linear flow velocity was calculated to range from 0.5 metres per year (m/y) to 2.5 m/y (Golder, 2005b).

Based on water level data from the fall of 2024, the hydraulic gradients in the shallow overburden were calculated to range from 0.006 m/m to 0.013 m/m. Based on the above hydraulic conductivity and porosity for peat, a corresponding linear flow velocity was calculated based on gradients observed in 2024 to range from 0.5 m/y to 1.1 m/y.

The reported water level at S-1 decreased by approximately one metre in the summer of 2015 and subsequently exhibited relatively stable behaviour, suggesting a change in the measuring point. The elevation at this location in

September 2024 (217.62 masl) is lower than the typical elevation of Lake Simcoe and notably less than upstream S-8 (219.13) indicating that the S-1 elevation is incorrect and should be re-surveyed.

Vertical gradients, as calculated in Golder (2005b) indicate a predominantly downward gradient through the underlying confining layer towards the Sand Aquifer. Vertical gradients between the peat unit and the Sand Aquifer were observed at BH2, BH5 and BH14. Based on water levels from fall 2024, vertical gradients ranged from -0.033 m/m to 0.12 m/m. In 2024, a slight upward vertical gradient was observed at BH14 (-0.033 m/m), similar to that observed in 2023. At BH2, the gradient switched from a slight downward gradient observed in 2023 (-0.01 m/m) to a slight upward gradient observed in 2024 (0.12 m/m).

4.3.4 Confined Sand Aquifer

The fall 2024 potentiometric surface is presented on Figure 7. The interpreted potentiometric surface is consistent with recent years. As discussed in Section 3.1, the Sand Aquifer is locally absent at BH15 and further west.

The groundwater flow direction in the Sand Aquifer is easterly under the western half of the Site, then southeasterly towards Lake Simcoe where discharge occurs. Based on the interpreted hydrostratigraphy, the Sand Aquifer also discharges to the area of Ben's Ditch. The potentiometric surface is steepest to the southwest, flattening out significantly to the east/northeast.

Based on water level data from the fall of 2024, the horizontal hydraulic gradients in the Sand Aquifer were calculated to range from 0.0015 m/m to 0.025 m/m, consistent with the values reported in the 2023 Annual Report (WSP, 2024). Based on the mean reported hydraulic conductivity of 1.6×10^{-4} cm/s, and an assumed porosity of 0.3, the corresponding horizontal linear flow velocity in the Sand Aquifer ranges from 0.25 m/y to 4.2 m/y.

4.4 Surface Water

As shown on Figure 2, the landfill is bounded on three sides by surface water bodies: the Mill Creek Diversion (Mill Creek) to the north, Ben's Ditch to the east, and Lake Simcoe to the south. To the west, a wetland area is present on the far side of the rail trail. Drainage from the northern and eastern parts of the Site leads to Mill Creek and Ben's Ditch; the southern area drains to Lake Simcoe. Surface water flow direction in the vicinity of the Site is from the northwest to the southeast. Flow in the ditch located west of the former CN Rail bed diverges near BH25, north towards Mill Creek, and south through the culvert at S-18 to Lake Simcoe. Further to the south, flow through S-19 originates from the south, in part from the Huronia Regional Centre (HRC). Mill Creek discharges to Ben's Ditch near S-6, which then flows into Lake Simcoe.

The Mill Creek Diversion is an improved surface drainage course. Upstream (west) of the Site, it is a natural narrow channel (Mill Creek), which extends beyond Highway 11 to the west (Figure 1). According to the City of Orillia storm drainage plan (UMA Engineering, 1991), the drainage basin of this creek is approximately 1,010 ha, of which 150 ha are serviced by storm drains. Surface water flows monitored at S-7 have ranged from approximately 14 litres per second (L/s) to 460 L/s since 1990. High peak flows may represent specific precipitation events. The discharge recorded at S-7 in 2024 ranged from 102 L/s in July to 341 L/s in April..

Ben's Ditch is reported to drain a catchment area of approximately 340 ha upstream of S-8, of which approximately 200 ha is serviced by storm drains. The headwaters of Ben's Ditch originate in industrial and commercial lands and collect runoff from Highway 12B. Ben's Ditch is an engineered watercourse with soft bottom conditions. Water is occasionally observed to flow upstream in this ditch due to changing water levels in Lake Simcoe, often resulting from a change in wind direction or intensity. Measurement of flow in this ditch is inconsistent due to this condition and has been discontinued. Average annual flow at S-8 is estimated at 36 L/s, calculated based on the watershed area.

During periods of low precipitation, the flow in Ben's Ditch upstream of the WWTC is primarily groundwater discharge, which forms the baseflow component. The Mill Creek Diversion also provides a component of flow to this water body. The discharge of the WWTC to Ben's Ditch near S-2 (Figure 2 and Table B-10) varied from a reported daily low of 9,846 m^3/day on November 4, 2024 to a high of 37,648 m^3/day on April 12, 2024; discharge rates were similar to recent years, though slightly lower than those reported in 2023.

Significant surface water flow towards the Site from the west has been intermittently observed at two culverts draining under the former CN Rail bed south of BH25, designated as S-18 and S-19. The surface water through these culverts originates off-site from both the paved industrial/commercial lands to the west and from the Huronia Regional Centre (HRC) to the south, which is notably elevated.

4.5 Landfill Gas

Landfill gas (LFG) in the soils is not regularly monitored at the Site; however, landfill gas has been occasionally observed by City staff to be venting from the surface of the landfill. Landfill gas typically consists primarily of methane and carbon dioxide, which are by-products of the decomposition of organic material found in MSW.

In 2006, Golder conducted a study to assess landfill gas production at the Site, relative to Condition 40 of the updated Environmental Compliance Approval (ECA) for the Site issued September 19, 2005. The following items were addressed in that report:

i) Assessment of the potential for off-Site impacts due to migrating LFG;

v) Prediction of the LFG generation rate for the landfill based on the size of the Site and the composition of the waste deposited at the Site;

vi) An estimation of the LFG discharge rate through the final cover; and

vii) Assessment of the potential for utilizing LFG at the Site.

Additionally, recommendations were made regarding landfill gas safety issues at on-site buildings, and provisions for further work, monitoring, or changes in Site activities.

From this study, it was determined that there is a low rate of landfill gas generation at the WDS with respect to the potential for LFG utilization The potential for off-site impacts of LFG by migration through the soil was determined to be low due to surface water bodies bounding the Site (Mill Creek to the north, Ben's Ditch to the east, and Lake Simcoe to the south), and the marshy and wetlands to the west of the CN Rail bed that were determined to have low concentrations of methane in the subsoil (0.0% to 0.1% by volume).

A risk of gas build-up in on-site buildings was noted in the report, due to higher methane soil gas concentrations measured immediately adjacent to the waste fill areas near buildings (up to 61.7% methane by volume). The City indicated that weekly sweeps for explosive gases were completed between October 2006 and November 2008. During this period there were no detections of combustible gas (e.g., methane). In November 2008, City staff discontinued the weekly combustible gas sweeps of landfill buildings. A new Equipment and Administration Building was opened on August 8, 2016 and a new Scale house was opened in 2017. Both buildings are equipped with methane detectors. In 2024, no methane alarms were reported by the City to have occurred at their buildings.

To address the potential for landfill gas migration to the west of the Site towards a residence on United Drive, a landfill gas monitoring probe (GP6) was installed in 2010, located to the west of the former CN Rail bed in a low-lying marshy area. Water levels within this marshy area are typically high, and the intervening area between

the rail bed and the residence to the north contains little unsaturated soil, if any, through which methane could be expected to migrate. The water levels within the gas probe were historically at, or near, ground surface and therefore present no evident methane migration pathway. The risk of methane migration from the landfill to the buildings on United Drive is considered to be minimal.

In 2020, Golder conducted a study (Golder, 2020b) to assess LFG production at the Site to address Condition 30.3 of the updated ECA issued October 9, 2018. The following items were addressed in the study:

i) Prediction of the LFG generation rate based on the size of the landfill and the composition of the waste deposited;

ii) An estimation of the LFG discharge rate through the final landfill cover;

iii) The potential for off-site migration of LFG; and

iv) Assessment of the potential for LFG controls.

The recent study results were similar to those reported in 2006. The LandGEM modelling results described in Golder (2020) indicated that the LFG generation rate at the WDS will decline with time. The likelihood of off-site lateral LFG migration from the WDS is considered unlikely. Nevertheless, as the waste fill expands, water levels in the gas probes should be regularly measured to monitor for possible landfill gas migration pathways, notably in in the direction of Progress Drive where LFG migration potential was not previously assessed.

5.0 GROUNDWATER QUALITY

Groundwater quality sampling was conducted at 26 of the 27 observation well nest locations in 2024. Triannual sampling is scheduled for locations BH27-I and BH27-IIR located within the landfill; samples have not been collected in these wells in recent years due to insufficient volume for sample collection.

Groundwater within the Site discharges to surface water locations within or adjacent to the Site boundaries; there are no groundwater users within or downgradient of the WDS. As a result, the main concern is protection of surface water quality and aquatic life in adjacent surface water features, and thus the Site compliance is assessed in relation to the Provincial Water Quality Objectives (PWQO).

Key indicators for landfill leachate from the WDS include ammonia, toluene and zinc. Trigger criteria for these key indicators were developed and are applied at four groundwater monitoring wells adjacent to Lake Simcoe, as discussed in Section 7. Other leachate indicator parameters including alkalinity, chloride and sodium have been identified for the landfill, which are used to evaluate trends in water quality relative to background conditions and inputs from other sources including runoff from the upstream urbanized areas and the WWTC. Phosphorous is not considered to be a landfill leachate indicator parameter at the WDS; however, it has been identified as a parameter of concern for Lake Simcoe and is therefore assessed in this report.

Chloride concentrations in the shallowest screen at each monitoring well are illustrated for fall 2024 on Figure 8, and in the underlying Sand Aquifer on Figure 9. Cross-sections A-A′ (Figure 3) and B-B′ (Figure 4) also include chloride concentration results. Elevated chloride concentrations are commonly observed in landfill leachate. Chloride is considered to be a conservative parameter relative to migration in groundwater due to its non-reactive nature, which typically results in chloride being the most advanced parameter migrating within a plume originating from a landfill. Consequently, it is often used to delineate the extent and migration of these plumes.

Prior to 1998, snow dumping activities occurred in Cells 9 and 10 in the southwest part of the landfill, which resulted in a source of chloride and sodium additional to that from the landfill. Subsequently, the snow dump was moved to the north of the WWTC to reduce chloride input at the landfill Site (Figure 2). Concentrations of chloride and sodium subsequently decreased in the vicinity of the former snow dump (i.e., BH16-IVR).

Chloride (and sodium) concentrations are notably highest in 2024 upgradient of the Site, in the peat unit at BH1-III and BH18R (averages of 436 milligrams per litre [mg/L] and 621 mg/L chloride, respectively), however chloride concentrations at BH1-III are reported at a new historical low in 2024. Concentrations in 2024 continued to fluctuate but were consistent overall with concentrations observed since 2019. Elevated chloride and sodium concentrations are also present in the Sand Aquifer at BH1-IR (average 198 mg/L) and remain notably elevated above concentrations prior to 2018 suggesting ongoing and increasing road salt impacts to this area. Accompanying elevated phosphorous and iron may reflect changes in the chemical makeup of the groundwater.

Chloride concentrations are also elevated at the refuse (waste) monitoring well BH3-IIR (average 566 mg/L in 2024), consistent with elevated concentrations observed at this location since late 2004. The lowest chloride concentrations are monitored in the Sand Aquifer at BH14-I (10.1 mg/L in 2024) located north of the landfill, and in BH29-II southwest of the new composting pad (average 2.2 mg/L in 2024).

Ammonia concentrations are a key indicator of landfill impact at the WDS, notably relative to the proximity of surface water at the Site. Ammonia concentrations in leachate (e.g., at BH3-IIR) averaged 329 mg/L in 2024 (discussed in Section 5.2). As discussed below, modelling of discharge from the landfill indicates that the vast majority of the leachate (on a mass basis) will discharge to the adjacent water bodies through the Sand Aquifer

(Golder, 2005b). Figure 11 illustrates the distribution of ammonia in this aquifer in the fall of 2024. Figure 10 illustrates the distribution of ammonia in the upper sand and peat unit.

Groundwater quality is presented for the shallow groundwater and Sand Aquifer units and divided into upgradient, leachate, landfill vicinity and downgradient sections within each unit. Tables 5.1 and 5.2 summarize the divisions. Leachate quality is discussed in Section 5.2, shallow groundwater water quality in Section 5.3 and Sand Aquifer water quality in Section 5.4.

Table 5.1: Shallow Groundwater Monitoring Wells by Location

Location	Monitoring Wells
Upgradient	BH1-III, BH18R, BH19*, BH23, BH24R, BH28-II
Toe of Landfill	BH2-III, BH6R, BH7*, BH8R, BH15-IIIR, BH21-II
Downgradient	BH5-IIIR, BH10R, BH11R, BH13*, BH14-IIIR, BH22-II
Downgradient of Compost Pad	BH29-II, BH30-II
Leachate	BH3-IIR, BH16-IV, BH20R, BH27-I, BH27-IIR, BH29-II

Note: * Water Level only

Table 5.2: Confined Sand Aquifer Monitoring Wells by Location

Location	Monitoring Wells
Upgradient	BH1-IR, BH25, BH28-I
Landfill Vicinity	BH2-II, BH3-IR, BH4-II, BH14-I, BH16-I, BH21-IR
Downgradient	BH5-IR, BH17-III, BH22-IR, BH26
Downgradient of Compost Pad	BH29-I, BH30-I
Upper Confining Unit	BH17-IVR

The water quality results are presented in Appendix D for major ions and indicator parameters, in Appendix E for metals and in Table B-6 for VOC.

Water quality monitoring was carried out in three events in 2024, spring, summer and fall. Based on a review of climate data prior to and during water quality monitoring events, monitoring was carried out during a mix of dry and wet conditions. Precipitation events of less than 10 mm are not considered to have a significant effect on groundwater monitoring and are considered to be ‘dry’ conditions. It is considered unlikely that the precipitation rates observed during the ‘wet’ weather condition noted in the table above had a significant influence on static water levels; the observed short-term influence of the precipitation would be expected to be limited to the wells located within shallow unconfined units.

5.1 Concentration Profiles and Indicator Distribution

Concentration profiles of selected indicator parameters along cross-sections through the Site are illustrated on Figures 13 through 16, based on average 2024 concentrations. Along the upper peat and landfill section (Figure 13), concentrations of the plotted indicator parameters were highest within or immediately downgradient of the landfill area (BH8R, BH20R, BH3-IIR, and BH21-II), and decrease substantially with increasing distance from the landfill. Similarly, concentrations in the Sand Aquifer section (Figure 14) were highest within the landfill area (BH3-IR and BH21-IR).

The distribution of concentrations of chloride and ammonia in the Sand Aquifer are illustrated on Figures 9 and 11, respectively, as a means of illustrating the extent of impact derived from the landfill Site as illustrated by these parameters.

Ammonia concentration distributions within the Sand Aquifer indicate lower concentrations of ammonia are observed under the central part of the landfill at BH3-IR. Ammonia concentrations at BH21-IR indicate that the impact is greater at some locations immediately downgradient of the landfill. The ammonia concentrations return to background or near-background concentrations approaching Lake Simcoe, reflecting the attenuation between the landfill area and the lake. Concentrations of ammonia decline to low or near-background values before reaching the southern Site boundary, whereas chloride concentrations are more persistent and remain slightly elevated downgradient of the landfill.

5.2 Leachate Quality

Leachate quality is monitored at four wells located within the landfill footprint, installed in either refuse (waste) or the underlying peat formation, as listed in Table 5.1.

Historically, BH27-IIR exhibited the highest concentration of most indicator parameters and best represented the quality of undiluted leachate. Since BH27-IIR has been consistently dry (or nearly so), BH3-IIR is now used to assess the quality of landfill leachate. For comparative purposes, it is noted that the peak chloride and ammonia concentrations at BH27-IIR were 3,490 mg/L and 738 mg/L, respectively, in 1993.

Table 5.3 presents the arithmetic mean (“average”) concentrations of selected leachate indicator parameters at the leachate monitoring wells in 2024. BH29-II is included in Table 5.3 for comparison to other leachate wells, however it is discussed in greater detail in section 5.4.3 relevant to its position downgradient of the compost pad.

Table 5.3: 2024 WDS Leachate Quality - Selected Average Indicator Parameter Concentrations

Parameter	PWQO	BH3-IIR	BH16-IVR[1]	BH20R[2]	BH29-II
Alkalinity	-	1,120	878	1,337	383
Chloride	-	566	118	168	2.2
Iron	0.3	0.5	39.1	0.6	11.6
Manganese (µg/L)	-	259	858	1,327	562
Ammonia	0.02	329	30	98	2.35
TKN	-	310	33.9	102	2.2
DOC	-	127	63	57	7.5
Cadmium (µg/L)	0.5	0.035	7.0	<0.02	<0.1
Cobalt (µg/L)	0.9	15	11.0	<5	1.5
Lead (µg/L)	5	<0.05	41	0.42	0.4
Nickel (µg/L)	25	68.9	20	<10	7.1
Zinc (µg/L)	20	3	42	<5	3
Phosphorus	0.02	0.88	0.59	0.65	0.067

Notes:
All concentrations in mg/L unless otherwise stated.
1: Cadmium, cobalt, lead, nickel and zinc not analyzed in 2024, average concentrations from 1995 are shown.
2: Cadmium, cobalt, lead, nickel and zinc not analyzed in 2024, concentrations from 2009 are shown.

As in previous years, concentrations of most leachate indicator parameters are highest at BH3-IIR. In addition to “typical” leachate indicators chloride, ammonia, iron and manganese, elevated concentrations of sodium, calcium, magnesium, and COD were observed at this location. Chloride concentrations at BH3-IIR remained relatively stable in 2024 (566 mg/L, slightly lower from 598 mg/L in 2023) and continue to be elevated compared with historical (pre-2006) observations. Fluctuations of sodium, total kjeldahl nitrogen (TKN), manganese, calcium and magnesium concentrations are noted but remain within historical ranges. Ammonia concentrations at this well continue to be elevated, maintaining the increased average first observed in 2023 (average 329 mg/L in 2024). There has been an increasing trend of ammonia concentration at BH3-IIR since the mid 1990s. In 2024, copper, selenium, and chromium were elevated above recent average concentrations. Zinc, lead, cadmium, cobalt and nickel concentrations at BH3-IIR are consistent with historical norms. Phosphorous was elevated (compared to historic norms at this well) at BH3-IIR in spring 2024 (1.15 mg/L), but decreased throughout the year to more typical concentrations (0.54 mg/L).

Elevated concentrations of landfill leachate indicator parameters are generally observed at BH16-IVR and BH20R, but typically at lower concentrations, reflecting the age (older) and thinner waste at these locations. It is noted that the concentrations of iron are well in excess of the PWQO at all three monitoring locations; phosphorous and phenols were also generally observed at concentrations in excess of the PWQO. Iron concentrations at BH16-IVR continue to remain elevated through to 2024 (average 39.1 mg/L), however, a gradual declining trend since 2010 is observed. Average chloride (118 mg/L in 2024) and ammonia (30.2 mg/L) concentrations at BH16-IVR decreased in 2024 relative to concentrations reported in 2023; however, ammonia trends at this location have historically fluctuated between approximately 20 mg/L and 70 mg/L.

Expanded metals analysis (Appendix E) was undertaken once at BH3-IIR in 2024. Reported concentrations above the Method Detection Limit (MDL) were reported for arsenic, barium, cadmium, chromium, copper, phosphorous, selenium, aluminum, cobalt, nickel and zinc. Exceedances of the PWQO were reported for arsenic, copper, cobalt, nickel, and phosphorus.

Impacted soils from the Orillia Ontario Provincial Police Headquarters Building Site were landfilled in 1992. Analyses of these soils undertaken in 1992 prior to their disposal indicated elevated arsenic concentrations of up to 100 ppm. Arsenic concentrations at BH3-IIR were reported at concentrations of 5.1 mg/L in 2024; from 2018 to 2022, arsenic concentrations at BH3-II remained at or below 3.2 mg/L.

5.3 Shallow Groundwater

Water quality in the shallow unconfined groundwater adjacent to the landfill is currently monitored at 16 monitoring wells (Table 5.1).

5.3.1 Upgradient

The shallow aquifer upgradient water quality is monitored at two locations north of Highway 12 (BH1-III and BH18R) and two locations to the west of the Site (BH23 and BH24R), where the shallow groundwater flows easterly. Arithmetic mean (“average”) groundwater quality data for all 2024 monitoring events for the selected indicator parameters at the upgradient locations are presented in Table 5.4.

Table 5.4: Upgradient Shallow Groundwater (Background) Water Quality

Selected Average Indicator Parameters (2024)

Parameter	BH1-III	BH18R	BH23*	BH24R*
Alkalinity	311	390	304	390
Chloride	436	621	142	171
Sodium	227	251	82	102
Iron	2.69	6.91	4.16	7.98
Manganese (µg/L)	432	986	614	1,620
Ammonia	0.3	0.8	0.06	0.5
TKN	11	4.6	0.4	0.7
DOC	51	72	5.8	5.1

Note: All concentrations in mg/L unless otherwise stated.
*: Location sampled annually.

As noted above, the elevated chloride and sodium concentrations reported upgradient of the landfill at BH1-III, BH18R, BH23 and BH24R are considered to be the result of ongoing road salt impact. Elevated iron, manganese, DOC, and TKN concentrations are interpreted to be sourced from the peat materials forming part of the shallow overburden and their concentrations in groundwater will be affected by changes to overall chemical makeup by road salt impacts. Exceedances (if observed) of the PWQO are typically observed at these locations for iron, phenols and phosphorous. The road salt impacts or natural presence of these parameters at elevated concentrations at these upgradient locations limits their usefulness as indicators of landfill impact. It is further noted that these wells those to the west of the landfill and the drainage (Ben's Ditch and Mill Street Diversion) have all exhibited a notable long-term increase in off-site chloride and sodium concentrations consistent with increasing urbanization and/or road salt use. The City has noted a recent increase in road salting activities, which includes the use of calcium chloride. As noted in Section 6, the increased road salt impacts in the groundwater are moving into the surface water, increasing the salinity of Lake Simcoe.

5.3.2 Toe of Landfill

Groundwater quality in the shallow aquifer was monitored at four locations at or near the toe of the landfill. Monitoring wells BH8 and BH15-III are located near the northernmost portion of the landfilled area; BH2-III is located approximately 10 m beyond the northeast of the landfilled area and BH21 is located approximately 15 m south of the defined landfill. Arithmetic mean (average) concentrations for the selected indicator parameters at the landfill vicinity locations in 2024 are presented in Table 5.5.

Table 5.5: Toe of Landfill, Shallow Groundwater Quality (2024)

Parameter	BH2-III	BH8R	BH15-IIIR*	BH21-IIR
Alkalinity	1,157	1,333	954	723
Chloride	273	82	49	74
Iron	8.0	2.8	43.1	23.1
Manganese (µg/L)	989	596	1,280	956
Ammonia	15.0	58.3	31.4	24.7
TKN	16.1	61.6	25.7	28.1
DOC	32	37	21	40

Note: All concentrations in mg/L unless otherwise stated.
*: Location sampled annually

Groundwater quality at BH2-III, BH8R, BH15-IIIR and BH21-IIR was generally similar, exhibiting elevated concentrations of leachate indicator parameters notably including ammonia, ranging from 15.0 mg/L to 58.3 mg/L and chloride ranging from 49 mg/L to 273 mg/L. Generally, the higher concentrations of leachate indicator parameters were observed at monitoring wells located in closest proximity to the largely completed (i.e., filled) portion of the landfill (BH8R and BH15-IIIR). Iron, phenols and phosphorus are notably elevated at these locations.

Elevated iron and possibly ammonia concentrations at BH21-IIR are considered to potentially reflect input from the former composting operations that were operated nearby. Concentrations of ammonia at BH21-IIR in 2024 (24.7 mg/L) were similar to 2023 concentrations (24.3 mg/L) but remain below historical values observed prior to 2016. The concentration of ammonia at BH15-IIIR decreased (31.4 mg/L) from 2023 (40.6 mg/L); the ammonia concentration at BH15-IIIR has been gradually declining since the historical maximum of 110 mg/L reported in 2015. BH15-IIIR is located immediately adjacent to the waste footprint. Ammonia concentrations at this well have been historically similar to those reported at BH20R, which is screened in waste within an older portion of the landfill. However, since 2022 the concentrations of ammonia have declined significantly at BH15-IIIR (0.7 mg/L July) and are much lower than those observed at BH20R.

Concentrations of ammonia at BH8R in 2024 were slightly lower than those in 2023 (average 58.3 mg/L and 67.2 mg/L, respectively) and remain below the historical peak average concentration (83.2 mg/L) observed in 2012. Chloride concentrations at BH8R continued to decrease (average 82 mg/L, down from 110 mg/L in 2023). As noted below in Section 6.3, the majority of leachate indicator parameters indicate no appreciable change in water quality from surface water sampling locations S-7 to S-6 and from S-3 to S-4. This reflects the relatively low flux from the upper units, as discussed in Golder (2005b).

5.3.3 Downgradient of Compost Pad

Groundwater quality in the shallow overburden is monitored downgradient of the new composting pad at two locations. The groundwater quality is monitored to the southeast (BH-30-II) and southwest (BH29-II) of the new composting pad. The concentrations for the selected indicator parameters at these locations in 2024 are presented in Table 5.6. BH29-II was also noted in Table 5.3 for comparison to other wells screened in refuse, however, BH29-II has historically exhibited trends that suggest equal impact from composting operations as from leachate and has been discussed as such in this section.

Table 5.6: Downgradient of Compost Pad, Shallow Overburden Groundwater Quality

Selected Average Indicator Parameters (2024)

Parameter	BH29-II	BH30-II
Alkalinity	383	614
Chloride	2	58
Iron	11.6	13.8
Manganese (µg/L)	562	1,610
Ammonia	2.4	6.3
TKN	2.2	6.9
DOC	8	8

Note: All concentrations in mg/L unless otherwise stated.

Groundwater quality downgradient of the compost pad in the shallow peat exhibited elevated concentrations of a number of indicator parameters however, current chloride and ammonia are relatively low compared to leachate. At BH30-II, concentrations of chloride (average 58 mg/L) and ammonia (average 6.3 mg/L) are reported. Whereas ammonia concentrations have remained similar to those reported since approximately 2015, chloride has exhibited a decreasing trend since 2016 (historical maximum of 372 mg/L). The average concentration of chloride was significantly lower at BH29-II (average 2 mg/L) compared to BH30-II. The ammonia concentration at BH 29-II has historically fluctuated. The reported average concentration decreased slightly in 2024 (2.4 mg/L, down from 7.0 mg/L in 2023). Elevated iron, phosphorus (0.067 mg/L at BH29-II, 0.046 at BH30-II) and cobalt (1.5 mg/L at BH29-II, 3.7 mg/L at BH30-II) relative to the PWQO are noted at these locations. It is noted that ammonia, iron, and COD are common to compost-specific water quality impacts, and that the fluctuation of indicator parameter concentrations is most likely related to the compost activities in addition to the landfill.

5.3.4 Downgradient of the Landfill

Shallow overburden groundwater downgradient of the landfill is monitored at five locations adjacent to Mill Creek (BH10, BH14-III), Ben's Ditch (BH11R) and Lake Simcoe (BH5-IIIR, BH22-IIR). Arithmetic mean ("average") concentrations for the selected indicator parameters at downgradient locations in 2024 are presented in Table 5.7.

Table 5.7: Downgradient Shallow Overburden Groundwater Quality – Selected Average Indicator Parameters (2024)

Parameter	BH5-IIIR	BH10R	BH11R	BH14-IIIR	BH22-IIR
Alkalinity	488	528	580	586	299
Chloride	109	105	127	83	128
Iron	1.57	1.23	2.72	1.0	6.66
Manganese (µg/L)	235	352	308	461	441
Ammonia	0.8	1.1	0.2	1.6	0.7
TKN	13	2.6	2	3.6	2.5
DOC	32	20	27	36	10

Note: All concentrations in mg/L unless otherwise stated.

Concentrations of chloride, manganese, TKN and DOC in the shallow groundwater at the downgradient monitoring wells were generally similar to concentrations reported for the upgradient monitoring locations; although elevated concentrations of alkalinity at all but BH22-IIR indicate landfill-derived impacts at these locations. In 2023, elevated TKN was first noted at BH5-IIIR and in 2024 was observed again at BH5-IIIR in the fall sampling event. The elevated concentrations of TKN at BH5-IIIR in 2023 and 2024 are not in keeping with typical groundwater quality at this location, and elevated phosphorous has also been reported at this location since 2022; potential local sources should be assessed through discussion with the City and inspection. The City noted that silty clays are occasionally present in samples collected from this location, and that the well is in good condition. Slightly elevated concentrations of some leachate indicator parameters are present, notably chloride (83 mg/L to 128 mg/L), whereas ammonia (0.2 mg/L to 1.6 mg/L) is relatively low. Historically, elevated aluminum, iron, phenols and phosphorous have been noted at these locations. In 2024, iron and phosphorous remain elevated relative to the PWQO.

Similar to that noted above for BH21-IIR (see Section 5.3.2), elevated iron, and possibly ammonia, at BH22-IIR is considered to potentially reflect input from the adjacent former historical composting operations. As has been historically observed, ammonia concentrations decreased substantially downgradient between BH21-IIR (average 24.7 mg/L) and BH22-IIR (average 0.7 mg/L) reflecting natural attenuation of this parameter, whereas chloride concentrations are slightly higher at BH22-IIR. The ammonia concentrations at BH22-IIR were largely unchanged

in 2024 (average 0.7 mg/L, similar to 0.9 mg/L in 2023) and remain well below the historical maximum concentrations observed in 2010 (2.47 mg/L).

Concentrations of chloride south of the landfill are typically lowest at BH5-IIIR (average 109 mg/L in 2024), however chloride has decreased at BH14-IIIR since 2023 and remained low in 2024 (average of 83 mg/L) and appear to have stabilized in recent years (average 124 mg/L between 2020-2023), following an increasing trend that had been observed since 2006. The historically lower concentrations of chloride at BH5-IIIR suggest that landfill impacts are greater downgradient of the central portion of the landfill to the west (south of Cell 11).

Overall, comparing the concentrations of leachate indicator parameters at downgradient monitoring wells to those adjacent to the landfill, lower concentrations of leachate parameters chloride, and notably ammonia, were observed at the downgradient monitoring wells. This reflects attenuation, notably of ammonia, within the intervening overburden materials.

The expanded metals analysis undertaken for samples collected from BH22-IIR indicates that the concentrations of the expanded metals analysis parameters were reported within historically observed ranges in 2024. Copper (average 2.6 µg/L), nickel (average 4.5 mg/L), selenium (average 0.4 mg/L) remained slightly elevated in 2024. Aluminum returned to more typical concentrations in 2024 (average 21 µg/L), suggesting that the highly elevated concentration reported in April 2023 (3,000 µg/L) was anomalous. As is typically observed at BH22-IIR, phosphorous exceeded the PWQO limits during all three sampling events. However, all other parameters in the expanded metals analysis remained below the PWQO limits in 2024. .

5.4 Confined Sand Aquifer

As presented in Table 5.2, the confined Sand Aquifer unit is monitored by 16 monitoring wells, including BH17-IVR (in the upper confining unit). The results of the groundwater monitoring program for the confined Sand Aquifer are discussed in Sections 5.4.1 to 5.4.4, for upgradient locations, the landfill vicinity and two downgradient locations. Monitoring well BH17-IVR is discussed in Section 5.4.5.

5.4.1 Upgradient

Background water quality for the Sand Aquifer is monitored at BH1-IR north of Highway 12B and BH25 southwest of the landfill west of the former CN railway corridor. The interpreted potentiometric surface and the observed low vertical hydraulic gradients indicate that groundwater flow is toward Lake Simcoe. Consequently, these monitoring locations are interpreted to be upgradient of the landfill and represent “background” water quality conditions. Arithmetic mean (“average”) concentrations for the selected indicator parameters at upgradient Sand Aquifer locations are presented in Table 5.8.

Table 5.8: Upgradient Confined Sand Aquifer Water Quality – Selected Average Indicator Parameters (2024)

Parameter	BH1-IR	BH25*
Alkalinity	225	277
Chloride	198	219
Iron	2.92	0.29
Manganese (µg/L)	455	313
Ammonia	0.1	0.3
TKN	1.6	0.5
DOC	19	4

Note: All concentrations in mg/L unless otherwise stated.
*: Location sampled annually.

The concentrations of indicator parameters observed at the upgradient Sand Aquifer location BH25 were generally consistent with historical results. Water quality at BH25 indicates that road salting impacts are present upgradient of the landfill. Previously, BH1-IR was considered to be the best representation of background water quality; increasing concentrations of a number of indicator parameters at this location in starting in 2018 indicate changing upgradient conditions. Concentrations remained similar to those reported in recent years and remain elevated to those reported prior to 2018. This includes chloride (average 198 mg/L, up from 3 mg/L in 2017), iron (average 2.92 mg/L, up from 0.026 mg/L in 2017), magnesium (average 39 mg/L, up from 15 mg/L in 2017), and manganese (average 455 µg/L, up from 42 µg/L in 2017), and sodium (average 107 mg/L, up from 28 mg/L in 2017). Sodium and hardness similarly remain elevated compared to historical pre-2018 data. Ammonia concentrations remained low in 2024 (average 0.1 mg/L). In the absence of other potential sources for this change in groundwater quality and considering the parameters that are elevated in recent years, it is interpreted that the onset of road salt and urbanization impacts at this monitoring location were observed starting in 1990 and notably increasing since 2005.

Chloride concentrations have been increasing consistently at BH25 since 2005 but appear to be stabilizing since the historic high first observed in 2021 (219 mg/L in 2024, 250 mg/L in 2021). Sodium and hardness concentration trends are also increasing over time. TKN and COD concentrations have fluctuated significantly at this well, notably since 2002. COD ranged from below detection limits for the period 1998 to 2000, to 137 mg/L in 2010; in 2024, COD was 56 mg/L. In 2024, manganese concentrations increased at BH25 (313 µg/L), however they remained below the historic high observed in 2023 (342 µg/L). An elevated concentration of barium (444 µg/L), consistent with historical results, was detected in 2024. Despite the close proximity to the landfill (less than 100 m), BH25 is not considered to be within its area of influence. The elevated chloride and sodium concentrations at BH25, as well as associated changes in other parameters (e.g., alkalinity and calcium), are considered to reflect urbanization, notably road salt application.

5.4.2 Landfill Vicinity

Groundwater quality in the Sand Aquifer in the vicinity of the landfill is monitored at six locations, BH2-II, BH3-IR, BH4-IIR, BH14-I, BH16-I, and BH21-IR. Groundwater trigger locations in the Sand Aquifer are monitored at locations BH5-IR, BH17-III, BH22-IR and BH26; these are discussed in detail in Section 7.1. Arithmetic mean concentrations for the selected indicator parameters in 2024 are presented in Table 5.9. Notably, elevated concentrations of ammonia are only present at BH21-IR.

Table 5.9: Landfill Vicinity Confined Sand Aquifer Water Quality – Selected 2024 Average Indicator Parameters

Parameter	BH2-II*	BH3-IR	BH4-IIR	BH14-I*	BH16-I	BH21-IR
Alkalinity	291	792	329	204	594	489
Chloride	112	199	260	10	184	105
Iron	3.93	13.41	0.60	0.25	8.59	25.43
Manganese (µg/L)	195	1,763	100	8	72	1,103
Ammonia	0.3	0.4	0.2	0.1	0.1	8.4
TKN	0.6	2.4	0.9	0.3	1.8	10.0
DOC	8.9	20.3	2.4	1.3	7.2	14.3

Note: All concentrations in mg/L unless otherwise stated.
*: Location sampled annually.

Groundwater quality at BH14-I is characterized by stable, relatively low, near background indicator parameter concentrations. This well is located 75 m north and cross-gradient/upgradient of the landfill; it is not interpreted to be impacted by landfilling activities and appears to be isolated from local road salt impacts, based on low chloride and sodium concentrations.

East of the WDS, indicator parameter concentrations are slightly elevated at BH2-II compared to BH14-I. Increasing trends were observed for chloride, sodium, iron, manganese at this location up to 2007 and again after 2017. Whereas ammonia concentrations are low (< 1 mg/L), an increasing trend is evident since 2007. Chloride, calcium, sodium and iron continued to increase into 2024, whereas ammonia appears to be stabilizing. In 2024, concentrations of chloride increased slightly to 112 mg/L, from 107 mg/L in 2023.

To the southwest of the WDS, groundwater quality at BH4-IIR exhibits moderately elevated chloride (average 260 mg/L in 2024) and sodium (average 142 mg/L in 2024) concentrations since 2005; sodium concentrations have been variable since 2016 but appear to be exhibiting an overall increasing trend. Chloride concentrations reached a historic maximum in 2021 and have since fluctuated. Elevated iron concentrations deviate from concentrations observed prior to 2008, when BH4-IIR groundwater quality was largely similar to that at BH25. Seasonal effects on groundwater quality are apparent at this well; however, the increasing trend in chloride and sodium are considered to represent infiltration of road salt impacted runoff from the vicinity of Memorial Avenue.

Monitoring locations BH3-IR and BH16-I are located under the landfill. Landfill impacts are observed at these locations, most notably at BH3-IR, characterized by elevated concentrations of alkalinity, chloride, iron and relatively low (< 1 mg/L) concentrations of ammonia. Indicator parameters including major ions, COD, and metals (including iron and manganese), increased substantially at BH3-IR from 2007 to 2010. Recent concentration trends were relatively stable and chloride notably decreased in 2024. Ammonia concentrations were higher prior to 2009.

Indicator parameter concentrations in the overlying leachate monitoring well BH3-IIR (average chloride, 566 mg/L) are higher than those observed at BH3-IR (average chloride, 199 mg/L) reflecting the presence of the intervening peat unit and underlying confining layer. The low vertical hydraulic conductivity of the confining layer overlying the Sand Aquifer further limits the rate of vertical migration of leachate into the Sand Aquifer. Since ammonia and potassium concentrations have not increased substantially in the same period and are not notably above background concentrations, it is concluded that these parameters are, to date, attenuated within the intervening peat and confining layer.

On the south side of the landfill, at BH16-I, iron and sodium have increased since about 2003; chloride has recently (since 2022) increased since late 2021 following relatively steady concentration trend. Concentrations of COD have fluctuated significantly at this well, notably since 2009. Elevated COD concentrations have also increased notably since 2021. Concentrations of ammonia (average 0.1 mg/L) remain low at BH16-I indicating that this parameter is attenuated.

As shown on Figure 3 (Cross-Section A-A'), BH21-IR and BH16-I are screened in significantly different parts of the Sand Aquifer; the screen of BH16-I is located near the base of the aquifer below an intervening silty confining layer.

At BH21-IR, located 15 m downgradient of the waste limit, elevated concentrations of chloride, iron, manganese, ammonia and DOC are observed, albeit decreased from peak concentrations in 2015 to 2016. Impacts in this area are considered to be landfill derived, likely in addition to input from the composting operation formerly located in this area. A downward hydraulic gradient exists between BH21-IIR and BH21-IR, as illustrated by the approximately 0.5 m difference in water levels at these screens in the fall of 2024. Chloride concentrations at BH21-IR in 2024 are similar to the previous year (average 105 mg/L, down slightly from 110 mg/L in 2023). Ammonia concentrations are also similar to and slightly lower than in 2023 (average 8.4 mg/L, down from 9.2 mg/L in 2023). Given that ammonia concentrations are higher at this well than at upgradient BH3-IR, it is concluded that the former operation of the leaf-composting in this area contributed nitrogen, iron and other components of organic decay.

Expanded metals analyses were performed on samples collected from BH2-II, BH3-IR, BH14-I, BH16-I, and BH21-IR. Stable or decreasing barium concentrations are observed at BH14-I since 2015, following historical maximum barium concentrations reported in 2014 at BH14-I (371 µg/L in 2024; down from 420 µg/L in 2014), and BH21-IR (199 µg/L in 2024; down from 974 µg/L in 2014). The decrease in barium concentrations observed at BH21-IR since 2015 is similar to the stabilizing chloride and declining ammonia trends observed at this location. Similar decreases in barium or relatively stable concentrations were observed BH3-IR. Barium concentrations at BH2-II have fluctuated since 2012 but have increased slightly in recent years. Excluding BH2-II, these concentrations are relatively low and reflect near background or natural conditions (observed at BH14) and therefore support the interpretation that landfill-related impacts are not present at these locations.

5.4.3 Downgradient of Compost Pad

Groundwater quality in the Sand Aquifer downgradient of the composting pad is monitored at BH29-I and 30-I to the southwest and southeast, respectively. Average concentrations for the selected indicator parameters in 2024 are presented in Table 5.10.

Table 5.10: Downgradient of Compost Pad, Sand Aquifer Water Quality Average Concentrations (2024)

Parameter	BH29-I	BH30-I
Alkalinity	420	559
Chloride	86	200
Iron	2.76	16.0
Manganese (µg/L)	1,183	293
Ammonia	0.03	0.18
TKN	1.2	1.5
DOC	6.5	8.9

Note: All concentrations in mg/L unless otherwise stated.

The concentrations of most indicator parameters, including ammonia (average 0.03 mg/L), remain low downgradient of the new composting pad at BH29-I. However, chloride has exhibited an increasing trend since 2017 (average 86 mg/L in 2024). Elevated concentrations of chloride (average 200 mg/L) and iron (average 16.0 mg/L) are reported at BH30-I; these concentrations were similar to 2023 (258 mg/L and 16.2 mg/L, respectively). Ammonia concentrations in 2024 remain low (average 0.18 mg/L, similar to 0.3 mg/L in 2023). Elevated concentrations of metals including barium (average 2,047 µg/L) and iron are reported at BH30-I, consistent with previous years. It is noted that barium concentrations at BH30-I are higher than reported in leachate. Metals concentrations were considerably lower at BH29-I (average barium concentration of 216 µg/L).

5.4.4 Downgradient of Landfill

Downgradient (and cross-gradient) water quality in the confined Sand Aquifer is monitored at BH5-IR, BH17-III, BH22-IR, and BH26, all located between the landfill and Lake Simcoe (Figure 2). Trigger concentrations for leachate indicator parameters at these wells have been developed based on their location between the landfill and Lake Simcoe, and are used as part of the trigger assessment for further actions, as described in the ECA and Golder (2006). Evaluation of trigger concentrations at these wells is discussed in Section 7.1. Arithmetic mean ("average") concentrations for the selected indicator parameters at downgradient Sand Aquifer locations in 2024 are presented in Table 5.11.

Table 5.11: Downgradient Sand Aquifer Water Quality – Selected 2024 Average Indicator Parameters

Parameter	BH5-IR	BH17-III	BH22-IR	BH26
Alkalinity	464	366	318	247
Chloride	137	211	153	90
Iron	3.12	13.77	6.08	9.03
Manganese (µg/L)	253	1,417	3,367	33
Ammonia	0.26	0.20	0.26	0.02
TKN	2	3	1	1
DOC	4	4	6	10

Note: All concentrations in mg/L unless otherwise stated.

Alkalinity, chloride and TKN are moderately elevated at BH5-IR, BH17-III, BH22-IR, and BH26 and are considered to reflect impact from the landfill. Ammonia concentrations are relatively low, indicating that this parameter is attenuated between the landfill and Lake Simcoe. This is notable at BH22-IR (average 0.26 mg/L), in comparison to the higher concentrations upgradient at BH21-IR (average 8.4 mg/L).

Following the replacement of BH5-IR in the summer of 2010, an appreciable increase in the concentration of several major ions and indicator parameters was noted, as discussed in the 2011 annual report (Golder, 2011a). It is noted that in the fall of 2022, DOC reached a historic maximum at BH5-IR (138 mg/L). In 2024, samples at this location remained within the typical range (average 3.8 mg/L). It is noted that the chloride concentration reached a new historic maximum in October 2021 (180 mg/L) however, chloride has since declined. The average chloride concentrations at this location in 2024 (137 mg/L) were similar to those observed prior to 2018. Concentrations of ammonia decreased at BH5-IR in 2024 (0.26 mg/L in 2024, average 1.61 mg/L in 2023), suggesting that the elevated concentration observed in early 2023 (4 mg/L) was anomalous.

At BH17-III, concentrations of chloride and other major ions have remained relatively stable since 2012 (average 211 mg/L in 2024, similar to 214 mg/L in 2023). Ammonia concentrations in 2024 (average 0.2 mg/L) remained similar to historical concentrations. Higher chloride (and sodium) concentrations at this well compared to the others downgradient of the landfill may reflect, in part, impacts from the snow dump previously located upgradient.

At BH22-IR, chloride and sodium concentrations increased until 2012, accompanied by increasing iron and manganese trends. Since that time, chloride and sodium concentrations have fluctuated, but remain relatively stable.

Chloride, calcium and sodium concentrations were increasing moderately at BH26 until 2012, but appear to have stabilized since 2012 (average chloride concentration of 90 mg/L in 2024). Water quality at this well appears to be seasonally affected, in that concentrations of several major ions and TKN are typically lower in the spring months than the summer and fall sampling rounds. This is considered to reflect the shallow depth of the screen of this well, which is closer to surface and spans both the Sand Aquifer as well as the shallower units.

Expanded metals analyses were performed on samples collected from BH5-IR, BH17-III, BH22-IR and BH26 in 2024, in order to supplement parameters potentially useful as leachate tracers. Barium concentrations at BH5-IR remained elevated in 2024 (average of 3,530 µg/L), which is higher than reported in leachate (average of 448 µg/L at BH3-IIR) and wells in the vicinity of the landfill (e.g., 371 µg/L at BH14-I). Barium concentrations are also elevated at BH17-III (average 587 µg/L) as is the case in many, although not all (i.e., not BH22-IR and BH26), downgradient Sand Aquifer wells. As noted in Section 5.3.4, barium concentrations greater than those reported in leachate were also reported downgradient of the compost pad at BH30-I (average 2,047 µg/L). These concentrations are well above the background in the Sand Aquifer reported at BH1-IR (171 µg/L in 2024). Elevated concentrations of barium are found outside of the landfill influence at BH25 (444 µg/L in 2024). It is considered likely the elevated concentrations of barium at BH5-IR and BH30-I are reflective of influence from the landfill and could represent variability in source leachate concentrations. The downgradient receptor is surface water; there is no standard for barium.

Based on the elevated concentrations found in leachate at BH3-IIR, cobalt and nickel are also considered to be potential indicators of leachate impact. The concentrations of cobalt at BH17-III (maximum of 1.6 µg/L at BH17-III) exceeded the PWQO limit in all sampling events in 2024. Nickel concentrations remained below the PWQO at all downgradient locations in the confined aquifer. Concentrations of cobalt at BH5-IR (maximum 0.3 µg/L in 2024) remain below background concentration observed at BH1-IR (1.2 µg/L). Concentrations at BH17-III (maximum 1.6 µg/L) are above background concentrations, but well below those observed in leachate at BH3-IIR in 2024 (average 15 µg/L in 2024).

5.4.5 Upper Confining Unit

Groundwater in the upper confining unit is monitored at downgradient BH17-IVR. The water quality at BH17-IVR is characterized by elevated chloride and sodium, and to a lesser extent manganese. The water quality results in 2024 were largely consistent with those observed historically. Average concentrations of ammonia (0.07 mg/L), chloride (79 mg/L), sodium (72 mg/L) and other parameters were relatively similar to those reported in 2023 and remain lower than historical maximum concentrations observed in September 2012. Comparison of the water quality observed at BH17-IVR to the underlying BH17-III in the Sand Aquifer indicates similar groundwater quality, with the exceptions of iron and manganese, which are significantly greater in the Sand Aquifer. Observed concentrations of these metal parameters were similar to the observed historic range of concentrations at this location.

5.5 VOC Monitoring Results

As noted in Section 3.3, VOC have been analyzed from selected wells since 2005. In 2024, VOC were detected at BH3-IR, BH3-IIR, BH6R, BH21-IR, BH21-IIR, and BH22-IR; The detected VOC include benzene, chlorobenzene, 1,4-dichlorobenzene, toluene, and m,p-xylene. A summary is provided below and the complete results are presented in Table B-6. The highest concentrations of VOC were found in leachate at BH3-IIR, at concentrations

ranging from 0.3 µg/L to 104 µg/L, and at the toe of the landfill at BH21-IIR, at concentrations ranging from 1.1 µg/L to 3.8 µg/L. Concentrations at the other locations were less than or equal to 10 µg/L and typically near the method detection limit (MDL).

- Benzene (BH3-IR, BH3-IIR, BH6R and BH21-IIR) – 0.3 µg/L to 4.3 µg/L;
- Chlorobenzene (BH3-IIR, BH21-IR and BH21-IIR) – 1.4 µg/L to 5.0 µg/L;
- 1,4-Dichlorobenzene (BH3-IIR, BH21-IR and BH21-IIR) – 0.6 µg/L to 1.3 µg/L;
- Toluene (BH21-IIR and BH22-IR) - 0.5 to 1.73 µg/L; and
- m,p-xylene (BH3-IIR, BH6R, and BH22-IR) – 0. µg/L to 1.2 µg/L

The identification and concentrations of VOC at BH3-IIR are typical of those observed in leachate from similarly sized landfills.

6.0 SURFACE WATER QUALITY

The 2024 surface water monitoring program consisted of water quality sampling in the spring, summer and fall at the locations listed in Table B-3 and shown on Figure 2.

Surface water quality is assessed with respect to the PWQO (MOE, July 1994, reprinted February 1999). Interim PWQO are used for several parameters, including phosphorous, which has tiered criteria depending on the nature of the water body. The criteria for phosphorous varies from 0.03 mg/L for rivers and streams to 0.02 mg/L for lakes (ice-free period). Phosphorus concentrations herein are compared against the default lake criteria (0.02 mg/L) regardless of location, as all monitoring locations ultimately discharge to Lake Simcoe. Phosphorous concentrations and loading were previously assessed in the Kitchener Street Waste Diversion Site Assessment Update (Golder, 2011c).

A statistical analysis was completed for the surface water quality in 2005, to determine if the water quality data in Mill Creek and Ben's Ditch was impacted by the landfill (Golder, 2005b). The results indicated that there is no statistically significant impact of the landfill on the Mill Creek Diversion for the parameters examined (chloride, DOC, phosphorous, ammonia, phenols, cadmium and lead). This was confirmed during similar statistical analyses undertaken as part of the 2010 assessment reports (Golder, 2011b).

Surface water monitoring in 2024 was carried out on eight days, as noted in Table 6.1 which also provides a summary of precipitation events prior to the sampling events. Precipitation events were determined based on the climate data obtained from Environment Canada for the Barrie-Oro DDD (Station Number 6117700)[1], and are summarized in Appendix F. Surface water quality data for the monitoring stations listed in Table 6.1 are contained in Appendices D and E.

Table 6.1: Climate Conditions Prior to and During Surface Water Monitoring Events

Date	Sampling Event	Stations Monitored	Total Precipitation (mm) (Barrie-Oro Station No. 6117700)	Monitoring Condition
April 9	-	-	15.8	-
April 10	-	-	0.0	-
April 11	-	-	22.7	-
April 12	Spring	D-1, D-2, D-3, D-5, D-6	17.6	Rain/Overcast
April 19	-	-	6.0	-
April 20	-	-	0.3	-
April 21	-	-	0.0	-
April 22	Spring	S-1, S-2, S-3, S-4, S-7	0.0	Sunny
April 23	Spring	S-6, S-8, S-11	3.8	Rain/Overcast
June 29	-	-	2.5	-
June 30	-	-	0.0	-
July 01	-	-	0.0	-
July 02	Summer	S-1, S-9, S-11, S-14	0.0	Sunny
July 03	Summer	S-7, S-18	6.3	Sunny
July 04	Summer	S-2, S-3, S-4, S-6, S-8	0.0	Sunny
September 22	-	-	0.7	-
September 23	-	-	9.9	-
September 24	-	-	0.0	-
September 25	Fall	S-1, S-2, S-3, S-6, S-8	5.3	Sunny
September 26	Fall	S-4, S-7, S-11	0.0	Sunny

[2] Environment Canada, Barrie Oro DDD, Station 6117700, https://climate.weather.gc.ca/; last accessed: March 27, 2025.

Based on a review of climate data prior to and during surface water monitoring events, the 2024 monitoring events were carried out in both wet-weather and dry-weather/baseflow conditions.

6.1 Ben's Ditch North of Highway 12

Sampling upstream of the Site in Ben's Ditch is undertaken at monitoring station S-8, located north of Highway 12B (see Figure 2).

Exceedances of the PWQO reported at S-8 in 2024 include:

- **Iron (PWQO 0.3 mg/L):** 0.221 mg/L to 0.589 mg/L, average 0.447 mg/L;
- **Phenols (PWQO 1 µg/L):** 1 µg/L to 1.2 µg/L, average 1.1 µg/L; and,
- **Phosphorous (PWQO 0.02 mg/L):** 0.031 mg/L to 0.064 mg/L, average <5 mg/L due to a raised laboratory method detection limit (MDL) during the fall monitoring round.

Monitoring station S-8 is representative of the Bens Ditch upstream of Highway 12. Concentrations of most key parameters at S-8 are generally consistent with historical norms; notably chloride and sodium concentrations are elevated, but stable, following a long-term increase related to anthropogenic impacts (i.e., road salting). In 2024, iron returned to typical concentrations observed at this location in the past (average of 0.23 mg/L in 2024) following a new historic maximum of 3.5 mg/L observed in the fall, of 2023. Concentrations of phenols at this

location have recently fluctuated near the PWQO for phenols (1 µg/L) since 2017. Elevated concentrations of iron, phosphorous and phenols (and other organic parameters) are typical of discharge from peat and wetlands and may be contributing to the elevated concentrations observed at this location. The concentration of phenols in 2024 was an average of 1.10 µg/L.

6.2 Mill Creek Diversion

The Mill Creek Diversion water quality is monitored at the upstream S-7 monitoring station and the downstream S-6 monitoring station.

Exceedances of the PWQO at S-6 and S-7 include:

- **Aluminum (PWQO 75 µg/L):** S-6 (4 µg/L to 82 µg/L, average 35 µg/L);
- **Iron (PWQO 0.3 mg/L):** S-6 (0.222 mg/L to 0.337 mg/L, average 0.271 mg/L) and S-7 (0.224 mg/L to 0.351 mg/L, average 0.267 mg/L);
- **Phenols (PWQO 1 µg/L):** S-6 (1.1 µg/L to 1.5 µg/L, average 1.3 µg/L) and S-7 (1.1 µg/L to 1.5 µg/L, average 1.3 µg/L); and,
- **Phosphorous (PWQO 0.02 mg/L):** S-6 (0.018 mg/L to 0.022 mg/L, average less than 5 mg/L due to a raised laboratory MDL during the summer monitoring round) and S-7 (0.007 mg/L to 0.021 mg/L, average less than 5 mg/L due to a raised laboratory MDL during the summer monitoring round).

Sodium and chloride are elevated at both Mill Creek monitoring stations, indicative of road salting impacts within the catchment area. Concentrations of chloride and sodium are increasing over time, notably so at S-6 (average 146 mg/L and 68 mg/L in 2024, respectively) however, it is noted that chloride and sodium decreased from historic highs in 2022 (200 mg/L) and 2020 (94 mg/L), respectively. Elevated concentrations of iron and phosphorous (and other organic parameters) are typical of discharge from peat and wetlands and may be contributing to the elevated concentrations observed at these locations. The absence of landfill indicators other than chloride and sodium indicate that the landfill is not notably influencing quality in the Mill Creek Diversion.

6.3 Ben’s Ditch and WWTC Outfall

Sampling along Ben’s Ditch was undertaken at four monitoring stations: S-2 which monitors the WWTC outfall, S-3 which is located a short distance downstream of the WWTC outfall and reflects the water quality in the mixing zone from the outfall into the ditch, S-4 which is upstream of the WWTC and monitors runoff from the Snow Disposal Area (SDA) and S-1 which is downstream of the WWTC outfall and mixing zone prior to Lake Simcoe.

Exceedances of the PWQO in Ben’s Ditch and WWTC outfall monitoring stations include:

- **Aluminum (PWQO 75 µg/L):** S-2 (71 µg/L to 280 µg/L, average 144 µg/L), and S-3 (56 µg/L to 192 µg/L, average 129 µg/L)
- **Cobalt (PWQO 0.9 µg/L):** S-2 (2.4 µg/L to 105 µg/L, average 40 µg/L), and S-3 (1.7 µg/L to 86.9 µg/L, average 32.8 µg/L); and
- **Iron (PWQO 0.3 mg/L):** S-2 (0.16 mg/L to 9.70 mg/L, average 5.99 mg/L) and S-4 (0.19 mg/L to 0.69 mg/L, average 0.43 mg/L);
- **Phenols (PWQO 1 µg/L):** S-2 (1 µg/L to 1.3 µg/L, average 1.1 µg/L), S-3 (1 µg/L to 1.3 µg/L, average 1.1 µg/L) and S-4 (1 µg/L to 1.7 µg/L, average 1.2 µg/L); and,

- **Phosphorus (PWQO 0.02 mg/L):** S-2 (0.036 mg/L to 6.70 mg/L, average 2.276 mg/L), S-3 (0.038 mg/L to 6.40 mg/L, average 2.171 mg/L) and S-4 (0.024 mg/L to 0.046 mg/L, average less than 5 mg/L due to a raised laboratory MDL during the fall monitoring round).

Elevated sodium and chloride are observed at all three monitoring stations and were highest at S-2 in 2024. The concentrations of these parameters at S-2 have notably increased since 2014 and are higher than those of upstream stations. Elevated nutrient parameter nitrate is noted at S-2 and S-3; however, these remain below their historic maximum concentrations. Concentrations of TKN are noted to be significantly reduced in 2024 compared to recent years. The iron concentrations at the WWTC outfall (S-2) are significantly higher compared to those in Ben's Ditch upstream of the discharge (S-4). It is noted that the ECA for the WWTC mandates a limit of 0.1 mg/L for phosphorus effective June 2015. The City has indicated that the WWTC was operated in compliance with its Environmental Compliance Approval in 2024, exhibiting an average annual concentration of phosphorus in plant effluent of 0.07 mg/L. The observed metals and ammonia concentration changes at S-3 relative to S-4 (including general decreases in iron and barium and increases in aluminum and nitrate) are interpreted to be predominantly sourced from the WWTC, not the landfill. It is noted that aluminum is used in the phosphorous removal process.

Downstream of the WWTC outfall and mixing zone, Ben's Ditch flows to the east towards monitoring station S-1. Exceedances of the PWQO in the Ben's Ditch discharge to Lake Simcoe location S-1 include:

- **Aluminum (PWQO 75 µg/L):** 38 µg/L to 204 µg/L, average 125 µg/L;
- **Cobalt (PWQO 0.9 µg/L):** 1.1 µg/L to 8.3 µg/L, average 4.1 µg/L;
- **Phenols (PWQO 1 µg/L):** 1 µg/L to 1.4 µg/L, average 1.2 µg/L; and,
- **Phosphorus (PWQO 0.02 mg/L):** 0.032 mg/L to 0.034 mg/L, average 0.less than 5 mg/L due to a raised laboratory MDL during the summer monitoring round.

Elevated concentrations of chloride and sodium are also observed at monitoring station S-1, as are slightly elevated concentrations of the nutrient parameters nitrate and TKN. Sodium and chloride continue to exhibite an overall increasing trend since 2011 (88 to 135 mg/L); in 2024, peak concentrations were 216 mg/L and 213 mg/L, respectively. This increasing trend is considered to be the result of urban runoff (e.g., road salting). Given the low concentrations of landfill indicator parameters, landfill leachate is not expected to significantly contribute to the observed concentrations.

6.4 Lake Simcoe

The water quality along the northern shoreline of Lake Simcoe downgradient of the WDS is monitored at two stations (southwest to northeast): S-9 and S-11. Monitoring station S-14 is located approximately one km offshore of the landfill. Locations S-9 was only sampled once in 2024, during the summer, whereas S-14 was sampled during the spring, summer and fall.

Exceedances of the PWQO in the Lake Simcoe samples include:

- **Aluminum (PWQO 75 µg/L):** S-11 (8 µg/L to 459 µg/L, average 189 µg/L);
- **Cobalt (PWQO 0.9 µg/L):** S-11 (0.3 µg/L to 1.3 µg/L, average 0.7 µg/L); and
- **Iron (PWQO 0.3 mg/L):** S-11 (0.082 mg/L to 0.592 mg/L, average 0.283 mg/L); and
- **Phenols (PWQO 1 µg/L):** S-9 (1.3 µg/L), and S-11 (1 µg/L to 1.3 µg/L, average 1.13 µg/L); and,

- **Phosphorous (PWQO 0.02 mg/L):** S-11 (0.074 mg/L to 0.090 mg/L, average 0.097 mg/L).

Chloride and sodium concentrations at S-14 continue to increase and ongoing contribution of road salt to Lake Simcoe in the area of the WDS. Collection of a sample at this location provides a measure of the overall quality of Lake Simcoe but is not expected to be measurably influenced by leachate impacts relative to the inputs from the urban runoff and WWTC discharge as well as the influence of inputs related to the wetlands surrounding the WDS.

Concentrations of other indicator parameters (excluding iron) at the background station S-14 were low in 2024 and remain within historical norms; this includes nitrate and ammonia, which are non-detectable. Slightly elevated concentrations of the nutrient parameters nitrate, ammonia and TKN were historically observed at the monitoring stations S-9 and S-11; nitrate and TKN remained elevated in 2024 at these locations, however reported ammonia concentrations were relatively low at these locations in 2024. Concentrations of phosphorous observed at S-9 and S-11 are typically slightly elevated in comparison to the concentrations from the deeper lake sample S-14; in 2023 and 2024, phosphorous was significantly elevated at S-11, and somewhat elevated at S-9.

6.5 CN Rail Bed Drain

Two surface water monitoring locations are located within the CN Rail bed Drain to assess the quality of surface flow originating west of the Site, including the Huronia Regional Centre compound (S-19) and an industrial subdivision (S-18). S-19 was dry during the summer 2024 sampling round.

Exceedances of the PWQO in the CN Rail bed Drain include:

- **Aluminum (PWQO 75 µg/L):** S-18 (177 µg/L);
- **Iron (PWQO 0.3 mg/L):** S-18 (1.09 mg/L); **Phosphorus (PWQO 0.02 mg/L)**: S-18 (0.108 mg/L);
- **Zinc (PWQO 20 µg/L):** S-18 (52 µg/L);
- **Copper (PWQO 5 mg/L):** S-18 (5.2 µg/L); and,
- **Arsenic (PWQO 5 mg/L):** S-18 (6 µg/L).

Chloride and sodium concentrations are elevated at S-18 (243 mg/L and 125 mg/L, respectively), but remain within historical norms. It is noted that nitrate concentrations have decreased since 2010; the source and cause for decline are not known with certainty but could reflect changes in land use at the upslope Huronia Regional Centre and the commercial area west of the Site. The concentrations of the other selected indicator parameters remained within historical norms. Elevated phosphorous and metals including aluminum, iron, zinc, copper and arsenic were reported in 2024; these are considered to potentially reflect entrained sediment. The water quality at S-18 is indicative of influences from off-site drainage.

6.6 Surface Water Quality Summary

Exceedances of the PWQO for some parameters in the surface water samples were identified for all locations sampled in 2024. As noted above, the observed exceedances in the water bodies adjacent to the WDS are not reflective of impacts from the landfill. Measurable impacts of the WDS on Lake Simcoe are not occurring. The observed changes in water quality are considered to be due to the inputs from the urban runoff and WWTC discharge as well as the influence of inputs related to the wetlands surrounding the WDS.

Elevated concentrations of phosphorus are observed at the downstream station S-1 in Ben’s Ditch, similar to previous years. Ammonia decreased in 2024 (average 0.08 mg/L, down from 1.66 mg/L in 2023). A slightly

elevated concentration of nitrate was reported (average 7.1 mg/L, up from 6.9 mg/L in 2023). The higher concentrations for nitrate at the downstream station S-1 location are considered to be related to outflow from the WWTC (as sampled at S-2). This conclusion is based on the observation that concentrations of other typical leachate indicators are not significantly higher at S-1, which is supported by the results of the t-test for chloride, DOC, phenols, cadmium and lead between the upstream station S-8 and the downstream station S-1 along Ben's Ditch as reported in Golder (2005b). The elevated concentrations of nitrate and phosphorus in the WWTC effluent relative to upstream water quality in Ben's Ditch is confirmed by the historically higher concentrations at the WWTC effluent station S-2. It is further noted that nitrate concentrations at the Ben's Ditch downstream station S-1 are similar (albeit lower) and correspond to concentrations at the WWTC effluent station S-2.

Elevated concentrations of chloride, manganese, iron, phenols and phosphorous are observed at upgradient, "background" surface water location S-8 (located along Ben's Ditch) indicating that off-site sources north of Highway 12 are contributing to the concentrations of these parameters at the discharge to Lake Simcoe. Low concentrations of phosphorous were detected at S-7 (western part of the Mill Creek Diversion) in 2024, and concentrations at S-7 are typically less than the concentrations observed downstream in the eastern portion of the Mill Creek Diversion (S-6), and after the confluence of the Mill Creek Diversion and Ben's Ditch (S-4), indicating that the majority of the off-Site contribution to phosphorous is from the north.

Phosphorous concentrations at the WWTC Effluent (S-2) (average 2.276 mg/L in 2024) are elevated above the PWQO and above concentrations observed at S-4 (average less than 5 mg/L in 2024 due to a raised laboratory MDL during the fall monitoring round; however during the spring and summer averaged 0.035 mg/L) indicating that the predominant contributor to phosphorous concentrations to Lake Simcoe along Ben's Ditch is from the S-2 WWTC effluent. Along the stretch of Lake Simcoe shoreline south of the landfill, phosphorous concentrations are typically higher towards the northeast at S-11 (average 3.067 mg/L in 2024). Elevated concentrations above the PWQO were reported at S-11, (iron, phosphorous, aluminum and phenols in the spring, phosphorous and aluminum in summer, and phosphorous and phenols in the fall). These elevated concentrations in the are considered to potentially reflect entrained sediment.

6.7 On-Site Stormwater Runoff Sampling

Stormwater runoff is sampled at six locations, D-1 to D-6 (Figure 2), to determine if significant evidence of landfill impact (e.g., contribution of leachate seepage to runoff) is present. Given that these samples are collected from active runoff, prior to settlement in the wetland areas next to the landfill, entrained sediment is present and therefore some elevated metal parameter concentrations are expected. As a result, review of the data focuses on significant changes in concentration and the presence of elevated ammonia.

In 2024, five surface water stations were sampled in the spring, on April 12. It is noted that D-4 was not sampled during the spring sampling event due to location access issues during the spring monitoring event. All six stations in the drainage ditch network (D-1 through D-6) were dry during the summer and fall sampling rounds and could not be sampled.

Station D-1 is located in the low-lying wet area along a drainage path through this feature towards Shingle Bay (Lake Simcoe) where Ministry staff observed "yellow water" in 2009; Station D-2 is located at the toe of the Cell No. 1 portion of the landfill in the roadside ditch, at the intersection of the perimeter road with the northern Fire Road; and Station D-3 is located at the upstream end of the culvert at the southeast end of the East Perimeter Road. Station D-4 is located to the northwest of Cell No. 1; D-5 is located at the toe of Cell No. 9 and D-6 is located in the ditch to the south of Cell No. 9.

The concentrations of indicator parameters were generally similar to previous years at D-1 to D-3, D-5 and D-6, including chloride and sodium. For these parameters, maximum concentrations of 96.1 mg/L and 55 mg/L were observed at D-5, respectively, and similar to elevated concentrations reported in previous years. Elevated concentrations relative to the PWQO in the stormwater runoff samples were noted at the following locations:

- **Aluminum (PWQO 75 µg/L):** D-1 (306 µg/L), D-3 (141 µg/L), D-5 (142 µg/L) and D-6 (364 µg/L);
- **Cobalt (PWQO 0.9 µg/L):** D-3 (1.6 µg/L) and D-5 (1.4 µg/L);
- **Copper (PWQO 5 µg/L):** D-1 (7 µg/L) and D-3 (19 µg/L);
- **Iron (PWQO 0.3 mg/L):** D-1 (0.788 mg/L), D-3 (0.384 mg/L), D-5 (0.762 mg/L) and D-6 (0.571 mg/L);
- **Phenols (PWQO 1 µg/L):** D-1 (2.2 µg/L), D-2 (1.3 µg/L), D-3 (1.8 µg/L), D-5 (1.6 µg/L) and D-6 (1.2 µg/L);
- **Phosphorus (PWQO 0.02 mg/L):** D-1 (0.195 mg/L), D-2 (0.159 µg/L), D-3 (0.094 mg/L), D-5 (0.037 mg/L) and D-6 (0.127 mg/L);
- **Arsenic (PWQO 5 µg/L):** D-3 (8 µg/L); and,
- **Zinc (PWQO 20 µg/L):** D-3 (33 µg/L).

The elevated metal parameters observed at D-1 to D-3, D-5 and D-6 are considered to reflect entrained sediment. The total ammonia concentration is used to calculate the un-ionized ammonia proportion based on the field pH and field temperature readings. Un-ionized ammonia concentrations are presented in Table 6.2.

Table 6.2: Un-ionized Ammonia Concentrations at Stormwater Runoff Locations

Station	Date	Field pH	Field Temperature (°C)	Total Ammonia Concentration (mg/L)	Calculated Un-ionized Ammonia Concentration (mg/L)
D-1	12 April 2024	7.3	12	0.79	0.003
D-2	12 April 2024	7.39	11	0.03	<0.001
D-3	12 April 2024	6.88	8.6	0.46	0.001
D-5	12 April 2024	7.03	11.8	0.36	0.001
D-6	12 April 2024	7	11.2	0.02	<0.001

Total ammonia concentrations ranged from 0.02 mg/L at D-6 to a maximum concentration of 0.79 mg/L at D-1; ammonia concentrations were less than or similar to those reported in previous years. The maximum ammonia concentration of 0.79 mg/L represents an un-ionized ammonia of concentration of 0.003 mg/L. TKN was slightly elevated in D-1 to D-3, D-4 and D-5; however, concentrations were similar to observed in recent years. The highest concentration of TKN was observed at D-1 and D-3 (2.7 mg/L at both locations). The elevated concentrations of ammonia observed at D-1 and D-3 may be related to landfill seepage. No leachate seeps were observed in this area in 2024 and following the completion of the construction of the landfill cap during 2022, TKN, nitrate, and ammonia concentrations have decreased.

7.0 TRIGGER AND CONTAMINANT LOADING ASSESSMENT

7.1 Groundwater Trigger Mechanism and Assessment

A groundwater trigger mechanism and response plan (Golder, 2006) was proposed to address Condition No. 35 of the former ECA. Through communication with the Ministry and the City in late 2006, the trigger mechanism and response plan were amended and accepted by the Ministry as per correspondence dated January 2, 2007. The response plan flowchart in the event of a trigger exceedance is included in Appendix F.

As shown in Table 7.1, trigger concentrations have been established for ammonia, zinc and toluene, to be applied at monitoring locations in the Sand Aquifer at BH5-IR, BH17-III, BH22-IR and BH26. All four monitoring locations are located downgradient of the landfill and close to the Lake Simcoe shoreline.

Table 7.1: Groundwater Trigger Parameters

Parameter	Trigger Concentration
Ammonia	7 mg/L
Zinc	0.025 mg/L (25 µg/L)
Toluene	0.010 mg/L (10 µg/L)

The PWQO for ammonia is based on un-ionized concentrations (0.02 mg/L). A proxy total ammonia criterion of 7 mg/L has been calculated based on the groundwater temperature and pH measured in the field at the trigger wells during the August 2005 sampling round (approximate average values of 7.0 and 12ºC for pH and temperature, respectively). This is considered a conservative means of evaluating the potential impact of the landfill on Lake Simcoe from groundwater discharge, since the PWQO applies to surface water and dilution of the groundwater discharge in the surface water will be substantial. The threshold for acute lethality for un-ionized ammonia of 0.2 mg/L should also be considered for the groundwater discharge. In this case, the objective for un-ionized ammonia would be on the order of 70 mg/L.

The concentrations of the trigger parameters in 2024 are summarized in Table 7.2.

Table 7.2: Trigger Parameter Concentrations

Trigger Locations	Ammonia (mg/L) Trigger: 7 mg/L	Zinc (mg/L) Trigger: 0.025 mg/L)	Toluene (mg/L) Trigger: 0.010 mg/L
BH5-IR (Apr-Jul-Oct)	0.06 – 0.06 – 0.67	0.004 – 0.002 – 0.002	<0.0004 – <0.0004 – <0.0004
BH17-III (Apr-Jul-Oct)	0.22 – 0.12 – 0.26	0.004 - <0.001 – 0.002	<0.0004 – <0.0004 – <0.0004
BH22-IR (Apr-Jul-Oct)	0.25 – 0.25 - 0.27	0.005 – 0.001 – 0.001	<0.0004 – <0.0004 – 0.0005
BH26 (Apr-Jul-Oct)	0.03 – 0.03 - <0.01	0.010 - <0.001 - <0.001	<0.0004 – <0.0004 – <0.0004

Bold Red Text – trigger exceedance

There were no exceedances of the trigger thresholds for ammonia, zinc, or toluene at the four trigger locations sampled in 2024. In 2023, zinc exceeded the trigger threshold in April 2023 at BH5-IR. As subsequent samples in 2023 and all three samples in 2024 from this location indicate, concentrations of zinc are aligned with historical values and the 2023 result for zinc is considered anomalous and should be ignored. Based on the results, remedial actions are not required.

7.2 2024 Contaminant Loading Evaluation

The 2024 contaminant loading calculations are based on groundwater flux as calculated and reported by Golder (2005b) based on the same methodology used in the 2010 Annual Report (Golder 2011a). Golder developed a simplified geologic model utilizing three horizontally layered geologic units (shallow overburden, confining unit, and Sand Aquifer), using the hydraulic conductivities summarized in Table 4.1. The landfill was subdivided into north, central, and south sections, based on differing thicknesses of the three geologic units in these areas. Considering hydraulic conditions in the area of the landfill have remained similar to those presented in the modelling report, the fluxes and flow rates are deemed to be valid in 2024.

7.2.1 Groundwater Flux

Golder (2005b) modelled contaminant loading to adjacent surface water features based on two groundwater flow pathways as follows:

- Pathway 1: Downward groundwater flow from the landfill, through the peat layer and the confining unit, into the underlying Sand Aquifer and discharging to Lake Simcoe.
- Pathway 2: Downward groundwater flow from the landfill and into the shallow groundwater, followed by horizontal, radial groundwater flow, discharging to Mill Creek and Ben's Ditch.

The groundwater fluxes for these pathways are summarized in Table 7.3.

Table 7.3: Groundwater Fluxes

Pathway	Flux (m3/yr)
	Golder (2005b)
Pathway 1 (flux from the landfill to the Sand Aquifer)	37,192
Pathway 2 (flux from the landfill to Mill Creek)	810
Pathway 2 (flux from the landfill to Ben's Ditch)	2,845

Total flux as reported in Golder (2005b) was 40,847 m^3/y.

7.2.2 Leachate Source Concentration

The average 2024 leachate concentrations of the selected indicator parameters at BH3-IIR are presented in Table 7.4 along with the values assumed for the modelling in Golder (2005b).

Table 7.4: Average Leachate Concentrations - Selected Indicator Parameters

Parameter	BH3-IIR Observed	BH3-IIR Modeled
	2024 Average	**Golder (2005b)**
Chloride (mg/L)	566	1,000 [1]
Ammonia (mg/L)	329	200 [1]
Toluene (µg/L)	<0.5	1.0 [2]
Cadmium (µg/L)	0.035	50 [2]
Lead (µg/L)	<0.05	600 [2]
Zinc (µg/L)	3	4,000 [3]

[1] Based on measured concentrations in 2005
[2] Based on O.Reg. 232/98 (MOE, 1998)
[3] Based on values from other Ontario Landfill Sites as reported by Rowe et. al., 1994.

Concentrations of chloride, ammonia, and toluene in 2024 are similar to, or less than, the values used in the Golder modelling study. The concentration of ammonia is higher than predicted based on 2004 data from Golder (2005), and in 2024 at BH3-IIR, an increasing trend continued. Concentrations of the metal parameters are significantly lower than the values assumed based on the Ministry Landfill Standards (O. Reg. 232/98) and therefore the results of the Golder model can be considered conservative for metals.

7.2.3 Contaminant Loading Calculation

Expanded analyses for metals and VOC were not undertaken at BH2-III and BH14-IIIR in 2024. Consequently, cadmium, lead, zinc and toluene concentrations were obtained from the average 2024 concentrations at leachate monitoring location BH3-IIR to provide a conservative estimate of loading to Mill Creek and Ben's Ditch. Where reported concentrations were below detection limits, the MDL was used to provide conservative loading estimates for these trace parameters. Contaminant loading assessments for the shallow overburden discharge to surface water are shown in Table 7.5.

Table 7.5: 2024 Contaminant Loading Calculations

Shallow Overburden Discharge to Mill Creek versus Ben's Ditch

Parameter	2024 Average Concentration BH14-IIIR (Mill Creek)	2024 Loading BH14-IIIR (Mill Creek) 2	2024 Average Concentration BH2-III (Ben's Ditch)	2024 Loading BH2-III (Ben's Ditch) 3
	(mg/L)	(kg/year)	(mg/L)	(kg/year)
Chloride	83	67.6	273	775.7
Ammonia	1.64	1.3	15.03	42.7
Toluene	<0.0005 [1]	0.00041	<0.0005 [1]	0.001
Cadmium	0.00005 [1]	0.00004	0.00005 [1]	0.0001
Lead	<0.00005 [1]	0.00004	<0.00005 [1]	0.0001
Zinc	0.003 [1]	0.002	0.003 [1]	0.008

[1] Parameter concentration based on BH3-IIR 2024 average
[2] Mill Creek groundwater flux = 810 m^3/y (Golder, 2005b)
[3] Ben's Ditch groundwater flux = 2,845 m^3/y (Golder, 2005b)

The combined contaminant loading from the shallow overburden groundwater to Mill Creek (BH14-IIIR) and Ben's Ditch (BH2-IIIR) is shown in Table 7.6, along with predicted loading values from 2004 (Golder, 2005b).

Table 7.6: Combined Contaminant Loading - Shallow Overburden Groundwater Discharge to Mill Creek and Ben's Ditch

Parameter	Total 2024 Loading	Predicted Loading 2
	(kg/y)	(kg/y)
Chloride	843	1,825
Ammonia	44	365
Toluene	<0.002 [1]	0.0037
Cadmium	0.0002 [1]	0.000037
Lead	0.0002 [1]	0.000037
Zinc	0.01 [1]	0.73

[1] Parameter concentration based on BH3-IIR 2024 average
[2] Golder (2005b), presented only in graphical format for calendar years 2004 to peak concentration (approximately year 2050)

The lower calculated mass loading for chloride, ammonia, toluene and zinc in 2024, relative to those predicted in Golder (2005b), reflect natural attenuation of these parameters as well as the conservative inputs of some parameters used in the modelled loading estimates. The loading estimates for cadmium and lead are higher than predicted in the Golder model. This is a direct function of using conservative data from BH3-IIR as a proxy for missing downgradient data and therefore represents impacts assuming no attenuation occurs between the landfill and the adjacent water bodies. Actual concentrations, and consequently loading values, are expected to be significantly lower.

The 2024 contaminant loading from the shallow overburden groundwater to the Sand Aquifer at the discharge to Lake Simcoe is shown in Table 7.7.

Table 7.7: 2024 Contaminant Loading Calculations

Shallow Overburden Groundwater to Confined Sand Aquifer at Discharge to Lake Simcoe

Parameter	2024 Average Concentration BH17-III	2024 Loading 2	Predicted Loading 1
	(mg/L)	(kg/y)	(kg/y)
Chloride	211	7,848	9,125
Ammonia	0.1	3.72	182.5
Toluene	<0.0004	0.015	0.000037
Cadmium	0.00002	0.001	0.000037
Lead	<0.00005	0.002	0.000037
Zinc	0.002	0.087	1.46

[1] Golder (2005)
[2] Flux from the Landfill to Confined Sand Aquifer = 37,192 m^3/y (Golder, 2005)

Confined Sand Aquifer contaminant loading values for ammonia and zinc in 2024 are significantly less than predicted in the model but are higher for cadmium and lead. Chloride concentrations have fluctuated over time, and in 2024 were lower than predicted in the 2004 model. Some of the cadmium, lead and toluene results were less than the method detection limit in 2024 and loading calculations are therefore based on the method detection limits for these parameters, which is considered conservative.

8.0 CONCLUSIONS

Based on the results of the 2024 annual monitoring program undertaken at the Kitchener Street Waste Diversion Site, the following conclusions are presented:

1) Groundwater flow directions in 2024 were consistent with those observed in recent years; radial flow in the Upper Aquifer and general flow towards Lake Simcoe in the Sand Aquifer was observed in 2024.

2) Groundwater and surface water elevation data are largely consistent with previous years, however highly variable measurements at BH16-I suggests that the annular seal is compromised.

3) Elevations of reported water levels in the area around S-1 and BH2 have fluctuated, and the data suggest that either the measurement point elevation may be outdated or that a change in local drainage patterns has occurred.

4) Landfill leachate impacts are observed in the surficial peat adjacent to the landfill. Attenuation of the constituents in the leachate, notably ammonia, occurs between the landfill and Lake Simcoe.

5) Elevated chloride and sodium concentrations noted in the Sand Aquifer are considered to be largely the result of road salt application upgradient of the landfill. These impacts ultimately discharge to Lake Simcoe.

6) Based on elevated concentrations of alkalinity, chloride, TKN and detectable concentrations of ammonia, groundwater quality in the Sand Aquifer is influenced by the landfill. In the vicinity of the landfill, ammonia is only present at elevated concentrations at BH21-IR; ammonia concentrations continued a decreasing trend in 2024 that started in 2017. It is noted that this decrease is likely attributed to the relocation of composting operations from this area. Elevated phosphorous and TKN were reported again at BH5-IIIR in 2024, suggesting a potential localized source of these parameters.

7) Surface water entering the Site from the Mill Creek Diversion and Ben's Ditch is impacted by road salting and parameters associated with runoff from roads and other urban development. The WWTC contributes nutrient parameters to the surface water within Ben's Ditch (including nitrogen and phosphorous) and also contributes significant flow.

8) Phosphorous was observed at the shallower Lake Simcoe surface water station S-11, but not at S-9 or S-14. The surface water quality in Lake Simcoe (at S-9, S-11 and S-14) meets the PWQO limits, with the minor exception of phenols and one phosphorous result, which may be anomalous (9 mg/L at S-11) Water quality at these locations is not considered to be adversely affected by the landfill.

9) Elevated metals concentrations at the stormwater sampling locations reflect entrained sediment within the storm water runoff. Samples collected at D-2 and D-3 in 2024 exhibited low TKN and ammonia concentrations. This reduction in nutrient parameter concentrations at these locations since 2022 suggests that the construction of the landfill cap over Cells 1 to 4 has reduced seepage from the landfill side slopes.

10) Leachate constituent concentrations in the leachate wells were less than or similar to those used in the 2005 attenuation assessment, with the exception of Ammonia. Ammonia was 65% higher than estimated in the attenuation assessment however, the calculated mass loading for ammonia remains below that predicted in 2005. This reflects natural attenuation as well as the conservative value used in the modelled loading estimates.

11) There were no exceedances in 2024 of the trigger thresholds for ammonia, zinc and toluene at the trigger locations the Sand Aquifer.

9.0 RECOMMENDATIONS

Based on the results of the 2024 annual monitoring program undertaken at the Kitchener Street Waste Diversion Site, the following recommendations are provided:

1) The monitoring program outlined in Tables B-2 and B-3 should continue in 2025.

2) Data from BH16-I suggests that the annular seal of the well has been compromised, and this well should be replaced in 2025. Given its location within the landfill footprint, consideration has been given to replacing the deeper screen outside of the toe of the landfill.

3) Drainage and local elevations should be investigated in the area surrounding trigger location BH2 and S-1.

4) Elevations of all monitoring well and surface water measuring points should be assessed for changes or re-surveyed in 2025 to verify apparent discrepancies in measured water levels observed in 2024.

5) The elevated TKN and phosphorous concentrations reported at BH5-IIIR in 2024 should be discussed and investigated to identify potential local sources of these parameters.

6) Water levels in gas probes along the western boundary of the site should continue to be monitored, with special attention paid to the north-west corner to monitor potential LFG migration pathways in the direction of Progress Drive.

Signature Page

WSP Canada Inc.

Brig Gubins, B.A.Sc.
Waste Management EIT

Joel Robinson, B.Sc., P.Geo
Hydrogeologist

Reviewed by:

Northern Geo Environmental Ltd.

Paul Dewaele, M.Sc, P.Eng
Senior Geo Environmental Engineer

BKG/JER/PJD/ms

10.0 BIBLIOGRAPHY

City of Orillia, 2018. Waste Diversion Site Ground and Surface Water Monitoring Protocols, Part F, Solid Waste Management Public Works Manual, Operations Department, Revised September 2018.

City of Orillia, March 2019. 2018 Solid Waste Management Annual Report. Report prepared by the City of Orillia Solid Waste Management Division, Environmental Services Department.

City of Orillia, 2020. 2019 Solid Waste Management Annual Report. Report prepared by the City of Orillia Solid Waste Management Division, Environmental Services Department.

City of Orillia, 2021. 2020 Solid Waste Management Annual Report. Report prepared by the City of Orillia Solid Waste Management Division, Environmental Services Department.

City of Orillia, 2022. 2021 Solid Waste Management Annual Report. Report prepared by the City of Orillia Solid Waste Management Division, Environmental Services Department.

City of Orillia, 2023. 2022 Solid Waste Management Annual Report. Report prepared by the City of Orillia Solid Waste Management Division, Environmental Services Department.

City of Orillia, 2024. 2023 Solid Waste Management Annual Report. Report prepared by the City of Orillia Solid Waste Management Division, Environmental Services Department.

City of Orillia, 2025. 2024 Solid Waste Management Annual Report. Report prepared by the City of Orillia Solid Waste Management Division, Environmental Services Department.

Dixon Hydrogeology Ltd., (1995). City of Orillia, Water System Master Plan, Assessment of Groundwater Supply Potential. Dixon Hydrogeology Ltd., November 29, 1995.

Dixon Hydrogeology Ltd., 2004. City of Orillia, Kitchener Street Waste Diversion Site, 2003 Annual Monitoring Report. Prepared for the City of Orillia, Public Works Department.

Gartner Lee Ltd., 1990. Hydrogeological Site Assessment and 1989 Monitoring Report. Prepared for the City of Orillia.

Golder Associates Ltd., 2005a. Report on Kitchener Street Waste Diversion Site, City of Orillia, 2004 Annual Water Monitoring Report. Prepared for the City of Orillia. No. 04-1112-535.

Golder Associates Ltd., 2005b. Assessment of Attenuation Capacity, Kitchener Street Waste Diversion Site, City of Orillia. Prepared for the City of Orillia, Public Works Department.

Golder Associates Ltd., 2006. Proposed Groundwater Trigger Mechanism, Kitchener Street Waste Diversion Site, City of Orillia. Prepared for the City of Orillia, Public Works Department.

Golder Associates Ltd., 2007. Landfill Gas Assessment, Kitchener Street Waste Diversion Site, City of Orillia, Ontario. Prepared for the City of Orillia, Public Works Department.

Golder Associates Ltd., 2010a. Letter from Golder Associates Ltd. On behalf of the City of Orillia to Ms. Cindy Hood, District Manager, Barrie District Office, MOE, titled “Proposed Work Plan – Orillia Landfills”.

Golder Associates Ltd., 2010b. 2009 Annual Water Monitoring Report, Kitchener Street Waste Diversion Site, City of Orillia, Ontario. Prepared for the City of Orillia.

Golder Associates Ltd., 2011a. 2010 Annual Water Monitoring Report, Kitchener Street Waste Diversion Site, City of Orillia, Ontario. Prepared for the City of Orillia.

Golder Associates Ltd., 2011b. Hydrogeological Assessment of the Former Kitchener Park Landfill, Orillia, ON. Prepared for the City of Orillia.

Golder Associates Ltd., 2011c. Kitchener Street Waste Diversion Site Impact Assessment Update, Orillia, ON. Prepared for the City of Orillia.

Golder Associates Ltd., 2012. 2011 Annual Water Monitoring Report, Kitchener Street Waste Diversion Site, City of Orillia, Ontario. Prepared for the City of Orillia.

Golder Associates Ltd., 2013. 2012 Annual Water Monitoring Report, Kitchener Street Waste Diversion Site, City of Orillia, Ontario. Prepared for the City of Orillia.

Golder Associates Ltd., 2014. 2013 Annual Water Monitoring Report, Kitchener Street Waste Diversion Site, City of Orillia, Ontario. Prepared for the City of Orillia.

Golder Associates Ltd., 2015. 2014 Annual Water Monitoring Report, Kitchener Street Waste Diversion Site, City of Orillia, Ontario. Prepared for the City of Orillia.

Golder Associates Ltd., 2016. 2015 Annual Water Monitoring Report, Kitchener Street Waste Diversion Site, City of Orillia, Ontario. Prepared for the City of Orillia.

Golder Associates Ltd., 2017. 2016 Annual Water Monitoring Report, Kitchener Street Waste Diversion Site, City of Orillia, Ontario. Prepared for the City of Orillia.

Golder Associates Ltd., 2018. 2017 Annual Water Monitoring Report, Kitchener Street Waste Diversion Site, City of Orillia, Ontario. Prepared for the City of Orillia.

Golder Associates Ltd., 2019. 2018 Annual Water Monitoring Report, Kitchener Street Waste Diversion Site, City of Orillia, Ontario. Prepared for the City of Orillia.

Golder Associates Ltd., 2020a. 2019 Annual Water Monitoring Report, Kitchener Street Waste Diversion Site, City of Orillia, Ontario. Prepared for the City of Orillia.

Golder Associates Ltd., 2020b. Landfill Gas Generation Assessment, Kitchener Street Waste Diversion Site, City of Orillia, Ontario. Prepared for the City of Orillia.

Golder Associates Ltd., 2021. 2020 Annual Water Monitoring Report, Kitchener Street Waste Diversion Site, City of Orillia, Ontario. Prepared for the City of Orillia.

WSP Canada Inc., 2022. 2021 Annual Water Monitoring Report, Kitchener Street Waste Diversion Site, City of Orillia, Ontario. Prepared for the City of Orillia.

WSP Canada Inc., 2023. 2022 Annual Water Monitoring Report, Kitchener Street Waste Diversion Site, City of Orillia, Ontario. Prepared for the City of Orillia.

WSP Canada Inc., 2024. 2023 Annual Water Monitoring Report, Kitchener Street Waste Diversion Site, City of Orillia, Ontario. Prepared for the City of Orillia.

Ministry of the Environment and Energy, 1996, Rationale for the Development and Application of Generic Soil, Groundwater and Sediment Criteria for Use at Contaminated Sites in Ontario.

Ministry of Environmental and Energy, 1994 (reprinted 1999), Water Management Policies, Guidelines, Provincial Water Quality Objectives.

Ministry of the Environment, 1998. Landfill Standards. A Guideline on the Regulatory and Approval Requirements for New or Expanding Landfilling Sites.

Ministry of the Environment 2003, Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines.

Ministry of the Environment, 2016. R.R.O. 1990, Regulation 347: General - Waste Management. Last amendment: O. Reg. 391/16.

Ministry of Environment and Energy, 1994, Guideline B-7, Incorporation of the Reasonable Use Concept Into MOEE Groundwater Management Activities.

Ministry of the Environment, 1998. Landfill Standards. A Guideline on the Regulatory and Approval Requirements for New or Expanding Landfilling Site.

Ministry of the Environment, November 28, 2006. Correspondence from Dale Gable, Senior Engineer, MOE to Peter G. Dance, P.Eng., City of Orillia, Ontario, regarding the Groundwater Trigger Mechanism.

Ministry of the Environment, January 2, 2007. Correspondence from Dale Gable, Senior Engineer, MOE to Peter G. Dance, P.Eng., City of Orillia, Ontario, regarding the Groundwater Trigger Mechanism.

Ministry of the Environment, December 21, 2009. Correspondence from Dirk Woudenberg, Environmental Officer, to Greg Preston, City of Orillia, Ontario, regarding the Non-Hazardous Waste Disposal Site Inspection Report and memorandum dated November 23, 2009 prepared as a result of the August 2009 inspection and 2009 Kitchener Street Waste Diversion Site (Orillia LFS) Assessment.

11.0 SITE CONTACT INFORMATION

Site Owner:

City of Orillia

Site Operator:

Greg Preston (City of Orillia)
50 Andrew Street, Suite 300
Orillia, Ontario L3V 7T5
Phone: 705-325-2444
Email: gpreston@orillia.ca

Contact for Site Environmental Issues:

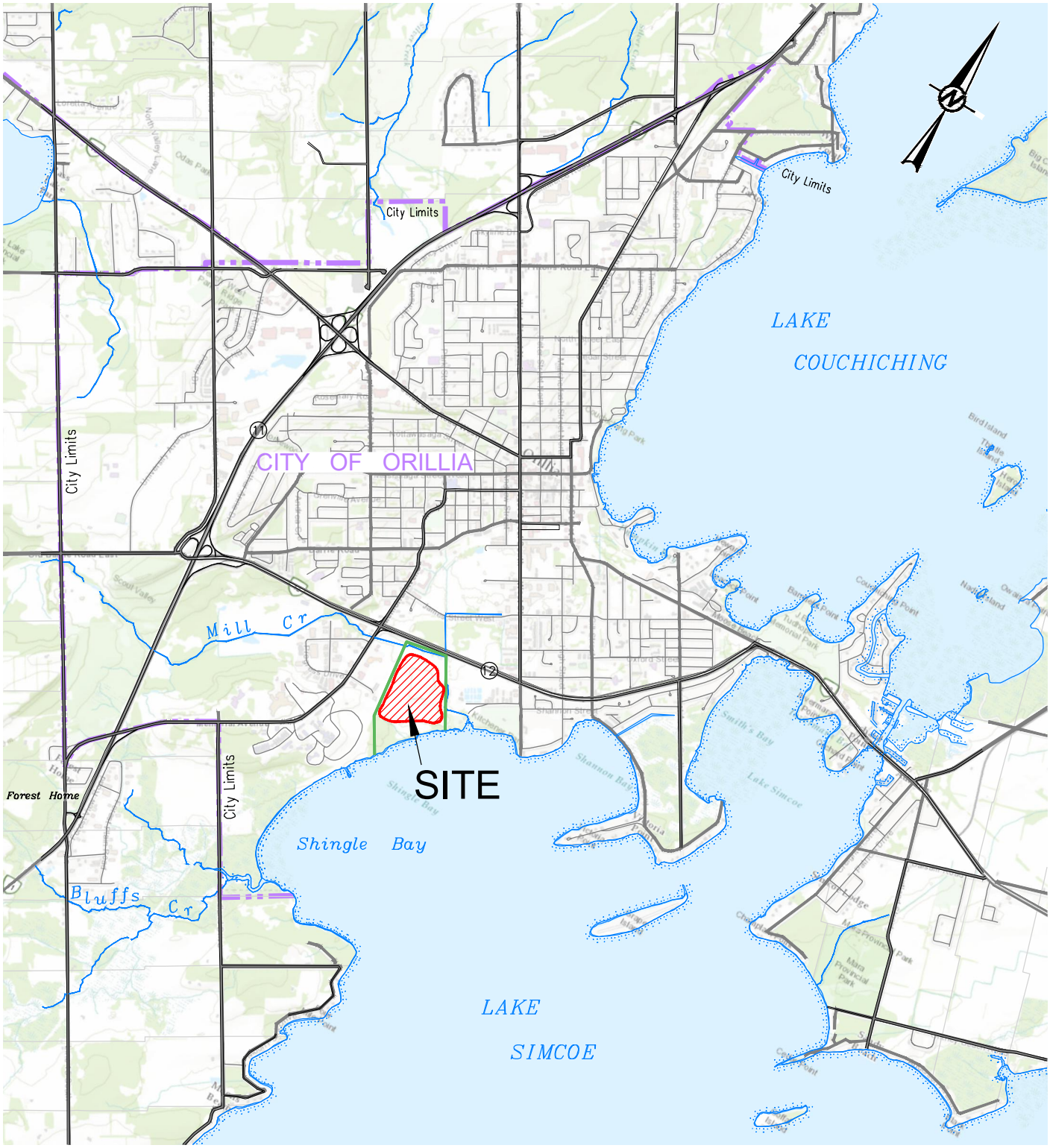
Greg Preston (City of Orillia)
50 Andrew Street, Suite 300
Orillia, Ontario L3V 7T5
Phone: 705-325-2444
Email: gpreston@orillia.ca

Groundwater and Surface Water Representative Competent Environmental Practitioner:

Paul Dewaele, M.Sc., P.Eng.
Northern Geo Environmental Ltd.
Phone: 705-790-9447
Email: PDewaele@northerngeo.ca

APPENDIX A

Figures



CITY OF ORILLIA LIMITS

0 1,000 2,000
1:50,000 METRES

BASE FROM LICENSED EMR DIGITAL 1:50000 TOPOGRAPHIC SHEET 31D/11

CLIENT
CITY OF ORILLIA

PROJECT
KITCHENER STREET WASTE DIVERSION SITE
2024 ANNUAL WATER MONITORING REPORT

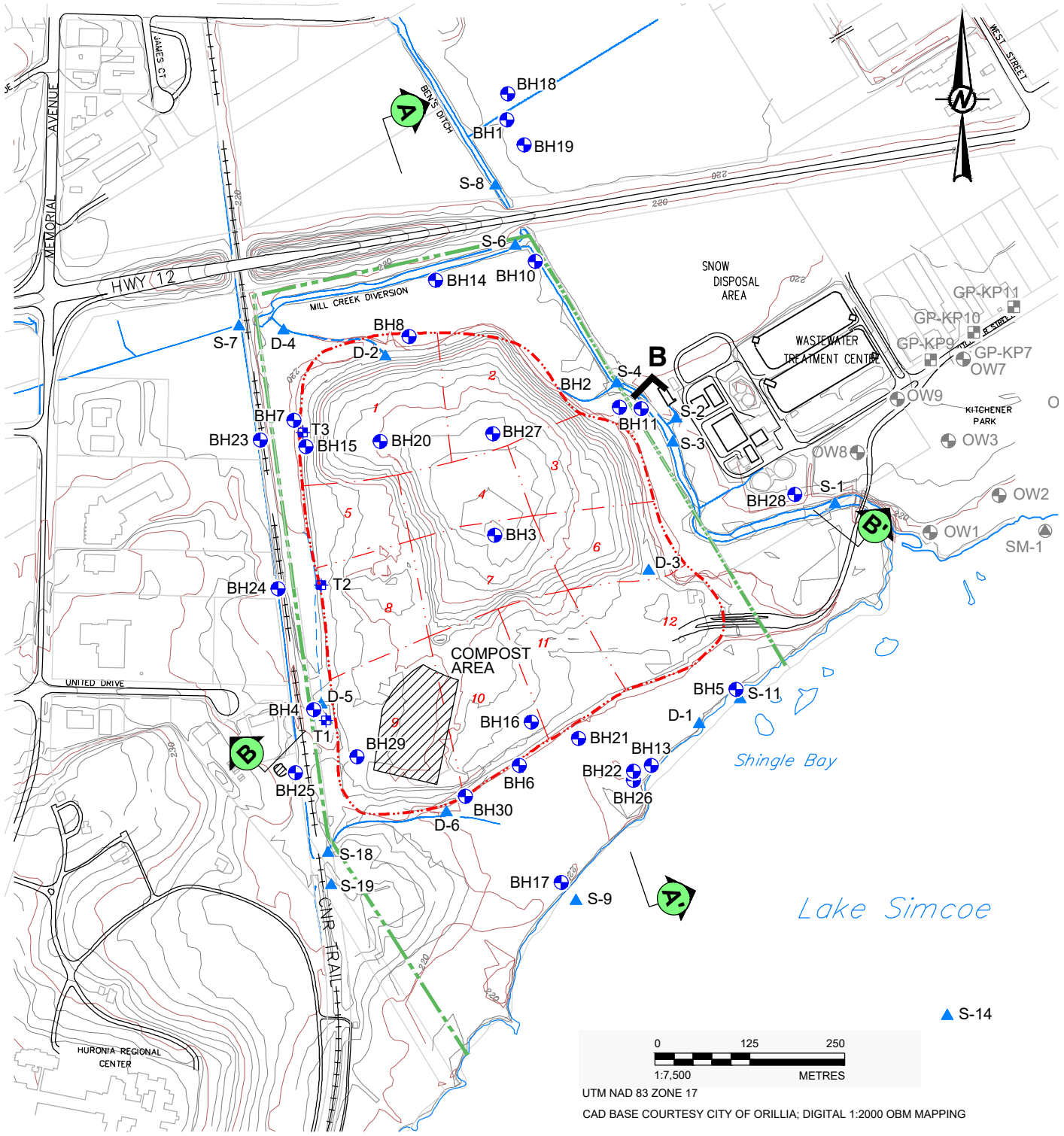
CONSULTANT
wsp

YYYY-MM-DD	2025-03-06
DESIGNED	
PREPARED	JPR
REVIEWED	JER/BG
APPROVED	

TITLE
REGIONAL LOCATION MAP

PROJECT NO.	CONTROL	REV.	FIGURE
22578520	0003	----	1

Last Edited By: gld_tregier Date: 2025-03-06 Time:9:07:36 AM | Printed By: gld_tregier Date: 2025-03-06 Time:9:56:43 AM
Path: \\corp.pbwan.net\CA\CAMIS3001\C17X_Data\SIM\Clients\City_of_Orillia\Kitchener_Street_Landfill\99_PROJ\22578520_Orillia_LF_AMR\40_PROD\0003-KSDS-2024-AMR\ | File Name: 22578520-0003-CH-0001.dwg
0 25 mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A



UTM NAD 83 ZONE 17

CAD BASE COURTESY CITY OF ORILLIA; DIGITAL 1:2000 OBM MAPPING

SHORELINE
FLOWING DITCH / IMPROVED SURFACE DRAIN
SITE BOUNDARY
LIMIT OF LANDFILL (APPROXIMATE)
LANDFILL CELL

OBSERVATION WELL
GROUNDWATER LEVEL MONITORING LOCATION
SURFACE WATER QUALITY STATION
LINE OF SECTION

CLIENT
CITY OF ORILLIA

PROJECT
KITCHENER STREET WASTE DIVERSION SITE
2024 ANNUAL WATER MONITORING REPORT

CONSULTANT
wsp

YYYY-MM-DD	2025-03-06
DESIGNED	
PREPARED	JPR
REVIEWED	JER/BG
APPROVED	

TITLE
SITE LOCATION MAP
2024 MONITORING PLAN

PROJECT NO.	CONTROL	REV.	FIGURE
22578520	0003	----	2

Last Edited By: gld_tregier Date: 2025-03-06 Time:9:09:24 AM | Printed By: gld_tregier Date: 2025-03-06 Time:10:00:24 AM
Path: \\corp.pbwan.net\CA\CAMIS3001\C17X_Data\SIM\Clients\City_of_Orillia\Kitchener_Street_Landfill\99_PROJ\22578520_Orillia_LF_AMR\40_PROD\0003-KSDS-2024-AMR\ | File Name: 22578520-0003-CH-0002.dwg
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI A
25 mm

N

S

ELEVATION: metres above Sea-level

230

220

210

BH27

BH3

BH14

Offset 60 m E

BH8

Extended BH3R

Limit of Landfill

HWY 12

℄ Mill Creek Diversion

Offset 160 m E

BH18 BH1

FILL

S6

147

REFUSE

L

FILL

501

571

REFUSE

Silted

NS

NS

WASTE DIVERSION & DROP OFF

Limit of Landfill

Offset 75 m W

BH16 BH21

BH22 BH26

Lake Simcoe

S11

77

146

P

614

683

614

647

160

86

97

60

96

90

101

77

91

116

150

124

100

145

158

103

105

157

271

C

NS

NS

NS

NS

NS

NS

NS

NS

SA

187

331

183

181

LCL

(200) CHLORIDE CONCENTRATION SUMMER 2024 (mg/L)

NS NOT SAMPLED

SEE FIGURE 2 FOR SECTION LINE

SEE FIGURE 5 FOR HYDROGEOLOGICAL SYMBOLS

SITE GRADE, SURVEY 2018

0 50 100

1:3,000 METRES

CLIENT
CITY OF ORILLIA

CONSULTANT
wsp

YYYY-MM-DD	2025-03-06
DESIGNED	
PREPARED	JPR
REVIEWED	JER/BG
APPROVED	

PROJECT
KITCHENER STREET WASTE DIVERSION SITE
2024 ANNUAL WATER MONITORING REPORT

TITLE
SITE SECTION A - A'

PROJECT NO.	CONTROL	REV.	FIGURE
22578520	0003	----	3

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

25 mm

0

Path: \\corp.pbwan.net\CA\CAM\IS300\CTX_Data\SIM\Clients\City_of_Orillia\Kitchener_Street_Landfill\99_PROJ\22578520_Orillia_LF_AMR\40_PROD\0003-KSDS-2024-AMR | File Name: 22578520-0003-CH-0003.dwg | Last Edited By: gld_jregier Date: 2025-03-06 Time:10:26:56 AM | Printed By: gld_jregier Date: 2025-03-06 Time:12:05:44 PM

Section angles 90° SE

SW NE SE

BH25 BH4 BH3 BH2 BH11 BH28

Extended BH3R

ELEVATION: metres above Sea-level

230 220 210

LIMIT OF LANDFILL | PL | LIMIT OF LANDFILL | PL

CNR

REFUSE

FILL

BEN'S DITCH

WASTEWATER TREATMENT CENTRE

BEN'S DITCH (Downstream)

FILL

S3 S1

L P C SA LCL

(219)
(200)
246
265
NS
501
571
157
271
156
168
225
231
173
226
(112)
(107)
NS
24
19
203
226
110
117

SEE FIGURE 2 FOR SECTION LINE

SEE FIGURE 5 FOR HYDROGEOLOGICAL SYMBOLS

SITE GRADE, SURVEY 2018

▼ ▽ STATIC WATER LEVEL FALL 2024

403 CHLORIDE CONCENTRATION FALL 2024 (mg/L)

(200) CHLORIDE CONCENTRATION SUMMER 2024 (mg/L)

NS NOT SAMPLED

0 50 100

1:3,000 METRES

CLIENT
CITY OF ORILLIA

CONSULTANT
wsp

YYYY-MM-DD	2025-03-06
DESIGNED	
PREPARED	JPR
REVIEWED	JER/BG
APPROVED	

PROJECT
KITCHENER STREET WASTE DIVERSION SITE
2024 ANNUAL WATER MONITORING REPORT

TITLE
SITE SECTION B - B'

PROJECT NO.	CONTROL	REV.	FIGURE
22578520	0003	----	4

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B

25 mm

0

Path: \\corp.pbwan.net\CA\CAM\S300\CTX_Data\SIM\Clients\City_of_Orillia\Kitchener_Street_Landfill\99_PRO\J22578520_Orillia_LF_AMR40_PROD\0003-KSDS-2024-AMR\ | File Name: 22578520-0003-CH-0003.dwg | Last Edited By: gld_jregier Date: 2025-03-12 Time:3:33:34 PM | Printed By: gld_jregier Date: 2025-03-19 Time:7:08:02 AM

SYMBOLS

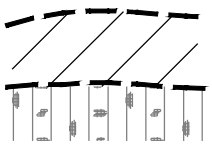
- Unoxidized CLAY, Blue, Grey, White, or Undefined CLAY
- Oxidized CLAY, Brown, Red, Yellow
- SILT
- SAND
- SAND FILL
- REFUSE
- GRAVEL
- STONES, Rounded GRAVEL
- BOULDER
- TILL

	Secondary/ Some	Trace	Minor	
Clayey				Clay
Silty				Silt
Sandy				Granular

- Screen
- Upper Peat and Landfill Water Level
- Sand Aquifer Static Water Level
- 11 Chloride Concentration

LEGEND

UNIT	DESCRIPTION
L	Landfill (Refuse)
F	Fill
P	Peat
C	Confining Layer
SA	Sand Aquifer
LCL	Lower Till Confining Layer



- Generally indicating Aquifer
- Inferred Hydrostratigraphic Contact
- Generally indicating Confining Material
- Generally Indicating Till

NOTE: On all sections, boundaries between soil strata have been determined only at well and test well locations. Between the wells and test wells, boundaries are not proven, but are inferred from geological evidence.

CLIENT
CITY OF ORILLIA

PROJECT
KITCHENER STREET WASTE DIVERSION SITE
2024 ANNUAL WATER MONITORING REPORT

CONSULTANT
wsp

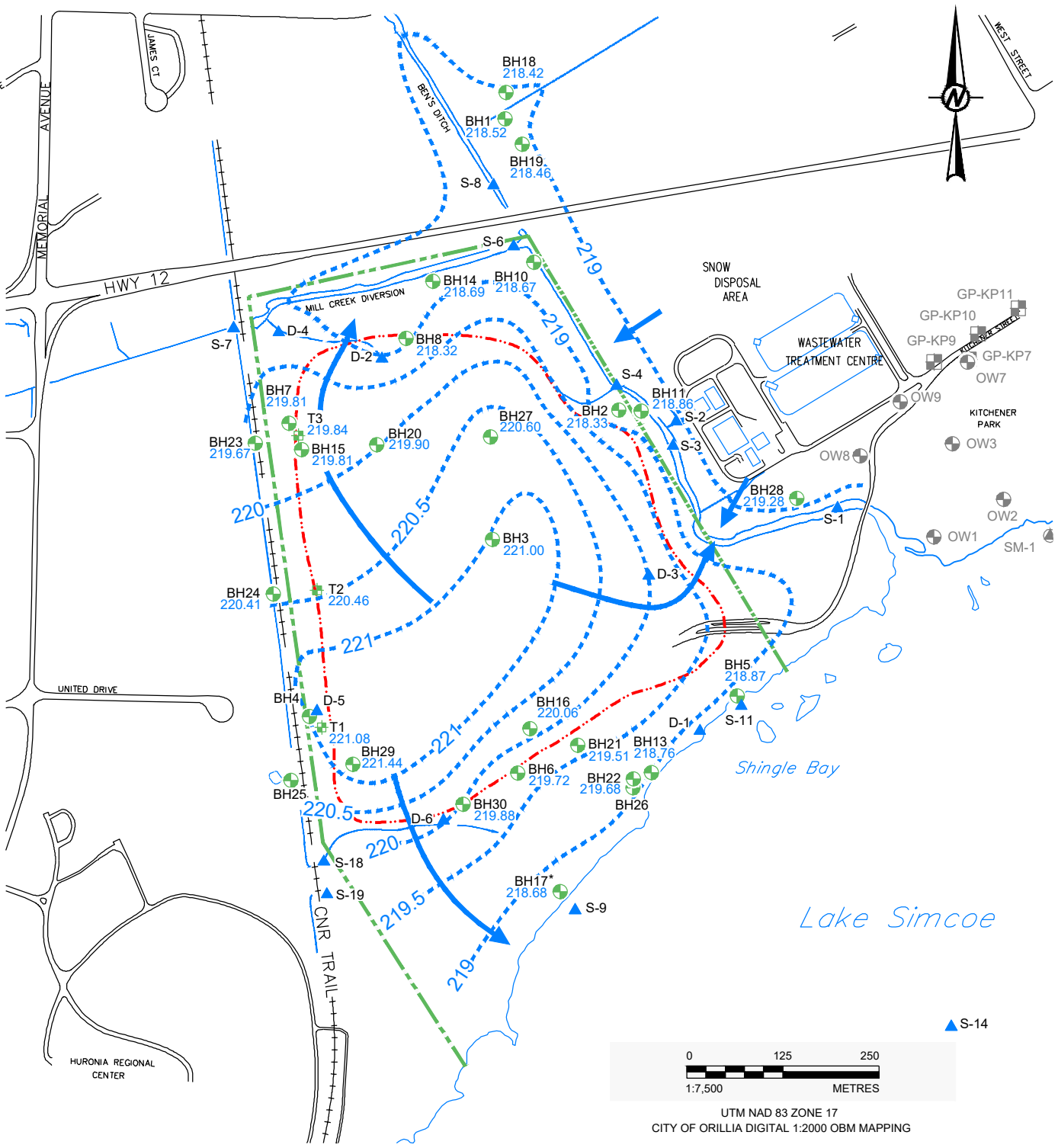
YYYY-MM-DD	2025-03-06
DESIGNED	
PREPARED	JPR
REVIEWED	JER/BG
APPROVED	

TITLE
HYDROGEOLOGICAL SYMBOLS

PROJECT NO.	CONTROL	REV.	FIGURE
22578520	0003	----	5

Last Edited By: gld_tregier Date: 2025-03-12 Time:3:33:34 PM | Printed By: gld_tregier Date: 2025-03-19 Time:7:08:30 AM
Path: \\corp.pbwan.net\CA\CAMIS3001\C1X_Data\SIM\Clients\City_of_Orillia\Kitchener_Street_Landfill\99_PROJ\22578520_Orillia_LF_AMR\40_PROD\0003-KSDS-2024-AMR\ | File Name: 22578520-0003-CH-0003.dwg

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A
0 25 mm



UTM NAD 83 ZONE 17
CITY OF ORILLIA DIGITAL 1:2000 OBM MAPPING

- SITE BOUNDARY
- LIMIT OF LANDFILL (APPROXIMATE)
- OBSERVATION WELL
- GROUNDWATER LEVEL MONITORING LOCATION
- SURFACE WATER QUALITY STATION
- 218.85 WATER TABLE ELEVATION (mASL)
- EQUIPOTENTIAL LINE FALL 2024 (mASL)
- INFERRED GROUNDWATER FLOW DIRECTION

CLIENT
CITY OF ORILLIA

PROJECT
KITCHENER STREET WASTE DIVERSION SITE
2024 ANNUAL WATER MONITORING REPORT

CONSULTANT
wsp

YYYY-MM-DD	2025-03-06
DESIGNED	
PREPARED	JPR
REVIEWED	JER/BG
APPROVED	

TITLE
WATER TABLE UPPER PEAT & SHALLOW UNITS FALL 2024

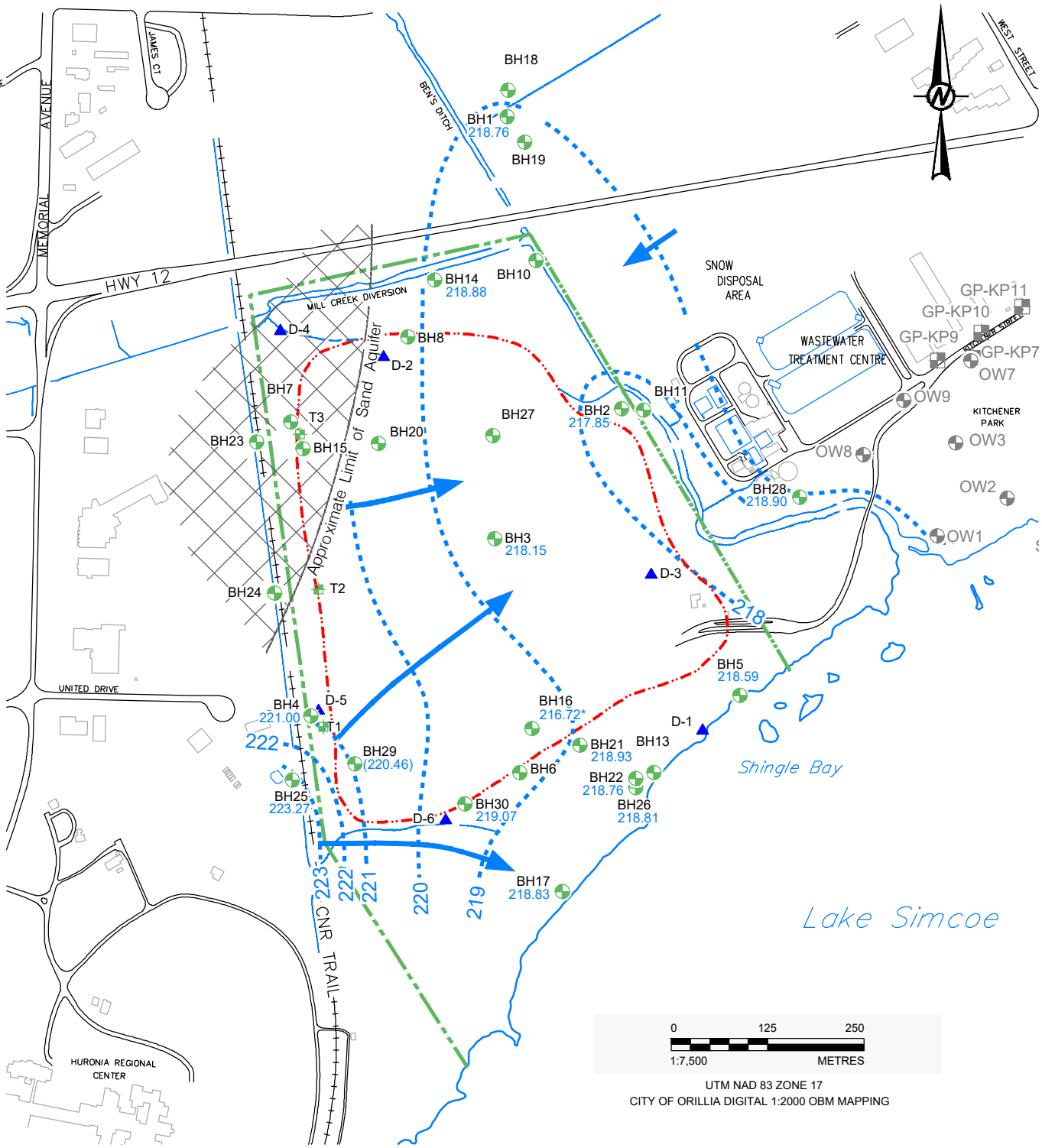
PROJECT NO.	CONTROL	REV.	FIGURE
22578520	0003	----	6

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A

25 mm

0

Last Edited By: gld_lregier Date: 2025-03-18 Time:5:32:42 PM | Printed By: gld_lregier Date: 2025-03-19 Time:7:06:01 AM
Path: \\corp.pbwan.net\CA\CAMIS3001\C17X_Data\SIM\Clients\City_of_Orillia\Kitchener_Street_Landfill\99_PROJ\22578520_Orillia_LF_AMR\40_PROD\0003-KSDS-2024-AMR\ | File Name: 22578520-0003-CH-0006.dwg



UTM NAD 83 ZONE 17
CITY OF ORILLIA DIGITAL 1:2000 OBM MAPPING

- SITE BOUNDARY
- LIMIT OF LANDFILL (APPROXIMATE)
- OBSERVATION WELL
- GROUNDWATER LEVEL MONITORING LOCATION
- SURFACE WATER QUALITY STATION
- 219.34 SAND AQUIFER POTENTIAL (mASL)
  *LEVEL AT BH16-I FALL ANOMALOUS, SUMMER VALUE SHOWN, () NOT USED FOR INTERPOLATION.
- EQUIPOTENTIAL LINE FALL 2024 (mASL)
- INFERRED GROUNDWATER FLOW DIRECTION
  OFF SITE SAND AQUIFER POTENTIAL AT KITCHENER PARK OW'S (GOLDER 2020)

CLIENT
CITY OF ORILLIA

PROJECT
KITCHENER STREET WASTE DIVERSION SITE
2024 ANNUAL WATER MONITORING REPORT

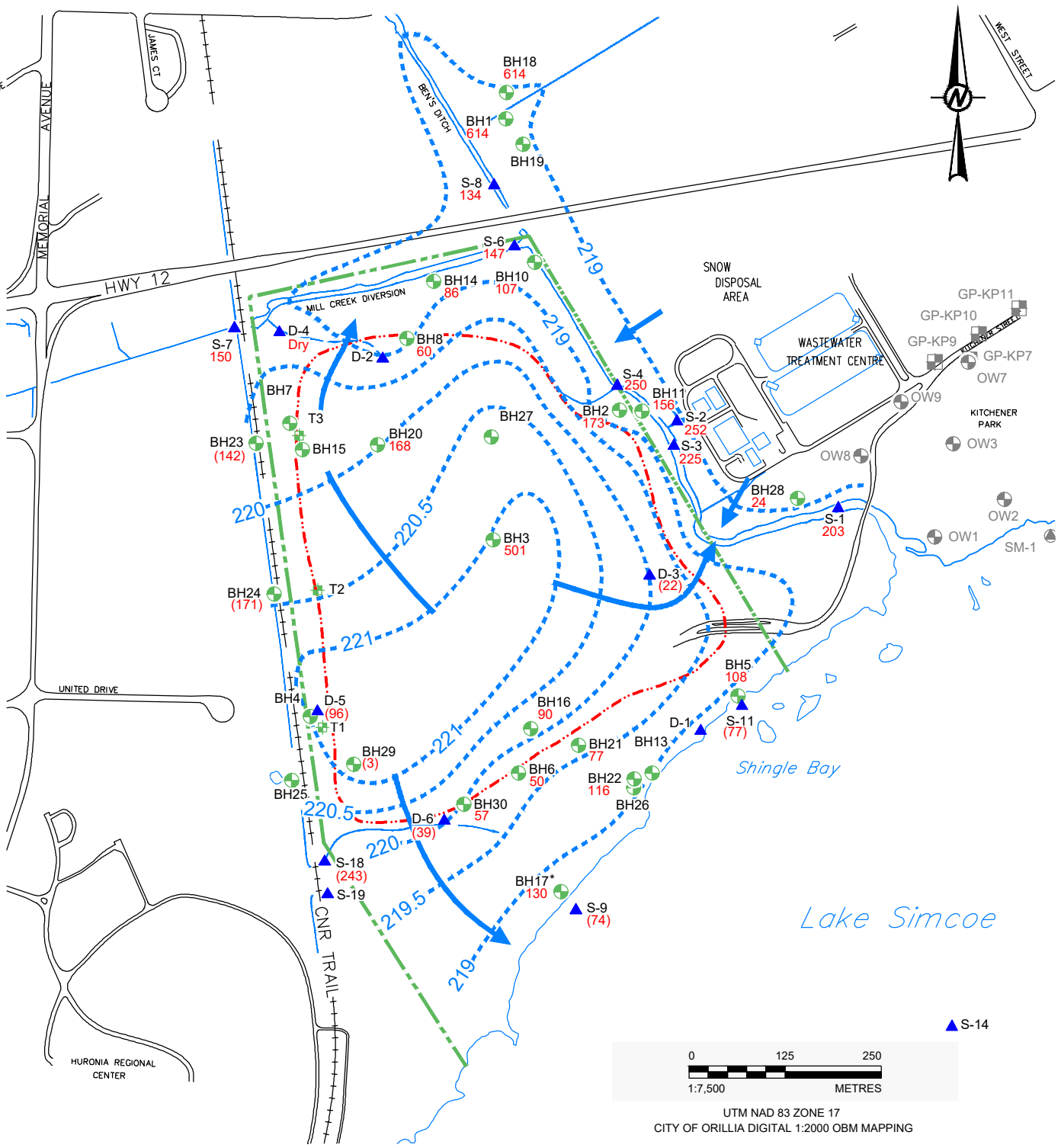
CONSULTANT
wsp

YYYY-MM-DD	2025-03-06
DESIGNED	
PREPARED	JPR
REVIEWED	JER/BG
APPROVED	

TITLE
POTENTIOMETRIC SURFACE SAND AQUIFER FALL 2024

PROJECT NO.	CONTROL	REV.	FIGURE
22578520	0003	----	7

Last Edited By: gld_tregier Date: 2025-03-06 Time:9:33:28 AM | Printed By: gld_tregier Date: 2025-03-19 Time:7:55:41 AM
Path: \\corp.pbwan.net\CA\CAMIS3001\C17X_Data\SIM\Clients\City_of_Orillia\Kitchener_Street_Landfill\99_PROJ\22578520_Orillia_LF_AMR\40_PROD\0003-KSDS-2024-AMR\ | File Name: 22578520-0003-CH-0007.dwg
0 25 mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A



UTM NAD 83 ZONE 17
CITY OF ORILLIA DIGITAL 1:2000 OBM MAPPING

SITE BOUNDARY

LIMIT OF LANDFILL (APPROXIMATE)

OBSERVATION WELL

GROUNDWATER LEVEL MONITORING LOCATION

SURFACE WATER QUALITY STATION

43 CHLORIDE CONCENTRATION FALL 2024 (mg/L)

(43) CHLORIDE CONCENTRATION SUMMER 2024

* UPPERMOST SCREEN

CLIENT
CITY OF ORILLIA

PROJECT
KITCHENER STREET WASTE DIVERSION SITE
2024 ANNUAL WATER MONITORING REPORT

CONSULTANT
wsp

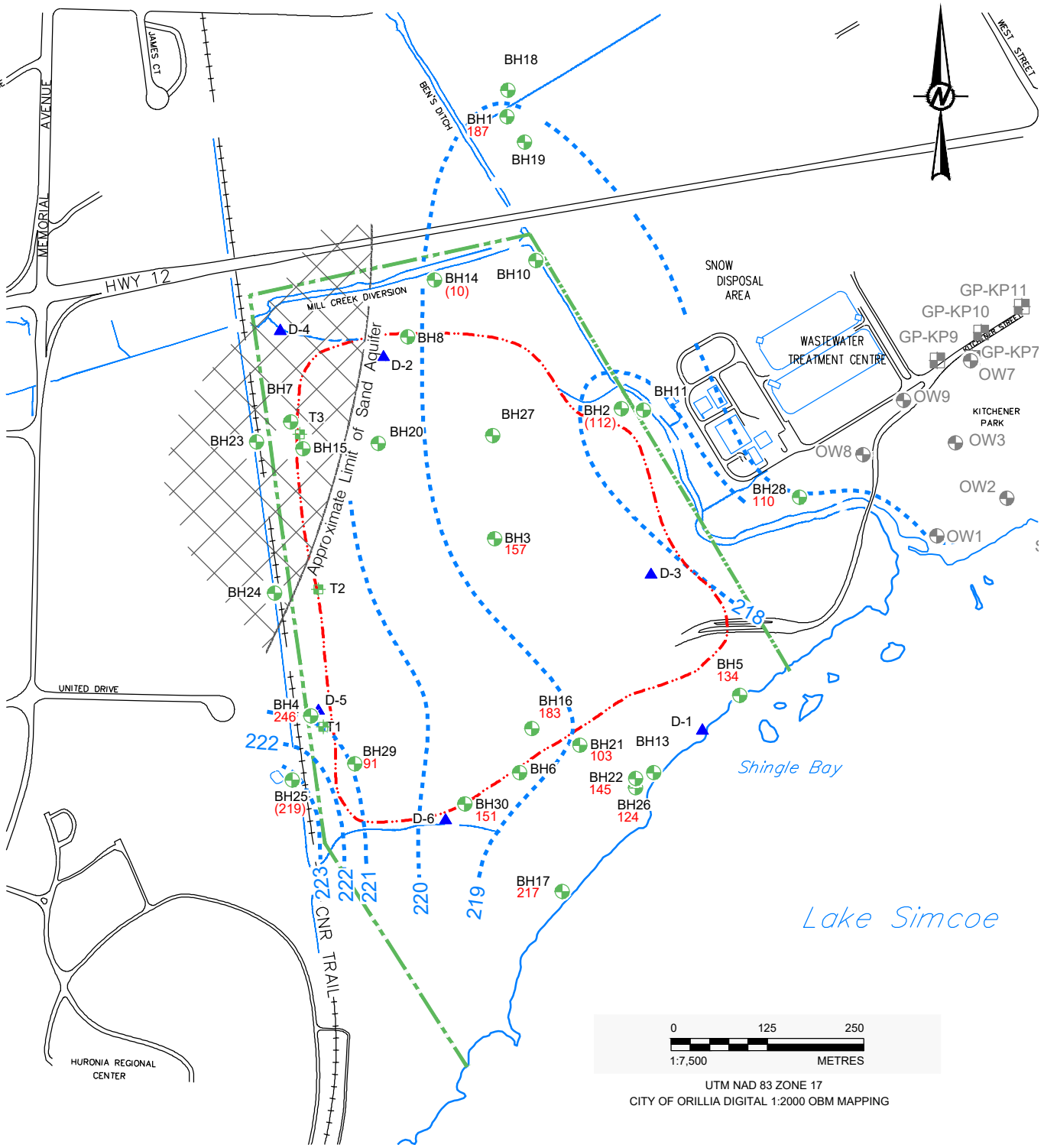
YYYY-MM-DD	2025-03-06
DESIGNED	
PREPARED	JPR
REVIEWED	JER/BG
APPROVED	

TITLE
CHLORIDE CONCENTRATION
UPPER PEAT & LANDFILL FALL 2024

PROJECT NO.	CONTROL	REV.	FIGURE
22578520	0003	----	8

Last Edited By: gld_lregier Date: 2025-03-19 Time:7:32:32 AM | Printed By: gld_lregier Date: 2025-03-19 Time:7:57:29 AM
Path: \\corp.pbwan.net\CA\CAMIS3001\C17X_Data\SIM\Clients\City_of_Orillia\Kitchener_Street_Landfill\99_PROJ\22578520_Orillia_LF_AMR\40_PROD\0003-KSDS-2024-AMR\ | File Name: 22578520-0003-CH-0006.dwg

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A
0 25 mm



UTM NAD 83 ZONE 17
CITY OF ORILLIA DIGITAL 1:2000 OBM MAPPING

SITE BOUNDARY
LIMIT OF LANDFILL (APPROXIMATE)
OBSERVATION WELL
GROUNDWATER LEVEL MONITORING LOCATION
SURFACE WATER QUALITY STATION

SAND AQUIFER POTENTIAL (mASL)
132 CHLORIDE CONCENTRATION FALL 2024 (mg/L)
(132) CHLORIDE CONCENTRATION SUMMER 2024 (mg/L)

OFF SITE CONCENTRATIONS AT KITCHENER PARK OW'S

CLIENT
CITY OF ORILLIA

PROJECT
KITCHENER STREET WASTE DIVERSION SITE
2024 ANNUAL WATER MONITORING REPORT

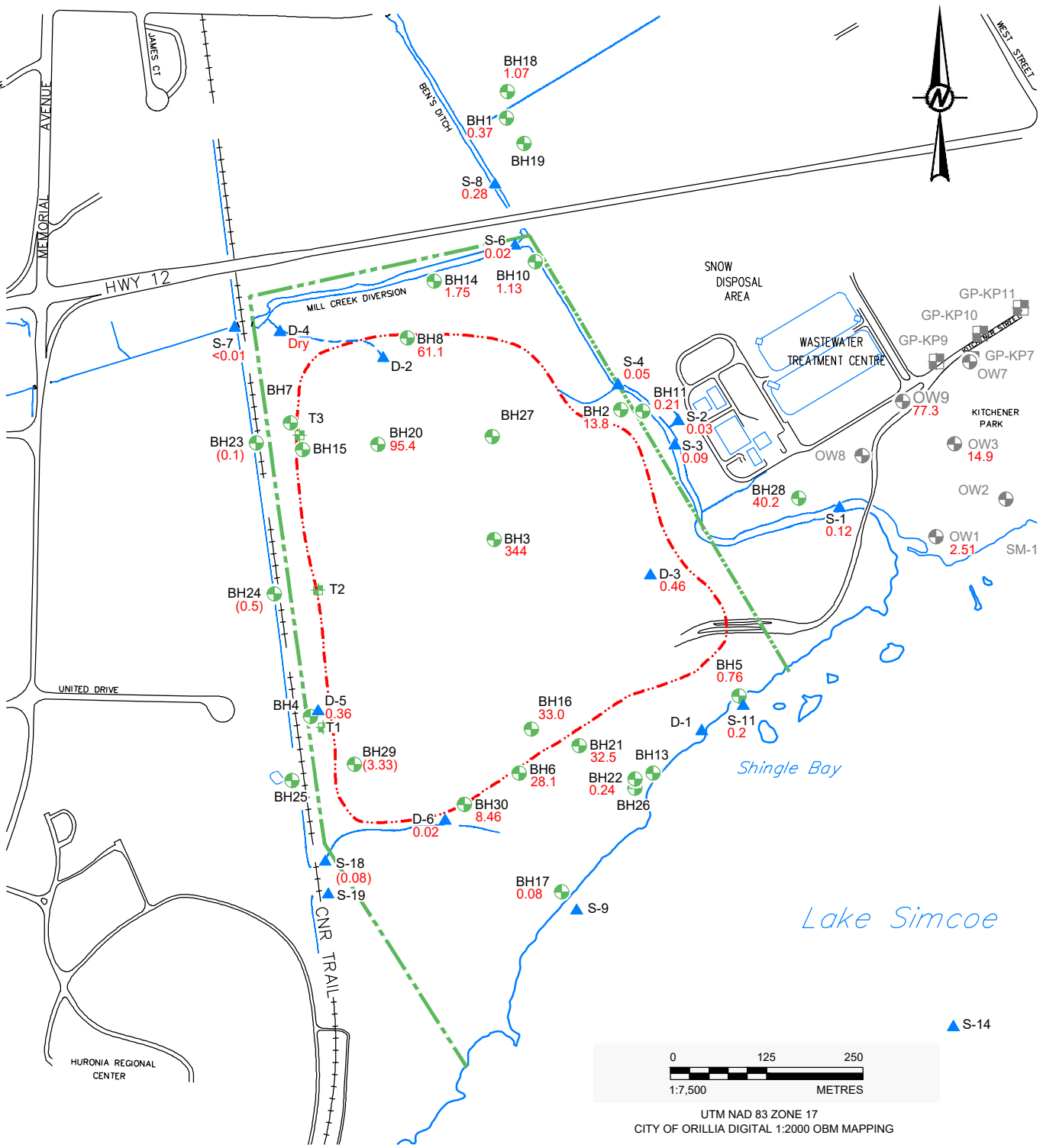
CONSULTANT
wsp

YYYY-MM-DD	2025-03-06
DESIGNED	
PREPARED	JPR
REVIEWED	JER/BG
APPROVED	

TITLE
CHLORIDE CONCENTRATIONS SAND AQUIFERS FALL 2024

PROJECT NO.	CONTROL	REV.	FIGURE
22578520	0003	----	9

Last Edited By: gld_lregier Date: 2025-04-03 Time:6:29:37 AM | Printed By: gld_lregier Date: 2025-04-03 Time:6:29:48 AM
Path: \\corp.pbwan.net\CA\CAMIS3001\C17X_Data\SIM\Clients\City_of_Orillia\Kitchener_Street_Landfill\99_PROJ\22578520_Orillia_LF_AMR\40_PROD\0003-KSDS-2024-AMR\ | File Name: 22578520-0003-CH-0007.dwg
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A
0 25 mm



UTM NAD 83 ZONE 17
CITY OF ORILLIA DIGITAL 1:2000 OBM MAPPING

SITE BOUNDARY

LIMIT OF LANDFILL (APPROXIMATE)

OBSERVATION WELL (SITE / KITCHENER PARK)

GROUNDWATER LEVEL MONITORING LOCATION

SURFACE WATER QUALITY STATION

0.01 AMMONIA CONCENTRATION FALL 2024 (mg/L)

(0.01) AMMONIA CONCENTRATION SUMMER 2024 (mg/L)

AMMONIA CONCENTRATION AT KITCHENER PARK OW'S (WSP 2024)

CLIENT
CITY OF ORILLIA

PROJECT
KITCHENER STREET WASTE DIVERSION SITE
2024 ANNUAL WATER MONITORING REPORT

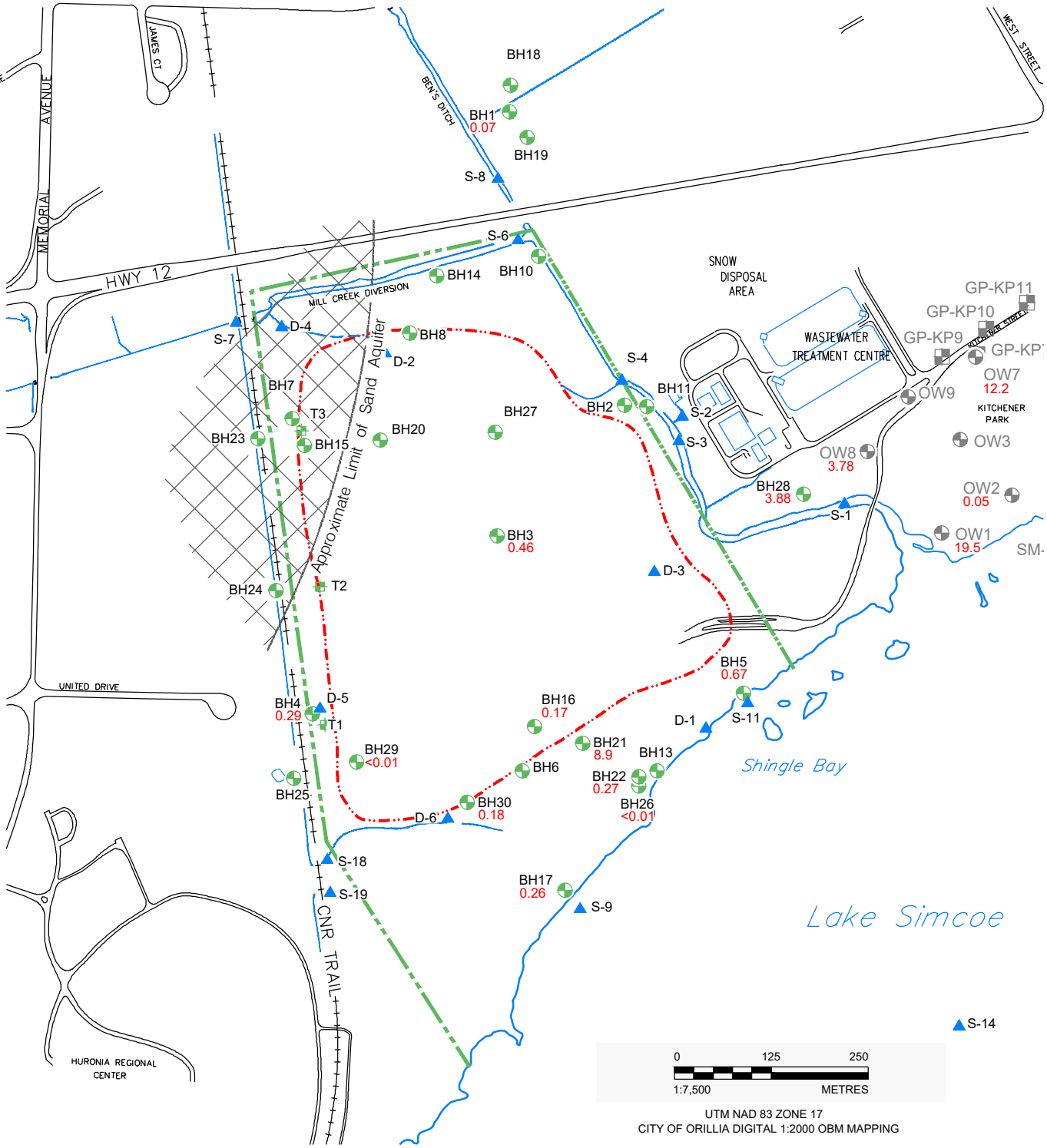
CONSULTANT
wsp

YYYY-MM-DD	2025-03-06
DESIGNED	
PREPARED	JPR
REVIEWED	JER/BG
APPROVED	

TITLE
AMMONIA CONCENTRATION PEAT, LANDFILL & SURFACE WATER, FALL 2024

PROJECT NO.	CONTROL	REV.	FIGURE
22578520	0003	----	10

Last Edited By: gld_lregier Date: 2025-03-06 Time:1:58:33 PM | Printed By: gld_lregier Date: 2025-03-19 Time:8:07:48 AM
Path: \\corp.pbwan.net\CA\CAMIS3001\C17X_Data\SIM\Clients\City_of_Orillia\Kitchener_Street_Landfill\99_PROJ\22578520_Orillia_LF_AMR\40_PROD\0003-KSDS-2024-AMR\ | File Name: 22578520-0003-CH-0010.dwg
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A
0 25 mm



UTM NAD 83 ZONE 17
CITY OF ORILLIA DIGITAL 1:2000 OBM MAPPING

SITE BOUNDARY

LIMIT OF LANDFILL (APPROXIMATE)

OBSERVATION WELL (SITE / KITCHENER PARK)

GROUNDWATER LEVEL MONITORING LOCATION

SURFACE WATER QUALITY STATION

0.01 AMMONIA CONCENTRATION FALL 2024 (mg/L)

(0.01) AMMONIA CONCENTRATION SUMMER 2024 (mg/L)

AMMONIA CONCENTRATION AT KITCHENER PARK OW'S (WSP 2024)
OW9 SAND AQUIFER NOT PRESENT / CONCENTRATION FROM LOWER SCREEN

CLIENT
CITY OF ORILLIA

PROJECT
KITCHENER STREET WASTE DIVERSION SITE
2024 ANNUAL WATER MONITORING REPORT

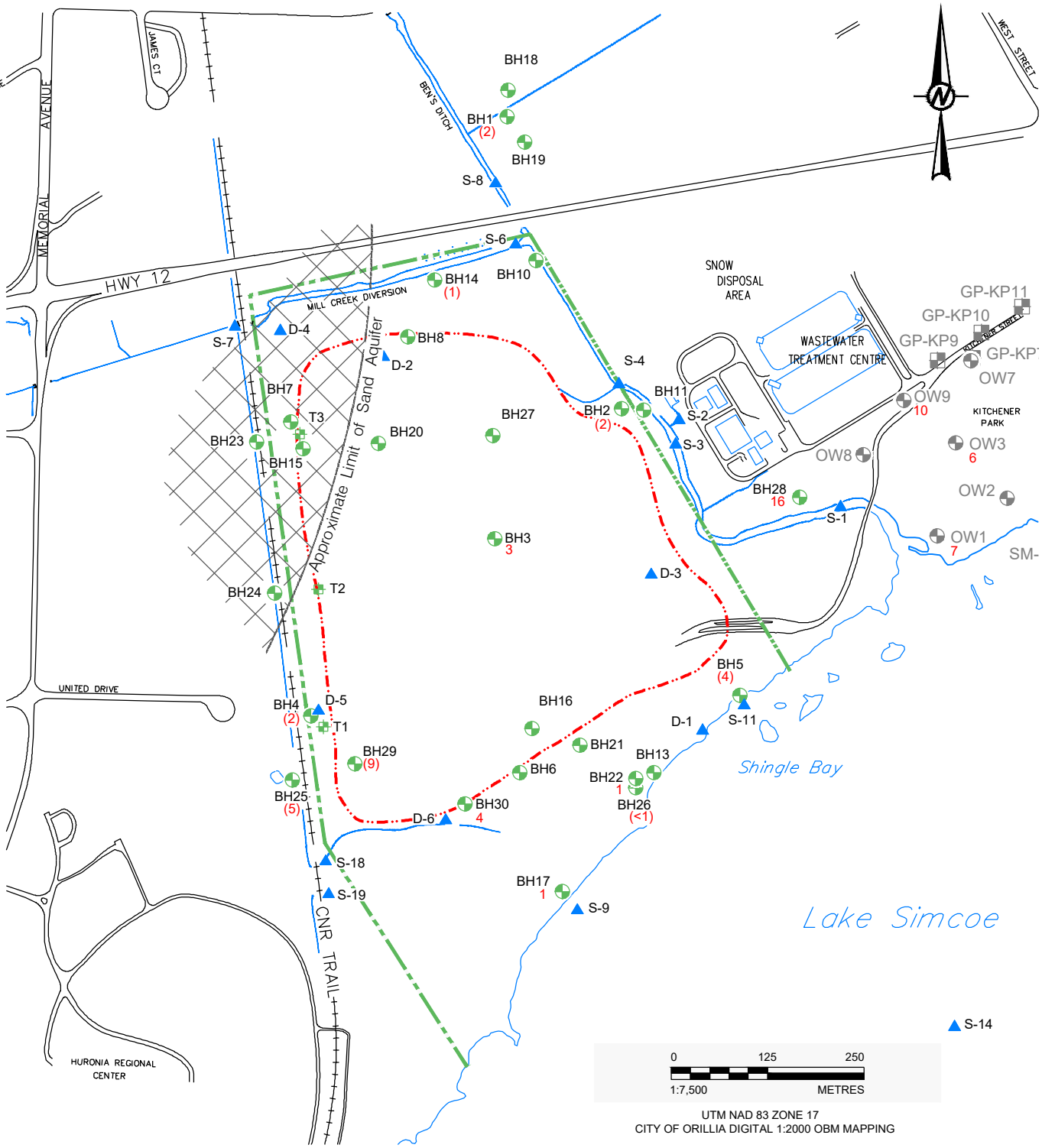
CONSULTANT
wsp

YYYY-MM-DD	2025-03-06
DESIGNED	
PREPARED	JPR
REVIEWED	JER/BG
APPROVED	

TITLE
AMMONIA CONCENTRATION SAND AQUIFER FALL 2024

PROJECT NO.	CONTROL	REV.	FIGURE
22578520	0003	----	11

Last Edited By: gld_lregier Date: 2025-03-06 Time:1:58:40 PM | Printed By: gld_lregier Date: 2025-03-19 Time:8:12:39 AM
Path: \\corp.pbwan.net\CA\CAMIS3001\C17X_Data\SIM\Clients\City_of_Orillia\Kitchener_Street_Landfill\99_PROJ\22578520_Orillia_LF_AMR\40_PROD\0003-KSDS-2024-AMR\ | File Name: 22578520-0003-CH-0011.dwg
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A
0 25 mm



UTM NAD 83 ZONE 17
CITY OF ORILLIA DIGITAL 1:2000 OBM MAPPING

SITE BOUNDARY

LIMIT OF LANDFILL (APPROXIMATE)

OBSERVATION WELL (SITE / KITCHENER PARK)

GROUNDWATER LEVEL MONITORING LOCATION

SURFACE WATER QUALITY STATION

6 ZINC CONCENTRATION FALL 2024 (mg/L)

(6) ZINC CONCENTRATION SUMMER 2024 (mg/L)

ZINC CONCENTRATION AT KITCHENER PARK OW'S (WSP 2024)
OW9 SAND AQUIFER NOT PRESENT / CONCENTRATION FROM LOWER SCREEN

CLIENT
CITY OF ORILLIA

PROJECT
KITCHENER STREET WASTE DIVERSION SITE
2024 ANNUAL WATER MONITORING REPORT

CONSULTANT
wsp

YYYY-MM-DD	2025-03-06
DESIGNED	
PREPARED	JPR
REVIEWED	JER/BG
APPROVED	

TITLE
ZINC CONCENTRATION SAND AQUIFER FALL 2024

PROJECT NO.	CONTROL	REV.	FIGURE
22578520	0003	----	12

Last Edited By: gld_tregier Date: 2025-03-19 Time:8:22:24 AM | Printed By: gld_tregier Date: 2025-03-19 Time:8:22:42 AM | File Name: 22578520-0003-CH-0012.dwg
Path: \\corp.pbwan.net\CA\CAMIS3001\C17X_Data\SIM\Clients\City_of_Orillia\Kitchener_Street_Landfill\99_PROJ\22578520_Orillia_LF_AMR\40_PROD\0003-KSDS-2024-AMR\
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A
25 mm
0

APPENDIX B

Tables

Table B-1
City of Orillia - Kitchener Street Waste Diversion Site
Monitoring Well Details

Location	Repl. Date	Measuring Point Elevation (Top of Pipe) (masl)	Easting (m)	Northing (m)	Screen Base (m)	Screen Top (m)	Hydrostratigraphic unit
BH1-IR	24/Jul/12	220.08	625661	4939086	208.2	209.7	Sand Aquifer
BH1-II		220.12	625661	4939086	213.8	214.3	Upper Confining Layer
BH1-III		220.22	625661	4939086	218.2	218.8	Peat
BH2-I		220.68	625809	4938707	207.7	208.2	Lower Till
BH2-II		220.48	625809	4938707	213.5	214.0	Sand Aquifer
BH2-III		220.48	625809	4938707	216.6	219.0	Peat
BH3-IIR	30/Sep/16	234.68	625645	4938538	218.4	221.5	Leachate
BH3-IR	31/Jul/08	234.68	625645	4938538	215.7	216.3	Sand Aquifer
BH4-IR	29/Sep/16	222.38	625406	4938308	215.3	216.8	Lower Till
BH4-IIR	29/Sep/16	222.37	625406	4938308	218.4	219.9	Sand Aquifer
BH5-IR	05/Oct/10	220.23	625963	4938335	210.2	211.8	Sand Aquifer
BH5-IIR	05/Oct/10	220.14	625963	4938335	213.4	215.0	Upper Confining Layer
BH5-IIIR	05/Oct/10	220.16	625963	4938335	216.6	217.3	Peat
BH6R	09/Jul/13	219.73	625677	4938235	217.9	219.4	Peat
BH7		220.24	625380	4938690	218.0	218.6	Peat
BH8R	09/Jul/13	219.25	625532	4938800	217.4	219.0	Peat
BH10R	09/Jul/13	219.06	625701	4938895	217.2	218.8	Peat
BH11R	23/Jul/12	220.21	625838	4938705	217.7	218.9	Peat
BH13		220.15	625851	4938235	217.8	218.4	Peat
BH14-I		220.51	625567	4938874	207.8	208.5	Sand Aquifer
BH14-II		220.46	625567	4938874	213.6	214.3	Upper Confining Layer
BH14-IIIR	09/Jul/13	219.62	625567	4938874	217.3	218.9	Peat
BH15-I		221.54	625396	4938655	209.8	210.5	Lower Till
BH15-II		221.64	625396	4938655	214.8	215.5	Upper Confining Layer
BH15-IIIR	08/Jul/13	221.70	625396	4938655	217.9	219.4	Fill
BH16-I		223.28	625692	4938291	206.3	207.1	Sand Aquifer
BH16-II		223.90	625692	4938291	215.1	215.8	Upper Confining Layer
BH16-III		223.69	625692	4938291	218.2	222.6	Leachate
BH16-IV		223.51	625692	4938291	219.9	222.4	Leachate
BH16-IVR	01/Aug/08	223.79	625692	4938291	219.7	221.3	Leachate
BH17-I		220.70	625732	4938080	206.7	207.4	Lower Till
BH17-II		220.66	625732	4938080	210.7	211.3	Lower Till
BH17-III		221.27	625732	4938080	214.6	215.2	Sand Aquifer
BH17-IVR	23/Jul/12	220.87	625732	4938080	217.8	219.3	Upper Confining Layer
BH18R	23/Jul/12	220.01	625662	4939120	217.5	218.7	Peat
BH19		220.53	625683	4939053	218.0	219.3	Peat
BH20R	15/Nov/90	231.30	625494	4938662	218.3	219.8	Leachate
BH21-IIR	29/Mar/19	220.67	625755	4938270	217.9	219.4	Peat
BH21-IR	21/Mar/95	220.83	625755	4938270	215.2	216.0	Sand Aquifer
BH22-II		220.60	625828	4938227	217.9	219.4	Peat
BH22-IR	15/Jul/88	219.96	625828	4938227	216.1	216.8	Sand Aquifer
BH23		220.82	625336	4938664	218.2	219.7	Peat
BH24R	11/Apr/95	222.03	625359	4938467	220.1	220.9	Peat
BH25		224.49	625382	4938225	220.6	221.4	Sand Aquifer
BH26		220.77	625827	4938215	216.1	220.6	Sand Aquifer
BH27-I		234.01	625642	4938672	218.3	218.6	Peat
BH27-IIX		233.97	625642	4938672	219.3	223.9	Leachate
BH29-I		224.42	625463	4938246	221.4	222.7	Sand Aquifer
BH29-II		224.49	625463	4938246	218.4	219.5	Leachate
BH30-I		222.46	625606	4938194	219.0	219.8	Peat
BH30-II		222.44	625606	4938194	212.4	214.0	Sand Aquifer
S-1		219.95	626094	4938581			Stream
S-2			625884	4938695			Stream
S-3			625880	4938663			Stream
S-4			625806	4938741			Stream
S-5			626182	4938499			Surface Water Location
S-6			625672	4938922			Stream

Table B-1
City of Orillia - Kitchener Street Waste Diversion Site
Monitoring Well Details

Location	Repl. Date	Measuring Point Elevation (Top of Pipe) (masl)	Easting (m)	Northing (m)	Screen Base (m)	Screen Top (m)	Hydrostratigraphic unit
S-7			625308	4938816			Stream
S-8			625646	4939002			Stream
S-9			625752	4938058			Surface Water Location
S-11			625969	4938324			Surface Water Location
S-14			626242	4937907			Surface Water Location
S-18			625425	4938122			Stream
S-19			625429	4938079			Stream
D-1			625914	4938292			Ditch
D-2			625501	4938776			Ditch
D-3			625848	4938494			Ditch
D-4							Ditch
D-5							Ditch
D-6							Ditch
T1		221.87	625423	4938294			Peat
T2		221.03	625416	4938472			Peat
T3		220.32	625392	4938674			Peat

masl: metres above sea level
m: metres
** Measuring point elevations provided have not been altered to reflect the 2009 survey data

Coordinate provided georeferenced UTM NAD 83 Zone7, accurate to within approximately 5 m. Data provided electronically by the City of Orillia. Coordinate provided for monitoring well nest represent centroid position between monitoring locations. Elevation data provided electronically by the City of Orillia, accurate to within 0.1 m.

Table B-2
City of Orillia - Kitchener Street Waste Diversion Site
2024 Groundwater Monitoring Schedule

Location	Unit	Water Level	Major Ions and Indicators	Dissolved Solids (metals)	VOC
BH1-IR	SA	T	T	A	-
BH1-II	UCL	T	-	-	-
BH1-III	P	T	T	-	-
BH2-I	BT	T	-	-	-
BH2-II	SA	T	A	A	-
BH2-III	P	T	T	-	-
BH3-IR	SA	T	T	A	T
BH3-IIR	LF	T	T	T	T
BH4-I	BT	T	-	-	-
BH4-II	SA	T	T	A	-
BH5-IR	SA	T	T	T	T*
BH5-IIR	UCL	T	-	-	-
BH5-IIIR	P	T	T	-	T*
BH6R	P	T	-	-	T*
BH7	P	T	-	-	-
BH8R	P	T	T	-	-
BH10R	P	T	T	-	-
BH11R	P	T	T	-	T*
BH13	P	T	-	-	-
BH14-I	SA	T	A	A	-
BH14-II	UCL	T	-	-	-
BH14-IIIR	P	T	T	-	-
BH15-I	BT	T	-	-	-
BH15-II	UCL	T	-	-	-
BH15-IIIR	F	T	A	-	-
BH16-I	SA	T	T	A	-
BH16-II	UCL	T	-	-	-
BH16-III	LF	T	-	-	-
BH16-IVR	LF	T	T	-	-
BH17-I	BT	T	-	-	-
BH17-II	BT	T	-	-	-
BH17-III	SA	T	T	T	T*
BH17-IVR	UCL	T	T	T	-
BH18R	P	T	T	-	-
BH19	P	T	-	-	-
BH20R	LF	T	T	-	-
BH21-IR	SA	T	T	A	T
BH21-IIR	P	T	T	-	T
BH22-IR	SA	T	T	T	T*
BH22-II	P	T	T	T	T*
BH23	P	T	A	-	-
BH24R	P	T	A	-	-
BH25	SA	T	A	A	-
BH26	SA	T	T	T	T*
BH27-I	P	T	T	-	-
BH27-IIR	LF	T	T	T	-
BH29-I	SA	T	T	T	-
BH29-II	LF	T	T	T	-
BH30-I	SA	T	T	T	-
BH30-II	P	T	T	T	-
T1	P	T	-	-	-
T2	P	T	-	-	-
T3	P	T	-	-	-

Note: * VOC analysis for BTEX only (starting in 2015)

P	Peat
SA	Sand Aquifer
UCL	Upper Confinning Layer
BT	Bottom Till
F	Fill
LF	Leachate
T	Triannual event (3 samples)
A	Annual Event (1 sample)
-	Not Taken

Table B-3
City of Orillia - Kitchener Street Waste Diversion Site
2024 Surface Water Monitoring Program

Location	Water Quality (all parameters)	Water Level	Flow	Arsenic	Description
Active Surface Sampling Stations					
S-1	T	A			Ben's Ditch
S-2	T	A		T	WWTC Discharge
S-3	T				Ben's Ditch
S-4	T				Ben's Ditch
S-6	T				Mill Creek
S-7	T	A	A		Mill Creek
S-8	T	A			Ben's Ditch
S-9	A				Lake Simcoe
S-11	T				Lake Simcoe
S-14	A			A	Lake Simcoe
S-18	T				CN Drain
S-19	A				CN Drain
D-1	S				Lake Simcoe Shoreline
D-2	S				Toe of Cell No. 1
D-3	S				SE End of E Access Road
D-4	S				Northwest of Cell No. 1
D-5	S				West of Cell No. 9
D-6	S				South of Cell No. 9

A Annual Event
S Semi-Annual Event (2 times per year)
T Triannual Event (3 times per year)

Table B-4

City of Orillia - Kitchener Street Waste Diversion Site

Provincial Water Quality Objectives (PWQO)[1]

Major Ions and Indicators Parameter	PWQO	Trace Metals Parameter	PWQO
Alkalinity (mg/L)	--	Aluminum (µg/L)	75
Conductivity (mg/L)	--	Arsenic (µg/L)[2]	5
Hardness (mg/L)	--	Antimony (µg/L)	20
pH (std. Units)	6.5-8.5	Barium (µg/L)	--
Chloride (mg/L)	--	Cadmium (µg/L)[2]	0.5
Sulphate (mg/L)	--	Chromium (µg/L)	1
Calcium (mg/L)	--	Cobalt (µg/L)	0.9
Magnesium (mg/L)	--	Copper (µg/L)[2]	5
Sodium (mg/L)	--	Lead (µg/L)[2]	5
Potassium (mg/L)	--	Molybdenum (µg/L)	40
Phenols (ug/L)	1	Nickel (µg/L)	25
Nitrite(N) (ug/L)	--	Selenium (µg/L)	100
Nitrate(N) (mg/L)	--	Silver (µg/L)	0.1
Total Ammonia(N) (mg/L)	--	Zinc (µg/L)[2]	20
Un-ionized Ammonia(N) (mg/L)[3]	0.02		
TKN(N) (mg/L)	--		
Organic Nitrogen (mg/L)	--	Ortho-Phosphate(P) (mg/L)	--
(COD) Chemical Oxygen Demand (mg/L)	--	Total Phosphorus(P) (mg/L)[4,5]	0.02/0.03
(DOC) Dissolved Organic Carbon (mg/L)	--		
(DIC) Dissolved Inorganic Carbon (mg/L)	--		
Iron (mg/L)	0.3		
Manganese (ug/L)	--		
Field pH (std. Units)	6.5-8.5		
Field Temperature (°C)	--		
Field Conductivity (µS/cm)	--		
Field Dissolved Oxygen	pH and Temp related		

Notes:

[1] *Provincial Water Quality Objectives, July 1994, Reprinted February 1999, where applicable*

[2] *Interim PWQO*

[3] *Calculated from total ammonia, as per PWQO*

[4] *Interim PWQO for lakes (0.02 mg/L); Interim PWQO for rivers and streams (0.03 mg/L)*

[5] *Average total phosphorous should not exceed 0.02 mg/L*

Table B-5

City of Orillia - Kitchener Street Waste Diversion Site
Streamflow Data for S7 (Mill Creek Upstream of Site)

RECORD OF FLOW

	Litres/Sec
DATE	**S7**
26/Apr/11	176
08/Oct/11	244
10/Dec/11	38
05/Apr/12	196
19/Jul/12	27
31/Oct/12	8435
02/May/13	203
25/Jul/13	34
13/Oct/13	371
06/May/14	198
17/Jul/14	86
25/Sep/14	124
27/Apr/15	123
17/Jul/15	83
25/Sep/15	69
03/May/16	187
13/Jul/16	55
05/Oct/16	91
18/Apr/17	213
12/Jul/17	145
13/Oct/17	185
08/May/18	276
11/Jul/18	161
11/Oct/18	208
17/Apr/19	276
11/Jul/19	161
24/Oct/19	208
27/Apr/20	220
17/Jul/20	162
24/Oct/20	139
27/Apr/21	428
17/Jul/21	275
24/Oct/21	101
26/Apr/22	414
06/Jul/22	993
29/Sep/22	139
24/Apr/23	104
06/Jul/23	162
10/Oct/23	522
22/Apr/24	341
03/Jul/24	102
26/Sep/24	225
Average Flow	206

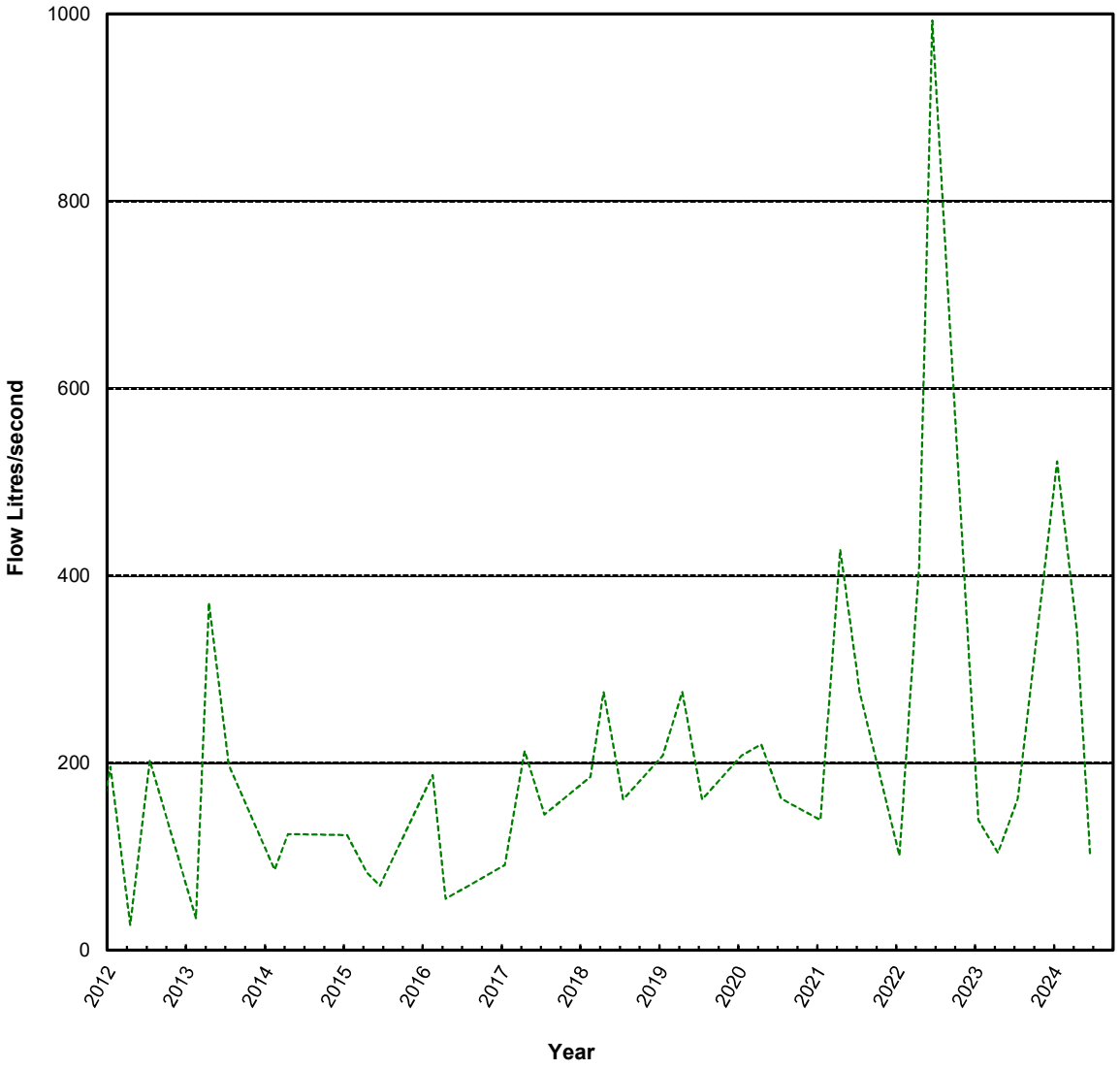


Table B-6
City of Orillia - Kitchener Street Waste Diversion Site 2024
Water Quality Results - VOC

ID	Date	Benzene	Bromodichloromethane	Bromoform	Bromomethane	Carbon tetrachloride	Chlorobenzene	Chloroethane	Chloroform	Chloromethane	Dibromochloromethane	Dibromoethane,1,2-	Dichlorobenzene,1,2-	Dichlorobenzene,1,3-	Dichlorobenzene,1,4-	Dichloroethane,1,1-	Dichloroethane,1,2-	Dichloroethene, 1,1-	Dichloroethene, cis-1,2-	Dichloroethene, trans-1,2-	Dichloropropane,1,2-	Dichloropropene, cis-1,3-	trans-1,3-Dichloropropene	Ethylbenzene	Dichloromethane	Styrene	Tetrachloroethane,1,1,1,2-	Tetrachloroethane,1,1,2,2-	Tetrachloroethene	Toluene	Trichloroethane,1,1,1-	Trichloroethane,1,1,2-	Trichloroethylene	Trichlorofluoromethane	Vinyl chloride	Xylene, m,p-	Xylene, o-
	Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
	M.D.L.	0.2	0.5	0.5	0.5	0.2	0.5	5	0.5	5	0.5	0.2	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	0.5	5	0.2	0.5	0.5
	PWQO	100	200	60	0.9	-	15	-	-	700	40	-	2.5	2.5	4	200	100	40	200	200	-	-	7	8	-	4	20	70	50	0.8	10	800	20		600	32	40
	ODWS	1	-	-	-	1	80	-	-	-	-	-	200	-	5	-	5	14	-	-	-	-	-	1.6	-	-	-	-	10	24	-	-	50		2	20	
		M				M	A/M						A/M		A/M		M	M						A	M				M	A			M		M	m-/p-	
BH3-IR	18-Apr-24	0.9	<0.2	<0.5	<0.5	<0.2	<0.5	<0.3	<1	<0.3	<2	<0.2	<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	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.1	<0.5	<0.5
BH3-IR	17-Jul-24	0.7	<0.2	<0.5	<0.5	<0.2	<0.5	<0.3	<1	<0.3	<2	<0.2	<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	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.1	<0.5	<0.5
BH3-IR	10-Oct-24	0.9	<0.2	<0.5	<0.5	<0.2	<0.5	<0.3	<1	<0.3	<2	<0.2	<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	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.1	<0.5	<0.5
BH3-IIR	18-Apr-24	4.3	<0.2	<0.5	<0.5	<0.2	2.6	<0.3	<1	<0.3	<2	<0.2	<0.5	<0.5	0.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.1	1.2	<0.5
BH3-IR	10-Oct-24	0.9	<0.2	<0.5	<0.5	<0.2	<0.5	<0.3	<1	<0.3	<2	<0.2	<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	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.1	<0.5	<0.5
BH3-IIR	10-Oct-24	3.5	<0.2	<0.5	<0.5	<0.2	2.9	<0.3	<1	<0.3	<2	<0.2	<0.5	<0.5	0.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.1	1.2	<0.5
BH5-IR	18-Apr-24	<0.2																						<0.4						<0.4						<0.4	<0.4
BH3-IIR	10-Oct-24	3.5	<0.2	<0.5	<0.5	<0.2	2.9	<0.3	<1	<0.3	<2	<0.2	<0.5	<0.5	0.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.1	1.2	<0.5
BH5-IR	10-Oct-24	<0.2																						<0.4						<0.4						<0.4	<0.4
BH5-IIIR	18-Apr-24	<0.2																						<0.4						<0.4						<0.4	<0.4
BH5-IR	10-Oct-24	<0.2																						<0.4						<0.4						<0.4	<0.4
BH5-IIIR	10-Oct-24	<0.2																						<0.4						<0.4						<0.4	<0.4
BH6R	15-Apr-24	0.9																						<0.4						<0.4						<0.4	<0.4
BH5-IIIR	10-Oct-24	<0.2																						<0.4						<0.4						<0.4	<0.4
BH6R	10-Oct-24	0.3																						<0.4						<0.4						0.6	<0.4
BH11R	11-Apr-24	<0.2																						<0.4						<0.4						<0.4	<0.4
BH11R	09-Jul-24	<0.2																						<0.4						<0.4						<0.4	<0.4
BH11R	02-Oct-24	<0.2																						<0.4						<0.4						<0.4	<0.4
BH17-III	16-Apr-24	<0.2																						<0.4						<0.4						<0.4	<0.4
BH17-III	15-Jul-24	<0.2																						<0.4						<0.4						<0.4	<0.4
BH17-III	10-Oct-24	<0.2																						<0.4						<0.4						<0.4	<0.4
BH21-IR	17-Apr-24	<0.2	<0.2	<0.5	<0.5	<0.2	1.5	<0.3	<1	<0.3	<2	<0.2	<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	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.1	<0.5	<0.5
BH21-IR	17-Jul-24	<0.2	<0.2	<0.5	<0.5	<0.2	1.4	<0.3	<1	<0.3	<2	<0.2	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.1	<0.5	<0.5
BH21-IR	10-Oct-24	<0.2	<0.2	<0.5	<0.5	<0.2	1.8	<0.3	<1	<0.3	<2	<0.2	<0.5	<0.5	0.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.1	<0.5	<0.5
BH21-IIR	17-Apr-24	0.3	<0.2	<0.5	<0.5	<0.2	3.1	<0.3	<1	<0.3	<2	<0.2	<0.5	<0.5	1.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.1	<0.5	<0.5
BH21-IR	10-Oct-24	<0.2	<0.2	<0.5	<0.5	<0.2	1.8	<0.3	<1	<0.3	<2	<0.2	<0.5	<0.5	0.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.1	<0.5	<0.5
BH21-IIR	10-Oct-24	<0.2	<0.2	<0.5	<0.5	<0.2	5	<0.3	<1	<0.3	<2	<0.2	<0.5	<0.5	1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	1.7	<0.5	<0.5	<5	<0.1	<0.5	<0.5
BH22-IR	16-Apr-24	<0.2																						<0.4						<0.4						<0.4	<0.4
BH21-IIR	10-Oct-24	<0.2	<0.2	<0.5	<0.5	<0.2	5	<0.3	<1	<0.3	<2	<0.2	<0.5	<0.5	1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	1.7	<0.5	<0.5	<5	<0.1	<0.5	<0.5
BH22-IR	10-Oct-24	<0.2																						<0.4						0.5						0.4	<0.4
BH22-IIR	16-Apr-24	<0.2																						<0.4						<0.4						<0.4	<0.4
BH22-IR	10-Oct-24	<0.2																						<0.4						0.5						0.4	<0.4
BH22-IIR	10-Oct-24	<0.2																						<0.4						<0.4						<0.4	<0.4
BH26	16-Apr-24	<0.2																						<0.4						<0.4						<0.4	<0.4
BH22-IIR	10-Oct-24	<0.2																						<0.4						<0.4						<0.4	<0.4
BH26	10-Oct-24	<0.2																						<0.4						<0.4						<0.4	<0.4

Table B-7
City of Orillia - Kitchener Street Waste Diversion Site
2024 Duplicate Results - Major Ions and Indicators

ID	LIMS		Date Collected	FPH	FCOND	FTEMP	Hardness (as CaCO3)	Alkalinity (as CaCO3)	Conductivity	pH	Chloride	Nitrite (N)	Nitrate (N)	Sulphate	Calcium	Magnesium	Sodium	Potassium	Ammonia (N) - Total	Total Kjeldahl Nitrogen	Phosphorus - Total	Phenolics	Dissolved Organic Carbon	Ion Balance
			Units		µs/cm		mg/L	mg/L	µmho/cm	pH Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	mg/L	%
			MDL				1	5	1		0.5	0.1	0.1	1	0.02	0.01	0.2	0.1	0.01	0.05	0.01	1	0.2	
BH1-III	4613		08-Apr-24	6.89	-	5.8	320	237	1250	7.01	249.0	<0.05	<0.05	<0.5	83	7.4	127	1.0	0.26	1.3	0.706	1.5	34.0	-2.35
BH501-III	4624		09-Apr-24	6.82	-	5.6	319	250	1340	7.08	269.0	<0.05	<0.05	<0.5	91	8.6	134	1.0	0.42	1.3	0.203	1.4	36.0	-2.18
Relative Percent Difference				**1.0%**	**-**	**3.5%**	**0.3%**	**5.3%**	**6.9%**	**1.0%**	**7.7%**	**-**	**-**	**-**	**9.9%**	**14.8%**	**5.4%**	**1.0%**	**47.1%**	**0.0%**	**110.7%**	**6.9%**	**5.7%**	**-7.5%**
BH2-III	4614		10-Apr-24	6.85	-	7.5	912	1150	2820	6.80	330.0	<0.05	0.09	<0.5	238	79.8	240	43.1	14.90	14.4	0.491	1.0	31.0	3.26
BH2-IIID	4623		10-Apr-24	6.85	-	7.5	935	1160	2860	6.93	336.0	<0.05	<0.05	<0.5	256	84.0	252	44.7	15.60	16.5	0.531	1.0	28.5	5.63
Relative Percent Difference				**0.0%**	**-**	**0.0%**	**2.5%**	**0.9%**	**1.4%**	**1.9%**	**1.8%**	**-**	**-**	**-**	**7.3%**	**5.1%**	**4.9%**	**3.6%**	**4.6%**	**13.6%**	**7.8%**	**0.0%**	**8.4%**	**53.3%**
BH30-I	4606		15-Apr-24	6.77	-	10.8	706	620	1680	7.08	225.0	<0.25	<0.25	7.8	197	52.9	89	3.4	0.19	0.3	0.041	1.1	7.6	4.30
BH30-ID	4608		15-Apr-24	6.77	-	10.8	690	621	1690	7.08	221.0	<0.25	<0.25	7.8	196	49.9	89	3.3	0.25	0.2	0.030	1.0	9.0	3.77
Relative Percent Difference				**0.0%**	**-**	**0.0%**	**2.3%**	**0.2%**	**0.6%**	**0.0%**	**1.8%**	**-**	**-**	**0.0%**	**0.5%**	**5.8%**	**0.9%**	**1.8%**	**27.3%**	**40.0%**	**31.0%**	**9.5%**	**16.9%**	**13.1%**
BH5-IR	4593		18-Apr-24	7.13	-	9.9	1130	474	1250	7.34	143.0	<0.25	<0.25	18.0	128	37.9	68	2.3	0.06	<0.2	5.780	1.1	4.2	1.61
BH505 - IR	4609		18-Apr-24	7.13	-	9.9	936	469	1230	7.32	144.0	<0.15	<0.15	20.9	131	37.1	70	2.2	0.09	<0.2	6.750	1.0	3.9	2.01
Relative Percent Difference				**0.0%**	**-**	**0.0%**	**18.8%**	**1.1%**	**1.6%**	**0.3%**	**0.7%**	**-**	**-**	**14.9%**	**2.3%**	**2.1%**	**2.0%**	**4.0%**	**40.0%**	**-**	**15.5%**	**9.5%**	**7.4%**	**22.1%**
S-1	4627		02-Jul-24	8.10	-	21.0	311	197	1080	7.98	216.0	<0.15	8.62	43.4	87.6	17	103	7.5	0.02	0.7	<5	1.4	6.4	0.95
1D	4638		02-Jul-24	8.10	-	21.0	316	202	1110	8.07	207.0	<0.2	7.00	39.0	92.1	17.5	107	7.3	0.02	0.8	0.038	1.2	6.2	0.98
Relative Percent Difference				**0.0%**	**-**	**0.0%**	**1.6%**	**2.5%**	**2.7%**	**1.1%**	**4.3%**	**-**	**20.7%**	**10.7%**	**2.1%**	**4.3%**	**2.0%**	**2.8%**	**0.0%**	**13.3%**	**197.0%**	**15.4%**	**3.2%**	**3.1%**
S-18	4637		03-Jul-24	7.32	-	13.8	420	358	1370	7.87	243.0	<0.2	0.30	26.0	126	21.0	122	4.9	0.08	0.6	0.108	1	3.2	-0.38
518	4639		03-Jul-24	7.32	-	13.8	415	357	1430	7.89	245.0	<0.2	0.30	21.0	119	21.9	123	4.9	0.10	0.7	0.700	1	3.3	0.38
Relative Percent Difference				**0.0%**	**-**	**0.0%**	**1.2%**	**0.3%**	**4.3%**	**0.3%**	**0.8%**	**-**	**0.0%**	**21.3%**	**0.8%**	**1.8%**	**0.8%**	**1.2%**	**22.2%**	**15.4%**	**146.5%**	**0.0%**	**3.1%**	**0.0%**
BH24R	4653		10-Jul-24	7.06	-	12.6	388	390	1220	7.86	171.0	<0.2	<0.2	<2	135	19.6	102	3.6	0.50	0.7	0.301	1.2	5.1	6.61
BH24RD	4657		10-Jul-24	7.06	-	12.6	375	385	1210	7.83	174.0	<0.2	<0.2	<2	135	19.5	106	3.6	0.49	0.8	0.310	1.2	5.0	7.38
Relative Percent Difference				**0.0%**	**-**	**0.0%**	**3.4%**	**1.3%**	**0.8%**	**0.4%**	**1.7%**	**-**	**-**	**-**	**0.0%**	**0.5%**	**3.8%**	**0.3%**	**2.0%**	**13.3%**	**2.9%**	**0.0%**	**0.0**	**11.0%**
BH23	4652		10-Jul-24	6.90	-	16.0	307	304	984	7.89	142.0	<0.1	<0.1	<1	104	11.0	82	2.4	0.06	0.4	0.443	1.2	5.8	5.59
BH523	4658		10-Jul-24	6.90	-	16.0	305	305	977	7.42	137.0	<0.15	<0.15	<1.5	107	9.0	83	2.3	0.07	0.4	0.446	1.1	5.7	8.05
Relative Percent Difference				**0.0%**	**-**	**0.0%**	**0.7%**	**0.3%**	**0.7%**	**6.1%**	**3.6%**	**-**	**-**	**-**	**2.8%**	**1.9%**	**2.2%**	**3.8%**	**15.4%**	**0.0%**	**0.7%**	**8.7%**	**1.7%**	**36.1%**
BH26	4675		15-Jul-24	6.71	-	13.7	277	312	789	7.58	99.2	<0.05	0.19	5.1	105	14.3	56	6.7	0.03	1.7	0.016	1	9.8	5.96
BH526	4680		15-Jul-24	6.71	-	13.7	305	312	628	7.49	98.8	<0.05	0.19	4.9	105	14.5	55	6.7	0.06	1.0	0.014	1	10.6	6.17
Relative Percent Difference				**0.0%**	**-**	**0.0%**	**9.6%**	**0.0%**	**22.7%**	**1.2%**	**0.4%**	**-**	**0.0%**	**4.0%**	**0.0%**	**1.4%**	**1.8%**	**0.1%**	**66.7%**	**51.9%**	**13.3%**	**0.0%**	**7.8%**	**3.5%**
BH17-IVR	4669	46287	15-Jul-24	6.63	-	13.0	322	316	877	7.77	53	<0.1	3.4	11.3	112	10.0	67	0.8	0.03	1.2	0.049	1.5	4.7	19.10
BH17IVRD	4679	4636	15-Jul-24	6.63	-	13.0	328	406	792	7.59	52.9	<0.05	3.43	11.4	110	13.0	67	0.8	0.03	0.8	0.051	1.5	4.8	8.66
Relative Percent Difference				**0.0%**	**-**	**0.0%**	**1.8%**	**24.9%**	**10.2%**	**2.3%**	**0.2%**	**-**	**0.9%**	**0.9%**	**1.8%**	**1.4%**	**0.3%**	**4.9%**	**0.0%**	**40.0%**	**4.0%**	**0.0%**	**2.1%**	**75.2%**
S-2	4628	46327	25-Sep-24	6.92	-	17.6	280	116	1290	7.44	252.0	<0.1	17.00	105.0	85	17.0	157	15.0	0.03	<0.2	6.7	1	6.3	5.74
502	4636	46357	25-Sep-24	6.92	-	17.6	284	117	1270	7.45	254.0	<0.1	17.30	106.0	85.1	17.0	156	15.0	0.04	<0.2	6.900	1	6.8	5.69
Relative Percent Difference				**0.0%**	**-**	**0.0%**	**1.4%**	**0.9%**	**1.6%**	**0.1%**	**0.8%**	**-**	**1.7%**	**0.9%**	**0.7%**	**1.7%**	**0.6%**	**0.0%**	**28.6%**	**-**	**2.9%**	**0.0%**	**7.6%**	**0.9%**
S-7	4632	4683	26-Sep-24	7.33	-	15.6	332	268	938	7.69	150.0	<0.1	0.1	6.1	98	21.0	79	3.1	<0.01	<0.2	0.007	1.3	7.2	6.99
7D	4635	4695	26-Sep-24	7.33	-	15.6	335	264	927	7.79	153.0	<0.05	0.11	7.9	99.2	21.0	79	3.1	<0.01	<0.2	0.002	1.2	7.2	7.20
Relative Percent Difference				**0.0%**	**-**	**0.0%**	**0.9%**	**1.5%**	**1.2%**	**1.3%**	**2.0%**	**-**	**9.5%**	**25.7%**	**1.2%**	**3.4%**	**0.0%**	**0.6%**	**-**	**-**	**111.1%**	**8.0%**	**0.0%**	**3.0%**
BH1-IR	4683	4686	01-Oct-24	7.05	-	10.7	399	220	1060	7.57	187.0	<0.1	<0.1	13.6	78	50.0	99	1.8	0.07	3.2	0.347	2	20.8	11.22
BH501-IR	4695	4694	01-Oct-24	7.05	-	10.7	292	224	1080	7.74	185.0	<0.05	<0.05	13.5	128	<1	121	2.5	0.07	3.1	0.328	2	20.8	8.93
Relative Percent Difference				**0.0%**	**-**	**0.0%**	**31.0%**	**1.8%**	**1.9%**	**2.2%**	**1.1%**	**-**	**-**	**0.7%**	**48.5%**	**42.4%**	**19.7%**	**31.0%**	**0.0%**	**3.2%**	**5.6%**	**0.0%**	**0.0%**	**22.7%**
BH4-IIR	4686	4667	02-Oct-24	6.94	-	11.2	978	303	1420	7.56	246.0	<0.1	<0.1	27.7	131	158.0	152	2.3	0.29	2.1	2.030	1.9	2.6	31.84
BH4-IIRD	4694	4680	02-Oct-24	6.94	-	11.2	922	302	1420	7.61	238.0	<0.05	<0.05	26.7	131	144.0	154	2.3	<0.01	2.3	0.990	1.9	2.5	30.83
Relative Percent Difference				**0.0%**	**-**	**0.0%**	**5.9%**	**0.3%**	**0.0%**	**0.7%**	**3.3%**	**-**	**-**	**3.7%**	**0.0%**	**0.5%**	**1.3%**	**1.7%**	**-**	**9.1%**	**68.9%**	**0.0%**	**3.9%**	**3.2%**
BH16-I	4667	4578	10-Oct-24	6.94	-	8.8	642	538	1680	7.55	183.0	<0.1	<0.1	<0.5	158	60.0	95	3.2	0.17	1.3	0.027	1.4	7.4	7.28
B516-I	4680	4583	10-Oct-24	6.94	-	8.8	630	538	1690	7.62	178.0	<0.05	<0.05	<0.5	160	56.0	92	26.3	0.03	1.4	0.026	1.6	3.6	9.15
Relative Percent Difference				**0.0%**	**-**	**0.0%**	**1.9%**	**0.0%**	**0.6%**	**0.9%**	**2.8%**	**-**	**-**	**-**	**1.3%**	**2.2%**	**3.5%**	**156.6%**	**140.0%**	**7.4%**	**3.8%**	**13.3%**	**69.1%**	**22.8%**

Table B-8
City of Orillia - Kitchener Street Waste Diversion Site
2024 Duplicate Results - Metals

ID	LIMS	Date Collected	Aluminum	Barium	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Nickel	Selenium	Silver	Zinc
		Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
		MDL	10	1	0.02	2	0.1	2	0.005	0.02	1	10	1	0.02	5
BH1-III	4613	8/Apr/2024	-	-	-	-	-	-	1.09	-	273	-	-	-	-
BH 501 - III	4624	9/Apr/2024	2360	135	0.100	4.0	3.4	13.0	1.03	3.80	344	8.0	0.40	<0.1	39
Relative Percent Difference			-	-	-	-	-	-	**5.7%**	-	**23.0%**	-	-	-	-
BH2-III	4614	10/Apr/24	-	-	-	-	-	-	8.16	-	1070	-	-	-	-
BH2-IIID	4623	10/Apr/24	-	-	-	-	-	-	8.72	-	1120	-	-	-	-
Relative Percent Difference			-	-	-	-	-	-	**6.6%**	-	**4.6%**	-	-	-	-
BH2-IIID	4623	10/Apr/24	-	-	-	-	-	-	8.72	-	1120	-	-	-	-
Relative Percent Difference			-	-	-	-	-	-	**6.6%**	-	**4.6%**	-	-	-	-
BH30-I	4606	15/Apr/24	3	1840	0.016	1.9	0.4	3.0	14.00	<0.05	266	6.6	3.06	0.02	5
BH30-ID	4608	15/Apr/24	3	1810	0.021	0.3	0.4	3.2	14.20	<0.05	297	6.2	2.98	0.01	5
Relative Percent Difference			**0.0%**	**1.6%**	**27.0%**	**145.5%**	**0.0%**	**6.5%**	**1.4%**	-	**11.0%**	**6.2%**	**2.6%**	**66.7%**	**0.0%**
BH5-IR	4593	18/Apr/2024	2	3320	0.009	2.0	0.3	2.1	3.19	<0.05	250	4.1	0.50	<0.01	4
BH505 - IR	4609	18/Apr/2024	3	3490	0.011	1.8	0.3	2.8	3.29	<0.05	243	4.2	0.66	0.01	7
Relative Percent Difference			**40.0%**	**5.0%**	**20.0%**	**10.5%**	**0.0%**	**28.6%**	**3.1%**	-	**2.8%**	**2.4%**	**27.6%**	-	**54.5%**
S-1	4627	2/Jul/24	178	115	<0.1	2.0	2.9	3.0	0.17	0.10	36	2.0	0.70	<0.1	15
1D	4638	2/Jul/24	183	112	<0.1	2.0	2.8	3.0	0.18	0.10	35	2.0	0.60	<0.1	16
Relative Percent Difference			**2.8%**	**2.6%**	-	**0.0%**	**3.5%**	**0.0%**	**5.7%**	**0.0%**	**2.8%**	**0.0%**	**15.4%**	-	**6.5%**
S-18	4637	3/Jul/2024	10	199	<0.1	3.0	0.6	3.0	0.41	<0.1	293	3.0	0.80	<0.1	52
518	4639	3/Jul/2024	5	201	<0.1	2.0	0.6	3.0	0.45	<0.1	291	3.0	1.00	<0.1	57
Relative Percent Difference			**66.7%**	**1.0%**	-	**40.0%**	**0.0%**	**0.0%**	**10.7%**	-	**0.7%**	**0.0%**	**22.2%**	-	**9.2%**
BH24R	4653	10/Jul/24	-	-	-	-	-	-	7.98	-	1620	-	-	-	-
BH24RD	4657	10/Jul/24	-	-	-	-	-	-	8.06	-	1690	-	-	-	-
Relative Percent Difference			-	-	-	-	-	-	**1.0%**	-	**4.2%**	-	-	-	-
BH23	4652	10-Jul-24	-	-	-	-	-	-	4.16	-	614	-	-	-	-
BH523	4658	10-Jul-24	-	-	-	-	-	-	4.66	-	615	-	-	-	-
Relative Percent Difference			-	-	-	-	-	-	**11.3%**	-	**0.2%**	-	-	-	-
BH26	4675	15-Jul-24	15	102	0.023	0.7	0.4	2.3	0.088	<0.05	26.9	1.5	0.64	<0.01	<1
BH526	4680	15-Jul-24	19	106	0.024	0.7	0.4	2.5	0.094	<0.05	28.2	1.5	0.57	<0.01	1
Relative Percent Difference			**23.5%**	**3.8%**	**4.3%**	**0.0%**	**0.0%**	**8.3%**	**6.6%**	-	**4.7%**	**0.0%**	**11.6%**	-	-
BH17-IVR	4669	15-Jul-24	6	77.2	0.009	0.5	0.4	3.7	0.09	<0.05	14.7	1.5	0.41	<0.01	<1
BH17IVRD	4679	15-Jul-24	6	77.7	0.014	0.5	0.4	3.8	0.09	<0.05	15.2	1.5	0.39	<0.01	<1
Relative Percent Difference			**0.0%**	**0.6%**	**43.5%**	**0.0%**	**0.0%**	**2.7%**	**0.0%**	-	**3.3%**	**0.0%**	**5.0%**	-	-
OW4-I	4651	23-Sep-24	3	1570	0.038	8.3	1.9	1.1	26.1	0.15	459	3.2	0.49	<0.01	8
OW504-I	4661	23-Sep-24	3	1540	0.031	6.8	1.9	1.0	25.6	0.11	455	3.2	1.07	<0.01	8
Relative Percent Difference			**0.0%**	**1.9%**	**20.3%**	**19.9%**	**0.0%**	**9.5%**	**1.9%**	**30.8%**	**0.9%**	**0.0%**	**74.4%**	-	**0.0%**
OW2-I	4649	24/Sep/2024	5	1900	0.066	10.1	14.9	3.0	50.5	0.15	376	16.3	1.75	0.01	6
OW2-IID	4660	24/Sep/2024	4	1880	0.058	8.5	13.2	2.4	49.1	0.11	373	15.8	1.95	0.01	6
Relative Percent Difference			**22.2%**	**1.1%**	**12.9%**	**17.2%**	**12.1%**	**22.2%**	**2.8%**	**30.8%**	**0.8%**	**3.1%**	**10.8%**	**0.0%**	**0.0%**
S-2	4628	25-Sep-24	67	66	<0.1	<1	13.7	3.0	0.08	0.20	7	2.0	0.40	<0.1	17
502	4636	25-Sep-24	74	64	<0.1	<1	13.6	3.0	0.09	0.20	7	2.0	<0.2	<0.1	22
Relative Percent Difference			**9.9%**	**3.1%**	-	-	**0.7%**	**0.0%**	**13.8%**	**0.0%**	**0.0%**	**0.0%**	-	-	**25.6%**
S-7	4632	26-Sep-24	2	165	<0.1	<1	0.2	2.0	0.23	<0.1	60	<1	0.4	<0.1	14
7D	4635	26-Sep-24	4	166	<0.1	<1	0.2	1.0	0.25	<0.1	63	<1	<0.2	<0.1	16
Relative Percent Difference			**66.7%**	**0.6%**	-	-	**0.0%**	**66.7%**	**8.9%**	-	**4.9%**	-	-	-	**13.3%**
BH1-IR	4683	01-Oct-24	-	-	-	-	-	-	2.55	-	356	-	-	-	-
BH501-IR	4695	01-Oct-24	-	-	-	-	-	-	5.97	-	600	-	-	-	-
Relative Percent Difference			-	-	-	-	-	-	**80.3%**	-	**51.0%**	-	-	-	-
BH4-IIR	4686	02-Oct-24	-	-	-	-	-	-	0.53	-	94	-	-	-	-
BH4-IIRD	4694	02-Oct-24	-	-	-	-	-	-	0.56	-	104	-	-	-	-
Relative Percent Difference			-	-	-	-	-	-	**4.6%**	-	**10.0%**	-	-	-	-
BH21-IR	4672	10-Oct-24	-	-	-	-	-	-	26.10	-	1120	-	-	-	-
21IRD	4679	10-Oct-24	-	-	-	-	-	-	24.70	-	1070	-	-	-	-
Relative Percent Difference			-	-	-	-	-	-	**5.5%**	-	**4.6%**	-	-	-	-
BH16-I	4667	10-Oct-24	-	-	-	-	-	-	8.54	-	67	-	-	-	-
B516-I	4680	10-Oct-24	-	-	-	-	-	-	12.90	-	164	-	-	-	-
Relative Percent Difference			-	-	-	-	-	-	**40.7%**	-	**84.0%**	-	-	-	-

Table B-9
City of Orillia - Kitchener Street Waste Diversion Site
2024 Duplicate Results - VOC

ID	LIMS	Date Collected	Benzene	Bromodichloromethane	Bromoform	Bromomethane	Carbon Tetrachloride	Monochlorobenzene (Chlorobenzene)	Chloroethane	Chloroform	Chloromethane	Dibromochloromethane	Dibromoethane,1,2- (Ethylene Dibromide)	Dichlorobenzene,1,2-	Dichlorobenzene,1,3-	Dichlorobenzene,1,4-	Dichloroethane,1,1-	Dichloroethane,1,2-	Dichloroethene,1,1-	Dichloroethene, cis-1,2-	Dichloroethene, trans-1,2-	Dichloropropane,1,2-	Dichloropropene, cis-1,3	Dichloropropene, trans-1,3	Ethylbenzene	Dichloromethane (Methylene Chloride)	Styrene	Tetrachloroethane,1,1,1,2-	Tetrachloroethane,1,1,2,2-	Tetrachloroethylene	Toluene	Trichloroethane,1,1,1-	Trichloroethane,1,1,2-	Trichloroethylene	Trichlorofluoromethane	Vinyl Chloride	Xylene, m,p-	Xylene, o-
		Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
		MDL	0.5	0.5	0.5	0.5	0.2	0.5	5	0.3	5	0.5	0.2	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	5	0.2	0.5	0.5
BH5-IR	4593	18-Apr-24	<0.2													102.0								<0.4						<0.4						<0.4	<0.4
BH505 - IR	4609	18-Apr-24	<0.2													101.0								<0.4						<0.4						<0.4	<0.4
Relative Percent Difference			-	-	-	-	-	-	-	-	-	-	-	-	-	**1.0%**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH26	4675	15-Jul-24	<0.2													100.0								<0.4						<0.4						<0.4	<0.4
BH526	4680	15-Jul-24	<0.2													105.0								<0.4						<0.4						<0.4	<0.4
Relative Percent Difference			-	-	-	-	-	-	-	-	-	-	-	-	-	**4.9%**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH21-IR	4672	10-Oct-24	<0.2	<0.2	<0.5	<0.5	<0.2	4.1	<0.3	<1	<0.3	<2	<0.2	<0.5	<0.5	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	1.3	<0.5	<0.5	<0.5	<5	<0.1	<0.5	<0.5
21IRD	4679	10-Oct-24	<0.2	<0.2	<0.5	<0.5	<0.2	2.1	<0.3	<1	<0.3	<2	<0.2	<0.5	<0.5	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.1	<0.5	<0.5
Relative Percent Difference			-	-	-	-	-	**64.5%**	-	-	-	-	-	-	-	**0.0%**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table B-10
City of Orillia - Kitchener Street Waste Diversion Site
2024 WWTC Daily Flows

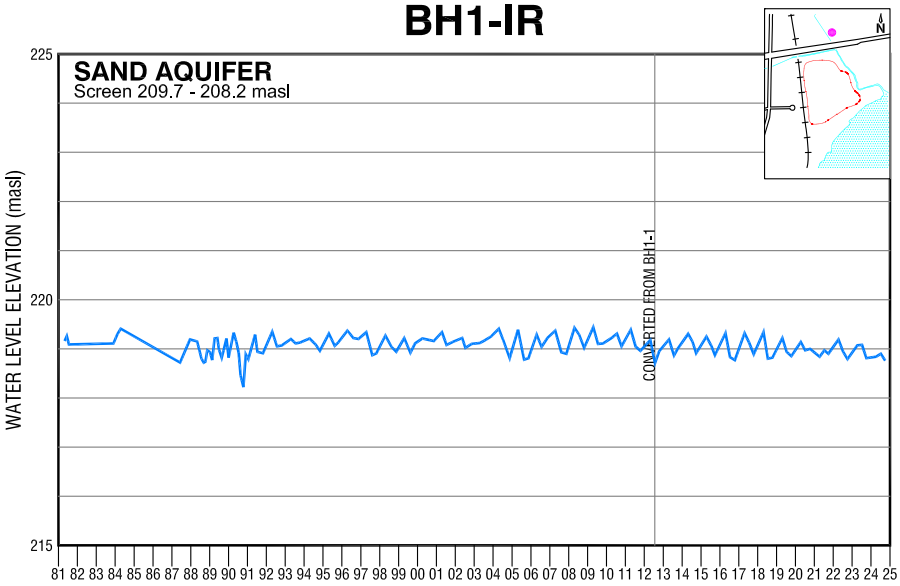
JAN	FLOW m3	FEB	FLOW m3	MAR	FLOW m3	APR	FLOW m3	MAY	FLOW m3	JUNE	FLOW m3	JULY	FLOW m3	AUG	FLOW m3	SEPT	FLOW m3	OCT	FLOW m3	NOV	FLOW m3	DEC	FLOW m3
1	14,112	1	14,354	1	15,110	1	12,728	1	23967.2	1	11,684	1	11,435	1	10,718	1	10,229	1	10396	1	10,027.2	1	10,094
2	15,062	2	15,453	2	15,282	2	13,425	2	21793.7	2	12,624	2	12,472	2	11,583	2	10,876	2	11606	2	11,159.1	2	10,400
3	14,521	3	15,468	3	15,209	3	22,298	3	19849.7	3	12,374	3	12,442	3	10,845	3	10,793	3	10683	3	10,677.4	3	11,014
4	14,829	4	14,594	4	15,760	4	29,600	4	18701.1	4	12,695	4	12,579	4	10,999	4	10,995	4	10530	4	9,846.0	4	10,654
5	14,079	5	14,625	5	15,849	5	29,839	5	17102.4	5	12,242	5	11,905	5	11,344	5	10,939	5	10288	5	10,228.2	5	11,271
6	13,370	6	14,269	6	15,494	6	26,645	6	15886	6	12,112	6	12,178	6	11,279	6	10,649	6	10717	6	10,513.2	6	11,200
7	13,497	7	14,230	7	15,870	7	23,183	7	16435.9	7	11,979	7	11,513	7	10,945	7	10,630	7	10426	7	10,199.0	7	10,736
8	12,888	8	13,889	8	15,191	8	20,617	8	15575.9	8	11,435	8	12,007	8	11,166	8	10,355	8	10544	8	10,170.8	8	11,705
9	13,417	9	14,298	9	22,395	9	19,792	9	16002.3	9	11,816	9	11,695	9	11,255	9	10,660	9	10563	9	9,923.7	9	11,237
10	17,191	10	15,067	10	19,534	10	18,457	10	13879.8	10	12,312	10	15,170	10	11,104	10	10,647	10	10610	10	10,050.7	10	12,037
11	14,813	11	15,416	11	18,350	11	20,194	11	13665.2	11	11,972	11	25,989	11	10,906	11	10,813	11	10776	11	10,278.8	11	13,270
12	14,530	12	14,321	12	17,344	12	37,648	12	13671.3	12	11,269	12	16,266	12	11,293	12	10,871	12	10475	12	10,419.4	12	12,668
13	16,337	13	14,257	13	16,223	13	37,159	13	13892.2	13	12,198	13	14,251	13	11,091	13	10,422	13	10201	13	10,304.3	13	12,562
14	14,917	14	14,200	14	16,230	14	30,719	14	15079.5	14	12,191	14	14,572	14	11,532	14	10,311	14	10218	14	9,950.6	14	12,010
15	14,652	15	14,001	15	20,646	15	26,780	15	14541.7	15	11,395	15	13,899	15	10,653	15	10,402	15	10523	15	10,302.3	15	12,047
16	14,478	16	13,762	16	18,179	16	22,276	16	13623.5	16	11,221	16	13,838	16	11,155	16	10,830	16	10580	16	10,318.9	16	13,064
17	14,085	17	13,299	17	17,861	17	22,118	17	13671.4	17	12,219	17	12,940	17	11,621	17	10,556	17	10753	17	9,989.6	17	16,314
18	13,527	18	13,213	18	16,793	18	26,211	18	13236.4	18	11,814	18	12,700	18	11,890	18	10,682	18	10943	18	10,313.8	18	15,310
19	13,186	19	13,137	19	16,216	19	24,649	19	12834.2	19	12,223	19	12,668	19	10,659	19	10,522	19	12948	19	9,894.0	19	14,580
20	13,272	20	13,180	20	16,093	20	22,535	20	13052.5	20	13,038	20	12,380	20	10,881	20	10,893	20	10590	20	10,025.9	20	13,251
21	12,983	21	12,929	21	15,416	21	20,711	21	13701.5	21	12,636	21	11,889	21	10,891	21	10,351	21	10612	21	11,365.7	21	13,069
22	12,961	22	14,032	22	14,995	22	19,035	22	13785.8	22	14,703	22	11,962	22	11,156	22	10,584	22	10635	22	10,453.6	22	12,419
23	12,499	23	14,037	23	14,695	23	18,115	23	13410.8	23	18,347	23	12,138	23	10,488	23	10,603	23	11063	23	10,513.8	23	12,092
24	12,315	24	13,629	24	14,446	24	17,721	24	12541.8	24	14,279	24	12,800	24	10,778	24	10,779	24	10739	24	10,514.6	24	11,869
25	13,227	25	13,790	25	14,765	25	17,228	25	12167.6	25	14,273	25	12,347	25	10,368	25	11,484	25	12347	25	10,257.1	25	10,755
26	17,161	26	13,389	26	14,538	26	16,027	26	12596	26	14,098	26	12,167	26	10,756	26	10,990	26	10657	26	11,339.5	26	11,386
27	16,518	27	13,683	27	15,275	27	16,337	27	15405.5	27	12,962	27	11,284	27	10,704	27	10,612	27	10100	27	11,126.5	27	11,291
28	16,300	28	16,210	28	14,527	28	17,157	28	14737.9	28	12,555	28	11,210	28	10,633	28	10,977	28	10249	28	10,870.8	28	11,827
29	15,598	29	15,571	29	13,756	29	29,059	29	13484.4	29	12,451	29	11,398	29	10,448	29	10,658	29	10450	29	10,608.4	29	16,017
30	14,731			30	13,621	30	28,642	30	13146	30	12,347	30	11,968	30	10,850	30	10,797	30	10683	30	10,247.8	30	25,251
31	15,038			31	13,300			31	12464.8			31	11,313	31	11,627			31	11020			31	19,869
TOTAL	446,091		412,301		498,960		686,902		463,904		379,462		403,375		341,615		310,679		332,920		311,891		401,266

YEARLY TOTAL **4,989,366 m³**

APPENDIX C

Water Level Hydrographs

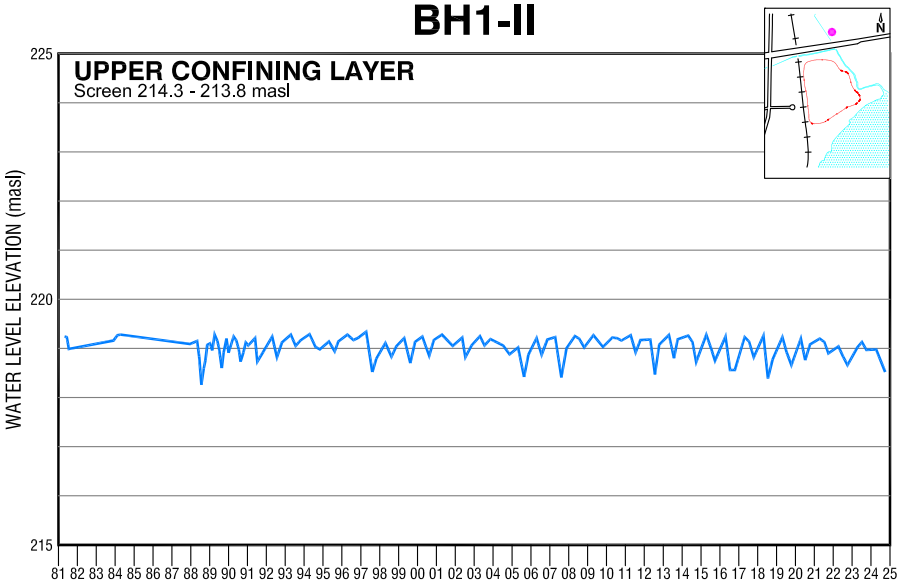
BH1-IR



MP Elevation 220.08 masl

DATE	ELEVATION	DATE	ELEVATION
21-Jul-08	219.29	17-Oct-16	218.77
27-Oct-08	219.02	24-Apr-17	219.32
21-Apr-09	219.44	18-Jul-17	219.13
21-Jul-09	219.10	17-Oct-17	218.89
27-Oct-09	219.11	23-Apr-18	219.34
22-Apr-10	219.23	16-Jul-18	218.80
21-Jul-10	219.31	15-Oct-18	218.82
19-Oct-10	219.05	23-Apr-19	219.22
14-Apr-11	219.39	15-Jul-19	218.94
19-Jul-11	219.04	15-Oct-19	218.85
20-Oct-11	218.96	14-Apr-20	219.14
27-Apr-12	219.18	08-Jul-20	218.97
26-Jul-12	218.71	08-Oct-20	219.00
15-Oct-12	218.95	13-Apr-21	218.84
22-Apr-13	219.19	12-Jul-21	218.97
29-Jul-13	218.87	29-Sep-21	218.90
08-Oct-13	219.00	11-Apr-22	219.19
28-Apr-14	219.30	11-Jul-22	218.94
21-Jul-14	219.15	04-Oct-22	218.79
30-Sep-14	218.91	11-Apr-23	219.07
15-Apr-15	219.25	10-Jul-23	219.08
20-Jul-15	219.06	04-Oct-23	218.81
28-Sep-15	218.87	08-Apr-24	218.84
19-Apr-16	219.32	08-Jul-24	218.90
17-Jul-16	218.83	01-Oct-24	218.76

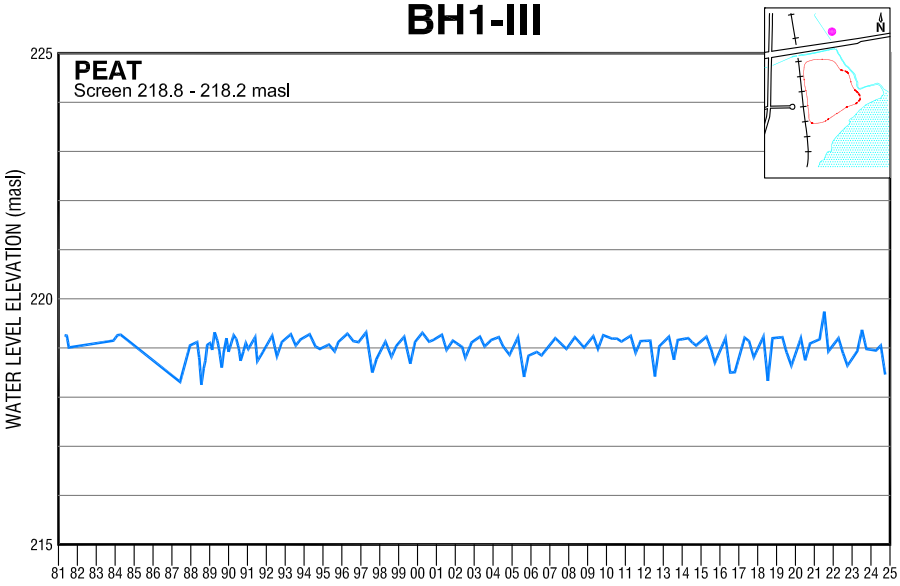
BH1-II



MP Elevation 220.12 masl

DATE	ELEVATION	DATE	ELEVATION
29-Apr-08	219.25	17-Oct-16	218.56
21-Jul-08	219.20	24-Apr-17	219.23
27-Oct-08	219.02	18-Jul-17	219.14
22-Apr-09	219.27	17-Oct-17	218.82
27-Oct-09	219.03	23-Apr-18	219.26
22-Apr-10	219.22	16-Jul-18	218.41
21-Jul-10	219.21	24-Jul-18	218.41
19-Oct-10	219.16	15-Oct-18	218.77
14-Apr-11	219.27	23-Apr-19	219.23
19-Jul-11	218.92	15-Jul-19	218.92
19-Oct-11	219.17	15-Oct-19	218.66
27-Apr-12	219.18	14-Apr-20	219.20
26-Jul-12	218.47	08-Jul-20	218.76
15-Oct-12	219.07	08-Oct-20	219.08
22-Apr-13	219.27	13-Apr-21	219.20
29-Jul-13	218.80	12-Jul-21	219.13
08-Oct-13	219.18	29-Sep-21	218.90
28-Apr-14	219.26	11-Apr-22	219.04
21-Jul-14	219.13	11-Jul-22	218.83
30-Sep-14	218.72	04-Oct-22	218.66
15-Apr-15	219.28	11-Apr-23	219.02
20-Jul-15	218.99	10-Jul-23	219.13
28-Sep-15	218.75	04-Oct-23	218.97
19-Apr-16	219.24	08-Apr-24	218.98
17-Jul-16	218.56	01-Oct-24	218.52

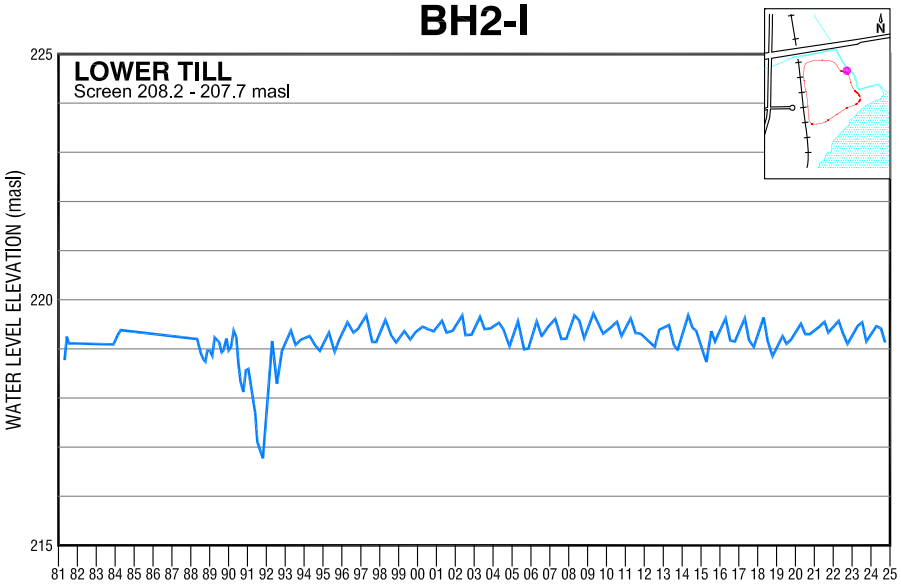
BH1-III



MP Elevation 220.22 masl

DATE	ELEVATION	DATE	ELEVATION
29-Apr-08	219.22	17-Oct-16	218.51
27-Oct-08	219.01	24-Apr-17	219.21
21-Apr-09	219.24	18-Jul-17	219.14
21-Jul-09	218.98	17-Oct-17	218.81
29-Oct-09	219.26	23-Apr-18	219.23
21-Apr-10	219.19	16-Jul-18	218.33
21-Jul-10	219.19	15-Oct-18	219.20
19-Oct-10	219.13	23-Apr-19	219.22
12-Apr-11	219.25	15-Jul-19	218.91
19-Jul-11	218.90	15-Oct-19	218.64
19-Oct-11	219.14	14-Apr-20	219.20
25-Apr-12	219.15	08-Jul-20	218.75
26-Jul-12	218.42	08-Oct-20	219.09
15-Oct-12	219.03	13-Apr-21	219.18
22-Apr-13	219.23	12-Jul-21	219.74
29-Jul-13	218.76	29-Sep-21	218.93
08-Oct-13	219.16	11-Apr-22	219.20
28-Apr-14	219.20	11-Jul-22	218.89
21-Jul-14	219.11	04-Oct-22	218.64
30-Sep-14	219.05	11-Apr-23	218.94
15-Apr-15	219.23	10-Jul-23	219.37
20-Jul-15	218.96	04-Oct-23	218.98
28-Sep-15	218.70	08-Apr-24	218.95
19-Apr-16	219.20	08-Jul-24	219.05
17-Jul-16	218.50	01-Oct-24	218.46

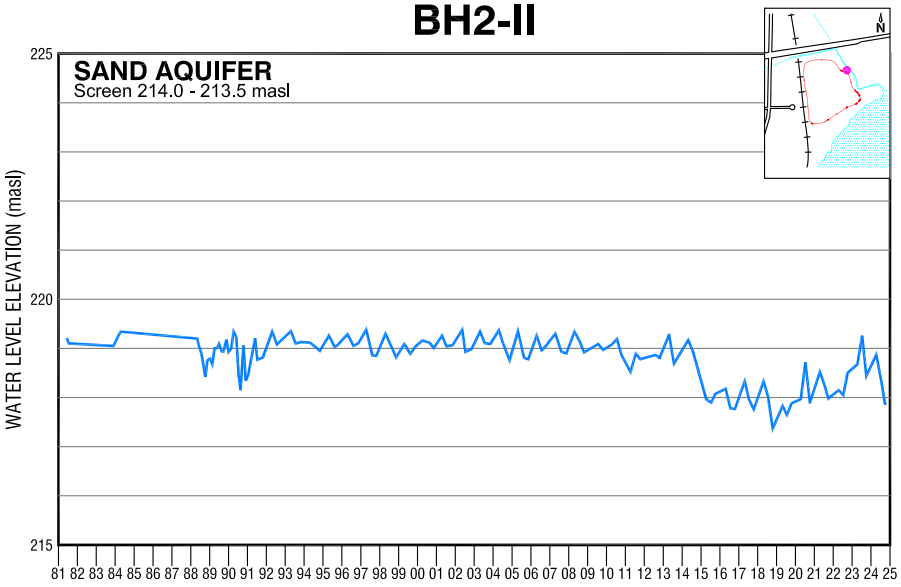
BH2-I



MP Elevation 220.68 masl

DATE	ELEVATION	DATE	ELEVATION
21-Apr-08	219.68	20-Oct-16	219.15
22-Jul-08	219.58	25-Apr-17	219.62
28-Oct-08	219.22	21-Jul-17	219.17
21-Apr-09	219.72	19-Oct-17	219.04
29-Oct-09	219.31	25-Apr-18	219.64
21-Apr-10	219.46	19-Jul-18	219.14
20-Jul-10	219.55	18-Oct-18	218.85
19-Oct-10	219.26	26-Apr-19	219.26
12-Apr-11	219.62	15-Jul-19	219.10
19-Jul-11	219.32	18-Oct-19	219.20
19-Oct-11	219.31	15-Apr-20	219.51
25-Jul-12	219.04	10-Jul-20	219.30
15-Oct-12	219.38	08-Oct-20	219.30
23-Apr-13	219.49	16-Apr-21	219.46
29-Jul-13	219.07	14-Jul-21	219.55
08-Oct-13	218.98	29-Sep-21	219.33
09-Oct-13	218.98	14-Apr-22	219.57
29-Apr-14	219.68	14-Jul-22	219.30
22-Jul-14	219.43	05-Oct-22	219.10
29-Sep-14	219.37	13-Apr-23	219.46
16-Apr-15	218.73	13-Jul-23	219.54
20-Jul-15	219.36	03-Oct-23	219.15
30-Sep-15	219.15	10-Apr-24	219.46
20-Apr-16	219.62	09-Jul-24	219.42
22-Jul-16	219.17	02-Oct-24	219.13

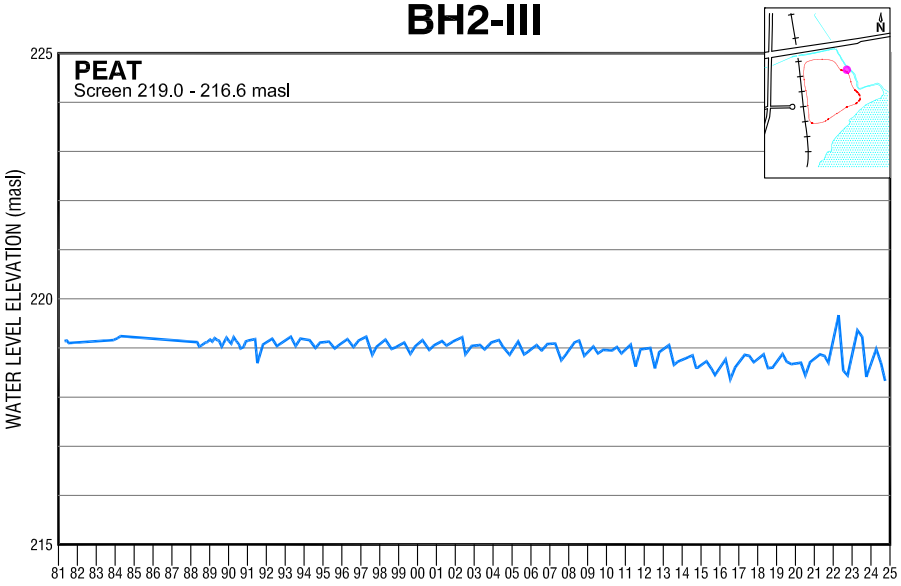
BH2-II



MP Elevation 220.48 masl

DATE	ELEVATION	DATE	ELEVATION
21-Apr-08	219.34	25-Apr-17	218.33
22-Jul-08	219.16	21-Jul-17	217.95
28-Oct-08	218.92	19-Oct-17	217.76
21-Jul-09	219.09	25-Apr-18	218.33
29-Oct-09	218.97	19-Jul-18	218.03
21-Apr-10	219.09	18-Oct-18	217.37
20-Jul-10	219.19	26-Apr-19	217.83
19-Oct-10	218.86	19-Jul-19	217.65
12-Apr-11	218.52	18-Oct-19	217.88
19-Jul-11	218.89	15-Apr-20	217.97
19-Oct-11	218.78	10-Jul-20	218.72
25-Jul-12	218.87	07-Oct-20	217.90
15-Oct-12	218.82	08-Oct-20	217.90
17-Oct-12	218.79	16-Apr-21	218.52
23-Apr-13	219.27	14-Jul-21	218.26
24-Apr-13	219.27	29-Sep-21	217.98
29-Jul-13	218.69	14-Apr-22	218.15
29-Apr-14	219.17	14-Jul-22	218.05
22-Jul-14	218.96	05-Oct-22	218.50
16-Apr-15	217.96	13-Apr-23	218.68
21-Jul-15	217.90	13-Jul-23	219.26
30-Sep-15	218.07	03-Oct-23	218.44
20-Apr-16	218.18	10-Apr-24	218.87
22-Jul-16	217.78	09-Jul-24	218.38
20-Oct-16	217.77	02-Oct-24	217.85

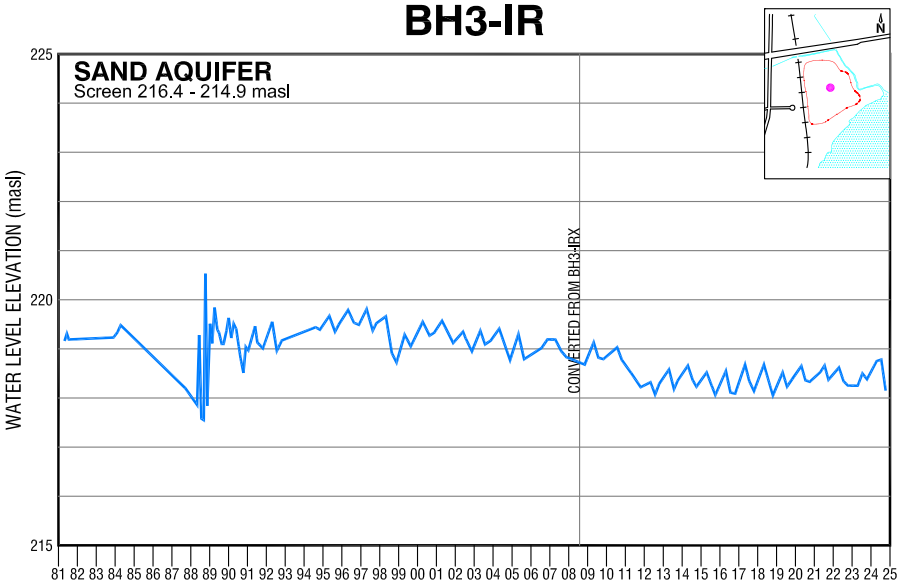
BH2-III



MP Elevation 220.48 masl

DATE	ELEVATION	DATE	ELEVATION
28-Oct-08	218.84	20-Oct-16	218.60
22-Apr-09	219.03	25-Apr-17	218.86
21-Jul-09	218.89	21-Jul-17	218.84
28-Oct-09	218.96	19-Oct-17	218.71
22-Apr-10	218.95	25-Apr-18	218.87
20-Jul-10	219.02	19-Jul-18	218.59
19-Oct-10	218.89	18-Oct-18	218.60
12-Apr-11	219.07	26-Apr-19	218.88
19-Jul-11	218.62	19-Jul-19	218.72
19-Oct-11	218.97	18-Oct-19	218.67
25-Apr-12	219.00	15-Apr-20	218.70
25-Jul-12	218.59	10-Jul-20	218.44
15-Oct-12	218.91	08-Oct-20	218.71
23-Apr-13	219.06	16-Apr-21	218.87
29-Jul-13	218.65	14-Jul-21	218.84
08-Oct-13	218.72	29-Sep-21	218.70
29-Apr-14	218.81	14-Apr-22	219.67
22-Jul-14	218.85	14-Jul-22	218.54
29-Sep-14	218.60	05-Oct-22	218.44
29-Oct-14	218.60	13-Apr-23	219.36
16-Apr-15	218.73	13-Jul-23	219.23
21-Jul-15	218.58	03-Oct-23	218.41
30-Sep-15	218.45	10-Apr-24	218.98
20-Apr-16	218.77	09-Jul-24	218.70
22-Jul-16	218.36	02-Oct-24	218.33

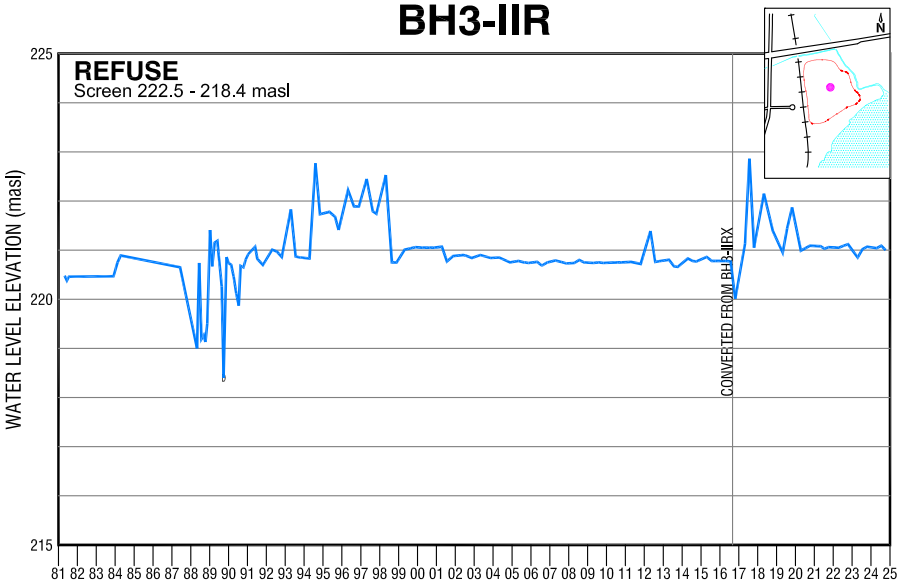
BH3-IR



MP Elevation 234.68 masl

DATE	ELEVATION	DATE	ELEVATION
14-Nov-06	219.19	25-Jul-16	218.11
16-Apr-07	219.19	25-Oct-16	218.09
13-Aug-07	218.95	01-May-17	218.68
20-Nov-07	218.83	25-Jul-17	218.34
06-Nov-08	218.68	23-Oct-17	218.14
28-Apr-09	219.13	01-May-18	218.68
28-Jul-09	218.82	22-Oct-18	218.05
03-Nov-09	218.79	29-Apr-19	218.52
26-Jul-10	219.03	23-Jul-19	218.23
25-Oct-10	218.77	28-Oct-19	218.38
20-Apr-11	218.51	23-Apr-20	218.65
24-Oct-11	218.22	13-Jul-20	218.36
30-Apr-12	218.32	06-Oct-20	218.33
30-Jul-12	218.07	29-Apr-21	218.53
15-Oct-12	218.29	16-Jul-21	218.66
23-Apr-13	218.58	01-Oct-21	218.37
30-Jul-13	218.18	21-Apr-22	218.62
08-Oct-13	218.35	19-Jul-22	218.34
22-Apr-14	218.66	13-Oct-22	218.25
28-Jul-14	218.36	19-Apr-23	218.25
06-Oct-14	218.23	19-Jul-23	218.50
21-Apr-15	218.52	16-Oct-23	218.38
27-Jul-15	218.25	18-Apr-24	218.75
05-Oct-15	218.06	17-Jul-24	218.78
26-Apr-16	218.55	10-Oct-24	218.15

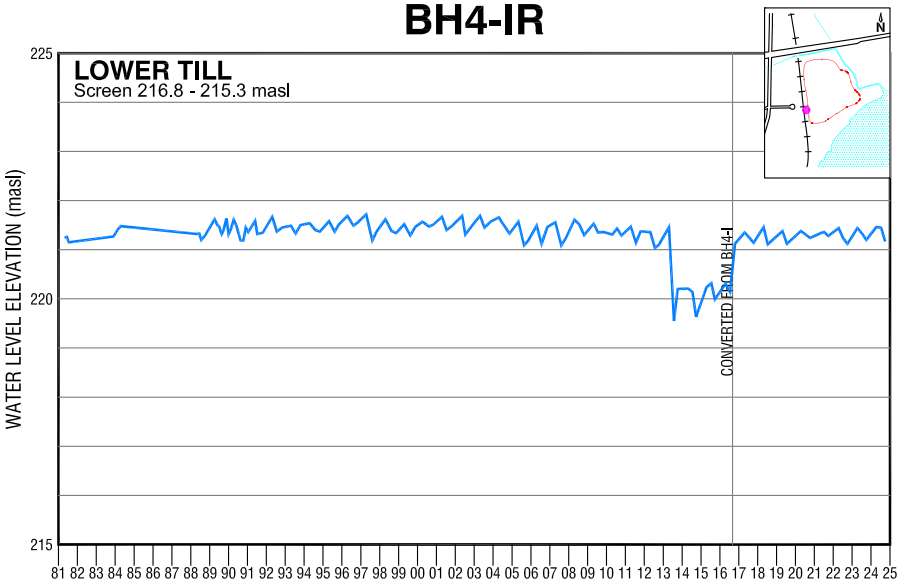
BH3-IIR



MP Elevation 235.59 masl

DATE	ELEVATION	DATE	ELEVATION
13-Aug-07	220.76	25-Jul-16	220.77
20-Nov-07	220.73	25-Oct-16	220.01
21-Apr-08	220.74	01-May-17	221.13
21-Jul-08	220.80	25-Jul-17	222.86
27-Oct-08	220.75	23-Oct-17	221.05
27-Apr-09	220.74	01-May-18	222.15
28-Jul-09	220.75	22-Oct-18	221.39
03-Nov-09	220.74	29-Apr-19	220.95
26-Jul-10	220.75	23-Jul-19	221.44
25-Oct-10	220.75	28-Oct-19	221.87
19-Apr-11	220.76	16-Apr-20	220.99
25-Oct-11	220.72	13-Jul-20	221.04
01-May-12	221.39	06-Oct-20	221.09
30-Jul-12	220.76	29-Apr-21	221.08
15-Oct-12	220.77	16-Jul-21	221.03
23-Apr-13	220.80	01-Oct-21	221.06
30-Jul-13	220.67	21-Apr-22	221.05
08-Oct-13	220.66	19-Jul-22	221.09
22-Apr-14	220.83	13-Oct-22	221.12
28-Jul-14	220.78	19-Apr-23	220.85
06-Oct-14	220.77	19-Jul-23	221.02
21-Apr-15	220.86	16-Oct-23	221.07
29-Jul-15	220.78	18-Apr-24	221.04
05-Oct-15	220.78	17-Jul-24	221.09
25-Apr-16	220.78	10-Oct-24	221.00

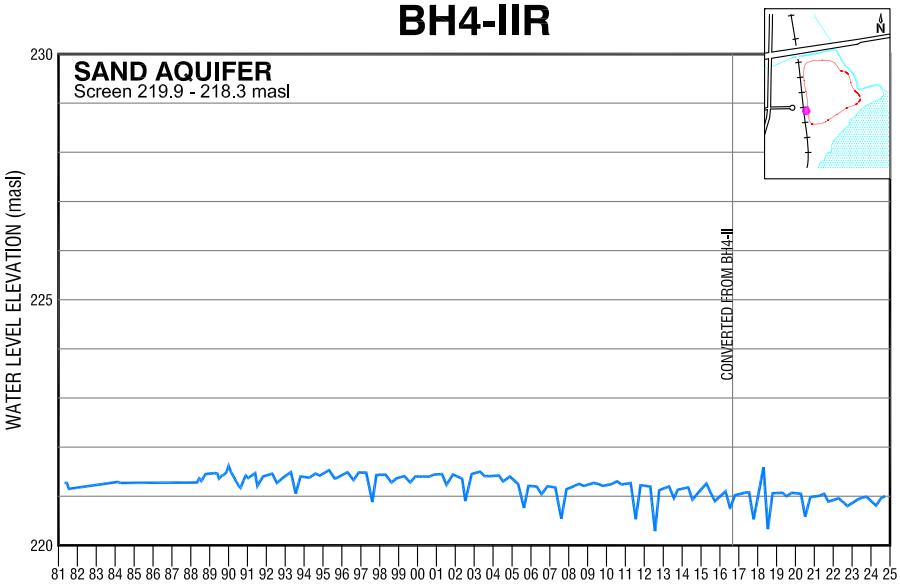
BH4-IR



MP Elevation 222.38 masl

DATE	ELEVATION	DATE	ELEVATION
13-Aug-07	221.09	28-Sep-15	219.99
19-Nov-07	221.26	19-Apr-16	220.31
21-Apr-08	221.61	17-Jul-16	220.14
21-Jul-08	221.52	18-Oct-16	221.12
27-Oct-08	221.30	24-Apr-17	221.35
27-Apr-09	221.53	19-Jul-17	221.25
24-Jul-09	221.35	16-Oct-17	221.14
27-Oct-09	221.36	24-Apr-18	221.46
26-Apr-10	221.31	17-Jul-18	221.11
22-Jul-10	221.43	23-Apr-19	221.38
20-Oct-10	221.29	23-Jul-19	221.12
14-Apr-11	221.47	14-Apr-20	221.38
25-Jul-11	221.15	13-Oct-20	221.24
20-Oct-11	221.37	14-Apr-21	221.33
26-Apr-12	221.36	08-Jul-21	221.36
27-Jul-12	221.04	28-Sep-21	221.28
15-Oct-12	221.11	14-Apr-22	221.44
22-Apr-13	221.46	13-Jul-22	221.23
29-Jul-13	219.55	04-Oct-22	221.12
08-Oct-13	220.20	12-Apr-23	221.44
28-Apr-14	220.21	11-Jul-23	221.33
21-Jul-14	220.14	03-Oct-23	221.20
30-Sep-14	219.63	10-Apr-24	221.46
15-Apr-15	220.23	12-Jul-24	221.45
20-Jul-15	220.32	02-Oct-24	221.17

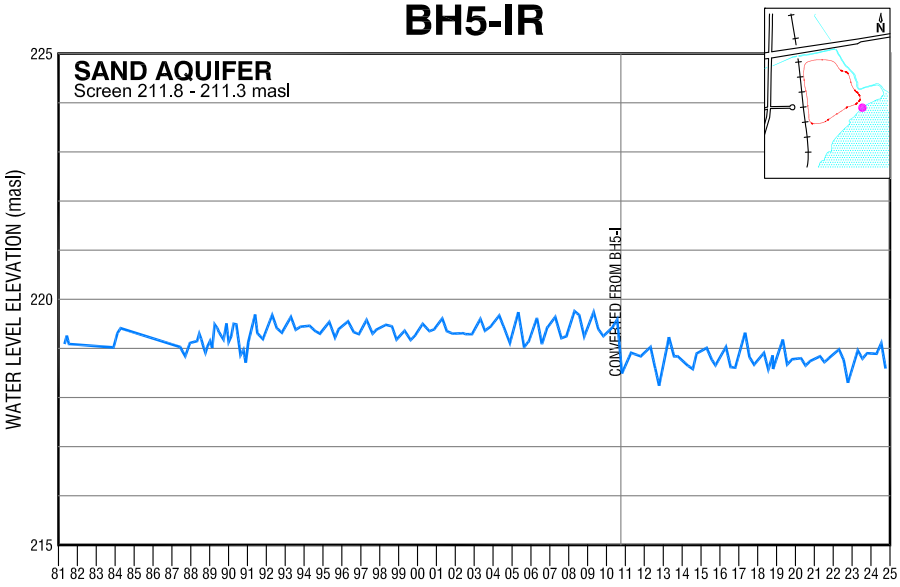
BH4-IIR



MP Elevation 222.37 masl

DATE	ELEVATION	DATE	ELEVATION
27-Oct-08	221.21	18-Oct-16	221.02
23-Apr-09	221.27	24-Apr-17	221.07
24-Jul-09	221.25	19-Jul-17	221.08
27-Oct-09	221.21	16-Oct-17	220.53
22-Apr-10	221.25	24-Apr-18	221.59
22-Jul-10	221.30	17-Jul-18	220.33
20-Oct-10	221.24	16-Oct-18	221.06
14-Apr-11	221.27	23-Apr-19	221.07
21-Jul-11	220.53	16-Jul-19	221.00
20-Oct-11	221.22	17-Oct-19	221.07
26-Apr-12	221.20	14-Apr-20	221.05
27-Jul-12	220.29	09-Jul-20	220.58
15-Oct-12	221.12	13-Oct-20	220.98
22-Apr-13	221.20	14-Apr-21	221.01
29-Jul-13	220.96	08-Jul-21	221.05
08-Oct-13	221.13	28-Sep-21	220.89
28-Apr-14	221.18	14-Apr-22	220.96
21-Jul-14	220.93	13-Jul-22	220.88
30-Sep-14	221.02	04-Oct-22	220.80
15-Apr-15	221.26	12-Apr-23	220.93
21-Jul-15	221.04	11-Jul-23	220.97
28-Sep-15	220.90	03-Oct-23	220.99
19-Apr-16	221.10	10-Apr-24	220.81
17-Jul-16	220.76	11-Jul-24	220.96
19-Jul-16	220.76	02-Oct-24	221.00

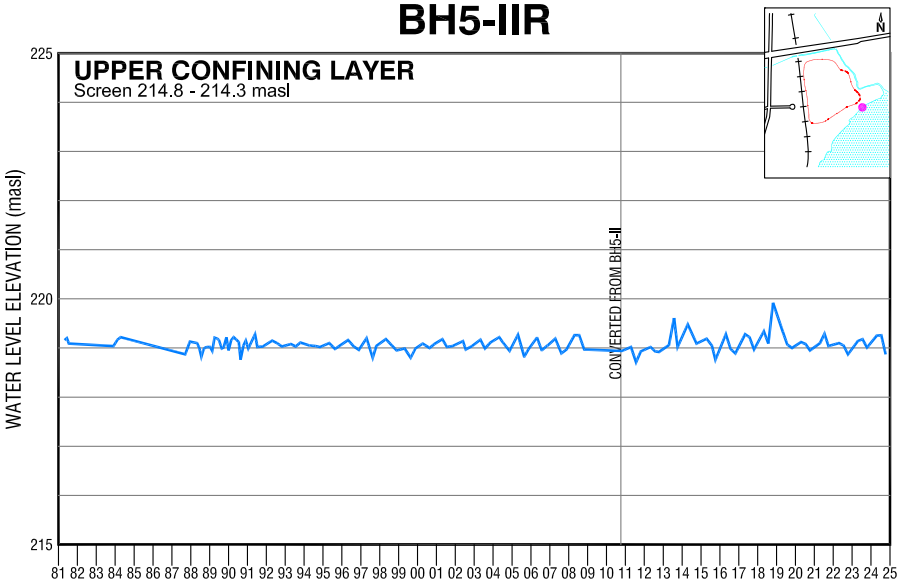
BH5-IR



MP Elevation 220.23 masl

DATE	ELEVATION	DATE	ELEVATION
22-Jul-08	219.68	03-May-17	219.32
27-Oct-08	219.24	27-Jul-17	218.82
28-Apr-09	219.74	24-Oct-17	218.67
28-Jul-09	219.39	01-May-18	218.91
03-Nov-09	219.25	26-Jul-18	218.57
26-Apr-10	219.43	18-Oct-18	218.86
26-Jul-10	219.59	25-Oct-18	218.58
27-Oct-10	218.49	01-May-19	219.18
20-Apr-11	218.91	26-Jul-19	218.67
26-Oct-11	218.84	29-Oct-19	218.78
30-Apr-12	219.03	17-Apr-20	218.80
31-Jul-12	218.59	14-Jul-20	218.65
15-Oct-12	218.24	08-Oct-20	218.74
22-Apr-13	219.23	21-Apr-21	218.84
30-Jul-13	218.84	15-Jul-21	218.72
07-Oct-13	218.84	06-Oct-21	218.80
22-Apr-14	218.65	21-Apr-22	218.98
28-Jul-14	218.58	20-Jul-22	218.77
08-Oct-14	218.90	13-Oct-22	218.30
20-Apr-15	219.01	20-Apr-23	218.96
30-Jul-15	218.77	20-Jul-23	218.79
08-Oct-15	218.65	16-Oct-23	218.90
27-Apr-16	219.03	18-Apr-24	218.89
28-Jul-16	218.62	18-Jul-24	219.11
26-Oct-16	218.61	09-Oct-24	218.59

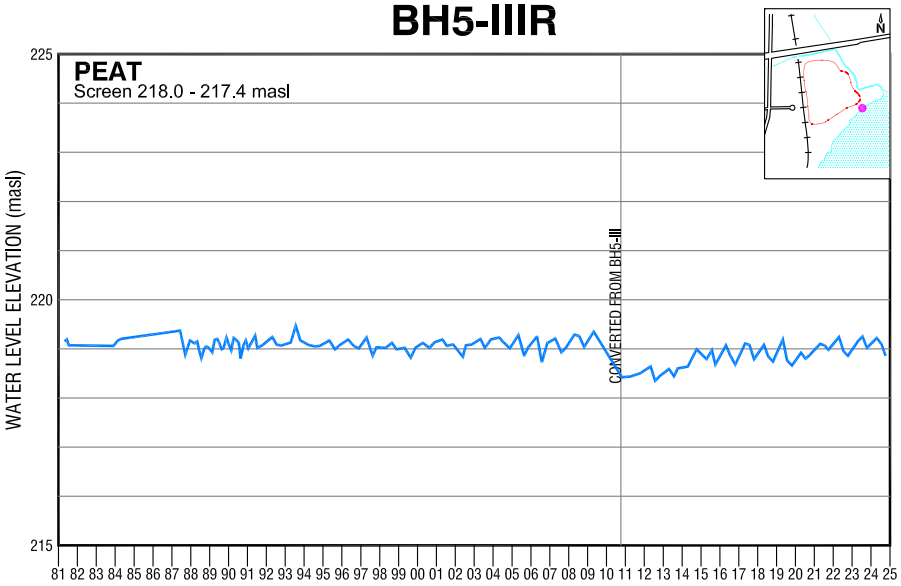
BH5-IIR



MP Elevation 220.14 masl

DATE	ELEVATION	DATE	ELEVATION
13-Nov-06	219.05	26-Oct-16	218.89
21-Nov-06	219.05	03-May-17	219.28
16-Apr-07	219.19	27-Jul-17	219.22
14-Aug-07	218.89	24-Oct-17	218.97
20-Nov-07	218.97	01-May-18	219.34
22-Apr-08	219.26	26-Jul-18	219.09
22-Jul-08	219.26	25-Oct-18	219.92
27-Oct-08	218.97	01-May-19	219.33
27-Oct-10	218.94	26-Jul-19	219.07
20-Apr-11	219.02	29-Oct-19	219.00
27-Jul-11	218.71	17-Apr-20	219.12
26-Oct-11	218.93	14-Jul-20	219.08
01-May-12	219.02	08-Oct-20	218.95
31-Jul-12	218.93	21-Apr-21	219.10
15-Oct-12	218.92	15-Jul-21	219.29
22-Apr-13	219.06	30-Sep-21	219.04
30-Jul-13	219.61	21-Apr-22	219.10
07-Oct-13	219.02	20-Jul-22	219.05
22-Apr-14	219.48	13-Oct-22	218.87
08-Oct-14	219.09	20-Apr-23	219.14
20-Apr-15	219.19	20-Jul-23	219.18
30-Jul-15	219.05	16-Oct-23	219.01
08-Oct-15	218.76	18-Apr-24	219.25
27-Apr-16	219.28	18-Jul-24	219.26
27-Jul-16	218.98	09-Oct-24	218.87

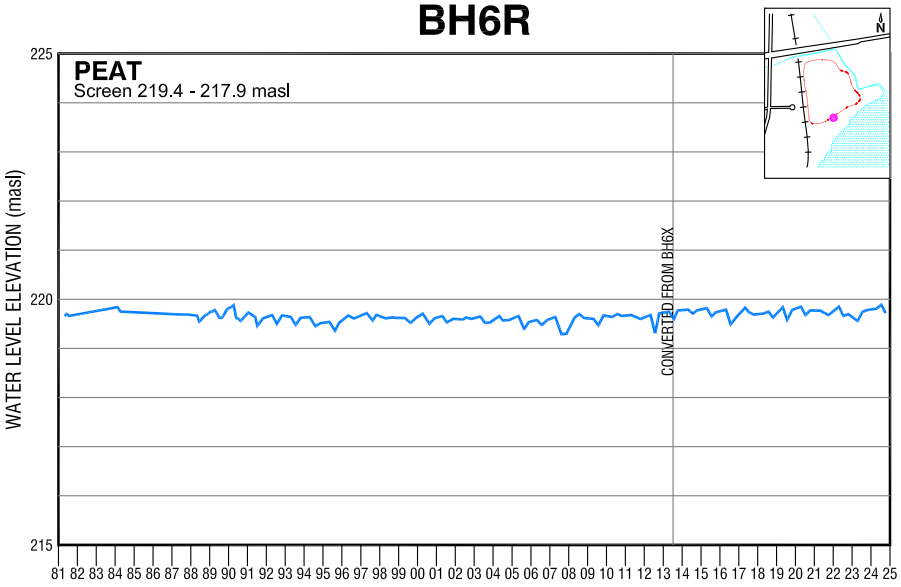
BH5-IIIR



MP Elevation 220.16 masl

DATE	ELEVATION	DATE	ELEVATION
13-Nov-06	219.12	26-Oct-16	218.68
21-Nov-06	219.12	03-May-17	219.11
16-Apr-07	219.21	27-Jul-17	219.08
14-Aug-07	218.93	24-Oct-17	218.79
20-Nov-07	219.04	01-May-18	219.08
22-Apr-08	219.29	26-Jul-18	218.84
22-Jul-08	219.26	25-Oct-18	218.74
27-Oct-08	219.04	01-May-19	219.19
29-Apr-09	219.35	26-Jul-19	218.76
27-Oct-10	218.42	29-Oct-19	218.66
20-Apr-11	218.44	17-Apr-20	218.92
26-Oct-11	218.51	14-Jul-20	218.80
01-May-12	218.64	08-Oct-20	218.88
31-Jul-12	218.35	21-Apr-21	219.10
15-Oct-12	218.43	15-Jul-21	219.07
22-Apr-13	218.59	30-Sep-21	218.98
30-Jul-13	218.44	21-Apr-22	219.24
07-Oct-13	218.60	20-Jul-22	218.95
22-Apr-14	218.64	13-Oct-22	218.86
08-Oct-14	218.99	20-Apr-23	219.15
20-Apr-15	218.79	20-Jul-23	219.25
30-Jul-15	218.97	16-Oct-23	219.02
08-Oct-15	218.68	18-Apr-24	219.22
27-Apr-16	219.07	18-Jul-24	219.10
27-Jul-16	218.85	09-Oct-24	218.86

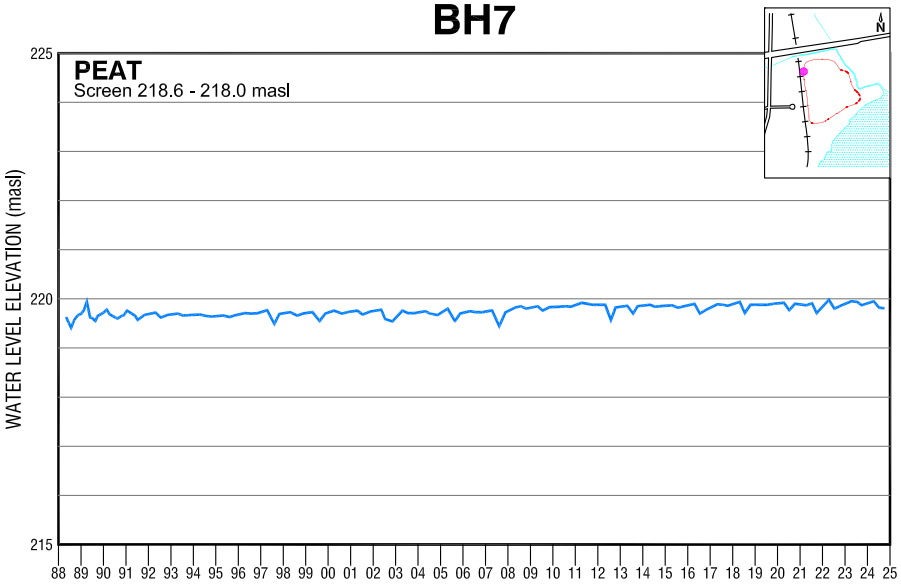
BH6R



MP Elevation 220.60 masl

DATE	ELEVATION	DATE	ELEVATION
21-Apr-08	219.62	26-Oct-16	219.61
22-Jul-08	219.70	02-May-17	219.83
27-Oct-08	219.62	25-Jul-17	219.73
27-Apr-09	219.60	23-Oct-17	219.69
29-Jul-09	219.47	01-May-18	219.71
03-Nov-09	219.67	25-Jul-18	219.75
26-Apr-10	219.64	25-Oct-18	219.63
27-Jul-10	219.70	01-May-19	219.84
25-Oct-10	219.66	26-Jul-19	219.58
19-Apr-11	219.68	29-Oct-19	219.78
24-Oct-11	219.60	17-Apr-20	219.85
30-Apr-12	219.68	14-Jul-20	219.68
30-Jul-12	219.31	07-Oct-20	219.77
15-Oct-12	219.71	21-Apr-21	219.77
22-Apr-13	219.75	19-Jul-21	219.72
29-Jul-13	219.60	04-Oct-21	219.68
07-Oct-13	219.77	20-Apr-22	219.85
23-Apr-14	219.79	18-Jul-22	219.66
31-Jul-14	219.71	13-Oct-22	219.70
08-Oct-14	219.77	18-Apr-23	219.56
23-Apr-15	219.82	18-Jul-23	219.74
28-Jul-15	219.65	12-Oct-23	219.78
06-Oct-15	219.73	15-Apr-24	219.81
27-Apr-16	219.79	17-Jul-24	219.89
29-Jul-16	219.49	08-Oct-24	219.72

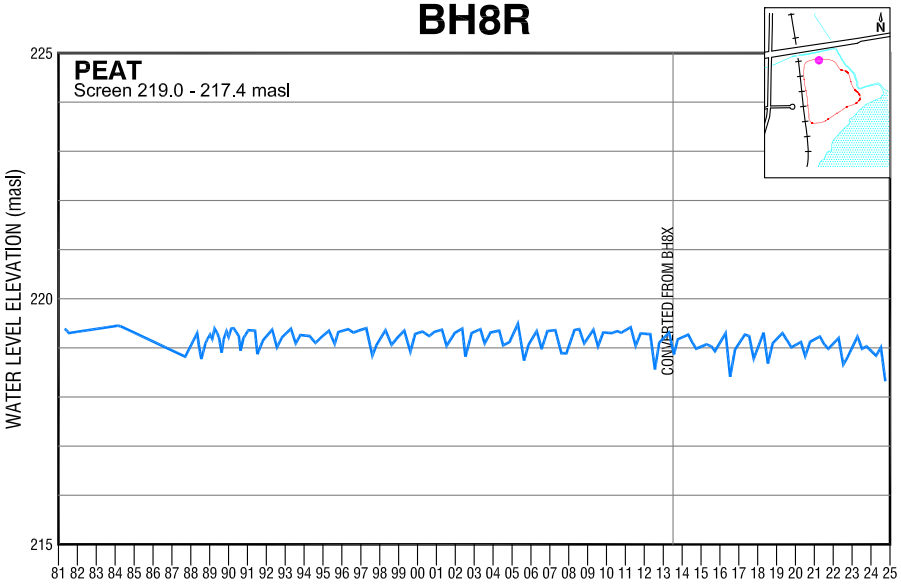
BH7



MP Elevation 220.24 masl

DATE	ELEVATION	DATE	ELEVATION
19-Nov-07	219.72	19-Jul-16	219.70
21-Apr-08	219.82	18-Oct-16	219.77
22-Jul-08	219.85	25-Apr-17	219.89
28-Oct-08	219.80	19-Jul-17	219.88
27-Apr-09	219.85	19-Oct-17	219.86
22-Jul-09	219.76	25-Apr-18	219.94
03-Nov-09	219.83	19-Jul-18	219.71
26-Apr-10	219.84	16-Oct-18	219.88
27-Jul-10	219.85	26-Jul-19	219.88
25-Oct-10	219.84	28-Oct-19	219.90
13-Apr-11	219.92	14-Apr-20	219.92
19-Oct-11	219.88	09-Jul-20	219.77
30-Apr-12	219.88	09-Oct-20	219.90
01-Aug-12	219.57	14-Apr-21	219.87
15-Oct-12	219.82	14-Jul-21	219.91
23-Apr-13	219.86	28-Sep-21	219.71
29-Jul-13	219.70	13-Apr-22	219.98
07-Oct-13	219.85	13-Jul-22	219.80
29-Apr-14	219.88	04-Oct-22	219.85
22-Jul-14	219.84	12-Apr-23	219.95
02-Oct-14	219.85	14-Jul-23	219.94
16-Apr-15	219.87	03-Oct-23	219.87
28-Jul-15	219.82	09-Apr-24	219.95
29-Sep-15	219.84	12-Jul-24	219.82
20-Apr-16	219.90	04-Oct-24	219.81

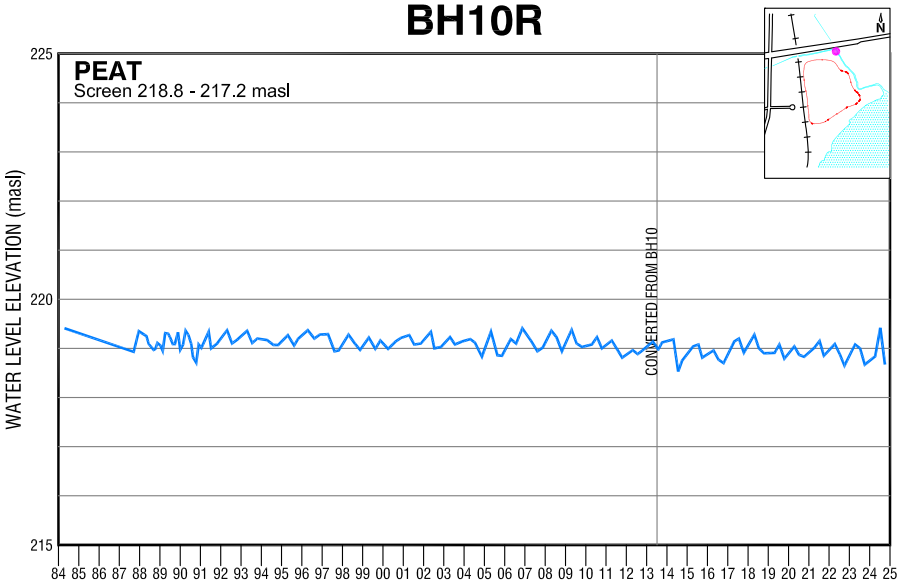
BH8R



MP Elevation 220.04 masl

DATE	ELEVATION	DATE	ELEVATION
22-Jul-08	219.38	18-Oct-16	218.96
28-Oct-08	219.09	26-Apr-17	219.27
22-Apr-09	219.37	20-Jul-17	219.24
22-Jul-09	219.03	18-Oct-17	218.78
28-Oct-09	219.31	25-Apr-18	219.31
22-Apr-10	219.30	18-Jul-18	218.68
21-Jul-10	219.34	17-Oct-18	219.09
19-Oct-10	219.31	24-Apr-19	219.30
13-Apr-11	219.42	18-Jul-19	219.16
19-Jul-11	219.04	18-Oct-19	219.01
19-Oct-11	219.29	15-Apr-20	219.12
26-Apr-12	219.28	09-Jul-20	218.83
26-Jul-12	218.56	09-Oct-20	219.12
15-Oct-12	219.10	14-Apr-21	219.23
23-Apr-13	219.31	13-Jul-21	219.07
29-Jul-13	218.87	30-Sep-21	218.98
07-Oct-13	219.17	13-Apr-22	219.20
29-Apr-14	219.27	14-Jul-22	218.66
22-Jul-14	219.10	05-Oct-22	218.81
02-Oct-14	218.98	13-Apr-23	219.23
16-Apr-15	219.07	12-Jul-23	218.98
22-Jul-15	219.03	04-Oct-23	219.03
28-Sep-15	218.93	09-Apr-24	218.84
20-Apr-16	219.30	09-Jul-24	219.01
19-Jul-16	218.41	03-Oct-24	218.32

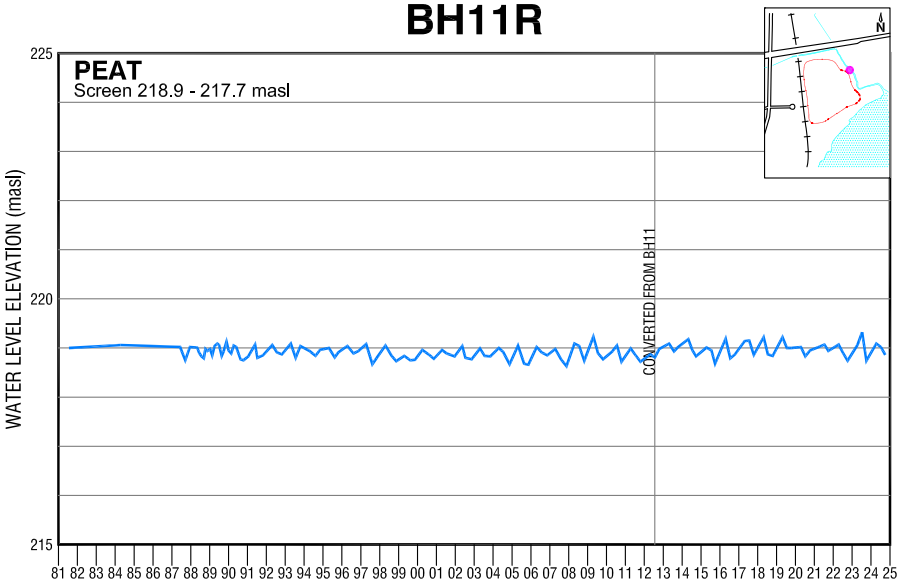
BH10R



MP Elevation 220.03 masl

DATE	ELEVATION	DATE	ELEVATION
28-Oct-08	218.94	19-Oct-16	218.70
21-Apr-09	219.38	27-Apr-17	219.14
21-Jul-09	219.10	20-Jul-17	219.20
27-Oct-09	219.03	18-Oct-17	218.91
21-Apr-10	219.08	26-Apr-18	219.28
21-Jul-10	219.23	18-Jul-18	219.00
19-Oct-10	219.00	17-Oct-18	218.90
13-Apr-11	219.16	25-Apr-19	218.91
20-Jul-11	218.98	18-Jul-19	219.08
19-Oct-11	218.81	18-Oct-19	218.79
25-Apr-12	218.96	15-Apr-20	219.04
25-Jul-12	218.88	10-Jul-20	218.87
15-Oct-12	218.96	09-Oct-20	218.83
23-Apr-13	219.14	14-Apr-21	219.02
29-Jul-13	218.98	13-Jul-21	219.15
01-Aug-13	218.98	30-Sep-21	218.85
07-Oct-13	219.12	13-Apr-22	219.09
29-Apr-14	219.18	13-Jul-22	218.88
23-Jul-14	218.53	05-Oct-22	218.65
02-Oct-14	218.75	13-Apr-23	219.08
16-Apr-15	219.04	13-Jul-23	219.00
22-Jul-15	219.08	05-Oct-23	218.67
30-Sep-15	218.81	11-Apr-24	218.84
20-Apr-16	218.96	11-Jul-24	219.42
20-Jul-16	218.77	03-Oct-24	218.67

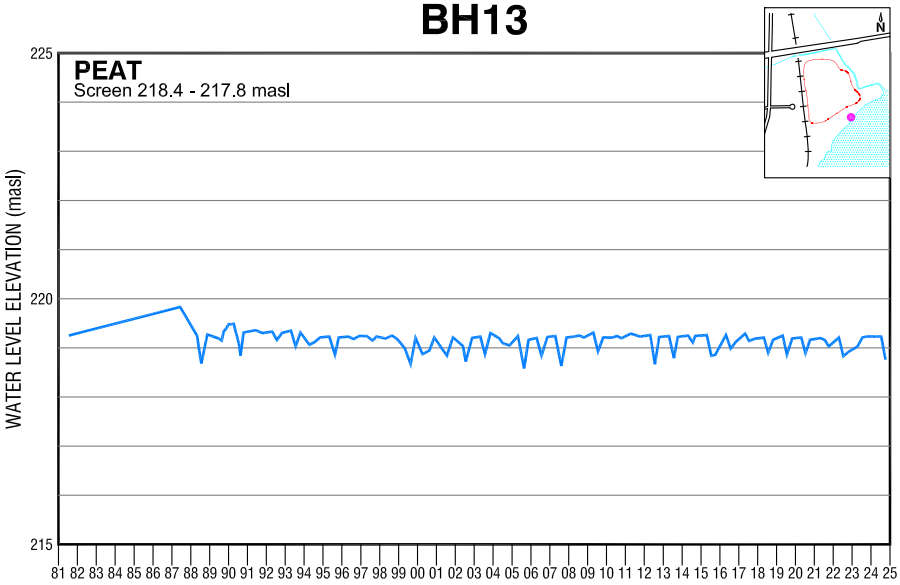
BH11R



MP Elevation 220.21 masl

DATE	ELEVATION	DATE	ELEVATION
22-Jul-08	219.04	20-Oct-16	218.87
28-Oct-08	218.74	25-Apr-17	219.14
21-Apr-09	219.23	21-Jul-17	219.15
21-Jul-09	218.89	19-Oct-17	218.86
27-Oct-09	218.77	26-Apr-18	219.22
22-Apr-10	218.93	19-Jul-18	218.87
21-Jul-10	219.05	18-Oct-18	218.84
19-Oct-10	218.72	26-Apr-19	219.22
13-Apr-11	218.99	19-Jul-19	219.00
19-Jul-11	218.85	18-Oct-19	219.00
19-Oct-11	218.72	16-Apr-20	219.02
25-Apr-12	218.87	10-Jul-20	218.83
25-Jul-12	218.81	09-Oct-20	218.95
15-Oct-12	218.98	16-Apr-21	219.03
23-Apr-13	219.09	13-Jul-21	219.07
29-Jul-13	218.93	29-Sep-21	218.94
07-Oct-13	219.01	14-Apr-22	219.07
30-Apr-14	219.18	14-Jul-22	218.89
22-Jul-14	218.95	05-Oct-22	218.74
29-Sep-14	218.83	13-Apr-23	219.06
17-Apr-15	219.01	13-Jul-23	219.32
21-Jul-15	218.95	03-Oct-23	218.74
01-Oct-15	218.68	11-Apr-24	219.09
21-Apr-16	219.19	09-Jul-24	219.02
22-Jul-16	218.79	02-Oct-24	218.86

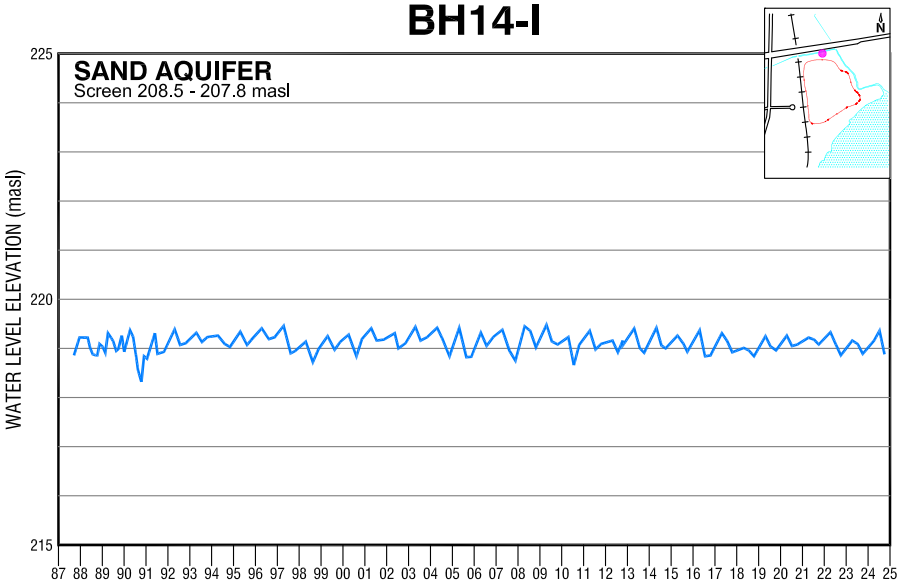
BH13



MP Elevation 220.15 masl

DATE	ELEVATION	DATE	ELEVATION
22-Apr-08	219.23	25-Oct-16	219.11
22-Jul-08	219.25	02-May-17	219.29
27-Oct-08	219.21	20-Jul-17	219.14
21-Apr-09	219.31	25-Oct-17	219.18
21-Jul-09	218.93	30-Apr-18	219.21
27-Oct-09	219.21	23-Jul-18	218.90
22-Apr-10	219.21	24-Oct-18	219.16
21-Jul-10	219.24	30-Apr-19	219.25
19-Oct-10	219.20	19-Jul-19	218.86
13-Apr-11	219.29	30-Oct-19	219.19
19-Oct-11	219.23	20-Apr-20	219.21
25-Apr-12	219.26	14-Jul-20	218.89
25-Jul-12	218.66	06-Oct-20	219.16
15-Oct-12	219.22	21-Apr-21	219.20
22-Apr-13	219.24	20-Jul-21	219.16
29-Jul-13	218.79	07-Oct-21	219.03
08-Oct-13	219.22	19-Apr-22	219.21
24-Apr-14	219.25	15-Jul-22	218.83
30-Jul-14	219.11	11-Oct-22	218.91
10-Sep-14	219.24	17-Apr-23	219.03
21-Apr-15	219.26	17-Jul-23	219.21
21-Jul-15	218.84	10-Oct-23	219.23
07-Oct-15	218.86	16-Apr-24	219.23
26-Apr-16	219.26	15-Jul-24	219.23
28-Jul-16	218.99	07-Oct-24	218.76

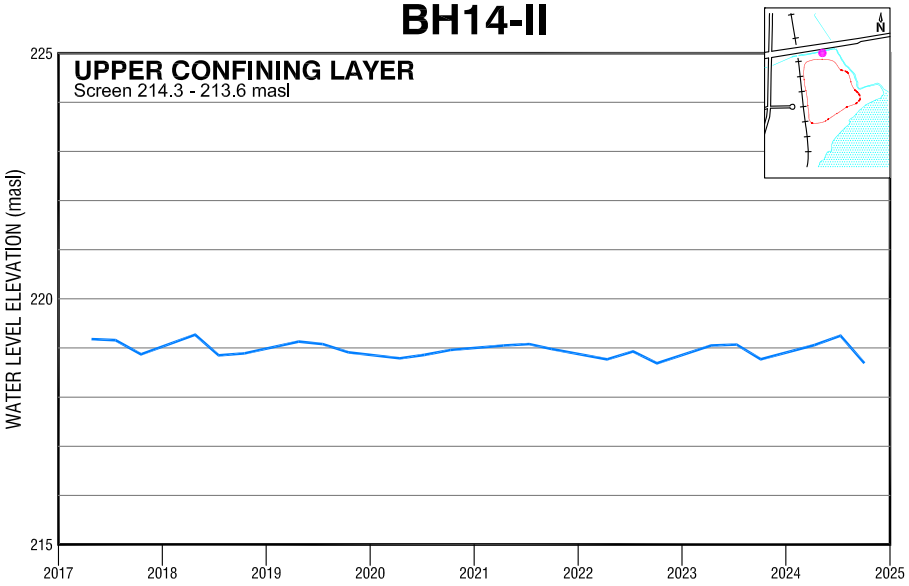
BH14-I



MP Elevation 220.51 masl

DATE	ELEVATION	DATE	ELEVATION
28-Oct-08	219.02	19-Oct-16	218.86
21-Apr-09	219.48	27-Apr-17	219.31
21-Jul-09	219.14	20-Jul-17	219.16
27-Oct-09	219.08	18-Oct-17	218.92
21-Apr-10	219.23	26-Apr-18	219.01
21-Jul-10	218.66	18-Jul-18	218.96
19-Oct-10	219.07	17-Oct-18	218.84
13-Apr-11	219.36	25-Apr-19	219.25
20-Jul-11	218.98	18-Jul-19	219.04
19-Oct-11	219.09	18-Oct-19	218.96
26-Apr-12	219.16	15-Apr-20	219.26
27-Jul-12	218.92	10-Jul-20	219.05
15-Oct-12	219.16	09-Oct-20	219.08
16-Oct-12	219.06	14-Apr-21	219.22
23-Apr-13	219.40	13-Jul-21	219.18
29-Jul-13	219.00	30-Sep-21	219.08
08-Oct-13	218.91	13-Apr-22	219.33
29-Apr-14	219.42	13-Jul-22	219.08
23-Jul-14	219.06	05-Oct-22	218.86
02-Oct-14	219.00	13-Apr-23	219.16
16-Apr-15	219.26	12-Jul-23	219.09
22-Jul-15	219.10	05-Oct-23	218.89
29-Sep-15	218.93	11-Apr-24	219.16
20-Apr-16	219.37	11-Jul-24	219.36
20-Jul-16	218.84	03-Oct-24	218.88

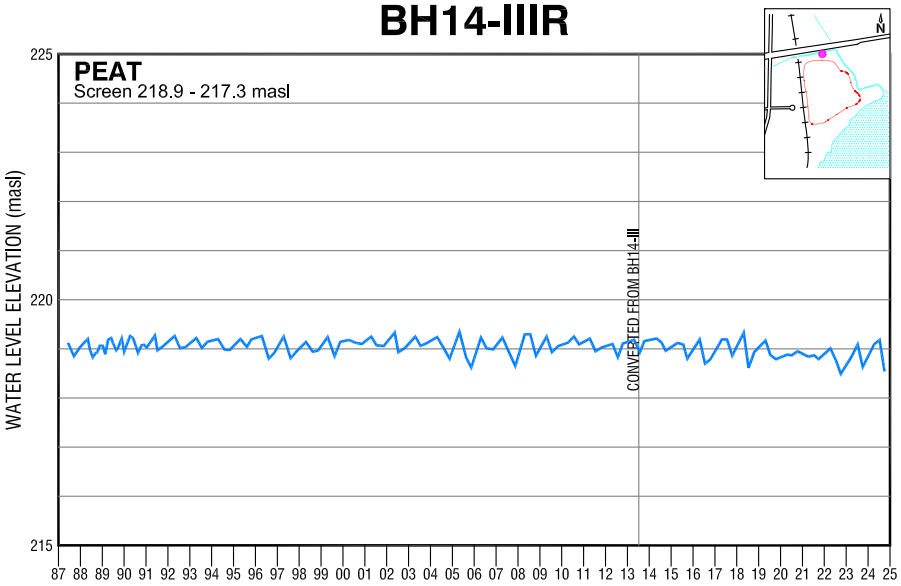
BH14-II



MP Elevation 220.46 masl

DATE	ELEVATION	DATE	ELEVATION
27-Apr-17	219.18		
20-Jul-17	219.16		
18-Oct-17	218.87		
26-Apr-18	219.27		
18-Jul-18	218.85		
17-Oct-18	218.89		
25-Apr-19	219.13		
18-Jul-19	219.08		
18-Oct-19	218.91		
15-Apr-20	218.79		
10-Jul-20	218.86		
09-Oct-20	218.96		
14-Apr-21	219.05		
13-Jul-21	219.08		
30-Sep-21	218.98		
13-Apr-22	218.77		
13-Jul-22	218.93		
05-Oct-22	218.69		
13-Apr-23	219.05		
12-Jul-23	219.07		
05-Oct-23	218.77		
11-Apr-24	219.06		
11-Jul-24	219.25		
03-Oct-24	218.69		

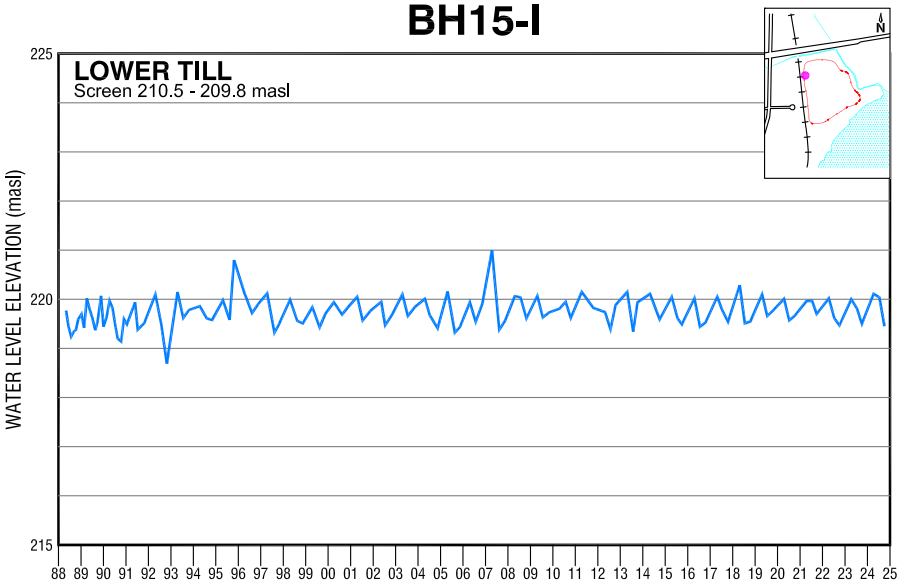
BH14-IIIR



MP Elevation 220.69 masl

DATE	ELEVATION	DATE	ELEVATION
22-Jul-08	219.30	19-Oct-16	218.79
28-Oct-08	218.86	27-Apr-17	219.19
22-Apr-09	219.25	20-Jul-17	219.19
21-Jul-09	218.93	18-Oct-17	218.86
27-Oct-09	219.05	26-Apr-18	219.33
21-Apr-10	219.13	18-Jul-18	218.61
21-Jul-10	219.25	17-Oct-18	218.93
19-Oct-10	219.09	25-Apr-19	219.17
13-Apr-11	219.21	18-Jul-19	218.87
20-Jul-11	218.95	18-Oct-19	218.79
19-Oct-11	219.02	15-Apr-20	218.88
26-Apr-12	219.10	10-Jul-20	218.87
26-Jul-12	218.83	09-Oct-20	218.95
15-Oct-12	219.10	14-Apr-21	218.84
23-Apr-13	219.18	13-Jul-21	218.87
29-Jul-13	218.93	30-Sep-21	218.79
08-Oct-13	219.15	13-Apr-22	219.01
29-Apr-14	219.21	13-Jul-22	218.77
23-Jul-14	219.13	05-Oct-22	218.49
02-Oct-14	218.96	13-Apr-23	218.87
16-Apr-15	219.12	12-Jul-23	219.09
22-Jul-15	219.09	05-Oct-23	218.63
29-Sep-15	218.80	11-Apr-24	219.09
20-Apr-16	219.19	11-Jul-24	219.18
20-Jul-16	218.70	03-Oct-24	218.54

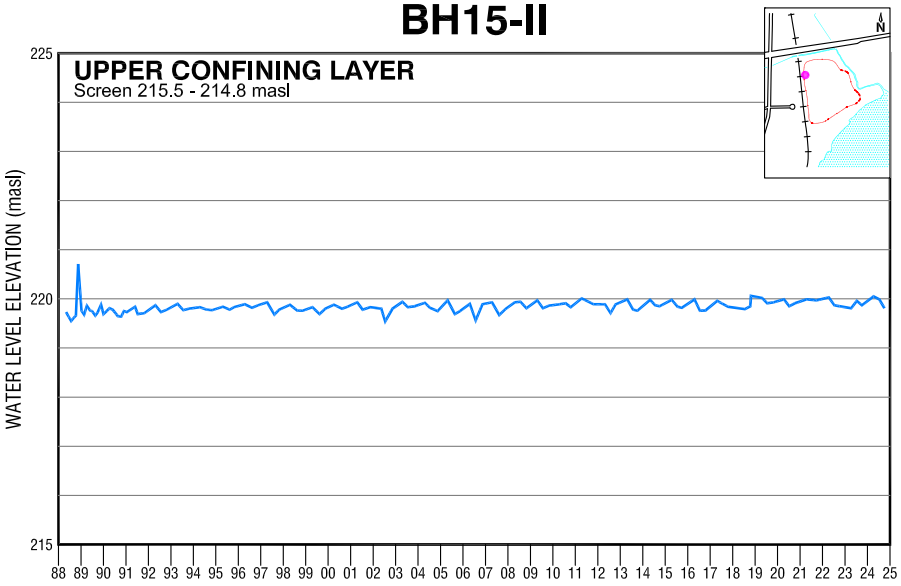
BH15-I



MP Elevation 221.54 masl

DATE	ELEVATION	DATE	ELEVATION
19-Nov-07	219.57	18-Oct-16	219.53
21-Apr-08	220.06	25-Apr-17	220.05
22-Jul-08	220.04	19-Jul-17	219.77
28-Oct-08	219.61	19-Oct-17	219.54
22-Apr-09	220.07	25-Apr-18	220.29
23-Jul-09	219.63	19-Jul-18	219.51
27-Oct-09	219.73	16-Oct-18	219.55
21-Apr-10	219.81	24-Apr-19	220.10
27-Jul-10	219.95	18-Jul-19	219.66
19-Oct-10	219.62	28-Oct-19	219.78
13-Apr-11	220.15	14-Apr-20	220.01
24-Oct-11	219.82	09-Jul-20	219.57
26-Apr-12	219.74	09-Oct-20	219.67
26-Jul-12	219.39	14-Apr-21	219.96
15-Oct-12	219.88	14-Jul-21	219.97
23-Apr-13	220.15	28-Sep-21	219.70
29-Jul-13	219.34	13-Apr-22	220.02
07-Oct-13	219.93	13-Jul-22	219.61
29-Apr-14	220.11	04-Oct-22	219.47
02-Oct-14	219.59	12-Apr-23	220.00
16-Apr-15	220.05	12-Jul-23	219.82
22-Jul-15	219.61	03-Oct-23	219.50
29-Sep-15	219.49	09-Apr-24	220.11
20-Apr-16	220.02	12-Jul-24	220.04
19-Jul-16	219.44	04-Oct-24	219.45

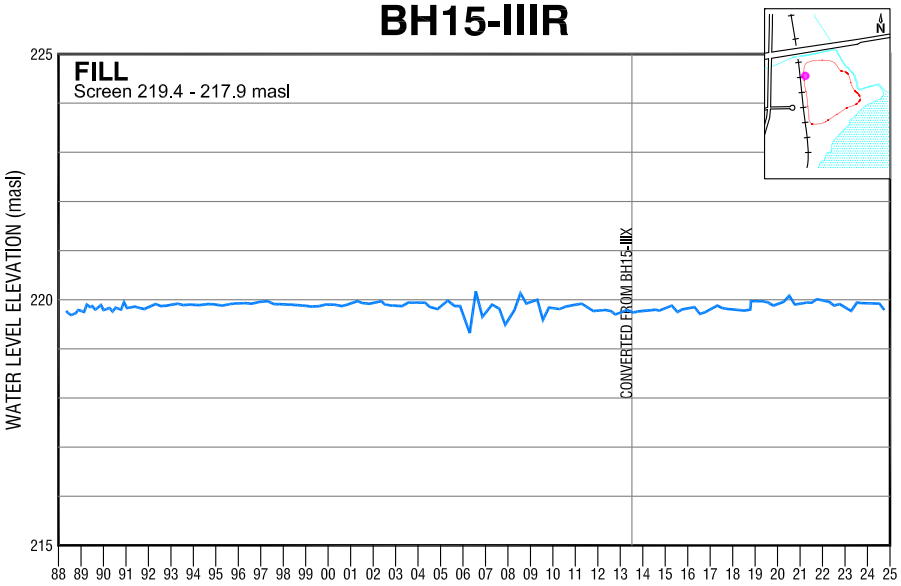
BH15-II



MP Elevation 221.64 masl

DATE	ELEVATION	DATE	ELEVATION
21-Apr-08	219.93	18-Oct-16	219.76
22-Jul-08	219.94	25-Apr-17	219.96
28-Oct-08	219.81	19-Jul-17	219.90
22-Apr-09	219.97	19-Oct-17	219.84
23-Jul-09	219.81	19-Jul-18	219.79
27-Oct-09	219.86	16-Oct-18	219.85
21-Apr-10	219.89	25-Oct-18	220.06
27-Jul-10	219.91	24-Apr-19	220.02
19-Oct-10	219.83	18-Jul-19	219.91
13-Apr-11	220.01	28-Oct-19	219.93
24-Oct-11	219.89	14-Apr-20	219.99
26-Apr-12	219.89	09-Jul-20	219.85
26-Jul-12	219.71	09-Oct-20	219.91
15-Oct-12	219.88	14-Apr-21	219.99
23-Apr-13	219.99	14-Jul-21	219.98
29-Jul-13	219.78	28-Sep-21	219.97
07-Oct-13	219.76	13-Apr-22	220.03
29-Apr-14	219.98	13-Jul-22	219.87
22-Jul-14	219.87	04-Oct-22	219.85
02-Oct-14	219.85	12-Apr-23	219.81
16-Apr-15	219.98	12-Jul-23	219.96
22-Jul-15	219.84	03-Oct-23	219.87
29-Sep-15	219.82	09-Apr-24	220.05
20-Apr-16	219.99	12-Jul-24	219.99
19-Jul-16	219.76	04-Oct-24	219.81

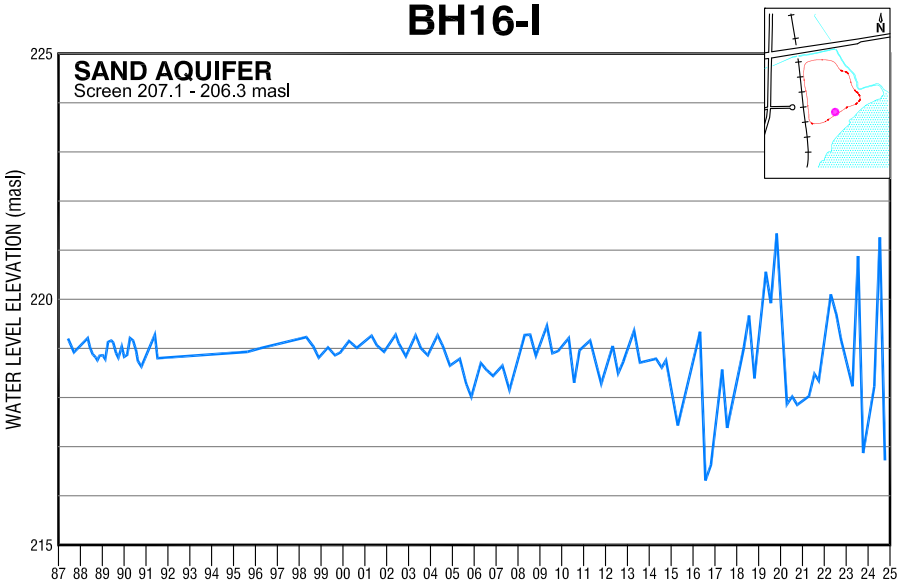
BH15-IIIR



MP Elevation 222.56 masl

DATE	ELEVATION	DATE	ELEVATION
13-Aug-07	219.82	19-Jul-16	219.71
19-Nov-07	219.49	18-Oct-16	219.75
21-Apr-08	219.80	25-Apr-17	219.88
22-Jul-08	220.13	19-Jul-17	219.83
28-Oct-08	219.92	19-Oct-17	219.81
22-Apr-09	220.00	19-Jul-18	219.78
23-Jul-09	219.59	16-Oct-18	219.80
27-Oct-09	219.84	25-Oct-18	219.97
21-Apr-10	219.81	24-Apr-19	219.97
27-Jul-10	219.86	17-Jul-19	219.95
19-Oct-10	219.88	28-Oct-19	219.88
13-Apr-11	219.92	14-Apr-20	219.96
24-Oct-11	219.77	09-Jul-20	220.08
26-Apr-12	219.79	09-Oct-20	219.90
26-Jul-12	219.77	14-Apr-21	219.94
15-Oct-12	219.70	14-Jul-21	219.94
23-Apr-13	219.79	28-Sep-21	220.01
29-Jul-13	219.74	13-Apr-22	219.96
07-Oct-13	219.76	13-Jul-22	219.88
22-Jul-14	219.79	04-Oct-22	219.91
02-Oct-14	219.78	12-Apr-23	219.77
16-Apr-15	219.88	12-Jul-23	219.94
22-Jul-15	219.75	03-Oct-23	219.93
29-Sep-15	219.80	11-Jul-24	219.92
20-Apr-16	219.85	04-Oct-24	219.79

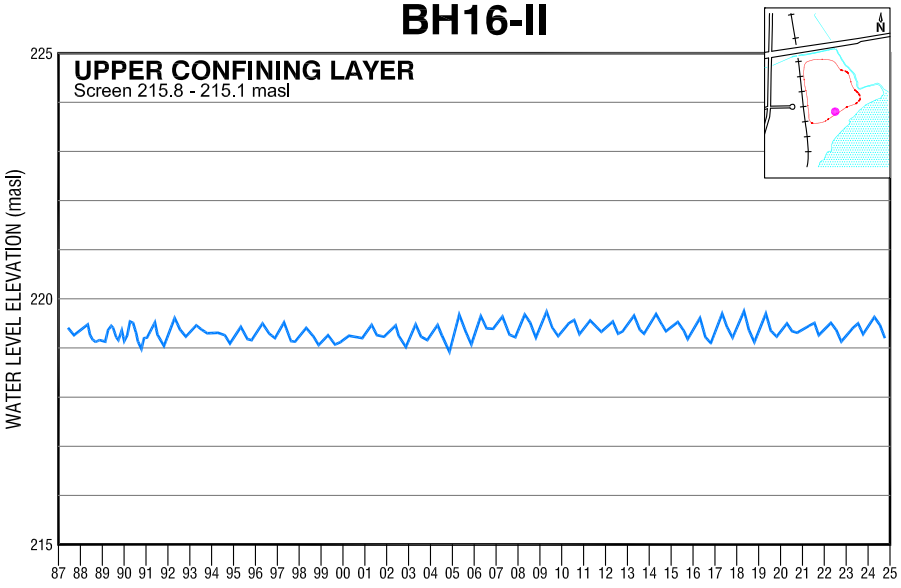
BH16-I



MP Elevation 223.28 masl

DATE	ELEVATION	DATE	ELEVATION
27-Jul-06	218.56	27-Jul-16	216.31
13-Nov-06	218.44	26-Oct-16	216.63
16-Apr-07	218.65	01-May-17	218.57
13-Aug-07	218.15	25-Jul-17	217.38
22-Apr-08	219.27	01-May-18	219.03
21-Jul-08	219.28	25-Jul-18	219.67
27-Oct-08	218.85	23-Oct-18	218.39
27-Apr-09	219.46	01-May-19	220.56
29-Jul-09	218.90	24-Jul-19	219.92
04-Nov-09	218.95	29-Oct-19	221.34
27-Apr-10	219.21	17-Apr-20	217.86
27-Jul-10	218.30	14-Jul-20	218.02
25-Oct-10	218.96	07-Oct-20	217.85
19-Apr-11	219.16	21-Apr-21	218.03
24-Oct-11	218.28	19-Jul-21	218.48
30-Apr-12	219.05	01-Oct-21	218.34
30-Jul-12	218.49	20-Apr-22	220.10
24-Oct-12	218.73	18-Jul-22	219.70
22-Apr-13	219.36	12-Oct-22	219.15
29-Jul-13	218.71	18-Apr-23	218.23
23-Apr-14	218.79	18-Jul-23	220.88
29-Jul-14	218.61	11-Oct-23	216.87
08-Oct-14	218.76	15-Apr-24	218.23
22-Apr-15	217.43	16-Jul-24	221.26
27-Apr-16	219.34	09-Oct-24	216.72

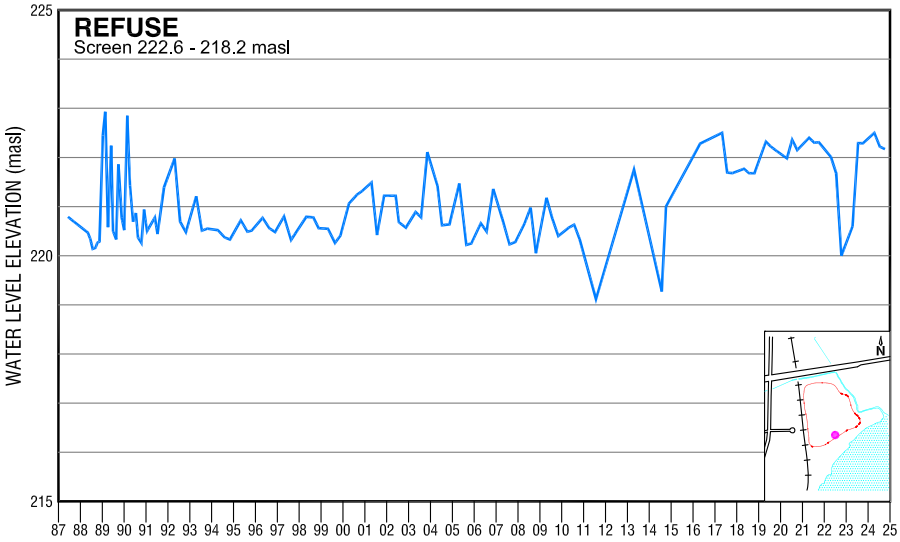
BH16-II



MP Elevation 223.90 masl

DATE	ELEVATION	DATE	ELEVATION
21-Jul-08	219.52	26-Oct-16	219.10
27-Oct-08	219.21	01-May-17	219.70
22-Apr-09	219.74	25-Jul-17	219.42
29-Jul-09	219.41	23-Oct-17	219.21
04-Nov-09	219.24	01-May-18	219.75
27-Apr-10	219.50	25-Jul-18	219.36
27-Jul-10	219.57	23-Oct-18	219.12
25-Oct-10	219.28	01-May-19	219.70
19-Apr-11	219.56	24-Jul-19	219.35
24-Oct-11	219.33	29-Oct-19	219.23
30-Apr-12	219.54	17-Apr-20	219.50
30-Jul-12	219.29	13-Jul-20	219.34
15-Oct-12	219.34	07-Oct-20	219.31
22-Apr-13	219.66	21-Apr-21	219.45
29-Jul-13	219.37	19-Jul-21	219.51
08-Oct-13	219.29	01-Oct-21	219.26
23-Apr-14	219.69	20-Apr-22	219.51
29-Jul-14	219.48	18-Jul-22	219.37
08-Oct-14	219.34	12-Oct-22	219.13
22-Apr-15	219.53	18-Apr-23	219.40
28-Jul-15	219.36	18-Jul-23	219.50
06-Oct-15	219.18	11-Oct-23	219.28
27-Apr-16	219.61	15-Apr-24	219.63
27-Jul-16	219.22	16-Jul-24	219.47
25-Oct-16	219.10	09-Oct-24	219.20

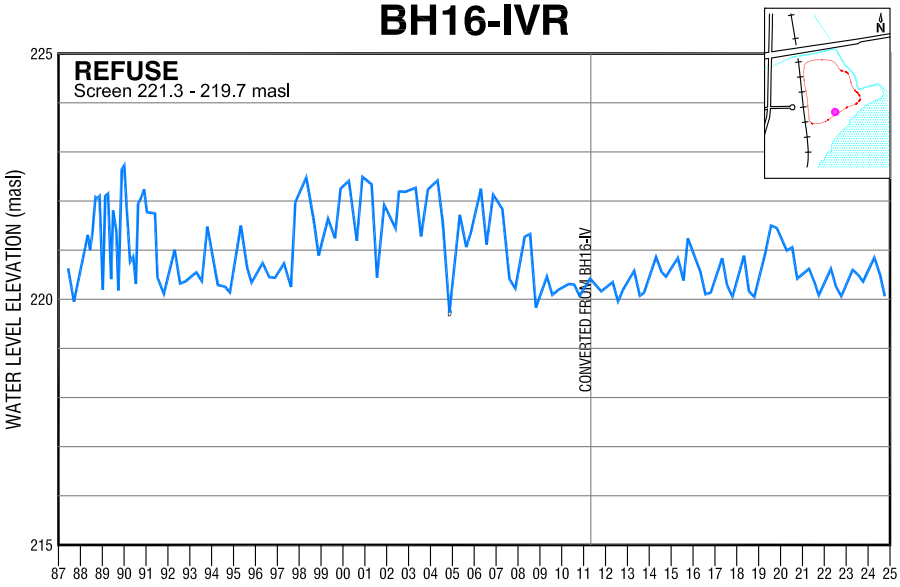
BH16-III



MP Elevation 223.69 masl

DATE	ELEVATION	DATE	ELEVATION
28-Apr-04	221.42	27-Apr-16	222.28
12-Jul-04	220.62	01-May-17	222.50
15-Nov-04	220.64	25-Jul-17	221.69
26-Apr-05	221.47	23-Oct-17	221.68
23-Aug-05	220.22	01-May-18	221.77
14-Nov-05	220.25	25-Jul-18	221.68
21-Apr-06	220.66	23-Oct-18	221.68
27-Jul-06	220.49	01-May-19	222.32
13-Nov-06	221.36	24-Jul-19	222.22
16-Apr-07	220.75	29-Oct-19	222.13
13-Aug-07	220.23	17-Apr-20	221.98
19-Nov-07	220.28	13-Jul-20	222.36
22-Apr-08	220.66	07-Oct-20	222.15
30-Jul-08	220.98	21-Apr-21	222.40
27-Oct-08	220.05	19-Jul-21	222.30
22-Apr-09	221.18	01-Oct-21	222.31
29-Jul-09	220.75	20-Apr-22	222.01
04-Nov-09	220.40	18-Jul-22	221.68
27-Apr-10	220.57	12-Oct-22	220.00
27-Jul-10	220.63	18-Apr-23	220.60
25-Oct-10	220.34	18-Jul-23	222.29
27-Jul-11	219.12	11-Oct-23	222.29
22-Apr-13	221.76	15-Apr-24	222.50
29-Jul-14	219.27	16-Jul-24	222.22
08-Oct-14	221.00	09-Oct-24	222.17

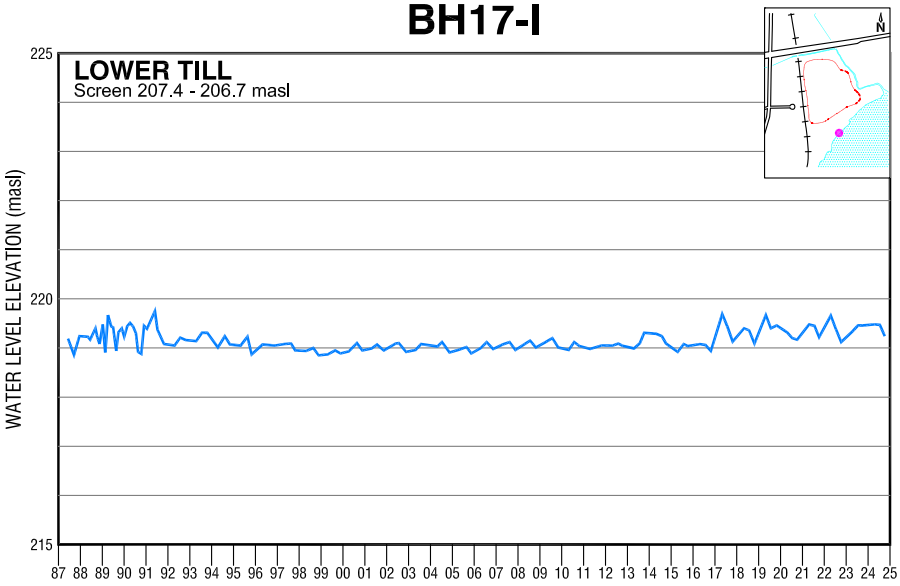
BH16-IVR



MP Elevation 223.79 masl

DATE	ELEVATION	DATE	ELEVATION
22-Apr-08	221.27	26-Oct-16	220.14
21-Jul-08	221.33	01-May-17	220.84
27-Oct-08	219.83	25-Jul-17	220.28
27-Apr-09	220.46	23-Oct-17	220.05
29-Jul-09	220.09	01-May-18	220.89
04-Nov-09	220.19	25-Jul-18	220.16
27-Apr-10	220.31	23-Oct-18	220.05
27-Jul-10	220.30	01-May-19	220.99
25-Oct-10	220.07	25-Jul-19	221.50
19-Apr-11	220.42	30-Oct-19	221.45
24-Oct-11	220.16	17-Apr-20	220.99
30-Apr-12	220.35	13-Jul-20	221.06
30-Jul-12	219.96	07-Oct-20	220.42
15-Oct-12	220.18	21-Apr-21	220.62
22-Apr-13	220.58	19-Jul-21	220.35
29-Jul-13	220.07	01-Oct-21	220.08
08-Oct-13	220.14	20-Apr-22	220.62
23-Apr-14	220.86	18-Jul-22	220.25
29-Jul-14	220.55	12-Oct-22	220.06
08-Oct-14	220.46	18-Apr-23	220.60
22-Apr-15	220.84	18-Jul-23	220.50
28-Jul-15	220.38	11-Oct-23	220.36
06-Oct-15	221.24	15-Apr-24	220.85
27-Apr-16	220.58	16-Jul-24	220.51
27-Jul-16	220.10	09-Oct-24	220.06

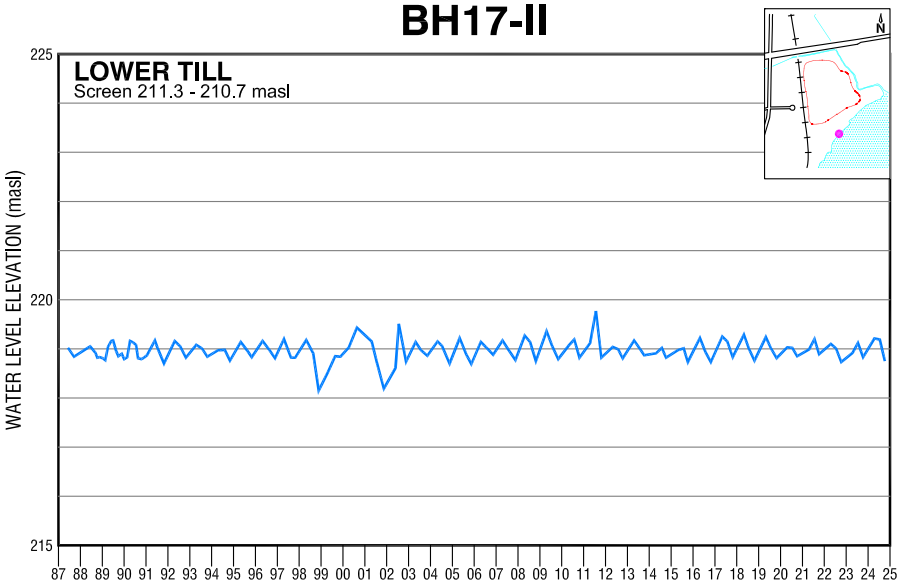
BH17-I



MP Elevation 220.70 masl

DATE	ELEVATION	DATE	ELEVATION
22-Apr-08	219.08	25-Oct-16	218.94
22-Jul-08	219.15	03-May-17	219.69
27-Oct-08	219.01	26-Jul-17	219.44
22-Apr-09	219.13	25-Oct-17	219.13
27-Jul-09	219.20	30-Apr-18	219.40
04-Nov-09	219.01	24-Jul-18	219.36
28-Apr-10	218.96	24-Oct-18	219.09
28-Jul-10	219.12	30-Apr-19	219.67
25-Oct-10	219.04	25-Jul-19	219.40
20-Apr-11	218.98	29-Oct-19	219.46
24-Oct-11	219.05	20-Apr-20	219.32
01-May-12	219.05	15-Jul-20	219.20
31-Jul-12	219.09	06-Oct-20	219.17
15-Oct-12	219.04	22-Apr-21	219.48
22-Apr-13	218.99	20-Jul-21	219.45
29-Jul-13	219.10	07-Oct-21	219.22
08-Oct-13	219.31	19-Apr-22	219.66
24-Apr-14	219.29	15-Jul-22	219.38
30-Jul-14	219.24	11-Oct-22	219.12
08-Oct-14	219.09	18-Apr-23	219.34
21-Apr-15	218.92	17-Jul-23	219.46
29-Jul-15	219.08	10-Oct-23	219.46
07-Oct-15	219.04	16-Apr-24	219.48
26-Apr-16	219.08	15-Jul-24	219.47
28-Jul-16	219.06	07-Oct-24	219.24

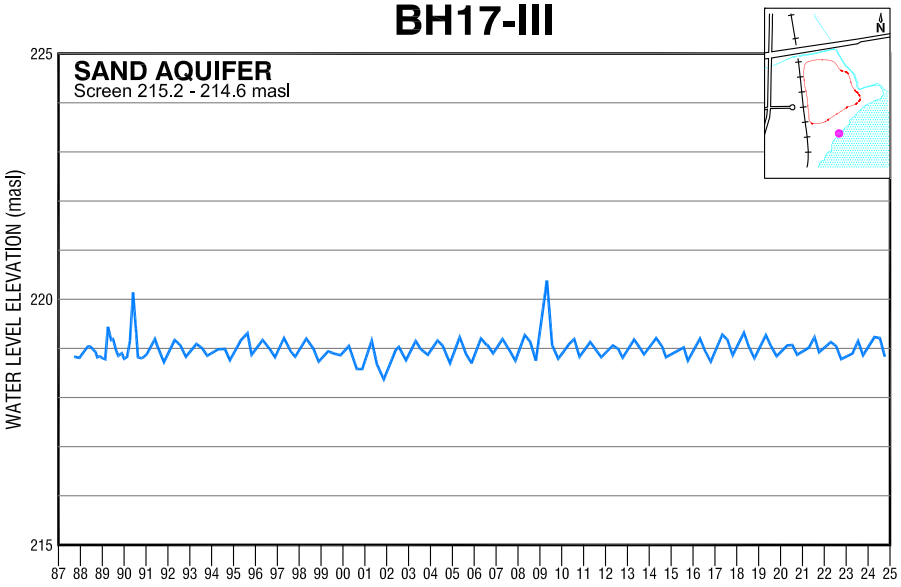
BH17-II



MP Elevation 220.66 masl

DATE	ELEVATION	DATE	ELEVATION
22-Jul-08	219.14	25-Oct-16	218.73
27-Oct-08	218.75	03-May-17	219.25
22-Apr-09	219.36	26-Jul-17	219.15
27-Jul-09	219.05	25-Oct-17	218.83
04-Nov-09	218.79	30-Apr-18	219.29
28-Apr-10	219.07	24-Jul-18	219.00
28-Jul-10	219.19	24-Oct-18	218.76
25-Oct-10	218.82	30-Apr-19	219.24
20-Apr-11	219.12	25-Jul-19	219.01
26-Jul-11	219.77	29-Oct-19	218.81
24-Oct-11	218.82	20-Apr-20	219.03
01-May-12	219.04	15-Jul-20	219.02
31-Jul-12	218.99	06-Oct-20	218.85
15-Oct-12	218.80	22-Apr-21	218.99
22-Apr-13	219.17	20-Jul-21	219.20
29-Jul-13	219.00	07-Oct-21	218.89
08-Oct-13	218.87	19-Apr-22	219.10
24-Apr-14	218.91	15-Jul-22	219.01
30-Jul-14	219.02	11-Oct-22	218.73
08-Oct-14	218.82	18-Apr-23	218.92
21-Apr-15	218.97	17-Jul-23	219.12
29-Jul-15	219.01	10-Oct-23	218.83
07-Oct-15	218.73	16-Apr-24	219.21
26-Apr-16	219.22	15-Jul-24	219.19
28-Jul-16	218.93	07-Oct-24	218.75

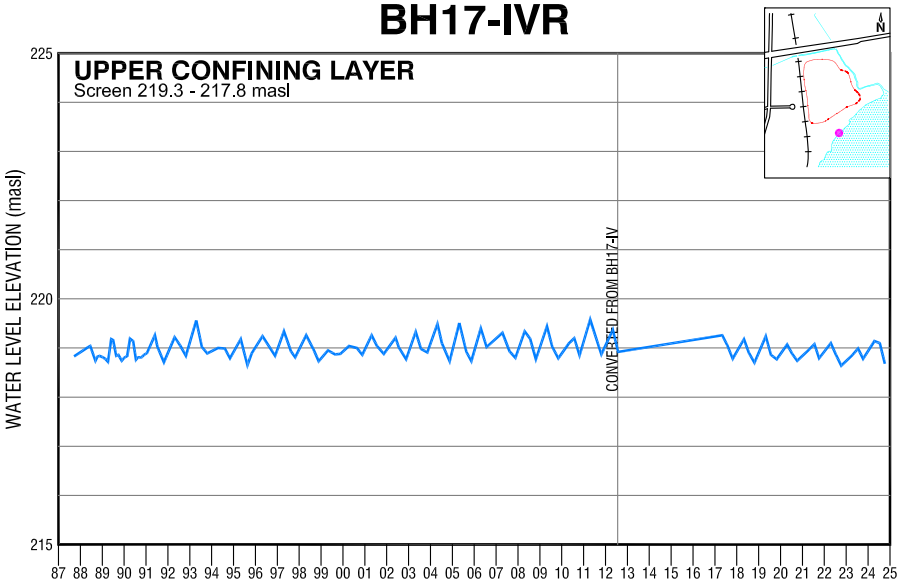
BH17-III



MP Elevation 221.27 masl

DATE	ELEVATION	DATE	ELEVATION
20-Nov-07	218.75	25-Oct-16	218.73
22-Apr-08	219.27	03-May-17	219.28
22-Jul-08	219.14	26-Jul-17	219.18
27-Oct-08	218.75	25-Oct-17	218.86
28-Apr-09	220.38	30-Apr-18	219.32
27-Jul-09	219.06	24-Jul-18	219.03
05-Nov-09	218.79	24-Oct-18	218.80
28-Apr-10	219.08	30-Apr-19	219.27
28-Jul-10	219.19	25-Jul-19	219.05
26-Oct-10	218.83	30-Oct-19	218.84
20-Apr-11	219.13	20-Apr-20	219.06
25-Oct-11	218.82	15-Jul-20	219.07
01-May-12	219.06	06-Oct-20	218.87
31-Jul-12	218.99	22-Apr-21	219.02
15-Oct-12	218.81	20-Jul-21	219.23
22-Apr-13	219.18	07-Oct-21	218.92
29-Jul-13	219.01	19-Apr-22	219.13
08-Oct-13	218.88	15-Jul-22	219.05
24-Apr-14	219.21	11-Oct-22	218.78
30-Jul-14	219.05	18-Apr-23	218.90
08-Oct-14	218.82	17-Jul-23	219.15
29-Jul-15	219.02	10-Oct-23	218.86
07-Oct-15	218.75	16-Apr-24	219.23
26-Apr-16	219.20	15-Jul-24	219.21
28-Jul-16	218.93	07-Oct-24	218.83

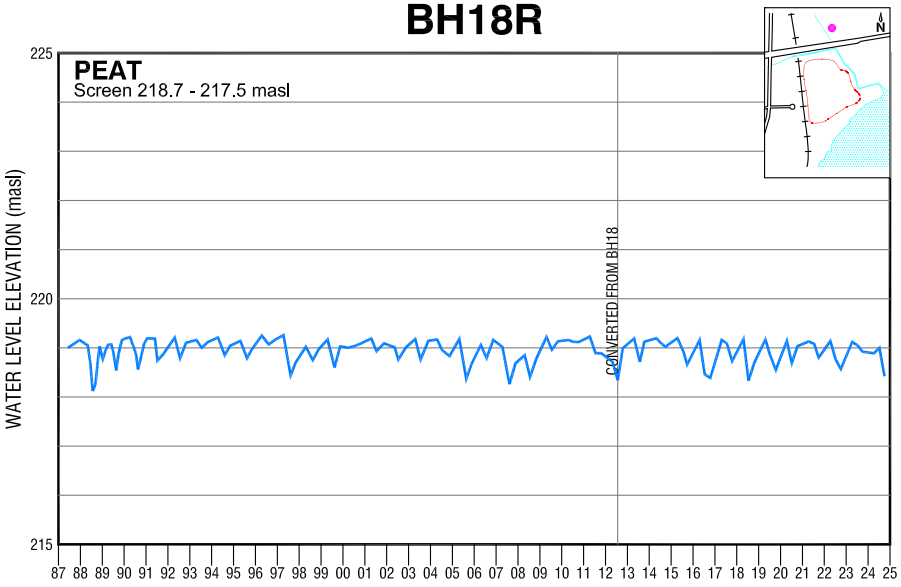
BH17-IVR



MP Elevation 220.87 masl

DATE	ELEVATION	DATE	ELEVATION
28-Jul-03	218.98	31-Jul-12	218.92
10-Nov-03	218.91	03-May-17	219.26
27-Apr-04	219.49	26-Jul-17	219.06
12-Jul-04	219.09	25-Oct-17	218.78
16-Nov-04	218.73	30-Apr-18	219.18
27-Apr-05	219.51	24-Jul-18	218.90
23-Aug-05	218.92	24-Oct-18	218.70
14-Nov-05	218.73	30-Apr-19	219.24
21-Apr-06	219.40	25-Jul-19	218.86
27-Jul-06	219.02	30-Oct-19	218.77
17-Apr-07	219.31	20-Apr-20	219.07
14-Aug-07	218.93	15-Jul-20	218.88
20-Nov-07	218.80	06-Oct-20	218.74
22-Apr-08	219.34	22-Apr-21	218.97
22-Jul-08	219.19	20-Jul-21	219.08
27-Oct-08	218.77	07-Oct-21	218.79
28-Apr-09	219.44	19-Apr-22	219.10
27-Jul-09	219.02	15-Jul-22	218.86
04-Nov-09	218.79	11-Oct-22	218.64
28-Apr-10	219.09	18-Apr-23	218.86
28-Jul-10	219.20	17-Jul-23	218.99
26-Oct-10	218.85	10-Oct-23	218.78
20-Apr-11	219.58	16-Apr-24	219.14
24-Oct-11	218.87	15-Jul-24	219.10
02-May-12	219.37	07-Oct-24	218.68

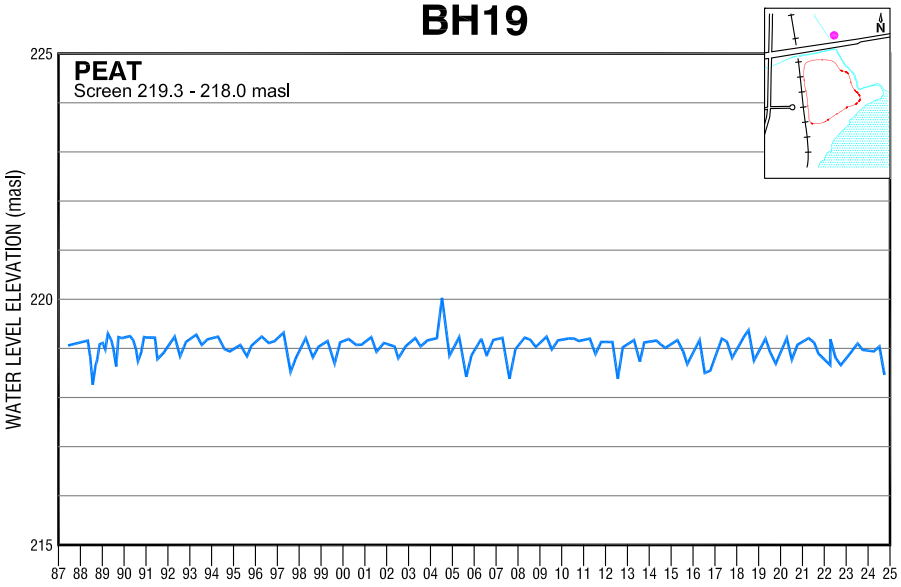
BH18R



MP Elevation 220.01 masl

DATE	ELEVATION	DATE	ELEVATION
21-Jul-08	218.41	17-Oct-16	218.39
27-Oct-08	218.76	24-Apr-17	219.16
21-Apr-09	219.22	18-Jul-17	219.09
21-Jul-09	218.96	17-Oct-17	218.73
27-Oct-09	219.13	23-Apr-18	219.18
22-Apr-10	219.16	16-Jul-18	218.33
21-Jul-10	219.12	15-Oct-18	218.68
19-Oct-10	219.12	23-Apr-19	219.17
14-Apr-11	219.23	15-Jul-19	218.84
19-Jul-11	218.89	15-Oct-19	218.55
20-Oct-11	218.89	14-Apr-20	219.14
25-Apr-12	218.72	08-Jul-20	218.69
26-Jul-12	218.34	08-Oct-20	219.03
15-Oct-12	218.99	13-Apr-21	219.13
22-Apr-13	219.19	16-Jul-21	219.08
29-Jul-13	218.71	29-Sep-21	218.80
08-Oct-13	219.12	11-Apr-22	219.14
28-Apr-14	219.20	11-Jul-22	218.76
21-Jul-14	219.09	04-Oct-22	218.57
30-Sep-14	219.02	11-Apr-23	219.12
15-Apr-15	219.20	10-Jul-23	219.05
20-Jul-15	218.94	04-Oct-23	218.92
28-Sep-15	218.66	09-Apr-24	218.89
19-Apr-16	219.16	08-Jul-24	219.00
17-Jul-16	218.46	02-Oct-24	218.42

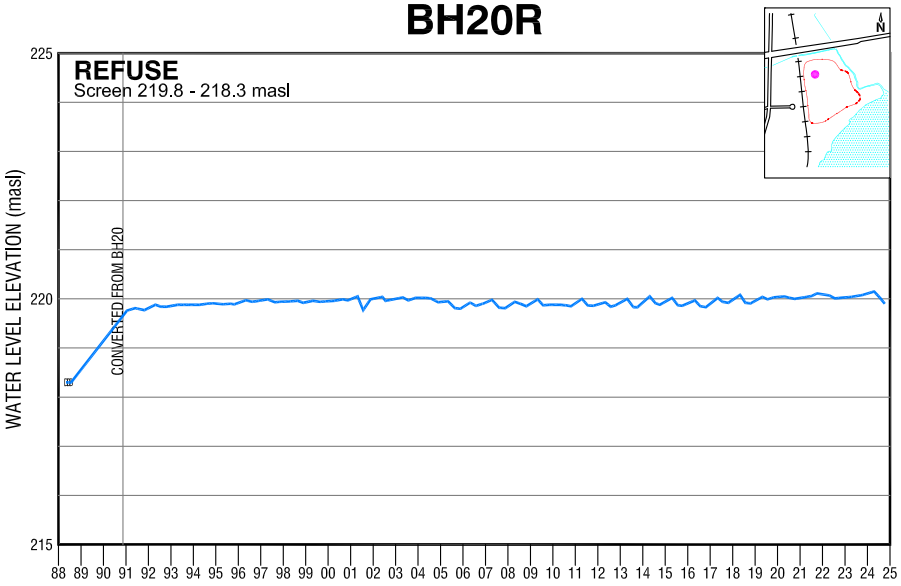
BH19



MP Elevation 220.53 masl

DATE	ELEVATION	DATE	ELEVATION
27-Oct-08	219.03	24-Apr-17	219.20
22-Apr-09	219.24	18-Jul-17	219.14
21-Jul-09	218.98	17-Oct-17	218.81
27-Oct-09	219.16	23-Apr-18	219.22
22-Apr-10	219.20	16-Jul-18	219.37
21-Jul-10	219.20	15-Oct-18	218.75
19-Oct-10	219.15	23-Apr-19	219.20
14-Apr-11	219.20	15-Jul-19	218.91
19-Jul-11	218.88	15-Oct-19	218.69
20-Oct-11	219.13	14-Apr-20	219.21
25-Apr-12	219.13	08-Jul-20	218.77
26-Jul-12	218.38	08-Oct-20	219.07
15-Oct-12	219.02	13-Apr-21	219.21
22-Apr-13	219.17	12-Jul-21	219.12
29-Jul-13	218.73	29-Sep-21	218.89
08-Oct-13	219.12	10-Apr-22	218.66
28-Apr-14	219.16	11-Apr-22	219.19
21-Jul-14	219.07	11-Jul-22	218.80
30-Sep-14	219.01	04-Oct-22	218.66
15-Apr-15	219.17	11-Apr-23	218.95
20-Jul-15	218.94	10-Jul-23	219.10
28-Sep-15	218.68	04-Oct-23	218.97
19-Apr-16	219.17	08-Apr-24	218.94
17-Jul-16	218.50	08-Jul-24	219.04
17-Oct-16	218.55	01-Oct-24	218.46

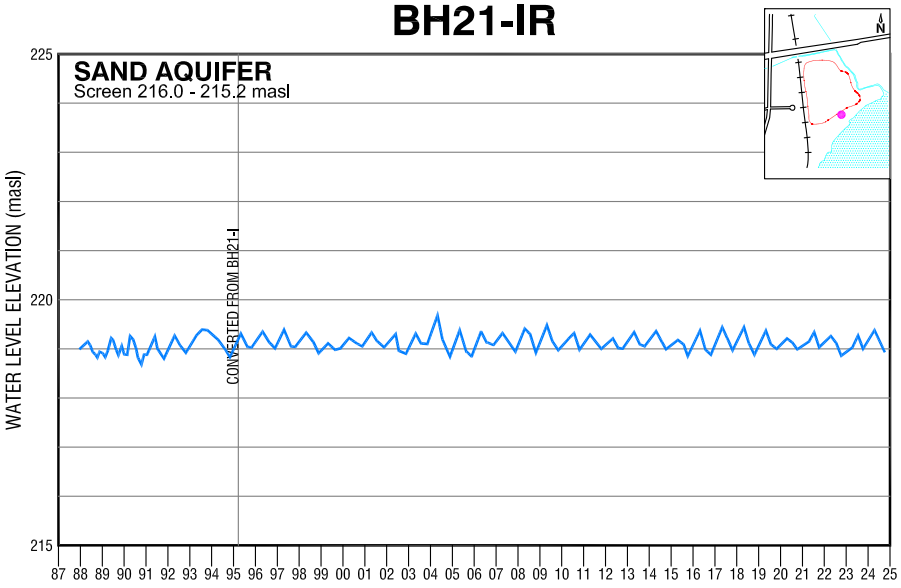
BH20R



MP Elevation 231.30 masl

DATE	ELEVATION	DATE	ELEVATION
21-Jul-08	219.90	25-Jul-16	219.85
27-Oct-08	219.85	24-Oct-16	219.83
27-Apr-09	219.99	01-May-17	220.02
28-Jul-09	219.87	24-Jul-17	219.94
02-Nov-09	219.88	23-Oct-17	219.92
26-Apr-10	219.88	02-May-18	220.08
26-Jul-10	219.87	26-Jul-18	219.92
25-Oct-10	219.85	22-Oct-18	219.91
18-Apr-11	220.00	29-Apr-19	220.04
25-Jul-11	219.87	23-Jul-19	219.99
24-Oct-11	219.86	28-Oct-19	220.03
30-Apr-12	219.93	16-Apr-20	220.05
30-Jul-12	219.84	13-Jul-20	220.02
15-Oct-12	219.87	07-Oct-20	220.00
23-Apr-13	220.00	21-Apr-21	220.04
30-Jul-13	219.84	14-Jul-21	220.06
06-Aug-13	219.83	01-Oct-21	220.11
08-Oct-13	219.83	21-Apr-22	220.07
23-Apr-14	220.05	20-Jul-22	220.01
28-Jul-14	219.91	13-Oct-22	220.02
06-Oct-14	219.88	19-Apr-23	220.04
22-Apr-15	220.02	16-Oct-23	220.08
27-Jul-15	219.87	17-Apr-24	220.15
05-Oct-15	219.86	18-Jul-24	220.03
25-Apr-16	219.97	10-Oct-24	219.90

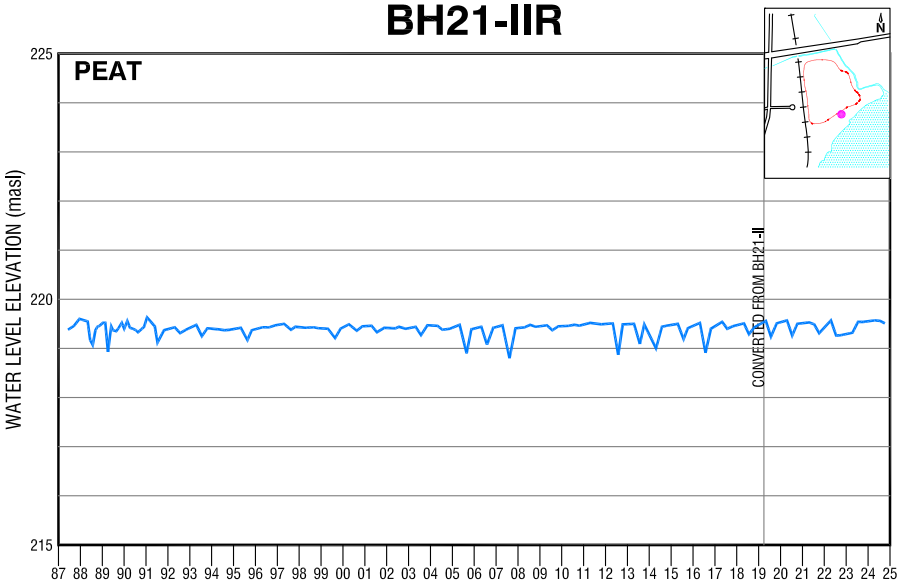
BH21-IR



MP Elevation 220.83 masl

DATE	ELEVATION	DATE	ELEVATION
22-Apr-08	219.41	28-Jul-16	218.98
22-Jul-08	219.30	26-Oct-16	218.88
27-Oct-08	218.92	02-May-17	219.44
28-Apr-09	219.48	26-Jul-17	219.22
29-Jul-09	219.15	24-Oct-17	218.97
04-Nov-09	218.97	30-Apr-18	219.44
27-Apr-10	219.21	23-Jul-18	219.11
26-Jul-10	219.32	23-Oct-18	218.88
26-Oct-10	218.98	01-May-19	219.37
18-Apr-11	219.29	25-Jul-19	219.09
24-Oct-11	219.00	30-Oct-19	219.00
02-May-12	219.21	17-Apr-20	219.21
01-Aug-12	219.01	14-Jul-20	219.13
15-Oct-12	219.01	07-Oct-20	218.99
22-Apr-13	219.34	22-Apr-21	219.15
29-Jul-13	219.09	15-Jul-21	219.34
08-Oct-13	219.05	07-Oct-21	219.03
16-Oct-13	219.05	20-Apr-22	219.26
24-Apr-14	219.36	18-Jul-22	219.12
31-Jul-14	219.14	11-Oct-22	218.86
09-Oct-14	218.99	17-Apr-23	219.03
22-Apr-15	219.18	17-Jul-23	219.27
29-Jul-15	219.09	11-Oct-23	219.00
07-Oct-15	218.85	17-Apr-24	219.38
26-Apr-16	219.37	08-Oct-24	218.93

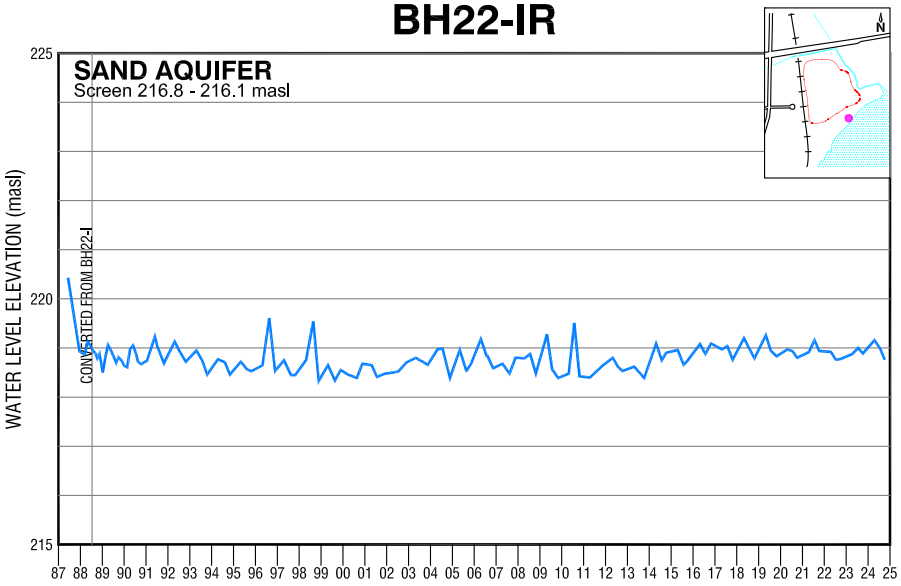
BH21-IIR



MP Elevation 220.67 masl

DATE	ELEVATION	DATE	ELEVATION
22-Apr-08	219.43	26-Oct-16	219.40
22-Jul-08	219.48	02-May-17	219.54
27-Oct-08	219.44	26-Jul-17	219.40
28-Apr-09	219.47	24-Oct-17	219.45
29-Jul-09	219.37	30-Apr-18	219.51
04-Nov-09	219.45	23-Jul-18	219.29
27-Apr-10	219.46	23-Oct-18	219.43
26-Jul-10	219.48	01-May-19	219.56
26-Oct-10	219.46	25-Jul-19	219.24
18-Apr-11	219.52	30-Oct-19	219.51
25-Oct-11	219.49	17-Apr-20	219.57
02-May-12	219.51	14-Jul-20	219.26
01-Aug-12	218.87	07-Oct-20	219.50
15-Oct-12	219.49	21-Apr-21	219.53
22-Apr-13	219.50	15-Jul-21	219.49
29-Jul-13	219.09	07-Oct-21	219.31
08-Oct-13	219.49	20-Apr-22	219.57
24-Apr-14	219.00	18-Jul-22	219.26
31-Jul-14	219.44	11-Oct-22	219.27
09-Oct-14	219.46	17-Apr-23	219.32
22-Apr-15	219.50	17-Jul-23	219.54
29-Jul-15	219.19	11-Oct-23	219.54
07-Oct-15	219.41	17-Apr-24	219.57
26-Apr-16	219.52	19-Jul-24	219.56
28-Jul-16	218.91	08-Oct-24	219.51

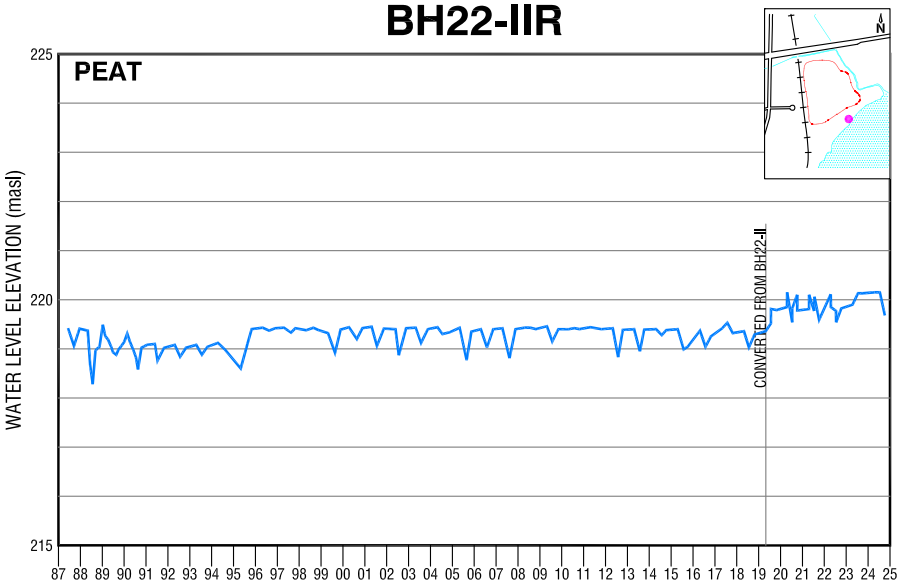
BH22-IR



MP Elevation 219.96 masl

DATE	ELEVATION	DATE	ELEVATION
22-Apr-08	218.79	25-Oct-16	219.09
22-Jul-08	218.88	02-May-17	218.97
27-Oct-08	218.48	26-Jul-17	219.04
28-Apr-09	219.28	25-Oct-17	218.76
27-Jul-09	218.56	30-Apr-18	219.20
05-Nov-09	218.39	23-Jul-18	219.00
28-Apr-10	218.48	24-Oct-18	218.79
28-Jul-10	219.51	30-Apr-19	219.26
26-Oct-10	218.42	26-Jul-19	218.94
20-Apr-11	218.40	30-Oct-19	218.83
25-Oct-11	218.62	20-Apr-20	218.97
01-May-12	218.80	15-Jul-20	218.94
01-Aug-12	218.61	06-Oct-20	218.80
15-Oct-12	218.53	22-Apr-21	218.92
22-Apr-13	218.62	20-Jul-21	219.16
29-Jul-13	218.49	07-Oct-21	218.94
08-Oct-13	218.39	19-Apr-22	218.92
24-Apr-14	219.09	15-Jul-22	218.76
30-Jul-14	218.75	11-Oct-22	218.78
09-Oct-14	218.90	17-Apr-23	218.88
21-Apr-15	218.96	17-Jul-23	219.00
29-Jul-15	218.66	10-Oct-23	218.89
07-Oct-15	218.75	16-Apr-24	219.16
26-Apr-16	219.08	15-Jul-24	219.00
28-Jul-16	218.88	07-Oct-24	218.76

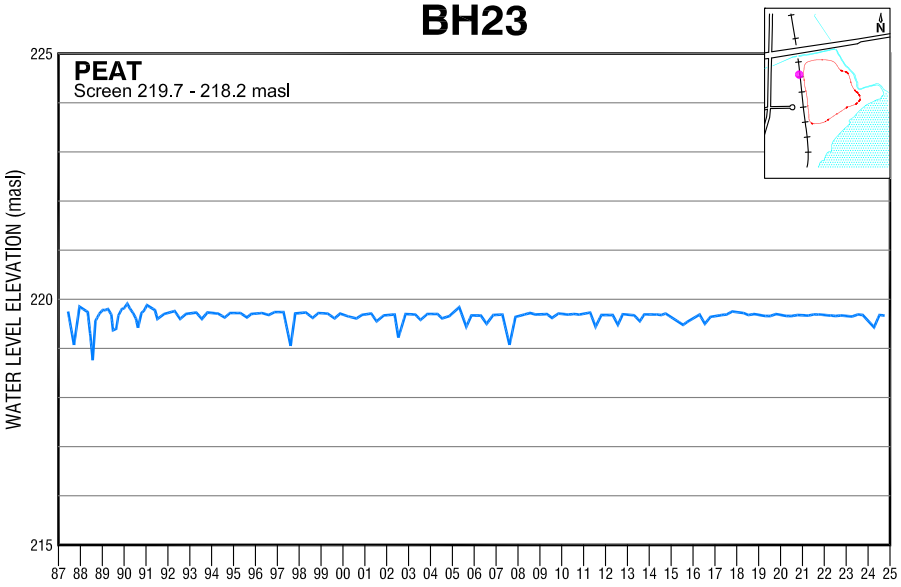
BH22-IIR



MP Elevation 220.95 masl

DATE	ELEVATION	DATE	ELEVATION
26-Oct-10	219.40	25-Jul-19	219.52
20-Apr-11	219.44	26-Jul-19	219.81
25-Oct-11	219.40	30-Oct-19	219.79
01-May-12	219.42	17-Apr-20	219.85
31-Jul-12	218.83	20-Apr-20	220.15
15-Oct-12	219.38	14-Jul-20	219.54
22-Apr-13	219.40	15-Jul-20	219.82
29-Jul-13	218.95	06-Oct-20	220.10
08-Oct-13	219.39	07-Oct-20	219.78
24-Apr-14	219.40	21-Apr-21	219.81
30-Jul-14	219.28	22-Apr-21	220.10
09-Oct-14	219.38	15-Jul-21	219.77
21-Apr-15	219.40	20-Jul-21	220.06
29-Jul-15	218.99	07-Oct-21	219.59
07-Oct-15	219.04	19-Apr-22	220.11
26-Apr-16	219.37	20-Apr-22	219.85
28-Jul-16	219.04	15-Jul-22	219.77
25-Oct-16	219.25	18-Jul-22	219.54
02-May-17	219.42	11-Oct-22	219.82
26-Jul-17	219.53	17-Apr-23	219.90
25-Oct-17	219.32	17-Jul-23	220.13
30-Apr-18	219.36	10-Oct-23	220.13
23-Jul-18	219.03	16-Apr-24	220.15
24-Oct-18	219.29	15-Jul-24	220.15
30-Apr-19	219.36	07-Oct-24	219.68

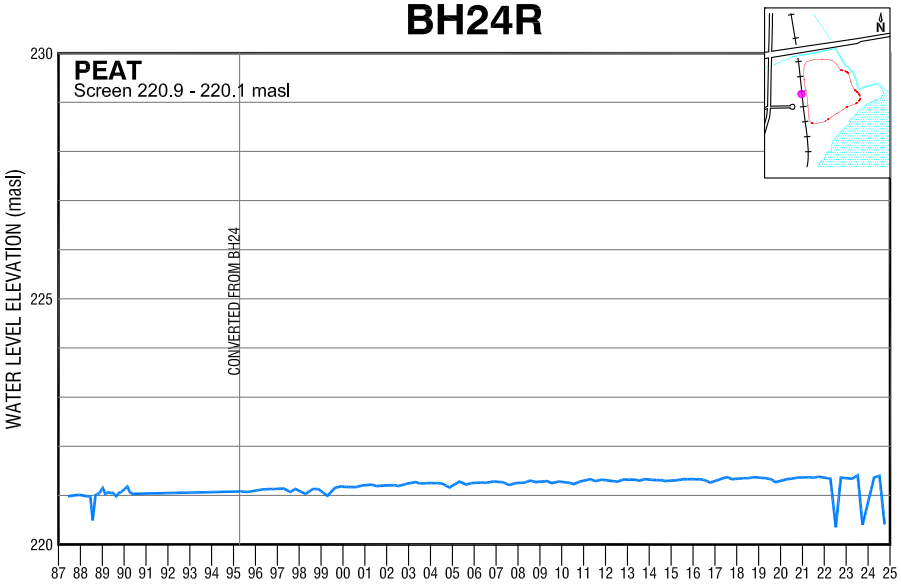
BH23



MP Elevation 220.82 masl

DATE	ELEVATION	DATE	ELEVATION
21-Apr-08	219.69	18-Oct-16	219.64
21-Jul-08	219.72	24-Apr-17	219.68
27-Oct-08	219.69	17-Jul-17	219.69
28-Apr-09	219.70	16-Oct-17	219.75
23-Jul-09	219.62	23-Apr-18	219.72
05-Nov-09	219.71	16-Jul-18	219.68
28-Apr-10	219.69	15-Oct-18	219.70
22-Jul-10	219.70	24-Apr-19	219.66
26-Oct-10	219.69	17-Jul-19	219.66
20-Apr-11	219.73	16-Oct-19	219.70
20-Jul-11	219.44	14-Apr-20	219.66
25-Oct-11	219.68	08-Jul-20	219.66
01-May-12	219.68	09-Oct-20	219.68
27-Jul-12	219.48	14-Apr-21	219.67
15-Oct-12	219.70	07-Jul-21	219.69
22-Apr-13	219.68	28-Sep-21	219.69
29-Jul-13	219.55	12-Apr-22	219.67
08-Oct-13	219.69	12-Jul-22	219.66
28-Apr-14	219.69	03-Oct-22	219.67
21-Jul-14	219.68	12-Apr-23	219.65
29-Sep-14	219.71	11-Jul-23	219.69
20-Jul-15	219.48	02-Oct-23	219.68
28-Sep-15	219.54	10-Apr-24	219.43
19-Apr-16	219.69	10-Jul-24	219.68
17-Jul-16	219.50	04-Oct-24	219.67

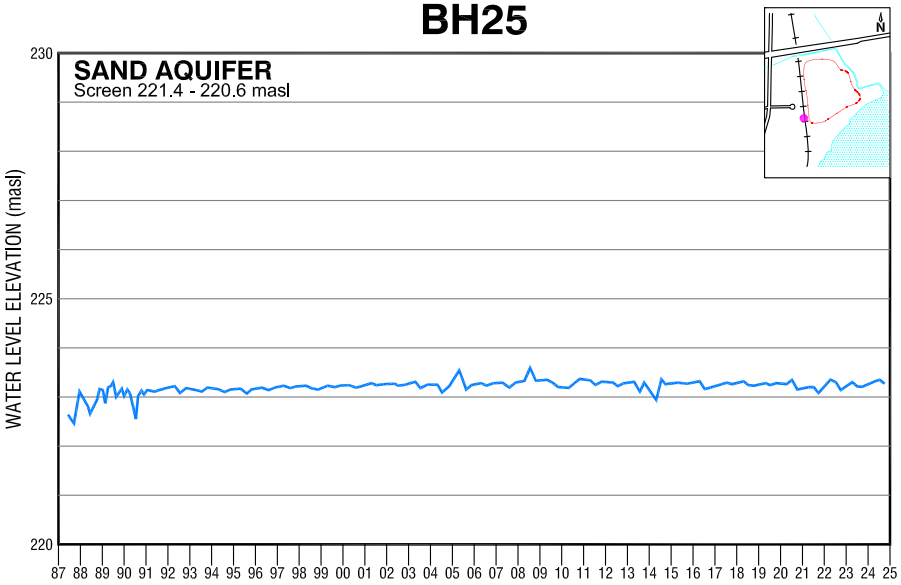
BH24R



MP Elevation 222.03 masl

DATE	ELEVATION	DATE	ELEVATION
21-Jul-08	221.30	18-Oct-16	221.26
27-Oct-08	221.27	24-Apr-17	221.34
28-Apr-09	221.29	18-Jul-17	221.37
23-Jul-09	221.25	16-Oct-17	221.33
05-Nov-09	221.28	23-Apr-18	221.35
28-Apr-10	221.26	16-Jul-18	221.35
22-Jul-10	221.23	15-Oct-18	221.37
26-Oct-10	221.28	24-Apr-19	221.35
20-Apr-11	221.33	17-Jul-19	221.33
21-Jul-11	221.29	16-Oct-19	221.27
25-Oct-11	221.32	14-Apr-20	221.33
01-May-12	221.29	08-Jul-20	221.34
27-Jul-12	221.28	09-Oct-20	221.36
15-Oct-12	221.32	14-Apr-21	221.37
22-Apr-13	221.32	07-Jul-21	221.36
29-Jul-13	221.30	28-Sep-21	221.38
08-Oct-13	221.33	12-Apr-22	221.34
28-Apr-14	221.31	12-Jul-22	220.35
21-Jul-14	221.31	03-Oct-22	221.36
29-Sep-14	221.29	12-Apr-23	221.34
15-Apr-15	221.31	11-Jul-23	221.41
20-Jul-15	221.33	02-Oct-23	220.40
28-Sep-15	221.33	10-Apr-24	221.36
19-Apr-16	221.33	10-Jul-24	221.40
17-Jul-16	221.31	04-Oct-24	220.41

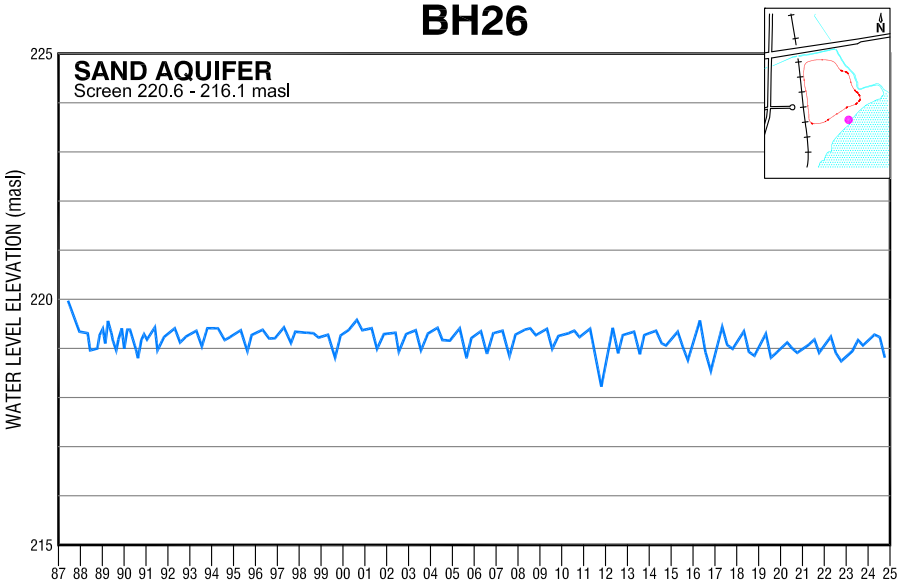
BH25



MP Elevation 224.49 masl

DATE	ELEVATION	DATE	ELEVATION
27-Oct-08	223.33	18-Oct-16	223.19
28-Apr-09	223.35	24-Apr-17	223.26
23-Jul-09	223.30	17-Jul-17	223.29
05-Nov-09	223.20	16-Oct-17	223.26
28-Apr-10	223.18	23-Apr-18	223.32
22-Jul-10	223.27	17-Jul-18	223.24
26-Oct-10	223.37	16-Oct-18	223.23
20-Apr-11	223.34	24-Apr-19	223.28
20-Jul-11	223.24	16-Jul-19	223.24
25-Oct-11	223.31	16-Oct-19	223.28
01-May-12	223.29	14-Apr-20	223.26
27-Jul-12	223.22	09-Jul-20	223.35
15-Oct-12	223.27	09-Oct-20	223.15
25-Oct-12	223.27	14-Apr-21	223.20
22-Apr-13	223.31	07-Jul-21	223.20
29-Jul-13	223.11	28-Sep-21	223.08
08-Oct-13	223.29	12-Apr-22	223.35
28-Apr-14	222.94	12-Jul-22	223.30
21-Jul-14	223.36	03-Oct-22	223.14
29-Sep-14	223.26	12-Apr-23	223.30
15-Apr-15	223.29	11-Jul-23	223.21
21-Jul-15	223.28	02-Oct-23	223.21
28-Sep-15	223.27	10-Apr-24	223.31
19-Apr-16	223.32	10-Jul-24	223.35
17-Jul-16	223.16	04-Oct-24	223.27

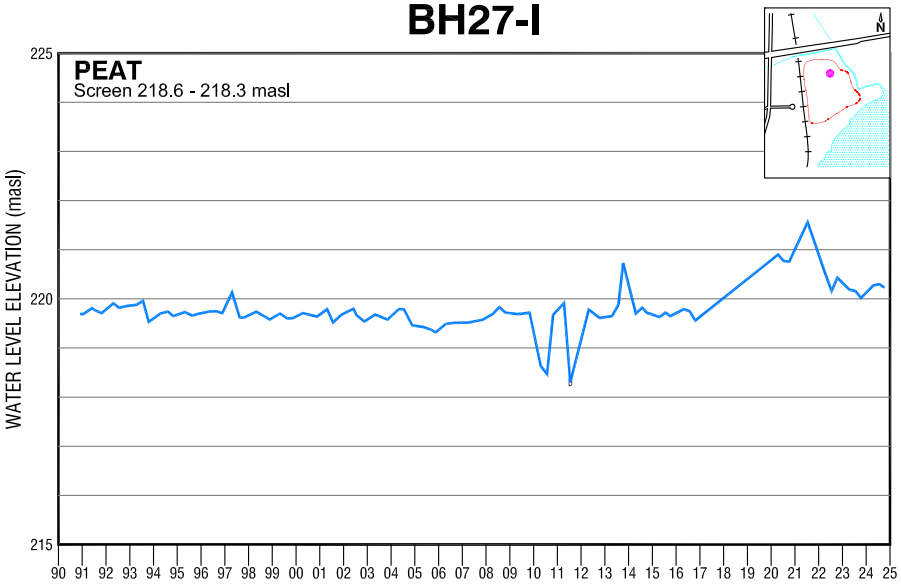
BH26



MP Elevation 220.77 masl

DATE	ELEVATION	DATE	ELEVATION
22-Apr-08	219.38	25-Oct-16	218.54
22-Jul-08	219.41	02-May-17	219.44
27-Oct-08	219.27	26-Jul-17	219.07
28-Apr-09	219.40	25-Oct-17	218.99
27-Jul-09	218.99	30-Apr-18	219.35
04-Nov-09	219.25	23-Jul-18	218.93
28-Apr-10	219.31	24-Oct-18	218.85
28-Jul-10	219.36	30-Apr-19	219.30
26-Oct-10	219.23	26-Jul-19	218.81
20-Apr-11	219.40	30-Oct-19	218.92
24-Oct-11	218.22	20-Apr-20	219.12
01-May-12	219.42	14-Jul-20	219.00
31-Jul-12	218.90	06-Oct-20	218.91
15-Oct-12	219.27	22-Apr-21	219.08
22-Apr-13	219.34	20-Jul-21	219.18
29-Jul-13	218.88	07-Oct-21	218.91
08-Oct-13	219.27	19-Apr-22	219.24
24-Apr-14	219.36	15-Jul-22	218.90
30-Jul-14	219.10	11-Oct-22	218.74
08-Oct-14	219.06	17-Apr-23	218.95
21-Apr-15	219.34	17-Jul-23	219.17
29-Jul-15	218.98	10-Oct-23	219.06
07-Oct-15	218.76	16-Apr-24	219.28
26-Apr-16	219.57	15-Jul-24	219.23
28-Jul-16	218.92	07-Oct-24	218.81

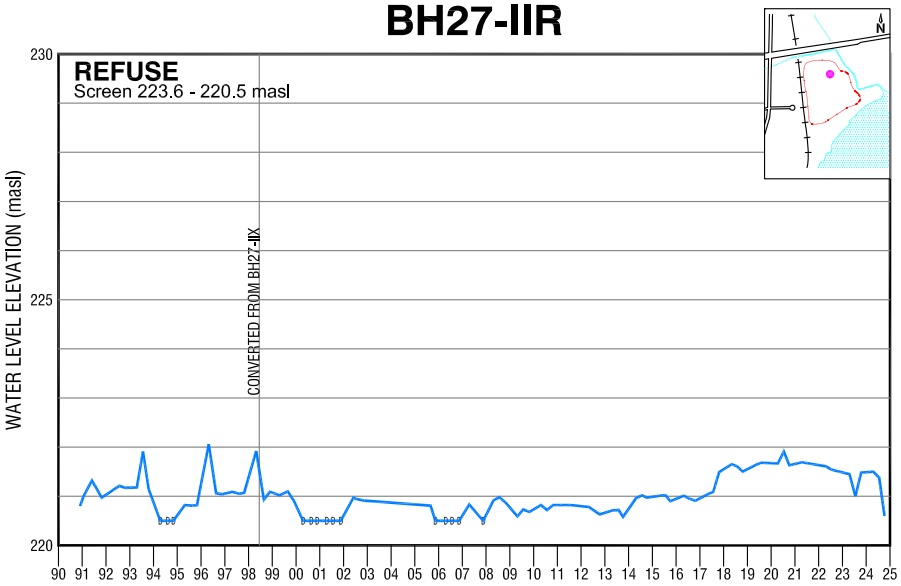
BH27-I



MP Elevation 234.01 masl

DATE	ELEVATION	DATE	ELEVATION
24-Nov-04	219.46	23-Apr-13	219.65
03-May-05	219.43	30-Jul-13	219.89
23-Aug-05	219.38	08-Oct-13	220.73
30-Aug-05	219.38	23-Apr-14	219.70
14-Nov-05	219.32	28-Jul-14	219.82
21-Nov-05	219.32	06-Oct-14	219.72
21-Apr-06	219.49	22-Apr-15	219.63
01-May-06	219.49	20-Jul-15	219.72
27-Jul-06	219.51	05-Oct-15	219.65
02-Aug-06	219.51	27-Apr-16	219.79
17-Apr-07	219.52	25-Jul-16	219.75
20-Nov-07	219.58	25-Oct-16	219.56
21-Apr-08	219.70	16-Apr-20	220.90
21-Jul-08	219.83	13-Jul-20	220.77
27-Oct-08	219.72	08-Oct-20	220.76
28-Apr-09	219.69	15-Jul-21	221.56
22-Jul-09	219.70	21-Apr-22	220.48
30-Oct-09	219.72	19-Jul-22	220.16
22-Apr-10	218.63	14-Oct-22	220.43
28-Jul-10	218.47	19-Apr-23	220.19
26-Oct-10	219.67	19-Jul-23	220.16
13-Apr-11	219.91	16-Oct-23	220.02
19-Jul-11	DRY	17-Apr-24	220.27
27-Apr-12	219.78	18-Jul-24	220.30
15-Oct-12	219.61	10-Oct-24	220.23

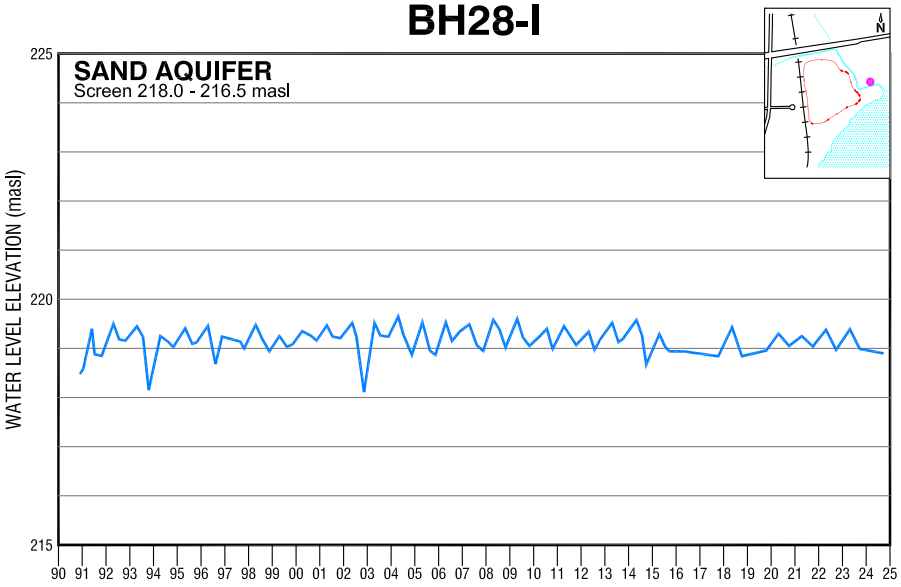
BH27-IIR



MP Elevation 234.24 masl

DATE	ELEVATION	DATE	ELEVATION
14-Nov-06	DRY	27-Apr-16	221.01
17-Apr-07	220.83	25-Jul-16	220.95
20-Nov-07	DRY	25-Oct-16	220.91
21-Apr-08	220.91	01-May-17	221.04
21-Jul-08	220.98	25-Jul-17	221.09
27-Oct-08	220.87	23-Oct-17	221.49
28-Apr-09	220.59	02-May-18	221.65
22-Jul-09	220.73	23-Jul-18	221.61
30-Oct-09	220.68	22-Oct-18	221.50
22-Apr-10	220.82	29-Apr-19	221.63
28-Jul-10	220.72	26-Jul-19	221.68
26-Oct-10	220.82	16-Apr-20	221.67
13-Apr-11	220.82	13-Jul-20	221.91
19-Jul-11	220.82	08-Oct-20	221.63
27-Apr-12	220.78	16-Apr-21	221.69
15-Oct-12	220.63	15-Jul-21	221.67
23-Apr-13	220.71	21-Apr-22	221.61
30-Jul-13	220.72	19-Jul-22	221.54
08-Oct-13	220.58	13-Oct-22	221.51
23-Apr-14	220.96	19-Apr-23	221.45
28-Jul-14	221.02	19-Jul-23	221.00
06-Oct-14	220.97	16-Oct-23	221.48
22-Apr-15	221.01	17-Apr-24	221.50
20-Jul-15	221.02	18-Jul-24	221.38
05-Oct-15	220.90	10-Oct-24	220.60

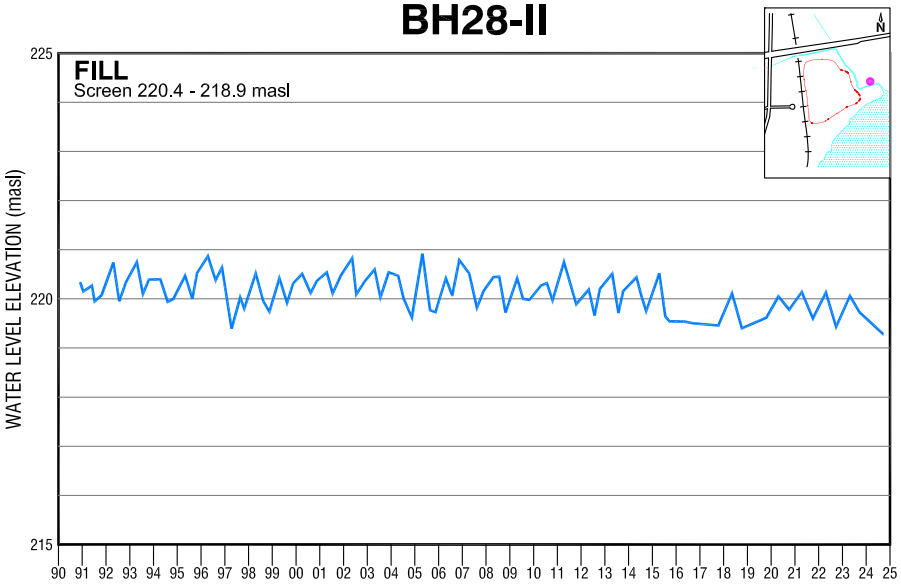
BH28-I



MP Elevation 222.07 masl

DATE	ELEVATION	DATE	ELEVATION
20-Apr-04	219.65	15-Oct-12	219.17
15-Jul-04	219.26	23-Apr-13	219.52
17-Nov-04	218.87	29-Jul-13	219.13
27-Apr-05	219.53	07-Oct-13	219.20
23-Aug-05	218.95	30-Apr-14	219.58
14-Nov-05	218.87	23-Jul-14	219.28
21-Apr-06	219.53	29-Sep-14	218.67
27-Jul-06	219.15	17-Apr-15	219.29
13-Nov-06	219.33	20-Jul-15	219.03
16-Apr-07	219.49	24-Sep-15	218.94
14-Aug-07	219.06	22-Apr-16	218.94
20-Nov-07	218.95	05-Oct-16	218.91
21-Apr-08	219.58	12-Oct-17	218.84
21-Jul-08	219.40	09-May-18	219.43
27-Oct-08	219.02	10-Oct-18	218.84
23-Apr-09	219.60	21-Oct-19	218.96
22-Jul-09	219.22	21-Apr-20	219.30
30-Oct-09	219.05	05-Oct-20	219.05
23-Apr-10	219.27	15-Apr-21	219.25
23-Jul-10	219.40	05-Oct-21	219.04
21-Oct-10	218.99	22-Apr-22	219.38
13-Apr-11	219.45	27-Sep-22	218.97
19-Oct-11	219.07	26-Apr-23	219.39
27-Apr-12	219.34	26-Sep-23	218.99
27-Jul-12	218.97	23-Sep-24	218.90

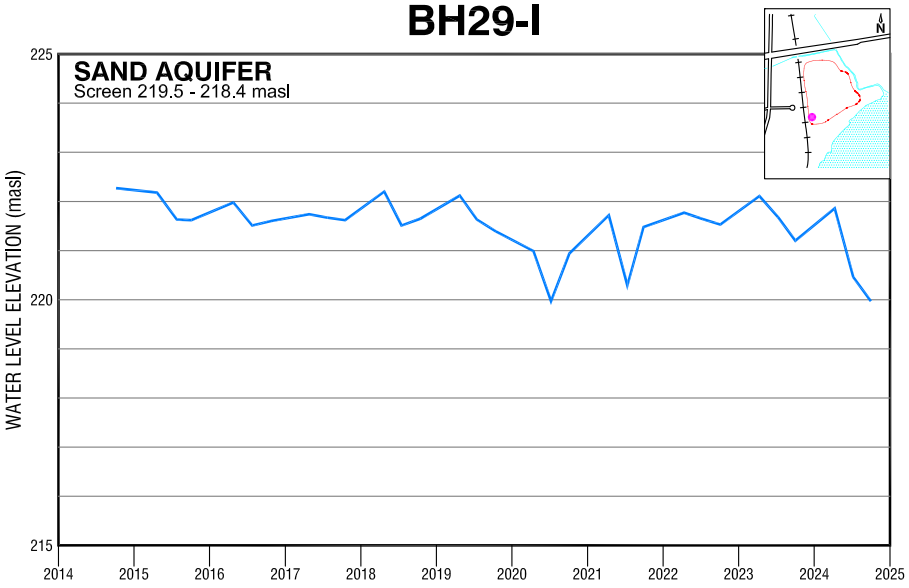
BH28-II



MP Elevation 221.85 masl

DATE	ELEVATION	DATE	ELEVATION
17-Nov-04	219.62	23-Apr-13	220.51
27-Apr-05	220.92	29-Jul-13	219.71
23-Aug-05	219.77	07-Oct-13	220.15
14-Nov-05	219.73	30-Apr-14	220.44
21-Apr-06	220.42	23-Jul-14	220.03
27-Jul-06	220.08	29-Sep-14	219.75
02-Aug-06	220.08	17-Apr-15	220.52
13-Nov-06	220.79	20-Jul-15	219.64
16-Apr-07	220.52	24-Sep-15	219.54
14-Aug-07	219.82	22-Apr-16	219.54
20-Nov-07	220.15	05-Oct-16	219.50
21-Apr-08	220.44	12-Oct-17	219.46
21-Jul-08	220.45	09-May-18	220.11
27-Oct-08	219.72	09-Oct-18	219.40
23-Apr-09	220.42	21-Oct-19	219.62
22-Jul-09	220.00	21-Apr-20	220.05
30-Oct-09	219.98	05-Oct-20	219.78
23-Apr-10	220.27	15-Apr-21	220.14
23-Jul-10	220.32	05-Oct-21	219.60
21-Oct-10	219.97	22-Apr-22	220.13
13-Apr-11	220.75	27-Sep-22	219.43
19-Oct-11	219.89	26-Apr-23	220.06
27-Apr-12	220.19	26-Sep-23	219.72
27-Jul-12	219.66	23-Sep-24	219.28
15-Oct-12	220.20	24-Sep-24	219.28

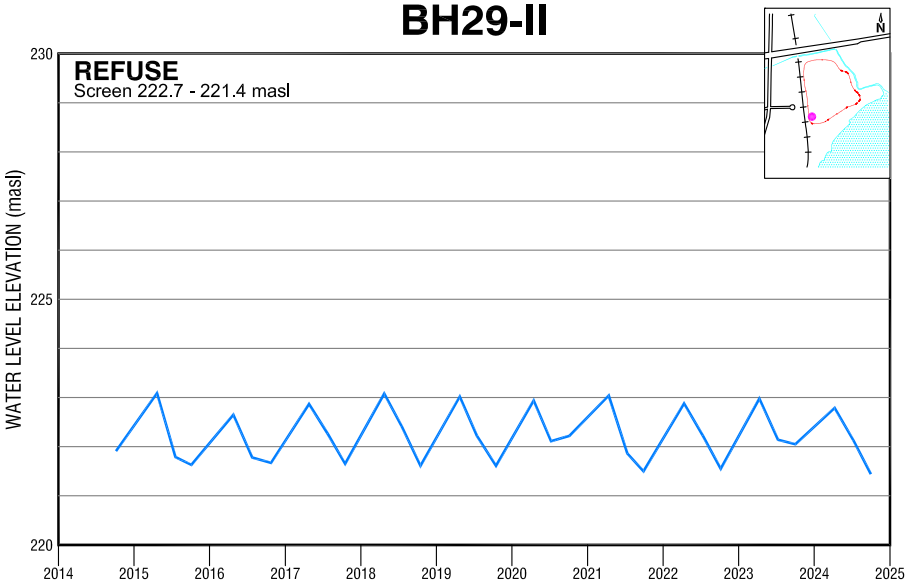
BH29-I



MP Elevation 224.42 masl

DATE	ELEVATION	DATE	ELEVATION
06-Oct-14	222.27	11-Apr-23	222.11
22-Apr-15	222.18	10-Jul-23	221.68
27-Jul-15	221.63	02-Oct-23	221.20
05-Oct-15	221.62	09-Apr-24	221.86
25-Apr-16	221.98	08-Jul-24	220.46
25-Jul-16	221.51	01-Oct-24	219.97
24-Oct-16	221.60		
26-Apr-17	221.74		
24-Jul-17	221.67		
17-Oct-17	221.62		
24-Apr-18	222.20		
17-Jul-18	221.51		
16-Oct-18	221.65		
24-Apr-19	222.12		
16-Jul-19	221.63		
16-Oct-19	221.39		
14-Apr-20	220.99		
08-Jul-20	219.97		
05-Oct-20	220.94		
13-Apr-21	221.72		
12-Jul-21	220.29		
28-Sep-21	221.48		
12-Apr-22	221.77		
12-Jul-22	221.64		
04-Oct-22	221.53		

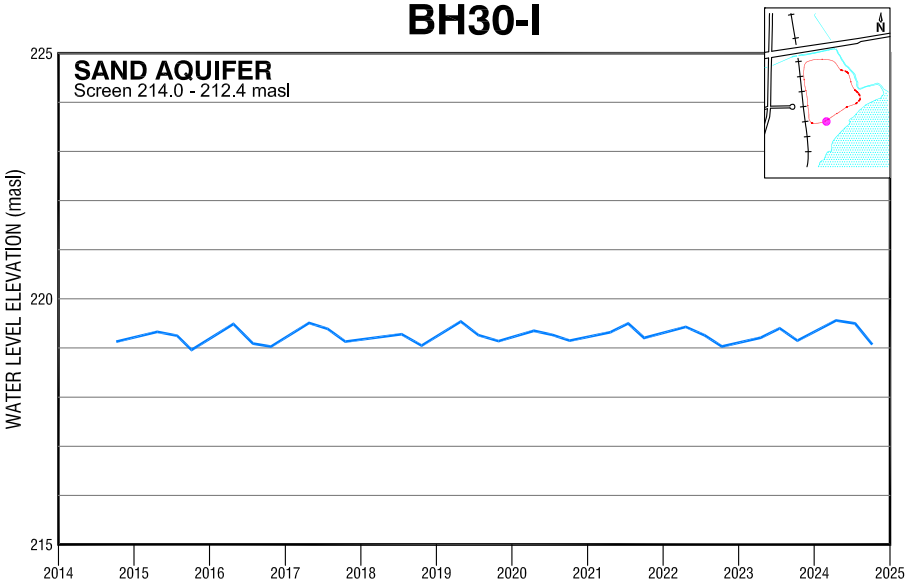
BH29-II



MP Elevation 224.49 masl

DATE	ELEVATION	DATE	ELEVATION
06-Oct-14	221.91	11-Apr-23	222.98
22-Apr-15	223.09	10-Jul-23	222.14
20-Jul-15	221.79	02-Oct-23	222.05
05-Oct-15	221.63	09-Apr-24	222.79
25-Apr-16	222.65	08-Jul-24	222.13
25-Jul-16	221.78	01-Oct-24	221.44
24-Oct-16	221.67		
26-Apr-17	222.87		
24-Jul-17	222.27		
17-Oct-17	221.65		
24-Apr-18	223.08		
17-Jul-18	222.42		
16-Oct-18	221.61		
24-Apr-19	223.02		
16-Jul-19	222.22		
16-Oct-19	221.61		
15-Apr-20	222.94		
08-Jul-20	222.11		
05-Oct-20	222.22		
13-Apr-21	223.04		
12-Jul-21	221.86		
28-Sep-21	221.50		
12-Apr-22	222.88		
11-Jul-22	222.23		
06-Oct-22	221.55		

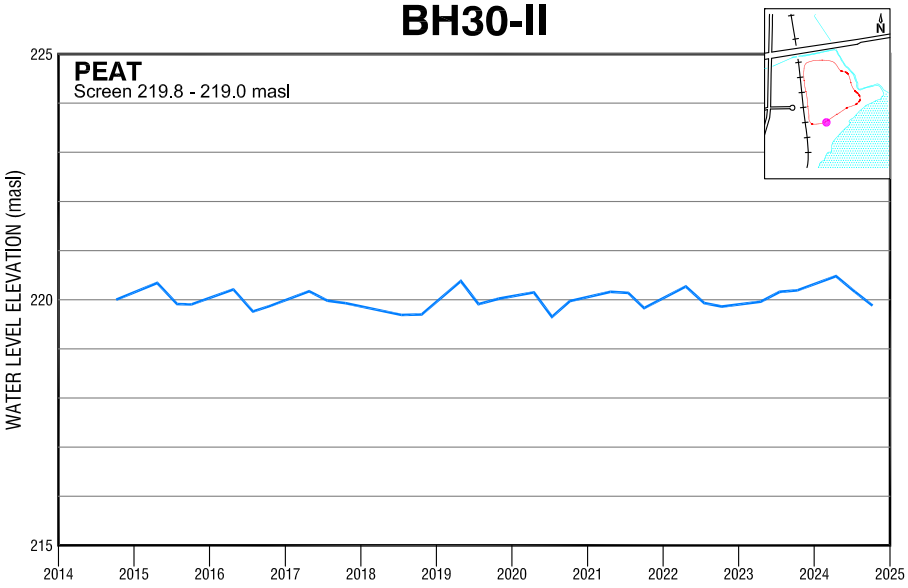
BH30-I



MP Elevation 222.64 masl

DATE	ELEVATION	DATE	ELEVATION
07-Oct-14	219.13	18-Jul-23	219.40
23-Apr-15	219.33	12-Oct-23	219.15
28-Jul-15	219.25	15-Apr-24	219.56
06-Oct-15	218.96	16-Jul-24	219.50
25-Apr-16	219.49	08-Oct-24	219.07
29-Jul-16	219.09		
24-Oct-16	219.03		
26-Apr-17	219.51		
24-Jul-17	219.39		
18-Oct-17	219.13		
17-Jul-18	219.28		
22-Oct-18	219.05		
29-Apr-19	219.54		
24-Jul-19	219.26		
29-Oct-19	219.14		
16-Apr-20	219.35		
13-Jul-20	219.27		
07-Oct-20	219.15		
21-Apr-21	219.32		
16-Jul-21	219.50		
01-Oct-21	219.21		
20-Apr-22	219.43		
19-Jul-22	219.26		
12-Oct-22	219.03		
18-Apr-23	219.21		

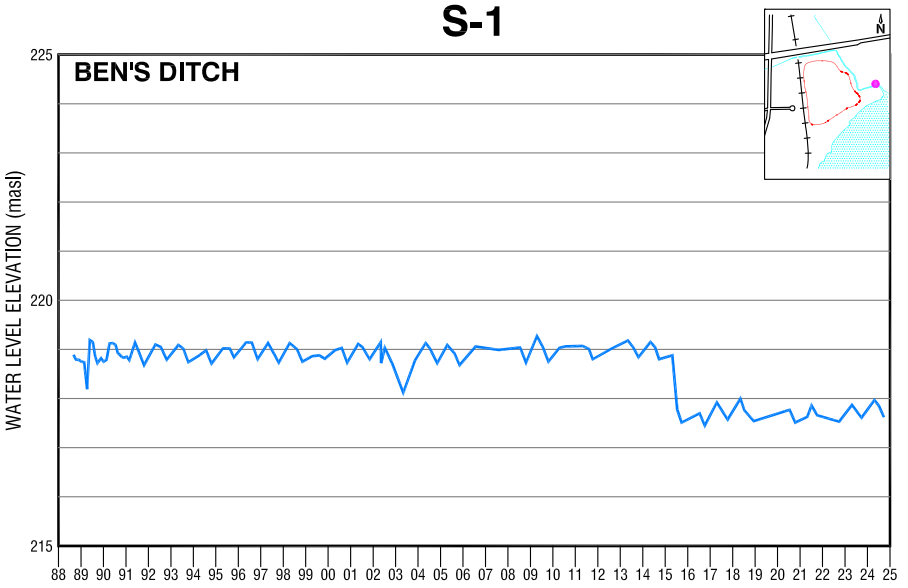
BH30-II



MP Elevation 222.44 masl

DATE	ELEVATION	DATE	ELEVATION
07-Oct-14	220.00	18-Jul-23	220.16
23-Apr-15	220.34	12-Oct-23	220.19
28-Jul-15	219.91	15-Apr-24	220.48
06-Oct-15	219.90	16-Jul-24	220.16
25-Apr-16	220.21	09-Oct-24	219.88
29-Jul-16	219.76		
24-Oct-16	219.88		
26-Apr-17	220.17		
24-Jul-17	219.98		
18-Oct-17	219.93		
17-Jul-18	219.69		
22-Oct-18	219.70		
29-Apr-19	220.38		
24-Jul-19	219.91		
29-Oct-19	220.02		
16-Apr-20	220.15		
13-Jul-20	219.65		
07-Oct-20	219.97		
21-Apr-21	220.16		
16-Jul-21	220.14		
01-Oct-21	219.83		
20-Apr-22	220.27		
19-Jul-22	219.93		
12-Oct-22	219.86		
18-Apr-23	219.96		

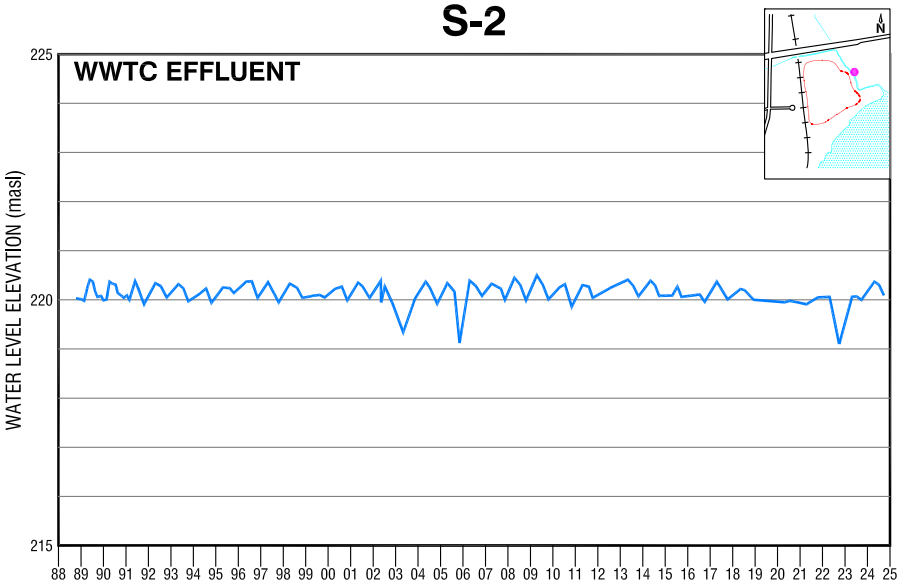
S-1



MP Elevation 219.95 masl

DATE	ELEVATION	DATE	ELEVATION
05-Nov-02	218.72	06-May-14	219.15
06-May-03	218.12	17-Jul-14	219.05
12-Nov-03	218.77	25-Sep-14	218.80
03-May-04	219.13	27-Apr-15	218.88
05-Jul-04	219.03	16-Jul-15	217.77
09-Nov-04	218.72	25-Sep-15	217.51
20-Apr-05	219.09	13-Jul-16	217.70
16-Aug-05	218.92	05-Oct-16	217.45
07-Nov-05	218.68	18-Apr-17	217.92
24-Jul-06	219.06	12-Oct-17	217.57
08-Aug-07	218.99	07-May-18	218.00
17-Jul-08	219.04	11-Jul-18	217.76
22-Oct-08	218.73	10-Dec-18	217.54
15-Apr-09	219.27	28-Apr-20	217.74
16-Jul-09	219.06	15-Jul-20	217.77
22-Oct-09	218.75	14-Oct-20	217.51
15-Apr-10	219.03	30-Apr-21	217.63
15-Jul-10	219.06	06-Jul-21	217.86
26-Apr-11	219.07	07-Oct-21	217.66
08-Aug-11	219.01	29-Sep-22	217.53
12-Oct-11	218.80	24-Apr-23	217.87
19-Jul-12	219.00	28-Sep-23	217.61
03-May-13	219.18	22-Apr-24	217.97
23-Jul-13	219.05	02-Jul-24	217.86
25-Oct-13	218.84	25-Sep-24	217.62

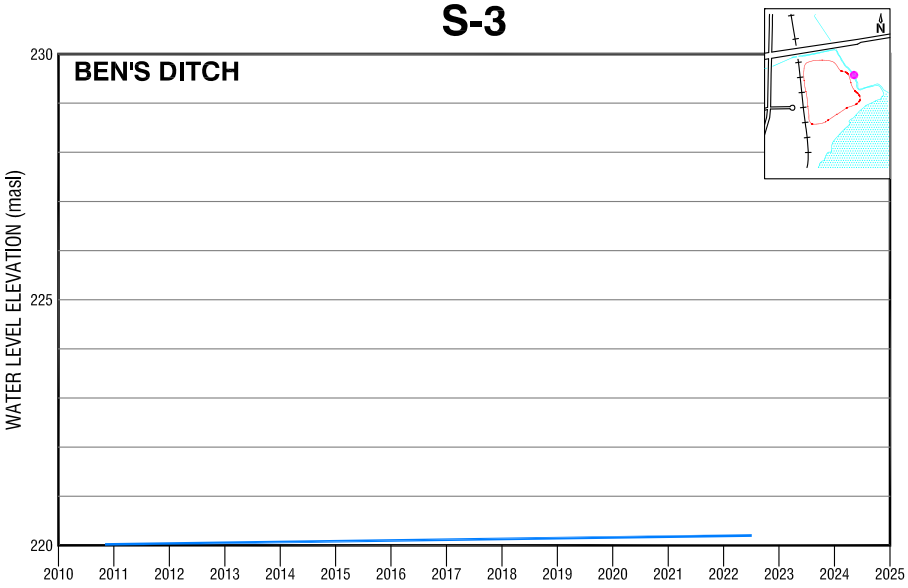
S-2



MP Elevation 221.02 masl

DATE	ELEVATION	DATE	ELEVATION
16-Aug-05	220.17	17-Jul-14	220.30
07-Nov-05	219.12	25-Sep-14	220.08
18-Apr-06	220.39	27-Apr-15	220.09
24-Jul-06	220.29	17-Jul-15	220.27
07-Nov-06	220.08	24-Sep-15	220.06
10-Apr-07	220.33	13-Jul-16	220.11
08-Sep-07	220.23	05-Oct-16	219.96
14-Nov-07	220.00	18-Apr-17	220.37
16-Apr-08	220.45	12-Oct-17	220.01
17-Jul-08	220.31	07-May-18	220.22
23-Oct-08	219.99	11-Jul-18	220.20
15-Apr-09	220.50	10-Dec-18	220.00
16-Jul-09	220.32	27-Apr-20	219.95
22-Oct-09	220.01	16-Jul-20	219.98
15-Apr-10	220.25	14-Oct-20	219.96
15-Jul-10	220.32	16-Apr-21	219.91
04-Nov-10	219.86	15-Oct-21	220.05
26-Apr-11	220.30	25-Apr-22	220.06
08-Aug-11	220.27	29-Sep-22	219.10
12-Oct-11	220.04	25-Apr-23	220.06
19-Jul-12	220.24	05-Jul-23	220.07
03-May-13	220.41	27-Sep-23	220.00
23-Jul-13	220.30	22-Apr-24	220.37
25-Oct-13	220.07	04-Jul-24	220.31
06-May-14	220.39	25-Sep-24	220.09

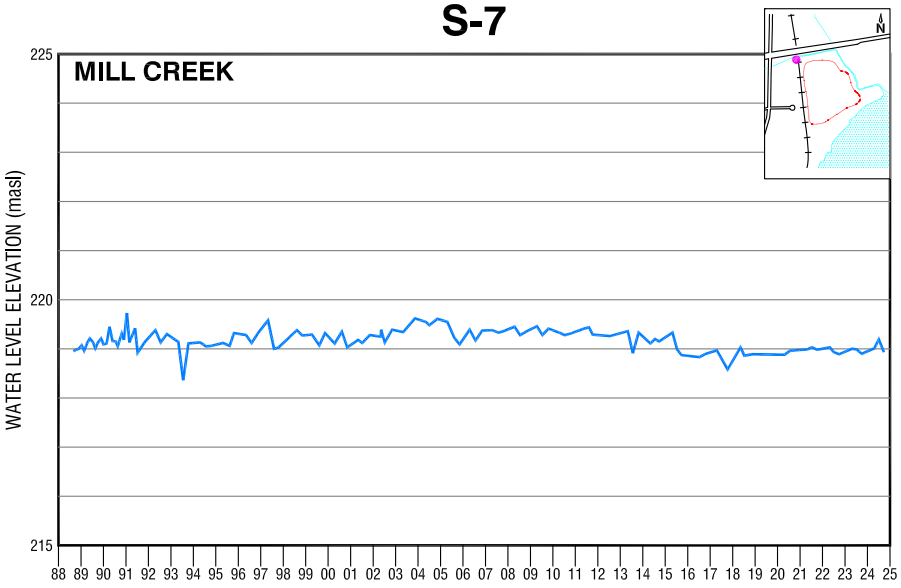
S-3



MP Elevation 221.02 masl

DATE	ELEVATION	DATE	ELEVATION
04-Nov-10	220.02		
05-Jul-22	220.20		

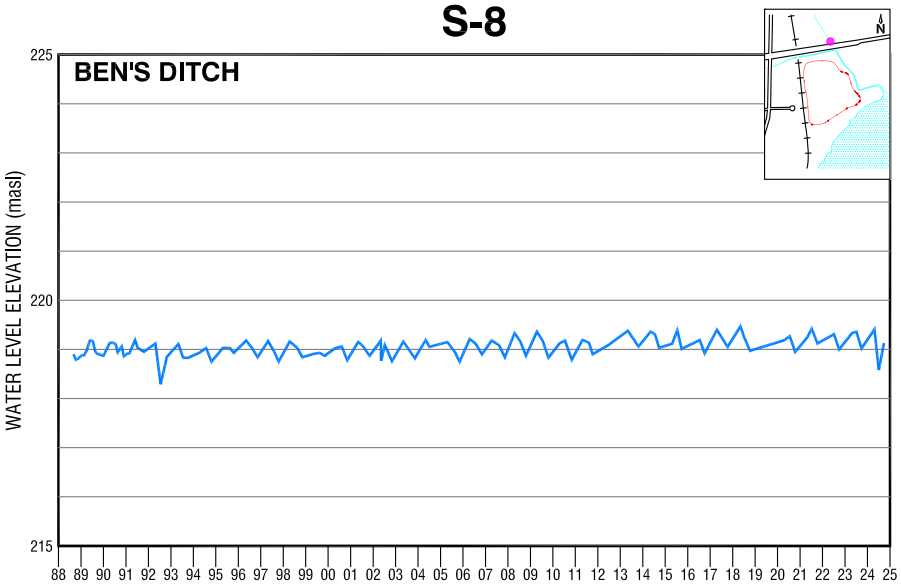
S-7



MP Elevation 220.21 masl

DATE	ELEVATION	DATE	ELEVATION
18-Apr-06	219.39	27-Apr-15	219.33
24-Jul-06	219.17	17-Jul-15	218.98
08-Nov-06	219.37	25-Sep-15	218.87
12-Apr-07	219.38	13-Jul-16	218.83
08-Aug-07	219.33	05-Oct-16	218.89
13-Nov-07	219.37	18-Apr-17	218.97
17-Apr-08	219.45	12-Oct-17	218.58
17-Jul-08	219.28	08-May-18	219.03
22-Oct-08	219.35	11-Jul-18	218.86
16-Apr-09	219.46	10-Nov-18	218.89
16-Jul-09	219.28	27-Apr-20	218.88
22-Oct-09	219.41	17-Jul-20	218.96
15-Apr-10	219.33	14-Oct-20	218.97
15-Jul-10	219.28	30-Apr-21	218.99
04-Nov-10	219.32	08-Jul-21	219.03
26-Apr-11	219.40	12-Oct-21	218.98
08-Aug-11	219.44	26-Apr-22	219.03
12-Oct-11	219.29	06-Jul-22	218.93
19-Jul-12	219.26	29-Sep-22	218.89
02-May-13	219.36	24-Apr-23	219.00
25-Jul-13	218.91	06-Jul-23	218.99
25-Oct-13	219.33	02-Oct-23	218.90
06-May-14	219.11	22-Apr-24	219.01
17-Jul-14	219.20	03-Jul-24	219.19
25-Sep-14	219.15	26-Sep-24	218.93

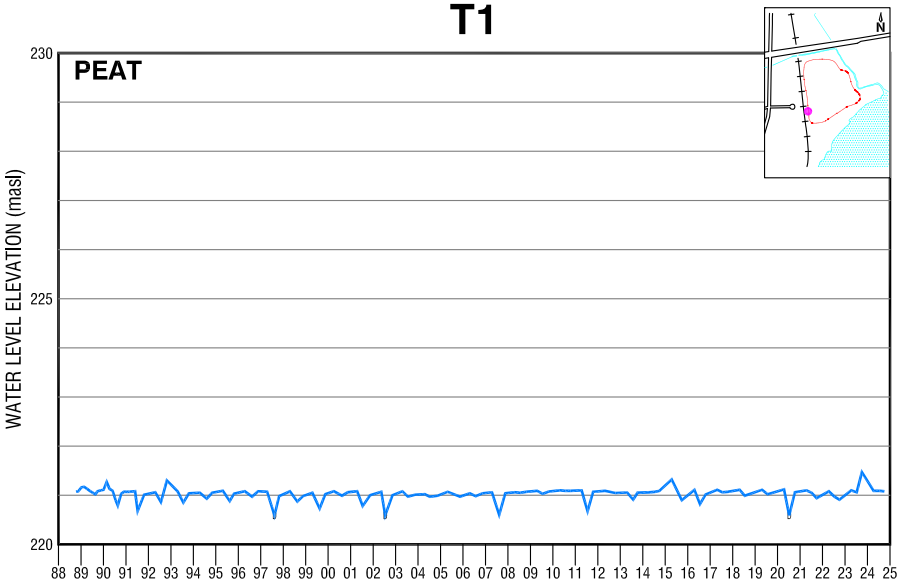
S-8



MP Elevation 219.89 masl

DATE	ELEVATION	DATE	ELEVATION
07-Nov-05	218.75	25-Sep-14	219.03
18-Apr-06	219.21	27-Apr-15	219.12
24-Jul-06	219.12	16-Jul-15	219.39
07-Nov-06	218.90	25-Sep-15	219.01
10-Apr-07	219.18	13-Jul-16	219.19
08-Aug-07	219.09	05-Oct-16	218.92
14-Nov-07	218.84	18-Apr-17	219.40
16-Apr-08	219.33	12-Oct-17	219.05
17-Jul-08	219.17	07-May-18	219.47
23-Oct-08	218.87	12-Jul-18	219.23
15-Apr-09	219.36	11-Oct-18	218.97
16-Jul-09	219.18	27-Apr-20	219.19
22-Oct-09	218.83	17-Jul-20	219.27
15-Apr-10	219.12	15-Oct-20	218.95
15-Jul-10	219.18	06-May-21	219.26
04-Nov-10	218.79	08-Jul-21	219.42
26-Apr-11	219.19	12-Oct-21	219.12
08-Aug-11	219.14	05-Jul-22	219.31
12-Oct-11	218.90	29-Sep-22	219.00
19-Jul-12	219.11	24-Apr-23	219.33
02-May-13	219.38	05-Jul-23	219.36
25-Jul-13	219.23	28-Sep-23	219.02
24-Oct-13	219.06	23-Apr-24	219.41
06-May-14	219.36	04-Jul-24	218.58
17-Jul-14	219.31	25-Sep-24	219.13

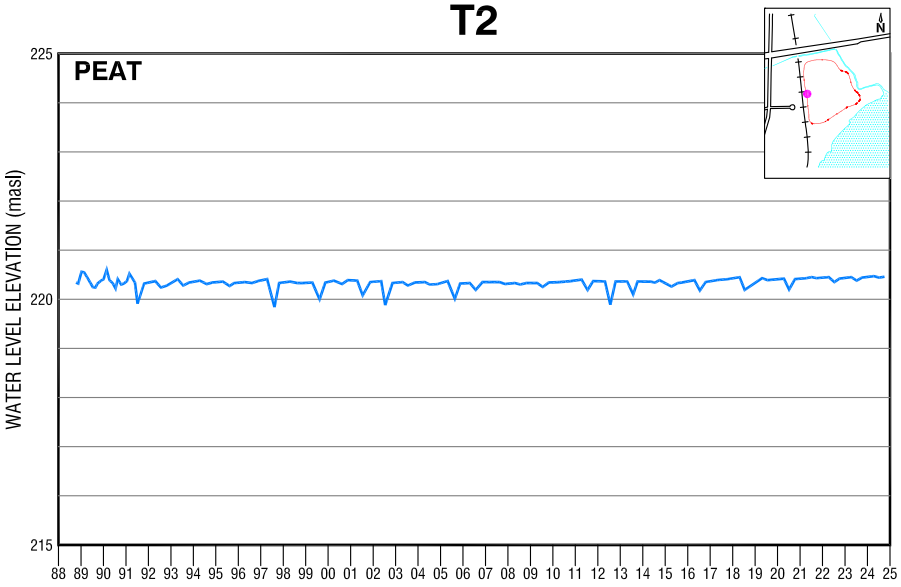
T1



MP Elevation 221.87 masl

DATE	ELEVATION	DATE	ELEVATION
16-Apr-07	221.06	19-Apr-16	221.11
13-Aug-07	220.60	19-Jul-16	220.82
19-Nov-07	221.04	18-Oct-16	221.01
21-Apr-08	221.06	24-Apr-17	221.11
21-Jul-08	221.05	19-Jul-17	221.06
27-Oct-08	221.07	16-Oct-17	221.07
20-Apr-09	221.09	23-Apr-18	221.11
20-Jul-09	221.03	17-Jul-18	220.99
26-Oct-09	221.07	23-Apr-19	221.11
23-Apr-10	221.10	24-Jul-19	221.02
23-Jul-10	221.09	14-Apr-20	221.12
18-Oct-10	221.09	09-Jul-20	DRY
13-Apr-11	221.10	09-Oct-20	221.06
19-Jul-11	220.68	14-Apr-21	221.10
17-Oct-11	221.07	08-Jul-21	221.05
27-Apr-12	221.09	28-Sep-21	220.94
15-Oct-12	221.04	13-Apr-22	221.08
22-Apr-13	221.05	13-Jul-22	220.97
30-Jul-13	220.91	04-Oct-22	220.91
08-Oct-13	221.05	12-Apr-23	221.10
30-Apr-14	221.06	11-Jul-23	221.06
21-Jul-14	221.07	03-Oct-23	221.47
30-Sep-14	221.09	10-Apr-24	221.09
15-Apr-15	221.32	12-Jul-24	221.09
28-Sep-15	220.90	02-Oct-24	221.08

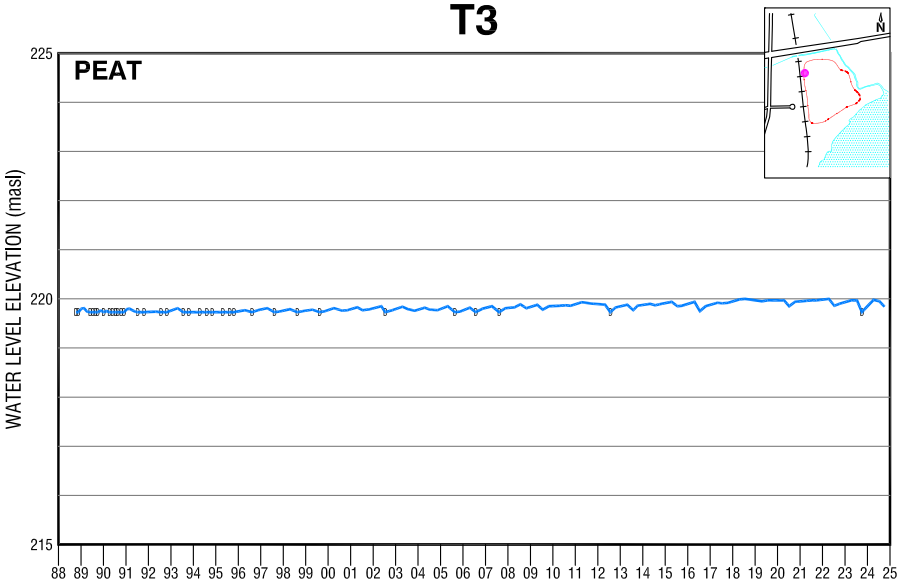
T2



MP Elevation 221.03 masl

DATE	ELEVATION	DATE	ELEVATION
13-Aug-07	220.35	28-Sep-15	220.34
19-Nov-07	220.31	19-Apr-16	220.39
21-Apr-08	220.33	17-Jul-16	220.18
21-Jul-08	220.30	18-Oct-16	220.35
27-Oct-08	220.33	24-Apr-17	220.39
20-Apr-09	220.33	16-Oct-17	220.41
20-Jul-09	220.25	23-Apr-18	220.45
26-Oct-09	220.34	16-Jul-18	220.19
23-Apr-10	220.35	24-Apr-19	220.43
23-Jul-10	220.36	24-Jul-19	220.39
18-Oct-10	220.37	14-Apr-20	220.42
13-Apr-11	220.40	08-Jul-20	220.20
19-Jul-11	220.19	09-Oct-20	220.41
17-Oct-11	220.37	14-Apr-21	220.43
27-Apr-12	220.37	07-Jul-21	220.45
23-Jul-12	219.89	28-Sep-21	220.43
15-Oct-12	220.36	12-Apr-22	220.45
22-Apr-13	220.37	12-Jul-22	220.35
30-Jul-13	220.10	03-Oct-22	220.42
08-Oct-13	220.36	12-Apr-23	220.45
30-Apr-14	220.36	11-Jul-23	220.38
21-Jul-14	220.34	02-Oct-23	220.44
29-Sep-14	220.39	10-Apr-24	220.47
15-Apr-15	220.26	12-Jul-24	220.44
20-Jul-15	220.33	04-Oct-24	220.46

T3

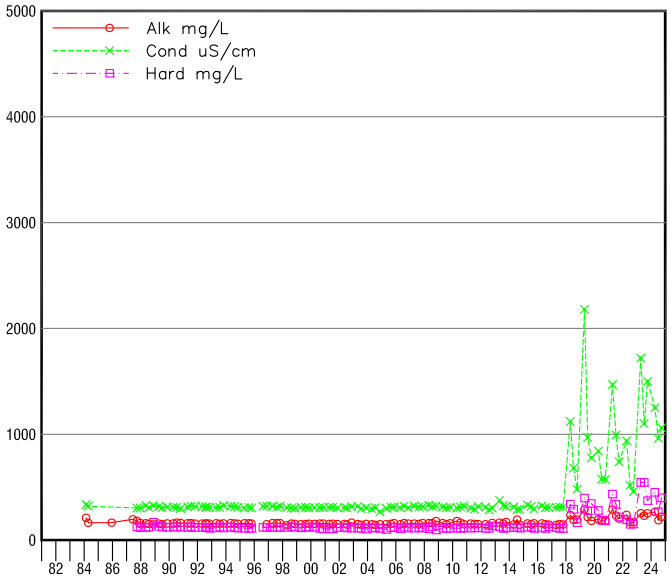


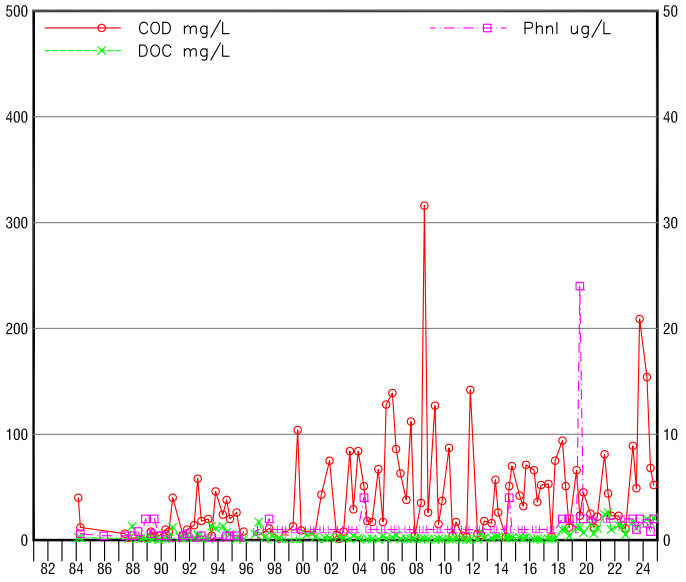
MP Elevation 220.32 masl

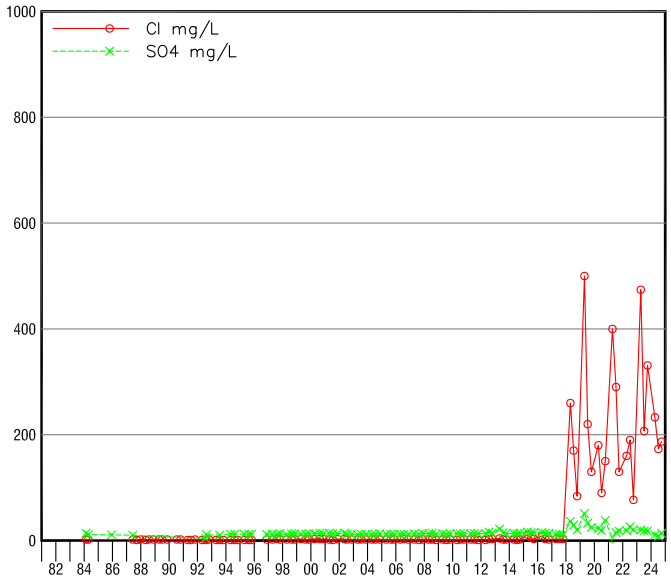
DATE	ELEVATION	DATE	ELEVATION
19-Nov-07	219.81	19-Jul-16	219.75
21-Apr-08	219.83	18-Oct-16	219.85
21-Jul-08	219.89	25-Apr-17	219.92
28-Oct-08	219.81	19-Jul-17	219.91
20-Apr-09	219.88	19-Oct-17	219.92
20-Jul-09	219.78	23-Apr-18	219.99
26-Oct-09	219.85	25-Apr-18	219.99
23-Apr-10	219.86	19-Jul-18	220.00
23-Jul-10	219.87	24-Apr-19	219.95
18-Oct-10	219.86	24-Jul-19	219.97
13-Apr-11	219.93	14-Apr-20	219.97
18-Oct-11	219.90	09-Jul-20	219.85
27-Apr-12	219.88	09-Oct-20	219.94
24-Jul-12	DRY	14-Apr-21	219.96
15-Oct-12	219.82	13-Jul-21	219.97
23-Apr-13	219.88	28-Sep-21	219.97
30-Jul-13	219.77	13-Apr-22	220.00
08-Oct-13	219.86	13-Jul-22	219.86
30-Apr-14	219.90	04-Oct-22	219.90
22-Jul-14	219.87	12-Apr-23	219.97
02-Oct-14	219.89	14-Jul-23	219.97
15-Apr-15	219.94	03-Oct-23	DRY
20-Jul-15	219.85	09-Apr-24	219.98
29-Sep-15	219.86	12-Jul-24	219.95
20-Apr-16	219.94	04-Oct-24	219.84

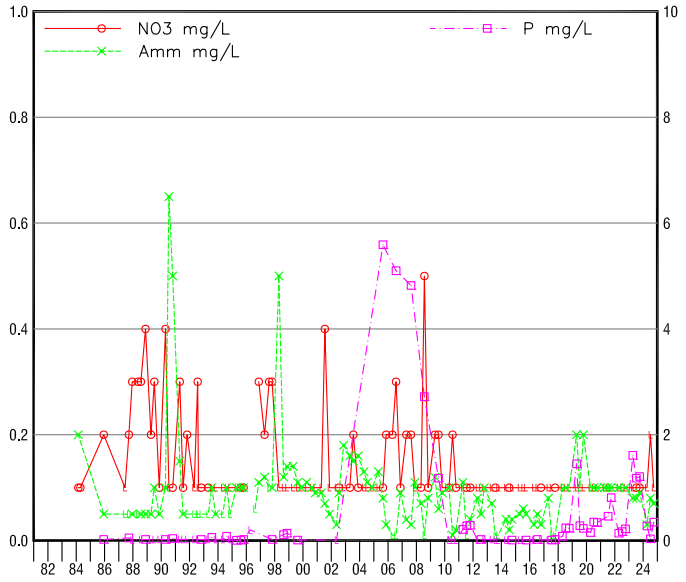
APPENDIX D

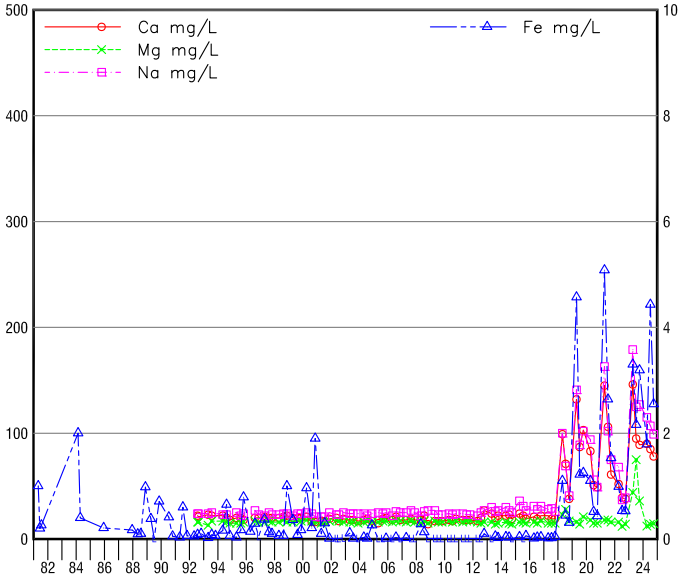
Water Quality, Major Ions and Indicators









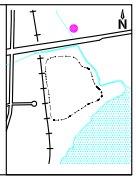


L Concentration Reported Less Than

G Concentration Reported Greater Than

A Concentration Determined Anomalous

Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

BH1-IR

FORMERLY 1-1
CONVERTED Jul 12

SAND AQUIFER

Screen 209.7 - 208.2 masl

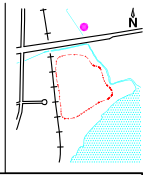
22578520 25 Apr 25	wsp	24G001

BH1-IR

SAND AQUIFER

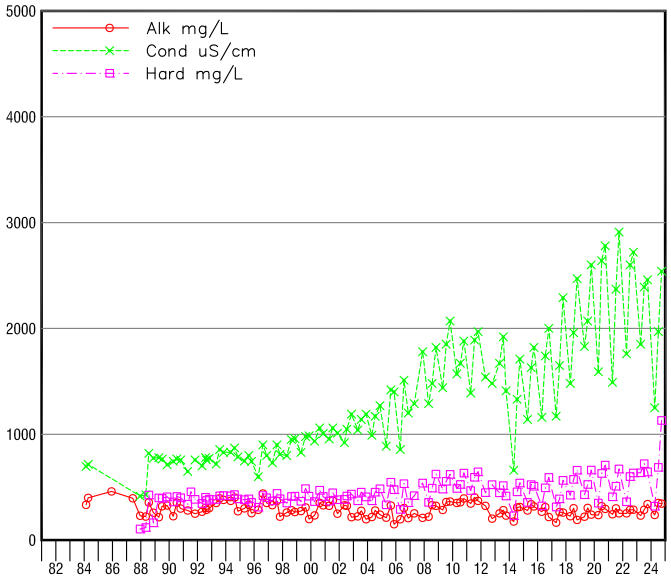
OBSERVATION WELL
Screen 209.7 - 208.2 masl

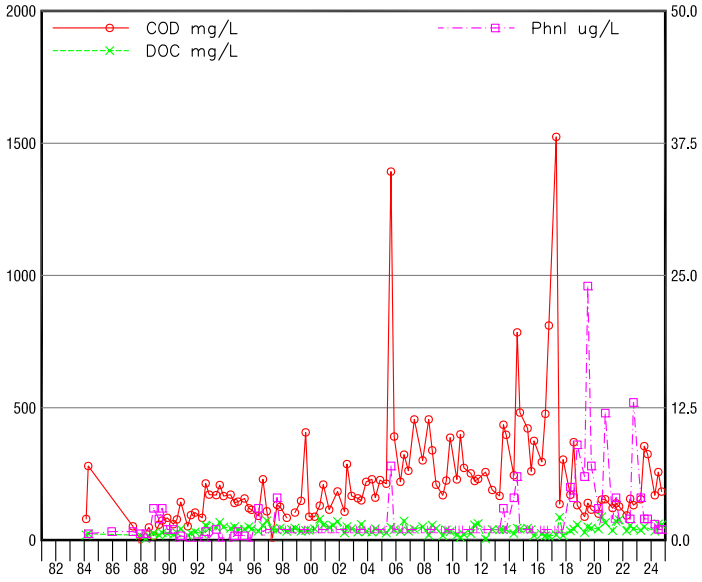
FORMERLY BH1-1
CONVERTED Jul 12

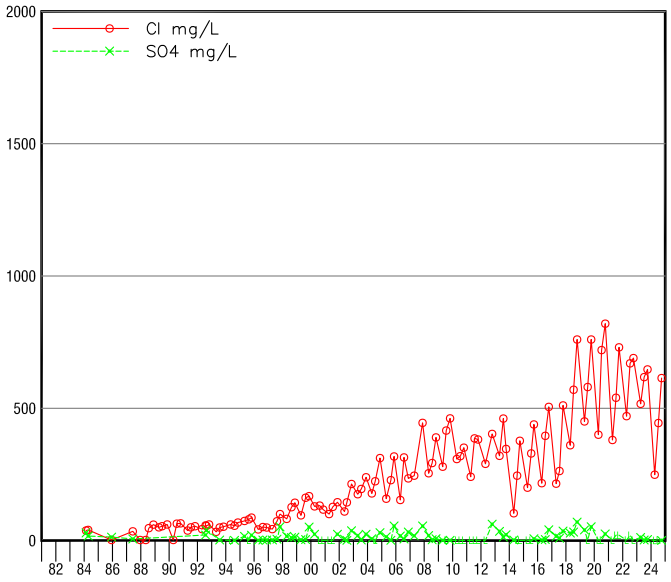


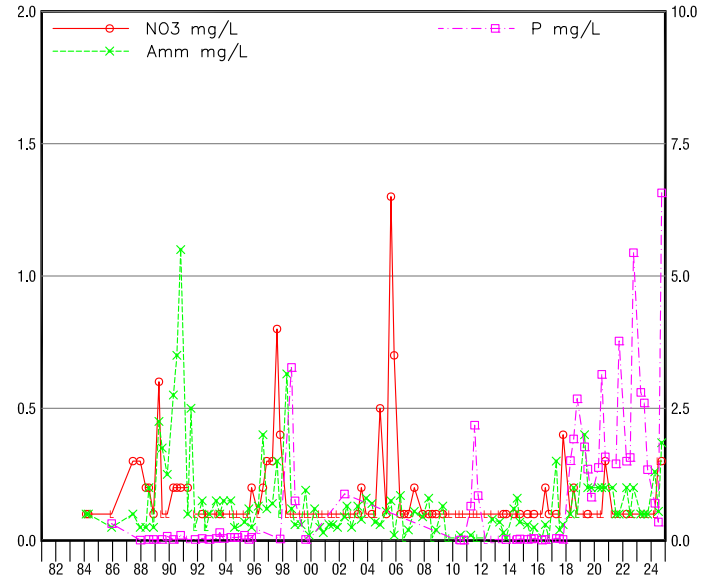
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
15-Apr-15	2972	157	333	124	8.1	11	16	24	16	36	2.1	0.04	50	42	2.5	0.3	<0.1	<0.1	0.05	<1	4.5
20-Jul-15	3032	150	318	118	8.0	5	15	22	16	31	1.8	<0.01	40	32	1.7	0.3	<0.1	<0.1	0.06	<1	5.0
28-Sep-15	3091	158	294	109	7.9	3	15	19	15	27	1.7	0.06	44	71	2.8	0.8	<0.1	<0.1	0.05	<1	-2.1
19-Apr-16	3163	157	324	119	8.0	9	15	21	16	31	1.8	0.013	32	66	0.8	0.2	<0.1	<0.1	0.03	<1	0.8
17-Jul-16	3199	149	306	110	8.1	3	14	19	15	28	1.5	0.03	26	36	1.0	0.3	<0.1	<0.1	0.05	<1	1.3
17-Oct-16	3291	146	307	126	8.0	2	14	22	17	31	1.6	0.035	42	52	0.8	0.7	0.1	0.1	0.03	<1	8.6
24-Apr-17	3326	144	310	118	8.1	3	12	22	15	28	1.5	0.016	57	53	1.1	0.4	<0.1	<0.1	0.08	<1	5.6
18-Jul-17	3392	151	313	110	8.1	3	12	19	15	29	1.5	0.018	34	3	1.2	0.3	<0.1	<0.1	<0.01	<1	3.3
17-Oct-17	3468	146	311	109	8.2	3	11	19	15	26	1.5	0.043	36	75	1.5	0.2	0.1	<0.1	<0.01	<1	3.2
23-Apr-18	3519	236	1120	339	7.6	260	36	99	23	100	3.2	**1.10**	348	94	10	0.6	<0.1	<0.1	<0.1	**2**	-5.8
16-Jul-18	3572	191	681	291	8.1	170	29	71	28	69	3.3	**0.443**	285	51	10	1.9	<0.1	<0.1	0.1	<2	-1.4
15-Oct-18	3645	194	480	164	8.1	84	20	38	17	41	1.9	**0.309**	95	12	4.0	<0.5	<0.1	<0.1	<0.1	**2**	-12.0
23-Apr-19	3697	290	2180	397	7.0	500	51	132	16	141	2.1	**4.57**	576	66	12	1.1	<0.1	<0.1	0.2	<1	-19.0
15-Jul-19	3474	216	970	276	7.4	220	33	87	14	89	2.1	**1.22**	347	23	12	0.7	<0.1	<0.1	<0.1	**24**	-7.9
15-Oct-19	3823	182	777	345	7.8	130	25	103	21	102	2.5	**1.25**	348	45	7.0	1.0	<0.1	<0.1	0.2	**2**	18.7
14-Apr-20	3859	198	841	280	8.1	180	23	83	18	94	2.3	**1.10**	308	25	15	<0.5	<0.1	<0.1	<0.1	<2	1.9
08-Jul-20	3911	181	576	187	8.0	90	19	51	15	56	1.8	**0.513**	177	12	6.0	<0.5	<0.1	<0.1	0.1	<2	-2.4
08-Oct-20	3967	181	573	183	7.9	150	38	49	15	49	1.9	**0.432**	146	22	11	0.6	<0.1	<0.1	0.1	<2	-19.1
13-Apr-21	4039	289	1470	435	7.0	400	<2	145	18	163	2.1	**5.08**	786	81	24	1.1	<0.1	<0.3	0.1	<2	-3.0
12-Jul-21	4093	231	993	337	7.9	290	15	106	18	102	2.3	**2.64**	463	44	26	0.9	<0.1	<0.1	0.1	<2	-7.0
29-Sep-21	4151	202	739	218	8.1	130	18	61	16	75	1.9	**1.53**	262	23	10	1.3	<0.1	<0.1	0.1	<2	-1.8
11-Apr-22	4217	238	937	193	7.8	160	19	52	16	68	1.7	**0.989**	207	23	14	<0.5	<0.1	<0.1	0.1	<2	-16.8
11-Jul-22	4285	168	519	149	8.0	190	26	39	12	37	1.5	**0.533**	145	14	13	0.7	<0.1	<0.1	<0.1	<2	-32.2
04-Oct-22	4361	167	459	152	8.0	77	20	38	14	39	1.6	**0.526**	122	11	5	<0.5	<0.1	<0.1	0.1	<2	-10.4
11-Apr-23	4413	254	1720	544	7.5	474	20	146	44	179	2.1	**3.30**	567	89	17	2.9	<0.1	0.2	0.08	**2**	0.0
10-Jul-23	4462	229	1100	545	7.6	207	18	95	75	125	1.8	**2.16**	422	49	11	2.0	0.1	<0.1	0.08	1	10.5
04-Oct-23	4539	253	1500	372	7.5	331	18	89	36	127	1.8	**3.19**	395	209		0.9	0.1	<0.1	0.09	**2**	-9.1
08-Apr-24	4612	266	1250	451	7.22	233	10.5	90	12.3	115	1.6	**1.79**	600	154	20	0.8	<0.1	<0.1	0.03	**1.6**	-2.8
08-Jul-24	4640	188	963	268	7.71	173	8	85	13.9	107	1.7	**4.43**	410	68	16.6	0.7	<0.2	<0.2	0.08	0.8	10.9
01-Oct-24	2064046	220	1060	399	7.57	187	13.6	78	14.5	99	1.8	**2.55**	356	52	20.8	3.2	<0.1	<0.1	0.07	**2**	11.2
TOTAL SAMPLES		114	113	112	114	112	96	96	96	95	95	114	89	109	112	115	114	115	114	113	
AVERAGE 2024		225	1091	373	7.50	198	10.7	84	13.6	107	1.7	2.923	455	91	19.1	1.6	<0.1	<0.1	0.06	1	

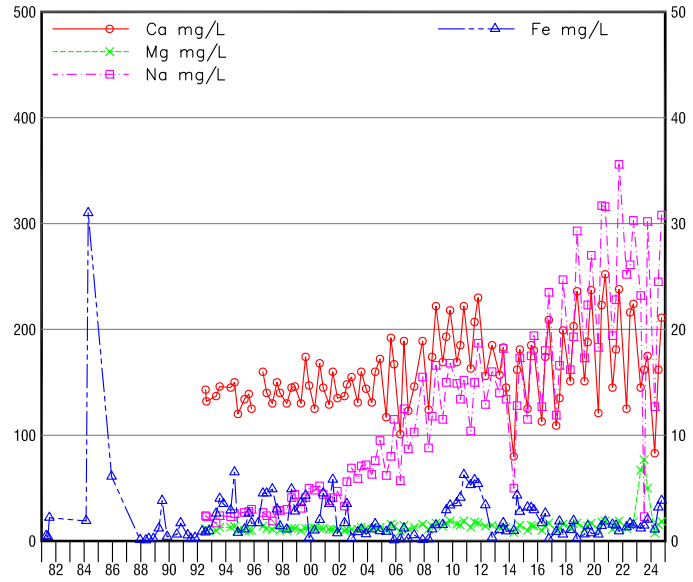
all Concentrations mg/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**



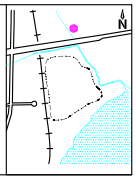








L	Concentration Reported Less Than
G	Concentration Reported Greater Than
A	Concentration Determined Anomalous
	Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

BH1-III

PEAT

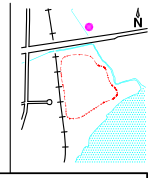
Screen 218.8 - 218.2 masl

22578520 25 Apr 25	wsp	24G002

BH1-III

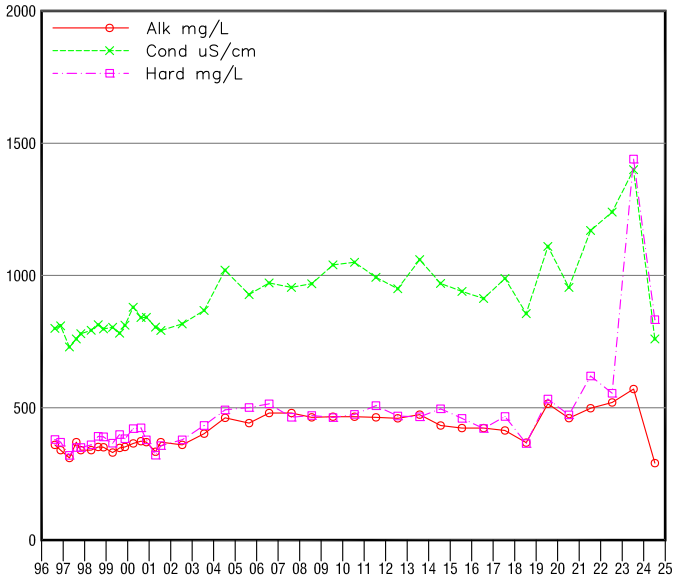
PEAT

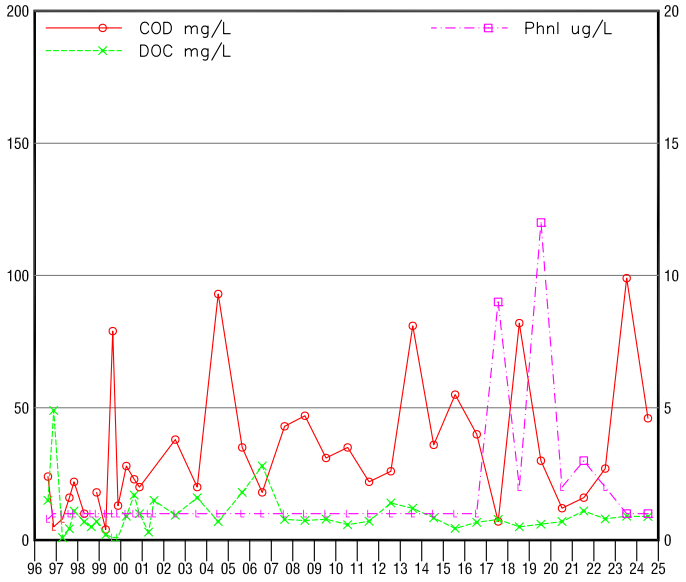
OBSERVATION WELL
Screen 218.8 - 218.2 masl

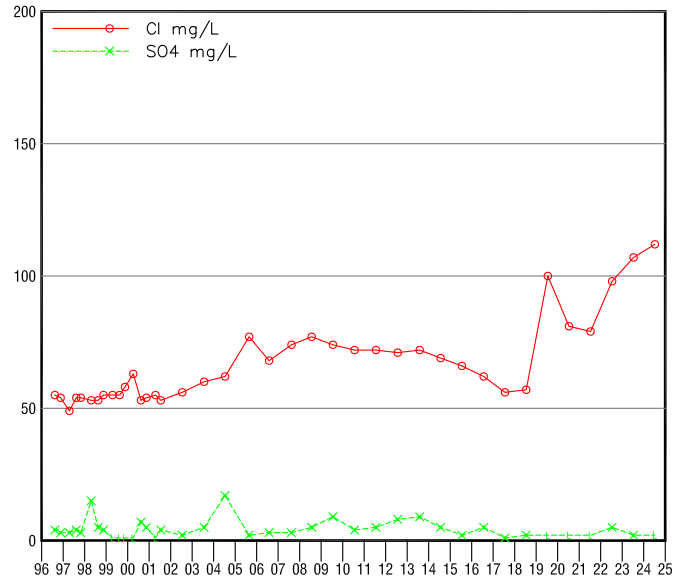


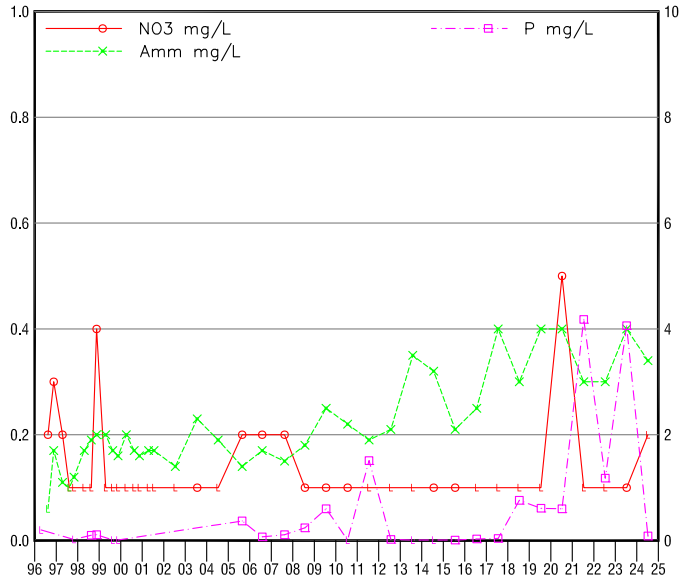
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
15-Apr-15	2973	280	1140	356	6.7	200	<1	125	10	115	0.7	**3.18**	411	422	45	1.8	0.1	<0.1	0.06	<1	4.1
20-Jul-15	3033	339	1630	524	7.1	329	<1	185	15	175	0.3	**3.14**	513	260	40	2.9	<0.1	<0.1	<0.01	<1	6.5
28-Sep-15	3092	317	1820	509	7.2	439	7	180	14	194	0.4	**2.91**	443	375	17	2.6	0.1	<0.1	0.05	<1	-0.5
19-Apr-16	3164	267	1160	323	7.3	217	2	113	10	127	0.3	**1.69**	360	295	23	1.8	<0.1	<0.1	<0.01	<1	2.7
17-Jul-16	3200	311	1740	493	7.3	396	4	174	14	180	0.3	**2.61**	399	477	16	2.7	0.2	<0.1	0.06	<1	0.8
17-Oct-16	3292	217	2000	591	7.7	505	41	209	17	235	0.3	0.197	375	811	15	1.9	0.1	<0.1	<0.01	<1	6.5
24-Apr-17	3327	165	1170	313	7.3	215	16	109	10	119	0.9	**0.864**	441	1524	20	2.6	0.1	0.2	0.3	<1	8.5
18-Jul-17	3393	264	1650	389	7.2	263	9	135	12	166	0.8	**1.86**	363	136	86	2.6	<0.1	<0.1	0.04	<1	7.7
17-Oct-17	3469	260	2290	564	7.4	511	36	199	16	247	<0.1	**0.613**	247	304	17	1.9	0.4	<0.1	0.06	<1	3.8
23-Apr-18	3520	225	1480	424	7.0	360	28	151	12	162	0.4	**1.04**	442	171	35	1.0	<0.1	<0.1	0.1	**5**	1.3
16-Jul-18	3573	301	1960	574	7.5	570	32	203	16	193	0.7	**1.91**	478	370	41	1.5	0.2	<0.1	0.2	**4**	-6.6
15-Oct-18	3646	191	2470	660	7.0	760	70	236	17	293	0.2	0.242	364	132	58	0.6	<0.1	<0.3	<0.1	**9**	-1.3
23-Apr-19	3698	221	1830	429	6.7	450	40	151	12	173	0.5	**0.637**	418	88	29	1.1	<0.1	<0.1	0.4	**6**	-5.4
15-Jul-19	3748	304	2070	525	6.7	580	<2	188	14	223	0.5	**1.40**	505	140	50	2.4	0.1	<0.1	0.2	**24**	-5.0
15-Oct-19	3824	241	2600	661	7.0	760	52	237	17	270	0.3	**0.737**	359	115	45	2.2	<0.1	<0.1	0.2	**7**	-4.4
14-Apr-20	3860	236	1590	349	6.9	400	<2	121	11	183	0.5	**0.617**	347	100	42	1.3	<0.1	<0.1	0.2	**3**	-3.3
08-Jul-20	3912	320	2640	630	7.1	720	<2	223	18	317	0.4	**1.44**	521	153	88	1.1	<0.1	<0.3	0.2	<2	-0.4
08-Oct-20	3968	294	2780	708	6.9	820	25	252	19	316	0.4	**1.84**	616	154	66	2.0	0.3	<0.3	0.2	**12**	-2.7
14-Apr-21	4040	244	1490	409	7.0	380	<2	145	11	194	0.5	**1.56**	369	121	36	1.5	<0.1	<0.3	0.2	<2	3.0
12-Jul-21	4094	299	2370	509	7.5	540	<20	181	14	228	<0.1	**1.46**	457	139	71	2.0	<0.1	<0.3	0.1	**4**	-2.5
29-Sep-21	4152	252	2910	671	7.8	730	<20	238	19	356	0.3	**0.919**	458	127	77	2.0	<0.1	<0.3	0.1	<2	6.0
11-Apr-22	4218	253	1760	362	7.3	470	<2	125	12	252	0.6	**1.30**	378	93	35	1.0	0.1	<0.1	0.2	<2	-0.1
11-Jul-22	4286	286	2600	600	7.2	670	<20	216	15	261	0.6	**1.67**	473	156	55	1.9	<0.1	<0.3	0.1	**2**	-2.5
04-Oct-22	4362	287	2720	634	6.7	690	<2	224	18	303	0.4	**1.49**	478	132	42	1.8	<0.1	<0.3	0.2	**13**	1.5
11-Apr-23	4414	231	1850	636	7.2	517	12	145	67	232	0.5	**1.20**	378	154	37	7.7	<0.1	0.6	0.1	**4**	8.1
10-Jul-23	4463	285	2390	722	7.3	618	2	162	77	23	0.6	**1.46**	473	355	50	6.0	<0.1	<0.1	0.1	**2**	2.2
04-Oct-23	4540	340	2460	644	7.3	647	4	175	50	302	1.6	**2.02**	476	325		2.8	<0.1	<0.1	0.1	**2**	-0.4
08-Apr-24	4613	237	1250	320	7.01	249	<0.5	83	7.4	127	1.0	**1.09**	273	169	34	1.3	<0.1	<0.1	0.26	**1.5**	-2.3
08-Jul-24	4641	351	1970	687	7.64	444	<2.5	162	15.4	245	1.4	**3.18**	452	257	61	1.8	<0.3	<0.3	0.11	1	4.9
01-Oct-24	2064047	345	2540	1130	7.27	614	0.5	211	18.6	308	1.3	**3.81**	570	183	57.6	30	0.3	<0.1	0.37	1	19.7
TOTAL SAMPLES		112	110	110	112	113	96	94	94	93	93	113	88	108	110	113	112	113	113	112	
AVERAGE 2024		311	1920	712	7.31	436	<2.5	152	13.8	227	1.2	2.693	432	203	51	11	<0.3	<0.1	0.25	1.17	

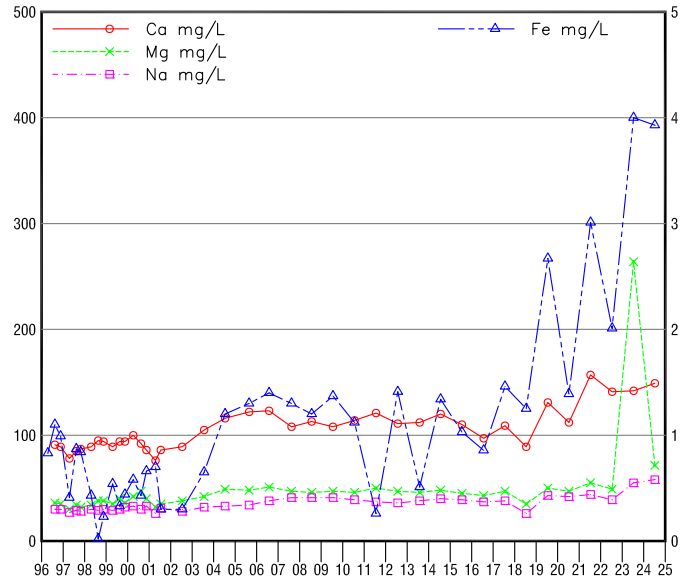
all Concentrations mg/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**









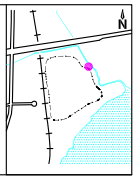


L Concentration Reported Less Than

G Concentration Reported Greater Than

A Concentration Determined Anomalous

Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

BH2-II

SAND AQUIFER

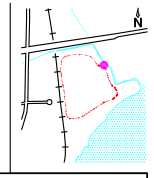
Screen 214.0 - 213.5 masl

22578520 25 Apr 25	wsp	24G003

BH2-II

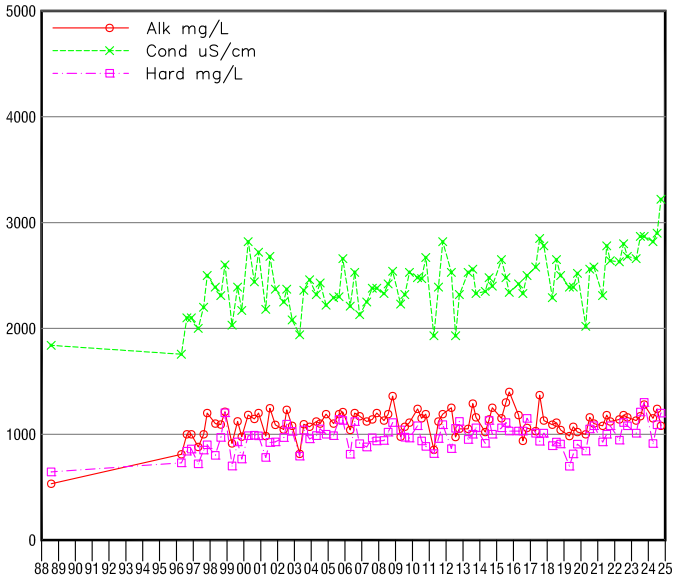
SAND AQUIFER

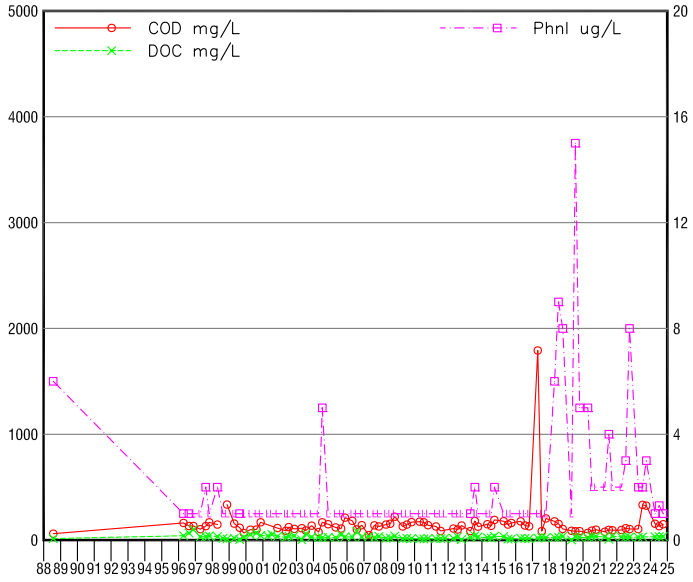
OBSERVATION WELL
Screen 214.0 - 213.5 masl

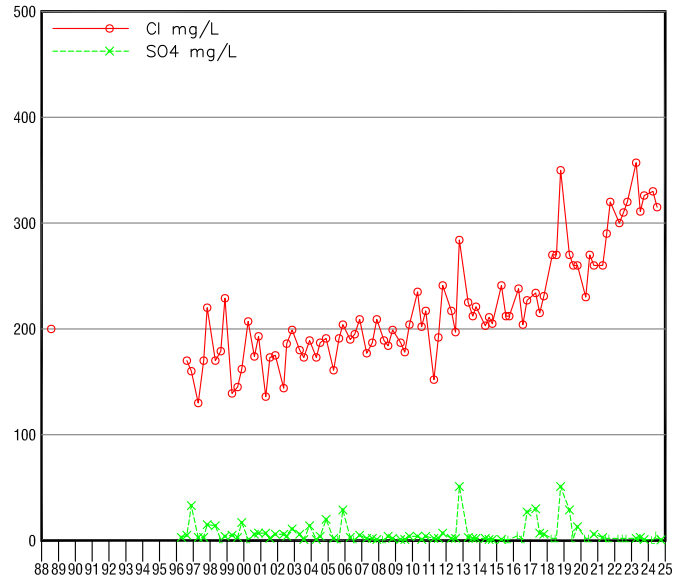


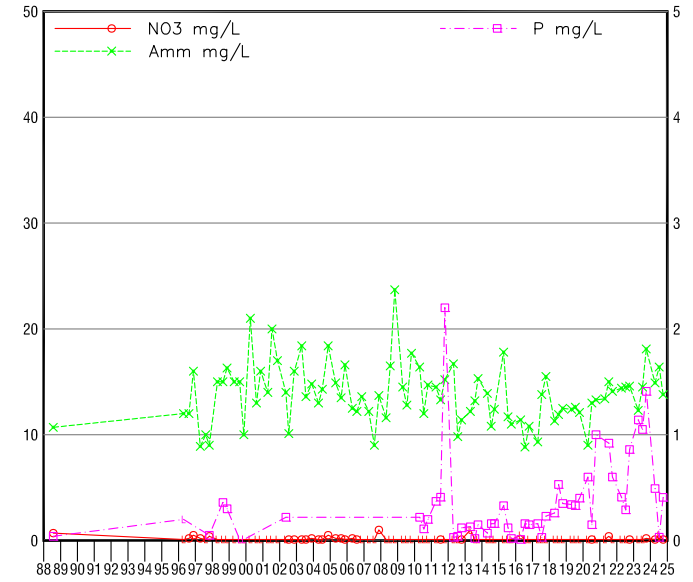
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
18-Aug-99	100986	348	782	399	7.3	55	<1	94	40	30	2.0	**0.33**	100	79	<1.0	0.4	<0.1	<0.1	0.17	<1	4.7
16-Nov-99	100987	352	812	383	7.3	58	<1	94	36	32	2.0	**0.44**	126	13	<1.0	0.2	<0.1	<0.1	0.16	<1	2.7
05-Apr-00	100988	365	880	421	7.2	63	<1	100	42	33	3.0	**0.58**	113	28	9.0	0.4	<0.1	<0.1	0.20	<1	4.8
16-Aug-00	100989	374	841	424	7.5	53	7	92	47	30	2.0	**0.43**	115	23	17	0.5	<0.1	<0.1	0.17	<1	3.8
14-Nov-00	100990	370	842	379	7.3	54	5	86	40	33	1.0	**0.66**	102	20	10	0.5	<0.1	<0.1	0.16	<1	0.3
19-Apr-01	100991	334	805	321	7.5	55	<1	76	32	26	2.0	**0.70**	95		3.0	0.5	<0.1	<0.1	0.17	<1	-3.7
19-Jul-01	100992	370	792	357	7.5	53	4	86	35	31	2.0	0.30	84		15	3.1	<0.1	<0.1	0.17	<1	-2.2
17-Jul-02	100993	360	817	379	7.2	56	2	89	38	28	1.9	0.30	81	38	9.4	0.4	<0.1	<0.1	0.14	<1	0.2
23-Jul-03	102541	402	868	433	7.7	60	5	105	42	32	2.3	**0.65**	110	20	16	0.5	0.1	<0.1	0.23	<1	1.7
13-Jul-04	1207	462	1020	492	7.4	62	17	116	49	33	2.5	**1.2**	122	93	7.0	0.5	<0.1	<0.1	0.19	<1	0.2
25-Aug-05	58253	442	928	501	8.0	77	2	122	48	34	2.4	**1.3**	118	35	18	0.7	0.2	<0.1	0.14	<1	2.5
01-Aug-06	6813	480	972	515	7.3	68	3	123	51	38	2.6	**1.40**	133	18	28	0.6	0.2	<0.1	0.17	<1	2.2
15-Aug-07	78153	480	955	464	7.5	74	3	108	47	41	2.7	**1.30**	139	43	7.8	0.6	0.2	<0.1	0.15	<1	-2.6
25-Jul-08	87253	464	969	471	7.3	77	5	113	46	41	4.1	**1.20**	126	47	7.4	0.9	0.1	<0.1	0.18	<1	-0.8
21-Jul-09	B09-229	466	1040	463	6.9	74	9	108	47	41	3.3	**1.37**	145	31	7.9	1.0	0.1	<0.1	0.25	<1	-1.8
21-Jul-10	2080	466	1050	475	7.7	72	4	114	46	39	3.2	**1.12**	142	35	5.8	0.9	0.1	<0.1	0.22	<1	-0.5
20-Jul-11	2243	464	993	508	7.5	72	5	121	50	37	2.8	0.26	153	22	7.1	0.9	<0.1	<0.1	0.19	<1	1.9
25-Jul-12	2444	460	950	469	7.8	71	8	111	47	36	2.9	**1.41**	161	26	14	1.6	<0.1	<0.1	0.21	<1	-1.1
01-Aug-13	2623	474	1060	466	7.6	72	9	112	46	38	3.0	**0.51**	136	81	12	0.9	<0.1	<0.1	0.35	<1	-2.4
22-Jul-14	2834	433	970	496	7.8	69	5	120	48	40	3.2	**1.34**	133	36	8.4	0.9	0.1	<0.1	0.32	<1	5.0
21-Jul-15	3034	423	940	460	7.8	66	2	110	45	39	2.9	**1.03**	136	55	4.4	1.5	0.1	<0.1	0.21	<1	3.0
22-Jul-16	3201	423	913	422	7.9	62	5	97	43	37	2.6	**0.857**	90	40	6.7	1.1	<0.1	<0.1	0.25	<1	-1.0
21-Jul-17	3394	414	989	467	7.9	56	1	109	47	38	2.6	**1.46**	129	7	7.8	1.0	<0.1	<0.1	0.4	**9**	5.9
16-Jul-18	3574	368	856	365	8.0	57	2	89	35	26	2.6	**1.25**	104	82	5.0	<0.5	<0.1	<0.1	0.3	<2	-2.4
19-Jul-19	3749	515	1110	533	7.5	100	<2	131	50	43	3.1	**2.67**	146	30	6.0	1.3	<0.1	<0.1	0.4	**12**	-1.5
10-Jul-20	3913	461	955	473	7.4	81	<2	112	47	42	2.9	**1.39**	139	12	7.0	<0.5	0.5	<0.1	0.4	<2	-0.4
14-Jul-21	4095	498	1170	620	8.0	79	<2	157	55	44	3.6	**3.01**	171	16	11	0.6	<0.1	<0.1	0.3	**3**	8.6
14-Jul-22	4287	520	1240	555	7.9	98	5	141	49	39	2.9	**2.01**	163	27	8.0	1.0	<0.1	<0.1	0.3	<2	-1.3
13-Jul-23	4464	571	1400	1440	7.5	107	2	142	264	55	3.4	**4.00**	186	99	9	1.6	0.1	<0.1	0.4	1	9.8
09-Jul-24	4642	291	760	833	7.82	112	<2	149	71.5	58	3.4	**3.93**	195	46	8.9	0.6	<0.2	<0.2	0.34	1	33.6
TOTAL SAMPLES		39	39	39	39	39	39	39	39	39	39	39	39	36	39	39	39	39	39	39	
AVERAGE 2024																					

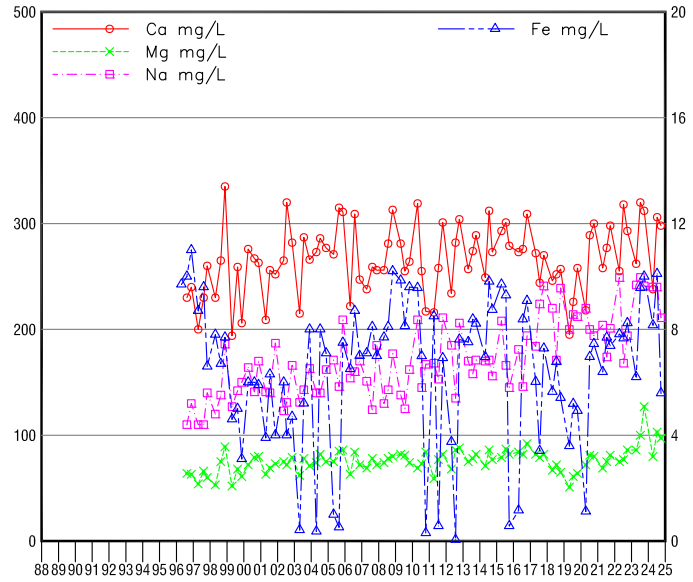
all Concentrations mg/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**



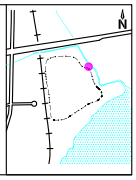








L	Concentration Reported Less Than
G	Concentration Reported Greater Than
A	Concentration Determined Anomalous
	Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

BH2-III

PEAT

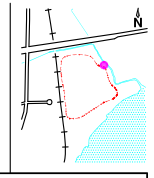
Screen 219.0 - 216.6 masl

22578520 25 Apr 25	wsp	24G004

BH2-III

PEAT

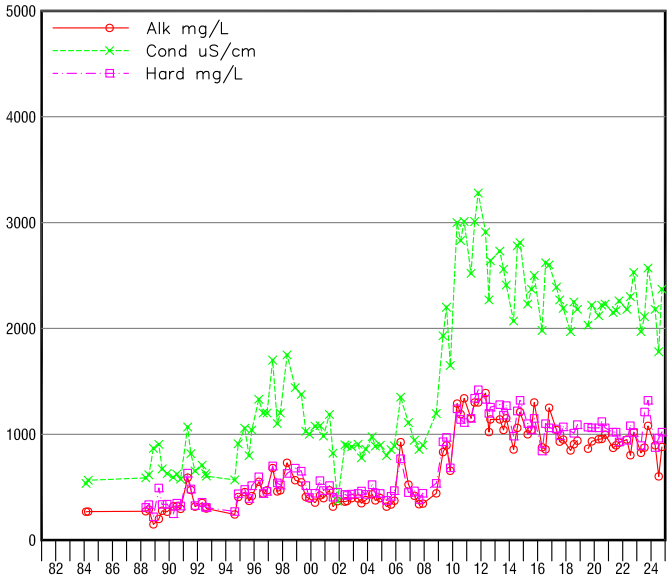
OBSERVATION WELL
Screen 219.0 - 216.6 masl

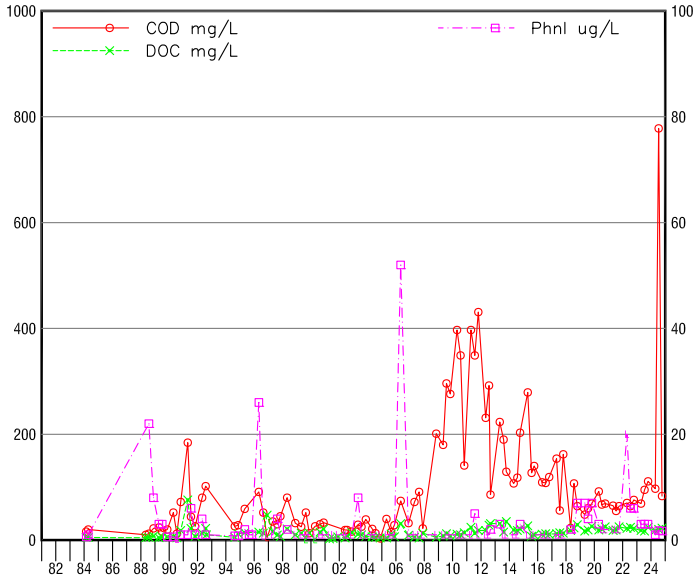


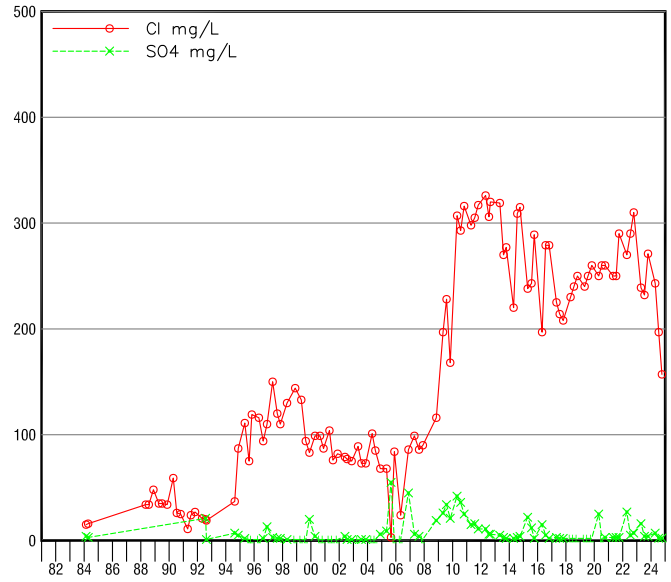
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
16-Apr-15	2974	1150	2650	1060	7.0	241	1	293	79	208	49	**9.70**	1300	178	33	21.9	<0.1	<0.1	17.8	<1	5.2
21-Jul-15	3035	1300	2480	1110	7.4	212	<1	301	87	166	30	**9.29**	1150	147	9.4	15.1	<0.1	<0.1	11.7	<1	-1.0
01-Oct-15	3093	1400	2340	1030	7.3	212	<1	279	82	145	24	**0.57**	944	162	11	14.2	<0.1	<0.1	11	<1	-8.9
20-Apr-16	3165	1180	2420	1030	7.4	238	<5	273	84	181	36	**1.16**	1180	176	17	14.0	<0.5	<0.5	11.4	<1	-0.2
22-Jul-16	3202	938	2330	1030	7.4	204	<1	276	82	146	21	**8.38**	882	138	14	13.6	<0.1	<0.1	8.83	<1	7.3
20-Oct-16	3293	1060	2500	1150	7.6	227	27	309	92	194	33	**9.08**	1070	130	14	11.9	<0.1	<0.1	10.8	<1	8.5
25-Apr-17	3328	1030	2580	1010	7.4	234	30	272	82	184	30	**6.02**	986	1792	19	11.1	<0.1	<0.1	9.32	<1	3.7
21-Jul-17	3395	1370	2850	934	7.9	215	7	244	79	224	61	**3.41**	1130	85	25	15.6	<0.1	<0.1	13.8	<1	-3.9
19-Oct-17	3470	1130	2780	1010	7.6	231	6	270	82	241	72	**7.28**	1240	204	23	17.0	<0.1	<0.1	15.5	<1	7.4
23-Apr-18	3521	1090	2290	892	7.3	270	<2	246	67	220	66	**5.64**	1160	176	24	12.2	<0.1	<0.3	11.3	**6**	1.1
19-Jul-18	3575	1110	2650	926	7.5	270	<2	252	72	171	48	**6.77**	1110	153	26	14.0	<0.1	<0.1	11.9	**9**	-2.6
18-Oct-18	3647	1040	2500	908	7.2	350	51	257	65	239	71	**5.41**	1130	105	35	12.5	<0.1	<0.1	12.5	**8**	-0.4
26-Apr-19	3699	982	2390	698	6.9	270	29	195	51	200	57	**3.59**	866	88	2.0	13.8	<0.1	<0.1	12.4	<1	-5.2
19-Jul-19	3750	1070	2390	814	7.2	260	<2	226	61	214	70	**5.19**	1100	83	30	15.2	<0.1	<0.3	12.6	**15**	-0.4
18-Oct-19	3825	1020	2520	906	7.2	260	13	258	64	212	70	**4.92**	1120	85	27	15.6	<0.1	<0.1	12.1	**5**	3.8
16-Apr-20	3861	1000	2020	841	7.1	230	<2	218	72	220	58	**1.12**	1030	68	22	9.5	<0.1	<0.1	9.0	**5**	3.7
10-Jul-20	3914	1160	2560	1050	7.0	270	<2	289	81	200	39	**6.96**	1080	89	33	12.7	0.1	<0.3	13	<2	1.8
08-Oct-20	3969	1100	2580	1080	7.2	260	6	300	80	194	37	**7.45**	1070	98	33	15.0	<0.1	<0.3	13.3	<2	4.4
16-Apr-21	4041	1080	2310	927	7.5	260	3	258	69	204	52	**6.39**	1130	78	30	14.9	<0.1	<0.3	13.4	<2	0.1
14-Jul-21	4096	1180	2780	1000	7.9	290	<2	277	75	174	40	**7.69**	1010	96	7.0	16.1	0.4	<0.3	15.0	**4**	-3.0
29-Sep-21	4153	1120	2640	1080	7.9	320	<2	298	81	201	36	**7.38**	982	92	37	15.1	<0.1	<0.3	14.1	<2	0.3
14-Apr-22	4219	1140	2630	944	7.6	300	<2	255	75	249	49	**7.82**	1140	95	28	15.3	<0.1	<0.3	14.4	<2	1.6
14-Jul-22	4288	1180	2800	1110	7.6	310	<2	318	77	168	33	**7.66**	1080	111	28	16.0	<0.1	<0.3	14.5	**3**	-1.1
05-Oct-22	4363	1160	2680	1080	6.9	320	<2	293	86	194	30	**8.24**	1020	104	28	15.9	0.1	<0.3	14.6	**8**	0.0
13-Apr-23	4415	1130	2660	1010	7.3	357	2	262	86	242	50	**6.20**	1060	104	27	17.3	<0.1	2.0	12.3	**2**	0.6
13-Jul-23	4465	1170	2870	1210	7.5	311	3	320	100	249	42	**9.57**	1200	332	30	20.8	<0.1	<0.1	14.5	**2**	12.4
03-Oct-23	4541	1280	2870	1300	7.4	326	1	312	127	241	33	**10.0**	925	325		17.5	0.2	<0.1	18.1	**3**	8.5
10-Apr-24	4614	1150	2820	912	6.8	330	<0.5	238	79.8	240	43	**8.16**	1070	154	31	14.4	0.1	<0.1	14.9	1	3.3
09-Jul-24	4643	1240	2900	1090	7.79	315	<5	306	103	240	35	**10.1**	1060	131	31.6	14.5	<0.5	<0.5	16.4	**1.3**	9.1
02-Oct-24	2064048	1080	3220	1200	7.4	*173*	0.6	298	97.2	211	27	**5.59**	836	150	33.9	19.5	0.1	<0.1	13.8	1	13.9

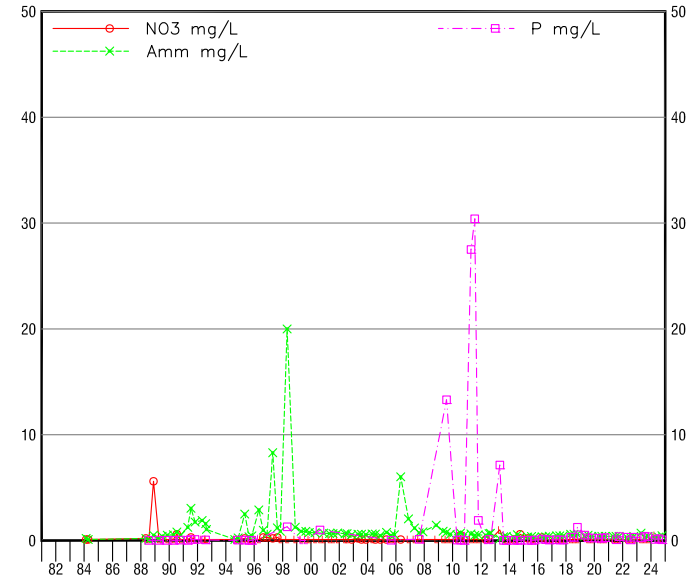
TOTAL SAMPLES	88	88	88	88	86	87	86	86	86	86	87	87	84	87	88	88	88	88	88		
AVERAGE 2024	1157	2980	1067	7.33	323	<5	281	93	230	35	7.95	989	145	32.2	16.1	<0.5	<0.1	15.0	1.10		

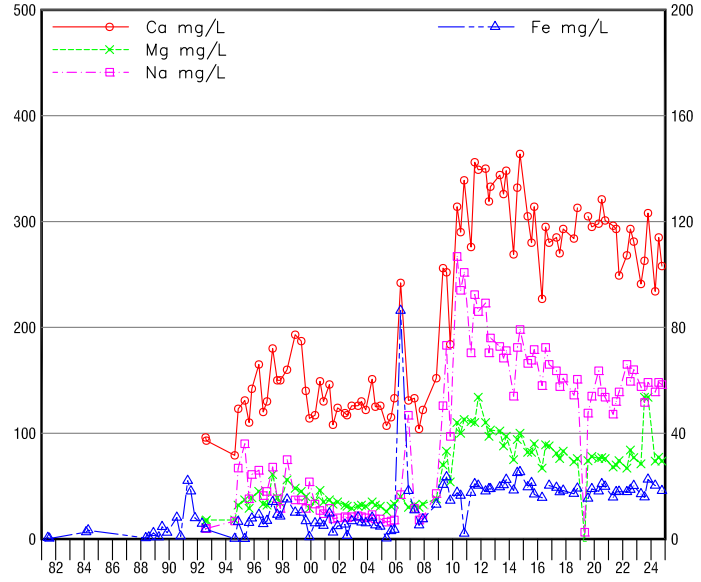
all Concentrations mg/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**



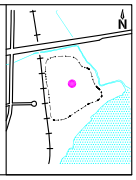








L	Concentration Reported Less Than
G	Concentration Reported Greater Than
A	Concentration Determined Anomalous
	Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

BH3-IR

FORMERLY 3-IRX
CONVERTED Jul 08

SAND AQUIFER

Screen 216.4 - 214.9 masl

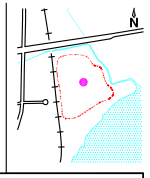
22578520 25 Apr 25	wsp	24G005

BH3-IR

SAND AQUIFER

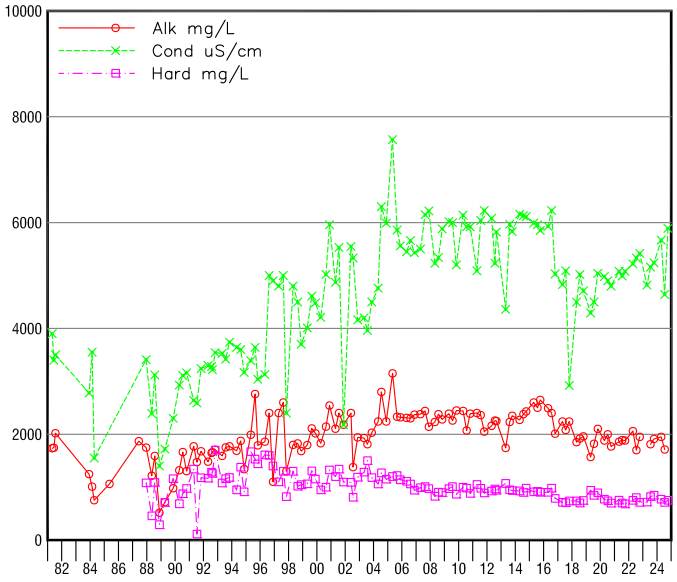
OBSERVATION WELL
Screen 216.4 - 214.9 masl

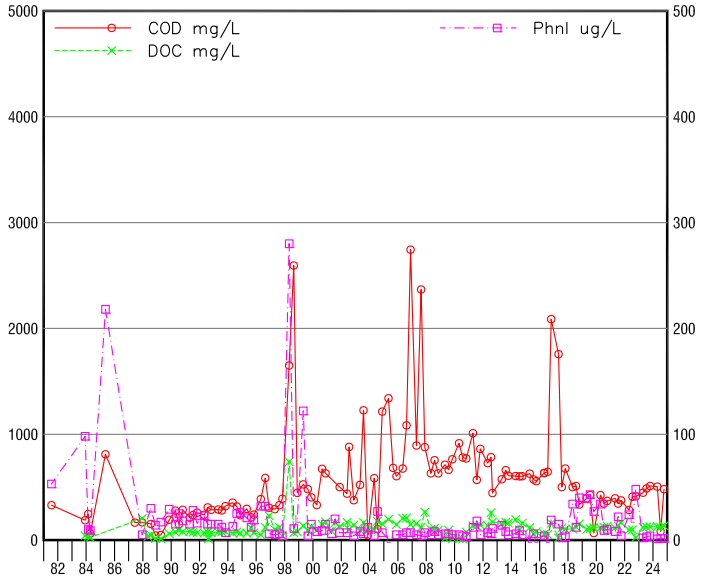
FORMERLY BH3-IRX
CONVERTED Jul 08

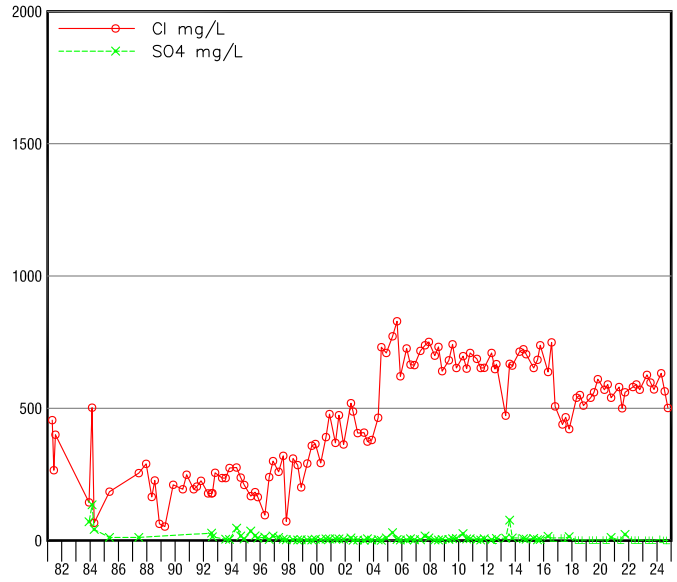


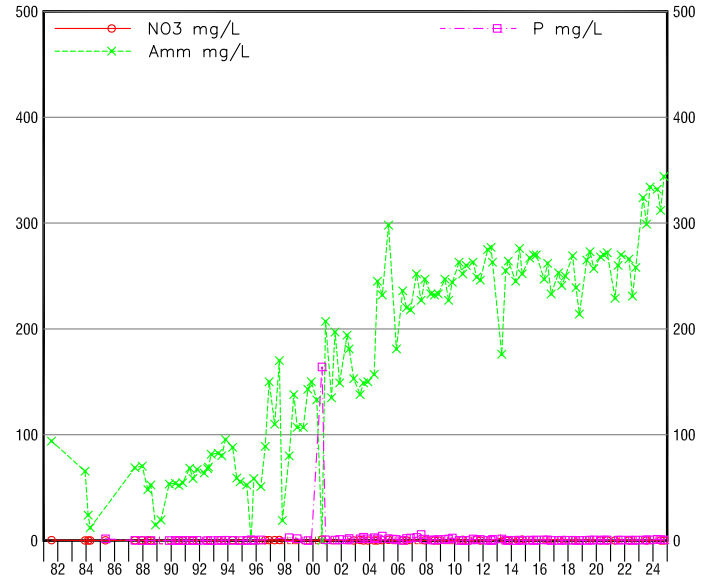
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
21-Apr-15	2988	1000	2230	1100	7.7	238	22	305	82	166	3.4	**19.6**	1880	279	27	1.6	0.2	<0.1	0.34	<1	5.0
27-Jul-15	3051	1040	2370	1040	7.1	243	12	280	82	169	3.3	**21.2**	1960	127	7.2	0.5	<0.1	<0.1	0.38	<1	1.9
05-Oct-15	3105	1300	2500	1150	7.1	289	2	314	90	179	3.3	**16.9**	2100	140	9.4	1.9	<0.1	<0.1	0.31	<1	-4.0
26-Apr-16	3176	877	1980	842	7.2	197	15	227	67	145	3.1	**15.6**	1640	109	11	1.7	0.3	<0.1	0.35	<1	0.8
25-Jul-16	3218	857	2620	1100	7.3	279	5	295	89	181	3.2	*0.098*	1940	108	12	1.9	<0.1	<0.1	0.35	<1	8.9
25-Oct-16	3304	1250	2600	1060	7.4	279	2	280	88	165	3.0	**20.2**	2210	119	11	2.0	0.1	<0.1	0.41	<1	-5.9
01-May-17	3343	1040	2390	1050	7.1	225	3	285	81	159	2.9	**19.4**	2070	154	12	2.2	<0.1	<0.1	0.45	<1	2.5
25-Jul-17	3411	929	2270	986	7.3	214	2	270	76	144	2.8	**17.7**	1830	56	14	1.6	<0.1	<0.1	0.45	<1	4.1
23-Oct-17	3485	949	2190	1070	7.1	208	2	293	83	152	3.3	**18.3**	2040	162	13	1.4	<0.1	<0.1	0.44	<1	7.4
01-May-18	3536	846	1970		7.1	230	<2							23	18	0.6	<0.1	<0.1	0.60	**2**	
24-Jul-18	3593	906	2250	1010	6.8	240	<2	284	73	136	3.4	**17.1**	1920	107	23	<0.5	<0.1	<0.1	0.60	<2	3.8
22-Oct-18	3660	939	2180	1090	7.4	250	<2	313	76	151	3.7	**19.1**	2180	64	29	0.7	<0.1	<0.1	0.60	**7**	6.3
29-Apr-19	3712	*432*	*1480*	*15*	8.1	240	<2	*5*	<1	6.4	1.8	*0.01*	0.2	48	17	1.4	<0.3	<0.3	0.4	**7**	-91.9
23-Jul-19	3768	863	2030	1066	6.7	250	<2	305	74	119	2.9	**15.3**	1870	60	19	1.6	<0.1	<0.3	0.5	**4**	5.5
28-Oct-19	3838	932	2220	1060	6.8	260	<2	295	78	135	2.7	**18.9**	1830	69	26	1.4	<0.1	<0.3	0.4	**7**	3.4
24-Apr-20	3874	952	2120	1060	6.9	250	25	298	76	159	3.0	**18.0**	1920	92	19	1.2	<0.1	<0.1	0.4	**3**	4.0
13-Jul-20	3932	955	2220	1120	7.0	260	<2	321	77	139	3.1	**20.8**	1990	67	21	1.3	<0.1	<0.3	0.4	<2	5.1
06-Oct-20	3970	997	2230	1060	7.0	260	3	301	76	134	2.9	**19.8**	1950	69	25	0.8	<0.1	<0.3	0.4	<2	1.0
29-Apr-21	4042	871	2150	1020	7.4	250	3	296	68	118	2.7	**15.7**	1810	65	18	1.2	<0.1	<0.3	0.4	<2	4.1
16-Jul-21	4097	895	2170	1020	6.9	250	3	293	70	130	3.9	**17.8**	1920	55	19	1.4	<0.1	<0.1	0.4	<2	4.4
01-Oct-21	4154	921	2260	927	7.4	290	3	249	74	139	2.5	**17.9**	1790	64	25	1.5	<0.1	<0.3	0.4	<2	-1.7
21-Apr-22	4220	950	2180	943	6.7	270	27	268	67	165	2.5	**17.8**	1680	70	22	1.2	<0.1	<0.1	0.3	<20	-0.8
19-Jul-22	4306	801	2300	1080	7.4	290	5	293	84	149	2.5	**18.6**	1960	64	24	1.0	<0.1	<0.3	0.3	**6**	8.5
13-Oct-22	4376	1020	2530	1017	7.2	310	7	281	77	160	2.6	**20.1**	1850	76	22	1.2	<0.1	<0.3	0.4	**6**	-2.0
19-Apr-23	4428	824	1970	893	7.0	239	16	241	71	144	2.8	**17.0**	1440	69	18	5.2	<0.1	<0.1	0.7	**3**	2.8
19-Jul-23	4483	874	2110	1210	7.1	232	4	263	134	129	2.4	**15.8**	1350	95	17	4.0	<0.1	<0.1	0.3	**3**	8.5
16-Oct-23	4554	1080	2570	1320	7.1	271	4	308	134	148	2.6	**22.5**	1850	111	24	1.8	<0.1	<0.1	0.4	**3**	6.9
18-Apr-24	4591	895	2180	874	6.89	243	7	234	73.6	139	2.6	**20.2**	1700	97	18	1.4	<0.5	<0.5	0.29	1	4.8
17-Jul-24	4661	602	1780	963	7.58	197	2.2	285	77.2	148	2.7	*1.84*	1830	778	20.2	1.5	<0.1	<0.1	0.33	**1.8**	27.4
10-Oct-24	2067111	880	2370	1020	7.18	157	2.3	258	73.6	146	2.7	**18.2**	1760	83	22.7	4.3	<0.1	<0.1	0.46	**1.7**	14.4
TOTAL SAMPLES		104	104	101	106	105	92	88	89	89	89	101	85	99	103	104	105	105	104	103	
AVERAGE 2024		792	2110	952	7.22	199	4	259	74.8	144	2.7	19.20	1763	319	20.3	2.4	<0.1	<0.1	0.36	1.50	

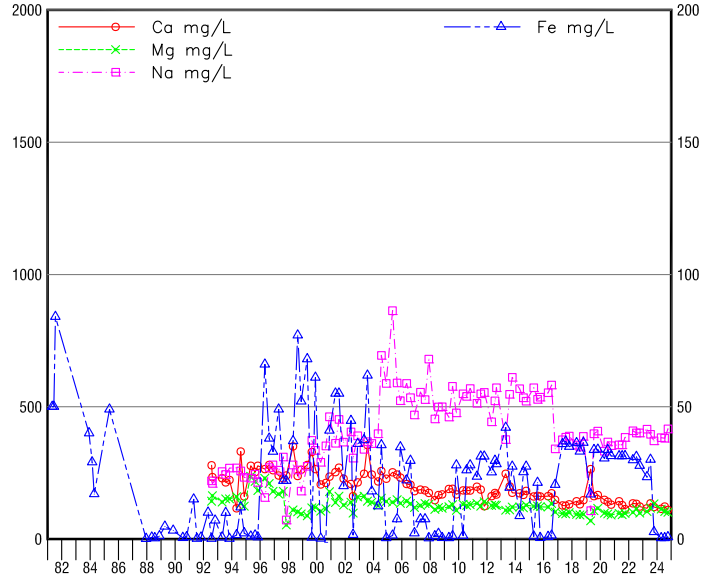
all Concentrations mg/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**



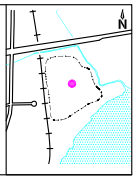








L	Concentration Reported Less Than
G	Concentration Reported Greater Than
A	Concentration Determined Anomalous
	Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

BH3-IIR

FORMERLY 3-IIRX
CONVERTED Sep 16

REFUSE

Screen 222.5 - 218.4 masl

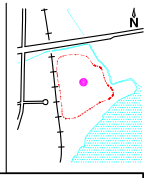
22578520 25 Apr 25	wsp	24G006

BH3-IIR

REFUSE

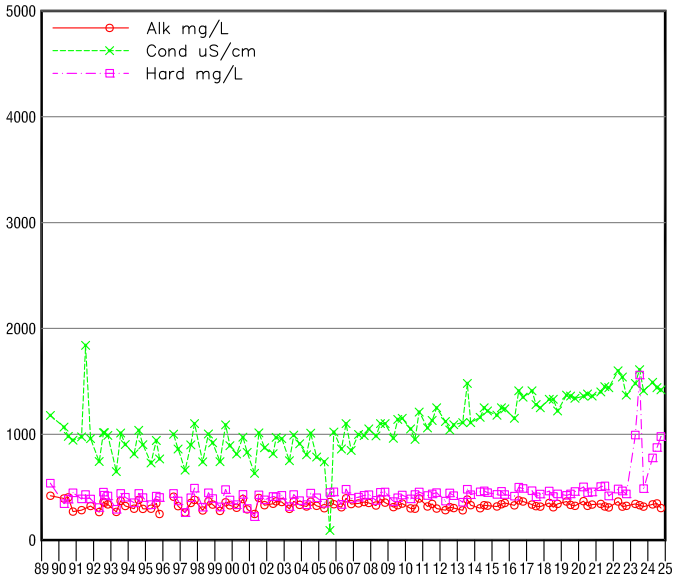
LEACHATE WELL
Screen 222.5 - 218.4 masl

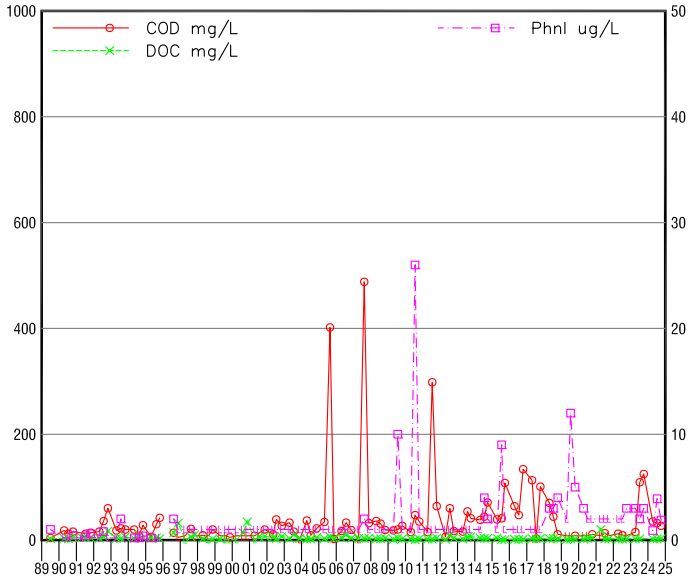
FORMERLY BH3-IIRX
CONVERTED Sep 16

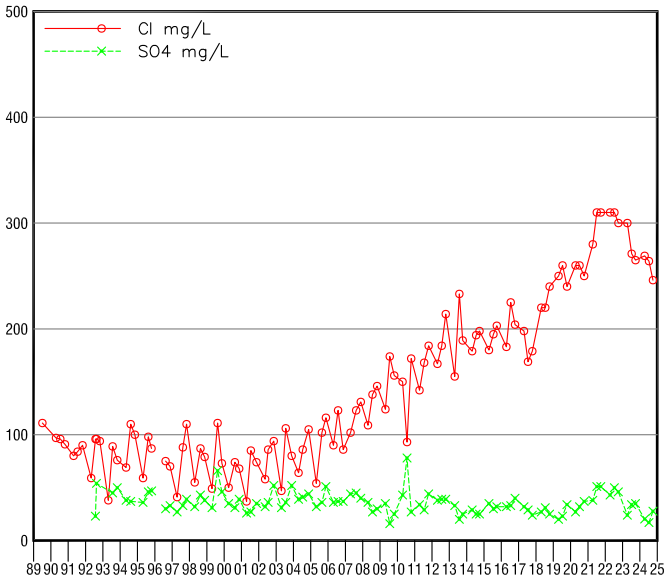


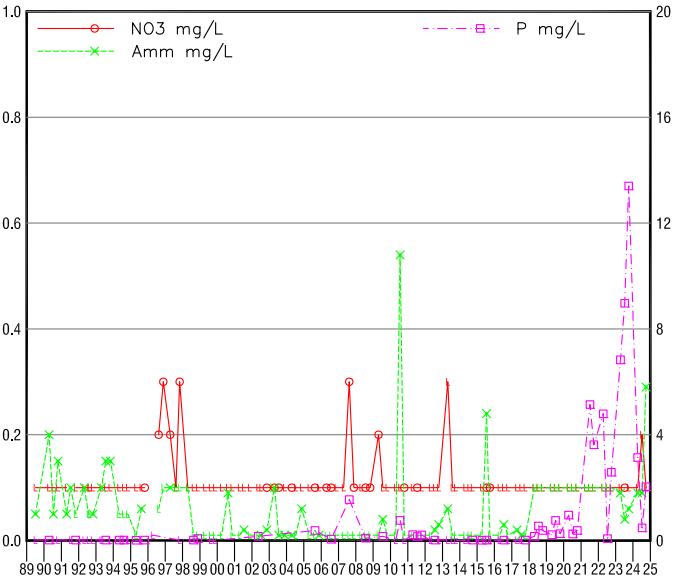
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
29-Jul-15	3052	2500	5960	920	7.5	683	3	163	125	528	168	**21.3**	320	573	57	284	<0.1	<0.1	270	**6**	-2.6
07-Oct-15	3106	2650	5850	904	7.5	738	4	161	122	536	168	**0.41**	247	557	79	273	<0.1	<0.1	270	<1	-6.4
25-Apr-16	3177													634							
27-Apr-16	3177	2490	5930	902	7.4	637	16	162	121	553	162	**0.813**	331	634	58	273	<1	<1	247	**4**	-3.1
25-Jul-16	3219	2400	6230	982	7.6	749	<10	173	134	582	173	**1.31**	317	645	52	316	<1	<1	262	<1	-0.7
25-Oct-16	3305	2010	5030	788	7.5	507	<10	148	102	341	128	**20.5**	2450	2088	158	262	<1	<1	233	**19**	-3.0
02-May-17	3344	2240	4830	713	7.5	439	<10	127	96	375	151	**35.9**	610	1757	19	267	<0.5	<0.5	253	**15**	-3.0
25-Jul-17	3412	2080	5090	705	7.4	466	<10	126	95	385	149	**36.9**	324	500	114	241	<0.5	<0.5	241	**2**	-1.4
23-Oct-17	3486	2240	2920	739	7.3	421	15	131	100	389	166	**34.9**	333	675	104	253	<1	<1	250	**3**	-1.7
01-May-18	3537	1850	4500	740	7.4	540	<2	143	93	355	171	**36.3**	335	500	104	280	<0.1	<0.3	269	**34**	2.7
24-Jul-18	3594	1920	5020	701	7.0	550	<2	131	91	348	166	**33.1**	300	511	124	282	<0.1	<0.3	239	**12**	-2.1
22-Oct-18	3661	1960	4710	747	7.3	510	<2	147	93	388	180	**36.4**	354	335	153	277	<0.1	<0.3	214	**40**	-0.5
29-Apr-19	3713	1570	4290	942	8.4	540	<2	264	69	107	2.7	**16.9**	1600	395	101	260	<0.6	<0.3	265	**39**	-3.9
23-Jul-19	3769	1820	4500	844	6.9	560	<2	162	107	398	201	**33.7**	311	425	109	296	<0.1	<0.3	273	**43**	7.0
28-Oct-19	3839	2100	5040	893	7.0	610	<2	166	116	408	160	**33.8**	341	66	116	268	<0.6	<0.3	257	**27**	0.1
16-Apr-20	3875	1880	4980	772	7.4	570	<2	148	98	332	173	**30.5**	307	425	114	275	0.1	<0.3	268	**34**	0.8
13-Jul-20	3933	2000	4900	743	6.9	590	<2	141	95	367	183	**33.7**	259	345	120	283	<0.6	<0.3	270	**9**	-0.5
06-Oct-20	3971	1770	4800	698	7.1	540	12	130	91	353	161	**31.4**	258	370	132	262	0.1	<0.3	272	**10**	3.0
29-Apr-21	4043	1860	5080	754	7.4	580	<2	143	97	356	176	**31.3**	275	395	116	274	0.1	<0.3	229	**8**	-18.6
16-Jul-21	4098	1890	4990	699	6.9	500	<2	128	92	356	154	**31.3**	244	345	134	286	<0.6	<0.3	260	**22**	-2.3
01-Oct-21	4155	1880	5080	683	7.4	560	23	113	97	384	159	**31.4**	290	375	165	280	<0.6	<0.3	270	**4**	-2.6
21-Apr-22	4221	2060	5220	751	6.9	580	<2	135	101	409	162	**29.8**	281	284	95	286	0.1	<0.3	266	**24**	-0.4
19-Jul-22	4307	1700	5330	802	7.5	590	<2	133	114	401	178	**31.1**	299	410	97	262	<0.1	<0.3	231	<20	4.7
13-Oct-22	4377	1950	5420	711	7.7	570	<2	123	98	401	154	**27.7**	259	412	23	267	<0.1	<0.1	258	**48**	0.0
19-Apr-23	4429	*<2*	4820	717	6.8	626	<1	116	104	415	172	**23.4**	203	447	120	341	<0.1	<0.1	324	**2**	55.0
19-Jul-23	4484	1810	5160	820	6.9	597	<1	135	117	396	172	**30.0**	281	488	123	343	0.1	<0.1	299	**3**	-8.6
16-Oct-23	4555	1910	5240	849	7.0	571	<1	121	133	371	160	**2.63**	278	511	125	309	<0.1	<0.1	334	**4**	-15.5
18-Apr-24	4592	1950	5670	772	7.08	632	<5	114	113	383	153	**0.354**	272	505	127	288	<0.5	<0.5	332	**1.1**	-16.5
17-Jul-24	4662	1710	4640	711	7.17	564	<0.5	123	104	381	167	**0.351**	262	83	120	296	0.1	<0.1	312	**1.5**	-10.4
10-Oct-24	2067112	*<2*	5890	752	7.21	501	<0.5	110	101	416	162	**0.720**	242	480	134	346	0.1	<0.1	344	**1.6**	43.8
TOTAL SAMPLES		118	118	112	117	119	102	98	98	98	98	117	90	115	114	116	118	117	116	114	
AVERAGE 2024		1830	5400	745	7.15	566	<0.5	116	106	393	161	0.4750	259	356	127	310	<0.5	<0.1	329	1.40	

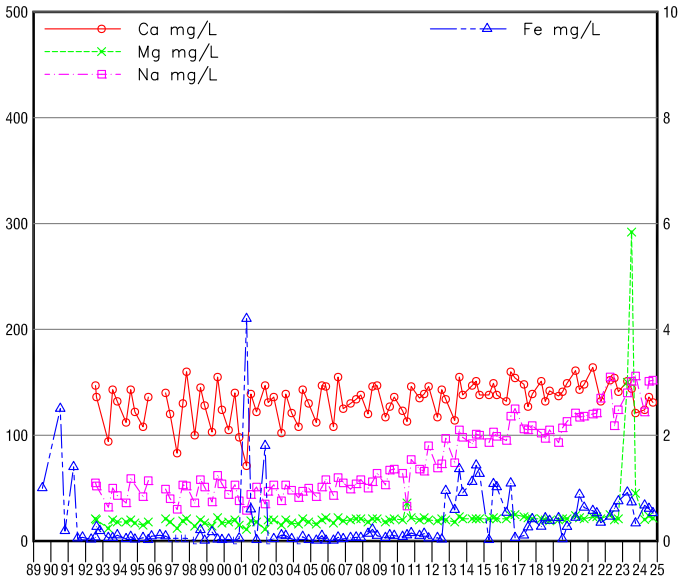
all Concentrations mg/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**









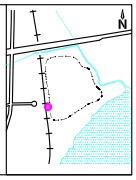


L Concentration Reported Less Than

G Concentration Reported Greater Than

A Concentration Determined Anomalous

Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

BH4-IIR

FORMERLY 4-II
CONVERTED Sep 16

SAND AQUIFER

Screen 219.9 - 218.3 masl

22578520
25 Apr 25

wsp

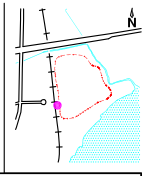
24G007

BH4-IIR

SAND AQUIFER

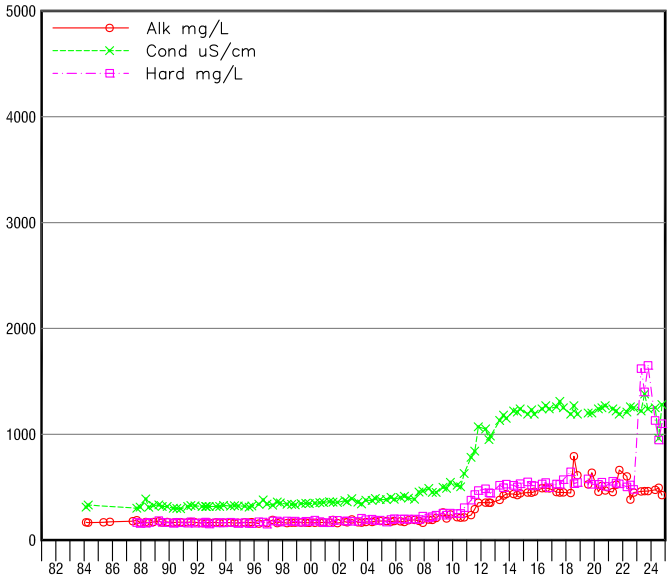
OBSERVATION WELL
Screen 219.9 - 218.3 masl

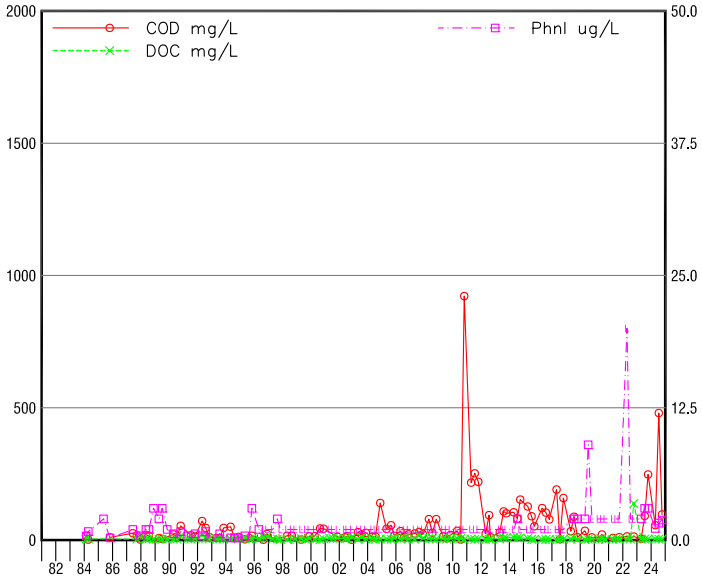
FORMERLY BH4-II
CONVERTED Sep 16

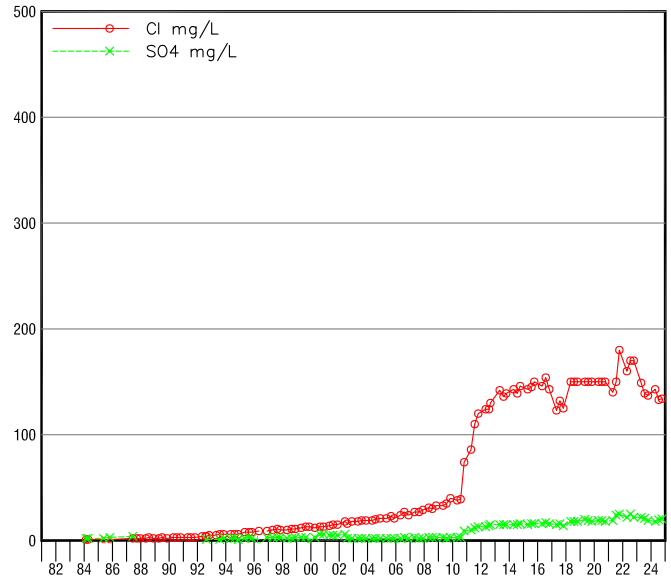


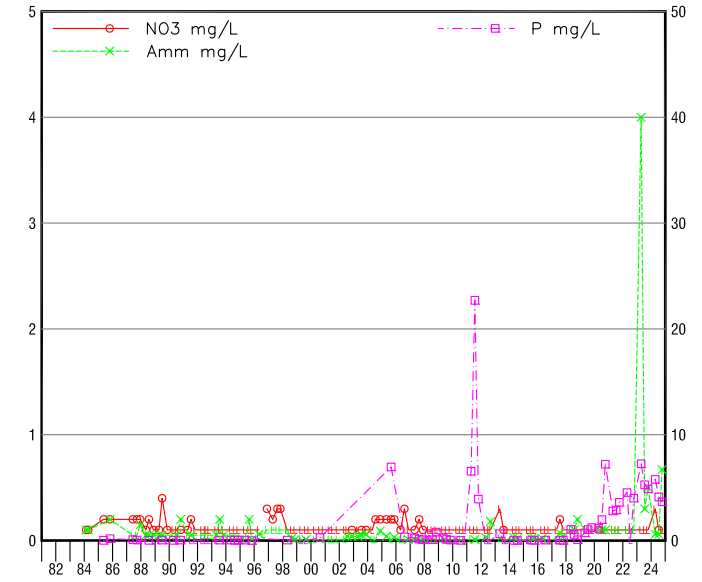
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
15-Apr-15	2975	317	1180	431	7.3	180	35	138	21	93	1.4	0.02	54	39	3.6	0.5	<0.1	<0.1	<0.01	<1	2.6
21-Jul-15	3036	338	1250	460	7.7	195	30	149	22	103	1.8	**1.08**	62	41	0.8	0.4	0.1	<0.1	0.24	**9**	3.5
28-Sep-15	3094	351	1240	430	7.7	203	32	138	21	99	1.6	**1.02**	55	108	0.8	0.8	0.1	<0.1	<0.01	<1	-1.2
19-Apr-16	3166	328	1150	415	7.7	183	32	132	21	95	1.3	**0.535**	45	64	1.5	0.3	<0.1	<0.1	<0.01	<1	0.9
19-Jul-16	3203	375	1410	499	7.8	225	33	160	24	118	1.5	**1.09**	60	47	1.5	0.4	<0.1	<0.1	0.03	<1	2.2
18-Oct-16	3294	364	1350	487	7.9	204	40	154	25	125	4.1	0.059	227	134	1.5	0.8	<0.1	<0.1	<0.01	<1	5.2
24-Apr-17	3329	335	1410	466	7.7	198	32	148	23	106	1.6	0.105	137	113	2.6	0.4	<0.1	0.1	0.02	<1	3.7
19-Jul-17	3396	320	1280	409	7.7	169	29	127	22	105	4.7	0.261	163	3	2.2	0.4	<0.1	<0.1	0.01	<1	4.4
16-Oct-17	3471	316	1250	434	7.8	179	24	139	21	109	2.8	**0.413**	129	101	3.1	0.3	<0.1	<0.1	<0.01	<1	6.8
23-Apr-18	3522	351	1330	463	7.4	220	27	151	21	102	2.0	0.271	113	70	3.0	<0.5	<0.1	<0.1	<0.1	**3**	0.3
17-Jul-18	3576	310	1330	411	7.8	220	31	132	20	97	2.5	**0.431**	102	44	3.0	<0.5	<0.1	<0.1	<0.1	**3**	-1.6
16-Oct-18	3648	342	1220	436	7.4	240	25	142	19	105	2.2	**0.384**	102	11	2.0	<0.5	<0.1	<0.1	<0.1	**4**	-2.7
23-Apr-19	3700	364	1370	422	7.1	250	20	137	20	93	1.6	**0.436**	121	<8	1.0	<0.5	<0.1	<0.1	<0.1	<2	-7.5
15-Jul-19	3751	333	1360	436	7.2	260	23	141	21	107	2.2	0.035	113	<8	2.0	<0.5	<0.1	<0.1	<0.1	**12**	-3.2
17-Oct-19	3826	324	1340	459	7.5	240	34	149	21	113	2.2	0.27	93	8	2.0	<0.5	<0.1	<0.1	<0.1	**5**	1.0
14-Apr-20	3862	367	1360	502	7.4	260	27	161	24	121	1.8	**0.442**	116	<8	2.0	<0.5	<0.1	<0.1	<0.1	**3**	0.7
09-Jul-20	3915	324	1380	448	7.6	260	32	143	22	117	1.8	**0.876**	107	<8	3.0	<0.5	<0.1	<0.1	<0.1	<2	-0.9
13-Oct-20	9372	336	1360	455	7.5	250	37	148	21	118	2.3	**0.632**	111	11	4.0	<0.5	<0.1	<0.1	<0.1	<2	-0.4
14-Apr-21	4044	341	1400	505	7.5	280	38	164	23	120	1.8	**0.571**	136	<8	20	<0.5	<0.1	<0.1	<0.1	<2	0.1
08-Jul-21	4099	318	1450	511	7.4	310	51		23	121	2.1	**0.526**	165	13	2.0	<0.5	<0.1	<0.1	<0.1	<2	-1.8
28-Sep-21	4156	309	1440	417	8.0	310	51	132	21	135	2.1	**0.347**	125	<8	2.0	0.6	<0.1	<0.1	<0.1	<2	-5.3
14-Apr-22	4222	364	1600	482	7.7	310	43	152	25	155	2.0	**0.462**	128	12	2.0	<0.5	<0.1	<0.1	<0.1	<2	-1.0
13-Jul-22	4289	316	1540	464	7.8	310	50	154	20	109	1.9	**0.617**	101	9	2.0	0.6	<0.1	<0.1	<0.1	<2	-6.3
04-Oct-22	4364	324	1370	436	7.3	300	46	141	21	124	2.1	**0.753**	105	<8	2.0	<0.5	<0.1	<0.1	<0.1	**3**	-5.3
12-Apr-23	4416	341	1480	993	7.6	300	24	151	150	140	1.9	**0.920**	109	15	2.5	2.4	<0.1	0.3	0.09	**3**	24.6
11-Jul-23	4466	330	1610	1560	7.6	271	34	144	292	151	2.3	**0.732**	95	109	2.4	3.5	0.1	<0.1	0.04	**2**	6.8
03-Oct-23	4542	316	1410	486	7.7	265	35	121	45	156	2.1	**0.336**	53	125		<0.4	<0.1	<0.1	0.06	**3**	5.3
10-Apr-24	4615	337	1490	776	7.37	269	20.3	124	20.3	122	1.7	**0.673**	102	35	2.2	0.3	<0.1	<0.1	0.09	0.9	-0.7
11-Jul-24	4644	346	1440	875	7.86	264	17	136	23.6	151	2.0	**0.611**	105	32	2.3	0.2	<0.2	<0.2	0.09	**3.9**	6.6
02-Oct-24	2064049	303	1420	978	7.56	246	27.7	131	21.6	152	2.3	**0.53**	94	27	2.6	2.1	<0.1	<0.1	0.29	**1.9**	31.8
TOTAL SAMPLES		105	106	106	106	106	95	95	96	95	95	105	89	103	105	105	105	106	105	105	
AVERAGE 2024		329	1450	876	7.60	260	21.7	130	21.8	142	2.0	0.6047	100	31	2.4	0.9	<0.1	<0.1	0.16	2.23	

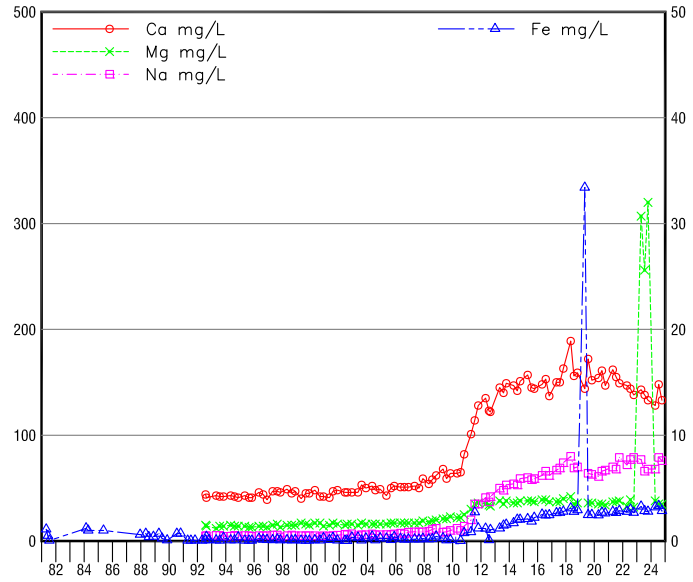
all Concentrations mg/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**









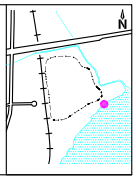


L Concentration Reported Less Than

G Concentration Reported Greater Than

A Concentration Determined Anomalous

Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

BH5-IR

FORMERLY 5-I
CONVERTED Oct 10

SAND AQUIFER

Screen 211.8 - 211.3 masl

22578520
25 Apr 25

wsp

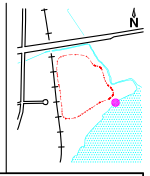
24G008

BH5-IR

SAND AQUIFER

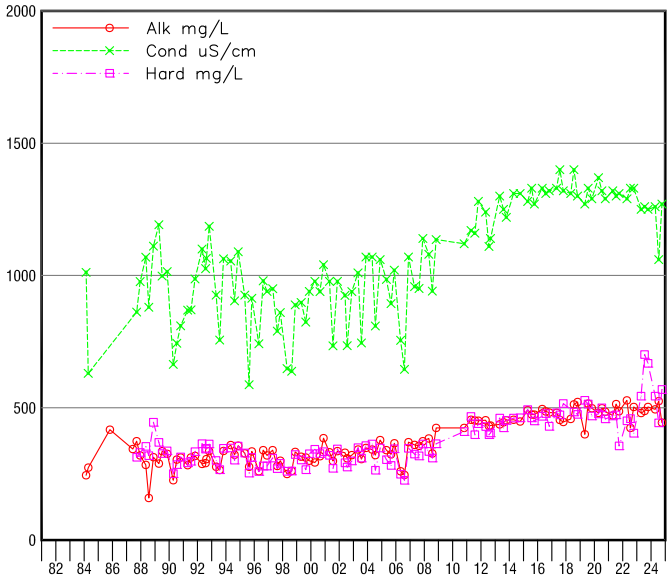
OBSERVATION WELL
Screen 211.8 - 211.3 masl

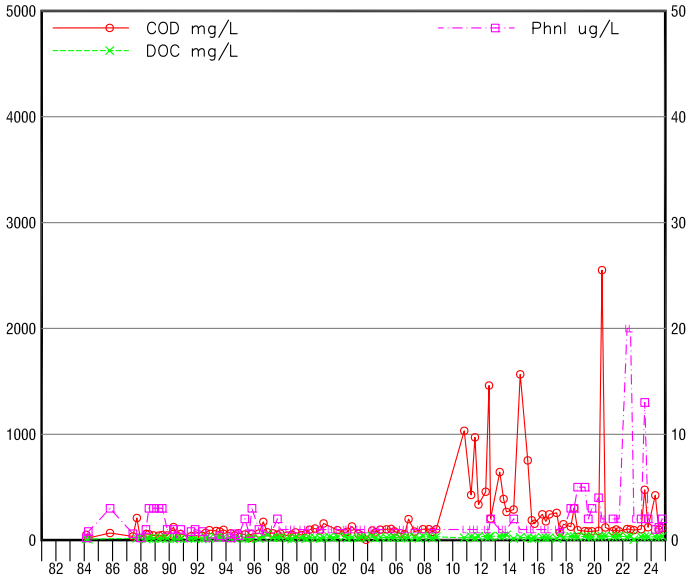
FORMERLY BH5-I
CONVERTED Oct 10

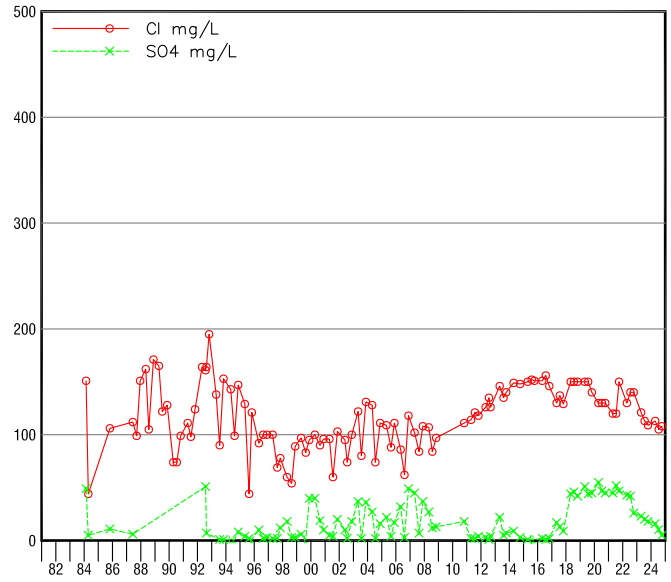


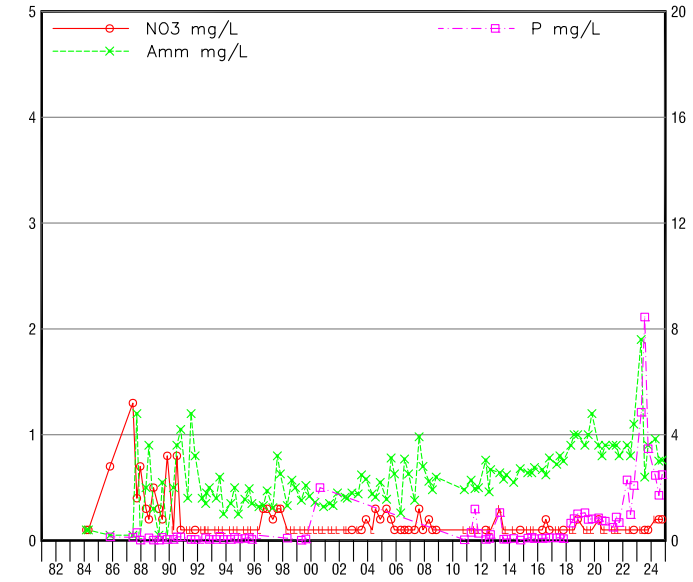
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
20-Apr-15	2990	449	1190	550	6.9	143	15	157	38	60	2.0	**2.08**	210	127	6.4	0.3	<0.1	<0.1	<0.01	<1	1.8
30-Jul-15	3053	447	1230	518	7.7	145	16	145	38	58	1.9	**1.85**	192	90	2.8	0.4	<0.1	<0.1	0.02	<1	-1.3
08-Oct-15	3107	456	1190	512	7.6	150	16	144	37	59	1.9	**2.20**	192	52	1.6	0.8	<0.1	<0.1	0.02	<1	-2.8
27-Apr-16	3178	489	1240	530	7.8	146	16	148	39	62	2.0	**2.50**	222	121	2.9	1.0	<0.1	<0.1	0.02	<1	-2.9
28-Jul-16	3220	489	1270	543	7.8	154	17	153	39	66	1.9	**2.42**	222	104	2.3	3.1	<0.1	<0.1	<0.01	<1	-1.8
26-Oct-16	3306	488	1240	495	7.9	143	16	137	37	62	1.8	**2.45**	224	78	2.3	0.2	<0.1	<0.1	<0.01	<1	-4.9
03-May-17	3345	453	1260	530	7.7	123	15	150	37	67	1.8	**2.64**	242	191	1.3	0.8	<0.1	<0.1	<0.01	<1	3.2
27-Jul-17	3413	449	1310	527	7.8	132	16	150	37	69	2.0	**2.67**	235	3	3.2	0.4	0.2	<0.1	0.07	<1	2.4
24-Oct-17	3487	450	1250	571	7.7	125	14	163	40	74	2.2	**2.78**	263	159	3.6	0.2	<0.1	<0.1	0.04	<1	7.2
02-May-18	3538	444	1190	645	7.8	150	18	189	42	80	2.9	**3.10**	303	33	4.0	<0.5	<0.1	<0.1	<0.1	<2	10.5
26-Jul-18	3595	792	1270	533	7.3	150	18	156	35	69	2.5	**2.76**	249	88	8.0	<0.5	<0.1	<0.1	0.1	**2**	-19.2
25-Oct-18	3662	612	1190	544	7.9	150	18	159	36	70	2.4	**2.92**	241	11	3.0	<0.5	<0.1	<0.1	0.2	**2**	-8.8
01-May-19	3714	*310*	*975*	*758*	8.2	150	20	144	*97*	*351*	*169*	**33.4**	344	35	2.0	<0.5	<0.1	<0.1	<0.1	**2**	53.8
26-Jul-19	3770	526	1200	578	7.3	150	19	172	36	64	2.2	**2.46**	228	<8	3.0	1.2	<0.1	<0.1	<0.1	**9**	-1.9
29-Oct-19	3840	637	1200	527	7.4	150	18	152	36	63	2.2	**2.47**	216	10	4.0	<0.5	<0.1	<0.1	<0.1	<2	-12.3
17-Apr-20	3876	457	1240	526	7.9	150	19	154	35	61	2.3	**2.43**	210	<8	3.0	0.9	0.1	<0.1	<0.1	<2	-1.3
14-Jul-20	3934	513	1250	546	7.6	150	19	161	35	66	2.3	**2.69**	223	21	4.0	<0.5	<0.1	<0.1	0.1	<2	-3.2
08-Oct-20	3973	468	1270	507	7.9	150	18	147	34	67	2.3	**2.62**	223	<8	2.0	<0.5	<0.1	<0.1	0.1	<2	-2.8
21-Apr-21	4045	454	1240	555	7.9	140	19	162	37	70	2.3	**2.76**	245	8	3.0	0.6	<0.1	<0.1	<0.1	<2	3.2
16-Jul-21	4100	523	1220	538	7.3	150	24	155	37	68	3.2	**2.66**	215	<8	4.0	<0.5	<0.1	<0.1	<0.1	<2	-4.4
06-Oct-21	4157	662	1190	531	7.3	180	25	149	38	79	2.2	**2.86**	254	11	3.0	<0.5	<0.1	<0.1	<0.1	<2	-13.6
21-Apr-22	4223	601	1210	503	7.4	160	22	147	33	72	2.1	**2.77**	238	14	4.0	<0.5	<0.1	<0.1	<0.1	<20	-11.7
20-Jul-22	4308	382	1260	521	8.1	170	25	144	39	77	2.0	**2.98**	236	<8	4.0	<0.5	<0.1	<0.1	<0.1	<2	3.9
13-Oct-22	4378	449	1250	478	8.1	170	22	138	32	79	2.2	**2.68**	226	13	138	<0.5	<0.1	<0.1	<0.1	<2	-3.6
20-Apr-23	4430	459	1220	1620	7.5	149	22	143	307	77	2.6	**3.26**	257	5	3.7	3.0	<0.1	<0.1	4.0	**2**	44.7
20-Jul-23	4485	462	1380	1400	7.6	139	21	138	256	66	2.1	**2.84**	231	91	3.4	1.4	<0.1	<0.1	0.3	**3**	1.6
16-Oct-23	4556	463	1240	1650	7.7	137	19	133	320	68	2.5	**2.78**	199	248	4.1	0.6	<0.1	<0.1	0.5	**3**	4.4
18-Apr-24	4593	474	1250	1130	7.34	143	18	128	37.9	68	2.3	**3.19**	250	56	4.2	<0.2	<0.3	<0.3	0.06	**1.1**	1.6
18-Jul-24	4663	495	961	946	7.43	133	19.6	148	35.0	79	2.3	**3.32**	263	480	3.4	1.1	0.1	<0.1	0.06	**1.6**	5.8
10-Oct-24	2067113	424	1280	1100	7.64	134	20.4	133	34.7	76	2.1	**2.84**	245	97	3.7	4.5	<0.1	<0.1	0.67	**1.9**	7.1
TOTAL SAMPLES		116	114	111	117	117	100	98	97	97	97	117	90	112	115	116	117	118	116	116	
AVERAGE 2024		464	1164	1059	7.47	137	19.3	136	35.9	74	2.2	3.117	253	211	3.8	1.9	<0.1	<0.1	0.26	1.53	

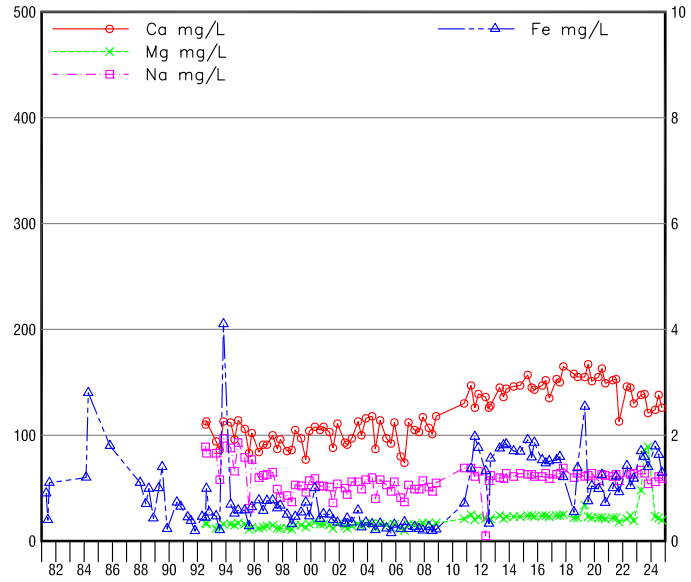
all Concentrations mg/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**



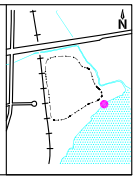








L	Concentration Reported Less Than
G	Concentration Reported Greater Than
A	Concentration Determined Anomalous
	Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

BH5-IIIR

FORMERLY 5-III
CONVERTED Oct 10

PEAT

Screen 218.0 - 217.4 masl

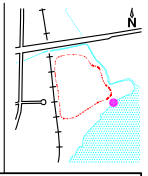
22578520 25 Apr 25	wsp	24G009

BH5-IIIR

PEAT

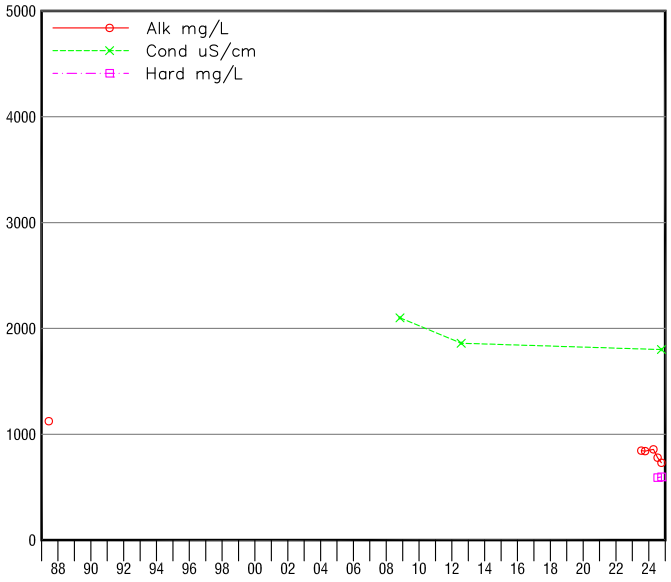
OBSERVATION WELL
Screen 218.0 - 217.4 masl

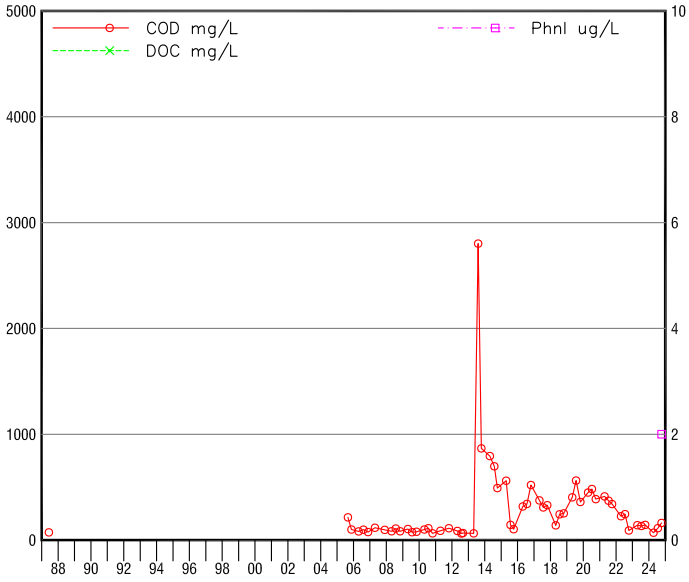
FORMERLY BH5-III
CONVERTED Oct 10

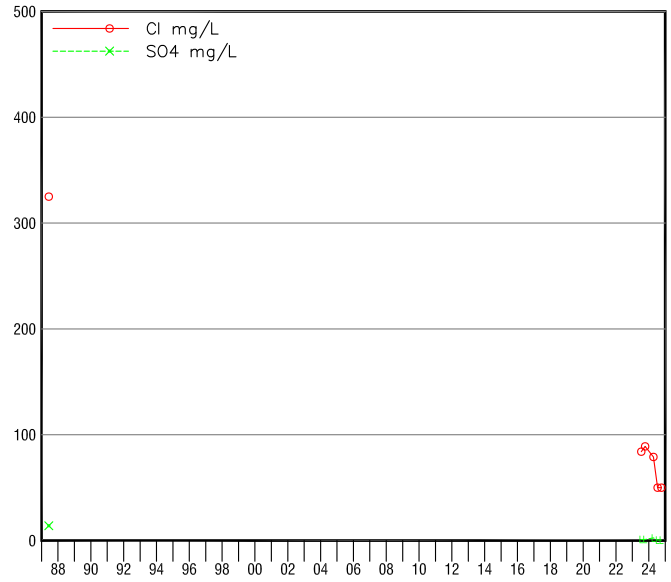


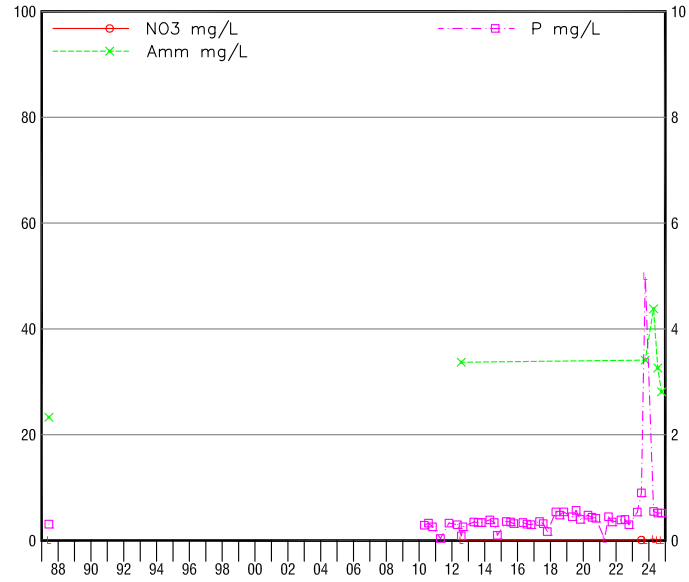
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
20-Apr-15	2991	491	1280	493	6.9	150	1	157	24	63	83	**1.91**	221	753	24	3.6	<0.1	<0.1	0.64	<1	2.5
30-Jul-15	3054	475	1330	462	7.4	152	<1	145	24	63	81	**1.58**	197	188	13	2.5	<0.1	<0.1	0.64	<1	1.2
08-Oct-15	3108	474	1270	450	7.4	151	<1	143	23	61	69	**1.86**	201	154	18	3.1	<0.1	<0.1	0.69	<1	-0.6
27-Apr-16	3179	495	1330	468	7.6	151	2	147	24	61	70	**1.53**	227	244	24	3.7	0.1	<0.1	0.67	<1	-1.2
27-Jul-16	3221	486	1310	478	7.6	156	1	152	24	64	69	**1.47**	212	177	21	3.3	0.2	<0.1	0.62	<1	0.2
26-Oct-16	3307	482	1320	430	7.6	146	2	135	23	59	70	**1.51**	201	244	22	3.6	0.1	<0.1	0.78	<1	-2.6
03-May-17	3346	481	1330	481	7.5	130	17	153	24	63	78	**1.53**	237	257	15	3.7	<0.1	<0.1	0.72	<1	2.9
27-Jul-17	3414	454	1400	473	7.6	137	13	150	24	64	75	**1.59**	229	73	42	3.2	<0.1	<0.1	0.8	<1	3.9
24-Oct-17	3488	446	1320	516	7.5	129	9	165	25	69	78	**1.21**	253	149	25	2.8	0.1	<0.1	0.75	<1	9.4
02-May-18	3539	458	1310		7.5	150	44							125	34	2.0	<0.1	<0.1	0.9	**3**	
26-Jul-18	3596	513	1400	484	7.1	150	46	158	22	60	96	**0.547**	196	303	33	2.5	<0.1	<0.1	1.0	**3**	-1.9
25-Oct-18	3663	522	1300	475	7.5	150	42	155	22	64	94	**1.38**	238	93	30	1.4	0.2	<0.1	1.0	**5**	-2.3
01-May-19	3715	400	1270	528	8.3	150	51	155	34	61	2.2	**2.54**	219	84	35	2.5	<0.1	<0.1	0.9	**5**	0.4
26-Jul-19	3771	516	1330	514	7.0	150	44	167	23	62	95	**0.754**	223	82	31	3.1	<0.1	<0.1	1.0	**2**	0.0
29-Oct-19	3841	498	1290	469	7.4	140	45	151	22	64	96	**1.04**	217	83	27	3.1	<0.1	<0.1	1.2	**3**	-0.4
17-Apr-20	3877	481	1370	477	7.7	130	55	155	22	57	101	**0.986**	230	87	33	3.3	0.2	<0.1	0.9	**4**	0.9
14-Jul-20	3935	498	1320	500	7.2	130	47	163	22	63	99	**1.25**	220	2550	34	2.6	<0.1	<0.1	0.8	<2	2.5
08-Oct-20	3974	485	1290	458	7.8	130	45	149	21	62	96	**0.722**	208	120	37	2.3	<0.1	<0.1	0.9	<2	0.3
22-Apr-21	4046	471	1320	469	7.8	120	45	152	22	61	106	**1.00**	229	84	33	2.8	<0.1	<0.1	0.9	**2**	3.5
16-Jul-21	4101	514	1300	473	7.2	120	52	153	22	63	99	**1.22**	205	99	33	3.0	<0.1	<0.1	0.9	<2	0.3
30-Sep-21	4158	487	1310	356	8.1	150	47	113	18	57	84	**0.924**	180	83	39	2.6	<0.1	<0.1	0.8	<2	-11.5
21-Apr-22	4224	528	1290	451	7.1	130	43	146	21	65	91	**1.42**	222	104	29	2.5	<0.1	<0.1	0.9	<20	-2.8
20-Jul-22	4309	424	1330	459	7.8	140	42	145	24	63	90	**1.04**	235	101	35	1.8	<0.1	<0.1	0.8	<20	3.7
13-Oct-22	4379	503	1330	404	7.9	140	26	130	19	64	85	**1.18**	193	93	4.0	2.7	0.1	<0.1	1.1	<2	-5.1
20-Apr-23	4431	480	1250	544	7.3	121	23	138	48	67	88	**1.70**	257	103	32	20.8	<0.1	<0.1	1.9	**2**	9.1
20-Jul-23	4486	488	1260	701	7.4	113	20	139	86	64	80	**1.59**	211	475	31	53.0	0.1	<0.1	0.6	**13**	7.9
16-Oct-23	4557	503	1250	668	7.6	109	18	121	89	54	77	**1.40**	192	121	30	9.9	0.1	<0.1	0.9	**2**	1.7
18-Apr-24	4594	494	1260	544	7.14	113	16	124	23.2	56	72	**1.79**	268	423	31	3.3	<0.2	<0.2	0.96	1	3.3
18-Jul-24	4664	525	1060	443	7.24	105	10.3	138	21.7	61	76	**1.63**	236	97	29.8	15	0.2	<0.1	0.75	**1.2**	6.0
10-Oct-24	2067114	444	1270	569	7.56	108	5.1	126	19.7	59	75	**1.29**	200	111	34.7	20.8	0.2	<0.1	0.76	**2**	8.3
TOTAL SAMPLES		111	109	106	110	111	95	91	91	91	91	110	83	106	109	109	111	111	110	109	
AVERAGE 2024		488	1197	519	7.31	109	10	129	21.5	59	74	1.570	235	210	31.8	13.0	<0.2	<0.1	0.82	1	

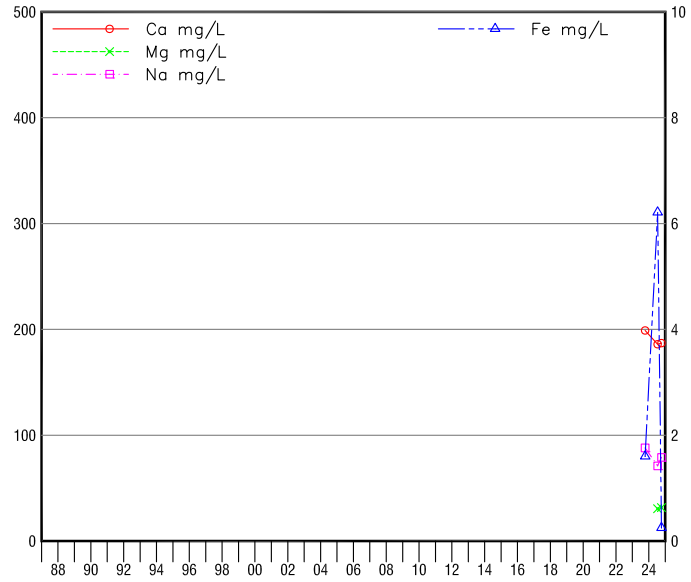
all Concentrations mg/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**









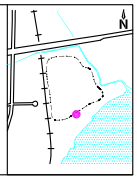


L Concentration Reported Less Than

G Concentration Reported Greater Than

A Concentration Determined Anomalous

Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

BH6R

FORMERLY 6X
CONVERTED Jul 13

PEAT

Screen 219.4 - 217.9 masl

22578520
25 Apr 25

wsp

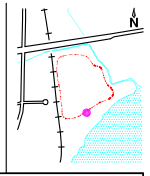
24G010

BH6R

PEAT

OBSERVATION WELL
Screen 219.4 - 217.9 masl

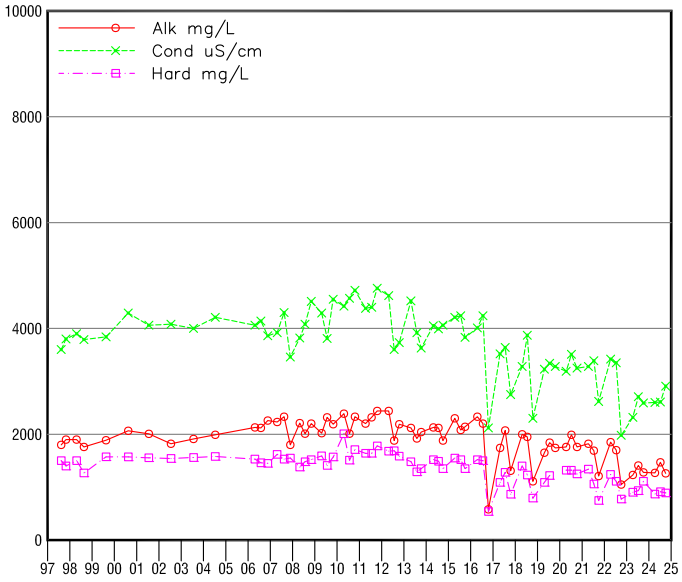
FORMERLY BH6X
CONVERTED Jul 13

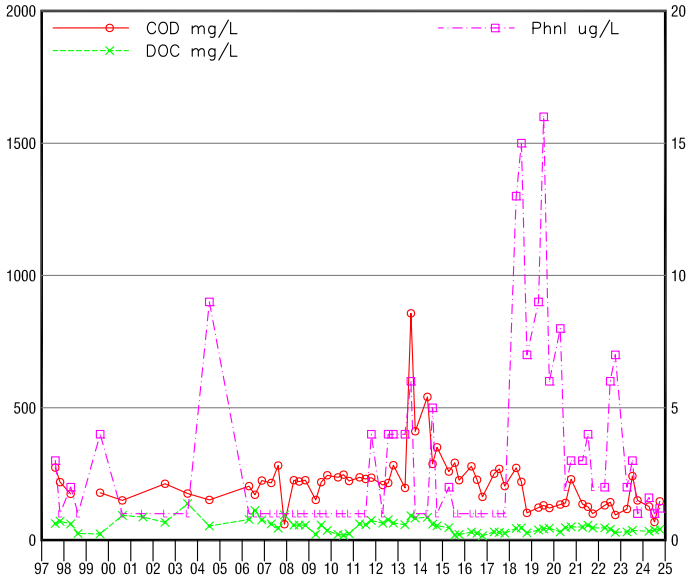


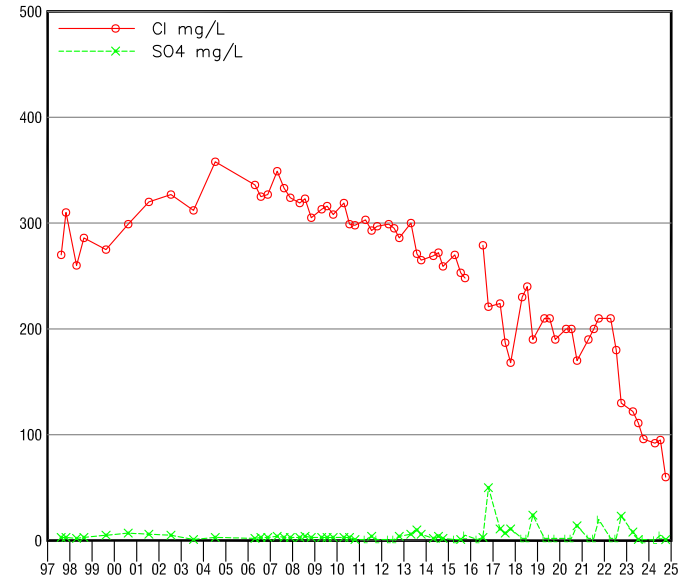
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
08-Oct-14	2908													492							
23-Apr-15	2992				6.8									561							
28-Jul-15	3055													143							
06-Oct-15	3109													102							
27-Apr-16	3180													317							
29-Jul-16	3222													342							
26-Oct-16	3308													520							
02-May-17	3347													375							
25-Jul-17	3415													308							
23-Oct-17	3489													329							
01-May-18	3540													139							
25-Jul-18	3597													243							
25-Oct-18	3664													252							
01-May-19	3716													403							
26-Jul-19	3772													563							
29-Oct-19	3842													360							
17-Apr-20	3878													449							
14-Jul-20	3936													482							
07-Oct-20	3975													387							
21-Apr-21	4047													413							
16-Jul-21	4102													372							
04-Oct-21	4159													340							
20-Apr-22	4225													225							
13-Oct-22	4380													91							
18-Apr-23	4432													140							
18-Jul-23	4487	845			6.9	84	<1							133			0.1	<0.1			2.7
12-Oct-23	4558	841			6.8	89	<1	199		88	28	**1.60**	796	143			<0.1	<0.1	34.1		4.4
15-Apr-24	4595	857			7.03	79	<2.5							70			<0.3	<0.3	43.8		1.2
17-Jul-24	4665	779		590	6.79	50	<0.5	186	30.5	71	27	**6.21**	820	111			<0.1	<0.1	32.6		4.7
10-Oct-24	2067115	730	1800	597	7.27	50	<0.5	187	31.6	79	27	0.248	872	162		35.3	<0.1	<0.1	28.1	**2**	9.1

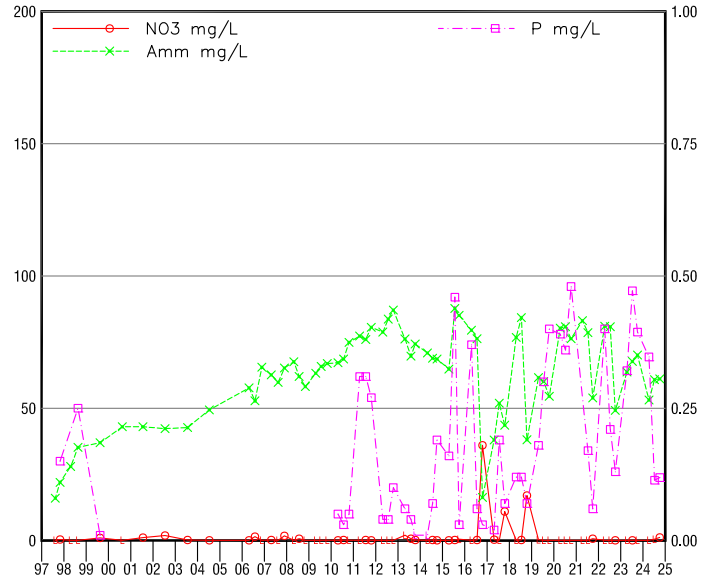
TOTAL SAMPLES	6	3	2	7	6	6	3	2	3	3	3	3	55	0	3	7	7	6	1	
AVERAGE 2024	789		594	7.03	60	<0.5	187	31.1	75	27	3.229	846	114			<0.1	<0.1	34.8		

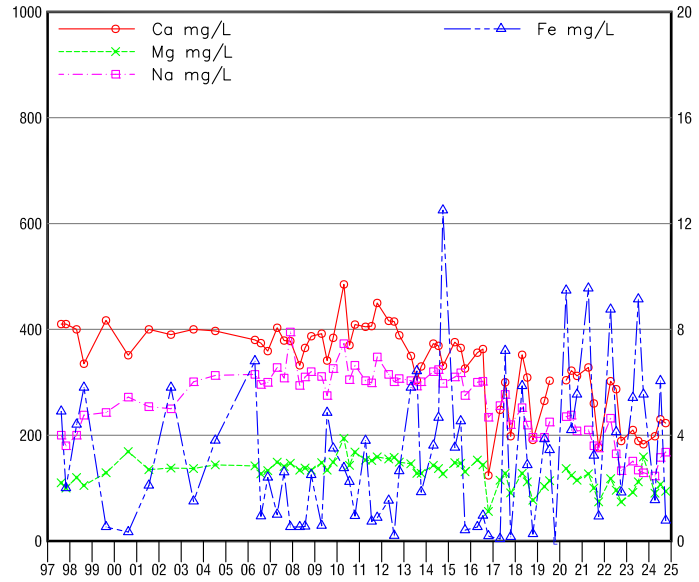
all Concentrations mg/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**



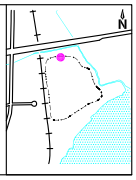








L	Concentration Reported Less Than
G	Concentration Reported Greater Than
A	Concentration Determined Anomalous
	Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

BH8R

FORMERLY 8X
CONVERTED Jul 13

PEAT

Screen 219.0 - 217.4 masl

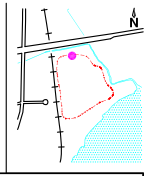
22578520 25 Apr 25	WSP	24G011

BH8R

PEAT

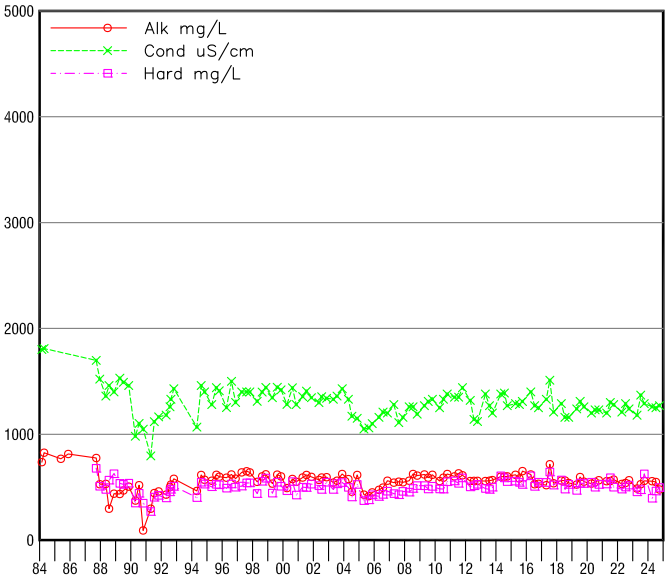
OBSERVATION WELL
Screen 219.0 - 217.4 masl

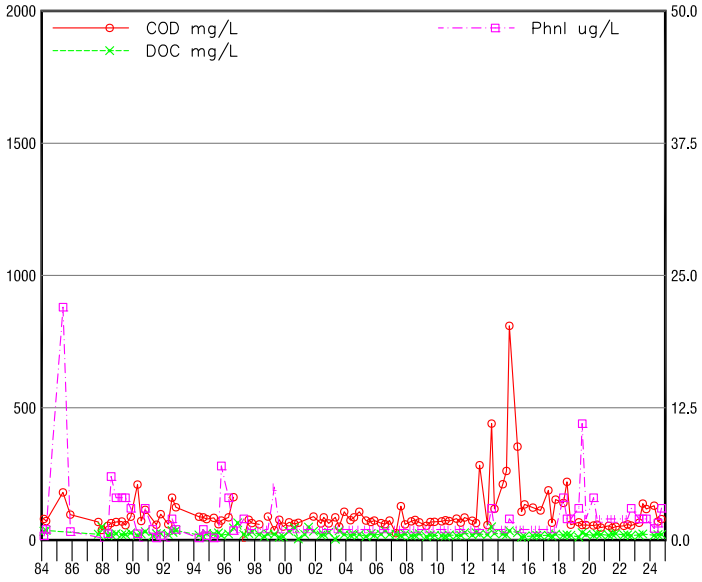
FORMERLY BH8X
CONVERTED Jul 13

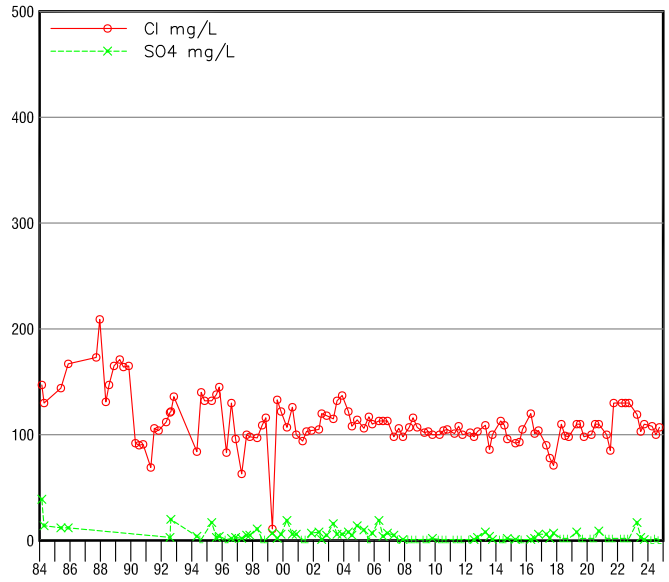


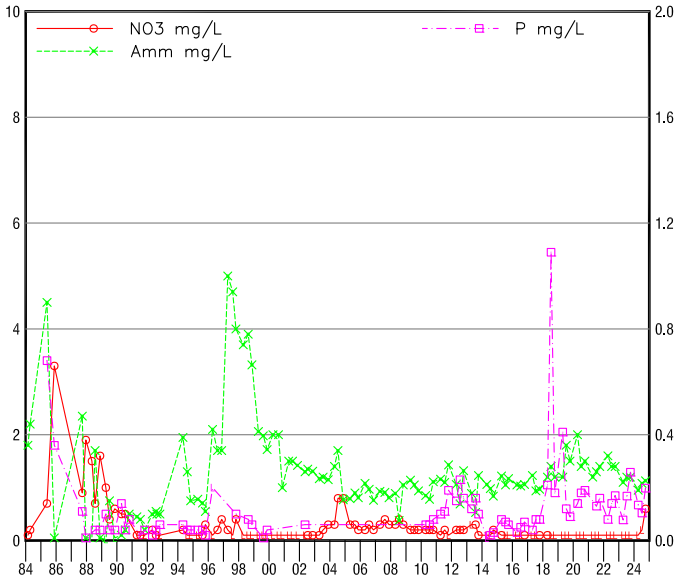
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
16-Apr-15	2976	2300	4210	1550	7.8	270	<1	376	148	310	110	**3.53**	782	259	47	85.1	0.1	<0.1	64.8	**2**	-1.5
22-Jul-15	3037	2080	4240	1520	7.6	253	1	365	147	318	124	**4.53**	824	292	19	102	0.2	<0.1	87.7	<1	4.9
30-Sep-15	3095	2140	3830	1350	7.7	248	<5	326	131	275	113	**0.41**	772	226	21	92.7	<0.5	<0.5	85.1	<1	-1.8
20-Apr-16	3167	2330	4010	1520	7.6	*26*	<1	356	153	300	111	**0.53**	793	279	30	87.9	<0.1	<0.1	79.5	<1	4.7
19-Jul-16	3204	2200	4240	1500	7.7	279	3	363	144	302	117	**0.963**	765	228	26	107	0.2	<0.1	76.3	<1	-0.3
18-Oct-16	3295	579	2120	539	7.7	221	50	124	56	234	96	0.186	211	163	16	18.5	36	<0.1	16.3	<1	6.9
26-Apr-17	3330	1740	3520	1090	7.5	224	11	248	115	256	103	0.081	424	251	31	38.7	0.3	<0.1	38	<1	-3.8
20-Jul-17	3397	2070	3640	1280	7.6	187	7	300	128	277	116	**7.19**	772	269	29	65.2	<0.1	<0.1	51.9	<1	-2.5
18-Oct-17	3472	1310	2750	867	7.6	168	11	198	91	220	110	0.155	352	204	26	50.5	11	<0.1	43.6	<1	1.5
23-Apr-18	3523	2000	3280	1400	7.2	230	<2	352	128	252	120	**5.86**	941	273	44	78.0	<0.1	<0.3	76.8	**13**	1.5
18-Jul-18	3577	1950	3870	1230	7.9	240	<2	309	112	219	118	**2.87**	787	220	46	86.9	0.2	<0.1	84.3	**15**	-2.7
17-Oct-18	3649	1110	2300	793	7.3	190	24	191	77	196	100	0.268	289	103	27	38.1	17	0.3	38.1	**7**	0.7
24-Apr-19	3701	1650	3230	1090	7.0	210	<2	265	103	196	98	**3.85**	671	123	38	62.2	<0.3	<0.3	61.6	**9**	-2.1
18-Jul-19	3752	1840	3340	1220	7.1	210	<2	303	114	225	114	**3.44**	823	131	42	65.6	<0.1	<0.3	60.1	**16**	-1.3
18-Oct-19	3827	1740	3280	*<1*	7.2	190	<2	*<1*	*<1*	*0.2*	*<0.1*	<0.007	<0.1	121	45	63.2	<0.1	<0.3	54.5	**6**	-82.3
15-Apr-20	3863	1760	3190	1320	7.1	200	<2	304	137	235	114	**9.47**	832	134	31	73.4	<0.1	<0.3	80.3	**8**	5.6
09-Jul-20	3916	1990	3510	1320	7.1	200	<2	322	124	238	109	**4.20**	796	140	47	81.6	<0.1	<0.3	80.8	<2	-0.1
09-Oct-20	3976	1760	3250	1250	7.2	170	14	312	115	208	107	**5.54**	778	230	50	79.8	<0.1	<0.3	76.3	**3**	2.7
14-Apr-21	4048	1820	3280	1340	7.4	190	<2	328	127	210	110	**9.55**	958	136	49	85.8	<0.1	<0.3	83.1	**3**	-3.7
13-Jul-21	4103	1690	3390	1060	7.8	200	<2	260	100	180	104	**3.23**	628	126	56	84.8	<0.1	<0.3	78.6	**4**	-4.1
30-Sep-21	4160	1210	2620	747	7.9	210	<20	177	74	176	97	**0.934**	420	100	46	54.6	0.7	<0.3	53.9	<2	-9.2
13-Apr-22	4226	1850	3420	1240	7.6	210	<2	302	118	232	97	**8.75**	807	131	46	77.2	<0.1	<0.3	81.0	**2**	0.6
14-Jul-22	4290	1700	3350	1110	7.9	180	<2	287	96	165	98	**4.12**	658	143	41	82.9	<0.1	<0.3	80.8	**6**	-1.6
05-Oct-22	4365	1050	1980	775	7.0	130	23	189	74	133	79	**1.84**	455	95	29	50.4	0.1	0.1	49.2	**7**	3.3
13-Apr-23	4417	1230	2320	904	7.0	122	8	210	92	151	79	**5.41**	547	117	31	75.5	<0.1	0.2	63.7	**2**	5.4
12-Jul-23	4467	1410	2710	934	7.2	111	1	189	112	134	81	**9.14**	608	242	37	76.3	0.1	<0.1	67.7	**3**	-4.6
04-Oct-23	4543	1280	2590	1110	7.2	96	<1	183	159	129	70	**5.54**	539	150		62.4	<0.1	<0.1	70.1	1	2.1
09-Apr-24	4616	1270	2600	870	7.09	92	<0.5	198	90.5	123	69	**1.55**	699	127	33	54.8	<0.1	<0.1	53.1	**1.6**	1.9
09-Jul-24	4645	1470	2610	913	7.81	95	<5	230	107	158	87	**6.05**	608	68	38.2	56.9	<0.5	<0.5	60.8	1	59.3
03-Oct-24	2064050	1260	2910	891	7.71	60	0.9	223	93.9	168	85	**0.774**	482	146	40.5	73.1	1.2	<0.1	61.1	**1.2**	8.0
TOTAL SAMPLES		67	67	66	67	66	67	66	66	66	66	67	67	65	66	67	67	67	67	67	
AVERAGE 2024		1333	2707	891	7.54	82	<5	217	97	150	80	2.791	596	114	37.2	61.6	<0.5	<0.1	58.3	1.27	

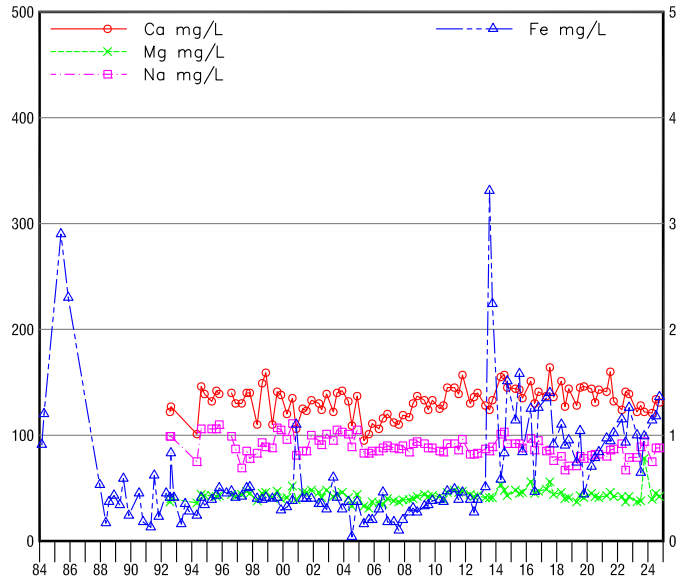
all Concentrations mg/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**









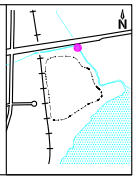


L Concentration Reported Less Than

G Concentration Reported Greater Than

A Concentration Determined Anomalous

Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

BH10R

FORMERLY 10
CONVERTED Jul 13

PEAT

Screen 218.8 - 217.2 masl

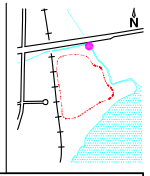
22578520 25 Apr 25	wsp	24G012

BH10R

PEAT

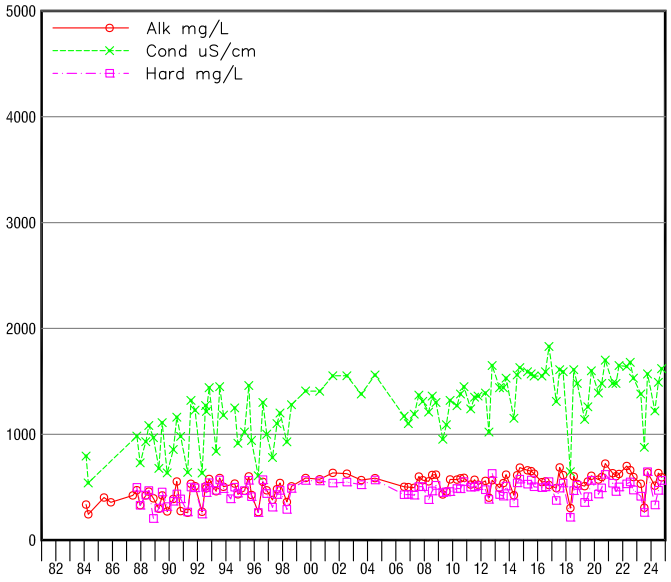
OBSERVATION WELL
Screen 218.8 - 217.2 masl

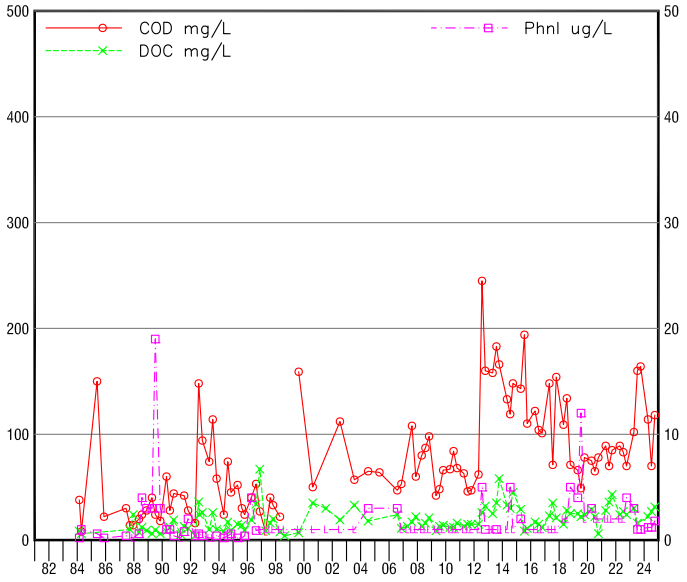
FORMERLY BH10
CONVERTED Jul 13

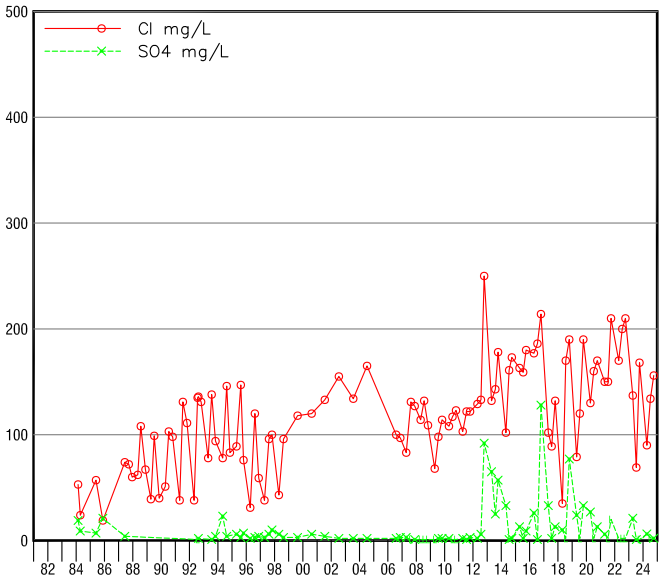


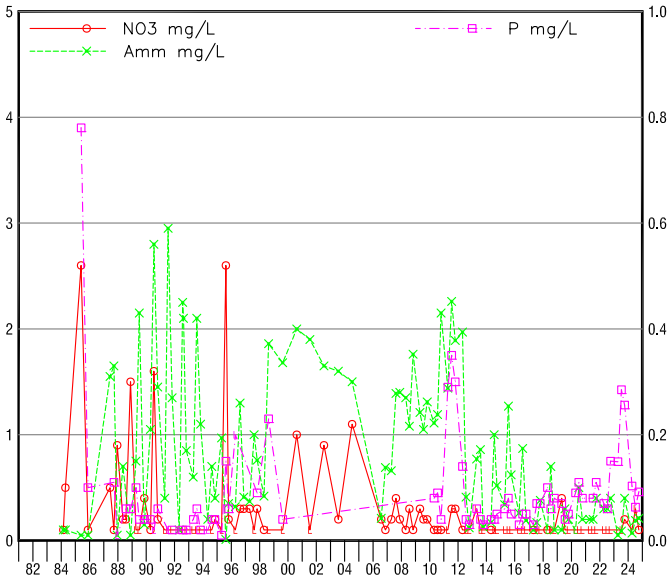
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
16-Apr-15	2977	617	1290	557	7.8	92	1	144	48	92	25	**1.14**	354	353	28	2.9	0.1	<0.1	1.22	<1	3.1
22-Jul-15	3038	582	1280	545	7.8	93	<1	143	45	92	23	**1.58**	332	107	11	2.7	<0.1	<0.1	1.05	<1	4.4
30-Sep-15	3096	652	1310	525	7.8	105	<1	135	46	88	23	**0.84**	291	135	13	2.7	<0.1	<0.1	1.17	<1	-3.0
20-Apr-16	3168	620	1400	607	7.9	120	1	151	56	97	21	**1.25**	360	123	16	2.7	<0.1	<0.1	1.05	<1	3.7
20-Jul-16	3205	528	1270	508	7.9	101	2	130	45	86	26	**0.466**	311		18	4.3	<0.1	<0.1	1.03	<1	4.4
19-Oct-16	3296	532	1250	546	7.9	104	6	141	47	95	25	**1.26**	336	112	17	2.5	0.1	<0.1	1.06	<1	7.1
27-Apr-17	3331	519	1330	544	7.8	90	6	137	49	85	18	**1.35**	344	188	18	2.6	<0.1	<0.1	1.23	<1	7.5
20-Jul-17	3398	717	1510	643	7.9	78	2	164	56	86	24	**1.40**	451	65	15	2.8	<0.1	<0.1	0.94	<1	2.1
18-Oct-17	3473	537	1210	520	7.8	71	7	136	44	76	24	**0.913**	385	153	22	2.5	0.1	<0.1	0.97	<1	5.6
23-Apr-18	3524	562	1290	568	7.8	110	<2	151	46	80	21	**1.10**	395	140	18	1.8	0.1	<0.1	1.2	**4**	3.8
18-Jul-18	3578	563	1160	481	7.8	99	<2	127	40	67	24	**0.902**	358	220	20	2.4	<0.1	<0.1	1.4	**2**	-2.8
17-Oct-18	3650	540	1160	526	7.8	98	<2	144	41	71	22	**0.952**	359	58	18	2.1	<0.1	<0.1	1.2	**2**	2.8
25-Apr-19	3702	524	1240	470	7.8	110	8	128	37	71	21	**0.742**	304	67	11	2.4	<0.1	<0.1	1.2	**3**	-2.1
18-Jul-19	3753	596	1310	538	7.7	110	<2	145	43	80	25	**1.04**	389	57	28	3.1	<0.1	<0.1	1.8	**11**	0.2
18-Oct-19	3828	551	1260	534	8.0	98	<2	146	41	78	24	**0.442**	355	57	21	2.5	<0.1	<0.1	1.5	<2	3.6
15-Apr-20	3864	533	1200	547	7.5	100	<2	144	45	81	26	**0.703**	362	55	18	2.5	<0.1	<0.1	2.0	**4**	6.3
10-Jul-20	3917	548	1230	500	7.6	110	<2	131	42	82	21	**0.784**	318	58	23	1.0	<0.1	<0.1	1.4	<2	0.7
09-Oct-20	3977	566	1230	526	7.6	110	9	143	41	82	22	**0.84**	343	47	21	2.9	<0.1	<0.1	1.5	<2	0.6
14-Apr-21	4049	556	1200	530	8.0	100	<2	141	43	80	23	**0.97**	329	54	18	2.2	<0.1	<0.1	1.2	<2	3.4
13-Jul-21	4104	558	1300	588	8.1	85	<2	160	46	86	24	**0.943**	363	46	22	2.1	<0.1	<0.1	1.3	<2	9.1
30-Sep-21	4161	572	1280	500	8.2	130	<2	132	42	87	24	**1.02**	350	51	24	2.7	<0.1	<0.1	1.4	<2	-1.7
13-Apr-22	4227	531	1210	481	7.9	130	<2	124	42	92	23	**1.15**	455	54	19	2.9	<0.1	<0.1	1.6	<2	0.4
13-Jul-22	4291	540	1290	502	8.1	130	<2	141	37	67	21	**0.931**	358	59	20	2.8	<0.1	<0.1	1.4	<2	-3.0
05-Oct-22	4366	565	1240	519	7.8	130	<2	139	42	79	22	**1.26**	365	55	17	2.3	<0.1	<0.1	1.4	**3**	-1.5
13-Apr-23	4418	486	1180	456	7.6	119	17	122	37	79	22	**1.00**	342	65	19	4.3	<0.1	0.2	1.1	**2**	-0.7
13-Jul-23	4468	528	1370	476	7.6	103	3	128	38	89	24	**0.645**	363	138	23	3.6	<0.1	<0.1	1.2	**2**	10.3
05-Oct-23	4544	559	1290	625	7.8	110	1	122	78	94	22	**0.990**	295	117		4.8	<0.1	<0.1	1.2	**2**	8.5
11-Apr-24	4617	557	1260	395	7.65	108	<0.5	121	39.4	75	19	**1.14**	356	130	17.8	1.7	<0.1	<0.1	0.95	**1.1**	3.6
11-Jul-24	4646	549	1250	463	7.91	100	<2	134	45.1	88	21	**1.18**	340	70	20.2	1.7	<0.2	<0.2	1.08	**1.6**	10.9
03-Oct-24	2064051	477	1270	497	7.85	107	<0.5	131	42.1	88	21	**1.36**	359	79	21	4.3	0.6	<0.1	1.13	**3**	6.7
TOTAL SAMPLES		114	112	110	113	114	98	94	94	93	93	115	90	107	111	113	113	113	114	112	
AVERAGE 2024		528	1260	452	7.80	105	<0.5	129	42.2	84	20	1.227	352	93	20	2.6	<0.2	<0.1	1.05	2	

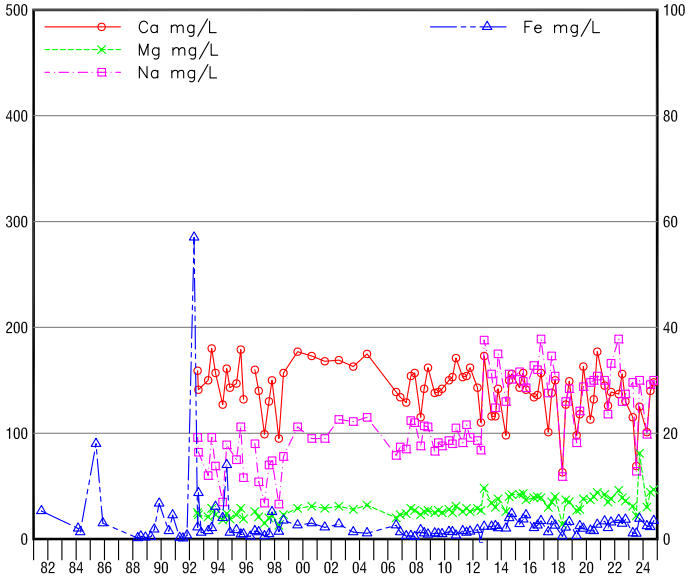
all Concentrations mg/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**



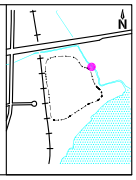








L	Concentration Reported Less Than
G	Concentration Reported Greater Than
A	Concentration Determined Anomalous
	Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

BH11R

FORMERLY 11
CONVERTED Jul 12

PEAT

Screen 218.9 - 217.7 masl

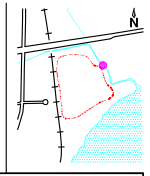
22578520 25 Apr 25	wsp	24G013

BH11R

PEAT

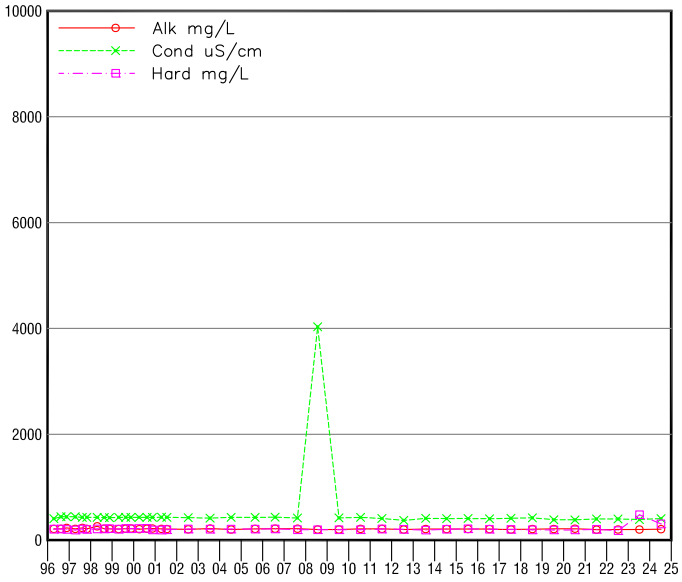
OBSERVATION WELL
Screen 218.9 - 217.7 masl

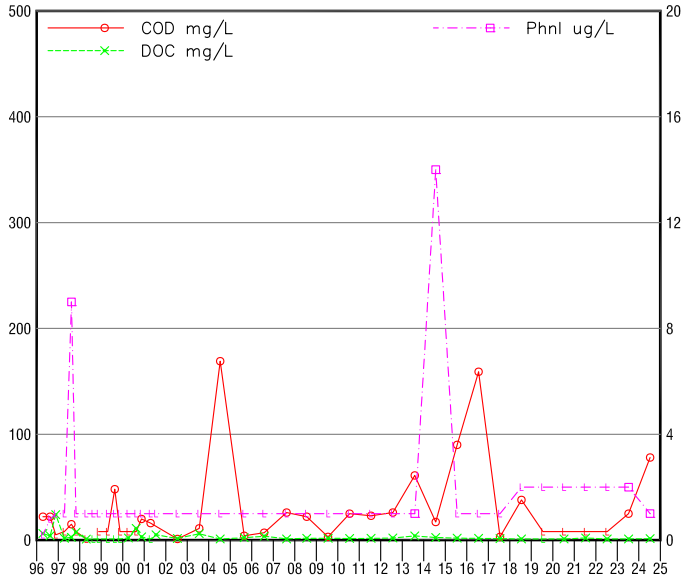
FORMERLY BH11
CONVERTED Jul 12

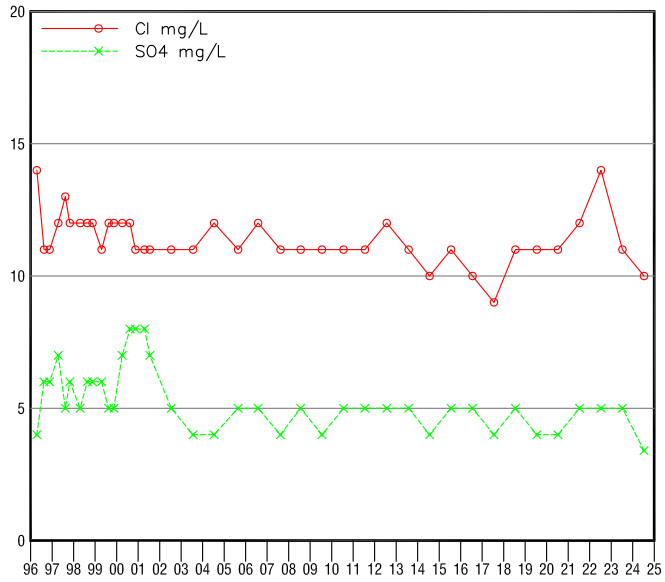


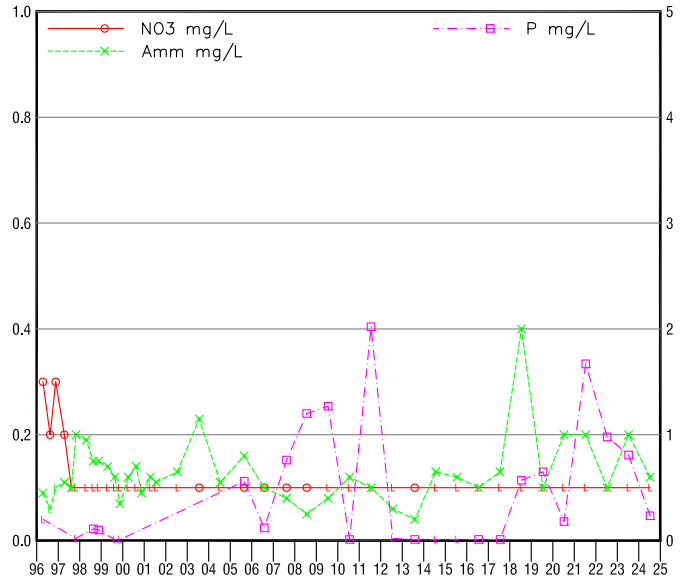
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
17-Apr-15	2978	659	1590	528	6.8	163	13	143	42	158	33	**2.83**	335	143	29	2.6	<0.1	<0.1	0.34	**2**	1.1
21-Jul-15	3039	652	1570	567	7.5	159	2	157	43	149	32	**3.72**	391	194	8.5	3.4	<0.1	<0.1	1.27	<1	3.7
01-Oct-15	3097	628	1550	504	7.5	180	9	141	37	143	32	**4.50**	413	110	11	2.7	<0.1	<0.1	0.62	<1	−1.4
21-Apr-16	3169	547	1550	495	7.7	177	26	134	39	164	33	**2.08**	324	122	17	1.8	<0.1	<0.1	0.26	<1	4.4
22-Jul-16	3206	555	1590	503	7.6	186	1	136	40	160	38	**2.57**	328	104	15	2.7	<0.1	<0.1	0.87	<1	5.2
20-Oct-16	3297	520	1830	553	7.6	214	128	157	39	189	39	**3.41**	338	101	12	1.8	<0.1	<0.1	0.19	<1	3.3
25-Apr-17	3332	492	1310	374	7.7	102	33	101	30	138	27	**1.29**	209	148	23	1.7	0.1	<0.1	0.1	<1	3.1
21-Jul-17	3399	686	1610	491	7.6	89	2	138	35	173	29	**3.37**	617	71	35	2.2	<0.1	<0.1	0.17	<1	5.5
19-Oct-17	3474	614	1590	539	7.6	132	13	150	40	154	34	**2.55**	302	154	21	2.0	<0.1	<0.1	0.38	<1	6.3
23-Apr-18	3525	303	646	215	7.3	35	10	63	14	59	10	**0.516**	72	109	15	0.9	0.1	<0.1	<0.1	<2	−0.1
19-Jul-18	3579	602	1610	467	7.7	170	<2	127	37	130	37	**2.17**	295	134	28	2.4	<0.1	<0.1	0.7	<2	−2.2
18-Oct-18	3651	531	1480	517	7.1	190	77	149	35	142	36	**3.22**	319	71	25	<0.5	<0.1	<0.1	0.1	**5**	−0.1
26-Apr-19	3703	510	1140	355	7.0	79	24	98	27	91	23	**0.568**	148	66	25	1.4	0.4	<0.1	0.1	**4**	−5.1
18-Jul-19	3754	553	1260	410	7.3	120	<2	118	28	121	26	**2.44**	319	49	22	1.5	<0.1	<0.1	0.3	**12**	−0.7
18-Oct-19	3829	608	1600	564	7.5	190	33	163	38	144	32	**1.95**	265	78	24	1.4	<0.1	<0.1	0.2	<2	0.6
16-Apr-20	3865	572	1390	434	7.4	130	27	113	37	148	33	**1.60**	211	75	29	1.0	<0.1	<0.1	<0.1	**3**	1.3
10-Jul-20	3918	596	1480	494	7.3	160	<2	132	40	150	34	**1.51**	252	65	22	0.8	<0.1	<0.1	0.5	<2	2.8
09-Oct-20	3878	723	1700	621	7.5	170	13	177	44	154	35	**2.73**	362	78	6.0	1.7	<0.1	<0.1	0.2	<2	1.6
16-Apr-21	4050	632	1480	537	7.8	150	6	145	42	150	36	**3.35**	334	89	28	1.4	<0.1	<0.1	0.2	<2	2.9
12-Jul-21	4105	603	1480	459	7.8	150	<2	126	35	118	34	**2.09**	285	70	36	1.8	<0.1	<0.1	0.2	<2	−3.0
29-Sep-21	4162	625	1650	502	8.1	210	<20	139	38	166	32	**3.14**	326	85	43	1.9	<0.1	<0.1	0.4	<2	−0.3
14-Apr-22	4228	700	1640	531	7.6	170	<2	137	46	189	38	**3.62**	316	89	24	1.4	<0.1	<0.1	0.3	<2	2.9
14-Jul-22	4292	660	1680	549	7.7	200	<2	156	39	130	33	**2.90**	336	83	27	1.7	<0.1	<0.1	0.3	<2	−3.4
05-Oct-22	4367	595	1530	473	7.5	210	<2	130	36	137	25	**3.67**	394	70	24	1.4	<0.1	<0.1	0.4	**4**	−4.8
13-Apr-23	4419	532	1380	414	7.6	137	21	115	31	148	26	**1.10**	172	102	30	3.2	<0.1	0.3	0.05	**3**	1.7
13-Jul-23	4469	306	877	261	7.6	69	1	69	22	64	12	**1.04**	156	160	16	3.0	<0.1	<0.1	0.09	1	6.8
03-Oct-23	4545	640	1570	646	7.7	168	<1	125	81	150	23	**3.85**	386	164		3.3	0.2	<0.1	0.4	1	5.3
11-Apr-24	4618	514	1220	332	7.24	90	6.2	101	30.3	99	22	**2.45**	242	114	22.2	1.2	<0.1	<0.1	0.07	**1.2**	5.5
09-Jul-24	4647	634	1490	470	7.92	134	<2.5	140	44.2	146	30	**2.26**	328	70	27	1.1	<0.3	<0.3	0.19	**1.2**	10.9
02-Oct-24	2064052	592	1620	564	7.59	156	2.1	148	46.7	150	30	**3.45**	353	118	31.3	3.8	0.1	<0.1	0.21	**1.8**	6.8
TOTAL SAMPLES		99	96	95	98	100	84	80	80	79	79	98	73	96	96	98	99	100	99	98	
AVERAGE 2024		580	1443	455	7.58	127	2.8	130	40.4	132	27	2.720	308	101	26.8	2.0	<0.3	<0.1	0.16	1.40	

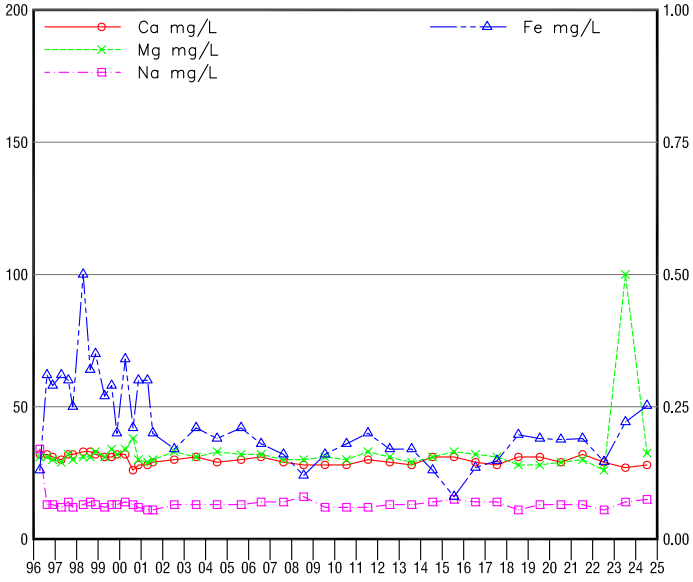
all Concentrations mg/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**



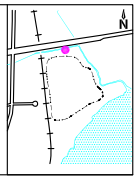








L	Concentration Reported Less Than
G	Concentration Reported Greater Than
A	Concentration Determined Anomalous
	Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

BH14-I

SAND AQUIFER

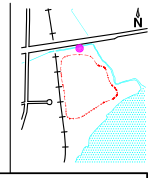
Screen 208.5 - 207.8 masl

22578520 25 Apr 25	wsp	24G014

BH14-I

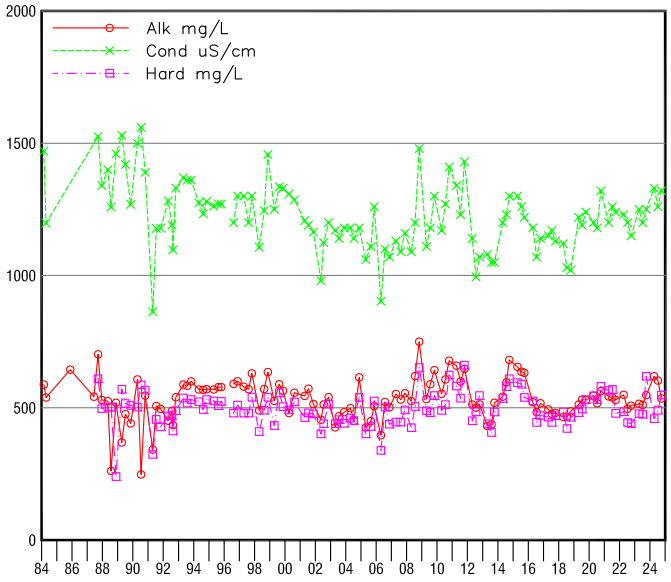
SAND AQUIFER

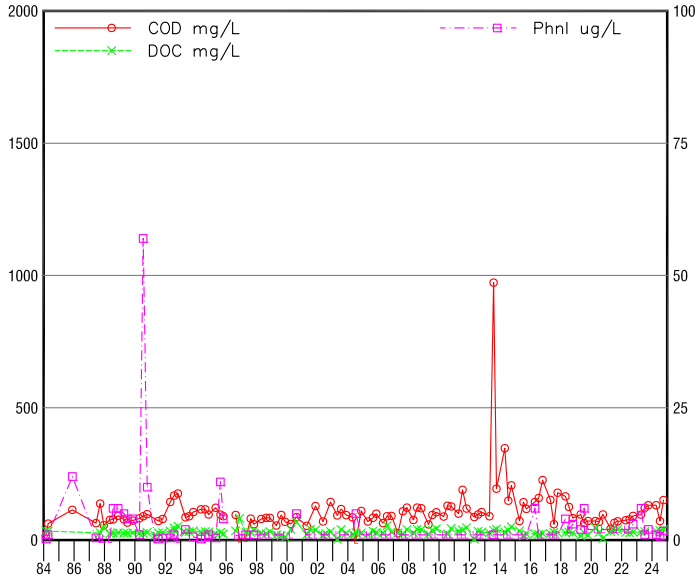
OBSERVATION WELL
Screen 208.5 - 207.8 masl

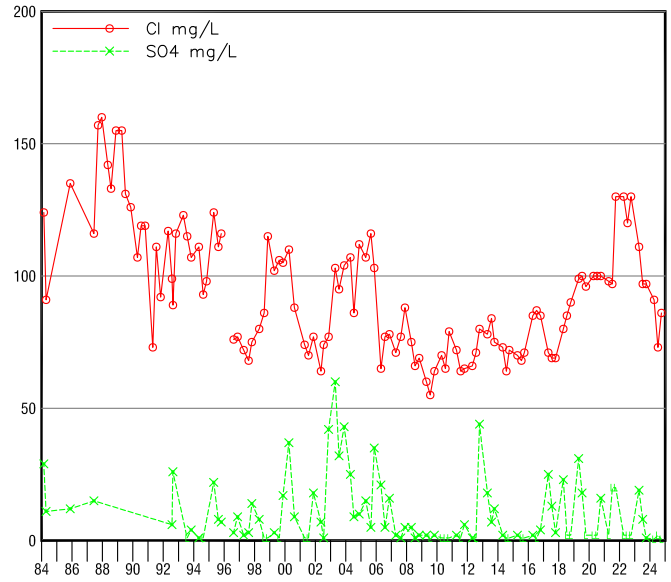


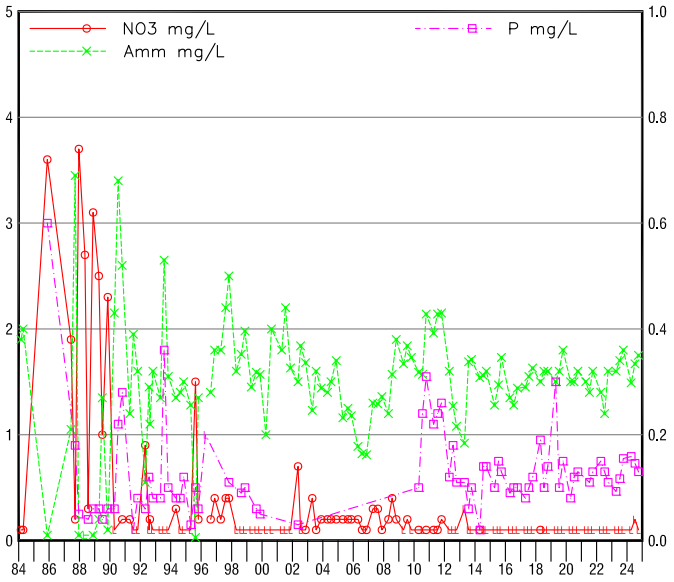
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
18-Aug-99	100108	215	430	218	7.9	12	5	31	34	13	2.0	0.29	11	48	<1.0	0.2	<0.1	<0.1	0.12	<1	2.8
16-Nov-99	100109	216	429	214	7.9	12	5	32	32	13	2.0	0.20	32	<8	<1.0	0.1	<0.1	<0.1	0.07	<1	1.6
05-Apr-00	100110	204	429	218	7.8	12	7	32	34	14	2.0	**0.34**	10	<8	2.0	0.2	<0.1	<0.1	0.12	<1	5.3
16-Aug-00	100111	213	430	221	8.0	12	8	26	38	13	2.0	0.21	13	<8	11	0.3	<0.1	<0.1	0.14	<1	3.0
16-Nov-00	100112	216	429	191	6.5	11	8	28	30	12	2.0	0.30	5	20	3.0	0.2	<0.1	<0.1	0.09	<1	-3.6
19-Apr-01	100113	210	431	190	8.1	11	8	28	29	11	2.0	0.30	18	16	<1.0	0.2	<0.1	<0.1	0.12	<1	-3.8
19-Jul-01	100114	209	430	196	8.0	11	7	29	30	11	2.0	0.20	5		5.0	0.3	<0.1	<0.1	0.11	<1	-1.9
18-Jul-02	100115	201	424	208	7.8	11	5	30	33	13	1.8	0.17	<5	1	1.5	0.2	<0.1	<0.1	0.13	<1	4.4
23-Jul-03	102492	216	415	205	8.1	11	4	31	31	13	1.8	0.21	9	11	6.0	0.4	0.1	<0.1	0.23	<1	0.2
14-Jul-04	1213	200	428	207	7.9	12	4	29	33	13	1.7	0.19	9	169	1.0	0.2	<0.1	<0.1	0.11	<1	4.0
26-Aug-05	58263	212	428	207	8.4	11	5	30	32	13	0.2	0.21	9	4	2.2	0.2	0.1	<0.1	0.16	<1	0.7
01-Aug-06	6813	215	432	211	7.9	12	5	31	32	14	1.9	0.18	9	7	3.6	3.0	0.1	<0.1	0.10	<1	1.1
15-Aug-07	78153	214	418	196	8.0	11	4	29	30	14	2.0	0.16	9	26	1.1	0.2	0.1	<0.1	0.08	<1	-1.0
23-Jul-08	87233	200	4030	195	8.0	11	5	28	30	16	3.6	0.12	9	22	1.7	0.3	0.1	<0.1	0.05	<1	2.7
21-Jul-09	B09-236	200	419	195	7.6	11	4	28	31	12	2.0	0.16	9	3	1.7	0.2	<0.1	<0.1	0.08	<1	1.6
21-Jul-10	2086	211	428	195	8.0	11	5	28	30	12	1.7	0.18	4	25	1.5	0.3	<0.1	<0.1	0.12	<1	-2.0
20-Jul-11	2249	211	408	208	7.9	11	5	30	33	12	2.0	0.20	8	23	1.6	0.2	<0.1	<0.1	0.10	<1	1.8
25-Jul-12	2450	200	372	202	8.1	12	5	29	31	13	1.9	0.17	13	26	1.9	0.5	<0.1	<0.1	0.06	<1	2.0
01-Aug-13	2629	208	410	189	8.0	11	5	28	29	13	1.7	0.17	5	61	3.9	0.4	0.1	<0.1	0.04	1	-2.0
23-Jul-14	2840	209	406	204	8.0	10	4	31	31	14	1.9	0.13	10	17	2.4	0.5	<0.1	<0.1	0.13	**14**	2.4
22-Jul-15	3040	209	407	213	7.9	11	5	31	33	15	1.8	0.08	10	90	1.8	0.6	<0.1	<0.1	0.12	<1	4.0
20-Jul-16	3207	208	403	204	8.1	10	5	29	32	14	1.6	0.135	9	159	1.6	0.3	<0.1	<0.1	0.1	<1	2.2
20-Jul-17	3400	198	412	200	8.2	9	4	28	31	14	1.7	0.148	10	3	1.3	0.7	<0.1	<0.1	0.13	<1	3.6
18-Jul-18	3580	208	420	193	8.2	11	5	31	28	11	2.1	0.197	10	38	1.0	<0.5	<0.1	<0.1	0.4	<2	-1.7
19-Jul-19	3755	207	385	191	8.2	11	4	31	28	13	1.9	0.19	8.4	<8	<1.0	<0.5	<0.1	<0.1	0.1	<2	-0.6
10-Jul-20	3919	215	382	191	8.1	11	4	29	29	13	1.9	0.188	10	<8	1.0	<0.5	<0.1	<0.1	0.2	<2	-2.8
13-Jul-21	4106	197	399	202	8.1	12	5	32	30	13	1.8	0.19	8.9	<8	2.0	<0.5	<0.1	<0.1	0.2	<2	2.9
13-Jul-22	4293	198	399	178	8.2	14	5	29	26	11	1.7	0.146	8.6	<8	1.0	<0.5	<0.1	<0.1	0.1	<2	-4.2
12-Jul-23	4470	199	388	478	7.9	11	5	27	100	14	1.9	0.221	9	25	1.1	0.9	<0.1	<0.1	0.2	**2**	10.1
11-Jul-24	4648	204	406	305	8.07	10	3.4	28	32.5	15	1.8	0.252	8.1	78	1.3	0.3	<0.1	<0.1	0.12	1	11.9
TOTAL SAMPLES		40	40	40	40	40	40	40	40	40	40	40	40	38	40	40	40	40	40	40	
AVERAGE 2024																					

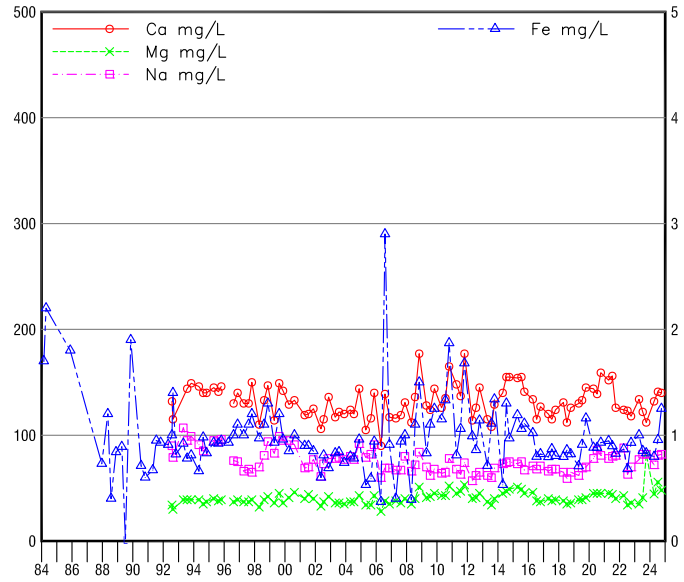
all Concentrations mg/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**









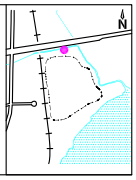


L Concentration Reported Less Than

G Concentration Reported Greater Than

A Concentration Determined Anomalous

Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

BH14-IIIR

FORMERLY 14-III
CONVERTED Jul 13

PEAT

Screen 218.9 - 217.3 masl

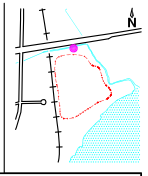
22578520 25 Apr 25	wsp	24G015

BH14-IIIR

PEAT

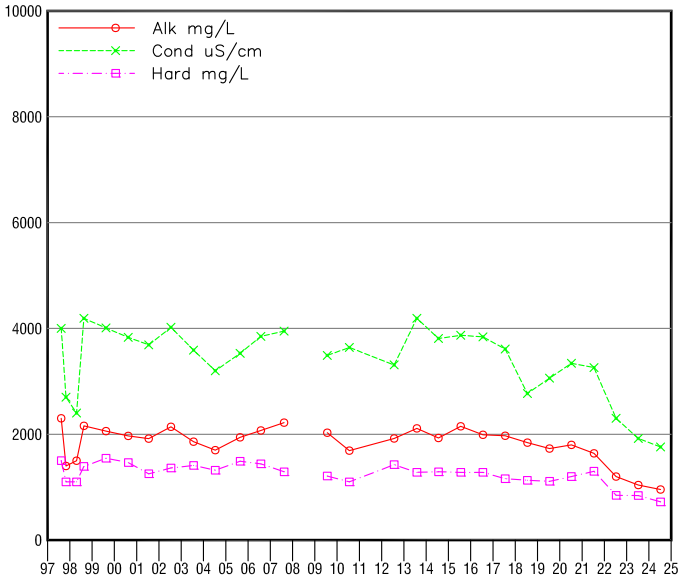
OBSERVATION WELL
Screen 218.9 - 217.3 masl

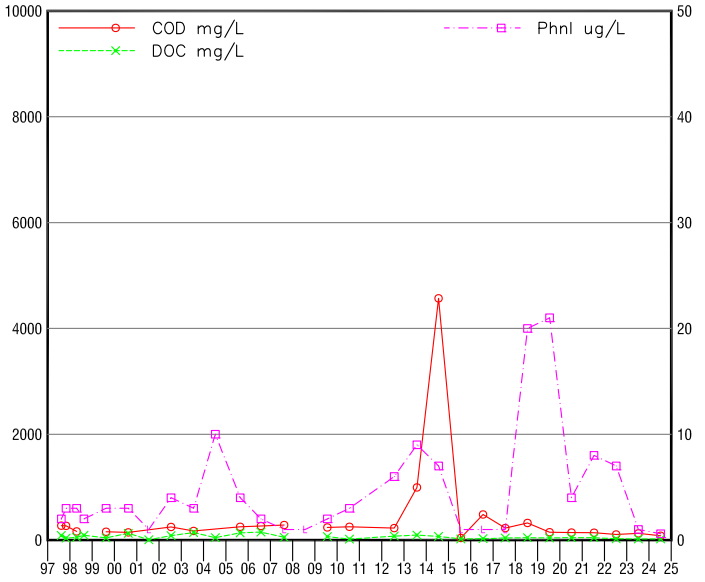
FORMERLY BH14-III
CONVERTED Jul 13

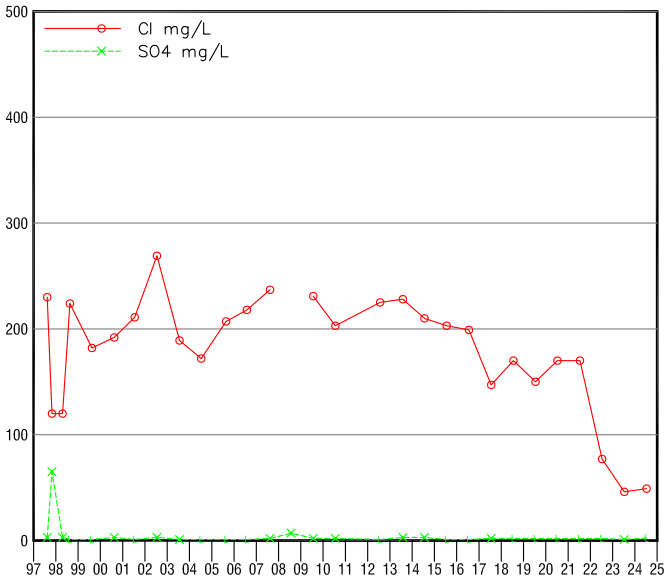


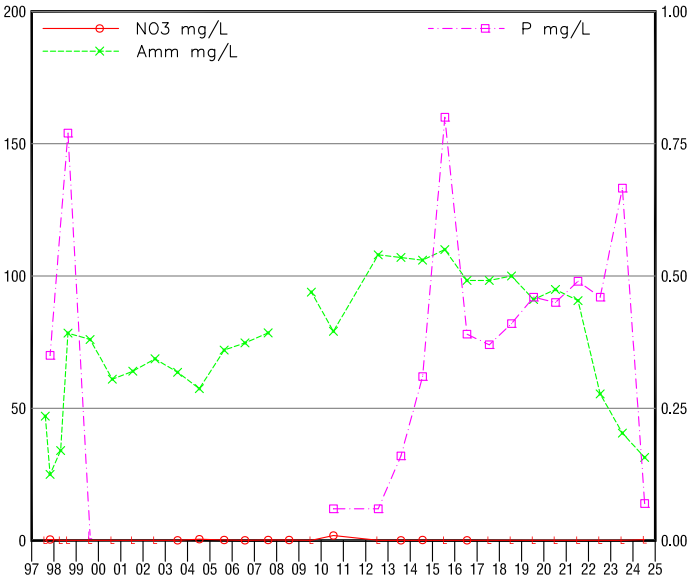
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
16-Apr-15	2979	655	1300	595	7.6	70	2	154	51	73	24	**1.19**	557	72	35	3.4	<0.1	<0.1	1.28	<1	2.3
22-Jul-15	3041	636	1260	589	7.7	68	<1	155	49	75	25	**1.06**	485	143	16	4.0	<0.1	<0.1	1.47	<1	3.9
29-Sep-15	3098	632	1220	539	7.7	71	<1	141	45	67	24	**1.11**	489	118	23	4.3	<0.1	<0.1	1.73	<1	-0.7
20-Apr-16	3170	521	1180	526	7.8	85	2	134	46	71	24	**1.02**	487	144	24	3.5	<0.1	<0.1	1.35	**6**	5.4
20-Jul-16	3208	484	1070	445	7.8	87	<1	115	38	68	21	**0.796**	413	159	21	4.1	<0.1	<0.1	1.28	<1	1.4
19-Oct-16	3298	517	1140	471	7.9	85	4	127	37	71	23	**0.823**	421	227	25	4.2	<0.1	<0.1	1.44	<1	1.5
27-Apr-17	3333	494	1150	465	7.7	71	25	120	40	66	20	**0.794**	428	152	25	3.2	<0.1	<0.1	1.45	<1	1.6
20-Jul-17	3401	477	1170	445	7.7	69	13	115	38	68	22	**0.869**	419	60	29	3.3	<0.1	<0.1	1.55	<1	3.2
18-Oct-17	3475	481	1130	470	7.7	69	3	124	39	68	24	**0.805**	425	179	28	3.5	<0.1	<0.1	1.63	<1	6.0
23-Apr-18	3526	465	1120	484	7.5	80	23	131	38	65	23	**0.795**	430	165	28	2.7	0.1	<0.1	1.5	**4**	4.7
18-Jul-18	3581	467	1030	422	7.4	85	<2	112	35	59	23	**0.859**	389	125	30	3.8	<0.1	<0.1	1.6	<2	0.2
17-Oct-18	3652	486	1020	464	7.5	90	<2	126	36	65	22	**0.821**	378	83	27	2.3	<0.1	<0.1	1.6	**3**	2.1
25-Apr-19	3704	512	1220	482	7.5	99	31	130	39	62	22	**0.708**	450	97	16	2.6	<0.1	<0.1	1.5	**2**	-2.2
18-Jul-19	3756	531	1190	495	7.5	100	18	133	39	69	22	**0.91**	445	64	27	3.4	<0.1	<0.1	1.6	**6**	-0.9
18-Oct-19	3830	529	1240	531	7.5	96	<2	145	41	70	24	**1.16**	415	72	19	3.2	<0.1	<0.1	1.8	<2	4.2
15-Apr-20	3866	546	1200	545	7.3	100	<2	144	45	78	24	**0.883**	425	72	46	2.9	<0.1	<0.1	1.5	<2	4.5
10-Jul-20	3920	517	1180	531	7.2	100	<2	139	45	86	25	**0.881**	494	68	29	1.4	<0.1	<0.1	1.5	<2	7.0
09-Oct-20	3979	563	1320	581	7.6	100	16	159	45	81	26	**0.93**	473	97	6.0	3.7	<0.1	<0.1	1.6	<2	5.1
14-Apr-21	4051	543	1200	565	7.7	98	<2	152	45	78	25	**0.946**	462	43	32	2.6	<0.1	<0.1	1.5	<2	3.4
13-Jul-21	4107	539	1260	569	8.0	97	<20	156	44	80	25	**0.896**	513	65	35	2.4	<0.1	<0.1	1.4	<2	7.5
30-Sep-21	4163	530	1240	479	8.1	130	<20	126	40	81	25	**0.825**	419	71	40	3.2	<0.1	<0.1	1.6	<2	-1.4
12-Apr-22	4229	549	1230	485	7.8	130	<2	124	43	88	23	**0.868**	452	75	29	2.4	<0.1	<0.1	1.4	<2	-1.5
13-Jul-22	4294	496	1200	444	7.7	120	<2	123	34	63	19	**0.680**	385	78	27	2.4	<0.1	<0.1	1.2	<2	-4.1
05-Oct-22	4368	508	1150	440	7.4	130	<2	118	36	70	20	**0.928**	347	91	30	2.8	<0.1	<0.1	1.6	**3**	-4.9
13-Apr-23	4420	515	1250	478	7.7	111	19	134	35	77	22	**1.00**	436	96	30	5.2	<0.1	0.1	1.6	**6**	-0.7
12-Jul-23	4471	511	1200	475	7.5	97	8	122	41	82	23	**0.852**	449	122	32	6.7	<0.1	<0.1	1.7	1	10.0
05-Oct-23	4546	548	1250	619	7.6	97	1	112	82	82	21	**0.830**	339	132		3.1	<0.1	<0.1	1.8	**2**	7.8
11-Apr-24	4619	619	1330	459	7.28	91	<0.5	132	44.5	72	20	**0.797**	504	132	33	2.6	<0.1	<0.1	1.49	1	4.5
11-Jul-24	4649	603	1260	491	7.82	73	<2	141	55.7	81	23	**0.956**	472	72	35.9	2.3	<0.2	<0.2	1.67	0.7	13.7
03-Oct-24	2064053	535	1320	548	7.53	86	<0.5	140	47.9	82	23	**1.25**	408	151	40.3	5.9	<0.1	<0.1	1.75	**1.7**	7.5
TOTAL SAMPLES		115	113	111	113	115	98	95	96	95	95	112	88	111	111	112	114	115	114	113	
AVERAGE 2024		586	1303	499	7.54	83	<0.5	138	49.4	78	22	1.001	461	118	36.4	3.6	<0.1	<0.1	1.64	1.13	

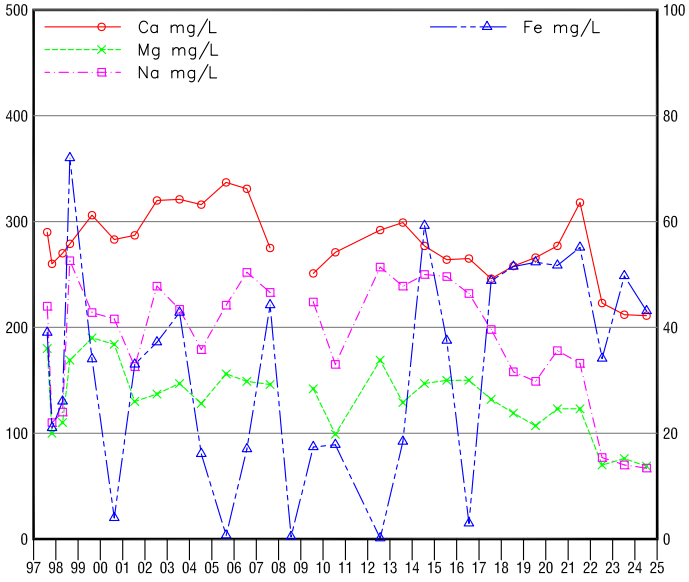
all Concentrations mg/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**



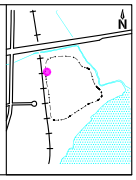








L	Concentration Reported Less Than
G	Concentration Reported Greater Than
A	Concentration Determined Anomalous
	Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

BH15-IIIR

FORMERLY 15-IIIX
CONVERTED Jul 13

FILL

Screen 219.4 - 217.9 masl

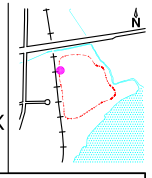
22578520 25 Apr 25	wsp	24G016

BH15-IIIR

FILL

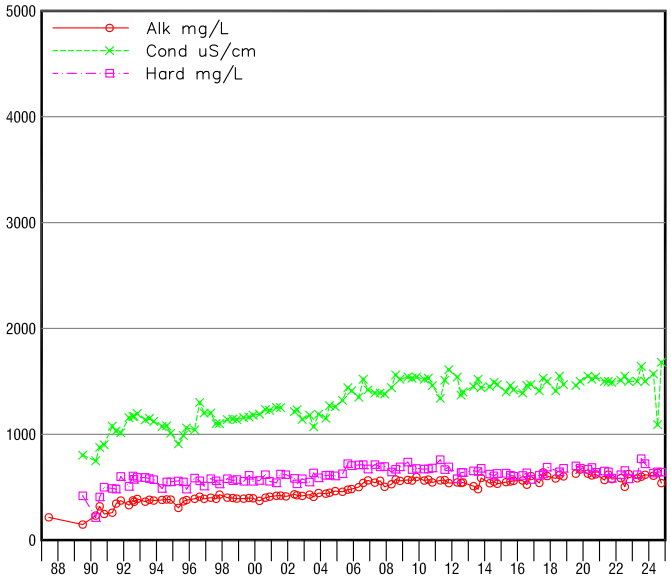
OBSERVATION WELL
Screen 219.4 - 217.9 masl

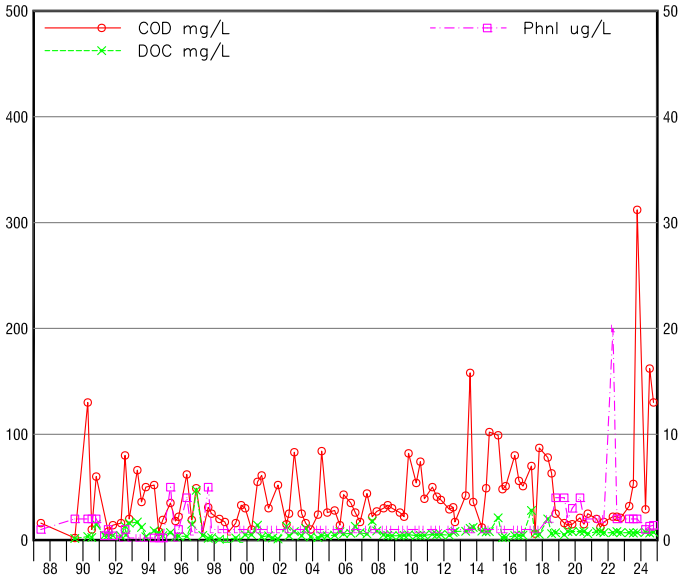
FORMERLY BH15-IIIX
CONVERTED Jul 13

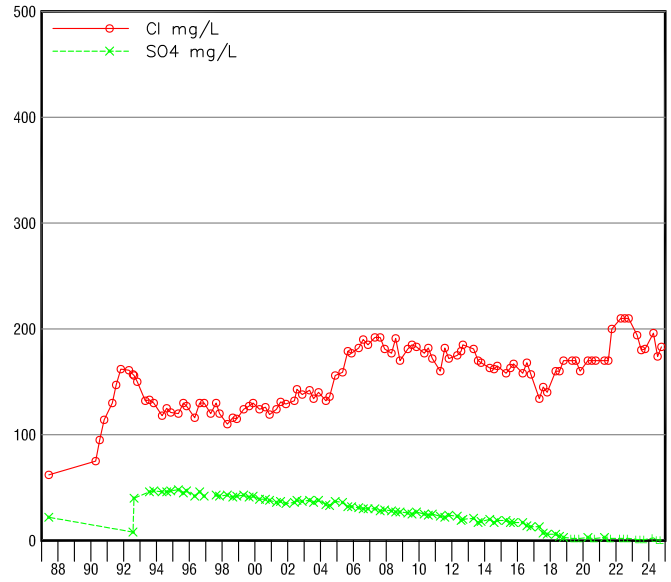


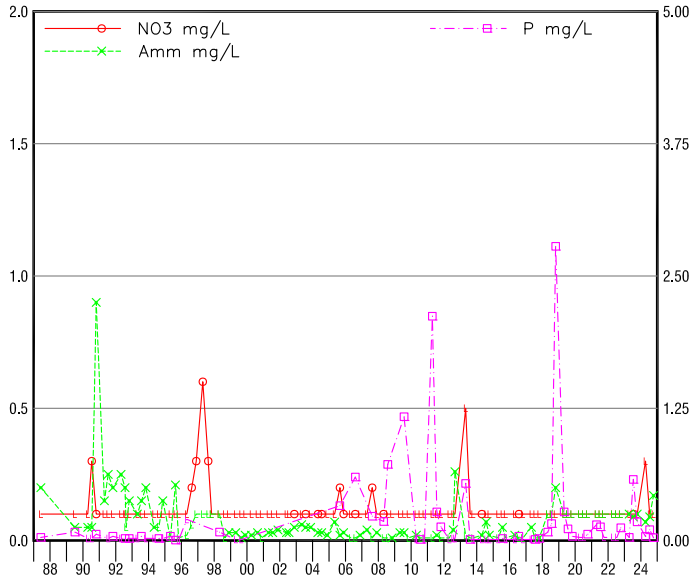
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
13-Aug-97	100167	2300	4000	1500	7.2	230	3	290	180	220	110	**39.0**	1200	271	86	78.0	<0.1	<1	47.0	**2**	-6.1
30-Oct-97	100168	1400	2700	1100	7.1	120	65	260	100	110	53	**21.0**	770	270	37	47.0	0.4	<0.5	25.0	**3**	-4.6
21-Apr-98	100169	1500	2400	1100	6.9	120	3	270	110	120	56	**26.0**	920	164	50	43.0	<0.1	<0.5	34.0	**3**	-2.8
19-Aug-98	100170	2160	4190	1392	6.5	224	<1	279	169	263	129	**72.0**	1350	*1141*	90	80.9	<0.1	<0.1	78.4	**2**	2.6
17-Aug-99	100171	2058	4010	1546	6.9	182	<1	306	190	214	111	**34.0**	1260	158	42	81.0	<0.1	<0.1	76.0	**3**	4.2
16-Aug-00	100172	1969	3830	1464	7.0	192	3	283	184	208	94	**4.0**	1200	144	127	76.0	<0.1	<0.1	61.0	**3**	0.4
18-Jul-01	100173	1918	3690	1252	6.8	211	<1	287	130	163	82	**33.0**	686		6.0	63.0	<0.1	<0.1	64.0	<1	-5.1
17-Jul-02	100174	2140	4020	1363	7.0	269	3	320	137	239	105	**37.2**	1150	247	84	86.4	<0.1	<0.1	68.7	**4**	-4.0
23-Jul-03	102496	1860	3590	1410	7.1	189	1	321	147	217	98	**42.8**	1000	171	142	82.4	0.1	<0.1	63.6	**3**	4.1
13-Jul-04	1215	1700	3200	1320	7.2	172	<1	316	128	179	84	**16.1**	892		45	64.8	0.5	<0.1	57.4	**10**	2.6
25-Aug-05	58253	1940	3530	1490	7.2	207	<1	337	156	221	105	**0.68**	839	252	137	86.3	0.2	<0.1	72.0	**4**	2.7
31-Jul-06	67313	2070	3850	1440	7.1	218	<1	331	149	252	108	**17.0**	844	265	151	88.2	0.1	<0.1	74.7	**2**	1.0
16-Aug-07	78163	2220	3950	1290	7.1	237	2	275	146	233	116	**44.2**	1000	285	52	98.5	0.2	<0.1	78.5	<1	-5.2
24-Jul-09	B09-238	2030	3490	1210	6.8	231	2	251	142	224	111	**17.4**	994	240	66	105	<0.1	<0.1	93.9	**2**	-3.3
21-Jul-10	2088	1690	3640	1100	7.4	203	2	271	99	165	70	**17.8**	779	250	18	81.1	1.9	<0.1	79.1	**3**	-3.6
25-Jul-12	2452	1920	3310	1425	8.0	225	<1	292	169	257	130	0.14	919	225	74	107	<0.1	<0.1	108	**6**	6.3
01-Aug-13	2631	2110	4190	1280	7.0	228	3	299	129	239	99	**18.4**	1890	995	94	107	0.1	<0.1	107	**9**	-2.0
22-Jul-14	2842	1930	3810	1290	7.1	210	3	277	147	250	130	**59.2**	887	4568	70	124	0.2	<0.1	106	**7**	5.6
22-Jul-15	3042	2150	3870	1280	7.3	203	<1	264	150	248	124	**37.5**	849	38	20	132	<0.1	<0.1	110	<1	0.0
19-Jul-16	3209	1990	3840	1280	7.3	199	<1	265	150	232	119	**2.96**	858	484	27	145	0.1	<0.1	98.3	<1	0.5
20-Jul-17	3402	1970	3610	1160	7.3	147	2	246	132	198	109	**48.8**	893	226	39	109	<0.1	<0.1	98.3	<1	-0.3
19-Jul-18	3582	1840	2770	1130	6.9	170	<2	258	119	158	114	**51.5**	1020	323	45	107	<0.1	<0.1	100	**20**	-0.1
17-Jul-19	3757	1730	3060	1110	6.8	150	<2	266	107	149	94	**52.3**	1150	149	40	92.9	<0.1	<0.3	91.1	**21**	0.7
09-Jul-20	3921	1800	3340	1200	6.8	170	<2	277	123	178	100	**51.7**	1080	142	46	94.7	<0.1	<0.3	94.9	**4**	2.5
14-Jul-21	4108	1640	3260	1300	7.3	170	<2	318	123	166	109	**55.1**	1160	140	45	94.4	<0.1	<0.3	90.7	**8**	8.0
13-Jul-22	4295	1200	2300	845	7.2	77	<2	223	70	77	56	**34.1**	1060	106	24	57.6	<0.1	<0.3	55.4	**7**	1.4
12-Jul-23	4472	1040	1920	841	6.7	46	1	212	76	70	43	**49.7**	1300	128	21	44.4	<0.1	<0.1	40.6	1	6.4
11-Jul-24	4650	954	1760	722	7.51	49	<2.5	211	68.8	67	37	**43.1**	1280	81	20.9	25.7	<0.3	<0.3	31.4	0.6	8.1
TOTAL SAMPLES		28	28	28	28	28	28	28	28	28	28	28	28	25	28	28	28	28	28	28	
AVERAGE 2024																					

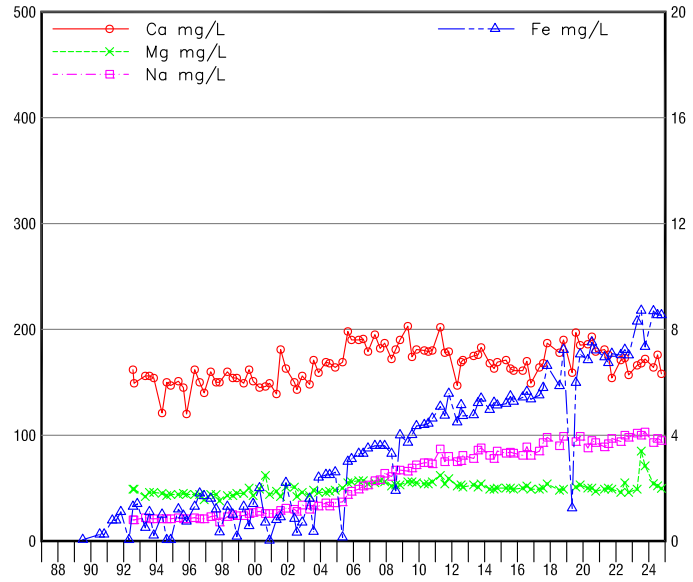
all Concentrations mg/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**









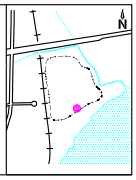


L Concentration Reported Less Than

G Concentration Reported Greater Than

A Concentration Determined Anomalous

Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

BH16-I

SAND AQUIFER

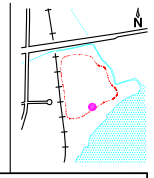
Screen 207.1 - 206.3 masl

22578520 25 Apr 25	wsp	24G017

BH16-I

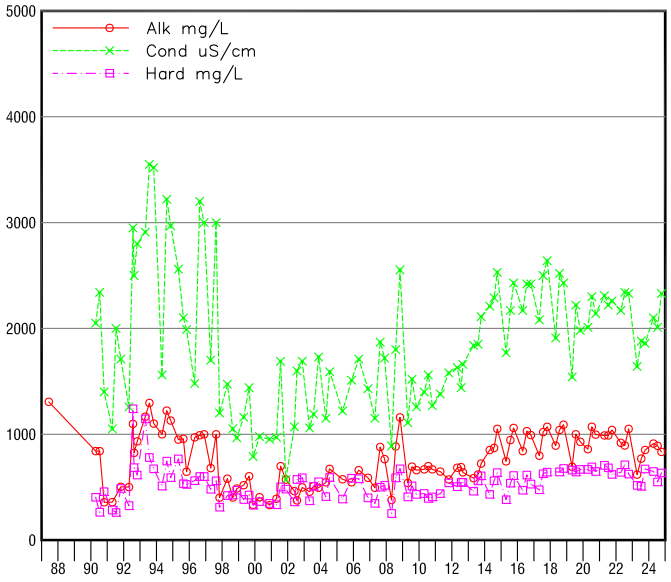
SAND AQUIFER

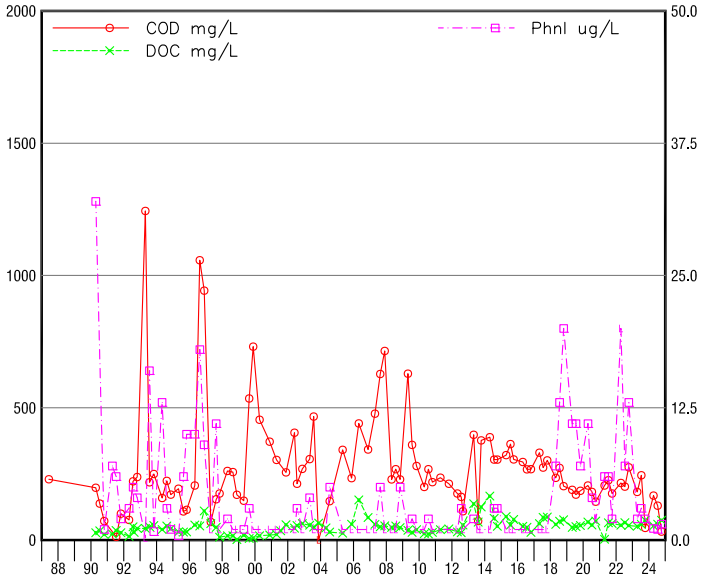
OBSERVATION WELL
Screen 207.1 - 206.3 masl

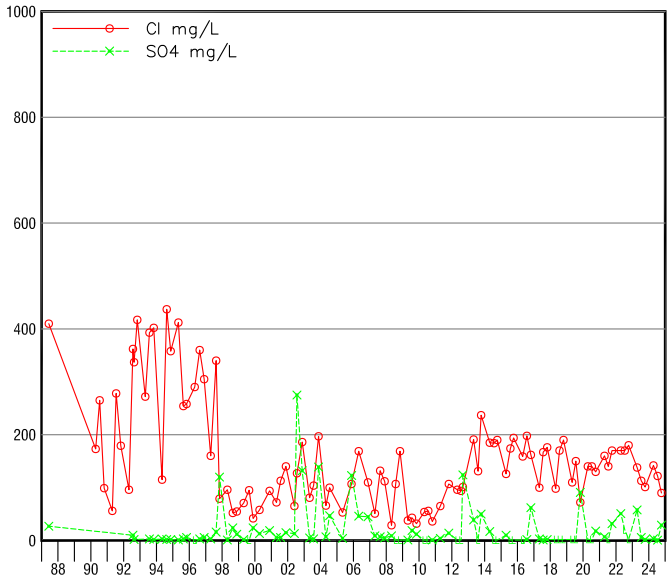


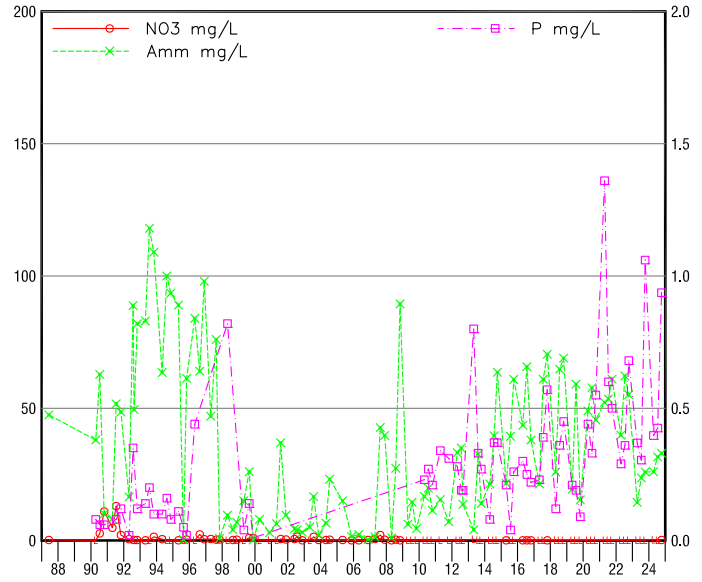
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
23-Apr-15	2993	547	1400	632	7.5	158	19	171	50	83	2.8	**5.19**	60	99	21	0.4	<0.1	<0.1	<0.01	<1	2.6
28-Jul-15	3056	553	1460	613	7.5	163	17	163	50	84	2.7	**5.47**	61	48	2.3	0.3	<0.1	<0.1	0.05	<1	0.5
07-Oct-15	3110	559	1420	604	7.5	167	17	161	49	83	2.7	**5.27**	58	51	2.4	0.8	<0.1	<0.1	<0.01	<1	-0.6
27-Apr-16	3181	562	1390	610	7.6	158	17	161	50	81	2.7	**5.43**	58	80	4.2	0.5	<0.1	<0.1	0.02	<1	-0.3
27-Jul-16	3223	523	1460	636	7.7	168	14	170	52	89	2.8	**5.64**	63	56	4.2	1.3	0.1	<0.1	<0.01	<1	4.7
26-Oct-16	3309	604	1470	573	7.7	157	13	149	49	81	2.5	**5.36**	59	51	4.6	0.5	<0.1	<0.1	<0.01	<1	-4.4
01-May-17	3348	539	1410	611	7.5	134	13	164	49	85	2.5	**5.51**	60	70	28	0.6	<0.1	<0.1	0.05	<1	4.4
25-Jul-17	3416	640	1530	625	7.6	145	7	168	50	93	2.7	**5.79**	60	6	6.4	0.5	<0.1	<0.1	<0.01	<1	-0.3
23-Oct-17	3490	605	1500	689	7.6	140	6	187	54	98	3.0	**6.62**	68	87	5.5	0.6	<0.1	<0.1	0.01	<1	6.3
01-May-18	3541	582	1410		7.5	160	6							78	20	<0.5	<0.1	<0.1	<0.1	<2	
25-Jul-18	3598	615	1550	644	7.4	160	4	178	48	90	3.4	**5.86**	62	63	6.0	<0.5	<0.1	<0.1	<0.1	<2	0.8
23-Oct-18	3665	601	1470	678	7.3	170	3	190	49	99	3.6	**7.23**	69	25	7.0	<0.5	<0.1	<0.1	0.2	**4**	3.8
01-May-19	3717	*304*	*1110*	*490*	8.3	170	<2	159	*23*	*60*	*93*	**1.24**	234	16	5.0	0.7	<0.1	<0.1	<0.1	**4**	15.8
24-Jul-19	3773	627	1460	701	7.0	170	<2	197	51	94	3.1	**5.98**	67	14	8.0	0.7	<0.1	<0.1	<0.1	<2	3.3
29-Oct-19	3843	666	1500	680	7.2	160	<2	185	53	99	3.1	**7.06**	70	15	8.0	0.6	<0.1	<0.1	<0.1	**3**	1.4
17-Apr-20	3879	628	1550	669	7.8	170	3	186	50	88	3.2	**6.84**	64	21	8.0	<0.5	<0.1	<0.1	<0.1	**4**	0.6
14-Jul-20	3937	610	1520	686	7.4	170	<2	193	50	95	3.3	**7.51**	65	15	8.0	0.7	<0.1	<0.1	<0.1	<2	3.7
07-Oct-20	3980	621	1540	640	7.8	170	<2	179	47	93	3.3	**7.21**	65	25	6.0	<0.5	<0.1	<0.1	<0.1	<2	0.2
21-Apr-21	4052	567	1500	652	7.7	170	3	181	49	89	3.2	**6.95**	69	20	8.0	0.6	<0.1	<0.1	<0.1	<2	3.6
16-Jul-21	4109	619	1500	645	7.3	170	<2	176	50	92	3.8	**6.73**	62	12	8.0	0.6	<0.1	<0.1	<0.1	<2	0.6
01-Oct-21	4164	576	1490	585	7.8	200	<2	154	49	97	2.9	**7.08**	65	17	7.0	0.7	<0.1	<0.1	<0.1	<2	-2.3
20-Apr-22	4230	585	1510	618	7.3	210	<2	171	46	94	2.8	**7.03**	63	22	7.0	<0.5	<0.1	<0.1	<0.1	<20	-2.2
18-Jul-22	4311	504	1550	657	8.0	210	<2	173	55	100	2.8	**7.23**	70	22	8.0	0.7	<0.1	<0.1	<0.1	**2**	5.6
12-Oct-22	4381	625	1500	579	7.3	210	<2	157	46	98	2.9	**7.02**	57	21	7.0	<0.5	<0.1	<0.1	<0.1	<2	-6.2
18-Apr-23	4433	583	1500	617	7.3	194	<1	166	49	102	3.6	**8.30**	67	32	7.0	3.1	<0.1	<0.1	0.1	**2**	0.1
18-Jul-23	4488	598	1640	769	7.5	180	<1	168	85	100	3.1	**8.71**	61	53	6.7	1.8	0.1	<0.1	0.09	**2**	6.6
11-Oct-23	4559	616	1500	721	7.2	181	<1	172	71	103	3.4	**7.34**	61	312	7.1	<0.2	<0.1	<0.1	0.1	**2**	7.9
15-Apr-24	4596	608	1570	633	7.07	196	<2.5	164	54.2	93	3.3	**8.69**	79	29	7.6	0.8	<0.3	<0.3	0.07	1	4.0
16-Jul-24	4666	635	1090	644	7.37	174	<0.5	176	52.1	97	3.2	**8.54**	69	162	6.6	3.3	<0.1	<0.1	0.09	**1.3**	6.1
10-Oct-24	2067116	538	1680	642	7.55	183	<0.5	158	49.7	95	3.2	**8.54**	67	130	7.4	1.3	<0.1	<0.1	0.17	**1.4**	7.3
TOTAL SAMPLES		107	105	105	107	107	97	97	96	96	96	104	89	105	107	107	108	108	108	107	
AVERAGE 2024		594	1447	640	7.33	184	<0.5	166	52.0	95	3.2	8.590	72	107	7.2	1.8	<0.1	<0.1	0.11	1.23	

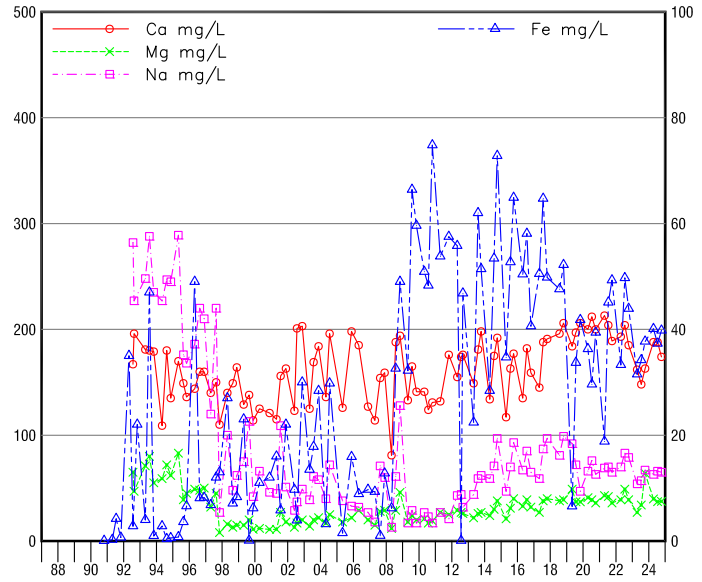
all Concentrations mg/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**









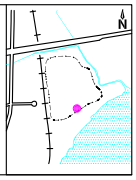


L Concentration Reported Less Than

G Concentration Reported Greater Than

A Concentration Determined Anomalous

Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

BH16-IVR

FORMERLY 16-IV
CONVERTED May 11

REFUSE

Screen 221.3 - 219.7 masl

22578520
25 Apr 25

wsp

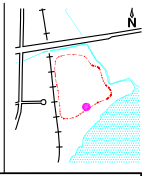
24G018

BH16-IVR

REFUSE

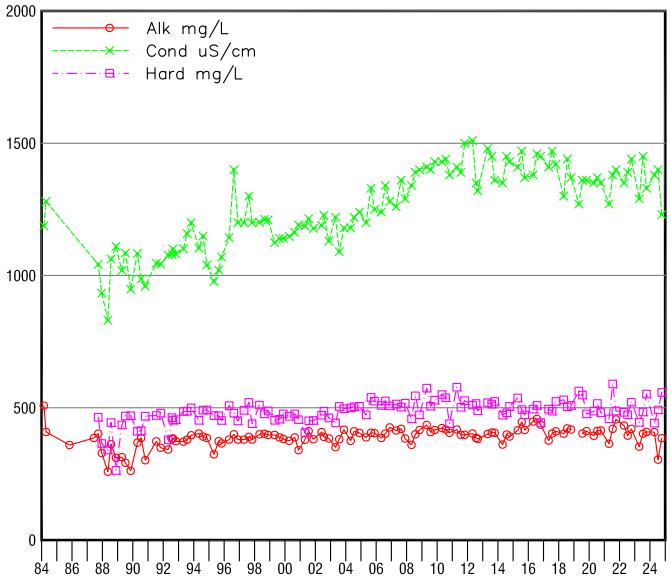
LEACHATE WELL
Screen 221.3 - 219.7 masl

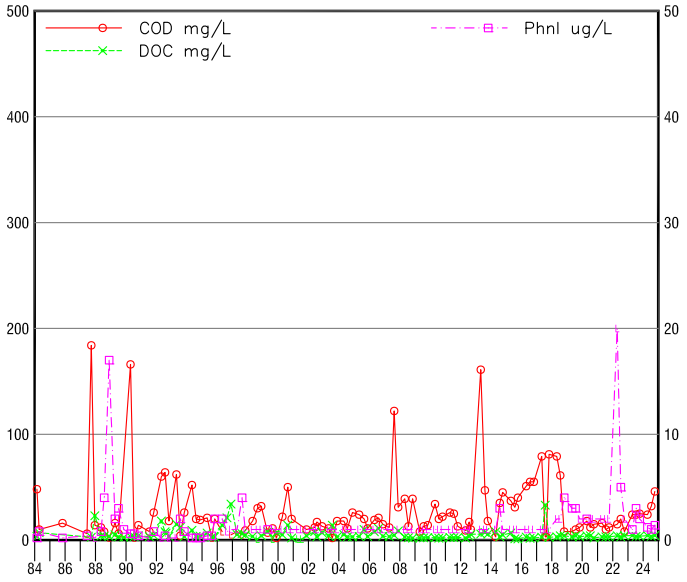
FORMERLY BH16-IV
CONVERTED May 11

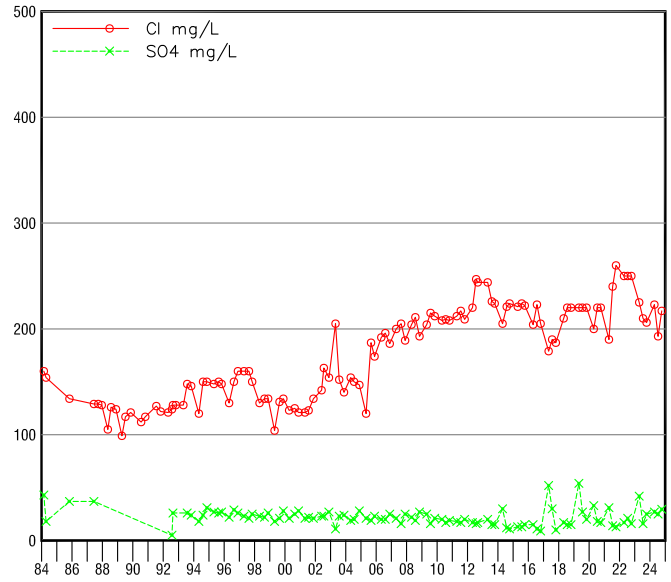


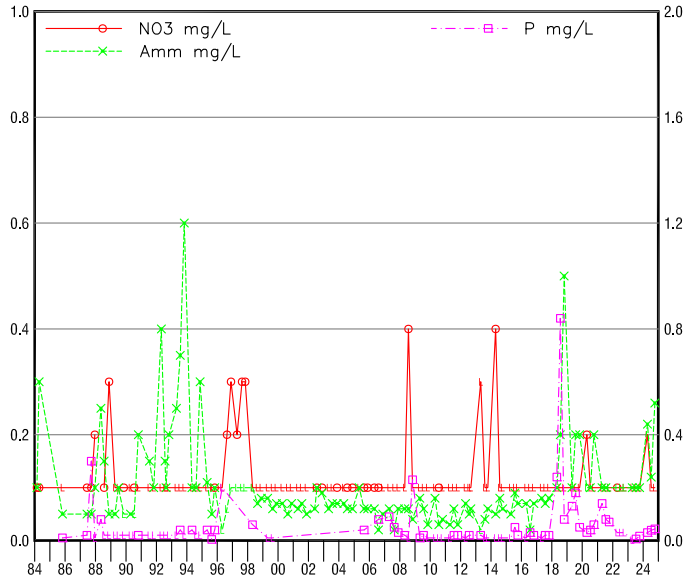
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
23-Apr-15	2994	743	1770	382	6.9	126	10	117	21	47	275	**34.7**	578	321	89	26.3	0.1	<0.1	21.6	<1	2.1
28-Jul-15	3057	945	2170	537	7.1	174	<1	163	31	70	254	**52.7**	706	363	57	49.4	<0.1	<0.1	39.4	<1	2.3
08-Oct-15	3111	1060	2430	609	7.1	194	<1	177	40	93	185	**64.9**	570	305	78	79.0	<0.1	<0.1	60.9	<1	1.7
27-Apr-16	3182	841	2170	471	7.1	159	<1	135	33	67	228	**50.4**	607	295	52	48.8	0.1	<0.1	43.6	<1	4.1
27-Jul-16	3224	1030	2420	615	7.3	198	2	182	39	85	213	**58.1**	736	267	48	73.5	0.1	<0.1	65.7	<1	3.7
26-Oct-16	3310	992	2420	529	7.2	162	62	159	32	65	270	**40.6**	982	268	29	41.6	0.1	<0.1	38.0	<1	-2.4
01-May-17	3349	797	2080	475	7.1	100	3	145	27	59	300	**50.5**	707	330	62	25.9	<0.1	<0.1	21.4	<1	10.1
25-Jul-17	3417	1020	2500	627	7.2	167	1	188	38	87	213	**64.7**	532	274	86	62.0	<0.1	<0.1	61.0	<1	6.2
23-Oct-17	3491	1070	2640	642	7.1	176	2	191	40	97	219	**49.8**	673	301	87	70.7	0.1	<0.1	70.4	<1	5.5
01-May-18	3542	892	1910		6.9	98	<2							235	59	25.1	<0.1	<0.1	25.9	**7**	
25-Jul-18	3599	1040	2520	644	6.7	170	<2	196	38	81	236	**47.6**	708	273	71	74.2	<0.1	<0.3	64.8	**13**	5.9
23-Oct-18	3666	1090	2430	676	7.4	190	<2	206	39	99	229	**52.2**	643	204	77	77.0	<0.1	<0.3	68.9	**20**	5.7
01-May-19	3718	692	1540	661	8.4	110	<2	184	49	92	3.5	**6.57**	68	190	48	23.3	<0.1	<0.3	19.4	**11**	5.6
25-Jul-19	3774	1000	2220	644	6.9	150	<2	197	37	72	244	**33.7**	795	172	51	66.5	<0.1	<0.3	59.1	**11**	6.7
30-Oct-19	3844	928	1980	667	6.7	72	91	206	37	47	286	**41.8**	1250	186	55	19.1	<0.1	<0.3	15.4	**7**	5.9
17-Apr-20	3880	858	2010	668	7.3	140	<2	200	41	66	215	**36.3**	765	206	68	52.0	<0.1	<0.3	49	**11**	11.4
14-Jul-20	3938	1070	2300	691	6.8	140	<2	212	39	76	228	**29.6**	593	182	57	55.5	<0.1	<0.3	57.7	**4**	5.2
07-Oct-20	3981	997	2140	648	7.0	130	18	200	36	63	242	**39.4**	942	145	72	49.4	<0.1	<0.3	45.6	<2	5.1
21-Apr-21	4053	988	2310	706	7.3	160	7	213	43	69	217	**18.8**	1030	206	3.0	62.7	<0.1	<0.3	52.2	**6**	-1.2
16-Jul-21	4110	989	2220	683	6.8	140	<2	204	42	70	200	**45.1**	714	226	65	57.6	<0.1	<0.3	53.5	**6**	6.9
04-Oct-21	4165	1040	2260	620	6.8	170	32	189	36	65	194	**49.3**	819	176	63	61.6	<0.1	<0.3	61.0	**2**	0.1
20-Apr-22	4231	919	2170	640	6.9	170	51	193	39	70	183	**33.3**	1090	216	56	43.9	<0.1	<0.1	39.8	<20	0.7
18-Jul-22	4312	893	2340	711	7.5	170	<20	204	49	83	206	**49.7**	796	202	66	67.1	<0.1	<0.1	62.2	**7**	12.8
12-Oct-22	4382	1050	2330	624	7.0	180	<2	185	39	79	175	**43.9**	640	275	55	66.3	<0.1	<0.1	55.1	**13**	-0.3
18-Apr-23	4434	619	1640	517	6.6	138	58	162	27	54	162	**31.5**	887	182	52	25.2	<0.1	<0.1	14.4	**2**	4.1
18-Jul-23	4489	769	1880	508	7.0	113	6	148	34	57	173	**34.2**	547	245	59	32.7	<0.1	<0.1	23.7	**3**	3.0
11-Oct-23	4560	851	1860	672	6.7	101	2	163	64	67	197	**37.7**	545	46	75	27.3	<0.1	<0.1	25.9	**2**	6.9
15-Apr-24	4597	911	2100	648	6.75	142	3.3	188	39.8	63	164	**40.1**	957	168	54	23.3	<0.3	<0.3	26	**1.1**	1.8
16-Jul-24	4667	890	2010	550	6.92	122	0.6	188	37.2	66	204	**37.3**	800	130	60	36.6	<0.1	<0.1	31.6	1	7.0
10-Oct-24	2067117	833	2330	634	7.21	90	29.1	174	37.5	65	197	**39.8**	816	32	75	41.7	0.2	<0.1	33	**1.5**	7.9
TOTAL SAMPLES		101	101	100	101	102	93	92	92	92	92	97	84	98	101	100	102	99	102	99	
AVERAGE 2024		878	2147	611	6.96	118	11.0	183	38.2	65	188	39.07	858	110	63	33.9	<0.1	<0.1	30	1.20	

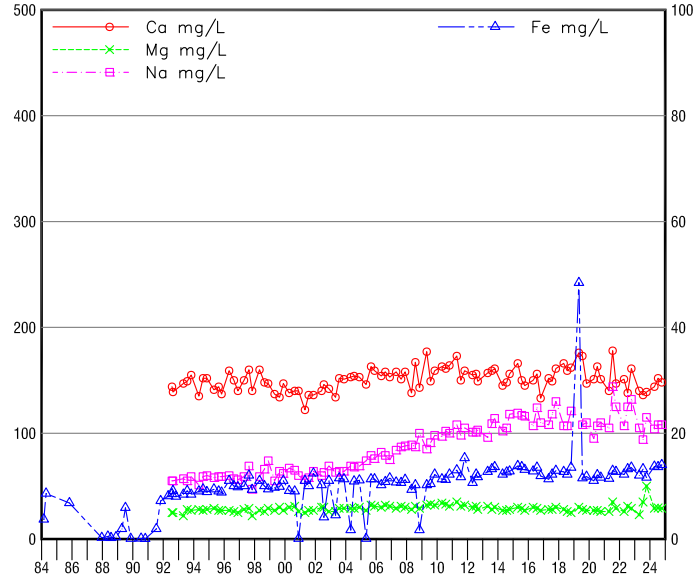
all Concentrations mg/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**



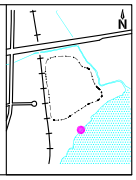








L	Concentration Reported Less Than
G	Concentration Reported Greater Than
A	Concentration Determined Anomalous
	Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

BH17-III

SAND AQUIFER

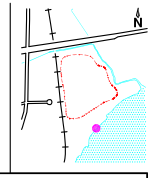
Screen 215.2 - 214.6 masl

22578520 25 Apr 25	wsp	24G019

BH17-III

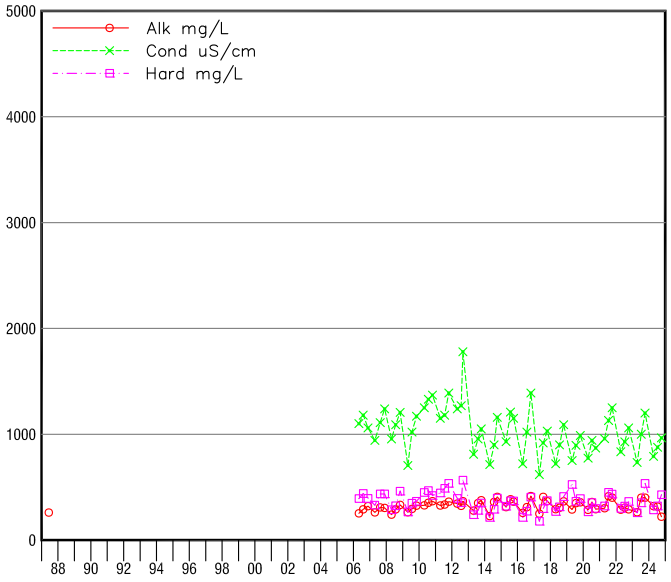
SAND AQUIFER

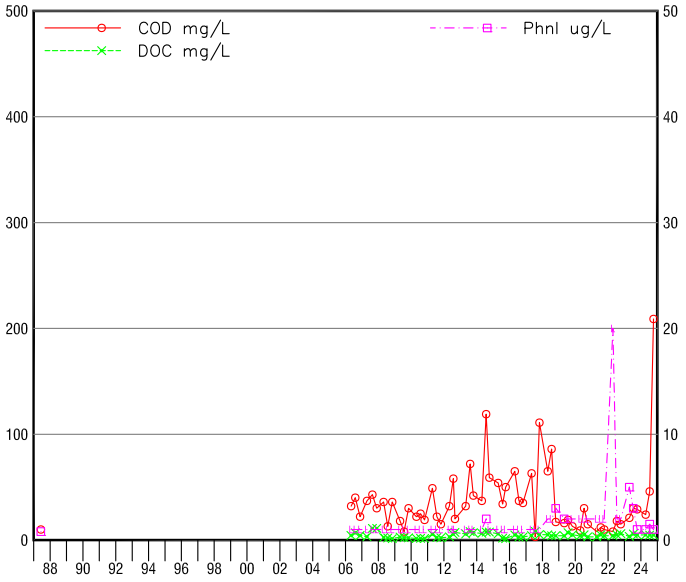
OBSERVATION WELL
Screen 215.2 - 214.6 masl

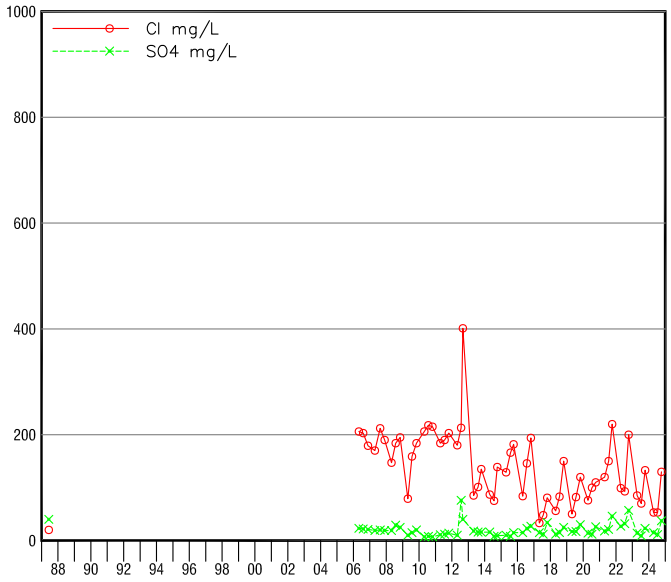


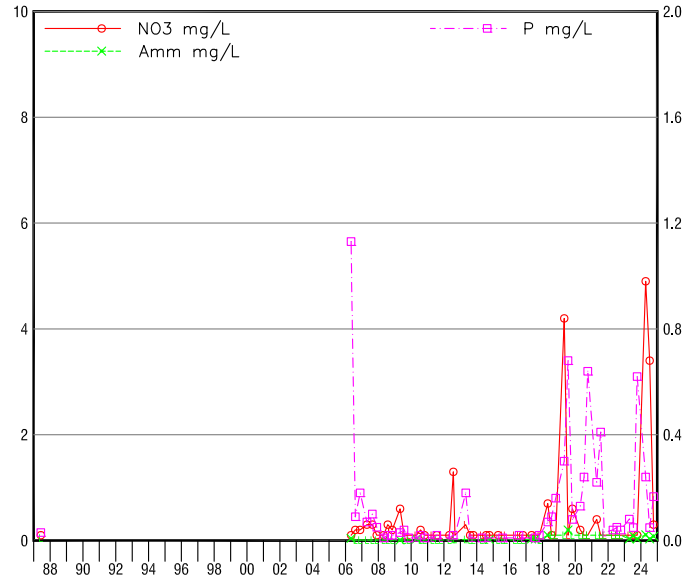
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
29-Jul-15	3058	446	1470	493	7.6	224	13	150	29	117	1.1	**13.6**	1110	31	1.2	0.2	<0.1	<0.1	0.09	<1	-0.1
07-Oct-15	3112	416	1370	473	7.5	222	15	145	27	116	1.2	**13.1**	1060	40	1.1	1.1	<0.1	<0.1	0.07	<1	0.4
26-Apr-16	3183	448	1380	495	7.7	204	15	150	30	107	1.1	**12.8**	1110	51	2.9	0.6	<0.1	<0.1	0.07	<1	0.3
28-Jul-16	3225	458	1460	509	7.7	223	11	156	29	124	1.1	**13.5**	1130	55	1.6	0.8	<0.1	<0.1	0.02	<1	1.3
25-Oct-16	3311	436	1450	444	7.8	205	9	133	27	110	1.0	**11.9**	1030	55	2.0	0.6	<0.1	<0.1	0.07	<1	-2.0
03-May-17	3350	376	1410	495	7.5	179	52	152	28	108	0.9	**11.3**	1140	79	2.7	0.5	<0.1	<0.1	0.08	<1	4.8
26-Jul-17	3418	403	1470	487	7.7	190	30	149	28	118	1.1	**12.2**	1130	3	33	0.7	<0.1	<0.1	0.07	<1	4.4
23-Aug-17	3418													3							
25-Oct-17	3492	411	1420	524	7.6	187	10	161	30	130	1.4	**12.9**	1210	81	2.6	0.3	<0.1	<0.1	0.08	<1	9.8
30-Apr-18	3543	402	1300	530	7.8	210	17	166	28	107	1.3	**12.7**	1180	79	3.0	<0.5	<0.1	<0.1	0.1	<2	4.7
24-Jul-18	3600	422	1440	504	7.2	220	15	159	26	107	1.4	**12.2**	1140	61	4.0	<0.5	<0.1	<0.1	0.2	<2	0.9
24-Oct-18	3667	418	1370	509	7.6	220	15	162	25	121	1.5	**13.5**	1220	8	4.0	0.7	<0.1	<0.1	0.5	**4**	3.5
30-Apr-19	3719	*235*	1270	563	8.2	220	54	176	30	*40*	*237*	**48.4**	1060	<8	3.0	0.6	<0.1	<0.1	0.1	**3**	26.7
25-Jul-19	3775	403	1360	548	7.1	220	27	173	28	108	1.3	**11.5**	1380	10	4.0	1.2	<0.1	<0.1	0.2	**3**	4.1
30-Oct-19	3845	412	1360	477	7.3	220	20	147	27	110	1.3	**11.8**	1130	12	3.0	<0.5	<0.1	<0.1	0.2	<2	-0.1
20-Apr-20	3881	394	1350	487	7.8	200	33	151	27	95	1.4	**11.0**	1140	18	4.0	0.6	0.2	<0.1	<0.1	**2**	0.6
15-Jul-20	3939	413	1370	516	7.2	220	18	163	27	107	1.3	**12.1**	1160	12	4.0	0.7	<0.1	<0.1	0.1	<2	2.0
06-Oct-20	3982	414	1350	482	7.8	220	17	151	26	110	1.3	**11.6**	1160	15	2.0	<0.5	<0.1	<0.1	0.2	<2	0.2
22-Apr-21	4054	364	1270	458	7.7	190	31	140	26	105	1.2	**11.4**	1300	16	3.0	0.7	<0.1	<0.1	0.1	<2	4.3
20-Jul-21	4111	420	1380	590	7.4	240	14	178	35	144	1.4	**12.9**	1360	10	3.0	0.5	<0.1	<0.1	0.1	<2	9.9
07-Oct-21	4166	456	1400	488	7.1	260	13	147	29	125	1.2	**12.7**	1290	12	3.0	<0.5	<0.1	<0.1	<0.1	<2	-1.8
19-Apr-22	4232	433	1350	483	7.6	250	17	151	26	107	1.1	**12.2**	1220	15	4.0	<0.5	0.1	<0.1	<0.1	<20	-3.8
15-Jul-22	4313	395	1390	473	7.7	250	21	138	31	125	1.0	**13.2**	1240	20	3.0	<0.5	<0.1	<0.1	<0.1	**5**	0.4
11-Oct-22	4383	420	1440	521	8.0	250	16	161	29	132	1.3	**13.5**	1350	8	4.0	<0.5	<0.1	<0.1	<0.1	<2	3.1
18-Apr-23	4435	353	1290	445	7.4	225	42	140	23	105	1.3	**12.0**	1190	24	4.2	2.3	<0.1	<0.1	0.1	1	-1.3
17-Jul-23	4490	402	1450	484	7.6	210	16	136	35	94	1.0	**13.2**	1280	24	3.4	1.4	<0.1	<0.1	0.1	**3**	5.2
10-Oct-23	4561	409	1330	552	7.4	206	25	139	50	115	1.2	**11.6**	1140	25	3.6	<0.2	<0.1	<0.1	0.1	**2**	3.3
16-Apr-24	4598	408	1380	442	7.05	223	27	144	29.1	104	1.2	**13.7**	1450	24	4.2	0.4	<0.2	<0.2	0.22	**1.2**	2.5
15-Jul-24	4668	304	1400	492	7.43	193	25	152	29.4	108	1.2	**13.6**	1350	32	3.4	6.1	<0.1	<0.1	0.12	1	15.2
10-Oct-24	2067118	385	1230	558	7.57	217	29.6	148	29.0	108	1.2	**14.0**	1450	46	4.3	2.4	<0.1	<0.1	0.26	**1.4**	5.4
TOTAL SAMPLES		115	114	112	114	115	101	98	98	97	97	113	90	112	114	116	115	116	116	114	
AVERAGE 2024		366	1337	497	7.35	211	27.2	148	29.2	107	1.2	13.77	1417	34	4.0	3.0	<0.1	<0.1	0.20	1.20	

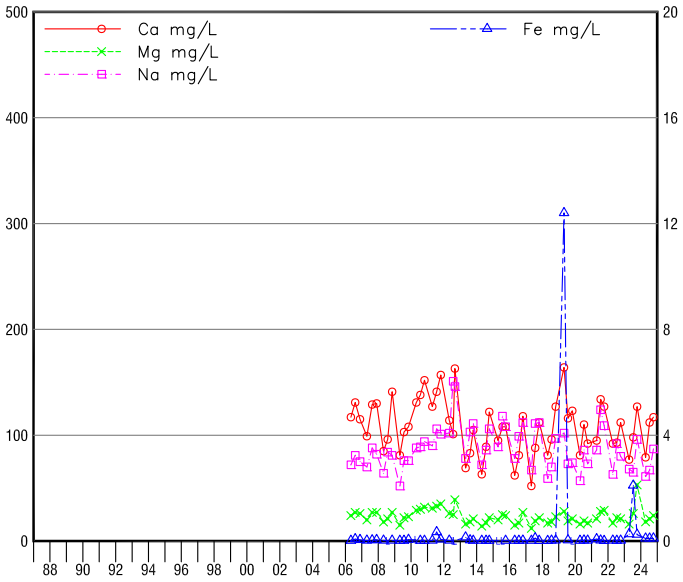
all Concentrations mg/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**









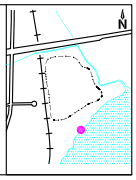


L Concentration Reported Less Than

G Concentration Reported Greater Than

A Concentration Determined Anomalous

Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

BH17-IVR

FORMERLY 17-IV
CONVERTED Jul 12

UPPER CONFINING LAYER

Screen 219.3 - 217.8 masl

22578520
25 Apr 25

wsp

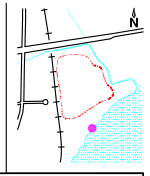
24G020

BH17-IVR

UPPER CONFINING LAYER

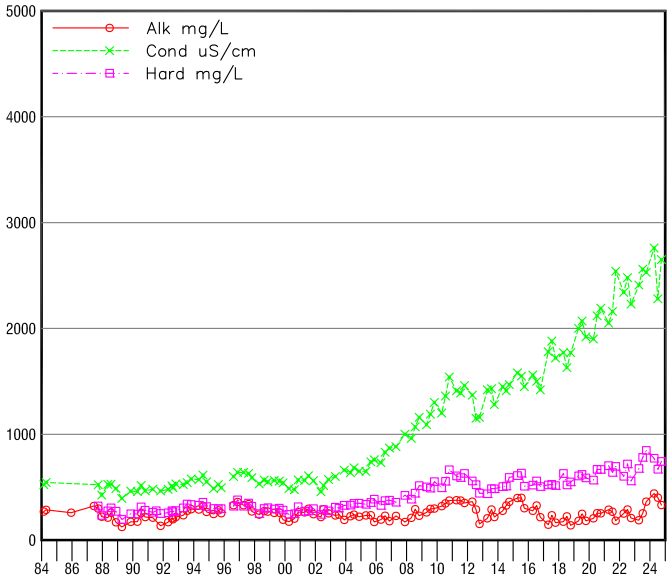
OBSERVATION WELL
Screen 219.3 - 217.8 masl

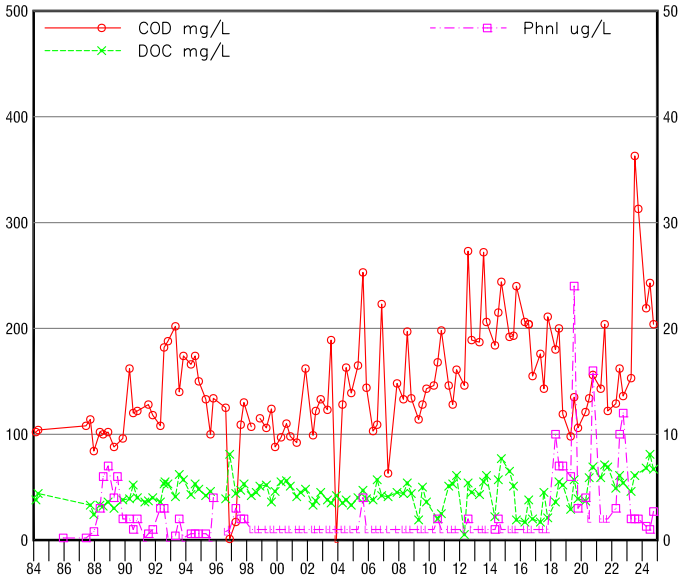
FORMERLY BH17-IV
CONVERTED Jul 12

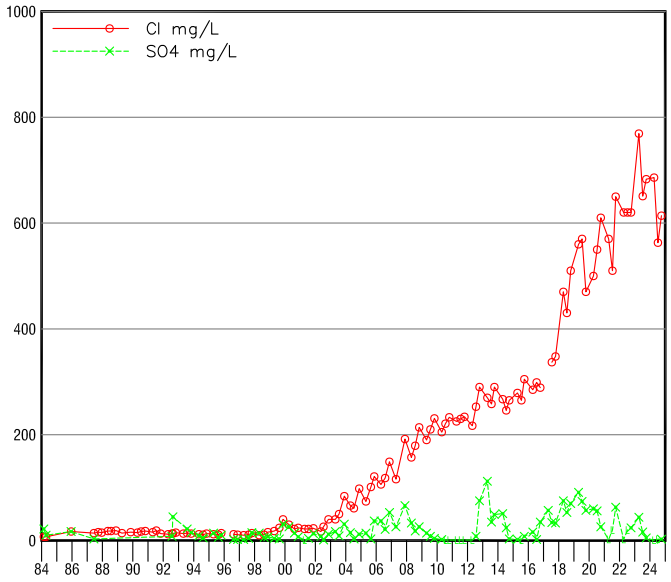


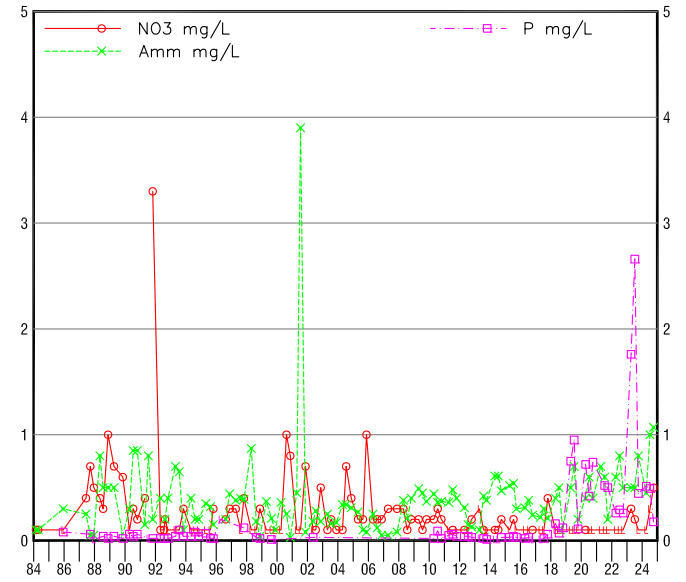
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
21-Apr-15	2996	312	930	320	7.4	129	10	95	20	89	0.7	<0.01	1	54	5.9	0.3	0.1	<0.1	<0.01	<1	1.4
29-Jul-15	3059	386	1210	371	7.7	166	8	108	25	118	2.1	<0.01	143	34	1.8	0.4	<0.1	<0.1	<0.01	<1	0.7
07-Oct-15	3113	363	1150	370	7.6	182	15	108	24	108	1.7	0.012	190	50	1.4	0.3	<0.1	<0.1	<0.01	<1	-2.0
26-Apr-16	3184	257	721	214	7.7	84	15	62	15	78	0.6	0.01	6	65	4.8	0.7	<0.1	<0.1	<0.01	<1	0.1
28-Jul-16	3226	312	1020	273	7.9	146	23	81	17	99	1.2	0.014	69	37	2.9	0.4	<0.1	<0.1	<0.01	<1	-4.6
25-Oct-16	3312	415	1390	406	7.8	194	27	118	27	112	1.2	0.019	160	35	2.9	0.7	0.1	<0.1	<0.01	<1	-4.4
03-May-17	3351	249	619	178	7.8	33	15	52	12	67	0.4	0.012	43	63	4.2	0.4	0.1	<0.1	0.03	<1	2.2
26-Jul-17	3419	408	918	297	7.8	48	12	88	19	111	1.4	0.107	662	3	8.1	0.7	<0.1	<0.1	0.03	<1	5.2
25-Oct-17	3493	368	1030	372	7.8	81	34	112	22	112	1.1	0.008	112	111	5.1	0.4	<0.1	<0.1	<0.01	<1	9.0
30-Apr-18	3544	291	721	270	8.2	56	12	81	17	59	0.7	0.007	13	65	5.0	0.5	0.7	<0.1	0.1	<2	2.2
24-Jul-18	3601	305	899	314	7.6	83	15	96	18	70	0.9	0.016	210	86	4.0	<0.5	0.1	<0.1	<0.1	<2	3.8
24-Oct-18	3668	365	1090	411	7.9	150	25	127	23	97	1.3	0.024	27	17	4.0	0.6	<0.1	<0.1	<0.1	**3**	2.2
30-Apr-19	3720	289	751	525	8.3	50	17	164	28	102	1.2	**12.4**	1290	16	4.0	0.6	4.2	<0.1	<0.1	**2**	32.8
25-Jul-19	3776	349	895	367	7.2	82	17	116	19	73	0.9	0.032	707	19	7.0	1.1	<0.1	<0.1	0.2	<2	4.6
30-Oct-19	3846	356	988	392	7.4	120	30	123	21	74	0.8	<0.007	27	13	5.0	0.6	0.6	<0.1	<0.1	<2	0.2
20-Apr-20	3882	285	774	267	8.0	76	14	81	16	57	0.5	0.012	11	9	4.0	0.6	0.2	<0.1	<0.1	<2	-1.3
15-Jul-20	3940	360	942	354	7.6	100	12	110	19	86	1.2	0.026	236	30	5.0	<0.5	<0.1	<0.1	<0.1	<2	3.1
06-Oct-20	3983	292	869	298	8.0	110	26	92	17	73	1.3	0.019	167	15	3.0	<0.5	<0.1	<0.1	<0.1	<2	-1.2
22-Apr-21	4055	300	958	322	7.9	120	18	95	21	86	0.4	0.07	76	<8	3.0	<0.5	0.4	<0.1	<0.1	<2	1.5
20-Jul-21	4112	414	1130	451	7.5	150	21	134	28	124	1.4	0.026	61	12	5.0	0.5	<0.1	<0.1	<0.1	<2	5.5
07-Oct-21	4167	401	1250	434	7.5	220	46	127	29	109	1.3	0.007	38	10	4.0	<0.5	<0.1	<0.1	<0.1	<2	-6.3
19-Apr-22	4233	287	834	298	7.7	99	27	92	17	63	0.5	0.015	22	8	4.0	<0.5	<0.1	<0.1	<0.1	<20	-1.5
15-Jul-22	4314	307	928	321	7.9	93	32	93	22	92	0.9	0.009	37	18	5.0	<0.5	<0.1	<0.1	<0.1	<2	5.5
11-Oct-22	4384	290	1060	365	7.8	200	57	112	21	80	0.8	0.015	96	15	6.0	<0.5	<0.1	<0.1	<0.1	<2	-7.3
18-Apr-23	4436	263	733	258	7.5	85	14	77	16	68	0.6	0.262	19	21	3.4	4.4	<0.1	<0.1	0.03	**5**	1.2
17-Jul-23	4491	401	1000	352	7.7	70	9	98	26	65	0.9	**2.10**	44	30	5.7	1.8	<0.1	0.2	0.09	**3**	2.6
10-Oct-23	4562	400	1200	535	7.9	133	23	127	53	96	0.7	0.242	16	29	4.8	0.8	0.1	<0.1	0.03	1	9.2
16-Apr-24	4599	321	790	285	7.25	53	15	79	18.1	61	0.6	0.098	16	24	4.9	1	4.9	<0.1	0.11	1	6.5
15-Jul-24	4669	316	877	322	7.77	53	11.3	112	20.9	67	0.8	0.094	15	46	4.7	1.2	3.4	<0.1	0.03	**1.5**	19.1
10-Oct-24	2067119	220	966	428	7.7	130	37.3	117	24.1	87	0.9	0.099	32	209	4.7	1.7	0.3	<0.1	0.08	1	18.3
TOTAL SAMPLES		58	57	57	57	58	58	57	57	57	57	57	57	58	57	58	58	58	58	58	
AVERAGE 2024		286	878	345	7.57	79	21.2	103	21.0	72	0.8	0.097	21	93	4.8	1.3	2.9	<0.1	0.07	1.17	

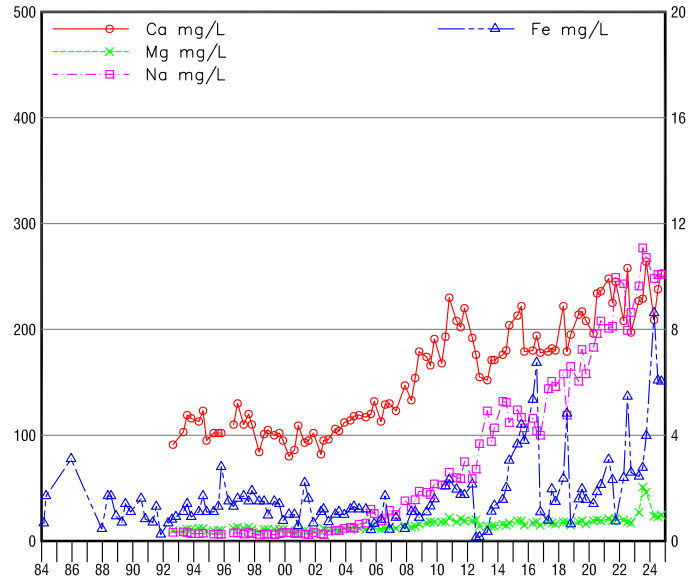
all Concentrations mg/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**



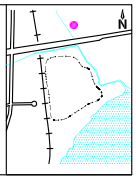








L	Concentration Reported Less Than
G	Concentration Reported Greater Than
A	Concentration Determined Anomalous
	Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

BH18R

FORMERLY 18
CONVERTED Jul 12

PEAT

Screen 218.7 - 217.5 masl

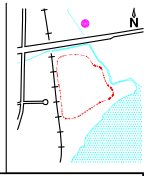
22578520 25 Apr 25	wsp	24G021

BH18R

PEAT

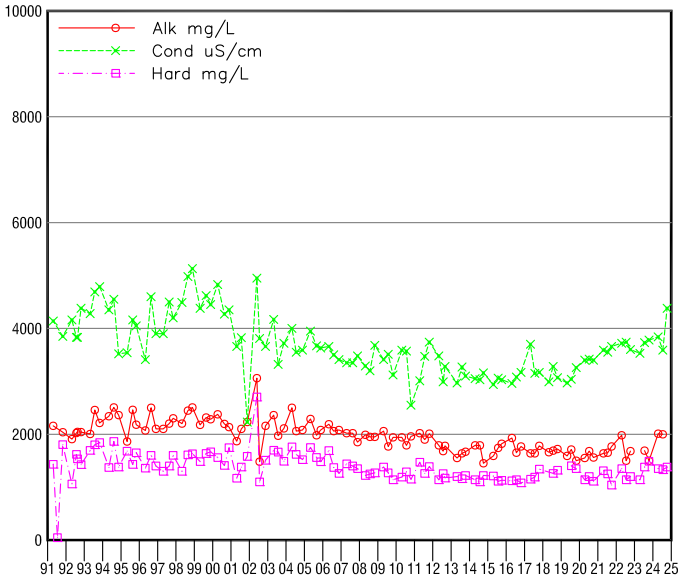
OBSERVATION WELL
Screen 218.7 - 217.5 masl

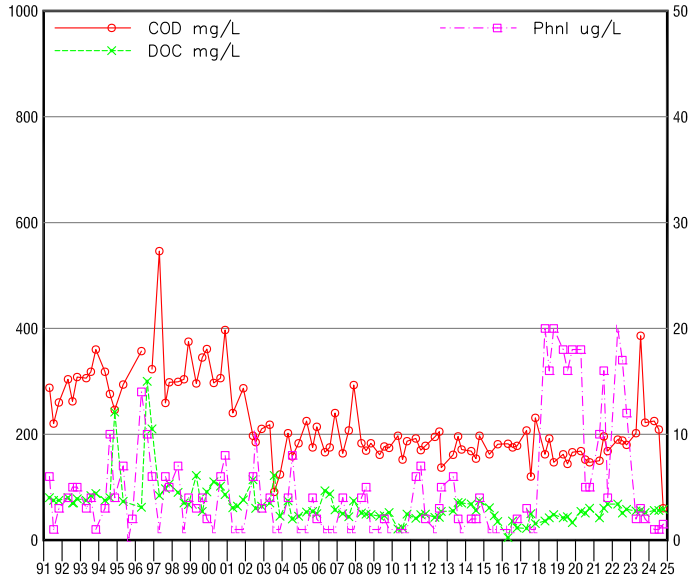
FORMERLY BH18
CONVERTED Jul 12

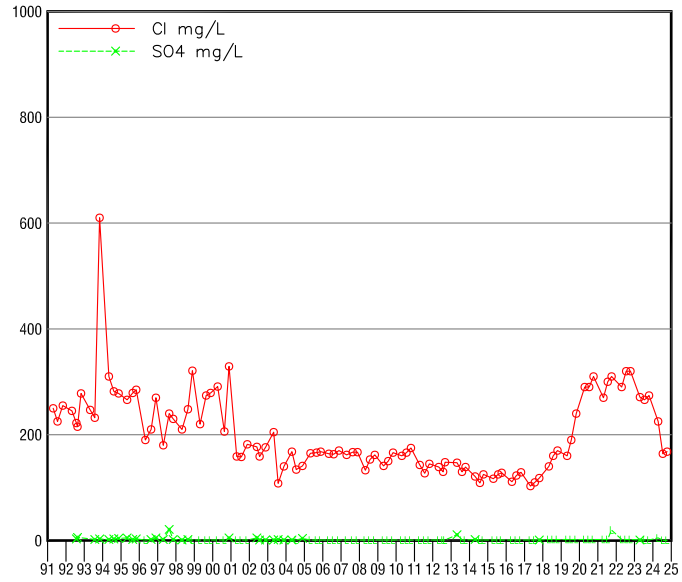


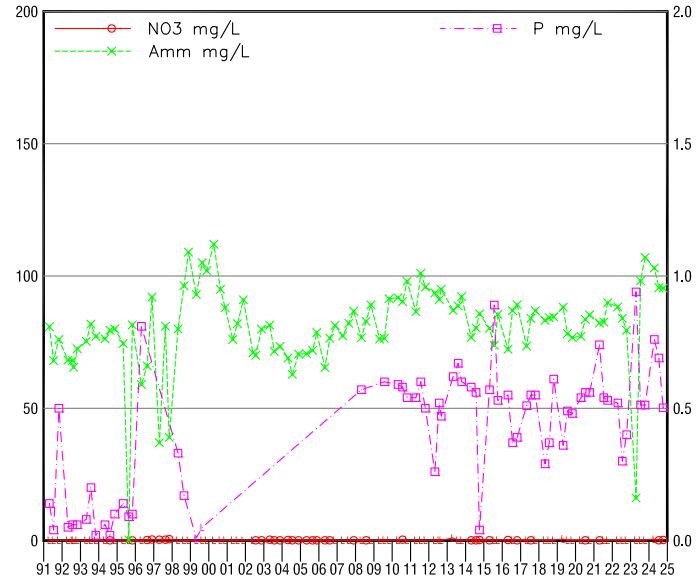
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
15-Apr-15	2980	398	1580	609	7.1	279	2	213	19	124	0.3	**3.65**	644	192	65	2.9	<0.1	<0.1	0.52	<1	5.6
20-Jul-15	3043	399	1550	632	7.1	265	<1	222	19	117	0.2	**4.40**	598	193	51	4.0	0.2	<0.1	0.54	<1	7.4
28-Sep-15	3099	301	1450	509	7.1	305	8	179	15	107	0.2	**3.79**	484	240	19	2.9	<0.1	<0.1	0.3	<1	0.7
19-Apr-16	3171	276	1560	519	7.2	285	16	180	17	116	0.2	**5.34**	556	206	17	2.6	<0.1	<0.1	0.31	<1	6.0
19-Jul-16	3210	326	1500	558	7.2	299	2	194	18	104	0.1	**6.74**	575	204	38	4.3	<0.1	<0.1	0.38	<1	3.1
17-Oct-16	3299	216	1420	506	7.3	289	35	178	15	100	0.2	**1.09**	392	155	20	2.2	0.1	<0.1	0.24	<1	4.8
24-Apr-17	3334	145	1780	521	7.1	*<1*	57	179	18	144	0.3	**0.776**	387	176	17	2.4	<0.1	<0.1	0.22	<1	60.8
18-Jul-17	3403	234	1880	526	7.2	337	34	182	17	151	0.2	**1.96**	445	143	45	3.0	<0.1	<0.1	0.3	<1	7.0
17-Oct-17	3476	164	1720	515	7.1	348	33	180	16	146	0.3	**1.48**	354	211	21	2.3	0.4	<0.1	0.21	<1	9.6
23-Apr-18	3527	174	1770	629	6.7	470	75	222	18	158	0.3	**2.36**	544	180	36	1.3	<0.1	<0.1	0.4	**10**	3.3
16-Jul-18	3583	224	1630	521	6.7	430	53	179	18	119	0.4	**4.82**	505	200	55	2.6	<0.1	<0.1	0.5	**7**	-5.7
15-Oct-18	3653	139	1770	549	6.8	510	70	195	15	165	0.8	**0.632**	335	119	52	1.0	<0.1	<0.1	<0.1	**7**	-0.9
23-Apr-19	3705	182	2000	606	6.8	560	91	214	18	151	0.4	**1.58**	548	98	29	1.9	<0.1	<0.1	0.5	**6**	-6.2
15-Jul-19	3758	248	2070	621	6.6	570	74	217	19	181	0.4	**1.96**	791	135	57	1.6	<0.1	<0.1	0.7	**24**	-5.1
15-Oct-19	3831	181	1920	587	6.9	470	57	208	16	158	0.4	**1.56**	405	106	39	1.8	<0.1	<0.1	0.2	**3**	1.6
14-Apr-20	3867	205	1900	567	6.8	500	60	196	19	183	0.4	**1.40**	589	121	37	1.4	0.1	<0.1	0.4	**4**	-0.1
09-Jul-20	3922	254	2120	668	6.8	550	56	234	20	196	0.3	**1.85**	576	134	59	1.6	<0.1	<0.3	0.60	<2	0.5
08-Oct-20	3984	253	2190	667	6.8	610	26	236	19	208	0.3	**2.12**	735	156	69	2.4	<0.1	<0.3	0.4	**16**	-0.7
13-Apr-21	4056	287	2050	703	6.6	570	<2	248	21	201	0.3	**3.08**	1030	143	59	2.2	<0.1	<0.3	0.7	<2	2.2
16-Jul-21	4113	268	2160	639	6.7	510	<20	225	19	203	0.4	**2.31**	856	204	71	2.5	<0.1	<0.1	0.6	<2	4.8
29-Sep-21	4168	183	2540	696	7.8	650	63	245	21	249	0.6	**0.742**	461	122	69	2.0	<0.1	<0.3	0.2	<2	3.3
11-Apr-22	4234	251	2340	603	7.1	620	<2	208	20	243	0.3	**2.39**	820	129	49	1.8	<0.1	<0.3	0.6	**3**	0.5
11-Jul-22	4296	288	2480	719	7.1	620	<20	258	18	199	0.3	**5.46**	615	162	61	2.7	<0.1	<0.3	0.8	**10**	0.1
04-Oct-22	4369	208	2230	559	6.8	620	24	197	17	216	0.2	**2.59**	464	136	54	2.1	<0.1	<0.3	0.5	**12**	-3.3
11-Apr-23	4421	188	2410	677	7.1	769	44	227	27	241	0.3	**2.44**	651	153	46	5.7	0.3	1.5	0.5	**2**	-4.4
10-Jul-23	4473	252	2560	781	6.8	651	16	229	51	277	0.3	**2.77**	815	363	61	5.4	0.2	<0.1	0.5	**2**	5.4
04-Oct-23	4547	362	2530	847	7.0	683	5	264	46	268	0.4	**3.98**	785	313		4.1	<0.1	<0.1	0.8	**2**	3.6
09-Apr-24	4620	440	2760	773	6.62	686	<0.5	209	23.5	248	0.5	**8.62**	1130	219	68	3.5	<0.1	<0.1	0.45	**1.3**	-6.2
08-Jul-24	4651	400	2280	669	7.52	563	<2.5	238	22.7	252	0.7	**6.07**	1250	243	81	3.1	<0.3	<0.3	1	1	5.1
02-Oct-24	2064054	331	2650	743	7.06	614	2.6	253	24.5	252	0.7	**6.03**	578	204	67	7.3	0.5	<0.1	1.07	**2.7**	4.2
TOTAL SAMPLES		113	110	110	112	113	98	95	95	94	94	110	88	109	109	113	113	113	113	111	
AVERAGE 2024		390	2563	728	7.07	621	<2.5	233	23.6	251	0.6	6.907	986	222	72	4.6	<0.3	<0.1	0.84	1.67	

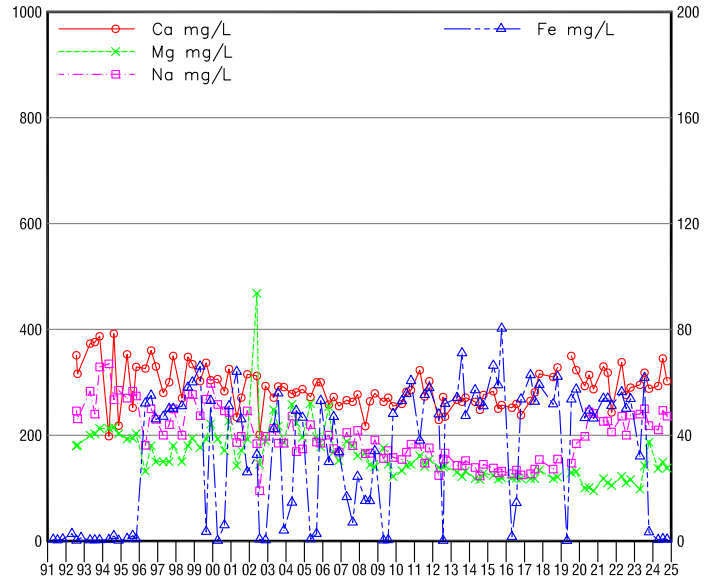
all Concentrations mg/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**









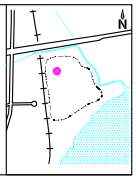


L Concentration Reported Less Than

G Concentration Reported Greater Than

A Concentration Determined Anomalous

Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

BH20R

FORMERLY 20
CONVERTED Nov 90

REFUSE

Screen 219.8 - 218.3 masl

22578520
25 Apr 25

wsp

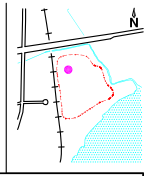
24G022

BH20R

REFUSE

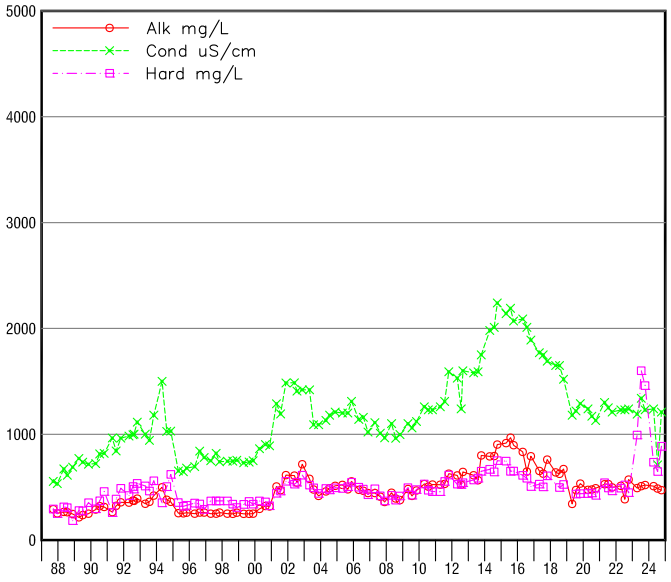
LEACHATE WELL
Screen 219.8 - 218.3 masl

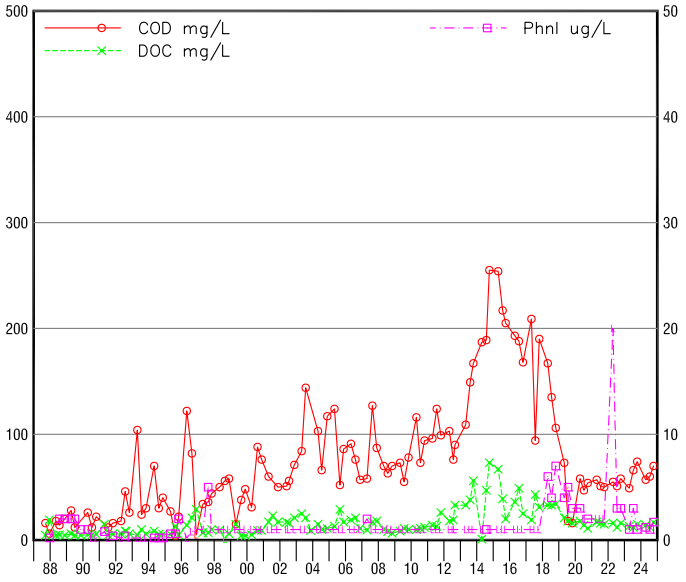
FORMERLY BH20
CONVERTED Nov 90

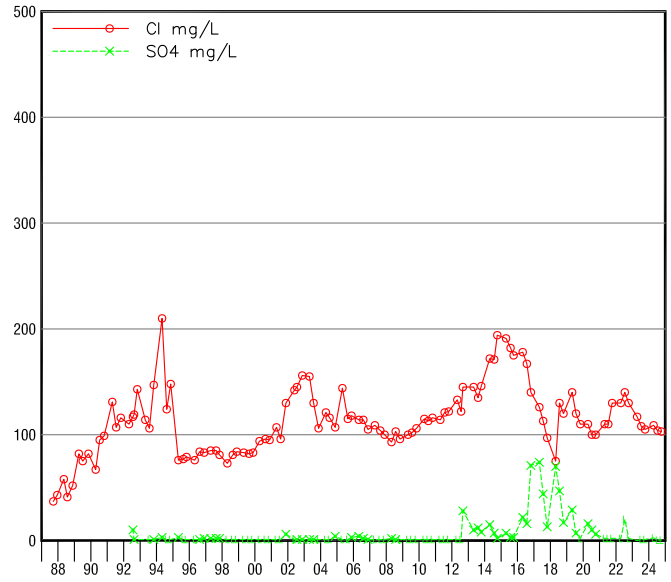


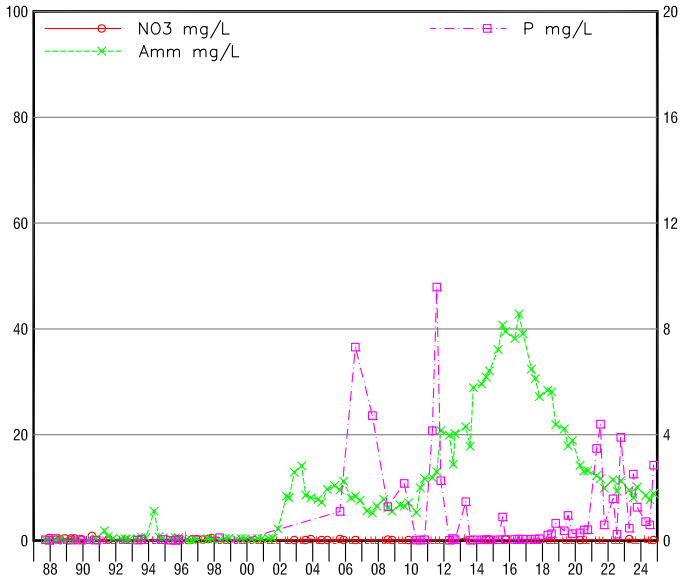
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
22-Apr-15	2997	1590	2940	1210	6.5	117	<1	283	124	138	87	**66.3**	1230	162	61	91.1	0.1	<0.1	80.2	<1	7.4
27-Jul-15	3060	1740	3060	1110	7.2	125	<1	250	117	129	82	**58.9**	1180		46	109	<0.1	<0.1	73.8	<1	-1.5
05-Oct-15	3114	1820	3030	1130	7.2	128	<1	257	119	132	82	**80.3**	1130	181	35	92.4	<0.1	<0.1	85.5	<1	-0.7
25-Apr-16	3185	1930	2960	1120	7.2	111	<1	252	119	127	79	**1.57**	1130	182	4.6	83.9	0.2	<0.1	72.3	<1	-8.6
25-Jul-16	3227	1650	3080	1140	7.3	123	<1	259	119	134	83	**14.4**	1090	175	36	101	<0.1	<0.1	86.9	<1	1.3
24-Oct-16	3313	1770	3170	1080	7.3	129	<1	238	118	125	79	**53.5**	1170	178	23	97.7	0.1	<0.1	89.1	**2**	-2.2
01-May-17	3352	1640	3700	1150	7.2	103	<1	265	118	127	77	**62.7**	1250	207	22	79.0	<0.1	0.8	73.5	**3**	3.1
24-Jul-17	3420	1640	3150	1190	7.2	110	<1	281	118	136	79	**52.7**	1220	120	50	84.2	0.1	<0.1	84	<1	4.9
23-Oct-17	3494	1780	3170	1340	7.2	118	1	316	134	154	93	**59.0**	1460	231	31	87.1	<0.1	<0.1	86.9	<1	6.3
02-May-18	3545	1660	2990		6.8	140	<2							162	36	85.8	<0.1	<0.3	83.2	**20**	
26-Jul-18	3602	1690	3280	1260	6.8	160	<2	310	118	136	89	**51.7**	1350	192	42	89.0	<0.1	<0.3	84.2	**16**	3.7
22-Oct-18	3669	1720	3070	1320	7.3	170	<2	328	121	155	97	**62.1**	1470	147	48	91.2	<0.1	<0.3	84.5	**20**	5.6
29-Apr-19	3721	1590	2970	*281*	7.1	160	<2	*88*	*15*	*50*	*0.6*	0.031	8.5	162	42	87.2	<0.6	<0.3	88.2	**18**	-44.0
23-Jul-19	3777	1710	3040	1404	6.7	190	<2	350	129	147	97	**53.5**	1590	144	44	87.4	<0.1	<0.3	78.2	**16**	5.9
28-Oct-19	3847	1500	3260	1350	6.9	240	<2	323	131	184	83	**57.3**	1370	166	33	82.0	<0.1	<0.3	76.7	**18**	9.6
16-Apr-20	3883	1550	3400	1140	7.3	290	<2	293	100	198	91	**46.5**	1170	168	54	84.2	<0.1	0.2	77.2	**18**	2.3
13-Jul-20	3941	1680	3420	1200	6.7	290	<2	314	101	244	100	**49.3**	1260	152	51	84.3	0.1	<0.3	83.6	**5**	3.6
07-Oct-20	3985	1560	3400	1110	7.5	310	<2	287	95	241	92	**46.3**	1240	147	60	90.5	<0.1	<0.3	85.3	**5**	3.4
21-Apr-21	4057	1640	3590	1310	7.4	270	<2	330	118	226	100	**53.8**	1550	150	42	86.4	0.1	<0.3	82.2	**10**	1.2
16-Jul-21	4114	1650	3550	1250	6.8	300	<2	318	110	227	85	**53.9**	1440	196	60	87.3	<0.1	<0.3	82.6	**16**	3.6
01-Oct-21	4169	1770	3660	1040	7.2	310	<20	243	105	206	85	**51.1**	1160	168	68	92.4	<0.1	<0.3	89.9	**4**	-5.2
21-Apr-22	4235	1980	3720	1350	6.8	290	<2	338	122	236	102	**56.3**	1300	190	68	93.7	<0.1	<0.3	88.3	<20	0.4
20-Jul-22	4315	1500	3740	1140	7.4	320	<2	276	110	200	83	**50.0**	1370	188	51	89.4	<0.1	<0.3	84.0	**17**	3.0
13-Oct-22	4385	1680	3600	1200	6.8	320	<2	290	116	238	84	**53.7**	1260	180	58	91.4	<0.1	<0.3	79.5	**12**	1.8
19-Apr-23	4437	*<2*	3530	1140	6.7	271	1	295	98	240	105	**32.0**	1270	202	55	146	<0.1	<0.1	16.1	**2**	66.6
19-Jul-23	4492	1690	3730	1380	6.8	266	<1	318	142	250	102	**61.7**	1250	386	56	123	<0.1	<0.1	98.2	**3**	7.7
16-Oct-23	4563	1500	3780	1490	7.0	274	<1	288	187	218	93	**3.35**	721	222	52	85.0	<0.1	<0.1	107	**2**	0.3
17-Apr-24	4600	2010	3840	1350	6.74	225	<5	293	137	210	102	**0.411**	1270	225	56	89.4	<0.5	<0.5	103	1	-2.0
18-Jul-24	4670	2000	3590	1330	6.93	164	<0.5	345	149	247	113	**0.779**	1380	209	56	111	0.1	<0.1	95.6	1	7.2
10-Oct-24	2067120	*<2*	4380	1380	7.09	168	<0.5	302	138	236	98	**0.570**	1330	60	58	107	0.2	<0.1	95.4	**1.5**	78.3
TOTAL SAMPLES		100	102	101	102	103	97	96	96	96	96	101	89	97	101	103	103	103	103	102	
AVERAGE 2024		2005	3937	1353	6.92	186	<0.5	313	141	231	104	0.5867	1327	165	57	102	<0.5	<0.1	98	1.17	

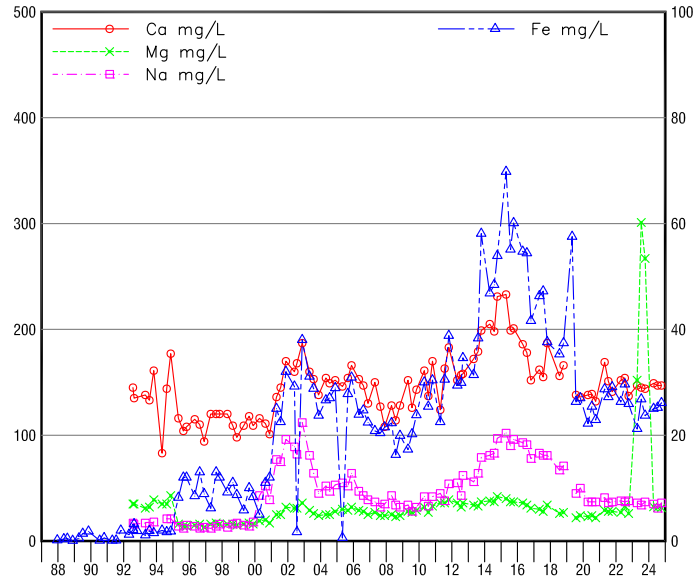
all Concentrations mg/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**









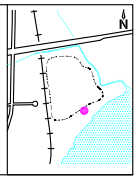


L Concentration Reported Less Than

G Concentration Reported Greater Than

A Concentration Determined Anomalous

Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

BH21-IR

FORMERLY 21-I
CONVERTED Mar 95

SAND AQUIFER

Screen 216.0 - 215.2 masl

22578520
25 Apr 25

wsp

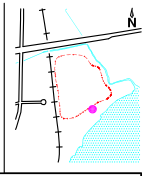
24G023

BH21-IR

SAND AQUIFER

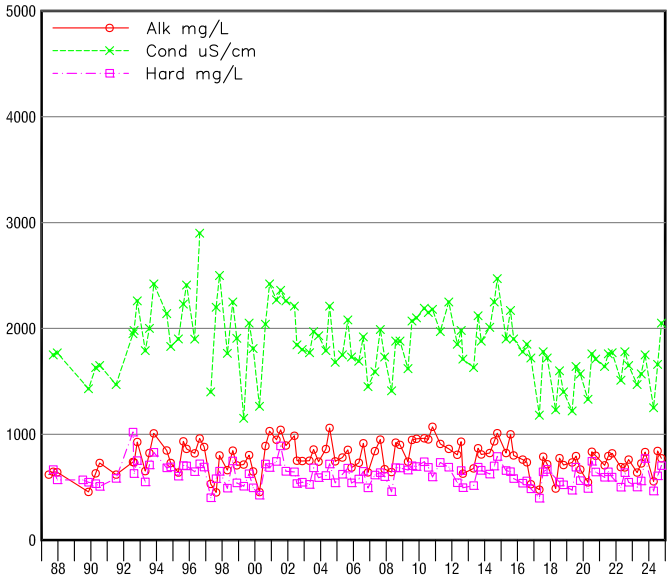
OBSERVATION WELL
Screen 216.0 - 215.2 masl

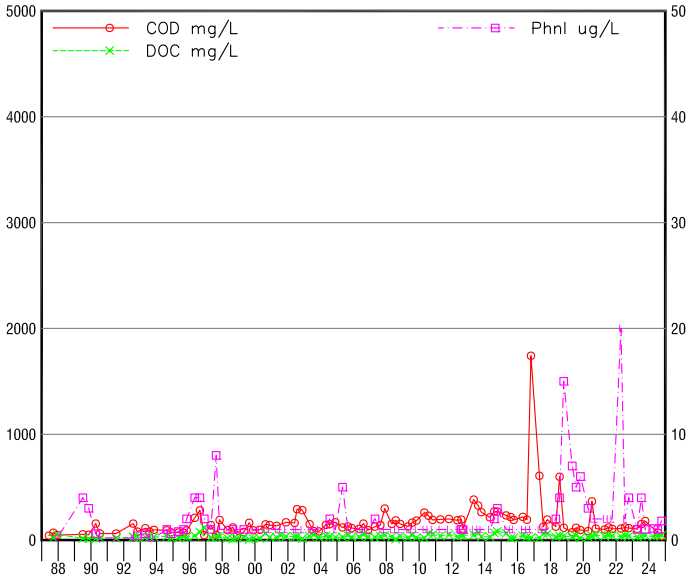
FORMERLY BH21-I
CONVERTED Mar 95

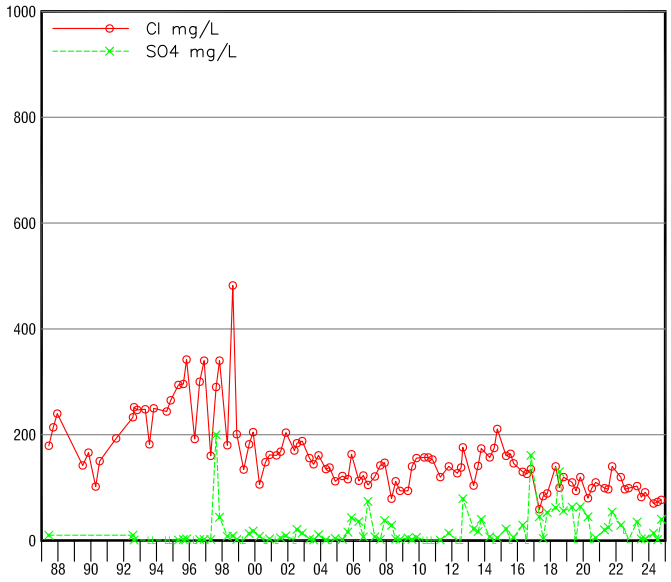


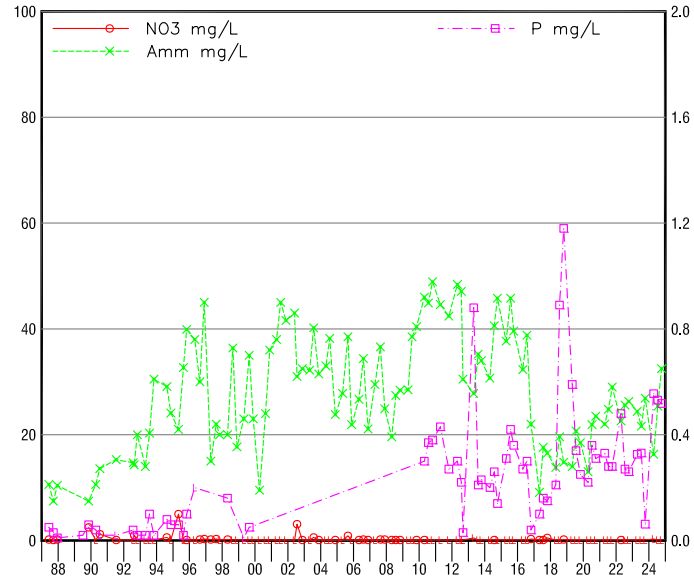
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
22-Apr-15	2998	916	2140	746	7.2	191	7	233	40	102	123	**69.8**	1360	254	67	46.4	<0.1	<0.1	36.1	<1	7.3
29-Jul-15	3061	968	2190	650	7.3	182	3	199	37	90	113	**55.1**	1240	217	39	46.0	<0.1	<0.1	40.7	<1	0.2
07-Oct-15	3115	896	2070	652	7.3	175	3	201	37	96	118	**60.1**	1180	205	20	43.6	0.2	<0.1	39.5	<1	4.8
26-Apr-16	3186	833	2090	612	7.2	178	22	186	36	93	110	**54.7**	1100	193	36	43.5	<0.1	<0.1	38.2	<1	3.6
28-Jul-16	3228	647	2010	584	7.5	167	16	178	34	91	111	**54.4**	1050	188	49	42.9	<0.1	<0.1	42.8	<1	13.3
26-Oct-16	3314	792	1890	506	7.4	140	71	152	31	78	106	**41.6**	928	168	25	49.3	<0.1	<0.1	39.1	<1	−1.7
02-May-17	3353	653	1770	528	7.2	126	74	162	30	83	101	**46.3**	943	209	19	33.9	<0.1	<0.1	32.4	<1	6.6
26-Jul-17	3421	628	1750	503	7.4	113	44	155	28	81	97	**47.2**	906	94	43	31.0	<0.1	<0.1	30.6	<1	8.9
24-Oct-17	3495	761	1690	607	7.4	97	13	187	34	81	113	**37.6**	1040	190	31	28.5	<0.1	<0.1	27.2	<1	9.0
30-Apr-18	3546	639	1650		7.2	75	70							167	33	25.7	<0.1	<0.1	28.4	**6**	
23-Jul-18	3603	626	1650	496	6.9	130	47	156	26	67	99	**35.3**	887	135	33	30.0	<0.1	<0.1	28.1	**4**	4.2
23-Oct-18	3670	671	1520	525	7.5	120	17	166	27	71	107	**37.4**	940	106	34	30.4	<0.1	<0.1	21.9	**7**	5.7
01-May-19	3722	341	1180	*1320*	8.3	140	29	*322*	*125*	*152*	*97*	**57.5**	1430	73	21	23.8	<0.1	<0.1	21.1	**4**	54.9
25-Jul-19	3778	473	1220	435	6.9	120	7	138	22	45	84	**26.3**	862	18	18	19.5	<0.1	<0.1	17.9	**5**	7.3
30-Oct-19	3848	533	1290	439	7.0	110	<2	136	24	50	76	**27.0**	770	16	16	18.7	<0.1	<0.1	18.9	**3**	5.0
17-Apr-20	3884	474	1240	440	7.7	110	16	138	23	37	73	**22.2**	774	58	18	20.2	0.1	<0.1	14.2	**3**	4.3
14-Jul-20	3942	477	1170	445	7.0	100	10	139	24	37	69	**25.4**	803	47	14		<0.1	<0.1	13.1	<2	5.7
07-Oct-20	3398	490	1130	422	7.8	100	6	132	22	37	66	**22.9**	786	54	11	13.8	<0.1	<0.1	13.2	**2**	2.8
22-Apr-21	4058	528	1300	541	7.5	110	<2	169	29	41	71	**28.7**	1060	57	17	13.5	<0.1	<0.1	12.3	<2	8.1
16-Jul-21	4115	529	1250	492	7.1	110	<2	151	28	36	61	**27.2**	939	51	16	13.7	<0.1	<0.1	11.7	<2	4.6
07-Oct-21	4170	498	1210	465	6.9	130	<2	141	28	37	61	**29.1**	971	50	15	12.0	<0.1	<0.1	9.9	<2	2.3
20-Apr-22	4236	513	1230	490	7.3	130	<2	152	27	38	52	**26.3**	990	55	16	11.9	<0.1	<0.1	11.5	<20	2.2
18-Jul-22	4316	385	1230	521	8.0	140	<20	154	33	37	58	**29.6**	998	51	12	10.4	<0.1	<0.1	9.3	**3**	13.3
11-Oct-22	4386	572	1240	448	7.2	130	<2	137	26	38	48	**25.9**	917	58	16	12.4	<0.1	<0.1	11.3	**3**	−5.4
17-Apr-23	4438	492	1190	993	7.2	117	0	147	152	36	47	**21.2**	978	49	13	13.8	0.3	<0.1	9.5	1	29.3
17-Jul-23	4493	510	1340	1600	7.4	108	<1	145	301	34	43	**26.8**	973	66	12	11.5	<0.1	<0.1	8.1	**3**	3.8
11-Oct-23	4564	520	1230	1460	7.1	105	<1	144	267	37	45	**23.7**	924	74	15	10.2	<0.1	<0.1	10.1	1	6.1
17-Apr-24	4601	509	1240	736	7.1	109	<2.5	149	32.4	35	41	**25.0**	1170	57	14.1	7.7	<0.3	<0.3	8.51	**1.2**	5.4
17-Jul-24	4671	486	710	648	7.2	104	<0.5	147	31.6	31	39	**25.2**	1020	60	12.2	9.9	<0.1	<0.1	7.69	1	6.0
10-Oct-24	2067121	472	1210	886	7.45	103	<0.5	147	31.4	36	42	**26.1**	1120	70	16.7	12.3	0.1	<0.1	8.9	**1.7**	8.1
TOTAL SAMPLES		113	113	111	113	113	97	96	96	95	96	110	89	108	113	111	113	113	113	110	
AVERAGE 2024		489	1053	757	7.25	105	<0.5	148	31.8	34	41	25.43	1103	62	14.3	10.0	<0.1	<0.1	8.4	1.30	

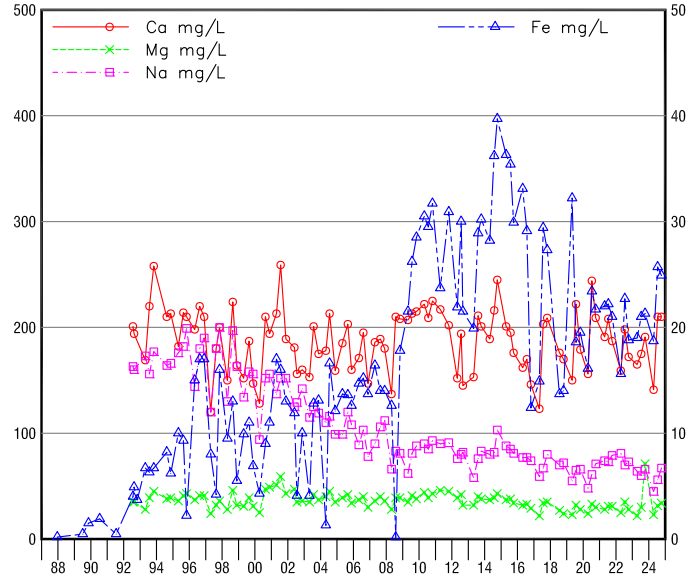
all Concentrations mg/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**









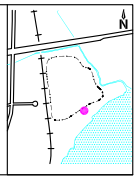


L Concentration Reported Less Than

G Concentration Reported Greater Than

A Concentration Determined Anomalous

Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

BH21-IIR

FORMERLY 21-II
CONVERTED Mar 19

PEAT

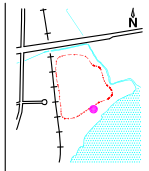
22578520 25 Apr 25	wsp	24G024

BH21-IIR

PEAT

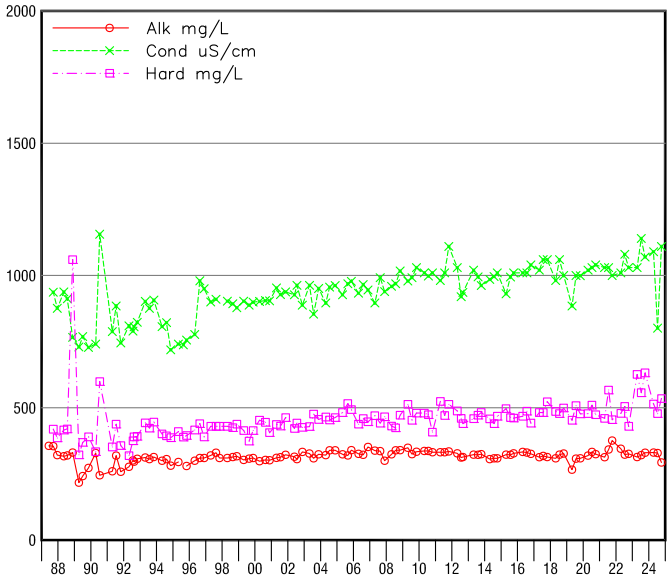
OBSERVATION WELL

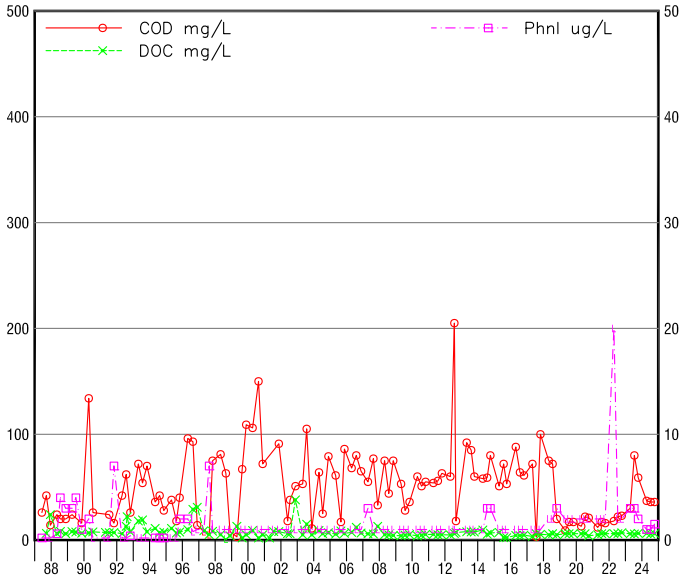
FORMERLY BH21-II
CONVERTED Mar 19

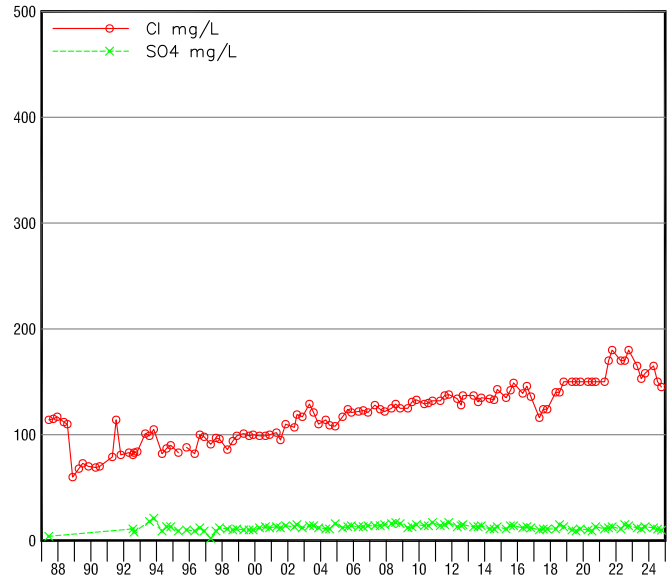


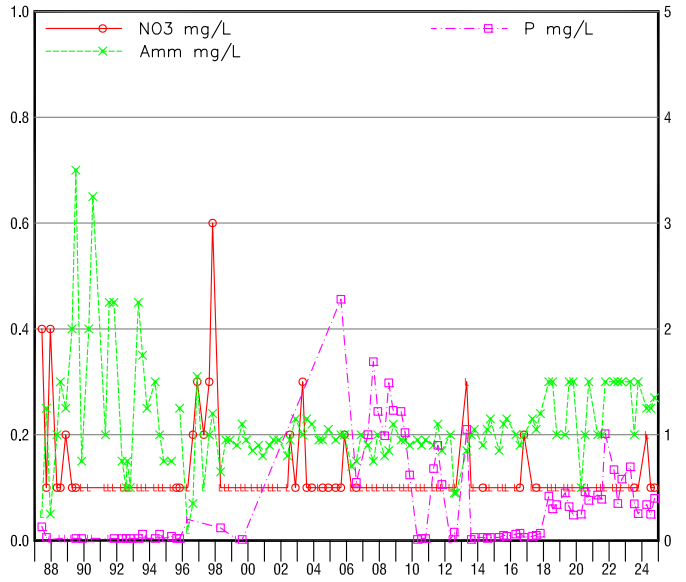
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
22-Apr-15	2999	822	1900	657	6.8	160	22	201	37	88	119	**36.3**	972	232	65	44.9	<0.1	<0.1	37.7	<1	5.6
29-Jul-15	3062	999	2170	646	7.3	164	<1	195	38	85	121	**35.4**	919	217	18	57.1	<0.1	<0.1	45.8	<1	-0.8
07-Oct-15	3116	799	1900	581	7.3	146	6	176	34	81	111	**29.9**	780	191	23	46.7	<0.1	<0.1	39.6	<1	3.9
26-Apr-16	3187	760	1780	537	7.3	130	29	162	32	77	112	**33.1**	785	219	40	36.7	<0.1	<0.1	32.3	<1	2.4
28-Jul-16	3229	734	1850	559	7.5	126	<1	170	33	77	119	**29.1**	761	192	28	44.2	<0.1	<0.1	38.8	<1	8.0
26-Oct-16	3315	527	1720	485	7.4	135	161	146	29	74	101	**12.4**	711	1742	23	30.3	0.3	<0.1	22.0	<1	-0.6
02-May-17	3354	476	1180	396	7.6	59	45	123	22	59	71	**14.9**	574	608	21	12.5	0.1	<0.1	9.1	<1	5.4
26-Jul-17	3422	788	1780	645	7.5	84	4	203	34	67	104	**29.4**	822	126	62	21.4	0.1	<0.1	17.6	<1	6.7
24-Oct-17	3496	717	1720	668	7.4	89	53	209	35	80	115	**27.3**	917	194	59	19.7	0.5	<0.1	16.5	<1	9.8
30-Apr-18	3547	487	1230		7.4	140	62							127	29	14.2	<0.1	<0.1	13.8	**2**	
23-Jul-18	3604	774	1600	548	6.9	100	130	176	27	70	112	**13.7**	575	599	41	23.6	<0.1	<0.1	19.6	**4**	-5.5
23-Oct-18	3671	709	1400	522	7.5	120	56	170	24	72	110	**14.0**	743	116	37	18.6	0.2	<0.1	14.8	**15**	-2.1
01-May-19	3723	733	1220	471	8.3	110	63	150	23	55	91	**32.2**	906	74	31	17.8	<0.1	<0.1	14	**7**	-8.0
25-Jul-19	3779	793	1640	688	6.9	94	<2	222	32	65	123	**18.6**	981	116	44	21.8	<0.1	<0.1	20.7	**5**	8.3
30-Oct-19	3849	666	1570	561	7.1	120	64	179	28	66	93	**19.5**	732	95	19	23.6	<0.1	<0.1	18.5	**6**	1.3
17-Apr-20	3885	546	1330	488	7.6	80	45	156	24	48	78	**16.1**	711	85	27	15.5	<0.1	<0.1	13	**3**	4.1
14-Jul-20	3943	834	1760	745	7.0	99	<2	244	33	61	114	**23.4**	978	365	37	22.3	<0.1	<0.1	21.9	<2	8.0
07-Oct-20	3987	797	1710	643	7.5	110	5	209	30	71	98	**21.7**	922	109	47	24.8	<0.1	<0.1	23.5	<2	4.4
22-Apr-21	4059	706	1640	593	7.6	99	20	191	28	74	106	**22.0**	902	100	34	23.6	<0.1	<0.1	22.0	<2	4.7
16-Jul-21	4116	793	1760	645	7.2	97	25	208	31	73	109	**22.2**	918	119	45	28.8	<0.1	<0.1	24.8	<2	5.8
07-Oct-21	4171	819	1770	594	6.9	140	54	187	31	79	107	**21.0**	920	105	40	30.3	<0.1	<0.1	29.0	<2	-1.4
20-Apr-22	4237	690	1510	499	7.0	120	29	159	25	81	82	**15.6**	724	109	33	24.7	0.1	<0.1	22.6	<20	-0.1
18-Jul-22	4317	687	1780	637	7.8	97	<20	198	35	70	111	**22.7**	856	120	41	27.3	<0.1	<0.1	25.6	<2	12.7
11-Oct-22	4387	760	1650	547	7.2	99	<2	172	28	73	88	**18.8**	804	113	38	29.1	<0.1	<0.1	26.3	**4**	2.4
17-Apr-23	4439	638	1470	501	7.0	103	35	165	22	64	88	**19.0**	770	105	30	29.3	<0.1	<0.1	24.4	1	3.3
17-Jul-23	4494	724	1570	559	7.1	82	3	175	30	60	84	**21.0**	765	151	37	28.1	<0.1	<0.1	21.6	**4**	5.3
11-Oct-23	4565	832	1750	770	7.0	91	3	191	71	66	86	**21.3**	801	180	43	27.6	<0.1	<0.1	26.9	1	4.4
17-Apr-24	4602	554	1250	464	7.09	70	14	141	23.0	45	63	**18.7**	836		33	15.1	<0.3	<0.3	16.3	**1.1**	5.4
17-Jul-24	4672	842	1660	607	6.87	73	1.5	210	31.5	56	87	**25.7**	991	70	41.7	30.1	<0.1	<0.1	25.4	1	5.6
10-Oct-24	2067122	773	2050	704	7.26	77	40.2	210	33.9	67	102	**24.9**	1040	36	44.6	39.1	<0.1	<0.1	32.5	**1.8**	9.3
TOTAL SAMPLES		103	101	102	102	104	96	95	95	95	95	100	88	101	103	104	103	103	103	101	
AVERAGE 2024		723	1653	592	7.07	73	18.6	187	29.5	56	84	23.10	956	53	39.8	28.1	<0.1	<0.1	24.7	1.30	

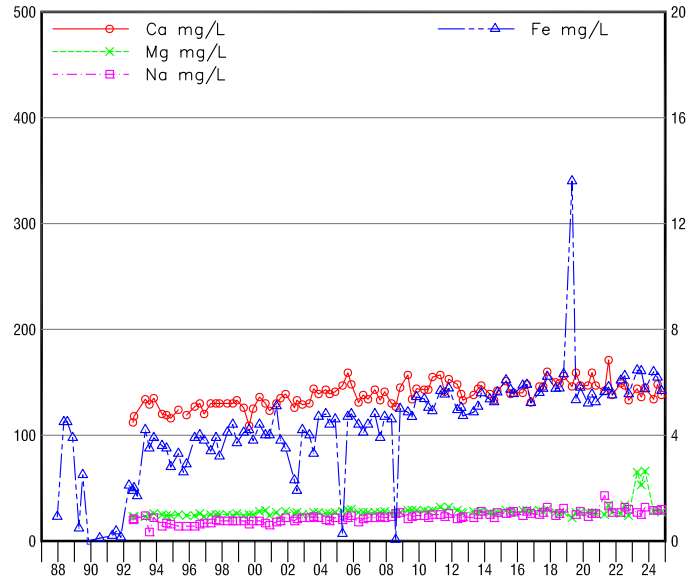
all Concentrations mg/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**









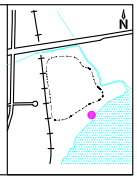


L Concentration Reported Less Than

G Concentration Reported Greater Than

A Concentration Determined Anomalous

Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

BH22-IR

FORMERLY 22-I
CONVERTED Jul 88

SAND AQUIFER

Screen 216.8 - 216.1 masl

22578520
25 Apr 25

wsp

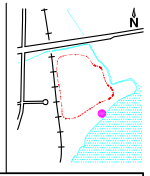
24G025

BH22-IR

SAND AQUIFER

OBSERVATION WELL
Screen 216.8 - 216.1 masl

FORMERLY BH22-I
CONVERTED Jul 88



DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
21-Apr-15	3000	323	931	497	7.2	135	11	151	29	26	0.8	**6.08**	2870	51	7.2	0.6	<0.1	<0.1	0.17	<1	3.7
29-Jul-15	3063	322	994	463	7.6	142	14	139	28	27	0.7	**5.72**	2980	72	2.2	0.9	<0.1	<0.1	0.22	<1	-0.4
07-Oct-15	3117	328	1010	461	7.5	149	14	140	27	28	0.8	**5.56**	2880	53	2.3	0.8	<0.1	<0.1	0.23	<1	-1.8
26-Apr-16	3188	333	1010	468	7.7	139	12	140	29	24	0.7	**5.88**	2940	88	4.4	0.9	<0.1	<0.1	0.2	<1	-0.8
28-Jul-16	3230	331	1010	487	7.8	146	13	148	29	28	0.8	**5.91**	3050	64	4.2	1.4	0.1	<0.1	0.18	<1	1.0
25-Oct-16	3316	326	1040	442	7.8	136	12	131	28	26	0.7	**5.22**	2760	61	4.7	0.9	0.2	<0.1	0.2	<1	-2.0
02-May-17	3355	313	1020	482	7.6	116	10	146	29	25	0.6	**5.60**	3000	72	3.5	1.1	<0.1	<0.1	0.23	<1	6.1
26-Jul-17	3423	318	1060	482	7.8	124	11	146	28	27	0.8	**5.76**	2820	3	5.8	0.9	0.1	<0.1	0.21	<1	4.4
25-Oct-17	3497	314	1060	523	7.6	124	11	160	30	32	0.9	**6.21**	3300	100	5.4	0.5	<0.1	<0.1	0.24	<1	9.5
30-Apr-18	3548	309	981	486	7.3	140	11	150	27	24	0.9	**5.76**	2780	75	5.0	<0.5	<0.1	<0.1	0.3	<2	3.0
23-Jul-18	3605	323	1060	478	7.6	140	15	149	26	26	0.9	**5.77**	2960	72	6.0	0.9	<0.1	<0.1	0.3	<2	1.1
24-Oct-18	3672	327	1000	499	7.6	150	13	156	27	31	1.0	**6.31**	3140	20	5.0	<0.5	<0.1	<0.1	0.2	**3**	2.6
30-Apr-19	3724	266	885	453	8.1	150	10	146	22	*73*	*86*	**13.6**	649	9	6.0	<0.5	<0.1	<0.1	0.2	<2	21.1
26-Jul-19	3780	308	1000	508	7.4	150	9	159	27	25	0.9	**5.33**	2950	17	6.0	0.8	<0.1	<0.1	0.3	<2	4.1
30-Oct-19	3850	309	999	477	7.3	150	11	147	27	28	1.0	**5.80**	2860	17	6.0	0.6	<0.1	<0.1	0.3	<2	1.8
20-Apr-20	3886	319	1020	478	7.8	150	10	147	27	23	1.1	**5.20**	2650	13	6.0	0.6	<0.1	<0.1	0.1	<2	-0.2
15-Jul-20	3944	333	1030	510	7.2	150	9	159	27	26	1.0	**5.54**	2840	22	6.0	0.8	<0.1	<0.1	0.2	<2	2.1
06-Oct-20	3988	325	1040	474	7.8	150	13	147	26	26	1.0	**5.25**	2720	21	4.0	<0.5	<0.1	<0.1	0.3	<2	-0.7
22-Apr-21	4060	313	1030	460	7.8	150	11	142	25	43	1.8	**5.63**	2440	12	5.0	0.6	<0.1	<0.1	0.2	<2	4.0
20-Jul-21	4117	342	1030	567	7.2	170	12	171	34	33	1.0	**5.82**	3270	17	6.0	<0.5	<0.1	<0.1	0.2	<2	5.5
07-Oct-21	4172	376	1000	455	7.1	180	13	138	27	27	0.9	**5.51**	3040	16	6.0	<0.5	<0.1	<0.1	0.3	<2	-8.5
19-Apr-22	4238	345	1010	479	7.3	170	11	149	26	27	0.8	**6.07**	3330	18	6.0	<0.5	<0.1	<0.1	0.3	<20	-3.9
15-Jul-22	4318	323	1080	505	7.7	170	15	147	34	32	0.8	**6.24**	4050	22	6.0	<0.5	<0.1	<0.1	0.3	<2	0.9
11-Oct-22	4388	326	1030	430	7.4	180	14	133	24	30	0.8	**5.55**	3000	23	7.0	0.5	<0.1	<0.1	0.3	<2	-7.9
17-Apr-23	4440	314	1030	626	7.4	165	12	144	65	27	1.0	**6.45**	2850	30	5.9	3.1	<0.1	<0.1	0.3	**3**	11.2
17-Jul-23	4495	321	1140	557	7.5	153	11	136	53	25	0.8	**6.42**	3180	80	5.7	1.8	0.1	<0.1	0.2	**3**	3.2
10-Oct-23	4566	330	1070	632	7.4	158	13	145	66	32	1.0	**5.74**	3270	59	6.3	<0.2	<0.1	<0.1	0.3	**2**	4.3
16-Apr-24	4603	331	1090	514	7.26	165	12	134	28.4	29	0.8	**6.39**	3510	37	6.4	0.7	<0.2	<0.2	0.25	1	
15-Jul-24	4673	329	801	478	7.48	150	10.8	148	29.1	29	0.9	**6.18**	3370	36	5.7	1.4	0.1	<0.1	0.25	1	6.0
10-Oct-24	2067123	293	1110	535	7.55	145	9.8	138	27.4	30	1.0	**5.67**	3220	36	6	1.3	0.1	<0.1	0.27	**1.5**	7.2
TOTAL SAMPLES		112	111	112	112	112	97	97	97	96	96	110	90	108	112	112	112	111	112	112	
AVERAGE 2024		318	1000	509	7.43	153	11	140	28.3	29	0.9	6.080	3367	36	6.0	1.1	<0.2	<0.1	0.26	1.17	

all Concentrations mg/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**

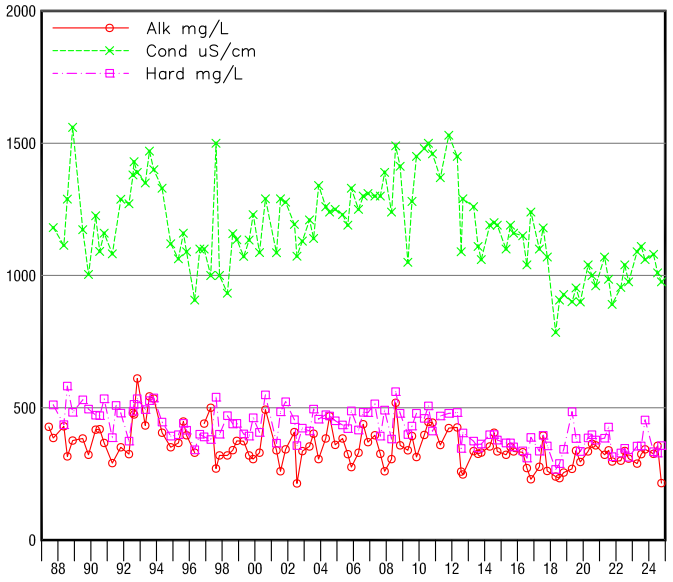
CITY OF ORILLIA
KITCHENER STREET WASTE DIVERSION SITE

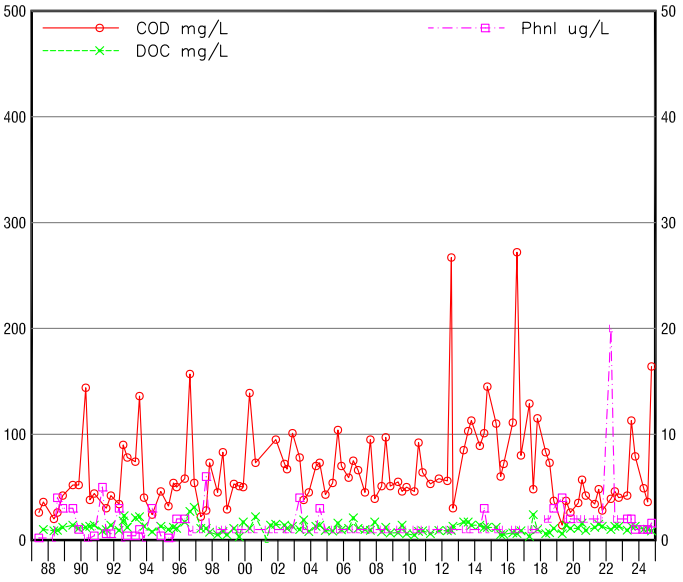
GENERAL CHEMISTRY REPORT

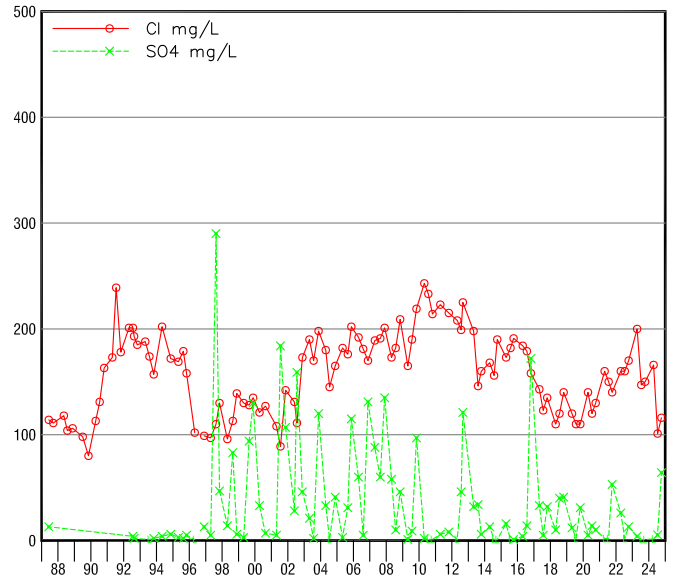
22578520
25 Apr 25

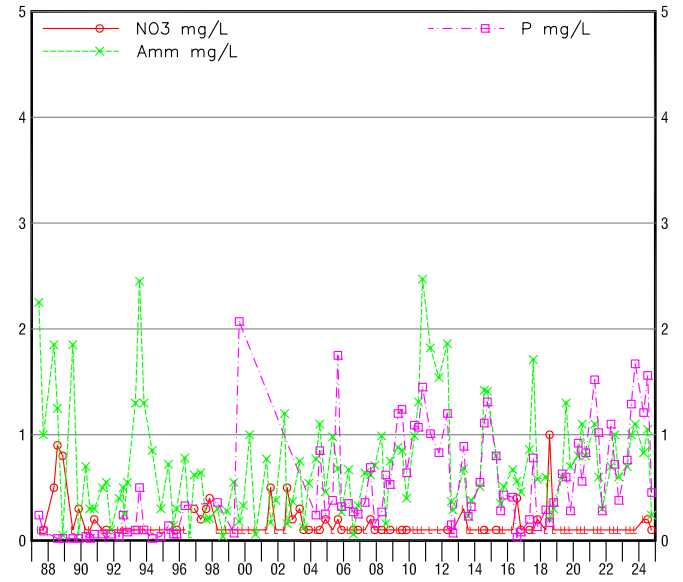
wsp

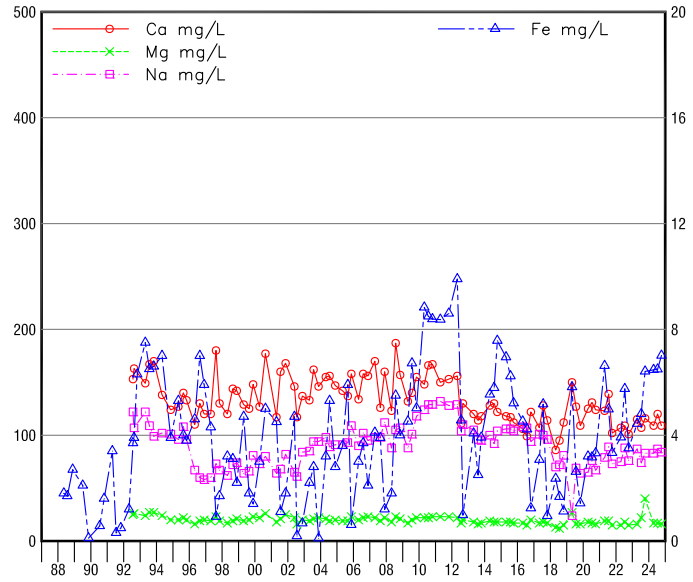
24G025



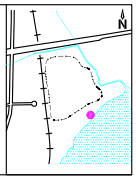








L	Concentration Reported Less Than
G	Concentration Reported Greater Than
A	Concentration Determined Anomalous
	Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

BH22-IIR

FORMERLY 22-II
CONVERTED May 19

PEAT

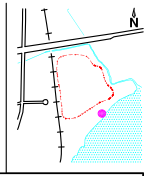
22578520 25 Apr 25	wsp	24G026

BH22-IIR

PEAT

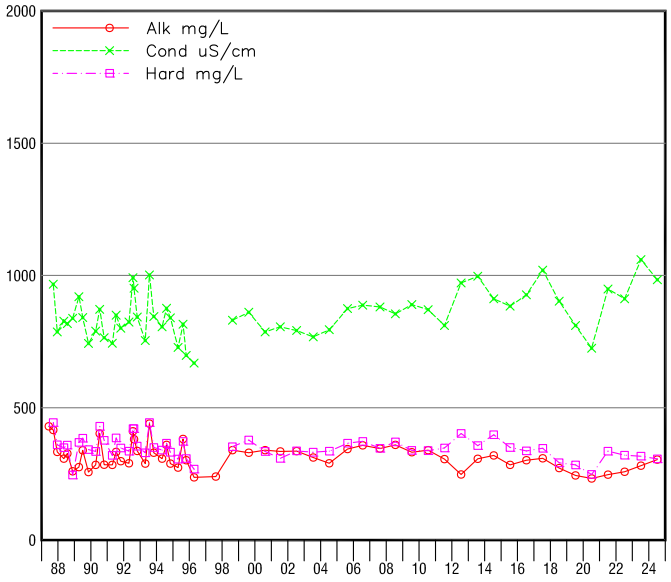
OBSERVATION WELL

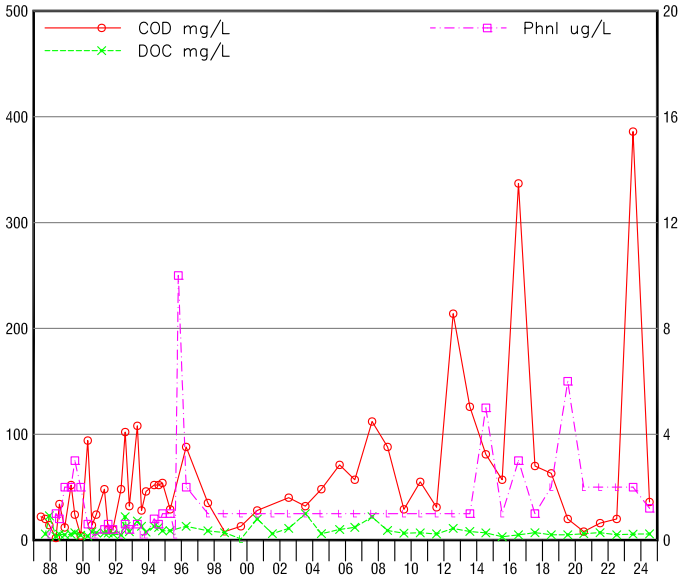
FORMERLY BH22-II
CONVERTED May 19

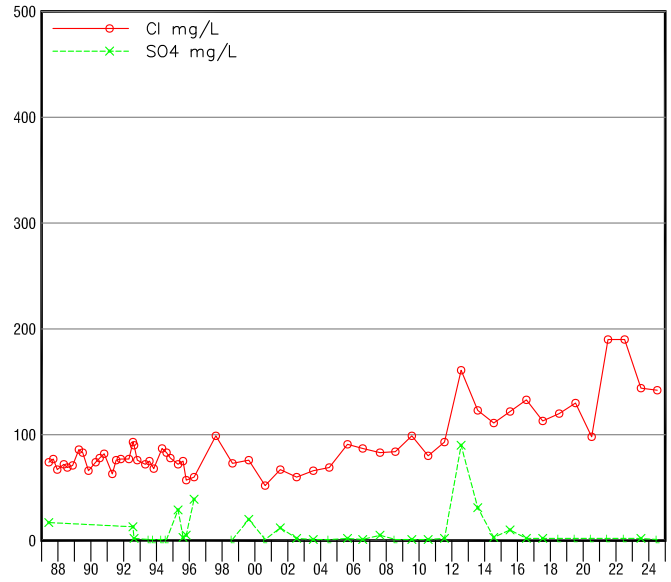


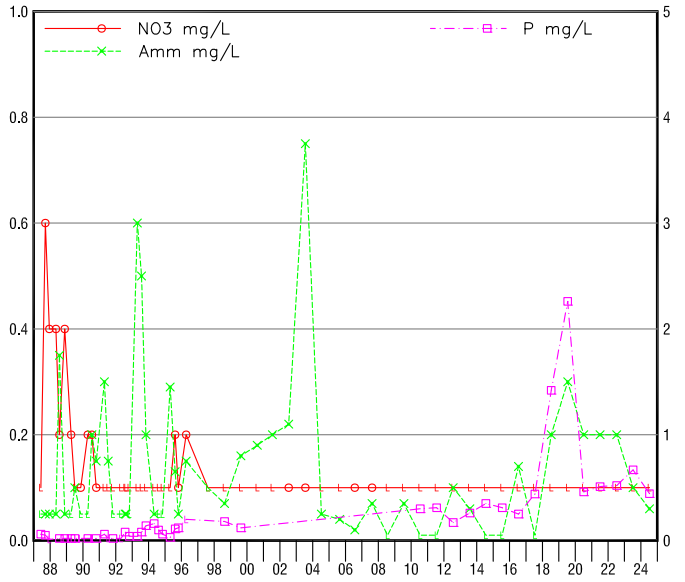
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
21-Apr-15	3001	322	1100	367	7.5	173	16	118	18	106	5.3	**6.95**	478	110	12	2.8	0.1	<0.1	0.8	<1	3.2
29-Jul-15	3064	352	1190	367	7.5	182	<1	117	18	106	2.5	**6.23**	447	60	5.1	1.8	<0.1	<0.1	0.35	<1	0.3
07-Oct-15	3118	335	1160	352	7.5	191	1	112	17	104	3.6	**5.21**	408	72	5.4	1.8	<0.1	<0.1	0.51	<1	-1.2
26-Apr-16	3189	332	1150	337	7.6	184	4	106	17	108	3.6	**4.52**	372	111	6.8	1.6	<0.1	<0.1	0.67	<1	-0.9
28-Jul-16	3231	272	1040	310	7.7	179	14	99	15	107	2.2	**4.22**	432	272	6.2	2.1	0.4	0.5	0.56	<1	1.2
25-Oct-16	3317	230	1240	388	7.7	158	172	122	20	94	4.9	**1.24**	394	80	8.8	1.7	0.1	<0.1	0.46	<1	-2.5
02-May-17	3356	277	1100	336	7.5	143	33	107	17	101	5.1	**3.07**	389	129	3.5	2.3	0.1	<0.1	0.86	<1	5.4
26-Jul-17	3424	395	1180	396	7.7	123	5	128	18	100	6.5	**5.17**	469	48	24	3.6	<0.1	<0.1	1.71	<1	5.1
25-Oct-17	3498	261	1070	356	7.5	135	32	114	17	96	5.9	**0.95**	330	115	10	1.3	0.2	<0.1	0.58	<1	8.4
30-Apr-18	3549	240	785	267	7.3	110	10	86	13	70	4.3	**2.36**	314	83	6.0	0.9	<0.1	<0.1	0.60	<2	3.2
23-Jul-18	3606	234	907	289	7.3	120	40	95	12	72	4.2	**1.67**	201	73	7.0	0.7	1.0	<0.1	0.2	<2	0.4
24-Oct-18	3673	255	928	343	7.4	140	41	112	15	81	3.9	**1.12**	324	37	11	1.0	<0.1	<0.1	0.3	**3**	3.0
30-Apr-19	3725	269	901	485	8.4	120	12	150	27	24	0.9	**5.82**	2670	14	6.0	0.9	<0.1	<0.1	0.60	**4**	10.1
26-Jul-19	3781	338	953	384	7.4	110	<2	127	16	69	6.1	**2.62**	365	37	14	1.8	<0.1	<0.1	1.3	<2	5.5
30-Oct-19	3851	295	900	335	7.2	110	31	109	16	64	3.4	**1.43**	357	26	11	1.4	<0.1	<0.1	0.7	**2**	0.4
20-Apr-20	3887	335	1040	386	7.8	140	5	125	18	65	3.7	**3.20**	413	35	11	1.8	<0.1	<0.1	0.8	<2	0.3
15-Jul-20	3945	364	1000	398	7.3	120	14	131	17	76	4.0	**3.16**	391	57	16	2.0	<0.1	<0.1	1.1	<2	2.6
06-Oct-20	3989	358	961	378	7.8	130	10	124	16	67	3.5	**3.32**	421	42	9.0	1.4	<0.1	<0.1	0.8	<2	-1.5
22-Apr-21	4061	322	1070	385	7.7	160	<2	123	19	79	3.9	**6.62**	505	34	12	2.2	<0.1	<0.1	1.1	<2	3.1
20-Jul-21	4118	339	986	427	7.3	150	<2	139	19	89	3.6	**4.98**	450	48	15	1.6	<0.1	<0.1	0.6	<2	8.0
07-Oct-21	4173	297	891	315	6.9	140	53	102	15	73	3.2	**3.33**	364	28	13	0.6	<0.1	<0.1	0.3	<2	-5.5
19-Apr-22	4239	300	955	329	7.5	160	26	107	15	75	3.2	**3.92**	385	39	10	1.1	<0.1	<0.1	0.7	<20	-4.4
15-Jul-22	4319	337	1040	347	7.7	160	<2	109	18	88	3.7	**5.75**	454	46	13	1.6	<0.1	<0.1	1.0	<2	-0.5
11-Oct-22	4389	308	976	313	7.4	170	13	101	15	76	3.5	**3.51**	357	40	13	1.0	<0.1	<0.1	0.6	<2	-6.7
17-Apr-23	4441	289	1090	355	7.5	200	4	115	16	87	3.9	**4.43**	406	42	9.3	5.7	<0.1	<0.1	0.7	**2**	-1.6
17-Jul-23	4496	325	1110	356	7.6	147	<1	107	22	74	3.9	**4.80**	398	113	13	3.8	<0.1	<0.1	1.0	**2**	1.8
10-Oct-23	4567	343	1060	454	7.3	150	<1	116	40	83	4.0	**6.41**	400	79	13	1.4	<0.1	<0.1	1.1	1	5.5
16-Apr-24	4604	326	1080	334	7.25	166	<1.5	109	17.0	83	4.0	**6.47**	475	49	10.1	1.7	<0.2	<0.2	0.83	1	2.9
15-Jul-24	4674	356	1010	329	7.38	101	5.4	120	16.9	87	4.1	**6.49**	411	36	10.3	3.6	0.2	<0.1	1.05	1	12.5
10-Oct-24	2067124	215	976	357	7.66	116	64.2	109	16.2	84	2.6	**7.01**	437	164	8.6	2.3	0.1	<0.1	0.24	**1.6**	13.2
TOTAL SAMPLES		108	108	109	108	109	94	95	95	95	95	107	88	106	109	110	109	110	110	108	
AVERAGE 2024		299	1022	340	7.43	128	23.2	113	16.7	85	3.6	6.657	441	83	9.7	2.5	<0.2	<0.1	0.71	1.20	

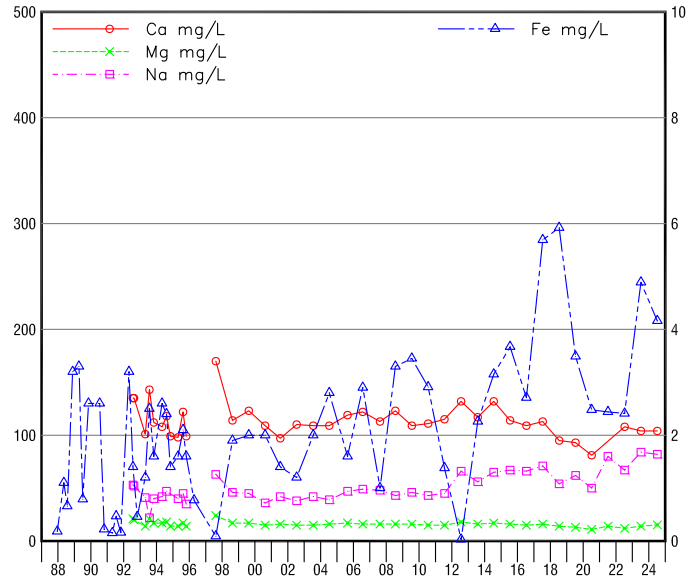
all Concentrations mg/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**



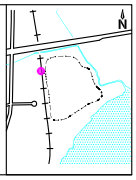








L	Concentration Reported Less Than
G	Concentration Reported Greater Than
A	Concentration Determined Anomalous
	Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

BH23

PEAT

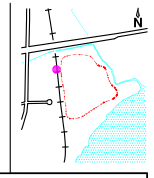
Screen 219.7 - 218.2 masl

22578520 25 Apr 25	wsp	24G027

BH23

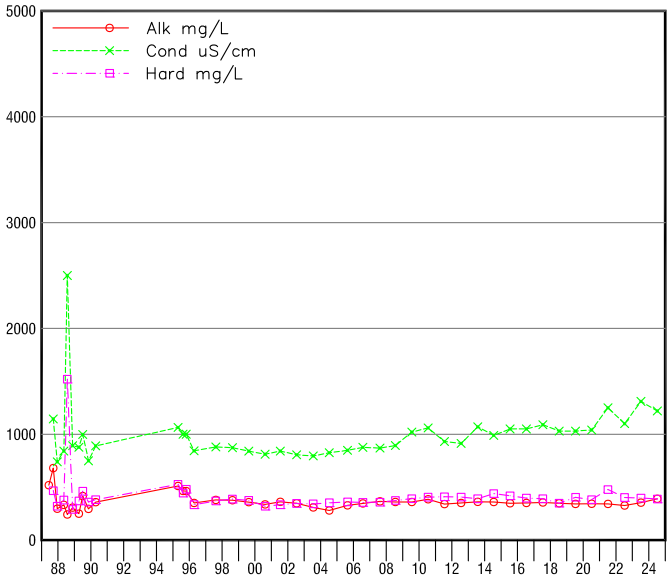
PEAT

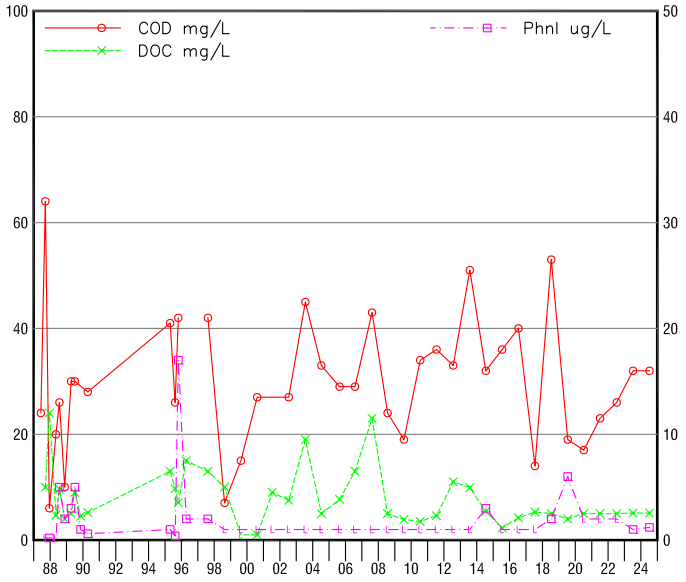
OBSERVATION WELL
Screen 219.7 - 218.2 masl

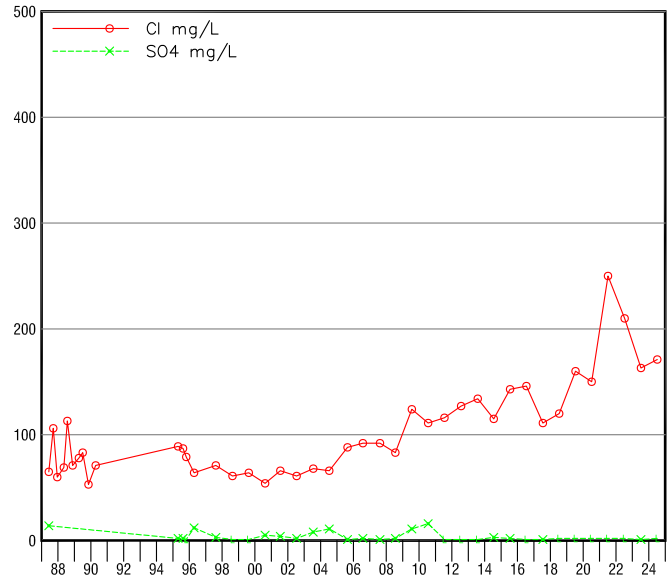


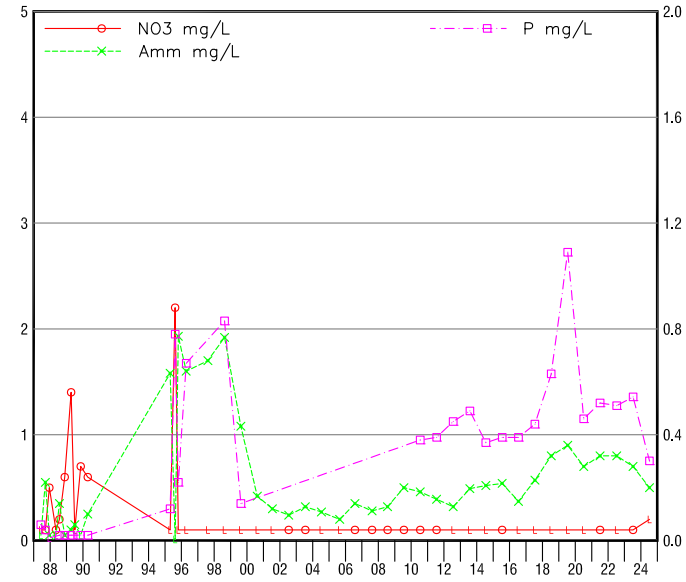
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
25-Oct-95	100727	302	698	308	7.9	57	5	99	14	35	4.5	**1.6**	402			0.6	0.1	<0.1	0.05	**10**	0.6
17-Apr-96	100728	237	669	268	7.6	60	39	*89*	*13*	*95*	*4.0*	**0.77**	220	88	13	0.2	0.2	<0.1	0.15	**2**	14.8
13-Aug-97	100729	240	*1200*	*520*	7.2	99	*320*	170	24	63	6.0	0.09	100	35	8.7	1.0	<0.1	<0.1	<0.10	<1	-3.2
19-Aug-98	100730	340	831	353	6.6	73	<1	114	17	46	5.3	**1.9**	670	<8	7.0	0.7	<0.1	<0.1	0.07	<1	2.6
17-Aug-99	100731	330	861	378	7.1	76	20	123	17	45	4.0	**2.0**	569	13	<1.0	0.6	<0.1	<0.1	0.16	<1	3.4
16-Aug-00	100732	340	787	335	7.2	52	<1	109	15	36	4.0	**2.0**	464	28	20	1.0	<0.1	<0.1	0.18	<1	1.0
18-Jul-01	100733	335	806	309	7.2	67	12	97	16	42	3.0	**1.4**	679		6.0	0.8	<0.1	<0.1	0.20	<1	-4.2
17-Jul-02	100734	336	792	337	7.3	60	2	110	15	38	3.3	**1.2**	478	40	11	0.7	0.1	<0.1	0.22	<1	0.4
22-Jul-03	102529	312	768	332	7.6	66	1	109	15	42	3.9	**2.0**	710	32	25	1.7	0.1	<0.1	0.75	<1	3.6
14-Jul-04	1217	290	795	336	7.1	69	<1	109	16	39	2.6	**2.8**	740	48	6.0	1.3	<0.1	<0.1	0.05	<1	5.4
24-Aug-05	58243	344	875	366	8.3	91	2	119	17	47	3.9	**1.6**	449	71	10	1.9	<0.1	<0.1	0.04	<1	0.3
28-Jul-06	67283	358	888	373	7.1	87	1	122	16	49	3.3	**2.9**	603	57	12	1.2	0.1	<0.1	0.02	<1	0.5
16-Aug-07	78163	346	881	347	7.6	83	5	113	16	48	4.2	**1.00**	511	112	22	2.9	0.1	<0.1	0.07	<1	-0.9
24-Jul-08	87243	360	855	371	7.3	84	<1	123	16	43	3.9	**3.30**	761	88	9.0	1.7	<0.1	<0.1	<0.01	<1	0.4
23-Jul-09	B09-225	332	890	339	7.1	99	1	109	16	46	3.0	**3.45**	936	29	6.5	1.1	<0.1	<0.1	0.07	<1	-2.6
22-Jul-10	2090	340	871	338	7.6	80	1	111	15	43	3.8	**2.91**	1690	55	6.8	0.9	<0.1	<0.1	<0.01	<1	-0.7
22-Jul-11	2253	306	811	348	7.4	93	2	115	15	45	3.5	**1.38**	1080	31	5.8	0.9	<0.1	<0.1	<0.01	<1	2.2
25-Jul-12	2454	248	972	403	8.0	161	90	132	18	66	3.4	0.03	363	214	11	1.0	<0.1	<0.1	0.10	<1	-1.5
31-Jul-13	2633	307	997	357	7.5	123	31	117	16	56	2.5	**2.26**	1310	126	8.1	0.8	<0.1	<0.1	0.06	1	-2.5
21-Jul-14	2844	320	912	398	7.6	111	3	132	17	65	2.6	**3.15**	1780	81	6.8	1.3	<0.1	<0.1	<0.01	**5**	7.3
20-Jul-15	3044	284	884	350	7.6	122	10	114	16	67	2.4	**3.67**	1130	57	3.1	1.5	<0.1	<0.1	<0.01	<1	4.5
17-Jul-16	3211	302	927	337	7.8	133	2	109	15	66	3.2	**2.71**	1470	337	4.9	0.9	<0.1	<0.1	0.14	**3**	-0.5
17-Jul-17	3404	309	1020	347	7.8	113	2	113	16	71	2.1	**5.69**	2710	70	7.0	0.8	<0.1	<0.1	<0.01	1	5.0
16-Jul-18	3584	272	903	292	7.8	120	<2	95	14	54	1.9	**5.92**	1040	63	5.0	0.6	<0.1	<0.1	0.2	<2	-1.8
17-Jul-19	3759	244	811	284	7.4	130	<2	93	13	62	2.6	**3.49**	774	20	5.0	<0.5	<0.1	<0.1	0.3	**6**	0.5
08-Jul-20	3923	233	725	248	7.5	98	<2	81	11	50	2.1	**2.48**	516	8	6.0	<0.5	<0.1	<0.1	0.2	<2	-0.8
07-Jul-21	4119	247	949	336	7.8	190	<2		14	80	2.7	**2.44**	653	16	7.0	0.8	<0.1	<0.1	0.2	<2	0.7
12-Jul-22	4297	258	912	321	7.4	190	<2	108	12	67	2.0	**2.41**	520	20	5.0	1.0	<0.1	<0.1	0.2	<2	-5.2
11-Jul-23	4474	281	1060	317	7.7	144	2	104	14	84	2.0	**4.89**	882	386	5.6	6.3	<0.1	<0.1	0.1	**2**	7.2
10-Jul-24	4652	304	984	307	7.89	142	<1	104	15.3	82	2.4	**4.16**	614	36	5.8	0.4	<0.1	<0.1	0.06	**1.2**	5.6
TOTAL SAMPLES		56	54	54	55	56	38	38	39	38	38	52	32	52	53	56	56	55	56	53	
AVERAGE 2024																					

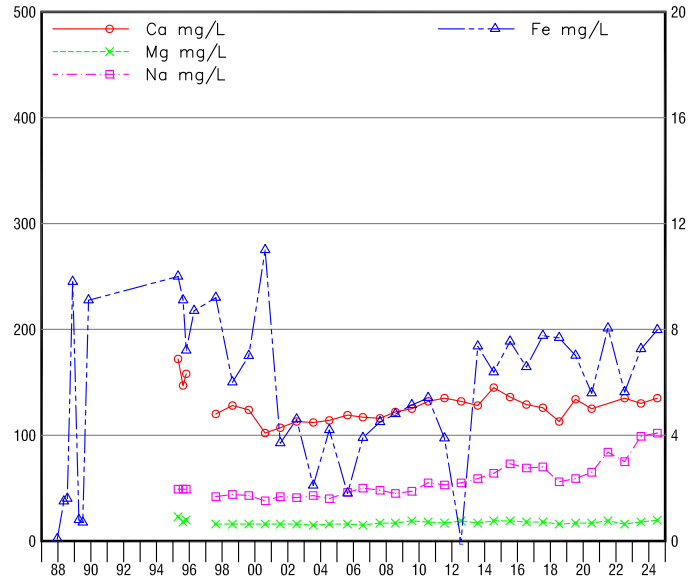
all Concentrations mg/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**









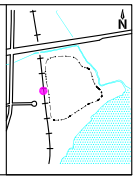


L Concentration Reported Less Than

G Concentration Reported Greater Than

A Concentration Determined Anomalous

Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

BH24R

FORMERLY 24
CONVERTED Apr 95

PEAT

Screen 220.9 - 220.1 masl

22578520
25 Apr 25

wsp

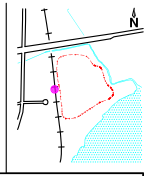
24G028

BH24R

PEAT

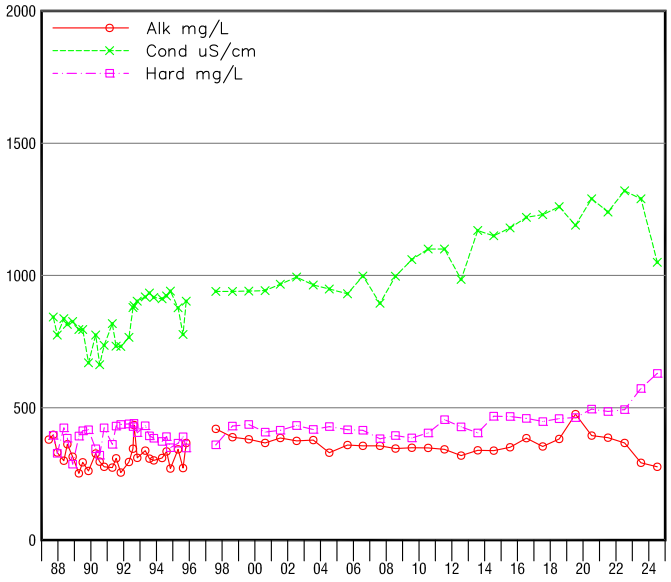
OBSERVATION WELL
Screen 220.9 - 220.1 masl

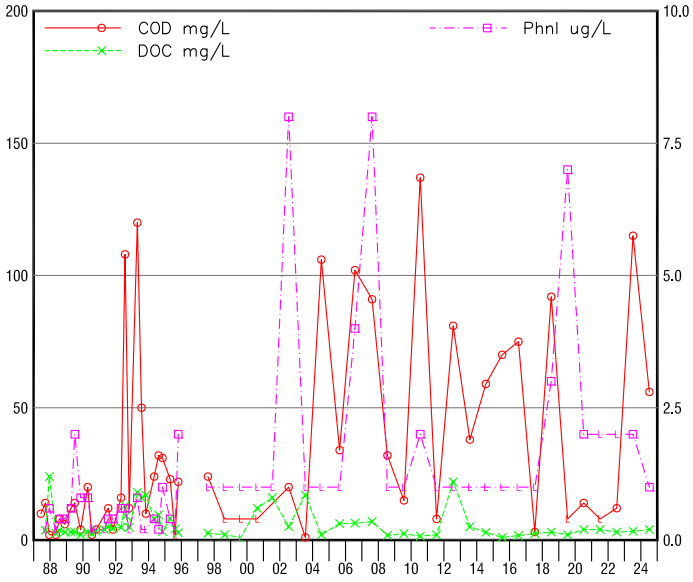
FORMERLY BH24
CONVERTED Apr 95

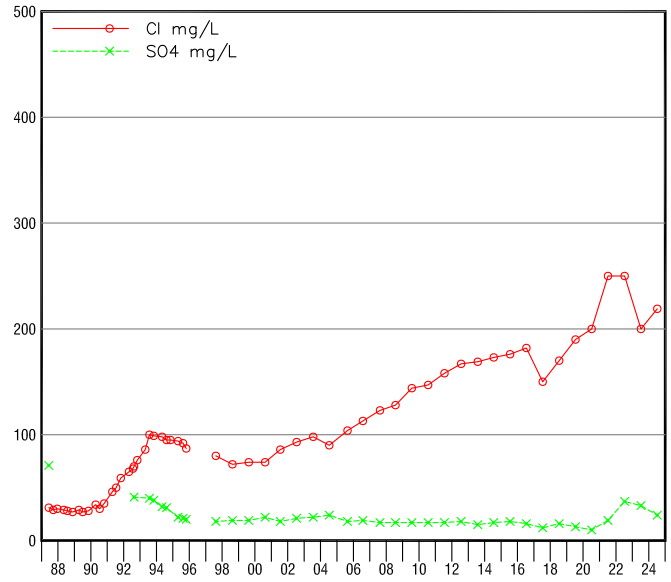


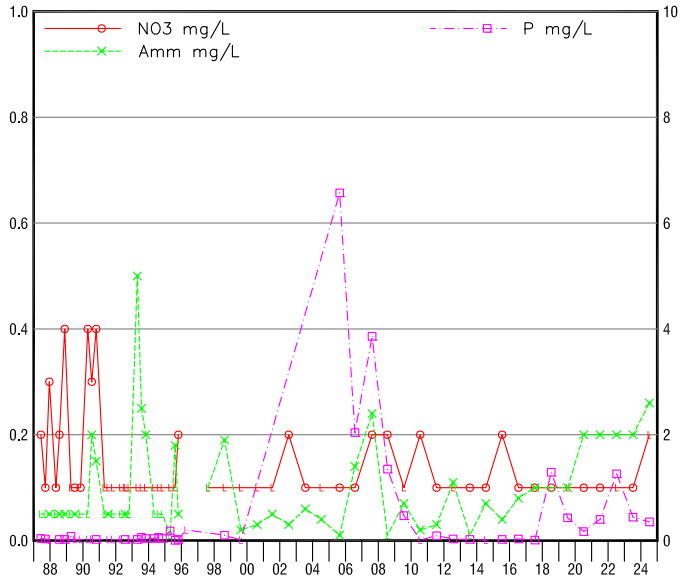
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
25-Oct-95	100747	463	1000	480	8.1	79	<1	158	20	49	7.3	**7.2**	3480	42	7.1	3.0	<0.1	<0.1	1.93	**17**	3.4
17-Apr-96	100748	350	843	334	7.6	64	12	*123*	*16*	*106*	*6.1*	**8.7**	2900	*239*	15	2.6	<0.1	<0.1	1.60	**2**	16.6
13-Aug-97	100749	380	880	370	7.5	71	3	120	16	42	7.3	**9.2**	3000	42	13	2.8	<0.1	<0.1	1.70	**2**	0.6
19-Aug-98	100750	377	873	387	6.6	61	<1	128	16	44	11	**6.0**	2650	7	10	2.3	<0.1	<0.1	1.92	<1	3.9
17-Aug-99	100751	358	840	375	7.0	64	<1	124	16	43	6.0	**7.0**	2350	15	<1.0	1.6	<0.1	<0.1	1.08	<1	3.8
16-Aug-00	100752	337	811	320	7.1	54	5	102	16	38	5.0	**11.0**	2350	27	1.0	1.0	<0.1	<0.1	0.42	<1	1.5
18-Jul-01	100753	361	841	334	7.2	66	4	107	16	42	4.0	**3.7**	2420		9.0	1.0	<0.1	<0.1	0.30	<1	−2.3
17-Jul-02	100754	348	806	346	7.0	61	2	113	16	41	4.1	**4.6**	1660	27	7.5	0.8	0.1	<0.1	0.24	<1	1.7
22-Jul-03	102530	309	795	342	7.6	68	8	112	15	43	4.6	**2.1**	970	45	19	0.9	0.1	<0.1	0.32	<1	3.7
14-Jul-04	1218	280	825	352	7.1	66	11	114	16	40	4.3	**4.2**	1240	33	5.0	0.8	<0.1	<0.1	0.27	<1	8.0
24-Aug-05	58243	328	848	361	8.3	88	1	119	16	46	4.4	**1.8**	901	29	7.7	0.8	<0.1	<0.1	0.20	<1	2.1
31-Jul-06	67313	346	876	355	7.2	92	2	117	15	50	4.5	**3.9**	1090	29	13	0.8	0.1	<0.1	0.35	<1	−0.2
16-Aug-07	78163	366	869	358	7.5	92	1	116	17	48	4.4	**4.50**	1100	43	23	0.9	0.1	<0.1	0.28	<1	−1.9
24-Jul-08	87243	360	893	374	7.3	83	2	122	17	45	5.6	**4.80**	1170	24	5.0	1.0	0.1	<0.1	0.32	<1	1.0
23-Jul-09	B09-226	360	1020	391	7.1	124	11	125	19	47	4.3	**5.14**	1280	19	3.9	1.1	0.1	<0.1	0.50	<1	−3.6
22-Jul-10	2091	385	1060	405	7.6	111	16	132	18	55	4.3	**5.41**	1300	34	3.5	1.0	0.1	<0.1	0.46	<1	−1.7
21-Jul-11	2254	340	931	409	7.4	116	<1	135	17	53	4.2	**3.88**	1340	36	4.6	1.0	0.1	<0.1	0.39	<1	3.1
25-Jul-12	2455	350	913	406	8.0	127	<1	132	19	55	4.5	<0.01	1380	33	11	2.1	<0.1	<0.1	0.32	<1	0.5
31-Jul-13	2634	361	1070	390	7.5	134	<1	128	17	59	4.1	**7.36**	1400	51	9.9	1.3	<0.1	<0.1	0.49	<1	−1.1
21-Jul-14	2845	359	989	439	7.6	115	3	145	19	64	4.3	**6.38**	1500	32	5.4	1.2	<0.1	<0.1	0.52	**3**	6.6
20-Jul-15	3045	347	1050	418	7.6	143	2	136	19	73	3.9	**7.54**	1830	36	2.3	2.4	0.1	<0.1	0.54	<1	4.0
17-Jul-16	3212	350	1050	396	7.8	146	<1	129	18	69	3.8	**6.58**	1550	40	4.2	1.3	<0.1	<0.1	0.37	<1	0.7
18-Jul-17	3405	355	1090	390	7.8	111	1	126	18	70	3.6	**7.76**	1600	14	5.3	1.5	<0.1	<0.1	0.57	<1	4.6
16-Jul-18	3585	347	1030	348	7.8	120	<2	113	16	56	3.9	**7.68**	1410	53	5.0	2.2	<0.1	<0.1	0.8	**2**	−2.5
17-Jul-19	3760	342	1030	404	7.4	160	<2	134	17	59	3.8	**7.01**	1660	19	4.0	<0.5	<0.1	<0.1	0.9	**6**	−1.3
08-Jul-20	3924	343	1040	382	7.4	150	<2	125	17	65	3.3	**5.59**	1350	17	5.0	0.7	<0.1	<0.1	0.7	<2	−1.2
07-Jul-21	4120	342	1250	477	7.4	250	<2		19	84	4.3	**8.04**	1710	23	5.0	0.6	0.1	<0.1	0.8	<2	−0.1
12-Jul-22	4298	326	1100	402	7.4	210	<2	135	16	75	3.3	**5.63**	1330	26	5.0	1.8	<0.1	<0.1	0.8	<2	−3.4
11-Jul-23	4475	354	1310	397	7.5	163	1	130	18	99	3.8	**7.26**	1340	32	5.1	2.5	0.1	<0.1	0.7	1	8.8
10-Jul-24	4653	390	1220	388	7.86	171	<2	135	19.6	102	3.6	**7.98**	1620	32	5.1	0.7	<0.2	<0.2	0.5	**1.2**	6.6
TOTAL SAMPLES		41	40	40	40	41	33	30	31	31	31	38	32	38	40	41	41	41	41	40	
AVERAGE 2024																					

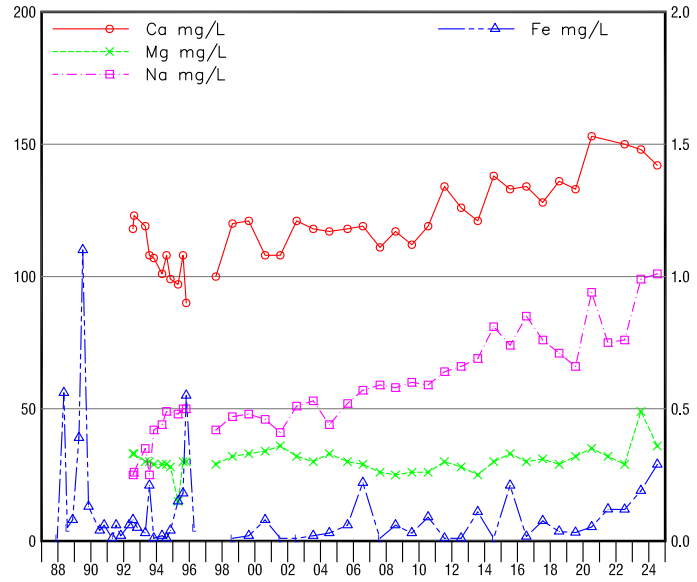
all Concentrations mg/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**









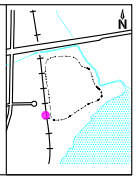


L Concentration Reported Less Than

G Concentration Reported Greater Than

A Concentration Determined Anomalous

Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

BH25

SAND AQUIFER

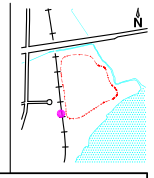
Screen 221.4 - 220.6 masl

22578520 25 Apr 25	wsp	24G029

BH25

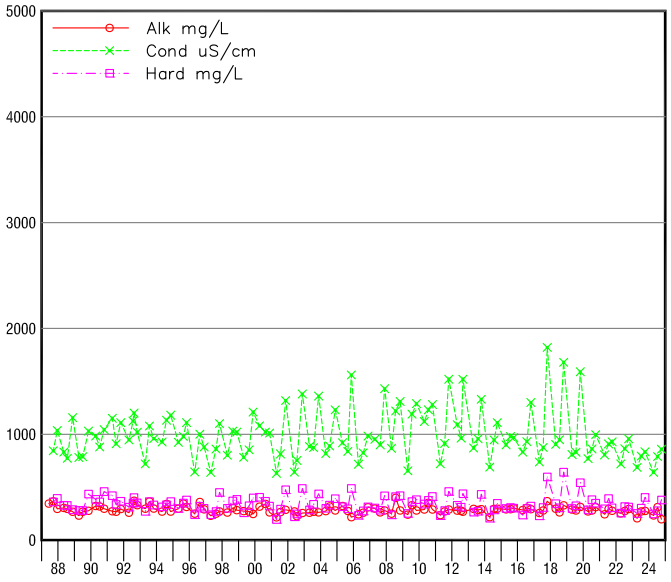
SAND AQUIFER

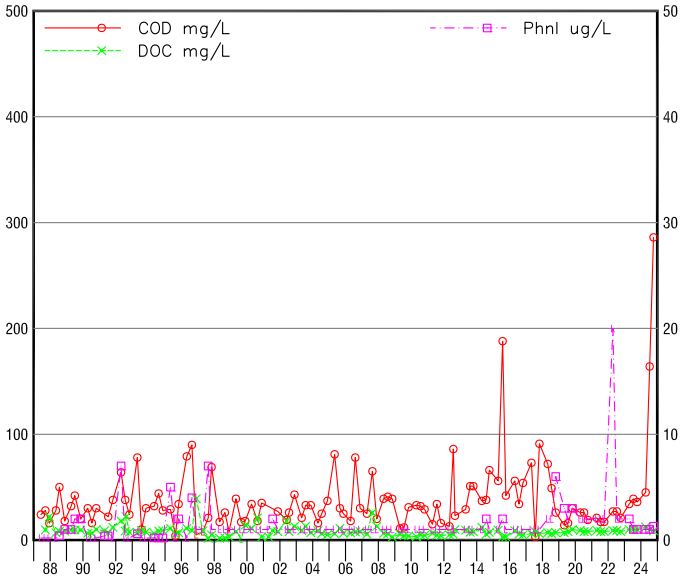
OBSERVATION WELL
Screen 221.4 - 220.6 masl

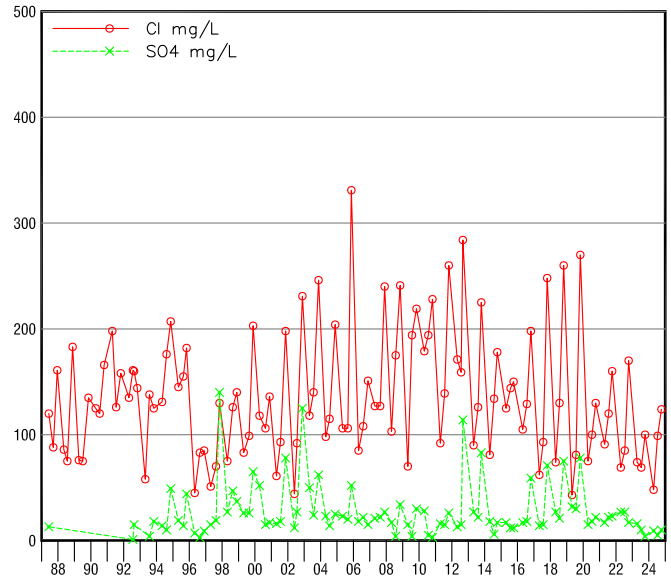


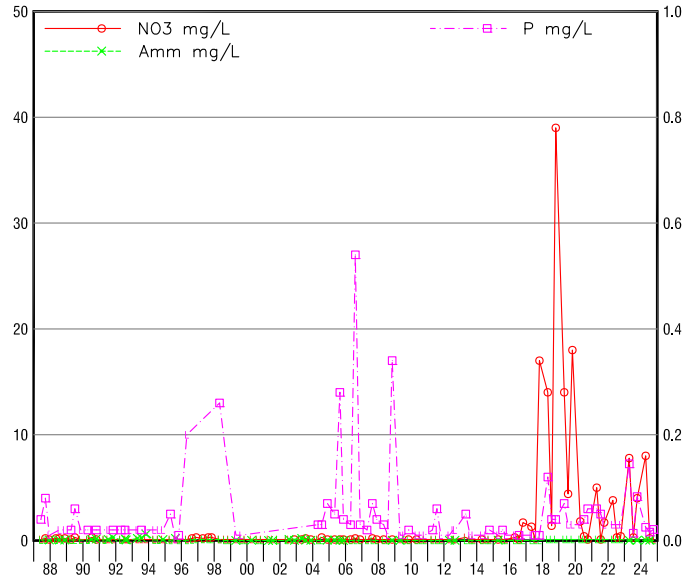
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
16-Aug-95	100781	272	777	390	8.1	92	21	108	30	50	2.9	0.18	157	<2	4.2	0.3	<0.1	<0.1	0.18	<0.2	8.7
25-Oct-95	100782	367	903	348	7.9	87	20	90	30	50	2.9	**0.55**	102	22	2.8	0.2	0.2	<0.1	0.05	**2**	-5.1
13-Aug-97	100784	420	940	360	7.5	80	18	100	29	42	4.9	*3.6*	120	24	2.6	0.5	<0.1	<0.1	<0.10	<1	-7.6
19-Aug-98	100785	389	940	431	6.7	72	19	120	32	47	5.4	<0.01	23	<8	2.0	0.2	<0.1	<0.1	0.19	<1	2.8
17-Aug-99	100786	381	941	437	7.2	74	19	121	33	48	3.0	0.02	59	<8	<1.0	0.2	<0.1	<0.1	0.02	<1	3.9
16-Aug-00	100787	367	943	408	7.3	74	22	108	34	46	3.0	0.08	47	<8	12	0.3	<0.1	<0.1	0.03	<1	1.9
18-Jul-01	100788	386	967	415	7.3	86	18	108	36	41	3.0	<0.01	24		16	0.4	<0.1	<0.1	0.05	<1	-1.4
17-Jul-02	100789	375	994	433	7.0	93	21	121	32	51	3.2	<0.01	53	20	5.1	2.3	0.2	<0.1	0.03	**8**	1.9
23-Jul-03	102531	378	964	418	7.9	98	22	118	30	53	3.3	0.02	55	1	17	0.7	0.1	<0.1	0.06	<1	-0.1
14-Jul-04	1219	330	949	429	7.6	90	24	117	33	44	2.9	0.03	224	106	2.0	1.1	<0.1	<0.1	0.04	<1	4.5
24-Aug-05	58243	359	931	417	8.1	104	18	118	30	52	3.4	0.06	177	34	6.2	2.5	0.1	<0.1	0.01	<1	1.0
31-Jul-06	67313	356	998	415	7.5	113	19	119	29	57	4.3	0.22	264	102	6.4	1.0	0.1	<0.1	0.14	**4**	1.1
16-Aug-07	78163	356	895	383	7.7	123	17	111	26	59	3.9	<0.01	230	91	7.0	1.9	0.2	0.2	0.24	**8**	-2.8
25-Jul-08	87253	346	997	395	7.3	128	17	117	25	58	3.4	0.06	234	32	1.8	0.7	0.2	<0.1	<0.01	<1	-1.3
24-Jul-09	B09-227	349	1060	386	7.1	144	17	112	26	60	3.6	0.03	207	15	2.4	0.4	<0.1	<0.1	0.07	<1	-4.4
23-Jul-10	2092	348	1100	405	7.8	147	17	119	26	59	3.5	0.09	187	137	1.5	0.2	0.2	<0.1	0.02	**2**	-3.3
22-Jul-11	2255	343	1100	455	7.5	158	17	134	30	64	3.4	0.01	83	8	2.0	0.3	0.1	<0.1	0.03	<1	1.5
25-Jul-12	2456	319	985	428	8.1	167	18	126	28	66	4.0	0.01	334	81	22	2.3	<0.1	<0.1	0.11	<1	0.5
31-Jul-13	2635	339	1170	405	7.7	169	15	121	25	69	3.5	0.11	304	38	5.1	0.4	0.1	<0.1	<0.01	<1	-2.5
21-Jul-14	2846	338	1150	468	7.7	173	17	138	30	81	3.8	<0.01	174	59	2.9	0.4	0.1	<0.1	0.07	<1	3.9
21-Jul-15	3046	351	1180	467	7.8	176	18	133	33	74	3.4	0.21	140	70	1.0	1.3	0.2	<0.1	0.04	<1	1.2
17-Jul-16	3213	385	1220	460	7.8	182	16	134	30	85	3.2	0.017	173	75	1.7	0.9	0.1	<0.1	0.08	<1	-0.9
17-Jul-17	3406	354	1230	448	7.9	150	12	128	31	76	3.0	0.076	216	3	2.5	0.5	0.1	<0.1	0.1	<1	3.2
17-Jul-18	3586	382	1260	459	7.9	170	16	136	29	71	3.8	0.036	297	92	3.0	<0.5	0.1	<0.1	<0.1	**3**	-1.2
16-Jul-19	3761	476	1190	463	7.3	190	13	133	32	66	3.3	0.032	153	<8	2.0	<0.5	<0.1	<0.1	0.1	**7**	-10.6
09-Jul-20	3925	395	1290	495	7.3	200	10	153	35	94	3.9	0.053	320	14	4.0	<0.5	0.1	<0.1	0.2	**2**	3.5
07-Jul-21	4121	387	1240	486	7.9	250	19		32	75	3.5	0.12	214	<8	4.0	0.6	0.1	<0.1	0.2	<2	-7.4
12-Jul-22	4299	367	1320	493	7.6	250	37	150	29	76	3.3	0.119	267	12	3.0	1.0	<0.1	<0.1	0.2	<2	-6.6
11-Jul-23	4476	292	1290	573	7.5	200	33	148	49	99	3.6	0.190	342	115	3.3	1.9	0.1	<0.1	0.2	**2**	13.6
10-Jul-24	4654	277	1050	630	7.83	219	24	142	35.9	101	4.3	0.289	313	56	4	0.5	<0.2	<0.2	0.26	1	13.2
TOTAL SAMPLES		55	54	54	54	55	37	38	39	38	38	50	31	52	54	54	55	55	55	53	
AVERAGE 2024																					

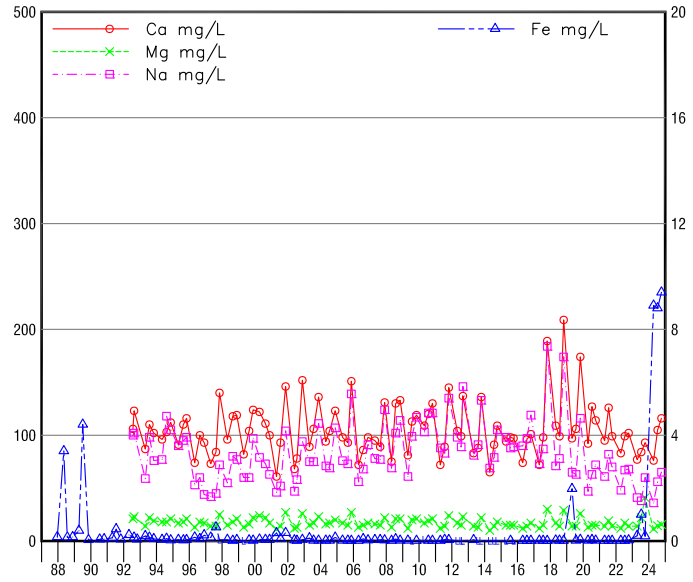
all Concentrations mg/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**



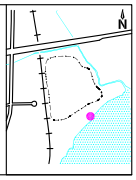








L	Concentration Reported Less Than
G	Concentration Reported Greater Than
A	Concentration Determined Anomalous
	Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

BH26

SAND AQUIFER

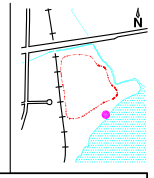
Screen 220.6 - 216.1 masl

22578520 25 Apr 25	wsp	24G030

BH26

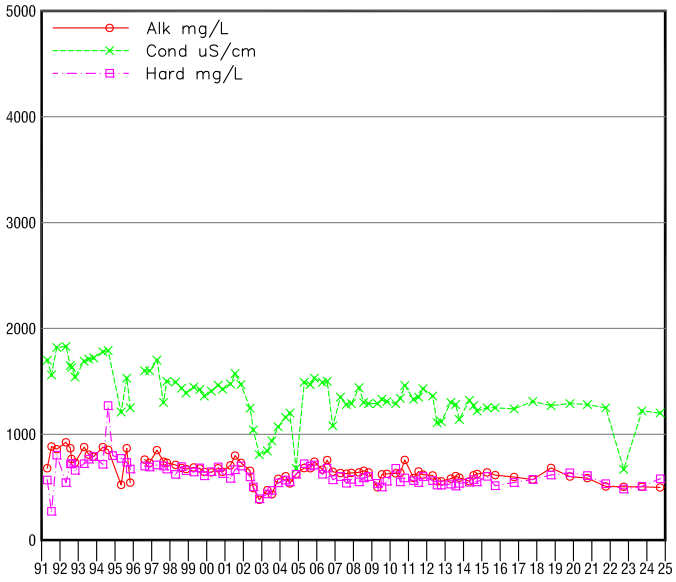
SAND AQUIFER

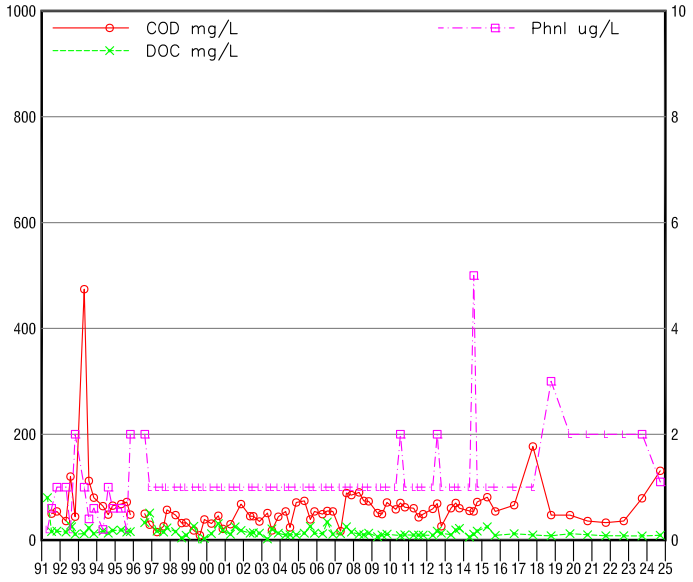
OBSERVATION WELL
Screen 220.6 - 216.1 masl

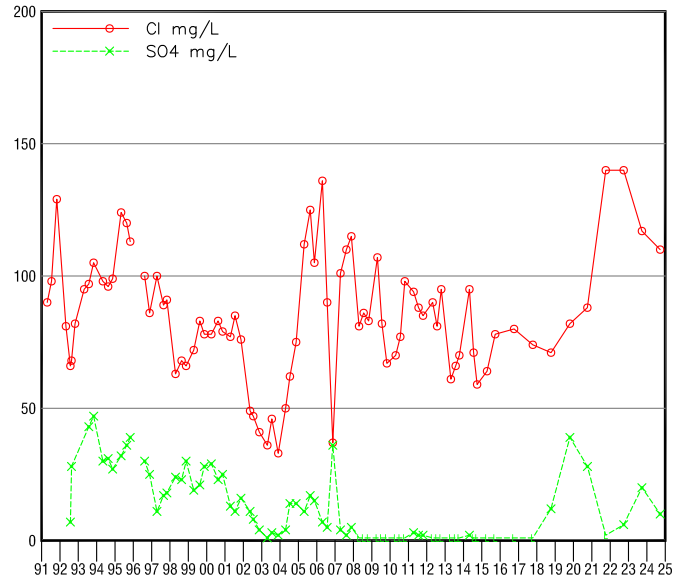


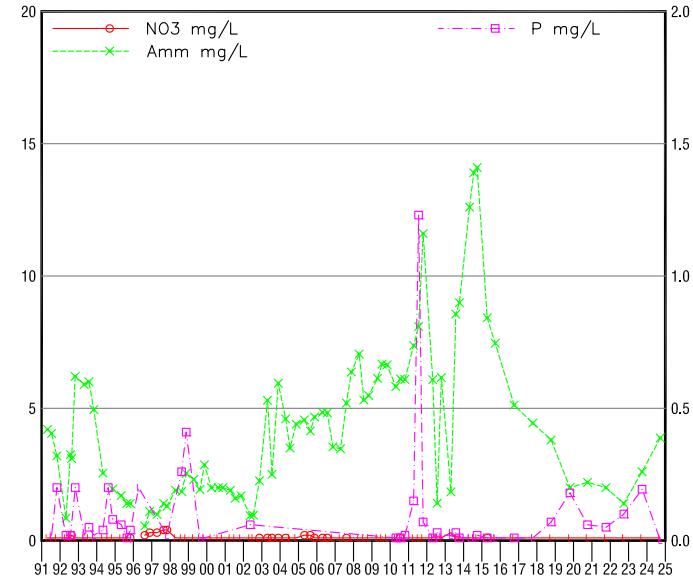
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
21-Apr-15	3002	290	899	298	7.6	125	17	94	15	98	2.2	<0.01	<1	56	9.4	0.7	0.1	<0.1	0.03	<1	2.8
29-Jul-15	3065	291	978	307	7.7	144	12	98	15	88	2.3	0.01	11	188	2.8	1.5	<0.1	<0.1	<0.01	**2**	-0.1
08-Oct-15	3119	300	969	302	7.7	150	12	97	15	89	2.3	<0.01	4	42	3.0	0.6	<0.1	<0.1	<0.01	<1	-1.8
26-Apr-16	3190	284	832	237	7.7	105	17	74	12	90	1.6	0.01	4	56	8.9	0.7	0.3	<0.1	<0.01	<1	-1.6
29-Jul-16	3232	306	930	298	7.9	129	18	96	14	97	1.8	0.008	20	34	5.6	0.5	0.1	<0.1	<0.01	<1	0.8
25-Oct-16	3318	292	1300	321	7.9	198	59	101	17	119	1.6	0.013	<1	54	4.8	0.5	1.7	<0.1	<0.01	<1	-4.1
02-May-17	3357	255	738	229	7.8	62	14	72	12	73	0.8	0.015	26	73	6.2	1.0	1.3	<0.1	<0.01	<1	4.3
26-Jul-17	3425	279	875	308	7.9	93	15	98	15	87	1.5	0.012	37	3	7.9	0.6	<0.1	<0.1	<0.01	<1	8.3
25-Oct-17	3499	368	1820	596	7.8	248	71	189	30	184	2.5	0.005	1	91	6.0	0.8	17	<0.1	<0.01	<1	8.2
30-Apr-18	3550	296	904	344	7.3	74	27	109	17	71	1.0	0.022	1	72	7.0	<0.5	14	<0.1	<0.1	<2	2.3
23-Jul-18	3607	262	948	305	7.9	130	21	99	14	78	1.4	0.019	13	49	6.0	1.7	1.4	<0.1	<0.1	<2	1.0
24-Oct-18	3674	328	1680	641	7.8	260	75	209	29	174	2.3	0.012	6	26	7.0	4.2	39	<0.1	<0.1	**6**	5.9
30-Apr-19	3726	289	808	298	8.6	43	32	97	14	65	5.0	**1.97**	299	14	7.0	0.8	14	<0.1	<0.1	**3**	2.8
26-Jul-19	3782	279	830	324	7.6	81	30	106	14	63	1.1	0.019	2.3	16	8.0	<0.5	4.4	0.1	<0.1	<2	2.8
30-Oct-19	3852	313	1590	542	7.7	270	78	174	26	116	1.5	0.048	78	30	10	0.8	18	<0.1	<0.1	**3**	-2.4
20-Apr-20	3888	271	769	285	7.9	75	15	92	13	47	0.9	0.016	2.7	26	9.0	0.7	1.8	<0.1	<0.1	<2	-0.8
15-Jul-20	3946	279	861	381	7.5	100	18	127	15	63	1.2	0.041	2.5	26	8.0	0.8	0.4	<0.1	<0.1	<2	8.8
06-Oct-20	3990	312	996	348	7.9	130	22	114	15	72	1.4	0.016	0.6	19	8.0	<0.5	0.1	<0.1	<0.1	<2	-0.8
22-Apr-21	4062	243	805	296	7.8	91	17	95	14	61	1.4	0.012	4.0	21	9.0	<0.5	5.0	<0.1	<0.1	<2	4.4
20-Jul-21	4122	295	908	392	7.8	120	22	126	19	82	1.9	0.013	7.7	17	8.0	<0.5	0.1	<0.1	<0.1	<2	7.7
07-Oct-21	4174	276	928	304	7.5	160	23	99	14	70	1.6	0.013	2.5	17	8.0	<0.5	1.7	<0.1	<0.1	<2	-7.4
19-Apr-22	4240	252	719	255	7.7	69	27	83	12	48	1.9	0.012	1.8	27	9.0	<0.5	3.8	<0.1	<0.1	<20	-3.3
15-Jul-22	4320	275	863	316	7.9	85	27	99	17	67	1.9	0.011	3.5	27	9.0	<0.5	0.3	<0.1	<0.1	<2	5.1
11-Oct-22	4390	293	957	312	7.8	170	17	102	14	68	2.3	0.029	4.4	21	8.0	<0.5	0.4	<0.1	<0.1	<2	-8.4
17-Apr-23	4442	205	686	251	7.6	74	16	77	14	41	2.8	0.200	6	34	10	3.1	7.8	<0.1	0.02	**2**	-1.5
17-Jul-23	4497	270	793	301	7.6	69	10	84	22	38	3.6	**1.00**	10	39	10	2.9	0.3	<0.1	<0.01	1	6.6
10-Oct-23	4568	275	834	403	7.5	100	4	93	41	60	5.1	0.180	5	36	9.9	0.5	4.0	<0.1	0.02	1	7.6
16-Apr-24	4605	233	640	247	7.2	48	9.3	76	11.4	36	4.1	**8.90**	6.8	45	12.3	0.7	8.0	<0.1	0.03	1	7.6
15-Jul-24	4675	312	789	277	7.58	99	5.1	105	14.3	56	6.7	**8.80**	27	164	9.8	1.7	0.2	<0.1	0.03	1	6.0
10-Oct-24	2067125	196	859	379	7.75	124	10	116	15.5	65	4.6	**9.40**	64	286	8.7	1.2	<0.1	<0.1	<0.01	**1.3**	18.1
TOTAL SAMPLES		114	113	113	113	114	98	98	98	98	98	110	90	110	113	113	114	114	114	113	
AVERAGE 2024		247	763	301	7.51	90	8	99	13.7	52	5.1	9.033	33	165	10.3	1.2	2.7	<0.1	0.02	1.10	

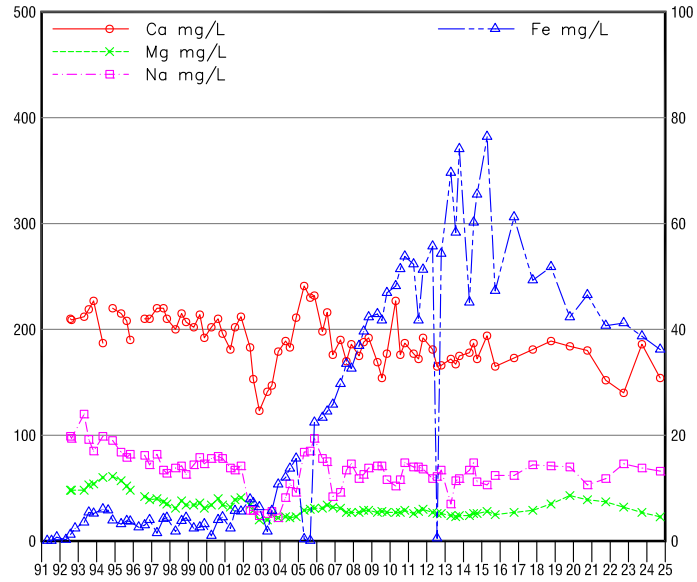
all Concentrations mg/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**



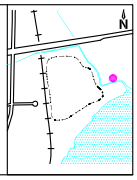








L	Concentration Reported Less Than
G	Concentration Reported Greater Than
A	Concentration Determined Anomalous
	Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

BH28-I

SAND AQUIFER

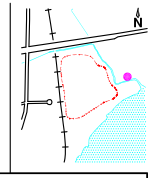
Screen 218.0 - 216.5 masl

22578520 25 Apr 25	wsp	24G031

BH28-I

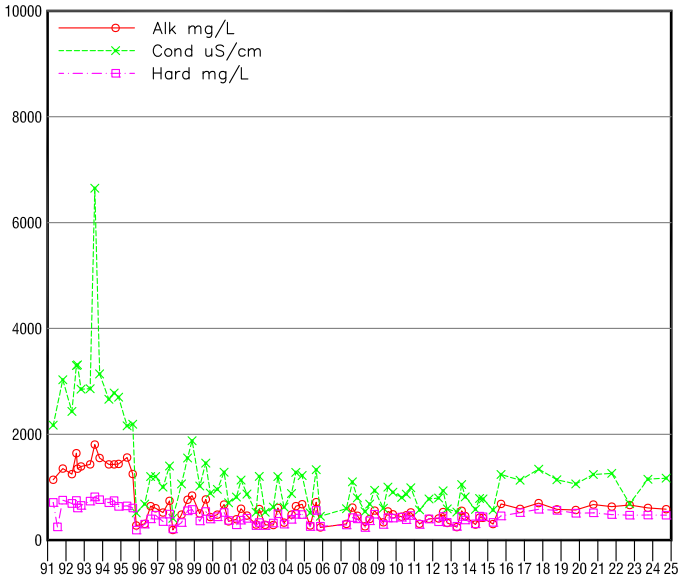
SAND AQUIFER

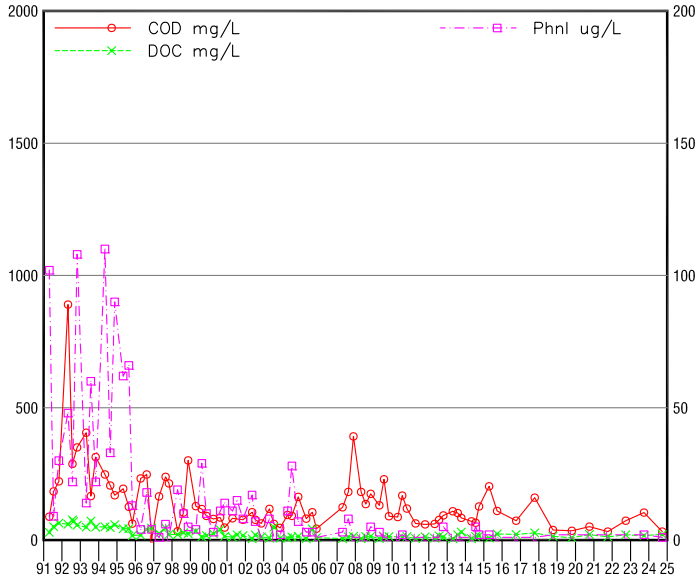
OBSERVATION WELL
Screen 218.0 - 216.5 masl

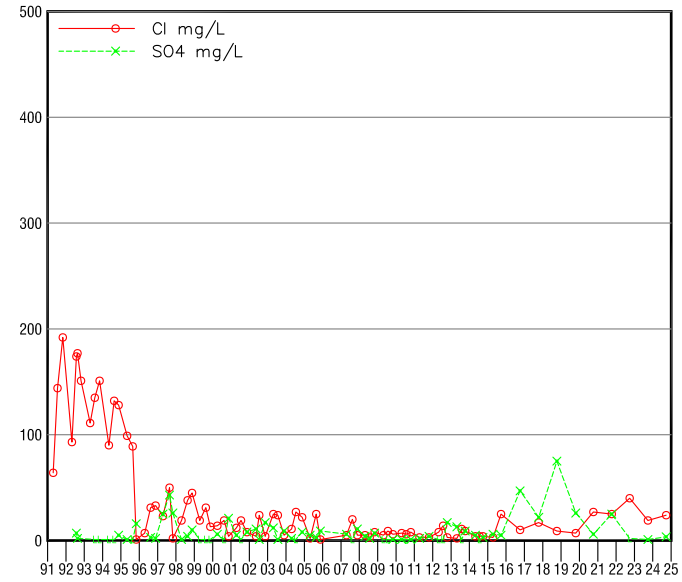


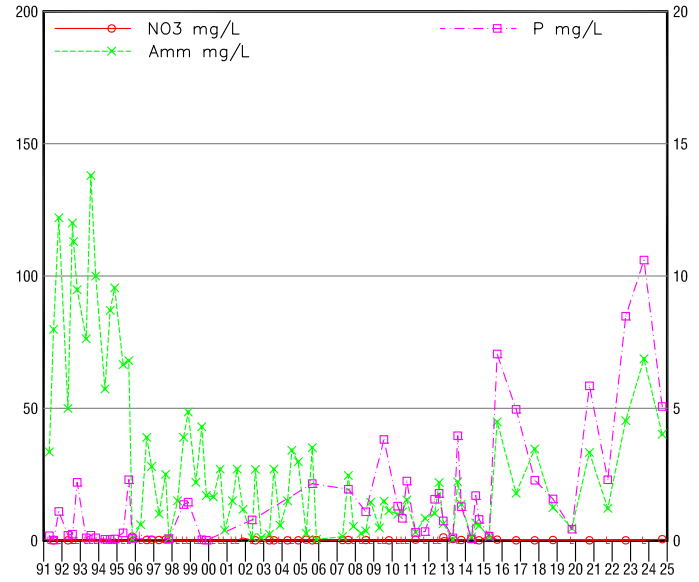
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
31-Oct-08	810313	639	1290	600	6.7	83	<1	192	29	69	13	**42.3**	1900	73	13	6.3	<0.1	<0.1	5.48	<1	6.5
23-Apr-09	0911681	499	1290	535	6.4	107	<1	169	27	71	13	**42.9**	1620	51	6.2	7.3	<0.1	<0.1	6.13	<1	10.5
22-Jul-09	B09-2222	622	1330	501	6.8	82	<1	154	28	71	12	**41.7**	1550	49	9.6	7.8	<0.1	<0.1	6.67	<1	2.0
30-Oct-09	0934218	626	1310	556	6.8	67	<1	177	27	58	12	**46.9**	1860	71	11	7.3	<0.1	<0.1	6.64	<1	5.4
23-Apr-10	2033	630	1290	678	7.2	70	<1	227	27	52	12	**48.2**	1890	58		6.7	<0.1	<0.1	5.82	<1	11.3
23-Jul-10	2093	635	1340	550	7.3	77	<1	176	27	58	11	**51.4**	1680	70	8.3	6.9	0.1	<0.1	6.11	**2**	3.9
21-Oct-10	2138	758	1460	587	6.8	98	<1	187	29	74	12	**53.8**	1800	62	10	7.8	<0.1	<0.1	6.09	<1	−0.9
13-Apr-11	2215	586	1330	562	7.8	94	3	177	26	70	14	**52.3**	1580	60	9.4	7.8	<0.1	<0.1	7.37	<1	7.5
21-Jul-11	2256	648	1350	544	7.2	88	2	172	28	70	13	**41.7**	1570	43	9.4	11.6	<0.1	<0.1	8.09	<1	2.7
19-Oct-11	2313	619	1430	600	7.1	85	2	192	30	68	14	**51.3**	1610	49	9.4	12.5	<0.1	<0.1	11.6	<1	9.8
27-Apr-12	2380	611	1360	562	7.3	90	<1	181	27	59	13	**55.7**	1640	59	9.0	8.5	<0.1	<0.1	6.08	<1	5.9
25-Jul-12	2457	555	1110	519	7.9	81	<1	165	26	61	13	**0.51**	1730	69	17	7.5	<0.1	<0.1	1.41	**2**	0.4
16-Oct-12	2523	555	1120	520	7.9	95	<1	166	26	67	15	**54.3**	1650	26	13	7.7	<0.1	<0.1	6.16	<1	7.8
25-Apr-13	05955	581	1300	529	7.7	61	<1	172	24	35	15	**69.6**	2040	60	10	8.9	<0.3	<0.3	1.84	<1	6.2
31-Jul-13	2636	604	1280	511	7.3	66	<1	167	23	57	13	**58.3**	1700	70	19	10.3	<0.1	<0.1	8.56	<1	6.1
10-Oct-13	2705	589	1140	536	7.3	70	<1	175	24	59	14	**74.1**	1820	60	22	9.9	<0.1	<0.1	8.99	<1	10.4
30-Apr-14	2785	555	1320	546	7.4	95	2	178	24	67	18	**45.1**	1810	55	5.7	13.8	<0.1	<0.1	12.6	<1	9.6
23-Jul-14	2847	612	1270	572	7.3	71	<1	187	26	74	19	**60.2**	1660	54	11	15.2	<0.1	<0.1	13.9	**5**	12.6
29-Sep-14	2898	624	1220	549	7.5	59	<1	172	26	56	18	**65.5**	1740	72	17	15.4	<0.1	<0.1	14.1	<1	9.1
17-Apr-15	2981	640	1250	602	6.8	64	<1	194	28	53	15	**76.4**	2080	81	25	10.3	0.1	<0.1	8.42	<1	10.5
24-Sep-15	3128	613	1250	514	7.3	78	<1	165	25	62	12	**47.3**	1810	54	8.7	8.0	<0.1	<0.1	7.46	<1	3.6
05-Oct-16	3273	596	1240	544	7.4	80	<1	173	27	62	11	**61.2**	1740	66	12	6.4	<0.1	<0.1	5.12	<1	7.3
12-Oct-17	3451	572	1310	573	7.5	74	<1	181	29	72	13	**49.3**	1900	177	9.5	6.1	<0.1	<0.1	4.44	<1	11.3
10-Oct-18	3617	682	1270	615	7.4	71	12	189	35	71	10	**51.8**	1820	47	8.0	3.7	<0.1	<0.1	3.8	**3**	5.6
21-Oct-19	3805	600	1290	636	7.1	82	39	184	43	70	6.5	**42.3**	1670	47	12	2.0	<0.1	<0.1	2.0	<2	7.6
05-Oct-20	4011	585	1280	609	7.7	88	28	180	39	53	6.8	**46.5**	1670	36	10	1.9	<0.1	<0.1	2.2	<2	5.5
05-Oct-21	4185	507	1250	533	7.4	140	<2	152	37	59	5.6	**40.7**	1520	33	8.0	2.3	<0.1	<0.1	2.0	<2	5.3
27-Sep-22	4343	504	668	482	7.0	140	6	140	32	73	4.4	**41.2**	1550	36	8.0	2.4	<0.1	<0.1	1.4	<2	1.1
26-Sep-23	4520	504	1220	508	7.0	117	20	186	27	69	5.9	**38.7**	1690	79	7.9	3.4	<0.1	<0.1	2.6	**2**	−3.9
23-Sep-24	2061019	497	1200	579	6.84	110	10	154	22.8	66	7.6	**36.2**	1270	131	9.1	6	<0.1	<0.1	3.88	**1.1**	5.0
TOTAL SAMPLES		82	82	83	82	83	77	77	77	77	77	82	70	80	82	82	83	83	82	82	
AVERAGE 2024																					

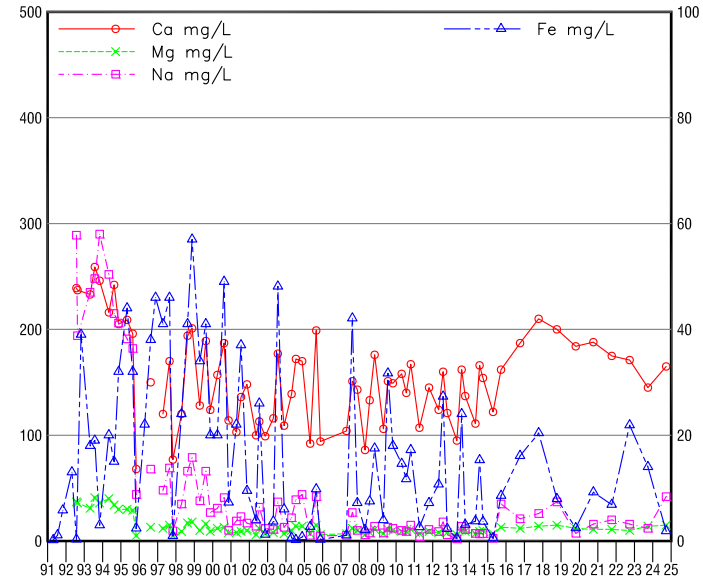
all Concentrations mg/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**



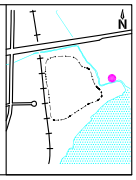








L	Concentration Reported Less Than
G	Concentration Reported Greater Than
A	Concentration Determined Anomalous
	Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

BH28-II

FILL

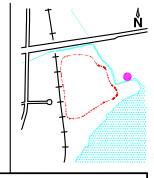
Screen 220.4 - 218.9 masl

22578520 25 Apr 25	wsp	24G032

BH28-II

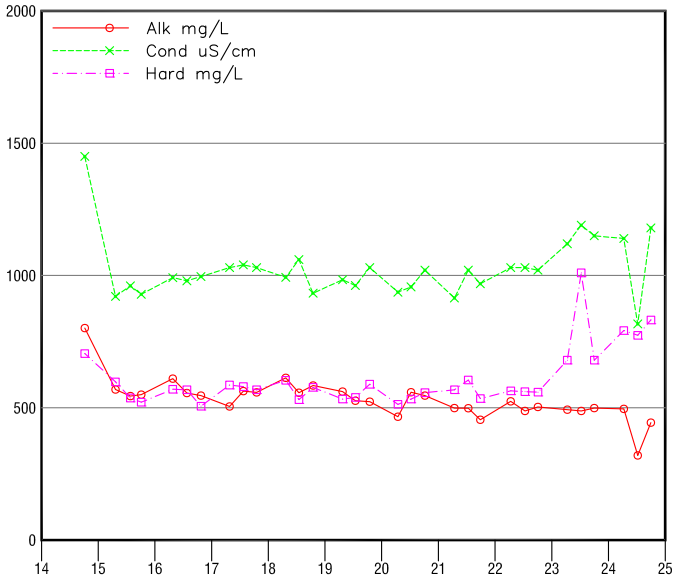
FILL

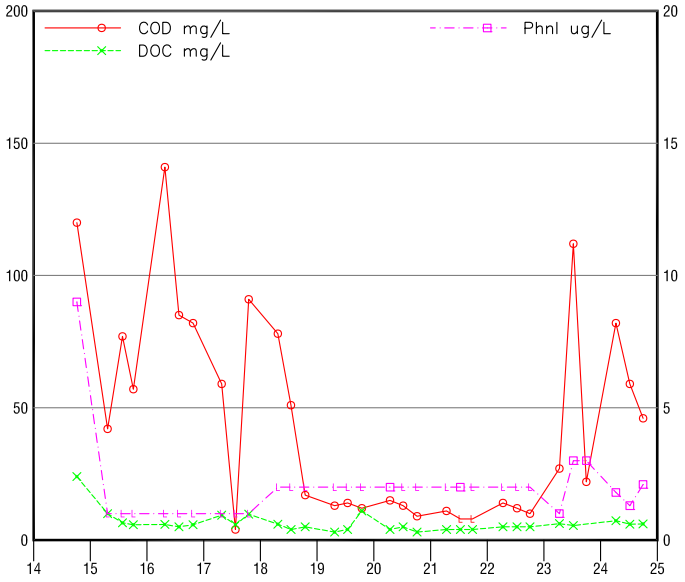
OBSERVATION WELL
Screen 220.4 - 218.9 masl

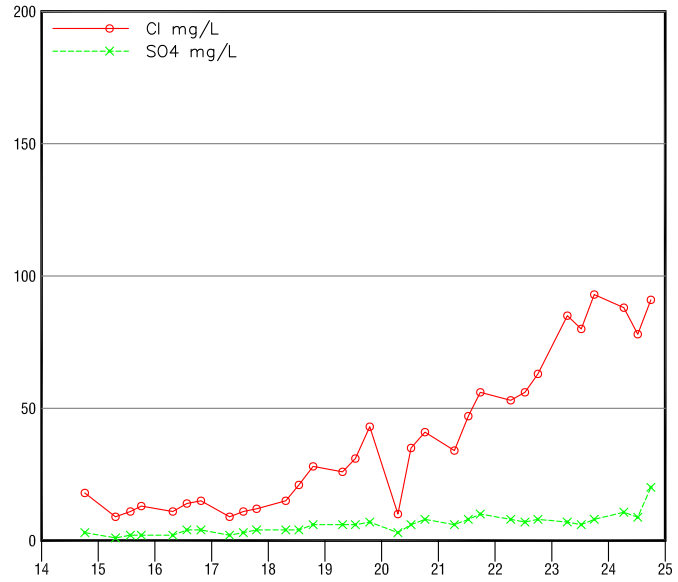


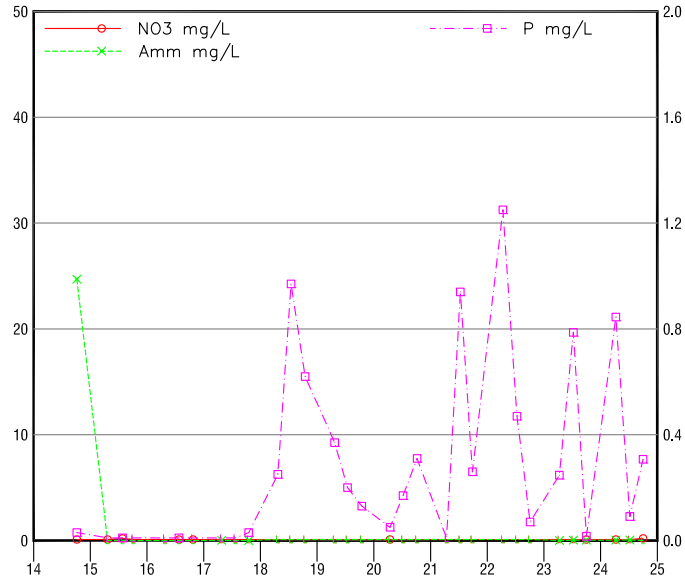
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
25-Jul-08	87253	400	680	364	7.3	3	2	133	8	7.6	6.9	**7.50**	139	136	13	7.1	0.2	0.1	3.65	<1	1.2
31-Oct-08	810313	555	940	488	6.8	8	7	176	11	14	9.5	**17.5**	210	175	14	18.2	<0.1	<0.1	14.5	**5**	3.1
23-Apr-09	0911682	335	601	294	6.6	5	<1	106	7	7.7	6.0	**3.96**	125	131	5.9	9.1	<0.1	<0.1	4.80	**3**	0.0
22-Jul-09	B09-239	540	1000	420	6.7	9	<1	151	11	13	9.5	**31.7**	229	230	12	19.8	<0.1	<0.1	14.9	<1	1.8
30-Oct-09	0934211	487	903	415	7.3	6	1	149	10	12	8.8	**18.0**	205	90	13	15.5	0.1	<0.1	11.3	<1	2.6
23-Apr-10	2034	441	803	432	7.2	7	1	158	9	10	7.7	**14.6**	156	87		12.8	<0.1	<0.1	9.93	<1	7.5
23-Jul-10	2094	468	868	386	7.2	6	<1	140	9	9.0	7.6	**11.7**	297	168	12	11.9	<0.1	<0.1	10.7	**2**	−0.1
21-Oct-10	2139	523	989	465	6.8	8	1	167	11	15	10	**17.2**	261	119	13	20.0	<0.1	<0.1	15.4	<1	5.2
13-Apr-11	2216	309	570	296	7.9	3	2	107	7	4.0	2.5	**2.64**	66	63	5.8	4.8	0.3	<0.1	3.12	<1	1.2
19-Oct-11	2314	402	778	399	7.0	3	4	145	9	11	6.9	**7.19**	109	59	12	8.8	<0.1	<0.1	8.42	<1	7.3
27-Apr-12	2381	407	795	345	7.5	8	<1	124	8	9.0	6.5	**10.7**	151	61	7.0	13.7	<0.1	<0.1	10.3	<1	1.0
25-Jul-12	2458	529	932	444	7.9	14	<1	160	11	18	11	**27.3**	289	76	16	21.3	<0.1	<0.1	21.9	<1	6.5
16-Oct-12	2524	324	590	333	7.7	3	17	121	8	6.0	4.9	**2.31**	118	93	12	7.4	1.2	0.4	6.39	**5**	4.3
25-Apr-13	06033	245	530	260	7.9	2	13	95	6	2.0	2.9	**0.52**	95	109	5.0	2.8	0.6	0.1	0.31	<1	1.6
31-Jul-13	2637	554	1050	446	7.3	11	<1	162	10	14	9.4	**24.0**	332	102	20	23.0	<0.1	<0.1	22.2	<1	3.5
10-Oct-13	2706	453	817	380	7.6	9	9	137	9	11	7.0	**3.08**	127	84	30	15.0	0.2	<0.1	13.7	<1	−1.0
30-Apr-14	2786	292	581	306	7.5	4	5	111	7	7.2	5.2	**3.76**	234	71	5.4	1.9	0.6	<0.1	1.27	<1	5.3
23-Jul-14	2848	424	786	451	7.3	4	<1	166	9	6.8	7.7	**15.3**	309	65	13	8.9	<0.1	<0.1	6.69	**5**	10.3
29-Sep-14	2899	420	776	439	7.5	4	3	154	10	7.1	8.0	**3.66**	383	127	16	6.2	0.1	<0.1	5.62	**2**	5.3
17-Apr-15	2982	301	567	333	7.1	3	6	122	7	2.6	2.3	**0.53**	57	203	7.0	2.1	1.8	<0.1	1.39	**2**	4.5
24-Sep-15	3129	682	1240	456	7.7	25	5	162	13	35	16	**8.56**	294	110	23	53.0	0.3	<0.1	44.9	<1	0.5
05-Oct-16	3274	589	1130	518	7.4	10	47	187	12	21	13	**16.1**	326	73	21	33.0	0.1	<0.1	17.9	<1	1.4
12-Oct-17	3452	698	1340	583	7.6	17	22	210	14	26	15	**20.4**	566	160	27	39.6	0.1	<0.1	34.6	<1	4.7
10-Oct-18	3618	581	1140	562	7.5	9	75	200	15	37	18	**7.96**	429	38	14	17.2	0.2	<0.1	12.5	<2	3.7
21-Oct-19	3806	567	1060	508	7.0	7	26	184	12	7.3	11	**2.44**	137	35	9.0	4.9	<0.1	<0.1	4.7	<2	−3.8
05-Oct-20	4012	672	1240	515	7.8	27	6	188	11	16	14	**9.22**	478	51	21	39.5	0.1	<0.1	33.3	<2	−0.9
05-Oct-21	4186	632	1260	482	7.6	25	25	175	11	20	14	**6.87**	337	32	12	14.4	<0.1	<0.1	12.2	<2	−10.2
27-Sep-22	4344	661	686	469	7.0	40	<2	171	10	16	11	**21.9**	444	73	20	48.4	0.1	<0.1	45.3	<2	0.1
26-Sep-23	4521	608	1150	474	7.2	19	1	145	14	12	10	**14.0**	466	104	17	48.7	<0.1	0.2	68.7	**2**	−3.9
23-Sep-24	2061020	584	1170	470	6.94	24	3.6	165	14.9	42	20	**1.87**	305	32	21.1	36	0.5	<0.2	40.2	1	6.8
TOTAL SAMPLES		79	79	80	79	80	73	73	73	73	73	79	67	78	79	79	80	79	80	79	
AVERAGE 2024																					

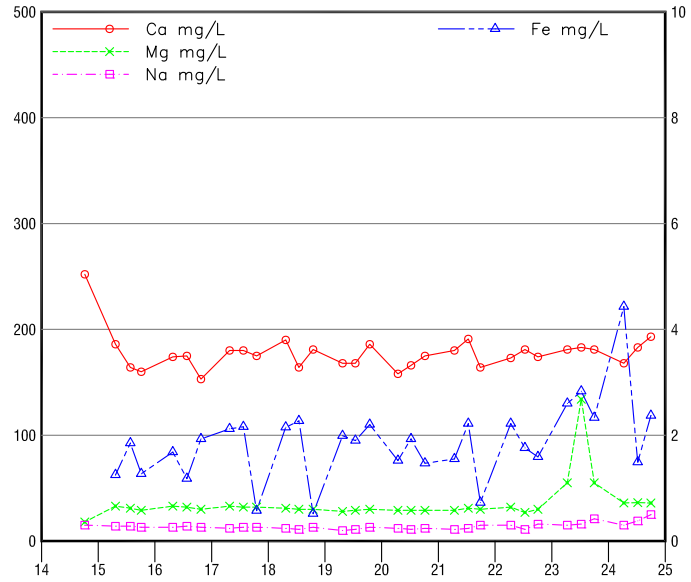
all Concentrations mg/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**



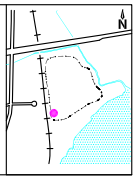








L	Concentration Reported Less Than
G	Concentration Reported Greater Than
A	Concentration Determined Anomalous
	Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

BH29-I

SAND AQUIFER

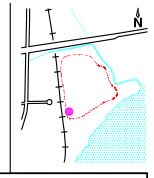
Screen 219.5 - 218.4 masl

22578520 25 Apr 25	wsp	24G033

BH29-I

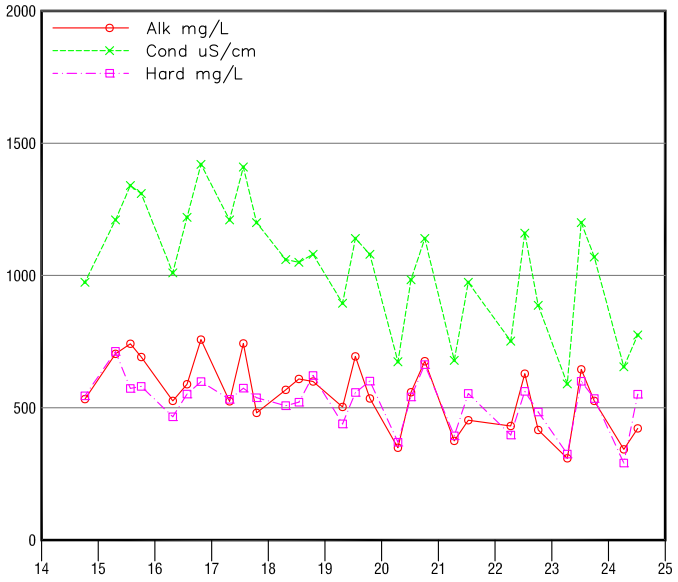
SAND AQUIFER

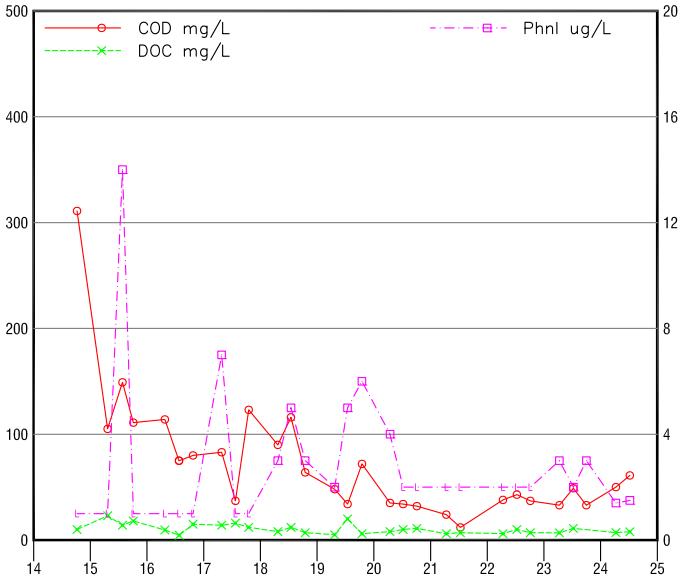
OBSERVATION WELL
Screen 219.5 - 218.4 masl

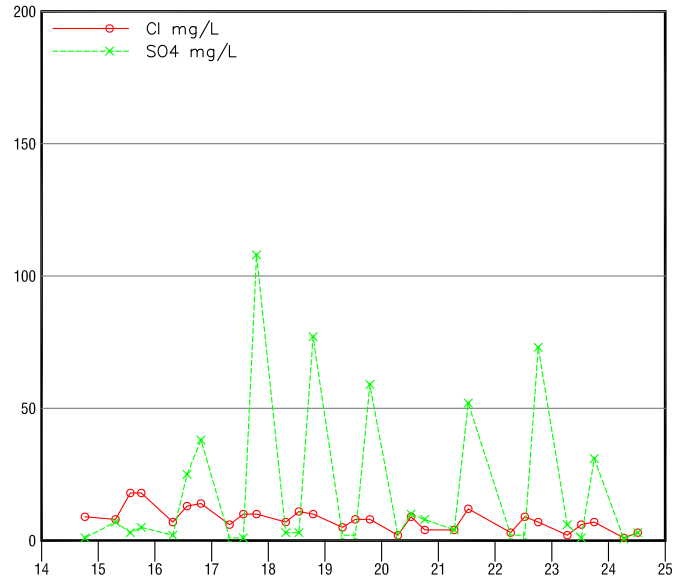


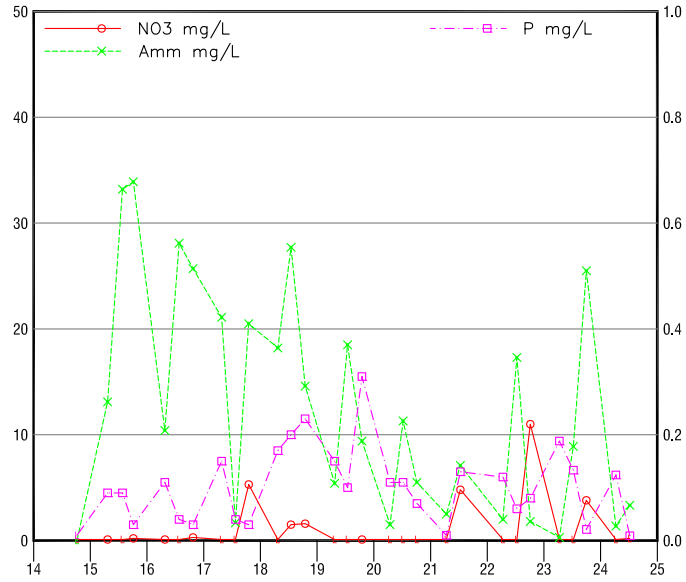
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
22-Apr-15	3003	569	921	598	7.6	9	1	186	33	14	1.2	**1.25**	1330	42	10	0.9	0.1	<0.1	<0.01	<1	4.6
27-Jul-15	3066	544	961	537	7.7	11	2	164	31	14	1.0	**1.85**	936	77	6.5	0.4	0.2	<0.1	<0.01	<1	1.3
05-Oct-15	3120	550	929	521	7.5	13	2	160	29	13	1.1	**1.27**	877	57	5.8	0.4	<0.1	<0.1	<0.01	<1	-1.3
25-Apr-16	3191	610	992	570	7.5	11	2	174	33	13	1.1	**1.68**	1100	141	5.9	0.4	<0.1	<0.1	<0.01	<1	-1.6
25-Jul-16	3233	556	980	568	7.7	14	4	175	32	14	1.0	**1.18**	1030	85	5.0	0.4	0.1	<0.1	<0.01	<1	2.3
24-Oct-16	3319	546	996	506	7.8	15	4	153	30	13	0.9	**1.93**	937	82	5.8	0.2	0.1	<0.1	<0.01	<1	-2.5
26-Apr-17	3335	505	1030	586	7.6	9	2	180	33	12	0.9	**2.12**	1060	59	9.4	1.0	<0.1	<0.1	0.02	<1	8.5
24-Jul-17	3428	563	1040	580	7.7	11	3	180	32	13	1.0	**2.16**	1050	4	5.8	0.4	<0.1	<0.1	<0.01	<1	3.2
17-Oct-17	3477	558	1030	568	7.5	12	4	175	32	13	1.1	**0.573**	1060	91	9.8	0.3	<0.1	<0.1	0.01	<1	1.7
23-Apr-18	3528	613	993	604	7.3	15	4	190	31	12	1.3	**2.15**	1110	78	6.0	<0.5	<0.1	<0.1	<0.1	<2	0.0
17-Jul-18	3587	557	1060	531	7.7	21	4	164	30	11	1.1	**2.27**	1080	51	4.0	<0.5	<0.1	<0.1	<0.1	<2	-2.0
16-Oct-18	3654	584	933	577	7.3	28	6	181	30	13	1.1	**0.517**	1010	17	5.0	<0.5	<0.1	<0.1	<0.1	<2	-1.5
24-Apr-19	3706	561	984	533	7.0	26	6	168	28	9.9	1.0	**1.99**	992	13	3.0	<0.5	<0.1	<0.1	<0.1	<2	-3.2
16-Jul-19	3762	527	962	539	7.2	31	6	168	29	11	1.0	**1.90**	1040	14	4.0	<0.5	<0.1	<0.1	<0.1	<2	-0.4
16-Oct-19	3832	523	1030	589	7.5	43	7	186	30	13	1.2	**2.20**	1040	12	11	<0.5	<0.1	<0.1	<0.1	<2	2.9
15-Apr-20	3868	466	937	513	7.3	10	3	158	29	12	1.1	**1.52**	920	15	4.0	<0.5	0.1	<0.1	<0.1	**2**	6.5
08-Jul-20	3926	559	957	533	7.2	35	6	166	29	11	1.0	**1.93**	1050	13	5.0	<0.5	<0.1	<0.1	<0.1	<2	-4.1
06-Oct-20	3399	546	1020	557	7.7	41	8	175	29	12	1.1	**1.47**	997	9	3.0	<0.5	<0.1	<0.1	<0.1	<2	-1.7
14-Apr-21	4065	499	915	568	7.6	34	6	180	29	11	1.0	**1.55**	1050	11	4.0	<0.5	<0.1	<0.1	<0.1	<2	4.3
12-Jul-21	4125	498	1020	605	8.0	47	8	191	31	12	1.1	**2.22**	1170	<8	4.0	<0.5	<0.1	<0.1	<0.1	**2**	5.6
28-Sep-21	4177	455	969	535	8.0	56	10	164	30	15	1.1	**0.727**	975	<8	4.0	0.5	<0.1	<0.1	<0.1	<2	2.7
12-Apr-22	4243	524	1030	564	7.7	53	8	173	32	15	1.0	**2.22**	1110	14	5.0	<0.5	<0.1	<0.1	<0.1	<2	0.0
12-Jul-22	4300	488	1030	561	7.7	56	7	181	27	11	0.9	**1.76**	1110	12	5.0	0.7	<0.1	<0.1	<0.1	<2	1.6
04-Oct-22	4370	503	1020	559	7.3	63	8	174	30	16	1.1	**1.59**	1010	10	5.0	<0.5	<0.1	<0.1	<0.1	<2	0.1
11-Apr-23	4422	493	1120	680	7.6	85	7	181	55	15	1.1	**2.60**	1020	27	6.2	1.9	<0.1	<0.1	0.01	1	7.3
10-Jul-23	4477	488	1190	1010	7.5	80	6	183	134	16	1.1	**2.83**	1150	112	5.5	1.0	<0.1	<0.1	0.04	**3**	9.2
02-Oct-23	4548	499	1150	680	7.5	93	8	181	55	21	1.2	**2.33**	949	22		0.6	0.1	<0.1	0.04	**3**	5.6
09-Apr-24	4621	496	1140	792	7.22	88	10.7	168	36.0	15	1.1	**4.43**	1340	82	7.3	<0.2	0.1	<0.1	0.04	**1.8**	4.0
08-Jul-24	4655	320	817	774	7.77	78	8.8	183	36.3	19	1.2	**1.49**	1140	59	6	0.4	<0.1	<0.1	0.05	**1.3**	25.9
01-Oct-24	2064055	444	1180	832	7.53	91	20.1	193	35.9	25	1.3	**2.37**	1070	46	6.1	3.2	0.2	<0.1	<0.01	**2.1**	20.3
TOTAL SAMPLES		31	31	31	31	31	31	31	31	31	31	30	31	31	30	31	31	31	31	31	
AVERAGE 2024		420	1046	799	7.51	86	13.2	181	36.1	20	1.2	2.763	1183	62	6.5	1.2	0.1	<0.1	0.03	1.73	

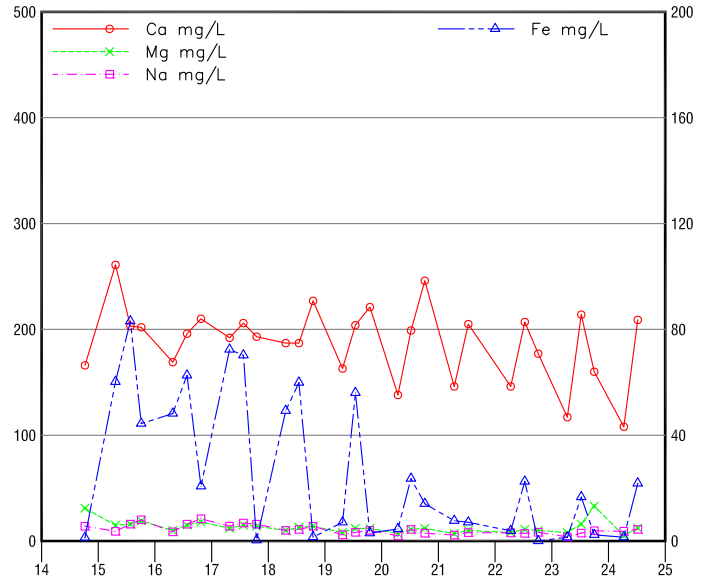
all Concentrations mg/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**









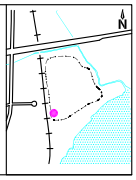


L Concentration Reported Less Than

G Concentration Reported Greater Than

A Concentration Determined Anomalous

Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

BH29-II

REFUSE

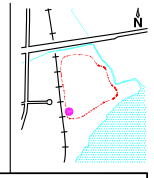
Screen 222.7 - 221.4 masl

22578520 25 Apr 25	wsp	24G034

BH29-II

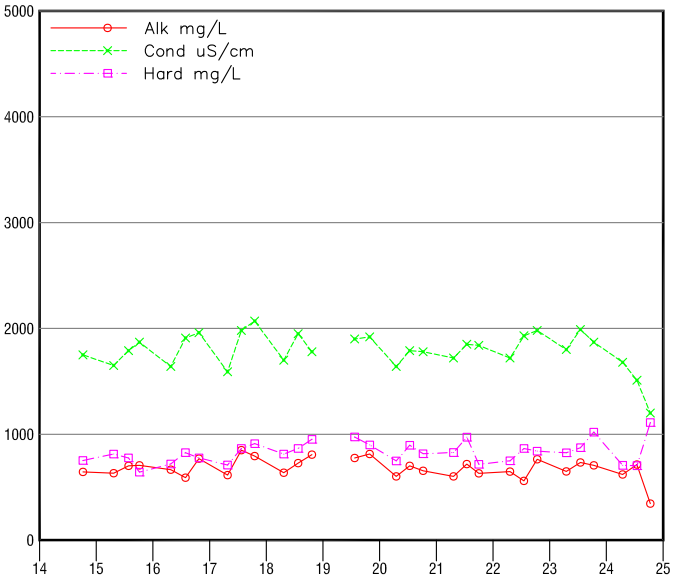
REFUSE

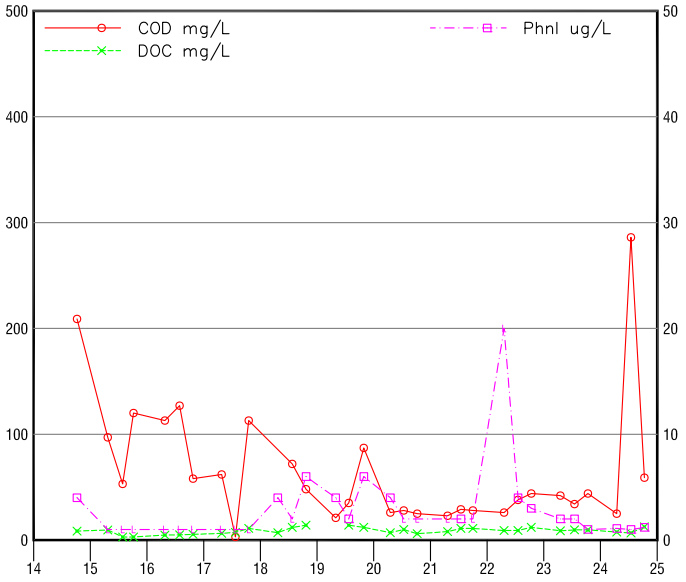
OBSERVATION WELL
Screen 222.7 - 221.4 masl

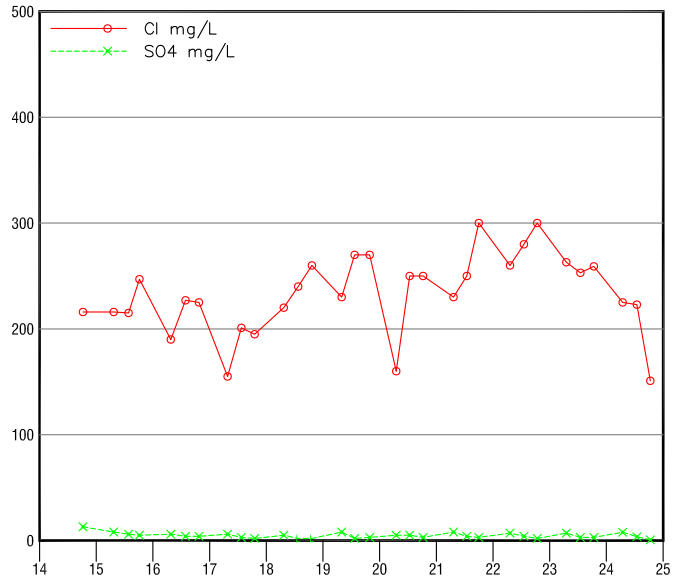


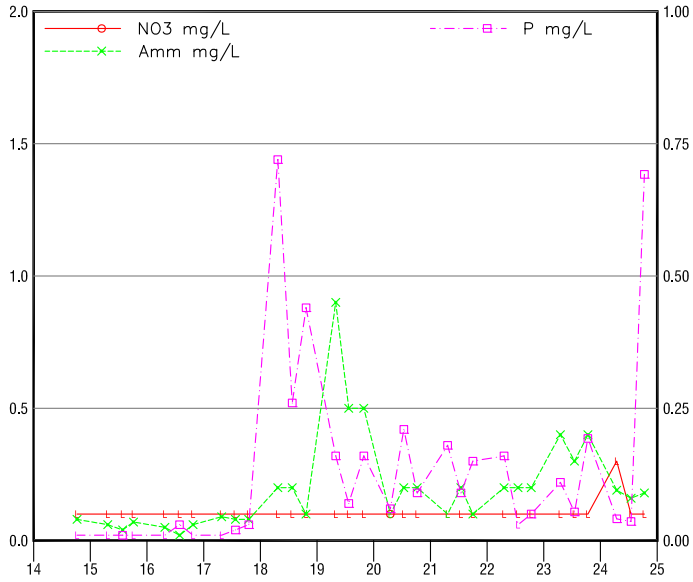
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
07-Oct-14	2940	533	974	545	7.5	9	1	166	31	14	1.4	**1.29**	858	311	10	0.5	<0.1	<0.1	<0.01	<1	3.1
22-Apr-15	3004	704	1210	713	6.7	8	7	261	15	9.1	5.9	**60.2**	2690	105	23	14.4	0.1	<0.1	13.1	<1	10.7
27-Jul-15	3067	742	1340	573	7.3	18	3	203	16	16	9.7	**83.1**	856	149	14	40.5	<0.1	<0.1	33.2	**14**	7.1
05-Oct-15	3121	692	1310	581	7.3	18	5	202	19	20	12	**44.4**	1030	111	18	39.9	0.2	<0.1	33.9	<1	7.6
25-Apr-16	3192	526	1010	466	7.2	7	2	169	10	8.7	5.0	**48.2**	1640	114	9.5	12.9	0.1	<0.1	10.4	<1	6.4
25-Jul-16	3234													75							
26-Jul-16	3234	589	1220	552	7.4	13	25	196	15	16	8.8	**62.6**	1230	75	4.6	32.4	<0.1	<0.1	28.1	<1	12.2
24-Oct-16	3320	758	1420	599	7.7	14	38	210	18	21	9.2	**20.7**	2150	80	15	33.7	0.3	<0.1	25.7	<1	−2.1
26-Apr-17	3336	524	1210	532	7.1	6	<1	192	12	14	5.6	**72.4**	1020	83	14	26.4	<0.1	<0.1	21.1	**7**	18.3
24-Jul-17	3429	743	1410	574	7.1	10	1	206	15	17	8.6	**70.2**	1020	37	16	34.8	<0.1	<0.1	1.69	<1	−0.1
17-Oct-17	3478	481	1200	538	7.4	10	108	193	14	16	7.3	**0.323**	553	123	12	21.4	5.3	<0.1	20.5	<1	2.4
23-Apr-18	3529	568	1060	508	6.7	7	3	187	10	10	5.0	**49.2**	1130	90	8.0	17.8	<0.1	<0.1	18.2	**3**	8.4
17-Jul-18	3588	609	1050	521	7.6	11	3	187	13	11	8.2	**59.9**	1360	116	12	31.2	1.5	<0.1	27.7	**5**	9.2
16-Oct-18	3655	599	1080	622	7.1	10	77	227	14	14	6.9	**1.49**	1210	64	7.0	15.4	1.6	<0.1	14.6	**3**	1.4
24-Apr-19	3707	503	895	439	6.8	5	<2	163	8	5.9	3.2	**7.06**	804	48	5.0	6.4	<0.1	<0.1	5.4	**2**	−2.2
16-Jul-19	3763	694	1140	558	6.8	8	<2	204	12	8.2	7.4	**56.0**	1230	34	20	18.1	<0.1	<0.1	18.5	**5**	3.3
17-Oct-19	3833	535	1080	601	7.5	8	59	221	12	10	6.5	**2.99**	864	72	6.0	13.8	0.1	<0.1	9.4	**6**	4.9
15-Apr-20	3869	349	674	370	7.2	2	<2	138	7	4.9	2.1	**4.60**	800	35	8.0	2.0	<0.1	<0.1	1.5	**4**	6.2
08-Jul-20	3927	559	984	541	7.1	9	10	199	11	11	7.8	**23.6**	1470	34	10	10.7	<0.1	<0.1	11.3	<2	6.3
05-Oct-20	3994	676	1140	663	7.6	4	8	246	12	7.4	6.9	**14.1**	740	32	11	6.3	<0.1	<0.1	5.5	<2	3.1
13-Apr-21	4066	375	679	394	6.8	4	4	146	7	5.7	2.2	**7.67**	665	24	6.0	3.1	<0.1	<0.1	2.5	<2	5.9
12-Jul-21	4126	453	974	554	7.8	12	52	205	10	8.0	5.5	**7.09**	767	12	7.0	7.3	4.8	0.1	7.1	<2	8.0
12-Apr-22	4244	431	752	397	7.5	3	<2	146	8	7.7	1.8	**3.86**	423	38	6.0	2.2	<0.1	<0.1	2.0	<2	−0.6
11-Jul-22	4301	629	1160	562	7.3	9	<2	207	11	7.2	5.9	**22.5**	873	43	10	18.5	<0.1	<0.1	17.3	<2	3.4
06-Oct-22	4371	416	887	484	7.7	7	73	177	10	8.3	3.6	0.017	135	37	7.0	1.7	11	0.4	1.8	<2	−2.6
11-Apr-23	4423	309	590	325	7.6	2	6	117	8	3.9	1.1	**1.40**	199	33	6.8	4.7	<0.1	<0.1	0.3	**3**	3.2
10-Jul-23	4478	645	1200	600	7.3	6	1	214	16	7.5	6.5	**16.6**	1150	49	11	11.0	<0.1	<0.1	8.9	**2**	6.5
02-Oct-23	4549	526	1070	535	7.1	7	31	160	33	9.7	7.7	**2.33**	311	33		22.2	3.8	0.3	25.5	**3**	2.1
09-Apr-24	4622	343	655	291	7.22	1	0.6	108	5.2	9.2	0.7	**1.42**	217	50	7.1	0.9	<0.1	<0.1	1.37	**1.4**	5.5
08-Jul-24	4656	422	775	551	7.67	3	3	209	12.3	11	4.1	**21.8**	906	61	7.8	3.5	<0.2	<0.2	3.33	**1.5**	26.0
TOTAL SAMPLES		29	29	29	29	29	29	29	29	29	29	29	29	30	28	29	29	29	29	29	
AVERAGE 2024		383	715	421	7.45	2	2	159	8.8	10	2.4	11.61	562	56	7.5	2.2	<0.2	<0.2	2.35	1.45	

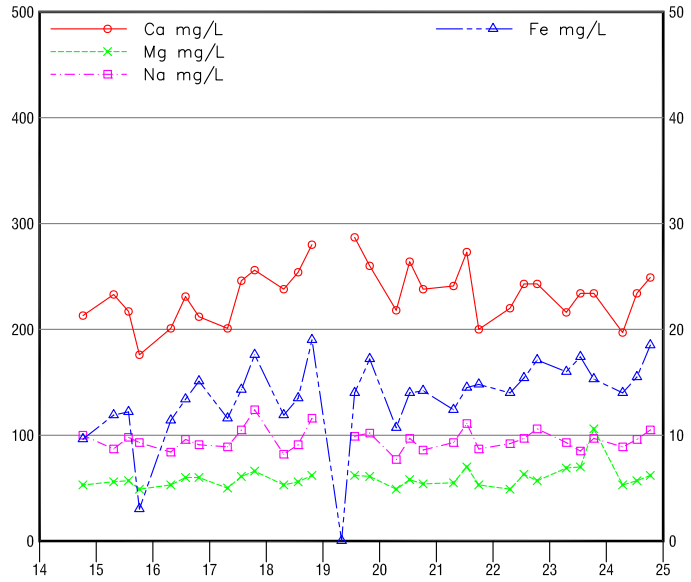
all Concentrations mg/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**



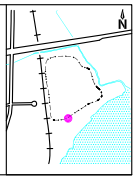








L	Concentration Reported Less Than
G	Concentration Reported Greater Than
A	Concentration Determined Anomalous
	Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

BH30-I

SAND AQUIFER

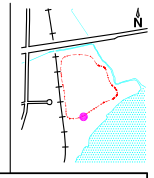
Screen 214.0 - 212.4 masl

22578520 25 Apr 25	wsp	24G035

BH30-I

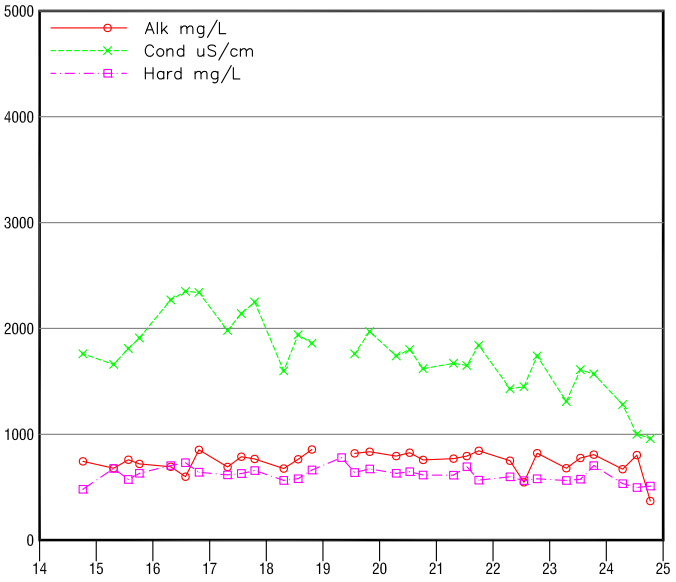
SAND AQUIFER

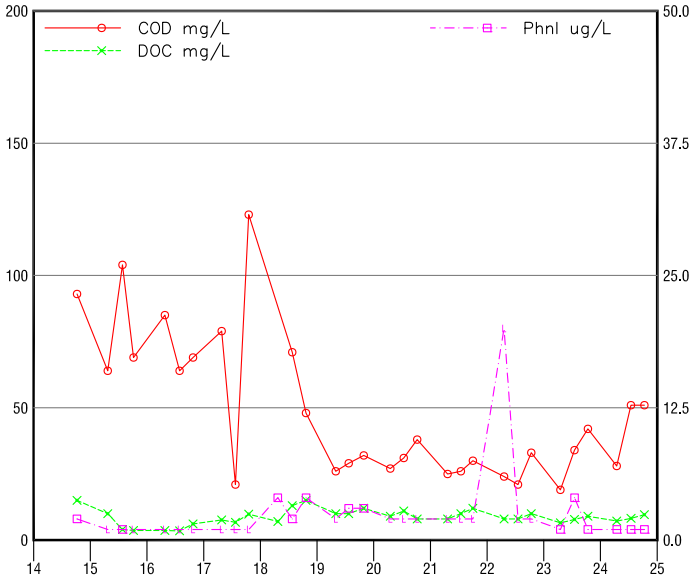
OBSERVATION WELL
Screen 214.0 - 212.4 masl

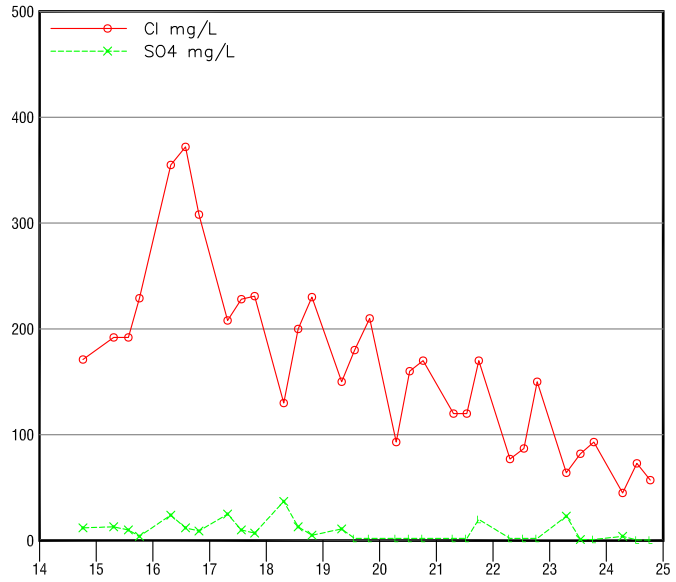


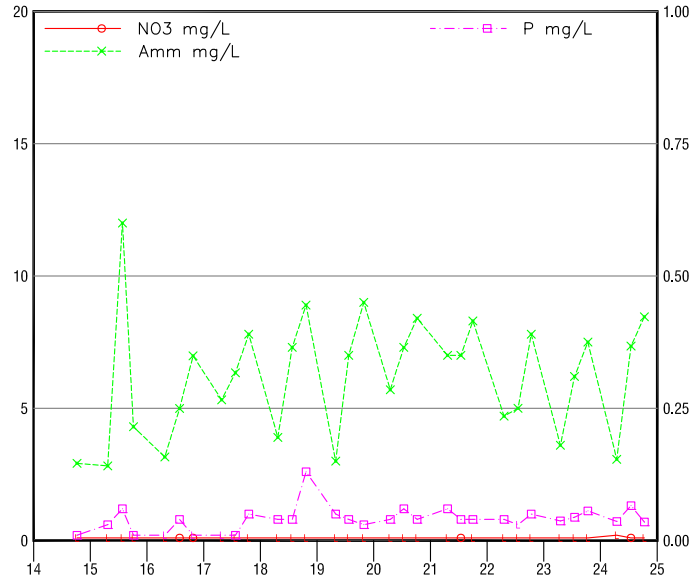
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
23-Apr-15	3005	632	1650	813	7.4	216	8	233	56	87	3.1	**11.9**	228	97	9.5	0.7	<0.1	<0.1	0.06	<1	4.2
28-Jul-15	3068	701	1790	776	7.5	215	6	217	57	98	3.0	**12.2**	250	53	2.9	0.7	<0.1	<0.1	0.04	<1	0.3
06-Oct-15	3122	706	1870	642	7.4	247	5	176	49	93	3.3	**3.03**	267	120	2.9	0.8	<0.1	<0.1	0.07	<1	-10.8
25-Apr-16	3193	665	1640	719	7.5	190	6	201	53	84	2.8	**11.4**	210	113	4.7	0.7	<0.1	<0.1	0.05	<1	-0.7
29-Jul-16	3236	590	1910	826	7.6	227	4	231	60	96	3.0	**13.4**	251	127	4.9	0.6	<0.1	<0.1	0.02	<1	7.4
24-Oct-16	3321	769	1960	776	7.7	225	4	212	60	91	2.9	**15.1**	234	58	5.4	1.3	<0.1	<0.1	0.06	<1	-4.1
26-Apr-17	3337	614	1590	709	7.6	155	6	201	50	89	2.6	**11.6**	199	62	6.3	0.6	<0.1	<0.1	0.09	<1	4.9
24-Jul-17	3430	850	1980	865	7.5	201	3	246	61	105	3.0	**14.3**	257	3	7.3	0.7	<0.1	<0.1	0.08	<1	-0.6
18-Oct-17	3479	794	2070	911	7.4	195	2	256	66	124	3.5	**17.6**	266	113	11	0.6	<0.1	<0.1	0.08	<1	6.4
23-Apr-18	3530	636	1700	812	7.0	220	5	238	53	82	3.4	**11.9**	269		7.0	0.6	<0.1	<0.1	0.2	**4**	3.3
25-Jul-18	3608	727	1950	866	6.9	240	<2	254	56	91	3.5	**13.5**	274	72	12	<0.5	<0.1	<0.1	0.2	<2	1.2
22-Oct-18	3675	807	1780	952	7.1	260	<2	280	62	116	4.0	**19.0**	315	48	14	<0.5	<0.1	<0.1	0.1	**6**	3.0
01-May-19	3727	*348*	*1300*	*342*	8.3	230	8	*111*	*16*	*47*	0.9	0.018	17	21	*17*	1.3	<0.1	<0.1	0.9	**4**	-20.4
24-Jul-19	3783	775	1900	974	7.0	270	2	287	62	99	4.3	**14.0**	342	35	14	0.8	<0.1	<0.1	0.5	**2**	2.6
29-Oct-19	3853	814	1920	899	6.9	270	3	260	61	102	3.6	**17.2**	318	87	12	1.2	<0.1	<0.3	0.5	**6**	-1.6
17-Apr-20	3889	602	1640	748	7.7	160	5	218	49	77	3.1	**10.7**	228	26	7.0	0.5	0.1	<0.1	<0.1	**4**	6.1
13-Jul-20	3947	701	1790	896	6.9	250	5	264	58	97	3.5	**14.0**	278	28	10	1.0	<0.1	<0.1	0.2	<2	3.6
07-Oct-20	3995	654	1780	816	7.7	250	3	238	54	86	3.4	**14.2**	277	25	6.0	<0.5	<0.1	<0.1	0.2	<2	1.1
21-Apr-21	4067	602	1720	827	7.5	230	8	241	55	93	3.3	**12.4**	275	23	8.0	1.1	<0.1	<0.1	<0.1	<2	6.7
16-Jul-21	4127	718	1850	972	7.2	250	4	273	70	111	3.7	**14.5**	287	29	11	0.9	<0.1	<0.1	0.2	**2**	8.2
01-Oct-21	4179	631	1840	716	7.6	300	3	200	53	87	3.1	**14.8**	288	28	11	0.7	<0.1	<0.3	0.1	<2	-5.4
20-Apr-22	4245	647	1720	749	7.4	260	7	220	49	92	3.0	**14.0**	266	26	9.0	<0.5	<0.1	<0.3	0.2	<20	-2.1
19-Jul-22	4321	559	1930	865	7.9	280	4	243	63	97	3.2	**15.4**	303	38	9.0	<0.5	<0.1	<0.1	0.2	**4**	7.2
12-Oct-22	4391	763	1980	840	7.1	300	2	243	57	106	3.5	**17.1**	332	44	12	<0.5	<0.1	<0.1	0.2	**3**	-3.5
18-Apr-23	4443	649	1800	825	7.3	263	7	216	69	93	3.9	**16.0**	296	42	8.8	4.1	<0.1	<0.1	0.4	**2**	1.6
18-Jul-23	4498	733	1990	873	7.4	253	3	234	70	85	3.6	**17.4**	347	34	9.6	2.3	<0.1	<0.1	0.3	**2**	1.8
12-Oct-23	4569	706	1870	1020	7.2	259	3	234	106	97	4.1	**15.3**	306	44	9.6	0.3	<0.1	<0.1	0.4	1	6.4
15-Apr-24	4606	620	1680	706	7.08	225	7.8	197	53	89	3.4	**14.0**	266	25	7.6	0.3	<0.3	<0.3	0.19	**1.1**	4.3
16-Jul-24	4676	714	1510	703	7.31	223	3.6	234	57	96	3.5	**15.5**	281	286	6.7	1.5	<0.1	<0.1	0.16	1	6.5
10-Oct-24	2067126	344	1200	1110	7.38	151	0.7	249	62	105	4.2	**18.5**	331	59	12.5	2.7	<0.1	<0.1	0.18	**1.2**	38.5
TOTAL SAMPLES		30	30	30	31	31	31	30	30	30	31	31	31	30	30	31	31	31	31	31	
AVERAGE 2024		559	1463	840	7.26	200	4.0	227	57	97	3.7	16.00	293	123	8.9	1.5	<0.1	<0.1	0.18	1.10	

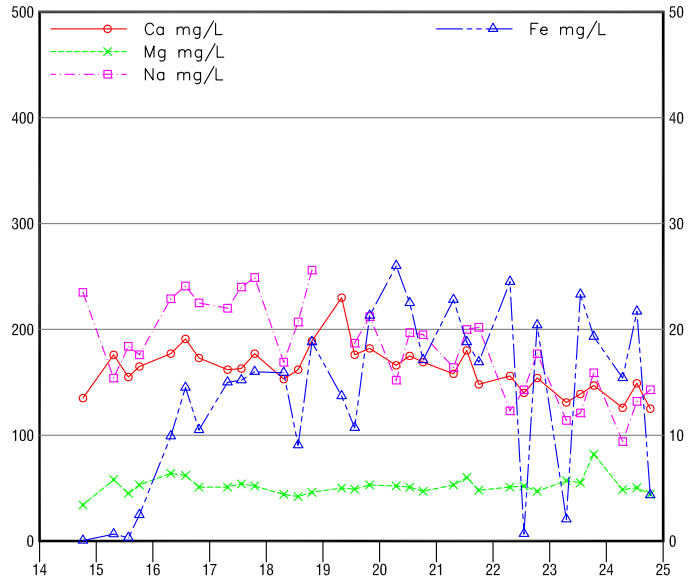
all Concentrations mg/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**



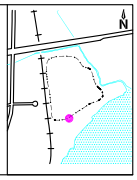








L	Concentration Reported Less Than
G	Concentration Reported Greater Than
A	Concentration Determined Anomalous
	Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

BH30-II

PEAT

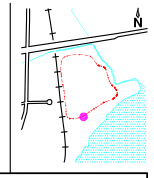
Screen 219.8 - 219.0 masl

22578520 25 Apr 25	wsp	24G036

BH30-II

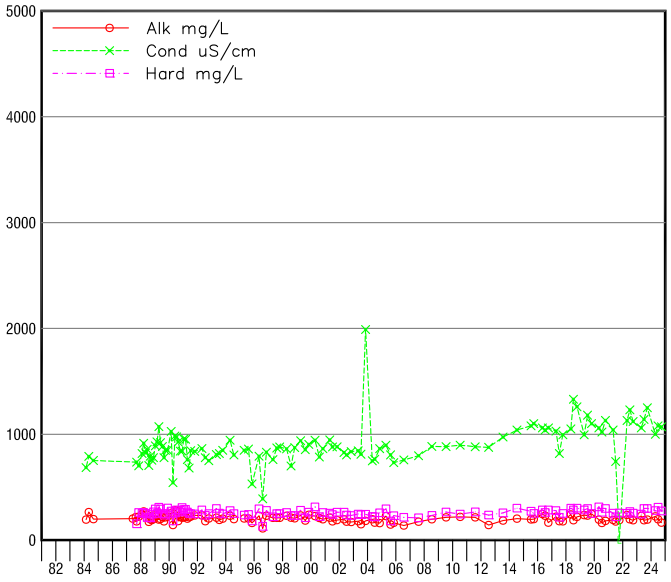
PEAT

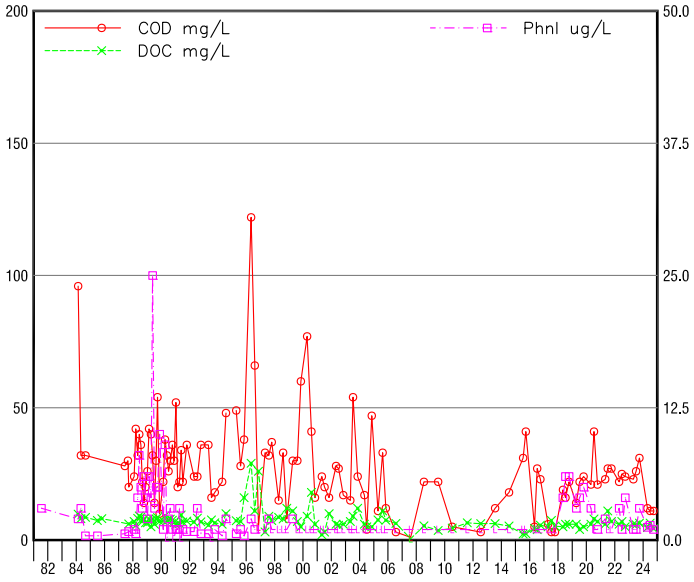
OBSERVATION WELL
Screen 219.8 - 219.0 masl

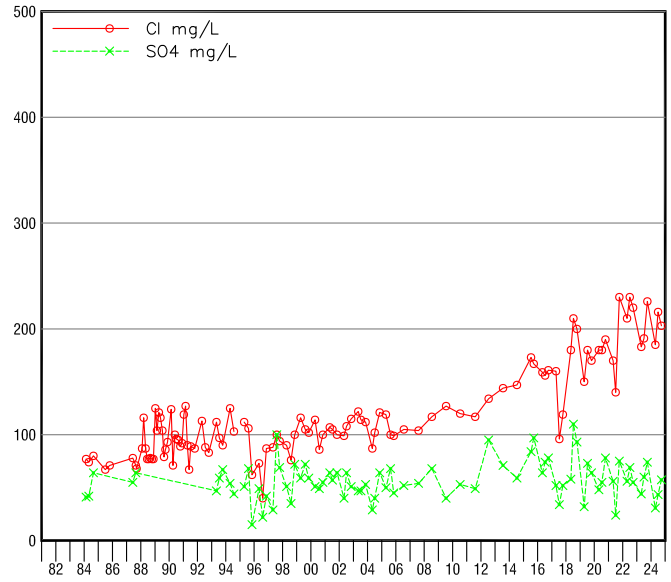


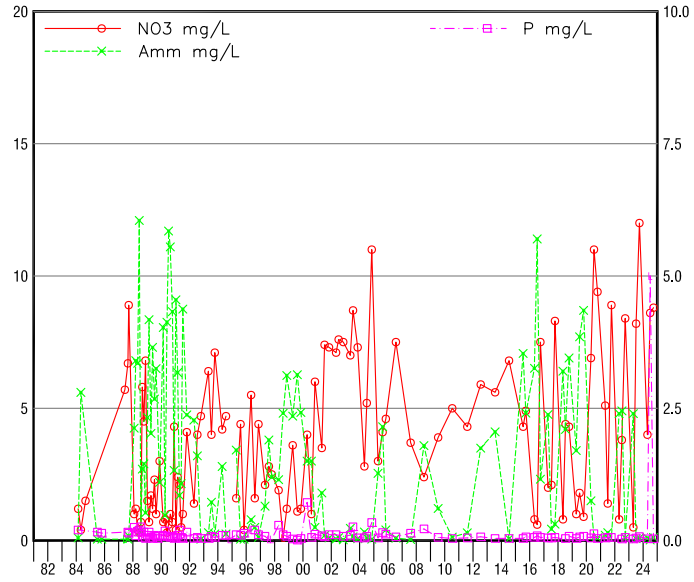
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
23-Apr-15	3006	679	1660	677	7.7	192	13	176	58	154	4.3	**0.65**	3260	64	10	4.5	<0.1	<0.1	2.82	<1	3.3
27-Jul-15	3069	759	1810	573	7.8	192	10	155	45	184	4.9	**0.31**	3010	104	4.0	13.7	<0.1	<0.1	12	1	−0.9
06-Oct-15	3123	720	1910	631	7.5	229	4	165	53	176	5.3	**2.47**	3510	69	3.6	6.1	<0.1	<0.1	4.3	<1	−0.4
25-Apr-16	3191	692	2270	704	7.7	355	24	177	64	229	4.7	**9.90**	3450	85	3.6	4.7	<0.1	<0.1	3.16	<1	0.9
29-Jul-16	3235	599	2350	731	7.8	372	12	191	62	241	5.8	**14.5**	3290	64	3.5	6.3	0.1	<0.1	4.99	<1	7.0
24-Oct-16	3322	853	2340	641	7.8	308	9	173	51	225	5.3	**10.5**	3090	69	6.1	9.5	0.1	<0.1	6.98	<1	−4.6
26-Apr-17	3338	691	1980	616	7.8	208	25	162	51	220	4.3	**15.0**	2490	79	7.6	6.1	<0.1	<0.1	5.32	<1	6.2
24-Jul-17	3431	788	2140	629	7.9	228	10	163	54	240	5.7	**15.2**	2380	21	6.7	6.9	<0.1	<0.1	6.34	<1	3.8
18-Oct-17	3480	767	2250	657	7.6	231	7	177	52	249	6.3	**16.0**	2660	123	9.8	8.7	<0.1	<0.1	7.8	<1	6.9
23-Apr-18	3531	676	1600	564	7.4	130	37	153	44	169	4.7	**15.9**	2140		7.0	4.0	<0.1	<0.1	3.9	**4**	4.3
25-Jul-18	3609	763	1940	580	7.2	200	13	162	42	207	5.9	**9.06**	2050	71	13	7.0	<0.1	<0.1	7.3	**2**	0.9
22-Oct-18	3676	856	1860	662	7.6	230	5	189	46	256	7.0	**18.8**	2563	48	15	9.3	<0.1	<0.1	8.9	**4**	4.3
01-May-19	3728	*431*	*1280*	779	8.5	150	11	230	50	*90*	3.8	**13.7**	296	26	10	3.8	<0.1	<0.1	3.0	<2	21.7
24-Jul-19	3784	819	1760	638	7.5	180	<2	176	49	187	6.7	**10.7**	2430	29	10	7.6	<0.1	<0.1	7.0	**3**	1.3
29-Oct-19	3854	835	1970	672	7.3	210	<2	182	53	212	6.4	**21.3**	2400	32	12	10.2	<0.1	<0.1	9.0	**3**	3.5
17-Apr-20	3890	793	1740	631	7.9	93	<2	166	52	152	5.6	**26.0**	2140	27	9.0	6.1	<0.1	<0.1	5.7	<2	5.7
13-Jul-20	3948	825	1800	646	7.5	160	<2	175	51	197	6.3	**22.5**	2200	31	11	8.1	<0.1	<0.1	7.3	<2	4.5
07-Oct-20	3996	758	1620	615	7.7	170	<2	169	47	195	6.5	**17.1**	2190	38	8.0	8.7	<0.1	<0.1	8.4	<2	5.3
21-Apr-21	4068	769	1670	613	7.8	120	<2	158	53	164	5.2	**22.8**	2460	25	8.0	7.6	<0.1	<0.1	7.0	<2	5.3
16-Jul-21	4128	793	1650	693	7.7	120	<2	180	60	200	6.3	**18.8**	2230	26	10	7.7	0.1	<0.1	7.0	<2	10.6
01-Oct-21	4180	844	1840	566	7.9	170	<20	148	48	202	6.3	**16.9**	2180	30	12	9.1	<0.1	<0.1	8.3	<2	0.3
20-Apr-22	4246	750	1430	598	7.5	77	<2	156	51	123	4.6	**24.5**	2000	24	8.0	5.2	<0.1	<0.1	4.7	<20	4.2
19-Jul-22	7322	545	1450	562	8.0	87	<2	140	52	143	5.4	**0.675**	1340	21	8.0	5.5	<0.1	<0.1	5.0	<2	14.8
12-Oct-22	4392	821	1740	579	7.6	150	<2	154	47	177	5.8	**20.4**	1900	33	10	8.7	<0.1	<0.1	7.8	<2	0.2
18-Apr-23	4444	679	1310	563	7.4	64	23	131	57	114	4.8	**2.05**	1660	19	6.5	7.3	<0.1	<0.1	3.6	1	2.4
18-Jul-23	4499	775	1610	575	7.6	82	1	139	55	121	5.5	**23.3**	1940	34	7.8	14.7	<0.1	<0.1	6.2	**4**	7.9
12-Oct-23	4570	808	1570	704	7.6	93	<1	147	82	159	6.5	**19.3**	1730	42	9	7.3	<0.1	<0.1	7.5	1	8.6
15-Apr-24	4607	669	1280	533	7.28	45	4	126	48.5	94	4.8	**15.4**	1670	28	7.2	3.2	<0.2	<0.2	3.07	1	8.6
16-Jul-24	4678	803	1000	497	7.46	73	<0.5	149	50.4	132	6.1	**21.7**	1790	51	8.2	8.7	0.1	<0.1	7.35	1	6.7
10-Oct-24	2067127	369	959	510	7.68	57	<0.5	125	44.1	143	6.1	**4.34**	1370	51	9.6	8.9	<0.1	<0.1	8.46	1	35.8
TOTAL SAMPLES		30	30	31	31	31	31	31	31	30	31	31	31	30	31	31	31	31	31	31	
AVERAGE 2024		614	1080	513	7.47	58	1	133	47.7	123	5.7	13.81	1610	43	8.3	6.9	<0.1	<0.1	6.29	1	

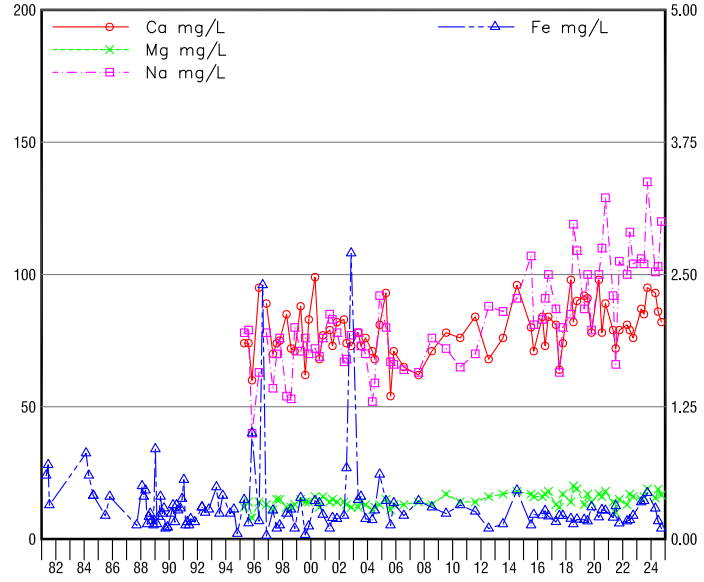
all Concentrations mg/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**









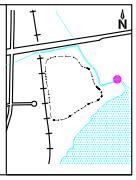


L Concentration Reported Less Than

G Concentration Reported Greater Than

A Concentration Determined Anomalous

Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

S-1

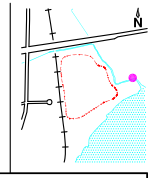
BEN'S DITCH

22578520 25 Apr 25	wsp	24G037

S-1

BEN'S DITCH

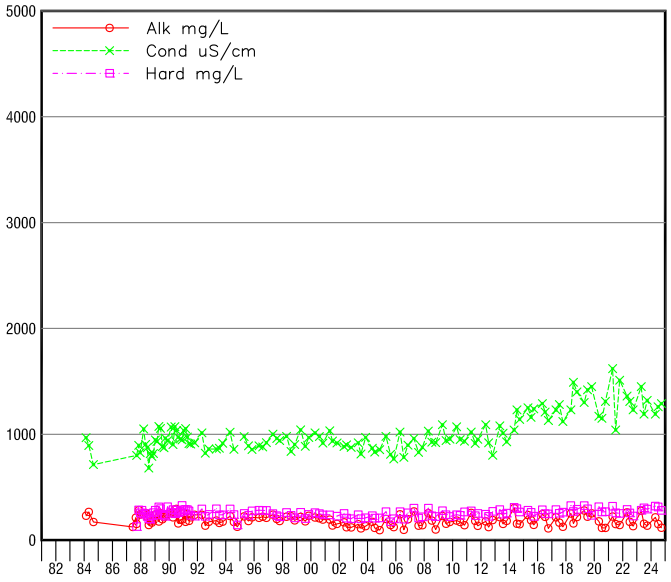
SURFACE WATER STATION

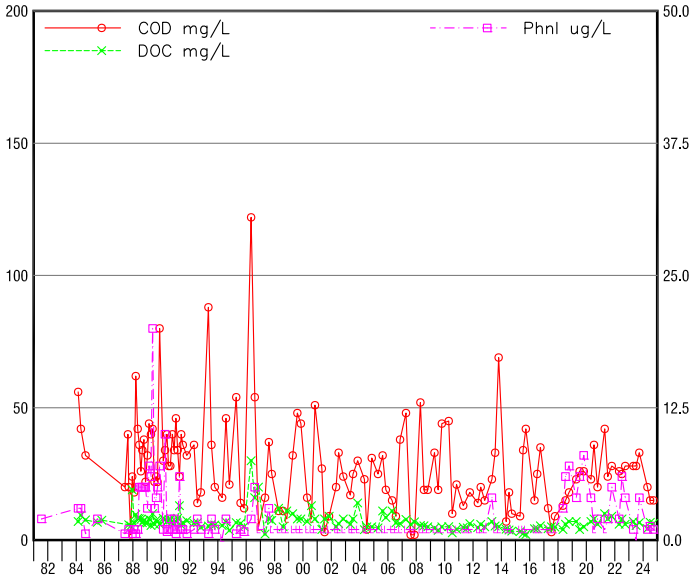


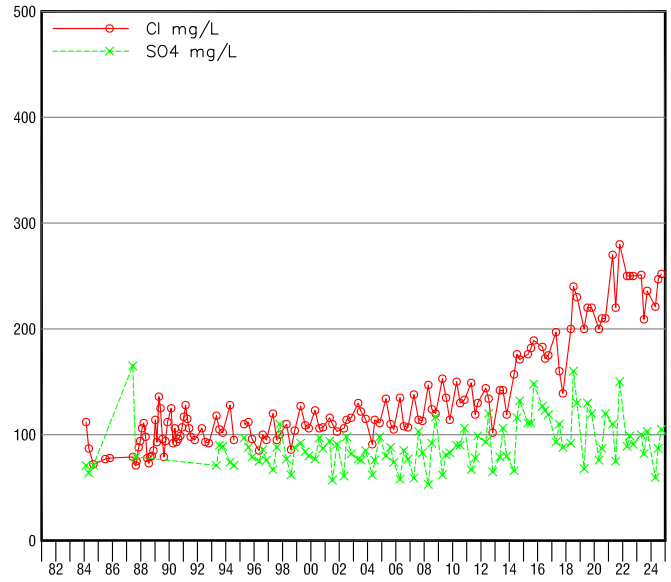
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
17-Jul-14	2811	202	1040	301	7.9	147	59	96	18	91	25	**0.46**	48	18	5.3	1.1	6.8	<0.1	0.07	<1	4.8
16-Jul-15	3017	195	1080	272	7.9	173	84	80	17	107	11	0.13	51	31	2.3	8.7	4.3	1.3	7.07	<1	0.0
25-Sep-15	3074	198	1100	252	7.8	167	97	71	16	81	52	0.23	50	41	2.4	6.4	4.9	0.9	4.82	<1	-4.6
02-May-16	3146	247	1060	284	7.9	159	64	84	16	83	34	0.224	88	5	4.4	7.2	0.8	<0.1	6.51	<1	-1.6
13-Jul-16	3240	230	1040	261	7.9	156	74	73	17	91	8.7	0.266	133	27	3.9	13.9	0.6	0.9	11.4	<1	-2.6
05-Oct-16	3256	165	1060	284	8.2	161	78	84	18	100	13	0.214	84	23	5.6	3.5	7.5	1.0	2.32	<1	2.6
18-Apr-17	3362	221	1030	278	7.9	160	52	81	13	87	24	0.162	67	6	5.0	6.4	2.0	0.2	4.76	<1	-1.5
13-Jul-17	3378	178	818	215	7.9	96	34	64	12	63	19	0.219	78	3	7.4	1.1	2.1	0.2	0.43	<1	2.2
12-Oct-17	3435	176	995	252	8.0	119	52	74	17	80	11	0.219	69	3	5.3	1.5	8.3	0.2	0.62	<1	2.0
07-May-18	3555	242	1050	301	8.1	180	58	98	14	85	29	0.192	86	19	5.0	6.7	0.8	<0.1	6.4	**4**	-1.0
11-Jul-18	3558	187	1330	285	7.9	210	110	82	20	119	68	0.141	79	16	6.0	5.3	4.4	0.7	4.2	**6**	2.8
12-Oct-18	3635	219	1260	302	8.0	200	93	90	19	109	52	0.185	95	22	6.0	7.9	4.3	0.8	6.9	**6**	1.5
16-Apr-19	3681	235	995	284	8.4	150	32	92	13	87	10	0.182	67	14	6.0	4.0	1.0	<0.1	3.4	**3**	1.5
11-Jul-19	3733	231	1180	298	7.8	180	73	91	17	100	29	0.168	104	22	4.0	8.6	1.8	0.3	7.7	**4**	1.1
23-Oct-19	3789	248	1100	251	8.1	170	64	78	14	79	39	**0.301**	92	24	5.0	9.4	0.9	0.3	8.7	**5**	-4.9
28-Apr-20	3901	194	1060	314	7.9	180	48	98	17	100	7.5	0.206	90	21	6.0	2.5	6.9	0.1	1.5	**3**	2.3
15-Jul-20	3953	162	1020	263	8.2	180	55	78	16	110	9.4	0.275	33	41	8.0	1.2	11	0.2	<0.1	<1	0.9
14-Oct-20	3997	182	1130	298	8.2	190	78	89	18	129	42	0.269	68	21	7.0	1.6	9.4	<0.1	0.1	1	5.7
30-Apr-21	4069	191	1040	254	8.0	170	56	79	14	92	33	0.202	66	23	6.0	1.1	5.1	0.2	0.2	**2**	-0.2
06-Jul-21	4133	175	742	220	8.0	140	24	72	10	66	4.6	**0.312**	54	27	11	<0.5	1.4	0.1	0.3	<1	-3.6
07-Oct-21	4201	189	<2	256	7.8	230	75	79	15	105	11	0.148	30	27	7.0	0.7	8.9	<0.1	<0.1	<1	-10.6
25-Apr-22	4247	237	1130	253	8.2	210	56	81	13	100	24	0.168	66	22	6.0	5.0	0.8	0.3	4.8	**3**	-6.8
05-Jul-22	4271	196	1230	270	8.0	230	69	79	17	116	9.2	0.18	74	25	7.0	6.2	3.8	0.5	4.9	1	-4.7
29-Sep-22	4327	187	1120	254	8.1	220	55	76	16	104	7.9	0.22	62	24	5.0	0.9	8.4	0.1	0.1	**4**	-8.7
24-Apr-23	4397	228	1060	245	7.6	183	44	87	15	106	23	**0.347**	46	23	6	5.9	0.5	0.5	4.8	1	2.1
05-Jul-23	4449	188	1140	299	7.7	191	60	85	16	104	6.7	**0.360**	66	26	5.8	3.8	8.2	<0.1	0.07	1	9.9
28-Sep-23	4504	194	1250	299	7.5	226	74	95	19	135	12	**0.435**	90	31	6.4	0.8	12	<0.1	0.1	**3**	-3.2
22-Apr-24	4575	224	1000	279	7.63	185	30.7	93	15.5	101	4.7	0.289	68	12	4.7	<0.2	4.0	<0.2	0.09	**1.2**	1.7
02-Jul-24	4627	197	1080	311	7.98	216	43.4	86	18.8	103	7.5	0.170	36	11	6.4	0.7	8.6	<0.2	0.02	**1.4**	1.0
25-Sep-24	2060970	165	1070	275	7.5	203	57.4	82	16.6	120	9.2	0.100	54	11	4.3	0.2	8.8	<0.1	0.12	1	6.0
TOTAL SAMPLES		114	112	109	114	115	80	70	70	70	70	119	71	112	113	112	112	112	113	114	
AVERAGE 2024		195	1050	288	7.70	201	43.8	87	17.0	108	7.1	0.186	53	11	5.1	0.3	7.1	<0.1	0.08	1.20	

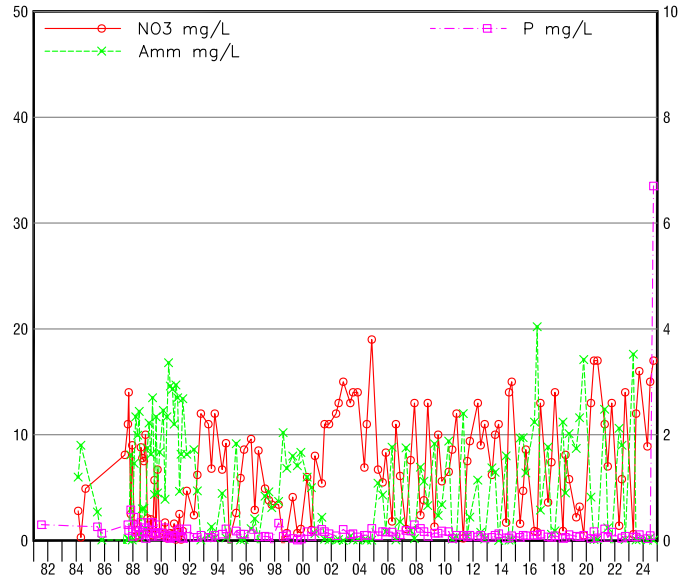
all Concentrations mg/L unless otherwise indicated

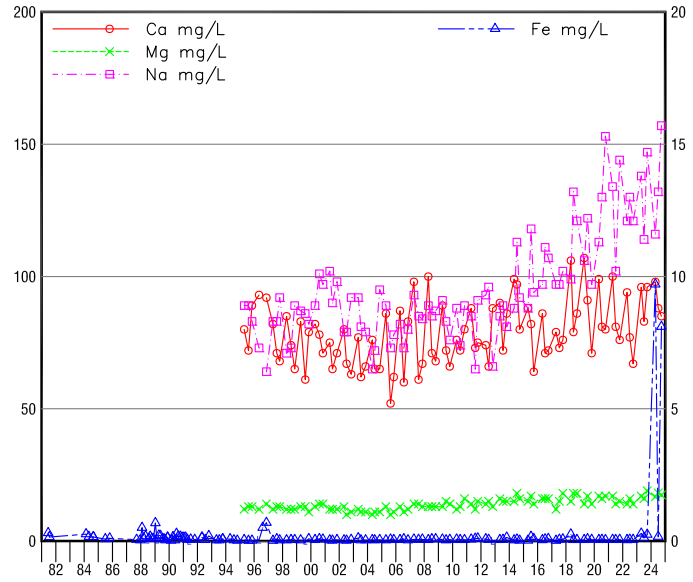
Anomalies shown in *Italics* / Exceedence in **BOLD**



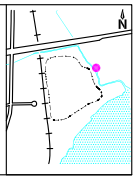








L	Concentration Reported Less Than
G	Concentration Reported Greater Than
A	Concentration Determined Anomalous
	Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

S-2

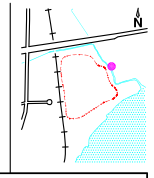
WWTC EFFLUENT

22578520 25 Apr 25	wsp	24G038

S-2

WWTC EFFLUENT

SURFACE WATER STATION



DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	PhnI ug/L	Ion B %
	PWQO											0.3								1	
27-Apr-15	2956	236	1250	282	7.9	176	111	88	15	88	56	0.02	64	9	3.2	11.7	1.6	<0.1	9.68	<1	-2.2
17-Jul-15	3018	187	1160	262	7.8	182	111	82	17	118	22	0.16	90	34	2.5	12.4	4.7	1.5	9.73	<1	1.6
24-Sep-15	3075	143	1240	225	7.7	189	148	64	14	94	79	0.08	25	42	2.1	7.8	8.6	1.2	6.39	<1	-4.3
02-May-16	3147	245	1290	286	7.8	183	127	86	16	97	71	0.037	66	15	4.3	14.1	0.9	<0.1	11.2	<1	-1.3
13-Jul-16	3241	219	1210	250	7.9	172	123	71	16	111	14	0.065	69	25	4.3	22.6	0.8	1.7	20.2	<1	-1.5
05-Oct-16	3257	110	1130	247	8.0	175	119	72	16	107	25	0.081	76	35	5.4	4.2	13	1.0	2.88	<1	-0.6
18-Apr-17	3363	215	1230	288	7.8	197	93	79	12	97	44	0.013	51	12	4.3	11.1	3.6	0.3	8.83	<1	-5.0
13-Jul-17	3379	164	1280	253	7.8	160	110	73	15	97	60	0.055	72	3	5.0	1.4	7.4	0.3	0.59	<1	0.3
12-Oct-17	3436	125	1120	264	7.8	139	88	76	18	102	21	0.063	66	9	4.9	2.3	14	0.3	0.91	<1	5.4
07-May-18	3556	251	1230	325	8.0	200	92	106	15	99	57	0.254	63	13	4.0	12.0	0.9	0.2	11.2	**3**	1.8
11-Jul-18	3559	157	1490	270	7.8	240	160	79	18	132	93	0.043	61	15	6.0	5.8	8.1	0.6	4.5	**6**	0.2
12-Oct-18	3636	217	1400	290	7.8	230	130	86	18	121	70	0.041	77	18	7.0	12.7	5.8	1.0	10.1	**7**	-1.4
16-Apr-19	3682	279	1300	326	8.3	200	68	107	14	106	28	0.044	74	23	7.0	10.2	2.2	0.3	8.7	**4**	-1.4
11-Jul-19	3734	220	1420	296	7.8	220	130	91	17	122	63	0.073	76	26	4.0	13.2	3.2	0.4	11.6	**6**	0.6
24-Oct-19	3790	253	1450	234	8.0	220	120	71	14	97	75	0.046	42	26	5.0	18.5	0.5	1.9	17.1	**8**	-6.7
27-Apr-20	3902	177	1170	315	7.9	200	76	99	17	113	12	0.04	71	23	7.0	4.6	13	0.4	4.1	**4**	0.7
15-Jul-20	3954	115	1150	266	7.9	210	87	81	16	130	14	0.05	8.3	36	8.0	1.0	17	0.2	0.1	<1	0.5
14-Oct-20	3998	115	1310	268	8.0	210	120	80	17	153	70	0.041	18	20	6.0	2.1	17	<0.1	0.1	**2**	7.4
16-Apr-21	4070	222	1620	320	8.0	270	110	100	17	134	83	0.046	56	42	10	13.6	11	2.8	12.4	<1	0.1
06-Jul-21	4134	151	1040	257	7.9	220	75	81	14	102	13	0.043	82	24	8.0	1.0	7.0	0.9	1.2	**2**	-4.8
15-Oct-21	4202	142	1510	252	8.0	280	150	76	15	144	94	0.048	20	28	9.0	1.4	13	0.1	<0.1	**5**	-3.5
25-Apr-22	4247	262	1360	289	8.1	250	89	94	14	121	51	0.039	84	26	6.0	11.2	1.4	0.5	10.6	**2**	-4.2
05-Jul-22	4272	172	1310	256	7.9	250	99	77	16	130	14	0.053	82	25	8.0	10.2	5.8	0.6	9.0	**6**	-4.9
29-Sep-22	4328	131	1230	227	8.1	250	91	67	14	121	12	0.045	26	28	6.0	1.0	14	0.1	0.1	**4**	-10.9
25-Apr-23	4398	276	1450	282	7.6	251	100	96	17	138	59	0.286	60	28	7.0	16.3	0.6	0.9	17.6	1	0.8
05-Jul-23	4450	154	1190	305	7.5	209	82	83	16	114	10	0.120	43	28	5.5	3.1	12	<0.1	0.05	0	11.2
27-Sep-23	4505	136	1320	292	7.7	236	103	96	19	147	17	0.24	21	33	6.6	<0.2	16	<0.1	0.1	**4**	-3.2
22-Apr-24	4576	214	1190	321	7.54	221	59.6	98	16.7	116	7.8	**9.70**	61	20	4.3	<0.2	8.9	<0.2	0.04	1	0.9
04-Jul-24	4628	151	1260	313	7.84	247	87	88	18.2	132	14	0.163	35	15	6.7	1.35	15	<0.2	0.25	**1.3**	2.5
25-Sep-24	2060971	116	1290	280	7.44	252	105	85	17.4	157	15	**8.10**	7	15	6.3	<0.2	17	<0.1	0.03	1	5.7
TOTAL SAMPLES		136	132	130	135	137	100	89	89	89	89	141	91	135	136	138	136	136	137	135	
AVERAGE 2024		160	1247	305	7.61	240	84	90	17.4	135	12	5.988	34	17	5.8	0.45	14	<0.1	0.11	1.10	

all Concentrations mg/L unless otherwise indicated

Anomalies shown in *Italics* / Exceedence in **BOLD**

CITY OF ORILLIA

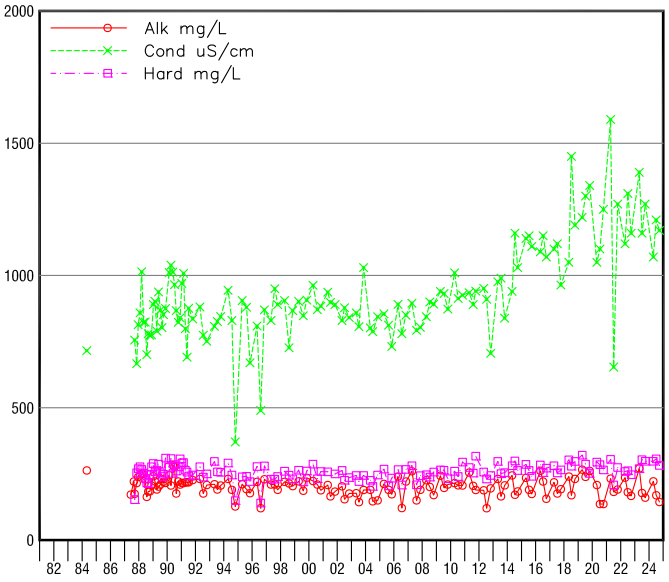
KITCHENER STREET WASTE DIVERSION SITE

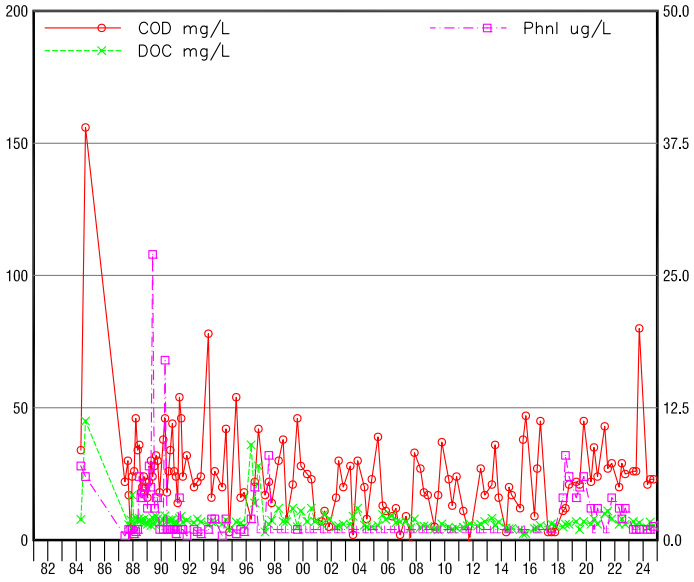
GENERAL CHEMISTRY REPORT

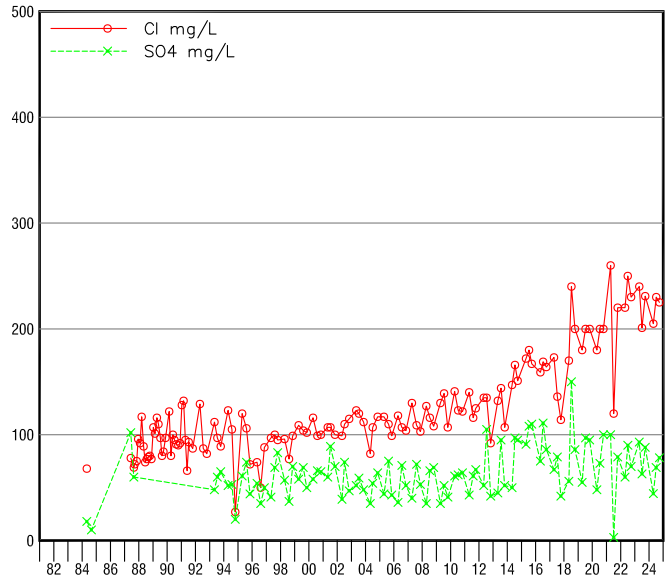
22578520
25 Apr 25

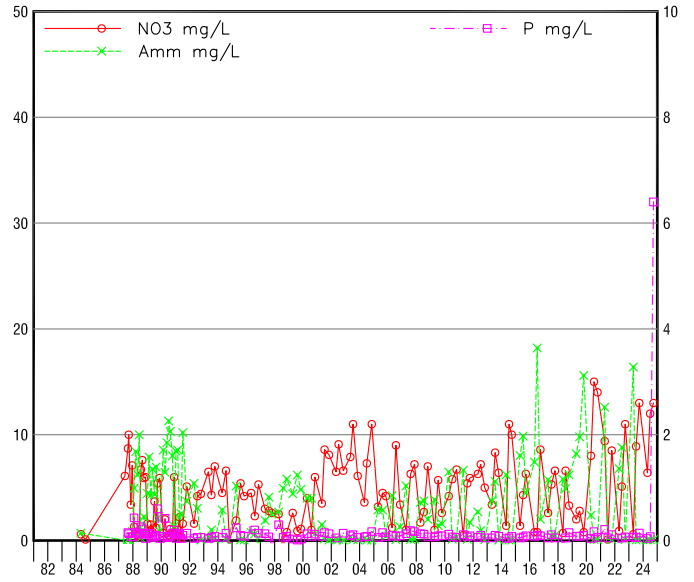
wsp

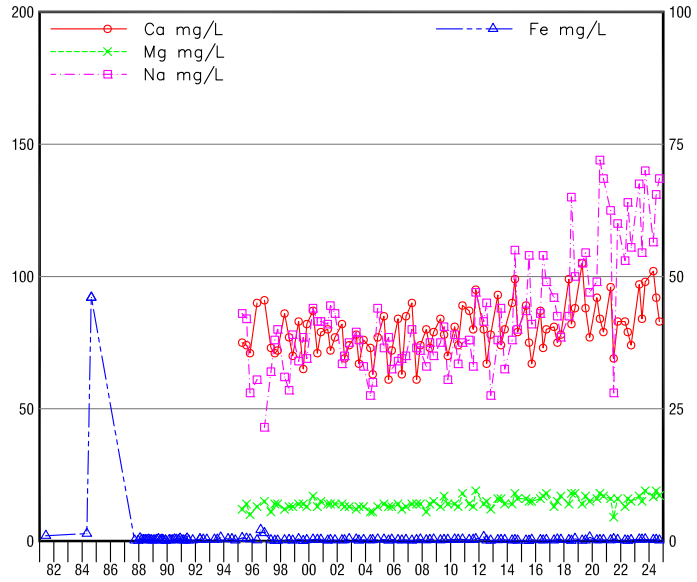
24G038



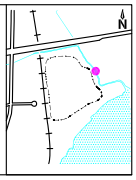








L	Concentration Reported Less Than
G	Concentration Reported Greater Than
A	Concentration Determined Anomalous
	Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

S-3

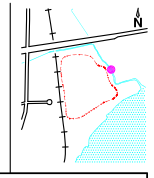
BEN'S DITCH

22578520 25 Apr 25	wsp	24G039

S-3

BEN'S DITCH

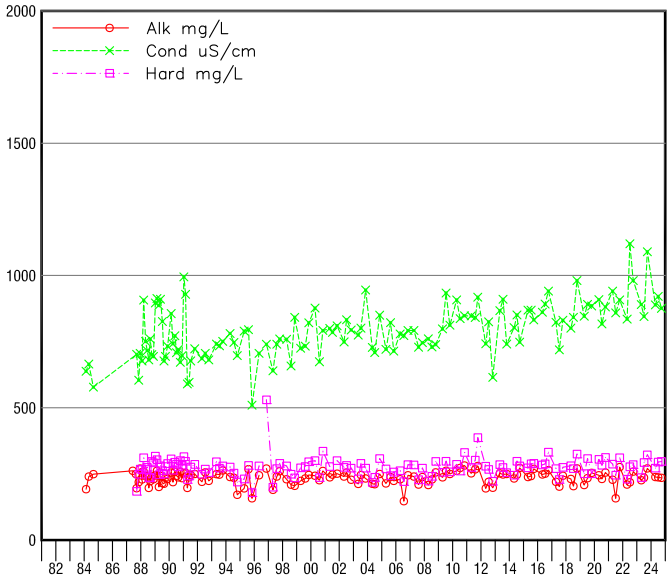
SURFACE WATER STATION

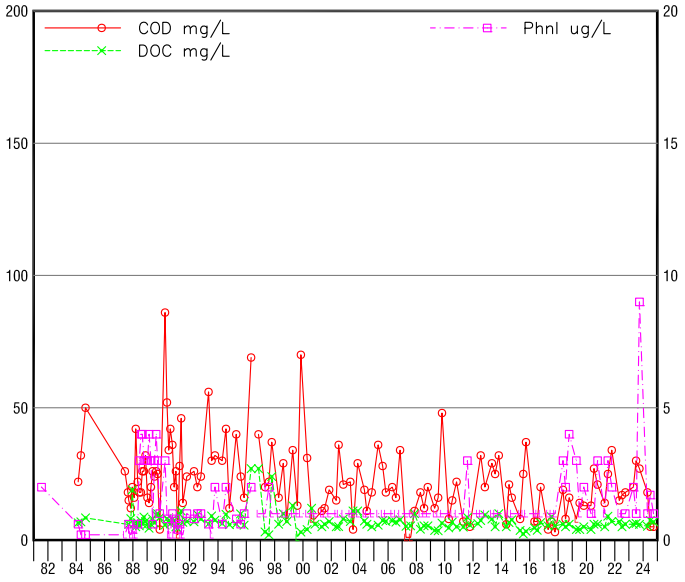


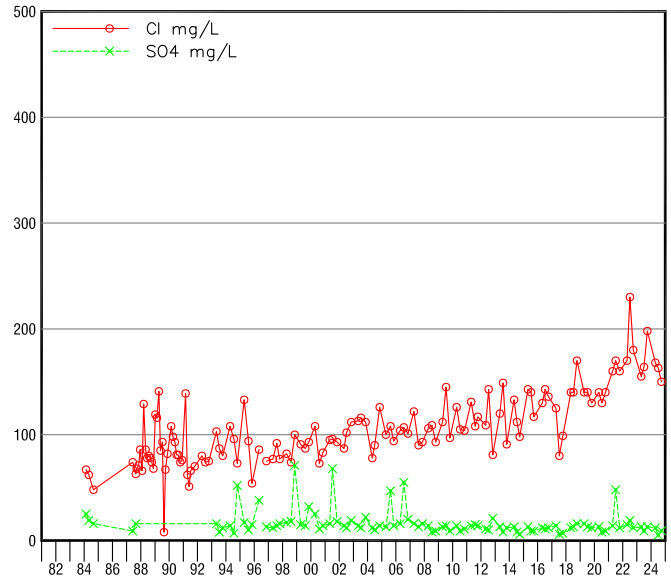
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
27-Apr-15	2957	235	1140	286	7.9	172	91	89	16	87	46	0.09	74	12	3.9	9.6	1.4	0.1	8.03	<1	-1.1
17-Jul-15	3019	190	1150	263	7.8	180	108	75	15	108	18	0.04	79	38	2.3	13.2	4.3	1.4	9.86	<1	-2.6
24-Sep-15	3076	174	1110	241	7.8	167	110	67	15	82	56	0.24	46	47	2.5	5.8	6.3	1.0	4.52	<1	-4.9
02-May-16	3148	262	1090	284	7.9	159	75	87	16	86	42	0.172	83	9	4.3	8.6	0.8	<0.1	7.41	<1	-1.5
13-Jul-16	3242	221	1150	255	7.8	169	111	73	17	108	13	0.122	74	27	4.6	20.8	0.8	1.3	18.2	<1	-0.8
05-Oct-16	3258	156	1070	272	8.1	164	86	80	18	98	16	0.20	91	45	5.5	3.4	8.6	1.0	2.02	<1	0.7
18-Apr-17	3364	218	1100	281	7.9	173	67	81	13	92	31	0.108	62	3	4.8	8.0	2.6	0.3	5.74	<1	-2.3
13-Jul-17	3380	176	1120	254	7.8	136	79	75	15	85	43	0.299	101	3	6.1	1.6	5.3	0.3	0.43	<1	2.3
12-Oct-17	3437	192	964	265	8.0	114	42	78	17	77	9.9	0.243	68	3	5.7	1.5	6.6	<0.1	0.5	<1	3.1
07-May-18	3557	240	1050	303	8.1	170	56	99	14	85	30	0.186	82	11	5.0	6.4	0.7	<0.1	5.8	**4**	0.8
11-Jul-18	3560	169	1450	279	7.9	240	150	82	18	130	87	0.07	65	12	6.0	5.9	6.6	0.6	4.9	**8**	0.2
12-Oct-18	3637	231	1190	297	7.9	200	86	88	18	100	41	**0.415**	136	21	6.0	7.0	3.3	0.5	6.2	**6**	-2.3
16-Apr-19	3683	266	1220	321	8.4	180	55	105	14	105	23	0.075	74	22	7.0	9.4	2.0	0.2	8.2	**4**	1.9
11-Jul-19	3735	239	1300	287	7.8	200	97	88	17	109	48	0.124	78	21	4.0	11.0	2.8	0.3	9.8	**5**	-0.7
24-Oct-19	3791	261	1340	252	7.7	200	95	77	15	94	66	**0.705**	95	45	7.0	16.6	0.8	1.2	15.6	**6**	-3.6
27-Apr-20	3903	208	1050	295	8.0	180	48	92	16	98	7.8	0.146	66	22	6	2.7	8.0	0.2	2.4	**3**	-1.3
15-Jul-20	3955	136	1100	285	8.0	200	73	84	18	144	13	0.18	31	35	8.0	1.3	15	0.2	0.1	<1	5.9
14-Oct-20	3999	136	1250	265	8.1	200	100	79	17	137	57	0.203	39	24	6.0	2.6	14	<0.1	0.1	**3**	5.2
16-Apr-21	4071	232	1590	305	8.0	260	100	96	16	125	73	0.14	67	43	10	13.0	9.4	2.3	12.6	<1	-3.2
06-Jul-21	4135	182	654	208	8.0	120	3	69	9	56	2.1	**0.366**	45	27	11	0.7	0.1	<0.1	<0.1	<1	-3.1
15-Oct-21	4203	191	1270	274	8.0	220	79	83	16	120	60	0.213	54	29	8.0	1.0	8.5	0.1	0.1	**4**	-0.1
25-Apr-22	4249	236	1120	259	8.2	220	60	83	13	106	32	0.126	66	20	6.0	6.9	0.9	0.3	6.8	**3**	-4.9
05-Jul-22	4273	181	1310	262	8.0	250	90	79	16	128	13	0.07	77	29	8.0	9.8	5.1	0.5	8.8	**2**	-4.6
29-Sep-22	4329	167	1160	247	8.2	230	70	74	15	111	9.5	0.176	48	25	6.0	0.7	11	0.1	0.1	**3**	-9.2
25-Apr-23	4399	271	1390	270	7.6	240	93	97	17	135	54	**0.308**	60	26	7.0	19.0	0.6	0.7	16.4	1	1.8
05-Jul-23	4451	178	1160	304	7.6	201	63	84	15	109	7.9	0.262	51	26	5.7	3.2	8.9	<0.1	0.05	1	10.3
27-Sep-23	4506	160	1270	298	8.0	231	88	98	19	140	15	**0.327**	50	80	6.5	0.3	13	<0.1	0.08	1	-6.3
22-Apr-24	4577	222	1070	298	7.6	205	44.3	102	16.7	113	6.3	0.217	69	21	4.6	<0.2	6.4	<0.2	0.06	1	3.7
04-Jul-24	4629	169	1210	307	7.89	230	69	92	19.0	131	12	0.228	60	23	6.8	<0.2	12	<0.2	0.08	1	4.4
25-Sep-24	2060972	144	1170	282	7.43	225	78.3	83	17.2	137	12	0.120	35	23	5.5	<0.2	13	<0.1	0.09	**1.3**	6.3
TOTAL SAMPLES		134	132	130	133	134	100	89	89	89	89	136	91	133	133	131	135	135	134	133	
AVERAGE 2024		178	1150	296	7.64	220	63.9	92	17.6	127	10	0.188	55	22	5.6	<0.2	10	<0.1	0.08	1.10	

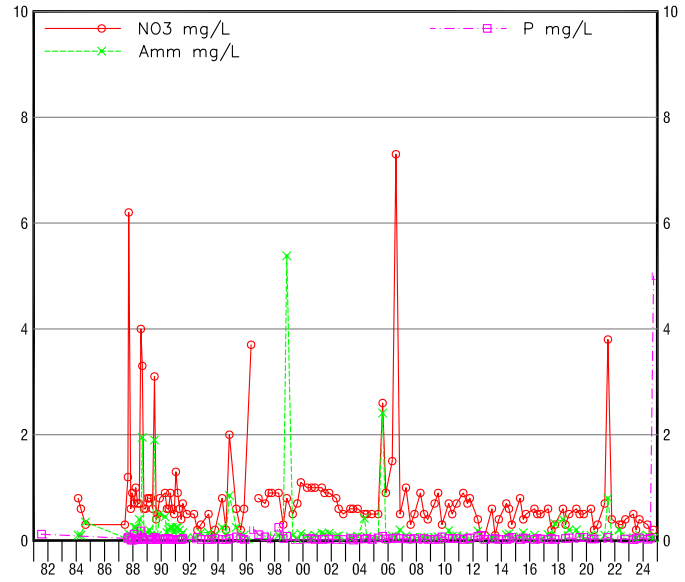
all Concentrations mg/L unless otherwise indicated

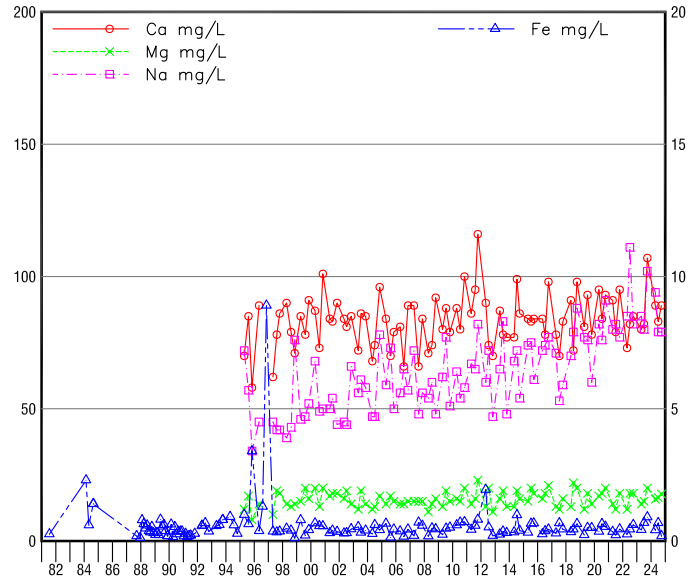
Anomalies shown in *Italics* / Exceedence in **BOLD**



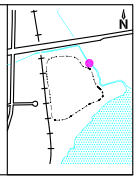








L	Concentration Reported Less Than
G	Concentration Reported Greater Than
A	Concentration Determined Anomalous
	Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

S-4

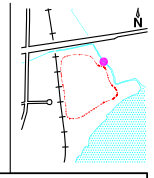
BEN'S DITCH

22578520 25 Apr 25	wsp	24G040

S-4

BEN'S DITCH

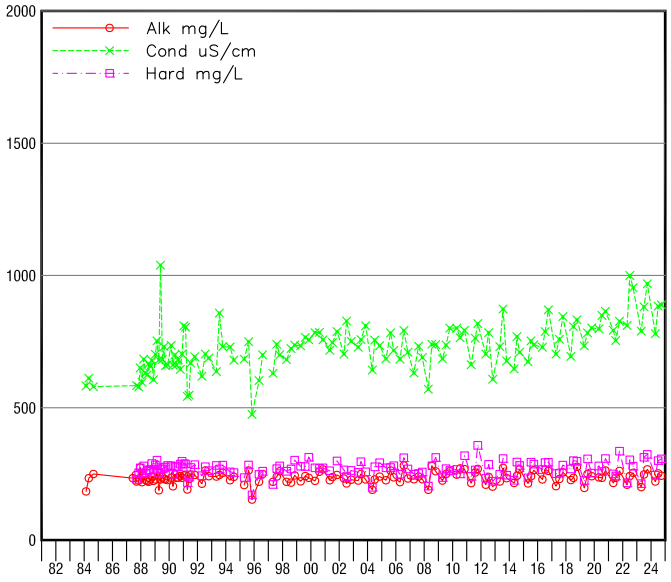
SURFACE WATER STATION

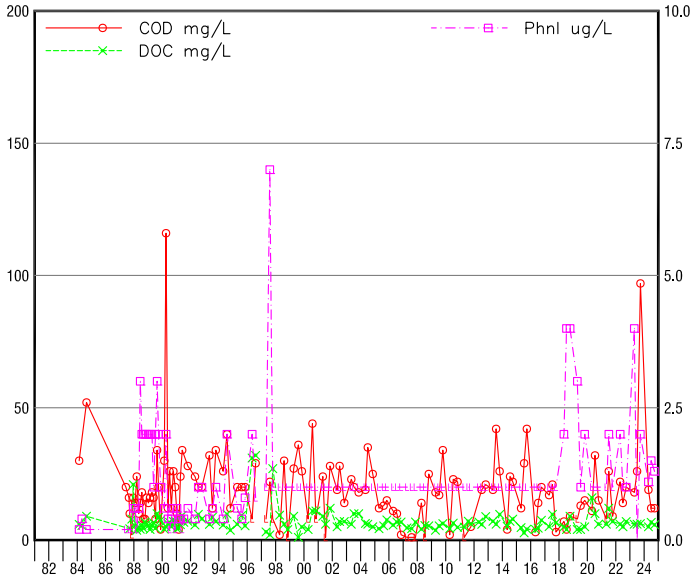


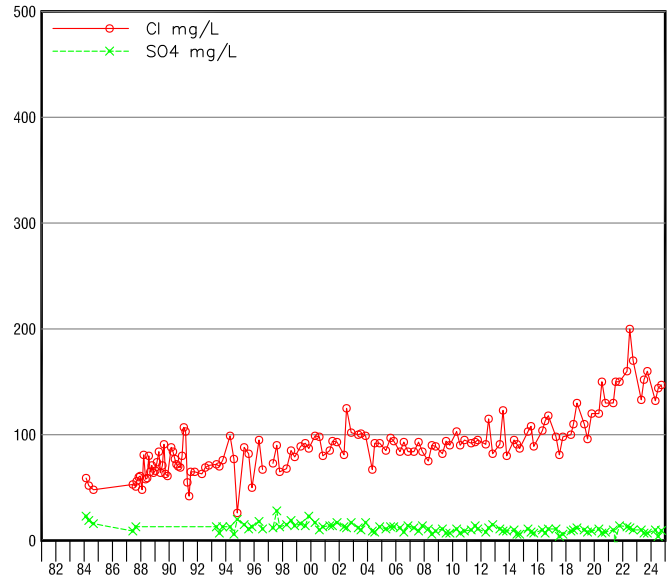
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
27-Apr-15	2958	238	869	273	8.1	143	13	84	15	74	2.2	**0.32**	102	8	3.6	0.5	0.8	<0.1	0.07	<1	-2.2
17-Jul-15	3020	242	869	288	7.9	140	9	83	20	75	2.1	**0.66**	100	25	2.3	0.4	0.4	<0.1	0.15	<1	0.8
25-Sep-15	3077	269	832	290	8.0	117	9	84	18	61	2.0	**0.67**	124	37	3.3	0.5	0.5	<0.1	0.06	<1	-2.8
02-May-16	3149	248	861	284	8.1	130	12	84	16	72	2.3	0.259	105	7	4.6	0.5	0.6	<0.1	0.1	<1	-1.1
13-Jul-16	3243	251	892	288	7.9	143	11	78	18	74	1.6	**0.375**	57	7	3.7	0.5	0.5	<0.1	0.04	<1	-3.7
05-Oct-16	3259	264	941	332	8.3	136	12	98	21	77	1.8	**0.442**	124	20	6.6	0.5	0.5	<0.1	0.02	<1	3.3
18-Apr-17	3365	220	823	270	8.1	125	14	78	13	71	1.7	0.288	92	4	5.4	0.6	0.6	<0.1	0.11	<1	-0.9
13-Jul-17	3381	202	719	229	8.0	80	6	70	12	53	1.6	**0.679**	168	7	8.8	0.6	0.2	<0.1	0.09	<1	3.2
12-Oct-17	3438	243	831	275	8.2	99	7	83	16	59	2.0	**0.444**	83	3	5.4	0.8	0.3	<0.1	0.32	<1	1.9
07-May-18	3506	231	801	281	8.1	140	12	91	13	70	2.4	**0.337**	94	19	6.0	1.0	0.6	<0.1	0.4	**3**	-0.6
11-Jul-18	3561	204	842	270	8.5	140	13	72	22	79	2.3	**0.439**	43	8	5.0	0.5	0.3	<0.1	<0.1	**2**	4.0
12-Oct-18	3536	271	981	325	8.1	170	16	98	20	88	2.7	**0.649**	297	16	6.0	1.3	0.5	<0.1	0.2	**4**	-0.5
16-Apr-19	3684	208	846	251	8.4	140	16	81	12	77	2.3	0.228	57	<8	4.0	0.5	0.6	<0.1	0.2	**3**	-0.1
11-Jul-19	3736	234	891	308	8.1	140	13	93	18	76	1.9	**0.503**	73	14	4.0	<0.5	0.5	<0.1	0.1	<1	3.1
25-Oct-19	3792	254	885	251	8.1	130	12	78	14	60	2.0	**0.495**	125	13	5.0	<0.5	0.5	<0.1	<0.1	**2**	-7.1
28-Apr-20	3904	245	909	305	8.1	140	13	95	17	82	2.5	**0.358**	83	13	4.0	1.6	0.6	<0.1	0.1	1	3.0
15-Jul-20	3956	231	817	283	8.0	130	8	84	18	76	2.2	**0.644**	72	27	6.0	0.7	0.2	<0.1	<0.1	<1	3.9
14-Oct-20	4000	255	881	312	8.3	140	9	93	20	91	2.4	**0.541**	128	21	6.0	<0.5	0.3	<0.1	<0.1	**3**	5.7
16-Apr-21	4072	228	941	287	8.1	160	14	91	14	80	2.7	**0.35**	90	14	5.0	<0.5	0.7	<0.1	0.1	<1	0.1
06-Jul-21	4136	158	859	245	7.9	170	48	79	12	82	8.8	0.224	74	25	9.0	1.4	3.8	0.5	0.8	**3**	-1.8
15-Oct-21	4204	276	908	311	8.0	160	12	95	18	77	2.7	**0.445**	91	34	7.0	<0.5	0.4	<0.1	<0.1	**2**	-2.8
25-Apr-22	4250	210	835	230	8.2	170	15	73	12	85	2.4	0.255	59	15	7.0	<0.5	0.3	<0.1	0.2	<1	-5.5
05-Jul-22	4274	218	1120	277	8.1	230	19	82	18	111	2.5	**0.444**	205	17	5.0	<0.5	0.3	<0.1	<0.1	<1	-3.3
29-Sep-22	4330	259	981	285	8.3	180	12	85	18	82	2.1	**0.611**	136	18	6.0	<0.5	0.4	<0.1	<0.1	1	-5.6
25-Apr-23	4400	226	890	236	7.8	155	13	80	14	85	2.6	**0.422**	48	20	6	1.1	0.5	<0.1	0.06	**2**	-1.5
05-Jul-23	4452	236	845	293	7.8	164	9	82	15	80	1.9	**0.691**	63	30	6.3	4.8	0.2	<0.1	0.04	1	9.7
28-Sep-23	4507	271	1090	322	7.3	198	13	107	20	102	3.1	**0.900**	262	27	5.9	0.5	0.4	<0.1	0.1	**9**	-5.2
22-Apr-24	4578	238	889	272	7.73	168	12	89	15.8	94	2.6	**0.409**	75	18	5.2	<0.2	0.3	<0.2	0.1	1	1.5
04-Jul-24	4630	237	921	295	8	163	5.1	83	16.4	79	2.0	**0.685**	187	5	7.4	0.6	<0.2	<0.2	0.06	**1.7**	0.9
26-Sep-24	2060973	235	876	297	7.62	150	9.3	89	17.8	79	3.1	0.190	103	5	6.9	<0.2	0.2	<0.1	0.05	1	6.7
TOTAL SAMPLES		135	133	129	133	134	100	88	88	88	88	137	90	132	132	133	134	134	134	133	
AVERAGE 2024		237	895	288	8	160	9	87	16.7	84	2.6	0.4280	122	9	6.5	<0.2	<0.2	<0.1	0.1	1.23	

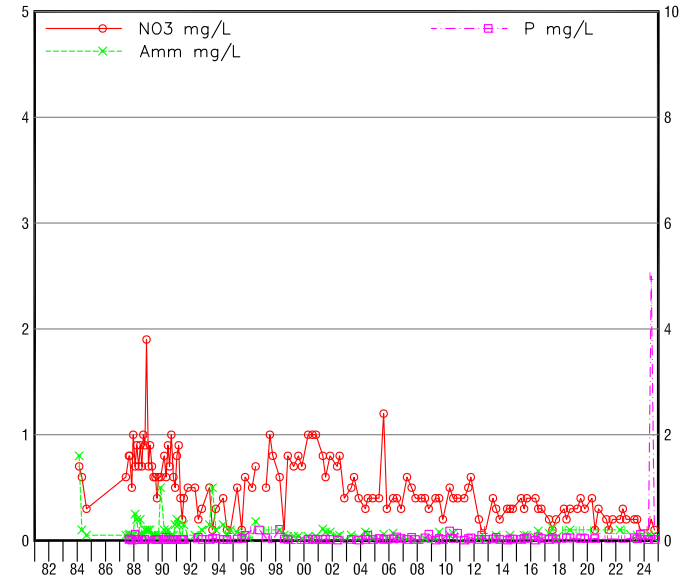
all Concentrations mg/L unless otherwise indicated

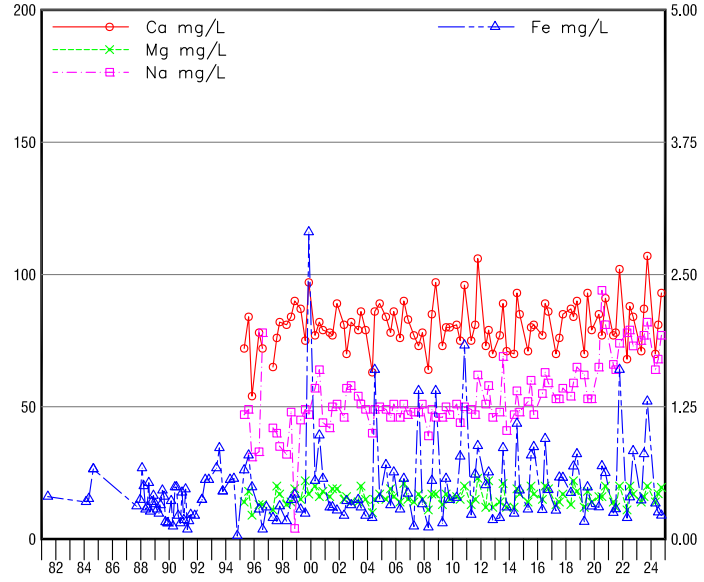
Anomalies shown in *Italics* / Exceedence in **BOLD**



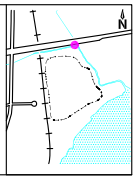








L	Concentration Reported Less Than
G	Concentration Reported Greater Than
A	Concentration Determined Anomalous
	Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

S-6

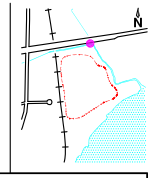
MILL CREEK

22578520 25 Apr 25	wsp	24G041

S-6

MILL CREEK

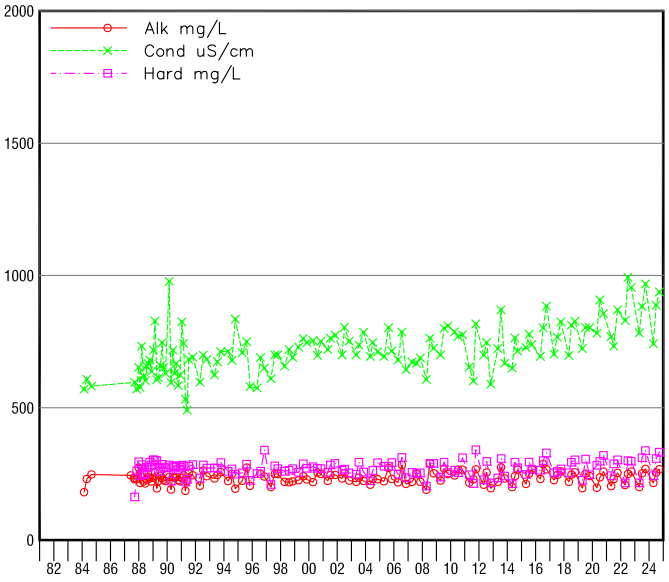
SURFACE WATER STATION

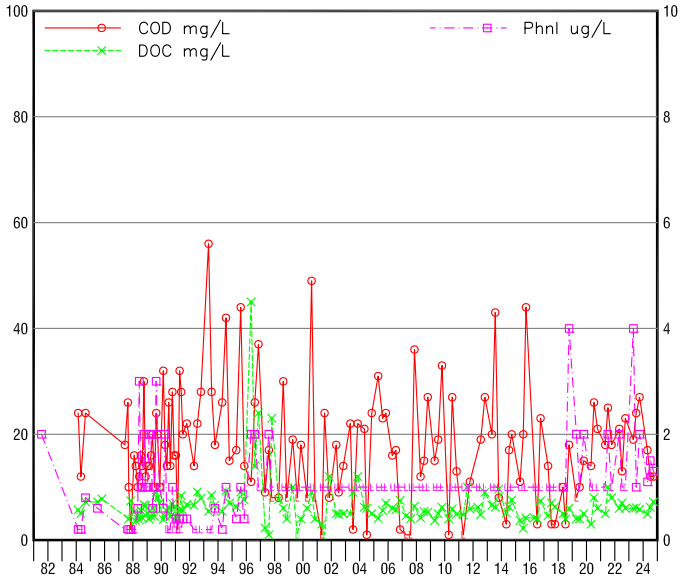


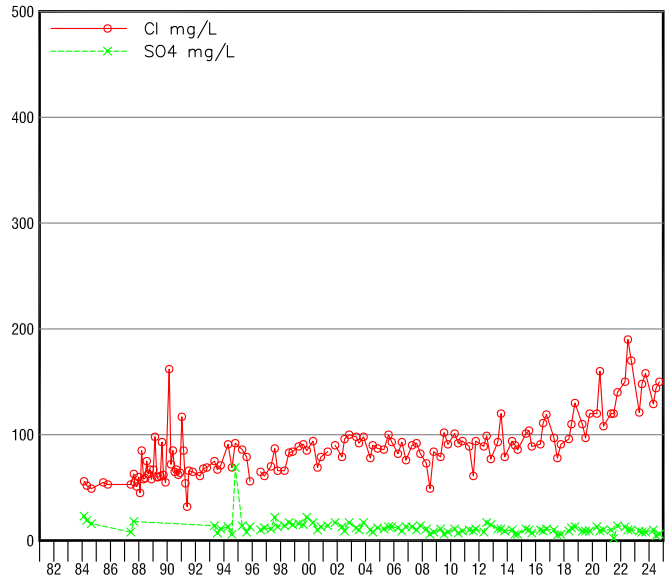
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
27-Apr-15	2959	214	674	235	8.1	103	11	71	14	52	1.7	0.28	71	12	4.7	0.4	0.4	<0.1	<0.01	<1	-2.3
16-Jul-15	3021	241	753	294	8.2	108	8	80	20	60	1.4	**0.79**	85	29	2.7	0.5	0.3	<0.1	0.05	<1	1.6
25-Sep-15	3078	264	738	287	8.1	89	7	81	17	47	1.6	**0.87**	128	42	4.1	0.5	0.4	<0.1	0.05	<1	-2.6
02-May-16	3150	229	729	266	8.1	104	10	77	15	55	1.7	0.275	51	3	4.0	0.5	0.4	<0.1	0.03	<1	-1.5
13-Jul-16	3244	266	788	293	8.0	113	7	89	20	63	1.4	**0.946**	173	14	4.5	0.5	0.3	<0.1	0.09	<1	1.3
05-Oct-16	3260	261	870	294	8.4	118	11	86	19	59	1.5	**0.464**	127	20	7.5	0.6	0.3	<0.1	<0.01	<1	-1.3
18-Apr-17	3366	204	703	251	8.2	98	11	70	13	53	1.3	0.269	53	17	5.1	0.6	0.2	<0.1	0.07	<1	-1.2
13-Jul-17	3382	231	759	253	8.1	81	4	76	14	53	1.3	**0.582**	104	21	9.7	0.7	0.1	<0.1	0.12	<1	2.2
12-Oct-17	3439	256	845	283	8.2	98	6	85	17	57	1.6	**0.579**	90	3	6.5	0.5	0.2	<0.1	0.02	<1	1.0
07-May-18	3507	227	694	269	8.3	100	9	87	13	54	2.1	**0.437**	78	7	5.0	0.7	0.3	<0.1	<0.1	**2**	2.3
12-Jul-18	3562	235	807	300	8.2	110	10	84	22	59	1.7	**0.686**	159	4	4.0	1.1	0.2	<0.1	<0.1	**4**	4.3
11-Oct-18	3639	277	833	298	8.1	130	12	90	18	65	1.9	**0.803**	109	9	9.0	0.6	0.3	<0.1	0.1	**4**	-3.2
17-Apr-19	3685	197	734	225	8.4	110	10	70	12	62	1.6	0.163	37	<8	4.0	<0.5	0.3	<0.1	<0.1	**3**	0.4
11-Jul-19	3737	250	783	307	8.2	96	8	93	18	53	1.4	**0.489**	85	13	4.0	<0.5	0.4	<0.1	<0.1	1	4.1
24-Oct-19	3793	241	802	253	8.2	120	9	79	14	53	1.5	**0.309**	75	15	5.0	0.7	0.3	<0.1	<0.1	**2**	-5.4
27-Apr-20	3905	237	798	280	8.3	120	11	85	16	65	2.1	**0.301**	57	11	16	<0.5	0.4	<0.1	<0.1	<1	1.2
15-Jul-20	3957	235	849	259	8.0	150	7	77	16	94	2.3	**0.689**	141	32	10	<0.5	0.1	<0.1	<0.1	<1	1.9
14-Oct-20	4001	263	865	308	8.4	130	8	91	20	81	2.0	**0.625**	109	15	6.0	<0.5	0.3	<0.1	<0.1	<1	3.8
06-May-21	4073	216	793	250	8.3	130	10	77	14	66	1.9	0.248	57	<8	6.0	<0.5	0.2	<0.1	<0.1	<1	-1.0
06-Jul-21	4137	235	754	242	8.2	150	<2	78	12	64	1.5	0.282	53	26	12	0.8	0.1	<0.1	<0.1	**2**	-7.4
12-Oct-21	4205	261	827	336	7.9	150	14	102	20	74	2.7	**1.60**	170	9	7.0	<0.5	0.2	<0.1	<0.1	<1	1.9
25-Apr-22	4051	209	811	216	8.2	160	13	68	11	78	1.9	0.199	43	22	6.0	<0.5	0.2	<0.1	0.1	**2**	-7.2
05-Jul-22	4275	242	1000	303	8.2	200	12	88	20	79	2.1	**0.394**	78	14	5.0	1.3	0.3	<0.1	<0.1	<1	-5.4
29-Sep-22	4331	254	954	279	8.4	170	10	84	17	73	1.8	**0.832**	123	20	7.0	<0.5	0.2	<0.1	<0.1	1	-6.2
24-Apr-23	4401	200	790	213	7.8	133	10	71	14	75	2.2	**0.366**	31	18	6	6.7	0.2	<0.1	<0.01	**4**	0.9
05-Jul-23	4453	248	882	313	7.8	152	7	87	16	77	1.6	**0.803**	81	26	6	3.0	0.2	<0.1	0.05	0	10.4
28-Sep-23	4508	267	969	324	7.4	160	7	107	20	82	2.6	**1.30**	253	97	6.2	0.5	<0.1	<0.1	0.04	**2**	-6.0
23-Apr-24	4579	221	780	245	7.71	132	10	70	14.0	64	2.0	**0.337**	67	19	5	0.3	<0.1	<0.1	0.05	**1.1**	2.8
04-Jul-24	4631	252	884	300	8	144	3.9	81	17.1	68	1.5	0.253	195	12	6.7	0.5	<0.2	<0.2	0.04	**1.5**	1.5
25-Sep-24	2060974	243	889	307	7.58	147	9.4	93	19.5	77	3.2	0.222	122	12	5.8	<0.2	0.1	<0.1	0.02	**1.3**	7.5
TOTAL SAMPLES		134	132	128	133	135	100	89	89	89	89	137	90	131	133	135	135	135	135	133	
AVERAGE 2024		239	851	284	8	141	8	81	16.9	70	2.2	0.2707	128	14	5.8	0.3	<0.2	<0.1	0.04	1.30	

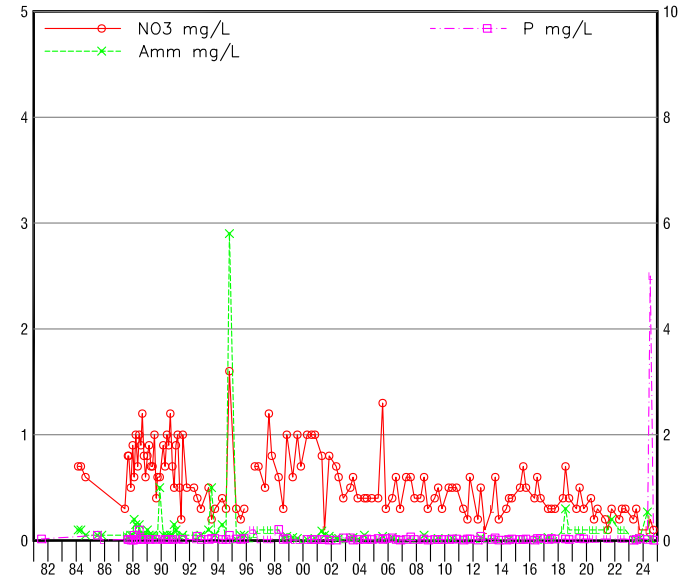
all Concentrations mg/L unless otherwise indicated

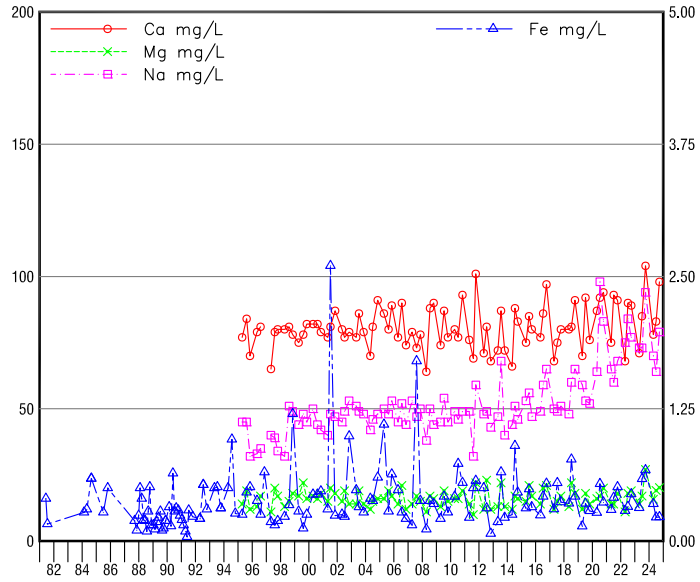
Anomalies shown in *Italics* / Exceedence in **BOLD**



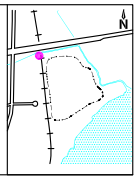








L	Concentration Reported Less Than
G	Concentration Reported Greater Than
A	Concentration Determined Anomalous
	Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

S-7

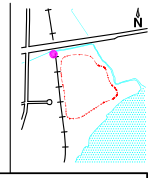
MILL CREEK

22578520 25 Apr 25	wsp	24G042

S-7

MILL CREEK

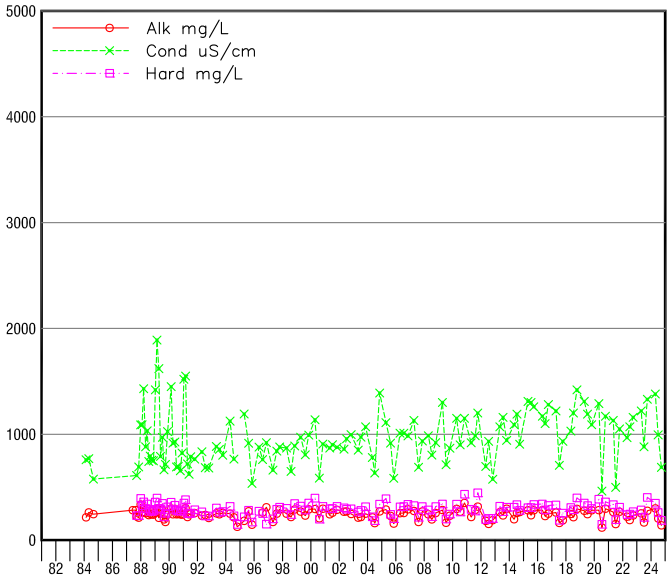
SURFACE WATER STATION

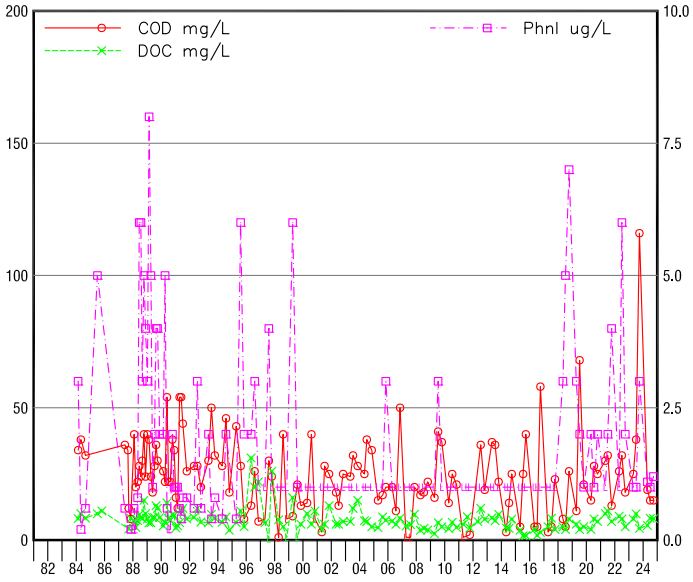


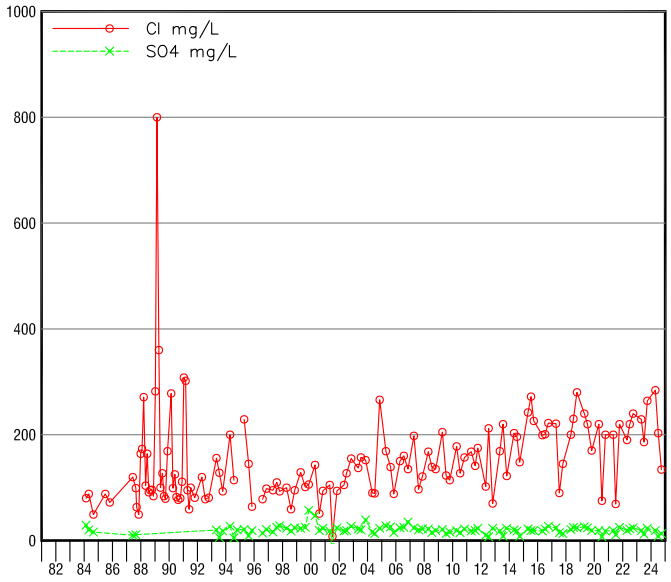
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
27-Apr-15	2960	212	728	248	8.1	101	11	75	15	53	1.7	**0.31**	68	11	3.7	0.4	0.5	<0.1	<0.01	<1	0.6
17-Jul-15	3022	251	778	295	8.1	104	10	85	21	56	1.5	**0.49**	74	20	2.2	0.3	0.7	<0.1	<0.01	<1	2.1
25-Sep-15	3079	266	739	268	8.1	89	7	80	17	47	1.6	**0.32**	55	44	4.2	0.4	0.5	<0.1	<0.01	<1	-2.7
03-May-16	3151	231	694	264	8.1	91	10	77	14	49	1.6	0.243	45		4.2	0.4	0.4	<0.1	<0.01	<1	-1.0
13-Jul-16	3245	287	802	300	8.2	111	9	86	20	59	1.3	**0.421**	73	3	4.0	0.6	0.6	<0.1	0.01	<1	-3.1
05-Oct-16	3261	267	884	329	8.3	119	11	97	21	65	1.5	**0.542**	104	23	7.4	0.5	0.4	<0.1	<0.01	<1	3.3
18-Apr-17	3367	227	703	254	8.1	97	10	68	12	50	1.1	**0.301**	52	14	4.6	0.5	0.3	<0.1	0.03	<1	-6.4
12-Jul-17	3383	246	767	259	8.2	78	5	75	15	49	1.0	**0.549**	55	3	7.0	0.4	0.3	<0.1	<0.01	<1	0.1
13-Oct-17	3440	260	825	269	8.2	91	6	80	17	51	1.4	**0.367**	53	3	6.3	0.4	0.3	<0.1	<0.01	<1	-1.0
07-May-18	3508	220	698	254	8.3	96	9	80	13	48	1.8	**0.355**	79	10	5.0	<0.5	0.4	<0.1	<0.1	1	-0.1
11-Jul-18	3563	247	812	294	8.3	110	12	81	22	60	1.7	**0.771**	65	3	4.0	1.6	0.7	<0.1	0.3	<1	1.3
11-Oct-18	3640	256	827	303	8.2	130	13	91	18	65	1.8	**0.42**	57	18	6.0	0.6	0.4	<0.1	<0.1	**4**	-0.4
17-Apr-19	3686	196	724	226	8.4	110	9	70	12	59	1.6	0.139	34	<8	4.0	<0.5	0.3	<0.1	<0.1	**2**	-0.2
11-Jul-19	3738	251	803	306	8.2	97	9	92	18	53	1.4	**0.354**	58	10	4.0	0.6	0.5	<0.1	<0.1	<1	3.3
24-Oct-19	3794	242	803	247	8.2	120	9	76	14	52	1.4	0.284	59	15	5.0	<0.5	0.3	<0.1	<0.1	**2**	-6.8
27-Apr-20	3906	198	782	283	8.3	120	13	87	16	64	2.0	0.267	51	14	3.0	0.6	0.4	<0.1	<0.1	<1	5.9
15-Jul-20	3958	237	908	298	8.1	160	9	92	17	98	2.2	**0.540**	105	26	8.0	<0.5	0.2	<0.1	<0.1	<1	4.8
14-Oct-20	4002	259	856	320	8.3	108	10	94	20	83	2.1	**0.365**	72	21	6.0	<0.5	0.3	<0.1	<0.1	<1	9.2
30-Apr-21	4074	204	769	243	8.1	120	10	75	14	65	1.9	0.295	48	18	5.0	<0.5	0.2	<0.1	<0.1	<1	0.1
06-Jul-21	4138	231	733	288	8.1	120	2	93	14	60	1.3	**0.409**	71	25	10	0.6	0.1	<0.1	<0.1	**2**	2.3
12-Oct-21	4206	254	870	303	8.2	140	14	91	18	68	2.4	**0.509**	58	18	8.0	<0.5	0.3	<0.1	0.2	<1	-1.4
25-Apr-22	4052	208	830	216	8.2	150	13	68	11	75	1.9	0.285	49	21	6.0	<0.5	0.2	<0.1	<0.1	**2**	-5.6
06-Jul-22	4276	250	993	300	8.3	190	10	90	18	84	1.9	**0.323**	66	13	7.0	<0.5	0.3	<0.1	<0.1	<1	-3.8
29-Sep-22	4332	259	955	298	8.3	170	10	89	19	77	1.9	**0.443**	66	23	6.0	<0.5	0.3	<0.1	<0.1	<1	-3.7
24-Apr-23	4402	200	783	216	7.8	121	9	71	14	73	2.1	**0.313**	28	19	6	3.3	0.2	<0.1	<0.01	**4**	2.7
06-Jul-23	4454	252	883	311	7.8	148	8	85	17	73	1.6	**0.587**	56	24	6.1	3.2	0.3	<0.1	0.01	1	11.0
02-Oct-23	4509	269	968	338	7.6	158	8	104	27	94	3.4	**0.670**	204	27	5.8	<0.2	<0.1	<0.1	0.02	**2**	0.3
22-Apr-24	4580	216	742	243	7.78	129	10	78	15.8	70	2.2	**0.351**	54	17	4.9	<0.2	<0.1	<0.1	0.27	**1.1**	2.6
03-Jul-24	4632	255	888	308	8.02	144	4.5	83	19.1	64	3.2	0.224	89	12	6.2	0.3	<0.2	<0.2	0.02	**1.5**	1.6
26-Sep-24	2060975	268	938	332	7.69	150	6.1	98	20.2	79	3.1	0.226	60	12	7.2	<0.2	0.1	<0.1	<0.01	**1.3**	7.0
TOTAL SAMPLES		135	134	131	135	136	99	89	89	89	89	143	91	132	135	138	135	136	138	136	
AVERAGE 2024		246	856	294	7.83	141	7	86	18.4	71	2.8	0.2670	68	14	6.1	<0.2	<0.2	<0.1	0.10	1.30	

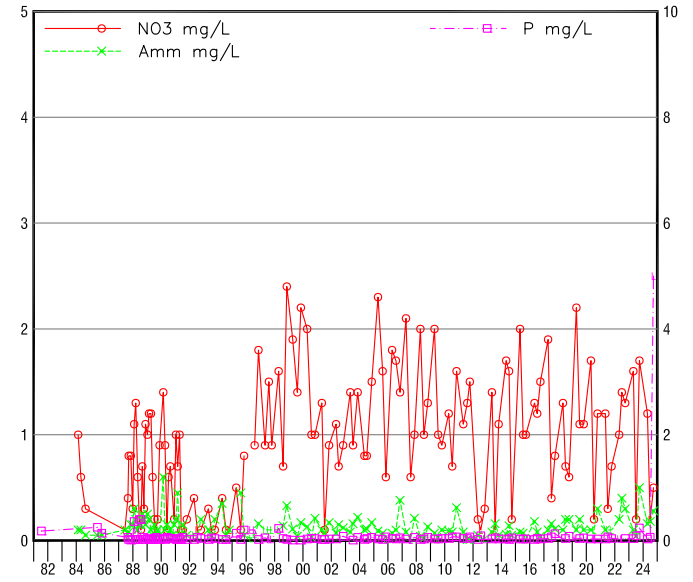
all Concentrations mg/L unless otherwise indicated

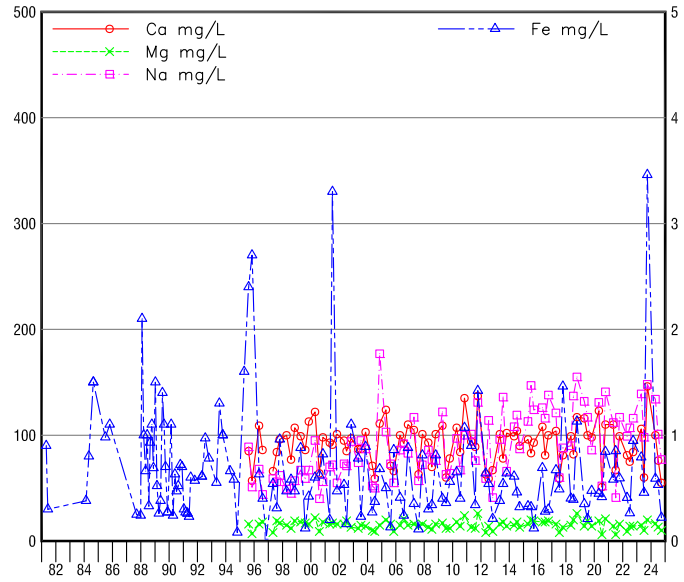
Anomalies shown in *Italics* / Exceedence in **BOLD**



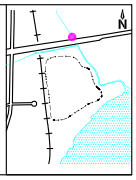








L	Concentration Reported Less Than
G	Concentration Reported Greater Than
A	Concentration Determined Anomalous
	Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

S-8

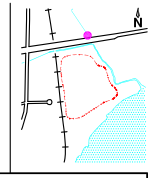
BEN'S DITCH

22578520 25 Apr 25	wsp	24G043

S-8

BEN'S DITCH

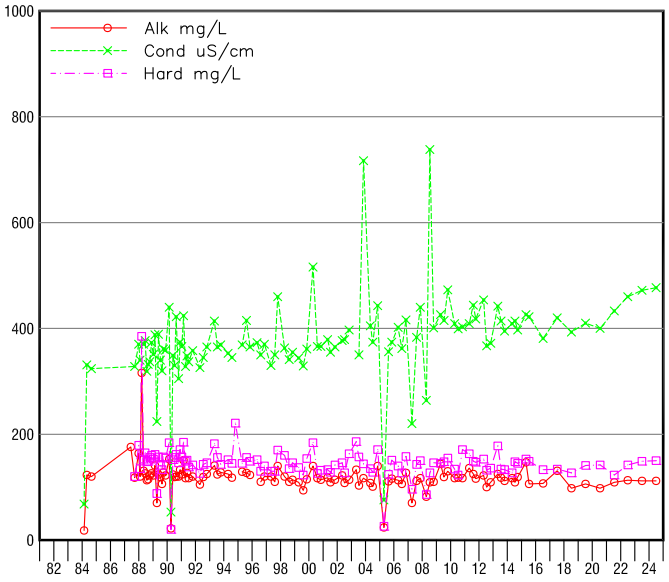
SURFACE WATER STATION

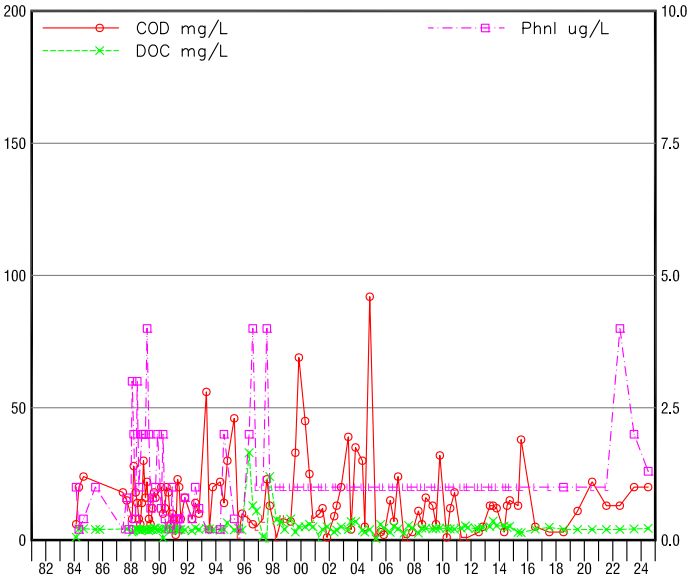


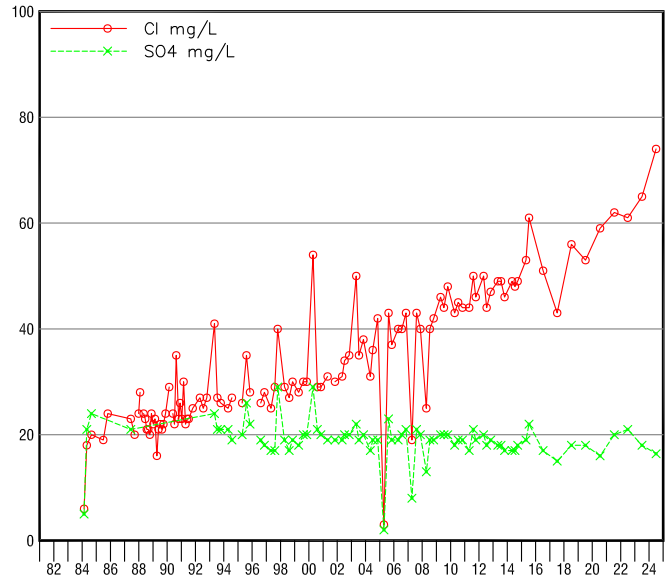
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
27-Apr-15	2961	281	1310	306	8.1	242	22	96	16	113	2.4	**0.33**	123	5	3.7	0.6	2.0	<0.1	0.08	<1	-8.0
16-Jul-15	3023	234	1300	307	8.1	272	19	83	20	147	2.6	**0.32**	95	25	1.6	0.5	1.0	<0.1	0.07	<1	-2.2
25-Sep-15	3080	281	1260	336	8.1	226	19	93	19	124	3.0	0.12	42	40	1.7	0.7	1.0	<0.1	<0.01	<1	-2.8
02-May-16	3152	282	1170	341	8.1	199	18	108	18	126	2.7	**0.691**	234	5	4.1	0.6	1.3	<0.1	0.18	<1	3.1
13-Jul-16	3246	227	1100	285	7.9	201	22	81	18	116	2.5	0.278	41	5	1.8	0.4	1.2	0.6	0.08	<1	-0.5
05-Oct-16	3262	249	1280	327	8.4	222	27	100	19	138	3.0	0.297	80	58	2.9	0.6	1.5	<0.1	0.04	<1	3.0
18-Apr-17	3368	260	1220	332	8.1	221	24	104	16	121	2.4	**0.669**	138	3	5.0	0.9	1.9	<0.1	0.1	<1	-0.8
13-Jul-17	3384	162	706	187	8.0	90	15	59	8	60	2.1	**0.488**	65	5	8.3	0.8	0.4	<0.1	0.16	<1	1.5
12-Oct-17	3441	188	933	255	8.0	145	13	81	13	88	2.9	**1.46**	227	23	4.0	7.4	0.8	<0.1	0.11	<1	5.2
07-May-18	3509	247	1030	308	8.2	200	21	99	15	90	2.3	**0.402**	108	8	5.0	<0.5	1.3	<0.1	0.1	**3**	-4.4
11-Jul-18	3564	216	1200	286	7.9	230	25	82	20	137	3.6	**0.39**	82	5	4.0	<0.5	0.7	0.2	0.2	**5**	1.9
11-Oct-18	3641	295	1420	398	8.0	280	24	117	26	155	4.1	**1.13**	484	26	8.0	0.6	0.6	<0.1	0.2	**7**	1.9
17-Apr-19	3687	276	1310	349	8.4	240	26	116	14	132	2.7	**0.349**	107	11	6.0	<0.5	2.2	<0.1	0.1	**3**	-0.8
11-Jul-19	3739	245	1190	326	7.9	220	24	100	19	117	3.3	0.209	100	68	4.0	0.7	1.1	0.1	0.2	**2**	0.3
24-Oct-19	3795	281	1090	299	8.2	170	19	98	14	86	3.1	**0.475**	166	21	5.0	0.7	1.1	<0.1	0.1	1	-4.8
27-Apr-20	3907	282	1290	386	8.3	220	19	123	19	131	2.9	**0.447**	127	15	4.0	<0.5	1.7	<0.1	0.1	**2**	4.5
15-Jul-20	3959	118	463	149	7.9	75	7	51	6	52	2.1	**0.416**	31	28	8.0	<0.5	0.2	<0.1	<0.1	1	7.6
14-Oct-20	4003	296	1170	361	8.3	200	18	110	21	141	3.8	**0.844**	314	25	7.0	<0.5	1.2	0.1	0.3	**2**	5.8
06-May-21	4075	265	1130	335	8.3	200	19	110	14	112	2.5	**0.580**	129	30	10	<0.5	1.2	<0.1	0.1	<1	1.3
06-Jul-21	4139	151	498	193	8.1	69	11	67	6	41	3.2	**0.85**	51	32	11	0.8	0.3	<0.1	<0.1	**2**	5.2
12-Oct-21	4207	267	1050	310	7.6	220	25	99	16	117	4.0	**0.593**	220	13	7.0	0.5	0.7	0.2	<0.1	**4**	-2.5
25-Apr-22	4053	220	968	240	8.2	190	19	81	9	99	2.2	**0.408**	101	26	9.0	<0.5	1.0	<0.1	0.2	<1	-5.2
05-Jul-22	4277	189	1070	245	8.1	220	22	75	14	107	2.8	0.263	44	32	8.0	0.9	1.4	0.1	0.4	**6**	-4.4
29-Sep-22	4333	232	1160	268	8.3	240	24	84	14	116	2.9	**0.946**	171	18	5.0	<0.5	1.3	0.1	0.3	**2**	-6.5
24-Apr-23	4403	253	1220	284	7.7	229	19	106	15	139	2.9	**0.790**	86	25	8	2.1	1.6	<0.1	0.1	1	2.6
05-Jul-23	4455	166	882	214	7.8	186	12	60	10	98	1.9	**0.457**	46	38	9.9	3.6	0.2	<0.1	0.04	1	8.9
28-Sep-23	4510	277	1330	403	7.5	264	23	146	20	148	4.1	**3.46**	847	116	4.4	1.4	1.7	<0.1	0.5	**3**	-8.2
23-Apr-24	4581	299	1380	348	7.67	284	19	100	16.5	134	2.6	**0.589**	115	19	5.5	0.5	1.2	<0.2	0.16	**1.1**	1.8
04-Jul-24	4633	204	994	260	7.92	203	7.9	76	13.1	101	2.7	**0.530**	225	15	8.2	0.7	<0.2	<0.2	0.18	1	-0.3
25-Sep-24	2060976	139	687	186	7.32	134	13.2	55	10.0	77	3.9	0.221	115	15	8.1	<0.2	0.5	<0.1	0.28	**1.2**	5.2
TOTAL SAMPLES		135	133	131	136	136	100	88	88	88	88	142	91	132	135	138	134	136	137	135	
AVERAGE 2024		214	1020	265	7.64	207	13	77	13.2	104	3.1	0.4467	152	16	7.3	0.4	0.6	<0.1	0.21	1.10	

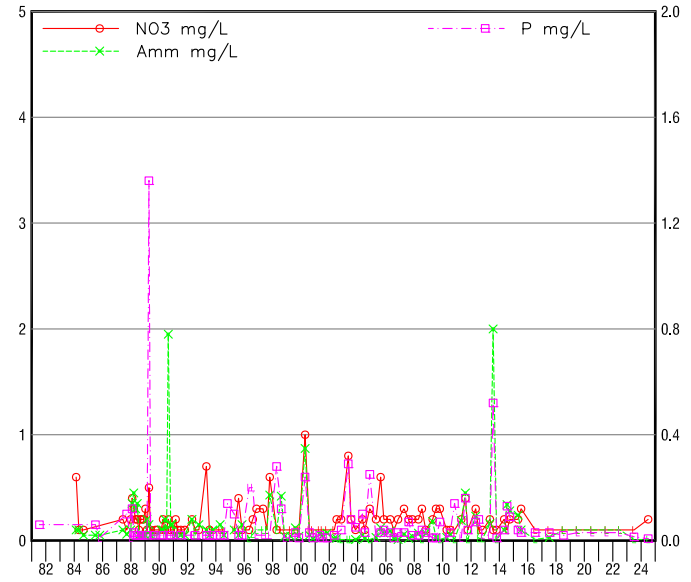
all Concentrations mg/L unless otherwise indicated

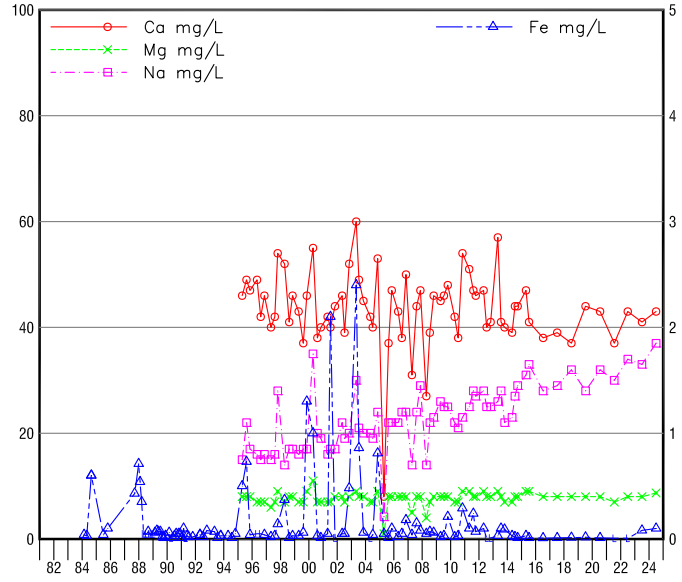
Anomalies shown in *Italics* / Exceedence in **BOLD**



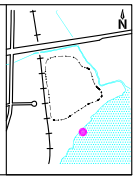








L	Concentration Reported Less Than
G	Concentration Reported Greater Than
A	Concentration Determined Anomalous
	Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

S-9

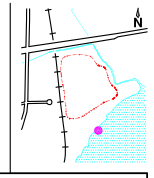
LAKE SIMCOE

22578520 25 Apr 25	wsp	24G044

S-9

LAKE SIMCOE

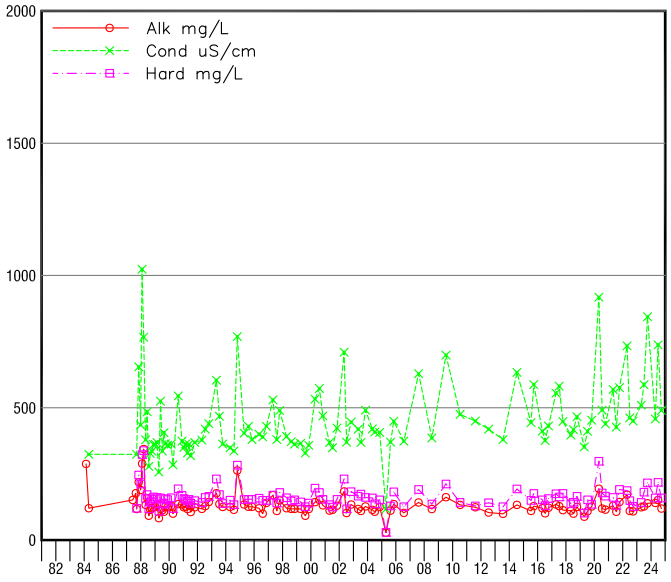
SURFACE WATER STATION

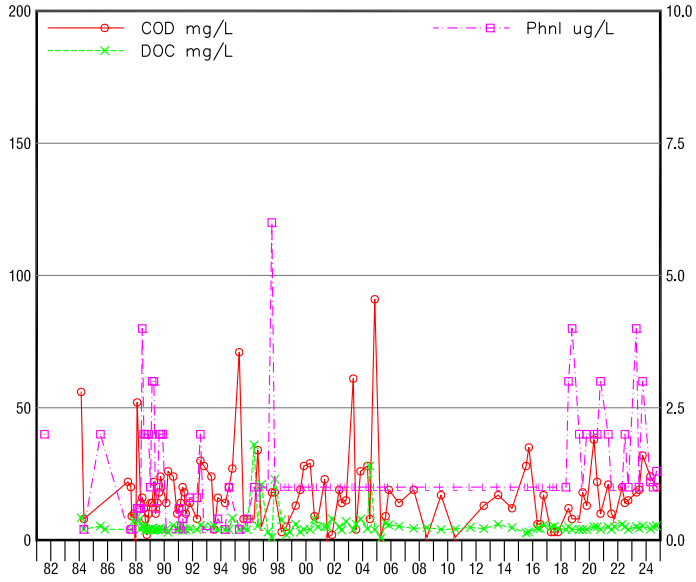


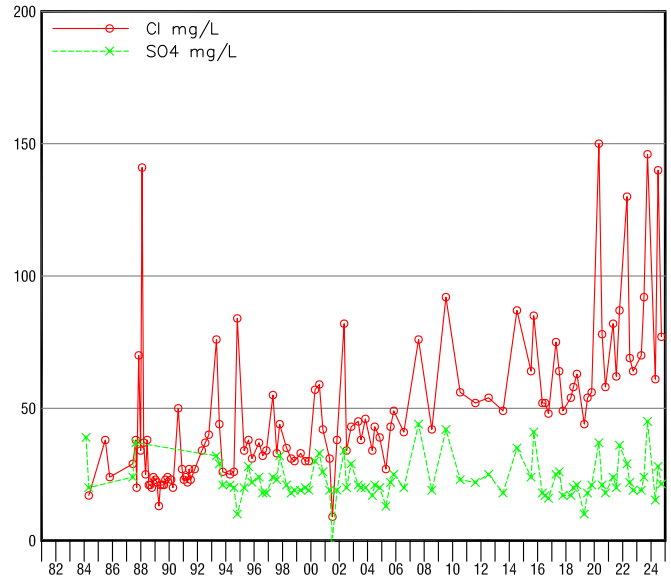
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
22-Oct-08	810223	110	401	146	7.6	42	19	46	8	23	2.6	0.06	5	16	4.4	0.5	0.1	<0.1	0.07	<1	3.1
16-Apr-09	0910933	144	426	145	7.8	46	20	45	8	26	2.2	0.02	4	13	4.2	0.5	0.2	<0.1	0.18	<1	-5.8
15-Jul-09	0921633	119	415	148	7.8	44	20	46	8	25	2.3	0.03	8	6	4.4	0.4	0.3	<0.1	0.03	<1	0.6
21-Oct-09	0933462	130	473	155	7.6	48	20	48	8	25	2.3	0.21	22	32	4.5	0.8	0.3	<0.1	<0.01	<1	-0.9
14-Apr-10	2015	117	409	134	7.7	43	18	42	7	22	2.0	0.02	8	1	4.4	0.3	0.1	<0.1	0.03	<1	-3.3
14-Jul-10	2066	118	399	123	8.2	45	19	38	7	21	2.0	0.03	15	12	4.2	0.5	0.1	<0.1	0.06	<1	-7.9
03-Nov-10	2170	117	403	171	7.9	44	19	54	9	23	2.4	0.29	32	18	4.1	0.9	<0.1	<0.1	<0.01	<1	7.4
27-Apr-11	2197	136	409	163	7.8	44	17	51	9	25	1.9	0.10	6	<1	4.5	0.6	0.2	<0.1	0.19	<1	1.3
09-Aug-11	2285	125	444	149	8.0	50	21	47	8	28	2.7	0.24	18		5.4	1.8	0.4	0.2	0.45	<1	-0.5
11-Oct-11	2345	116	418	147	8.1	46	19	46	8	27	2.6	0.07	19	<1	4.7	0.3	0.1	<0.1	<0.01	<1	3.4
02-May-12	2412	122	454	153	8.2	50	20	47	9	28	2.4	0.10	19		4.3	0.9	0.3	<0.1	0.23	<1	1.1
18-Jul-12	2430	100	367	132	8.0	44	18	40	8	25	2.2	<0.01	25	3	4.3	0.8	<0.1	<0.1	<0.02	<1	3.8
31-Oct-12	2504	109	372	136	8.2	47	19	41	8	25	2.4	<0.01	<2	5	4.7	0.4	0.1	<0.1	<0.02	<1	0.6
02-May-13	2574	125	442	178	8.1	49	18	57	9	26	2.4	0.03	16	13	5.1	0.7	0.2	<0.1	0.16	<1	5.7
24-Jul-13	2665	118	414	134	7.9	49	18	41	8	28	3.1	0.10	59	13	7.2	3.5	0.1	0.1	2.0	<1	0.3
24-Oct-13	2684	112	395	133	8.2	46	17	40	7	22	1.8	0.09	22	12	5.4	0.4	0.1	<0.1	<0.01	<1	-2.9
05-May-14	2760	117	409	127	8.1	49	17	39	7	23	2.8	0.03	5	3	5.3	0.6	0.2	<0.1	0.1	<1	-6.0
18-Jul-14	2818	109	414	148	8.2	48	17	44	8	27	2.4	0.02	11	13	4.7	0.9	<0.1	<0.1	0.34	<1	3.3
26-Sep-14	2880	119	397	145	8.1	49	18	44	8	29	3.1	0.01	5	15	5.2	1.0	0.2	<0.1	0.28	<1	1.2
28-Apr-15	2962	147	426	153	8.1	53	19	47	9	31	3.5	0.03	8	13	2.9	0.7	0.2	<0.1	0.24	<1	-3.6
16-Jul-15	3024	106	422	149	8.1	61	22	41	9	33	2.9	0.01	10	38	2.8	0.6	0.3	0.2	0.1	<1	-0.5
12-Jul-16	3247	107	381	133	8.3	51	17	38	8	28	1.9	0.009	2	5	4.1	0.3	<0.1	<0.1	<0.01	<1	-0.2
12-Jul-17	3385	131	420	134	8.2	43	15	39	8	29	2.2	0.01	22	3	4.8	0.5	<0.1	<0.1	0.03	<1	-2.9
12-Jul-18	3565	98	393	127	8.9	56	18	37	8	32	3.1	0.013	9	3	4.0	0.8	<0.1	<0.1	<0.1	1	2.4
11-Jul-19	3740	106	410	141	8.3	53	18	44	8	28	2.4	0.017	11	11	4.0	0.7	<0.1	<0.1	<0.1	<1	2.8
21-Jul-20	3960	98	400	142	8.6	59	16	43	8	32	2.4	0.01	6.2	22	4.0	<0.5	<0.1	<0.1	<0.1	<1	5.1
21-Jul-21	4140	109	433	123	8.3	62	20	37	7	30	2.4	<0.007	4.5	13	4.0	<0.5	<0.1	<0.1	<0.1	<1	-6.2
04-Jul-22	4278	113	460	142	8.4	61	21	43	8	34	2.3	<0.007	4.4	13	4.0	<0.5	<0.1	<0.1	<0.1	**4**	0.5
04-Jul-23	4456	112	472	149	8.3	65	18	41	8	33	2.3	0.082	8	20	4.2	3.3	<0.1	<0.1	<0.01	**2**	8.9
02-Jul-24	4634	112	477	150	8.09	74	16.4	43	8.7	37	2.6	0.100	6.7	20	4.4	0.5	0.2	<0.1	<0.01	**1.3**	4.4
TOTAL SAMPLES		113	111	111	115	112	78	71	71	71	71	121	72	111	115	117	114	113	116	113	
AVERAGE 2024																					

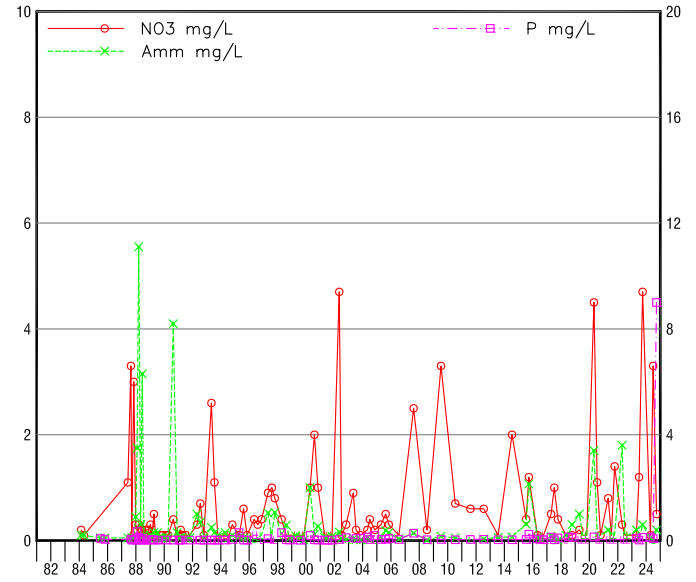
all Concentrations mg/L unless otherwise indicated

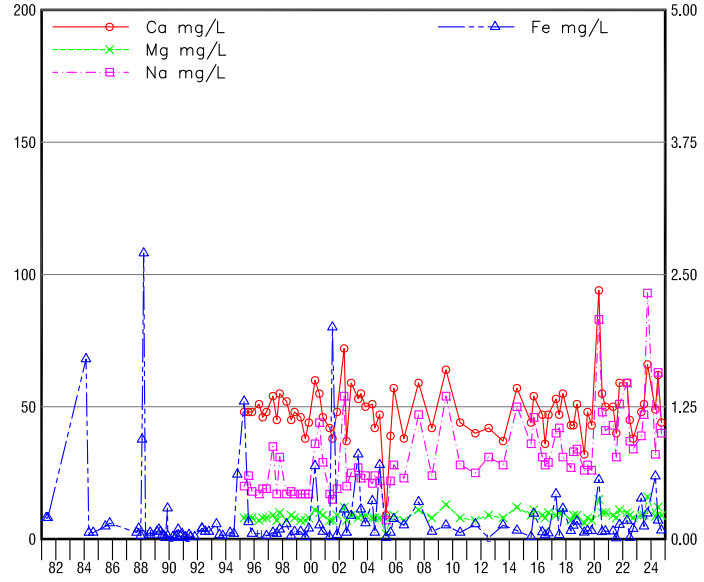
Anomalies shown in *Italics* / Exceedence in **BOLD**



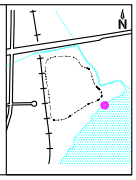








L	Concentration Reported Less Than
G	Concentration Reported Greater Than
A	Concentration Determined Anomalous
	Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

S-11

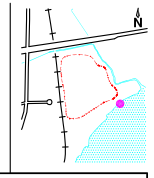
LAKE SIMCOE

22578520 25 Apr 25	wsp	24G045

S-11

LAKE SIMCOE

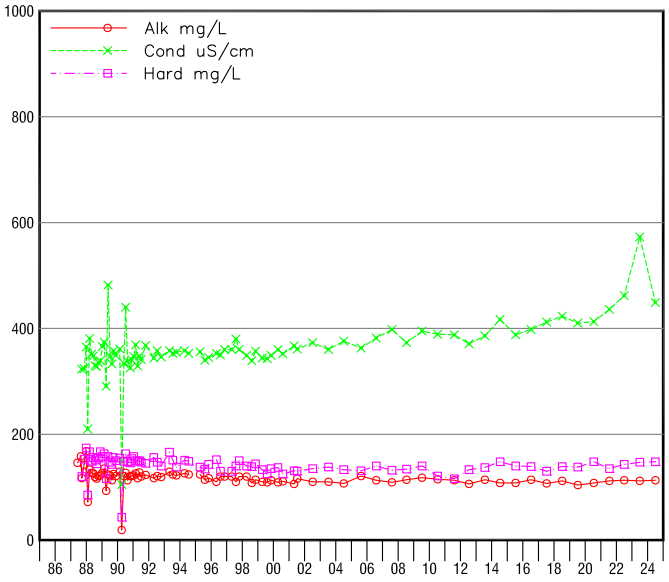
SURFACE WATER STATION

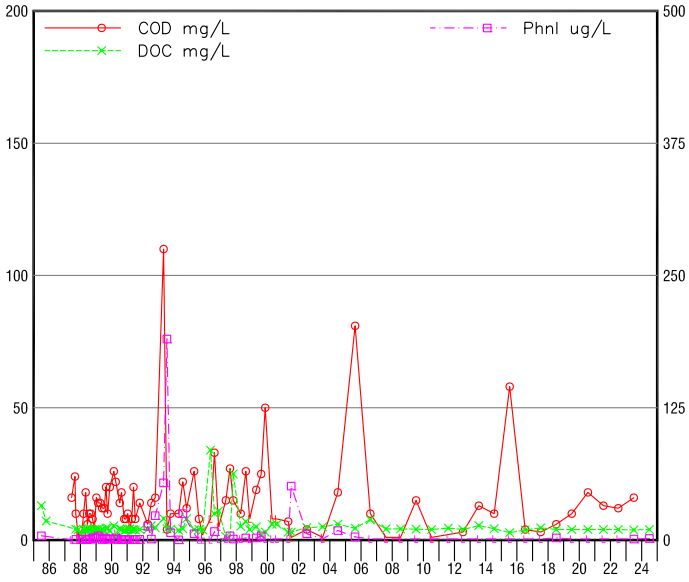


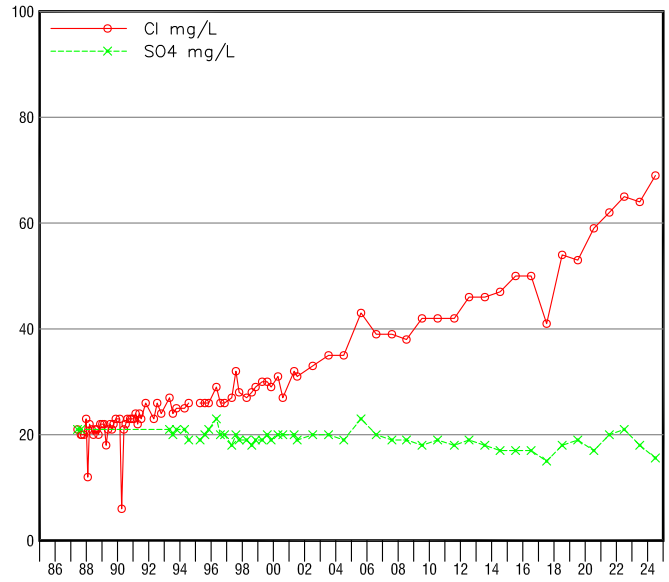
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	PhnI ug/L	Ion B %
	PWQO											0.3								1	
18-Jul-14	2820	133	634	193	8.3	87	35	57	12	50	12	0.08	11	12	4.7	0.9	2.0	<0.1	0.07	<1	2.7
16-Jul-15	3025	110	444	150	8.1	64	24	44	9	36	3.3	0.02	14	28	2.7	0.9	0.4	0.2	0.31	<1	0.9
25-Sep-15	3081	128	588	176	8.2	85	41	54	11	46	16	0.24	46	35	3.1	2.8	1.2	0.4	1.07	<1	1.7
03-May-16	3153	120	412	152	8.1	52	18	47	9	31	3.2	0.065	15	6	4.4	0.8	0.1	<0.1	0.06	<1	2.7
12-Jul-16	3248	101	376	130	8.4	52	17	36	8	28	2.1	0.036	14	6	4.3	0.7	<0.1	<0.1	0.01	<1	-1.9
06-Oct-16	3263	122	431	157	8.3	48	16	47	10	29	2.3	0.054	8	17	5.7	0.5	<0.1	<0.1	<0.01	<1	5.3
19-Apr-17	3369	135	555	175	8.1	75	25	53	9	40	6.5	**0.424**	48	3	4.8	2.2	0.5	<0.1	0.08	<1	-0.5
12-Jul-17	3386	128	582	163	8.1	64	26	47	10	42	9.1	0.037	29	3	5.2	0.6	1.0	<0.1	0.05	<1	2.3
13-Oct-17	3442	113	448	176	8.1	49	17	55	10	31	2.8	0.287	56	3	4.4	1.0	0.4	<0.1	0.01	<1	10.6
07-May-18	3510	111	397	137	8.4	54	17	43	7	27	2.8	0.077	9		4.0	0.6	<0.1	<0.1	0.1	1	-1.2
12-Jul-18	3566	100	417	143	8.4	58	20	43	9	33	4.4	0.127	39	12	5.0	0.7	<0.1	<0.1	<0.1	**3**	5.3
12-Oct-18	3642	125	466	165	8.1	63	21	51	9	34	5.7	0.166	37	8	4.0	0.9	0.1	<0.1	0.3	**4**	2.5
17-Apr-19	3688	88	352	102	8.2	44	10	32	6	26	3.5	0.062	24	<8	4.0	1.0	0.2	<0.1	0.5	**2**	1.4
11-Jul-19	3741	109	411	152	8.2	54	18	48	8	28	2.7	0.077	34	18	4.0	0.8	<0.1	<0.1	<0.1	<1	4.3
24-Oct-19	3796	127	453	135	8.4	56	21	43	7	26	2.8	0.075	9.4	13	4.0	<0.5	<0.1	<0.1	<0.1	**2**	-6.0
28-Apr-20	3908	194	918	298	8.0	150	37	94	15	83	5.9	**0.559**	90	38	5.0	2.3	4.5	0.1	1.7	**2**	3.4
21-Jul-20	3961	119	491	178	8.4	78	21	55	10	48	3.5	0.067	13	22	5.0	<0.5	1.1	<0.1	<0.1	**2**	6.6
14-Oct-20	4004	115	439	166	8.2	58	18	50	10	41	3.2	0.074	16	10	4.0	<0.5	0.1	<0.1	<0.1	**3**	10.2
30-Apr-21	4076	130	569	161	8.1	82	24	50	9	43	9.5	0.073	15	21	5.0	1.0	0.8	0.1	0.2	**2**	-0.7
21-Jul-21	4141	107	427	131	8.4	62	20	40	8	31	2.5	0.007	5.7	10	4.0	<0.5	<0.1	<0.1	<0.1	<1	-3.5
12-Oct-21	4208	144	576	191	8.2	87	36	59	11	51	12	0.134	16	<8	5.0	<0.5	1.4	<0.1	<0.1	<1	2.0
25-Apr-22	4254	172	734	187	8.2	130	29	59	10	59	9.8	0.174	16	20	6.0	1.8	0.3	0.1	1.8	<1	-7.3
04-Jul-22	4279	110	462	149	8.7	69	22	45	9	37	2.6	0.011	6.6	14	5.0	<0.5	<0.1	<0.1	<0.1	**2**	1.5
29-Sep-22	4334	108	450	127	8.2	64	19	38	8	34	2.4	0.096	13	15	4.0	<0.5	<0.1	<0.1	<0.1	1	-2.1
25-Apr-23	4404	124	510	142	7.9	70	19	48	9	39	4.7	**0.384**	43	18	5	2.0	0.1	<0.1	0.2	**4**	1.3
04-Jul-23	4457	127	587	181	8.1	92	24	51	9	47	3.2	0.12	8	19	4.5	5.8	1.2	<0.1	<0.01	1	6.1
03-Oct-23	4511	139	844	216	7.8	146	45	66	16	93	8.1	0.242	25	32	5.3	<0.2	4.7	<0.1	0.3	**3**	0.5
23-Apr-24	4582	140	458	159	7.81	61	15.3	49	8.5	32	2.3	**0.592**	33	24	4.2	0.6	0.1	<0.1	0.05	**1.1**	0.9
02-Jul-24	4635	151	738	218	8.06	140	28	62	12.1	63	4.2	0.176	15		5.1	0.7	3.3	<0.1	<0.01	1	-1.9
26-Sep-24	2060977	119	490	159	7.82	77	21.4	44	8.9	40	3.1	0.082	4	20	5.4	0.7	0.5	<0.1	0.2	**1.3**	2.2
TOTAL SAMPLES		112	110	109	113	114	81	71	71	71	71	121	72	107	112	115	113	111	115	111	
AVERAGE 2024		137	562	179	7.90	93	22	52	9.8	45	3.2	0.2833	17	22	4.9	0.7	1.3	<0.1	0.1	1.13	

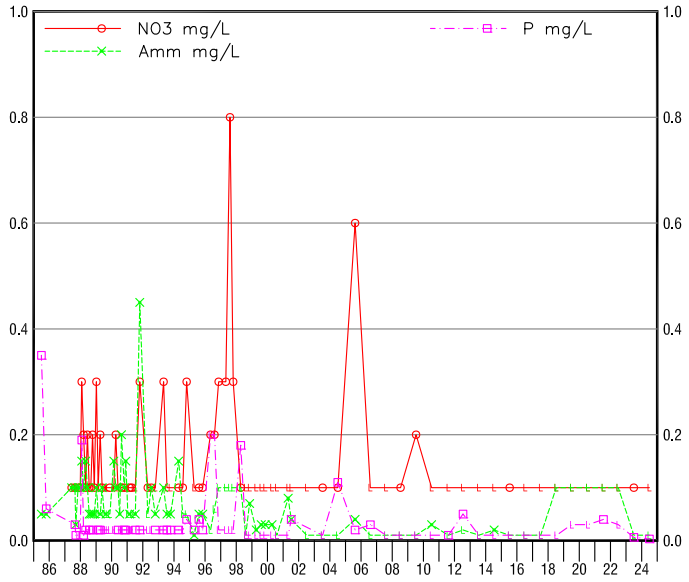
all Concentrations mg/L unless otherwise indicated

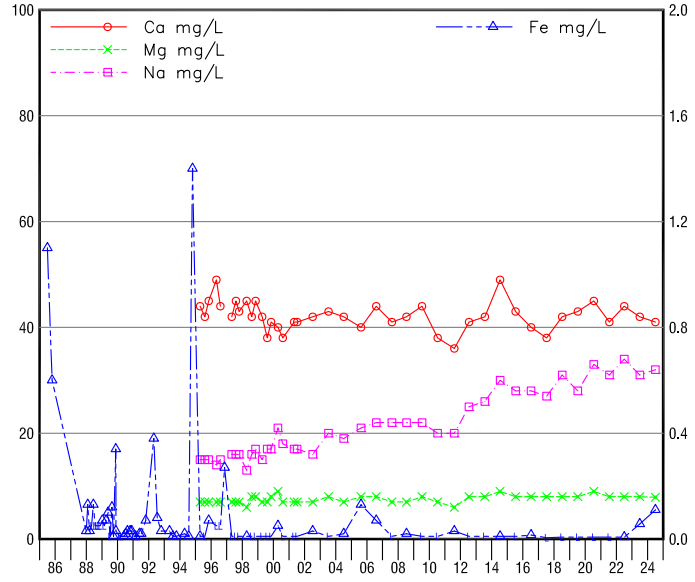
Anomalies shown in *Italics* / Exceedence in **BOLD**









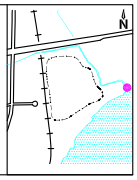


L Concentration Reported Less Than

G Concentration Reported Greater Than

A Concentration Determined Anomalous

Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

S-14

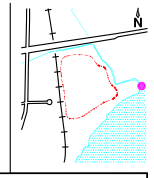
LAKE SIMCOE

22578520 25 Apr 25	wsp	24G046

S-14

LAKE SIMCOE

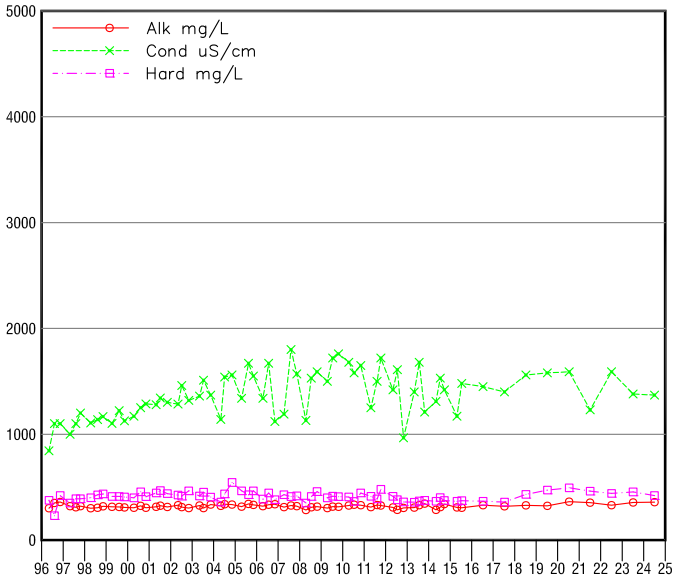
SURFACE WATER STATION

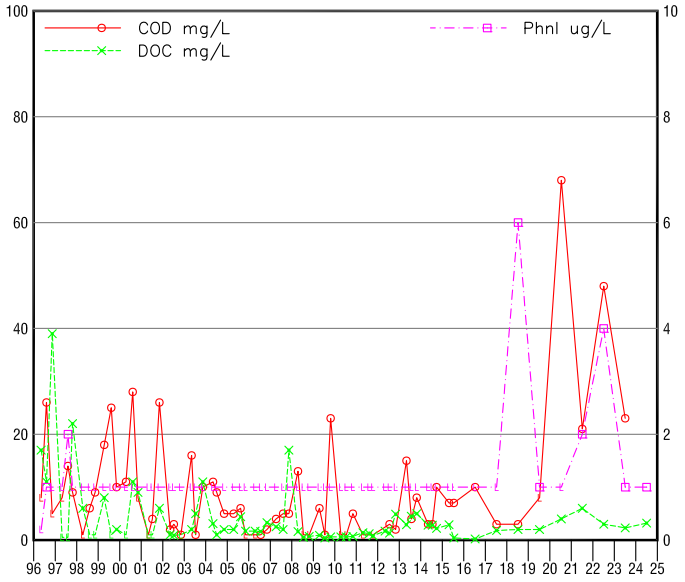


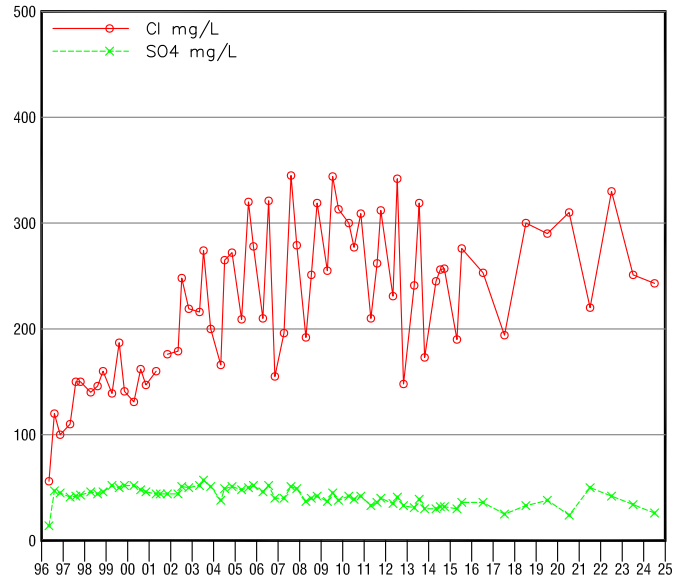
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
13-Apr-99	101730	110	344	133	8.3	30	19	42	7	15	2.0	<0.01	<5	19	5.0	0.4	<0.1	<0.1	0.02	**2**	0.8
09-Aug-99	101731	109	343	125	8.1	30	20	38	7	17	2.0	<0.01	<5	25	2.0	0.3	<0.1	<0.1	0.03	**4**	2.0
08-Nov-99	101732	113	349	135	8.0	29	19	41	8	17	2.0	<0.01	<5	50	3.0	0.2	<0.1	<0.1	0.03	<1	0.0
17-Apr-00	101733	109	360	137	8.1	31	20	40	9	21	3.0	0.05	<5	<8	6.0	0.4	<0.1	<0.1	0.03	<1	3.6
08-Aug-00	101734	111	352	125	8.3	27	20	38	7	18	2.0	<0.01	<5	<8	6.0	0.3	<0.1	<0.1	<0.01	<1	0.2
30-Apr-01	101735	106	367	131	8.1	32	20	41	7	17	2.0	<0.01	<5	7	3.0	0.5	<0.1	<0.1	0.08	<1	-0.3
11-Jul-01	101736	116	361	130	8.2	31	19	41	7	17	2.0	<0.01	<5	<1	3.0	0.5	<0.1	<0.1	0.04	**51**	-2.5
10-Jul-02	101737	110	373	135	7.9	33	20	42	7	16	1.8	0.03	<5	4	4.7	0.4	<0.1	<0.1	<0.01	**6**	-0.4
15-Jul-03	102576	110	360	138	8.3	35	20	43	8	20	2.0	<0.01	3	<1	5.0	0.3	0.1	<0.1	<0.01	<1	2.9
06-Jul-04	1198	107	376	133	8.2	35	19	42	7	19	1.9	0.02	8	18	6.0	1.2	0.1	<0.1	<0.01	**9**	1.7
15-Aug-05	58153	121	363	131	8.4	43	23	40	8	21	2.0	0.13	24	81	4.5	0.5	0.6	<0.1	0.04	**3**	-6.8
08-Aug-06	6883	113	382	140	7.9	39	20	44	8	22	2.1	0.07	9	10	7.7	0.4	<0.1	<0.1	<0.01	<1	2.5
09-Aug-07	7893	109	398	132	8.1	39	19	41	7	22	2.0	<0.01	4	<1	4.2	0.3	<0.1	<0.1	<0.01	<1	0.8
16-Jul-08	87163	114	373	134	7.9	38	19	42	7	22	2.0	0.02	4	<1	4.2	0.4	0.1	<0.1	<0.01	<1	0.4
15-Jul-09	0921631	118	395	140	7.9	42	18	44	8	22	2.0	<0.01	3	15	4.1	0.3	0.2	<0.1	<0.01	<1	0.4
14-Jul-10	2071	115	389	121	8.3	42	19	38	7	20	1.9	<0.01	<1	<1	4.0	0.3	<0.1	<0.1	0.03	<1	-6.7
09-Aug-11	2290	113	388	116	8.3	42	18	36	6	20	1.8	0.03	<1		4.5	0.3	<0.1	<0.1	<0.01	<1	-7.2
18-Jul-12	2435	106	371	133	8.1	46	19	41	8	25	2.1	<0.01	4	3	4.0	0.4	<0.1	<0.1	<0.02	<1	1.7
24-Jul-13	2670	114	386	137	8.2	46	18	42	8	26	2.0	<0.01	12	13	5.5	0.3	<0.1	<0.1	<0.01	<1	1.1
18-Jul-14	2823	108	417	148	8.3	47	17	49	9	30	2.6	0.01	6	10	4.3	0.5	<0.1	<0.1	0.02	<1	8.7
16-Jul-15	3026	108	388	140	8.1	50	17	43	8	28	2.2	<0.01	3	58	2.8	0.3	0.1	<0.1	<0.01	<1	3.2
12-Jul-16	3249	114	398	139	8.1	50	17	40	8	28	1.9	0.015	6	4	3.8	0.3	<0.1	<0.1	<0.01	<1	-0.7
12-Jul-17	3387	107	412	130	8.2	41	15	38	8	27	1.9	<0.005	3	3	4.6	0.3	<0.1	<0.1	<0.01	<1	3.2
12-Jul-18	3567	112	423	139	8.4	54	18	42	8	31	2.4	<0.007	5	6	4.0	<0.5	<0.1	<0.1	<0.1	**2**	1.6
11-Jul-19	3742	104	410	138	8.4	53	19	43	8	28	2.4	<0.007	5.8	10	4.0	0.7	<0.1	<0.1	<0.1	<1	2.4
21-Jul-20	3962	108	413	148	8.4	59	17	45	9	33	2.4	<0.007	3.6	18	4.0	<0.5	<0.1	<0.1	<0.1	<1	4.5
21-Jul-21	4142	112	436	135	8.3	62	20	41	8	31	2.5	<0.007	4.2	13	4.0	<0.5	<0.1	<0.1	<0.1	<1	-3.2
04-Jul-22	4280	113	462	143	8.3	65	21	44	8	34	2.4	0.007	4.7	12	4.0	<0.5	<0.1	<0.1	<0.1	<1	-0.4
04-Jul-23	4458	112	573	147	8.2	64	18	42	8	31	2.2	0.057	2	16	3.8	3.2	0.1	<0.1	<0.01	1	9.5
02-Jul-24	4636	113	449	148	8.03	69	15.6	41	7.9	32	2.3	0.110	4		4	0.4	<0.1	<0.1	<0.01	**1.5**	3.4
TOTAL SAMPLES		84	82	81	84	84	49	41	41	41	41	85	43	82	83	87	85	85	87	84	
AVERAGE 2024																					

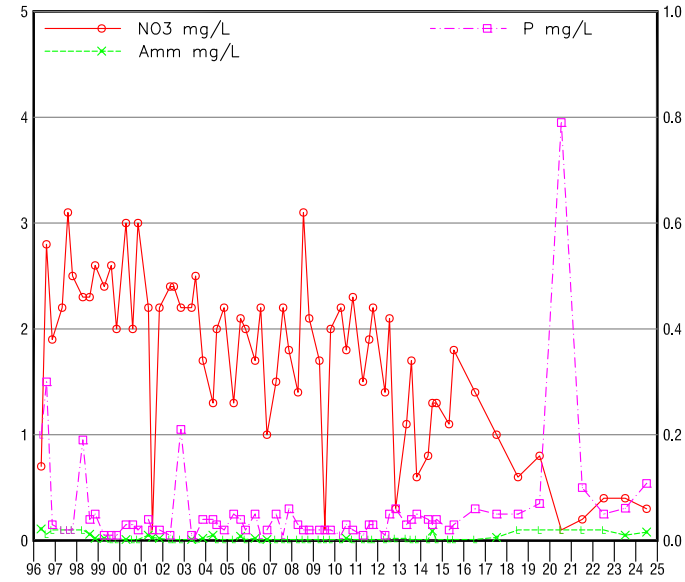
all Concentrations mg/L unless otherwise indicated

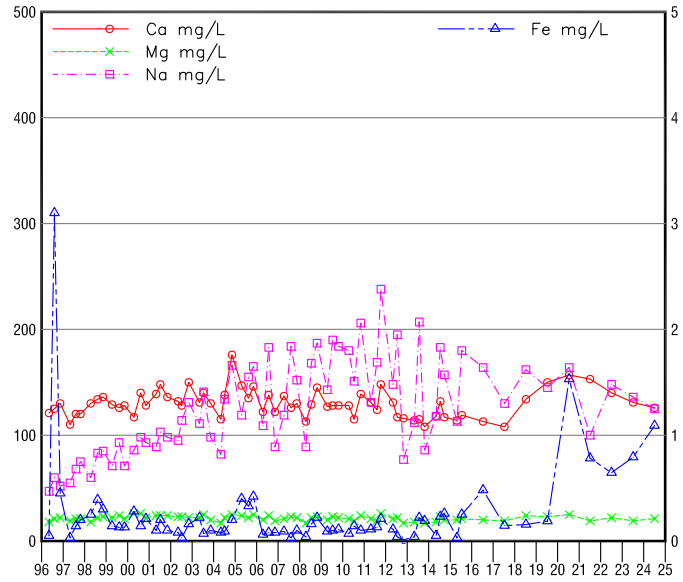
Anomalies shown in *Italics* / Exceedence in **BOLD**



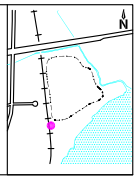








L	Concentration Reported Less Than
G	Concentration Reported Greater Than
A	Concentration Determined Anomalous
	Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

S-18

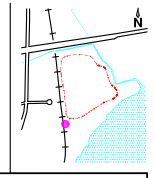
CN RAIL DRAIN

22578520 25 Apr 25	wsp	24G047

S-18

CN RAIL DRAIN

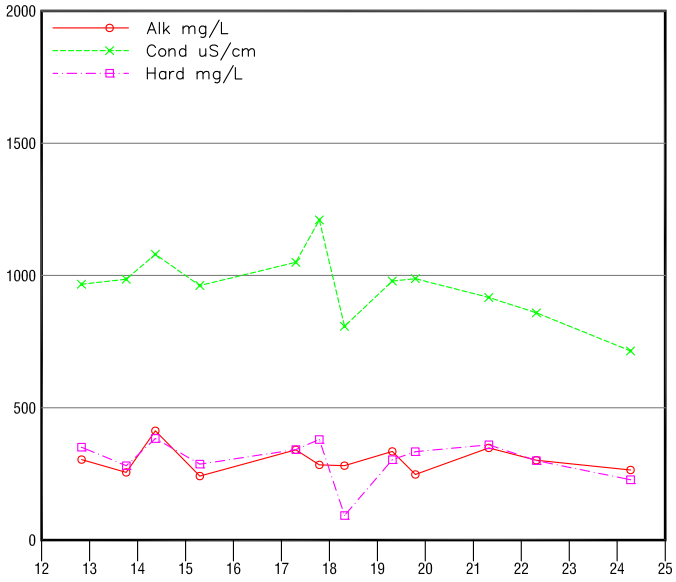
SURFACE WATER STATION

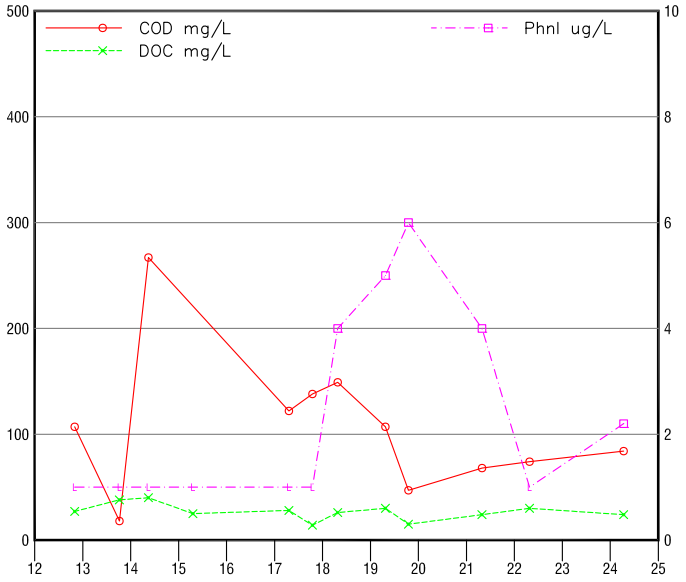


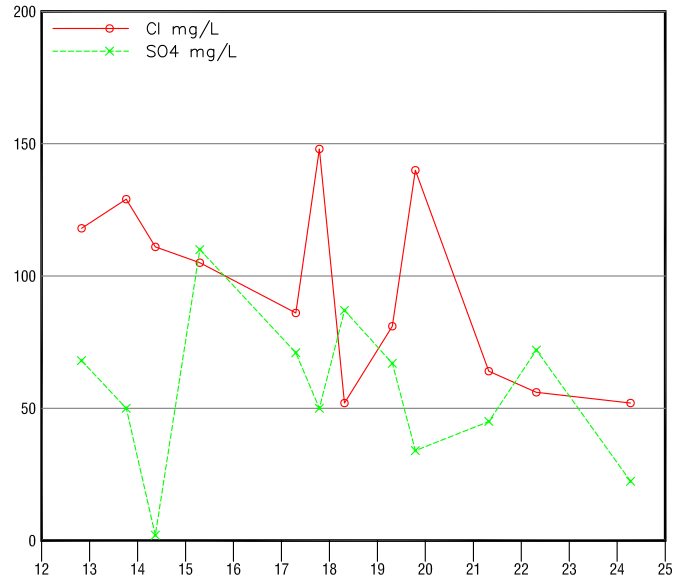
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
23-Oct-08	810233	316	1590	458	7.3	319	42	145	23	187	3.6	0.22	78	<1	0.7	0.1	2.1	<0.1	<0.01	<1	3.3
15-Apr-09	0910924	303	1500	399	7.4	255	37	127	20	143	3.1	0.09	24	6	0.9	0.1	1.7	<0.1	<0.01	<1	0.9
16-Jul-09	0921629	316	1720	414	7.4	344	45	128	23	190	2.8	0.10	37	1	0.4	<0.1	<0.1	<0.1	<0.01	<1	−0.7
22-Oct-09	0933458	315	1760	410	7.2	313	38	128	22	184	2.6	0.11	54	23	0.6	0.1	2.0	<0.1	<0.01	<1	1.0
15-Apr-10	2020	327	1680	407	7.5	300	42	128	21	180	2.8	0.07	34	<1	0.6	<0.1	2.2	<0.1	<0.01	<1	0.3
15-Jul-10	2075	334	1580	365	7.6	277	39	115	19	151	2.6	0.14	50	<1	0.6	0.2	1.8	<0.1	0.02	<1	−5.1
04-Nov-10	2175	330	1650	445	7.5	309	42	139	24	206	3.1	0.10	43	5	0.7	0.1	2.3	<0.1	<0.01	<1	5.0
26-Apr-11	2202	312	1250	413	7.6	210	33	131	21	131	2.4	0.11	40	<1	1.4	0.2	1.5	<0.1	<0.01	<1	4.3
08-Aug-11	2294	331	1500	389	7.8	262	36	124	19	169	2.5	0.13	110		1.2	0.2	1.9	<0.1	<0.01	<1	1.3
12-Oct-11	2350	327	1720	479	7.6	312	40	148	26	238	3.5	0.21	55	<1	0.8	<0.1	2.2	<0.1	<0.01	<1	10.3
04-May-12	2417	309	1420	413	7.9	231	35	131	21	148	2.9	0.11	32		1.7	0.2	1.4	<0.1	<0.01	<1	4.8
18-Jul-12	2439	285	1610	381	8.1	342	41	117	22	195	2.6	0.04	16	3	1.3	0.5	2.1	<0.1	<0.02	<1	−0.1
31-Oct-12	2509	304	966	360	8.3	148	33	116	17	77	2.8	<0.01	35	2	4.9	0.5	0.3	<0.1	<0.02	<1	−1.2
02-May-13	2579	307	1400	358	8.0	241	31	114	18	112	2.7	0.04	22	15	2.9	0.1	1.1	<0.3	<0.02	<1	−5.6
25-Jul-13	2674	330	1680	370	7.8	319	39	115	20	207	2.5	0.22	46	4	4.5	0.1	1.7	<0.1	<0.01	<1	0.1
25-Oct-13	2689	345	1210	375	7.8	173	30	108	17	86	2.1	0.19	118	8	5.0	0.3	0.6	<0.1	<0.01	<1	−7.6
06-May-14	2765	285	1310	367	8.1	245	30	118	18	118	2.8	0.05	26	3	2.8	0.1	0.8	<0.1	<0.01	<1	−2.4
17-Jul-14	2827	312	1530	401	7.9	256	32	132	23	183	3.1	0.23	161	3	2.8	0.4	1.3	<0.1	0.09	<1	7.5
25-Sep-14	2885	340	1420	374	7.9	257	32	117	20	157	2.6	0.26	72	10	2.2	0.2	1.3	<0.1	<0.01	<1	−1.1
27-Apr-15	2967	309	1170	366	7.9	190	30	114	20	113	2.5	0.03	39	7	2.9	0.2	1.1	<0.1	<0.01	<1	0.7
17-Jul-15	3027	306	1480	372	7.9	276	36	119	21	180	2.7	0.25	29	7	0.4	0.1	1.8	<0.1	<0.01	<1	2.9
13-Jul-16	3250	329	1450	367	7.9	253	36	113	20	164	2.1	**0.481**	36	10	0.2	0.2	1.4	<0.1	<0.01	<1	0.1
12-Jul-17	3388	319	1400	359	7.9	194	25	108	19	130	2.0	0.145	125	3	1.8	0.2	1.0	<0.1	0.03	<1	0.9
11-Jul-18	3568	328	1560	432	7.9	300	33	134	24	162	2.4	0.155	197	3	2.0	0.5	0.6	<0.1	<0.1	**6**	0.4
11-Jul-19	3743	323	1580	472	7.9	290	38	150	23	145	3.0	0.188	50	<8	2.0	<0.5	0.8	<0.1	<0.1	1	1.2
15-Jul-20	3963	362	1590	494	7.8	310	24	157	25	164	3.3	**1.53**	1030	68	4.0	<0.5	<0.1	<0.1	<0.1	<1	2.3
06-Jul-21	4143	353	1230	462	7.7	220	50	153	19	100	3.5	**0.782**	305	21	6.0	0.6	0.2	<0.1	<0.1	**2**	−2.0
05-Jul-22	4281	330	1590	441	8.0	330	42	140	22	148	3.0	**0.645**	193	48	3.0	<0.5	0.4	<0.1	<0.1	**4**	−4.2
06-Jul-23	4459	355	1380	455	7.6	251	34	131	19	136	2.7	**0.792**	165	23	2.3	3.4	0.4	<0.1	0.05	1	10.8
03-Jul-24	4637	358	1370	420	7.87	243	26	126	21.2	125	4.3	**1.09**	289		3.2	0.6	0.3	<0.2	0.08	1	−0.4
TOTAL SAMPLES		68	68	68	68	67	68	68	68	68	68	68	68	65	68	68	68	68	68	68	
AVERAGE 2024																					

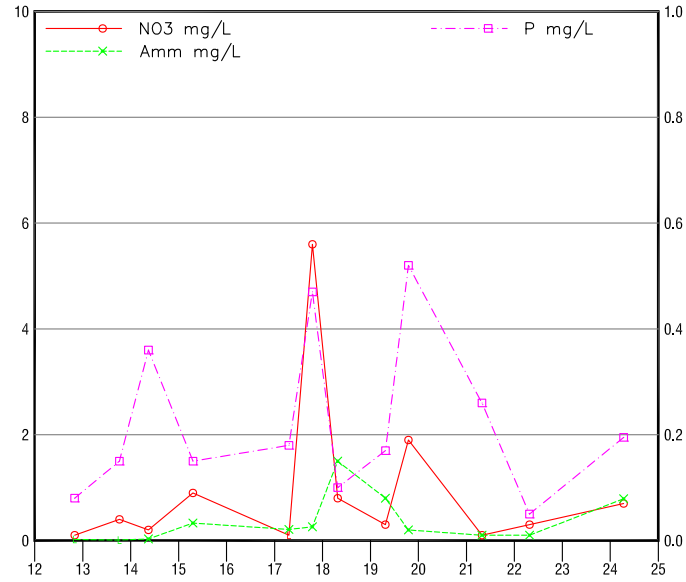
all Concentrations mg/L unless otherwise indicated

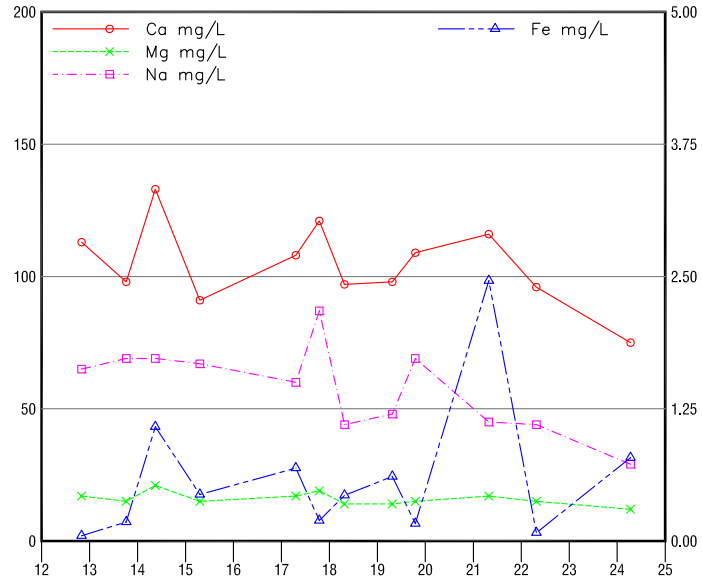
Anomalies shown in *Italics* / Exceedence in **BOLD**



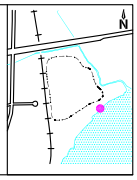








L	Concentration Reported Less Than
G	Concentration Reported Greater Than
A	Concentration Determined Anomalous
	Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

D-1

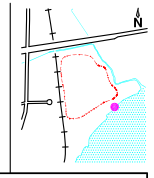
SURFACE WATER

22578520 25 Apr 25	wsp	24G048

D-1

SURFACE WATER

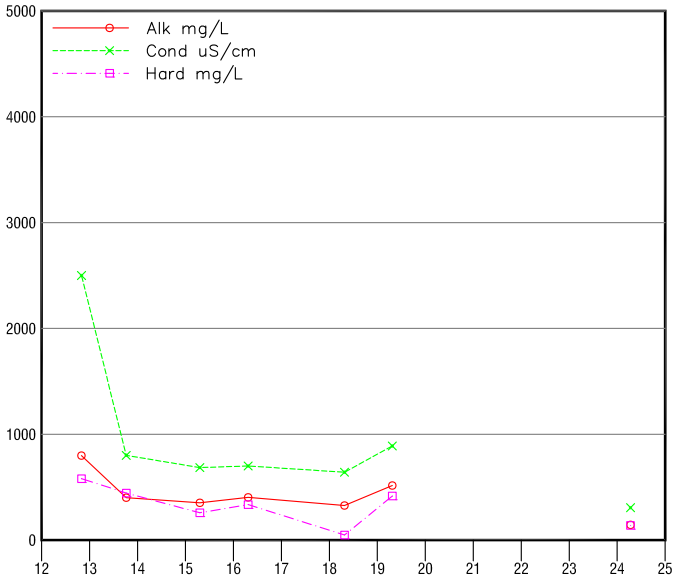
SURFACE WATER STATION

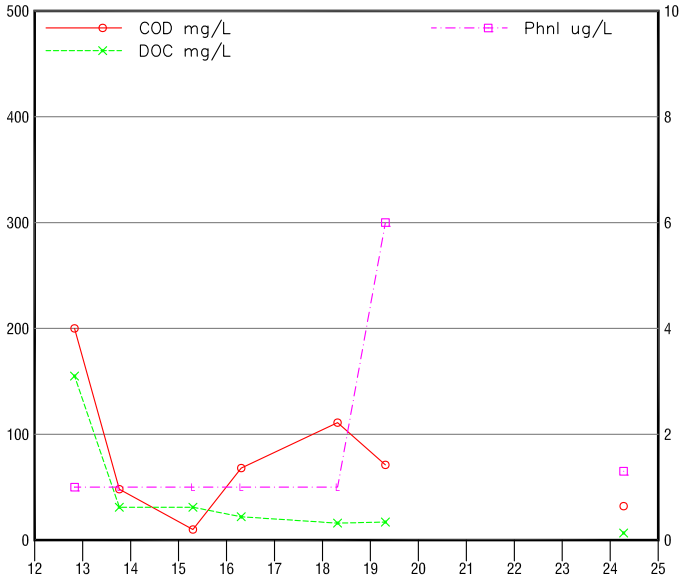


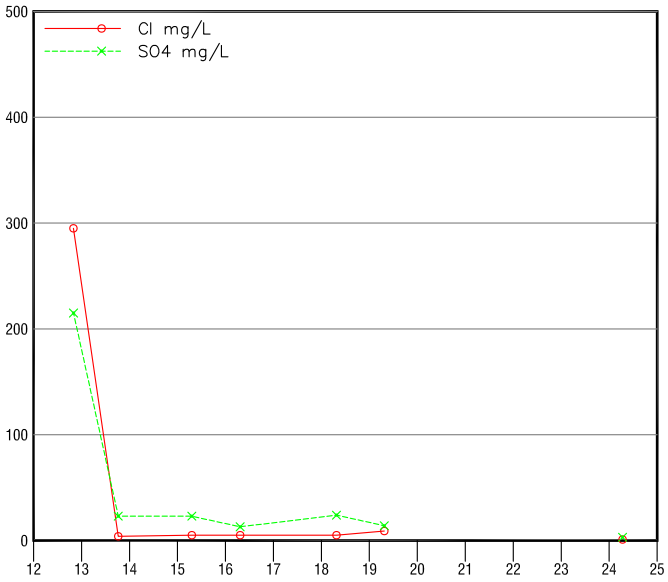
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
31-Oct-12	2565	304	967	351	8.3	118	68	113	17	65	40	0.05	19	107	27	3.4	0.1	<0.1	<0.02	<1	0.8
07-Oct-13	2749	256	986	281	7.9	129	50	98	15	69	59	0.18	17	18	38	1.9	0.4	<0.1	<0.01	<1	4.5
16-May-14	2770	413	1080	384	8.2	111	2	133	21	69	76	**1.08**	1220	267	40	4.1	0.2	<0.1	0.03	<1	7.7
20-Apr-15	3011	242	962	287	8.1	105	110	91	15	67	53	**0.44**	63		25	3.4	0.9	<0.1	0.33	<1	-0.3
20-Apr-17	3372	341	1050	342	8.1	86	71	108	17	60	80	**0.689**	524	122	28	3.6	<0.1	<0.1	0.21	<1	3.5
16-Oct-17	3445	284	1210	380	7.9	148	50	121	19	87	27	0.194	65	138	14	1.9	5.6	<0.1	0.26	<1	3.5
26-Apr-18	3513	281	808	93	8.0	52	87	97	14	44	45	**0.432**	26	149	26	4.7	0.8	<0.1	1.5	**4**	1.3
25-Apr-19	3691	335	979	304	7.4	81	67	98	14	48	62	**0.61**	193	107	30	1.8	0.3	<0.1	0.8	**5**	-3.0
17-Oct-19	3799	248	988	334	8.0	140	34	109	15	69	20	0.165	26	47	15	1.6	1.9	<0.1	0.2	**6**	2.3
29-Apr-21	4077	348	917	360	8.0	64	45	116	17	45	48	**2.46**	227	68	24	1.8	0.1	<0.1	0.1	**4**	4.9
26-Apr-22	4255	302	859	300	8.2	56	72	96	15	44	43	0.078	7.3	74	30	1.7	0.3	<0.1	0.1	<1	-0.7
12-Apr-24	4585	265	715	228	7.93	52	22.4	75	12.0	29	44	**0.788**	38	84	24	2.7	0.7	<0.1	0.79	**2.2**	6.7
TOTAL SAMPLES		12	12	12	12	12	12	12	12	12	12	12	12	11	12	12	12	12	12	12	
AVERAGE 2024																					

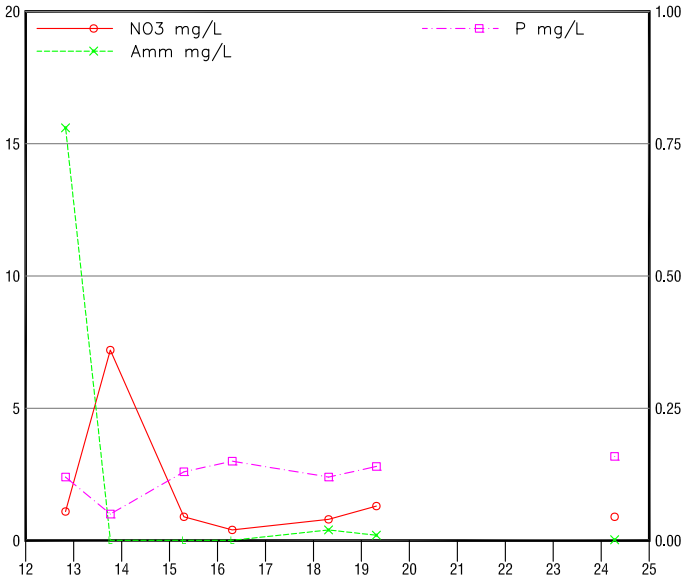
all Concentrations mg/L unless otherwise indicated

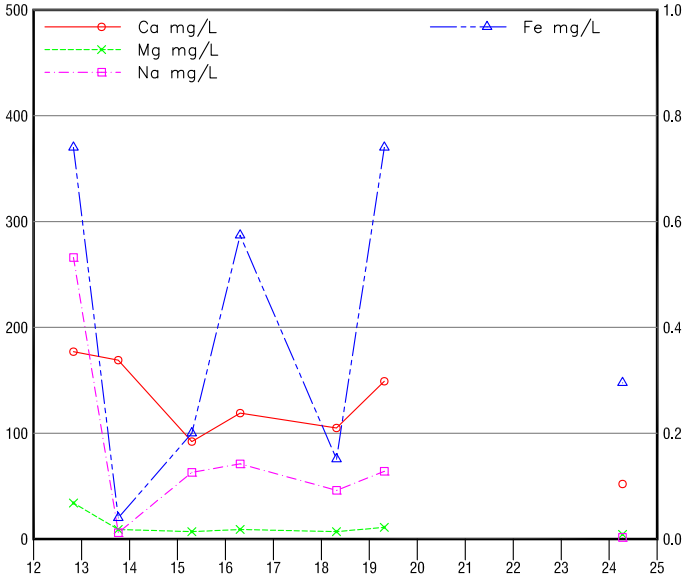
Anomalies shown in *Italics* / Exceedence in **BOLD**



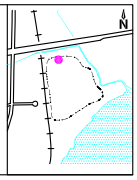








L	Concentration Reported Less Than
G	Concentration Reported Greater Than
A	Concentration Determined Anomalous
	Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

D-2

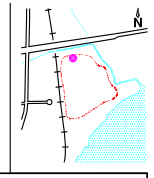
SURFACE WATER

22578520 25 Apr 25	wsp	24G049

D-2

SURFACE WATER

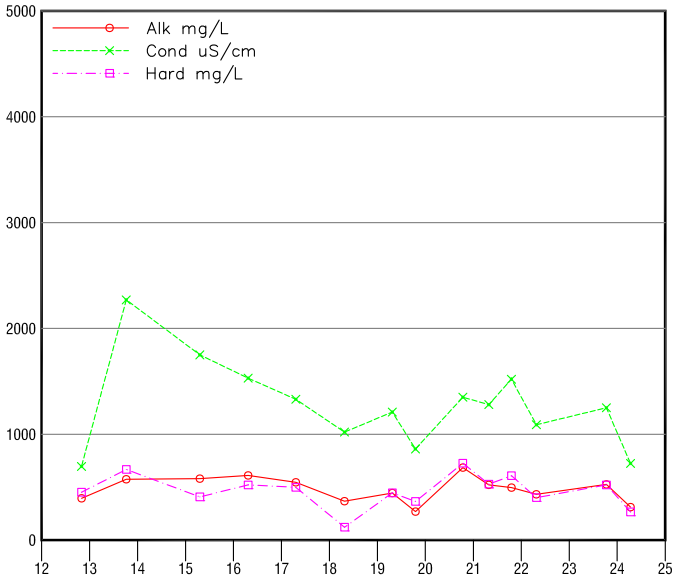
SURFACE WATER STATION

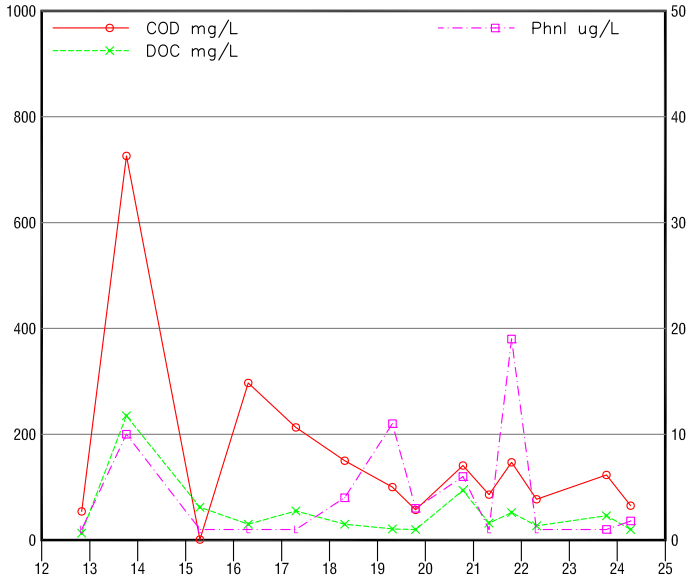


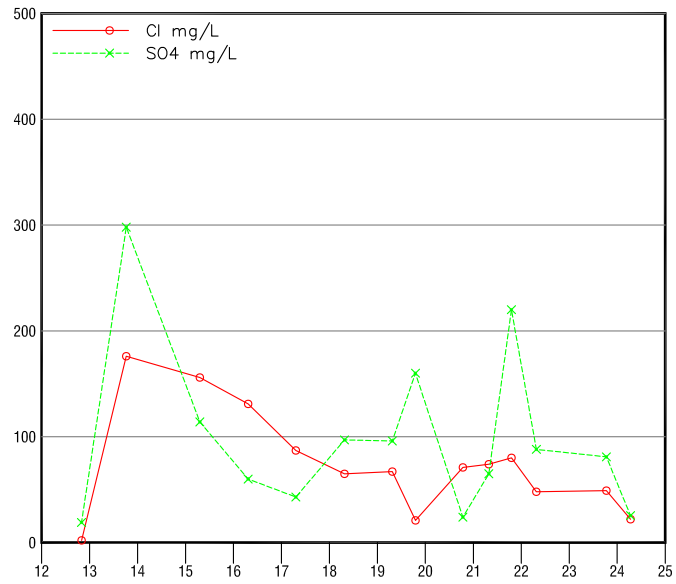
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
31-Oct-12	2566	798	2500	580	8.4	295	215	177	34	266	245	**0.74**	425	200	155	19.4	1.1	<0.1	15.6	1	3.0
07-Oct-13	2750	400	800	444	8.2	4	23	169	9	6.0	7.7	0.04	7	48	31	2.1	7.2	<0.1	<0.01	<1	3.4
20-Apr-15	3012	352	685	258	8.2	5	23	92	7	63	5.7	0.20	25	10	31	1.7	0.9	<0.1	<0.01	<1	2.8
22-Apr-16	3158	403	700	335	8.2	5	13	119	9	71	7.5	**0.574**	168	68	22	1.9	0.4	<0.1	<0.01	<1	8.6
26-Apr-18	3514	327	641	48	8.1	5	24	105	7	46	7.3	0.151	167	111	16	1.8	0.8	<0.1	0.4	<1	5.4
25-Apr-19	3692	515	889	416	7.9	9	14	149	11	64	8.2	**0.74**	246	71	17	1.2	1.3	<0.1	0.2	**6**	2.0
12-Apr-24	1994695	144	306	138	7.97	1	3.1	52	4.4	1.5	7.0	0.295	5.3	32	6.7	0.4	0.9	<0.1	0.03	**1.3**	11.1
TOTAL SAMPLES		7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	
AVERAGE 2024																					

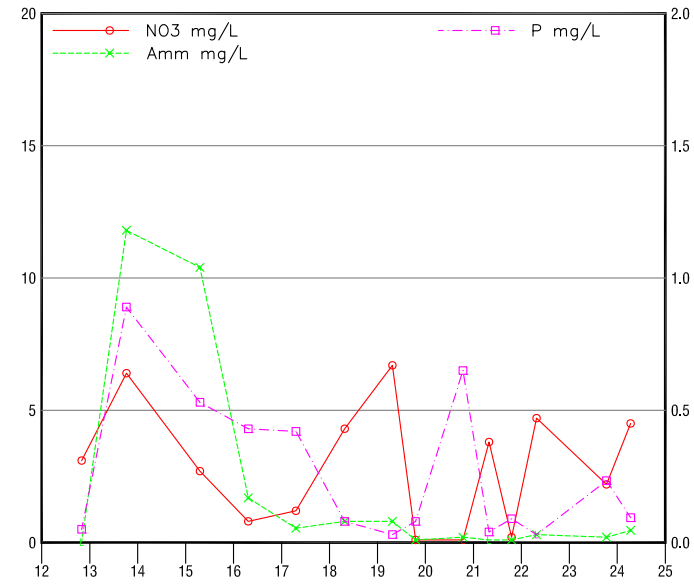
all Concentrations mg/L unless otherwise indicated

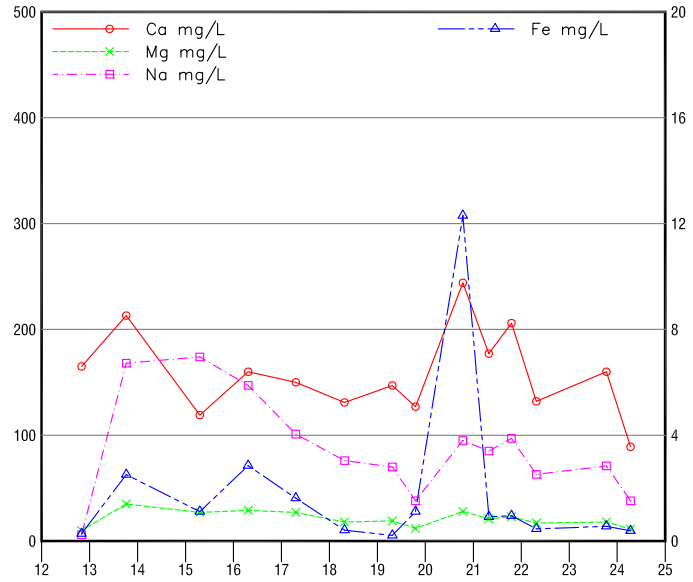
Anomalies shown in *Italics* / Exceedence in **BOLD**



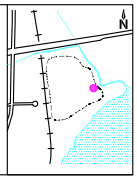








L	Concentration Reported Less Than
G	Concentration Reported Greater Than
A	Concentration Determined Anomalous
	Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

D-3

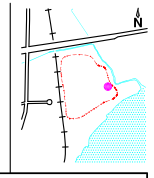
SURFACE WATER

22578520 25 Apr 25	WSP	24G050

D-3

SURFACE WATER

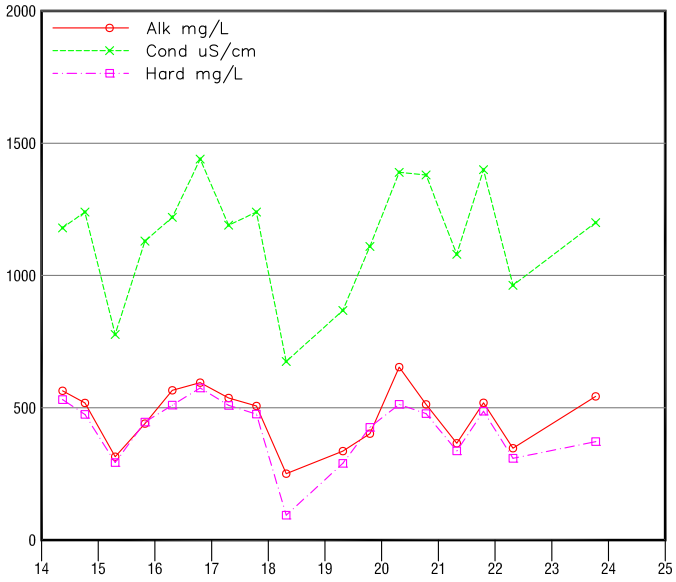
SURFACE WATER STATION

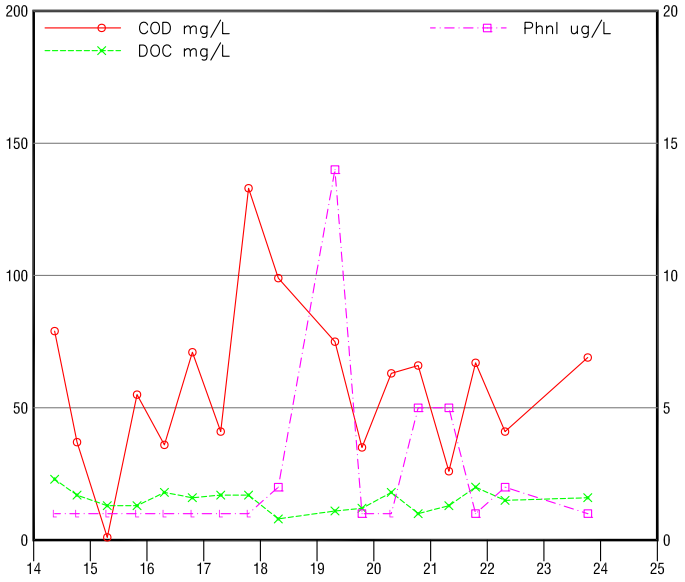


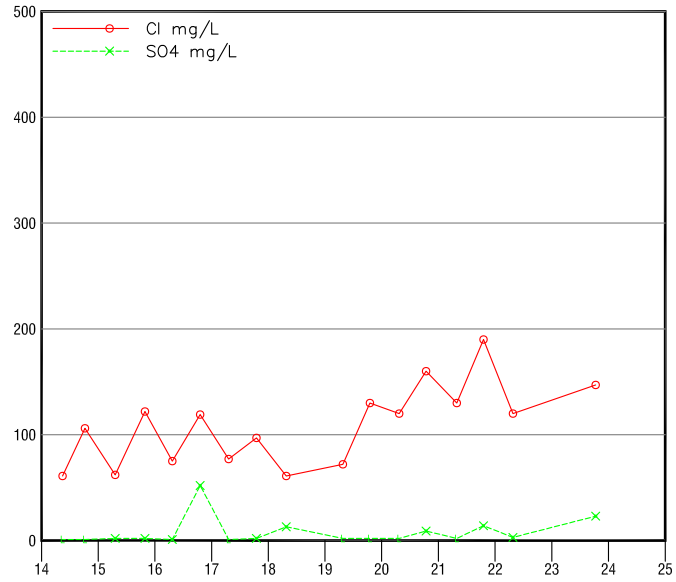
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
31-Oct-12	2567	395	696	452	8.2	2	19	165	10	6.0	5.7	0.28	41	54	13	1.7	3.1	<0.1	<0.02	<1	5.6
07-Oct-13	2751	574	2270	667	7.7	176	298	213	35	168	160	**2.51**	1180	726	235	47.9	6.4	1.3	11.8	**10**	5.6
20-Apr-15	3013	580	1750	408	8.1	156	114	119	27	174	95	**1.11**	354	1	62	18.9	2.7	<0.1	10.4	<1	1.0
22-Apr-16	3159	611	1530	521	8.1	131	60	160	29	147	81	**2.85**	1520	297	30	6.9	0.8	<0.1	1.69	<1	5.1
20-Apr-17	3374	546	1330	498	8.2	87	43	150	27	101	55	**1.62**	271	213	55	4.3	1.2	<0.1	0.54	<1	4.2
26-Apr-18	3515	367	1020	121	7.9	65	97	131	18	76	42	**0.409**	85	150	30	3.8	4.3	<0.1	0.8	**4**	4.1
25-Apr-19	3693	445	1210	446	7.7	67	96	147	19	70	44	0.212	68	100	21	4.4	6.7	<0.1	0.8	**11**	-0.5
18-Oct-19	3801	269	861	365	7.9	21	160	127	12	38	25	**1.11**	281	57	20	2.5	0.1	<0.1	0.1	**3**	1.9
13-Oct-20	4007	685	1350	726	8.1	71	24	244	28	95	36	**12.3**	2870	141	94	4.8	<0.1	<0.1	0.2	**6**	10.5
29-Apr-21	4079	521	1280	528	8.0	74	65	177	21	85	39	**0.916**	201	86	32	2.6	3.8	<0.1	<0.1	<1	4.8
18-Oct-21	4211	496	1520	608	8.1	80	220	206	23	97	41	**0.957**	417	147	52	3.5	0.2	<0.1	0.1	**19**	2.1
26-Apr-22	4257	433	1090	401	8.3	48	88	132	17	63	31	**0.458**	188	77	27	2.3	4.7	<0.1	0.3	<1	-2.6
11-Oct-23	4516	526	1250	521	8.0	49	81	160	18	71	27	**0.555**	155	123	46	2.6	2.2	<0.1	0.2	1	7.4
12-Apr-24	4587	311	724	266	7.86	22	25.4	89	11.3	38	21	**0.384**	61	65	20	2.7	4.5	<0.1	0.46	**1.8**	10.6
TOTAL SAMPLES		14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	
AVERAGE 2024																					

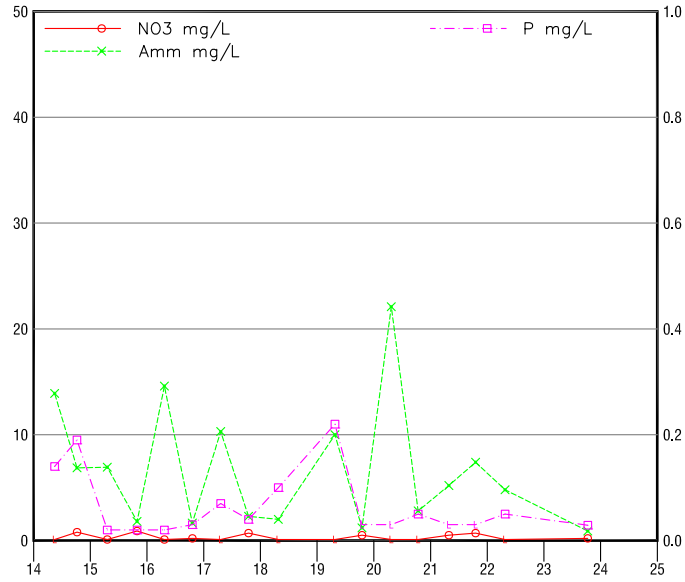
all Concentrations mg/L unless otherwise indicated

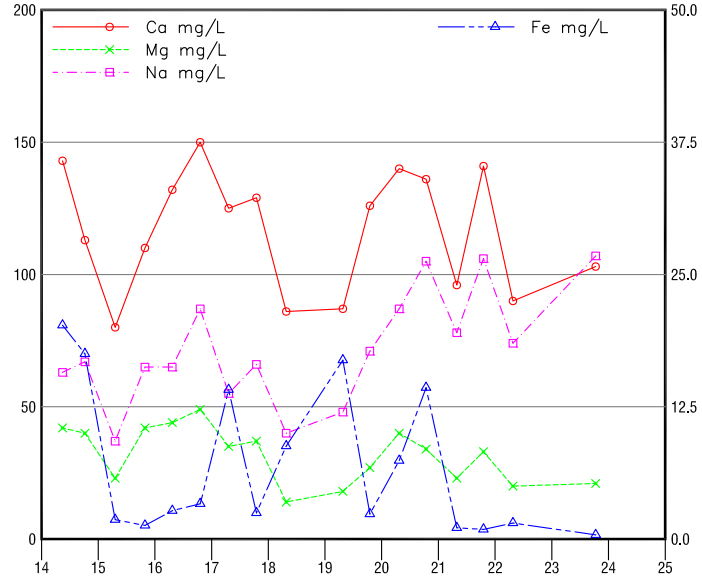
Anomalies shown in *Italics* / Exceedence in **BOLD**



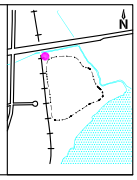








L	Concentration Reported Less Than
G	Concentration Reported Greater Than
A	Concentration Determined Anomalous
	Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

D-4

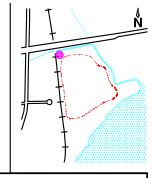
SURFACE WATER

22578520 25 Apr 25	wsp	24G051

D-4

SURFACE WATER

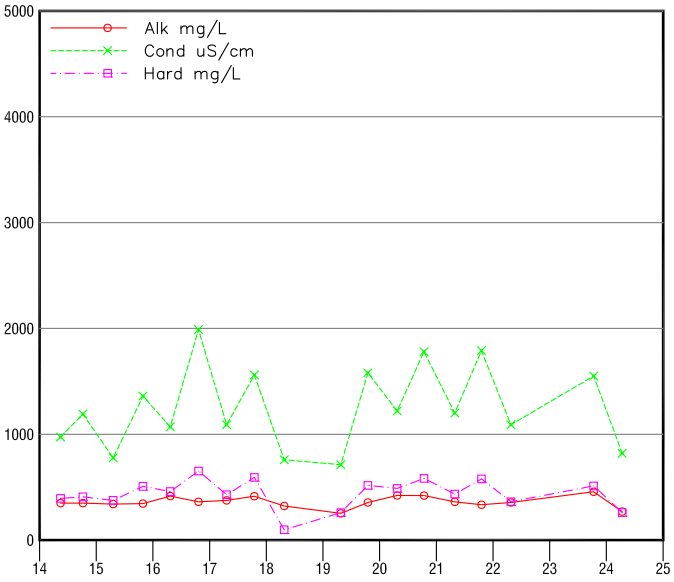
SURFACE WATER STATION

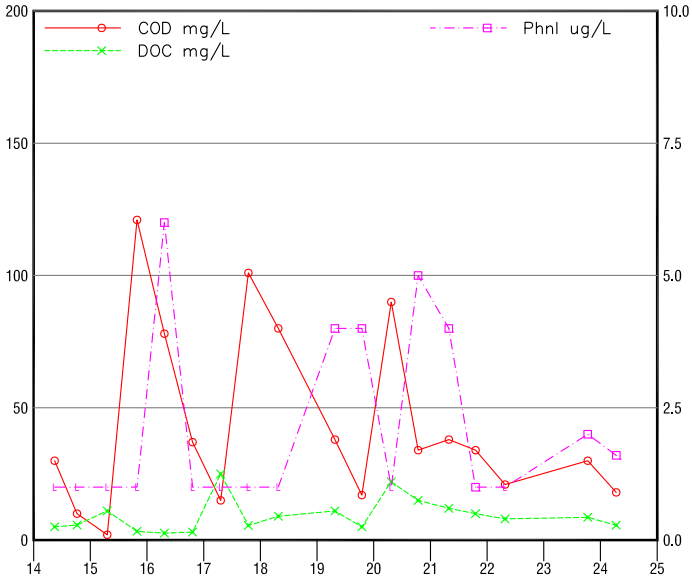


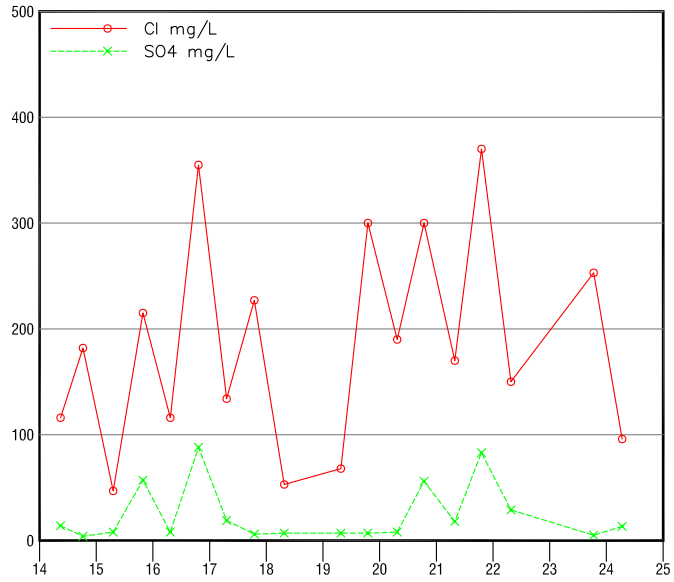
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
16-May-14	2773	564	1180	531	8.0	61	<1	143	42	63	27	**20.2**	1100	79	23	16.0	<0.1	<0.1	13.9	<1	9.6
07-Oct-14	2950	518	1240	475	8.2	106	<1	113	40	67	25	**17.5**	403	37	17	8.8	0.8	<0.1	6.87	<1	0.8
20-Apr-15	3014	315	777	293	8.1	62	2	80	23	37	12	**1.83**	385	1	13	7.8	0.1	<0.1	6.93	<1	1.6
29-Oct-15	3087	440	1130	446	7.9	122	2	110	42	65	23	**1.28**	204	55	13	3.2	0.9	<0.1	1.8	<1	0.8
22-Apr-16	3160	566	1220	510	8.0	75	1	132	44	65	28	**2.68**	657	36	18	16.6	0.1	<0.1	14.6	<1	5.1
19-Oct-16	3270	595	1440	575	7.9	119	52	150	49	87	34	**3.32**	931	71	16	2.9	0.2	<0.1	1.65	<1	0.2
20-Apr-17	3375	537	1190	509	8.1	77	<1	125	35	55	20	**14.1**	1210	41	17	12.4	<0.1	<0.1	10.3	<1	1.4
16-Oct-17	3448	507	1240	476	8.1	97	2	129	37	66	24	**2.46**	420	133	17	3.6	0.7	<0.1	2.29	<1	1.0
26-Apr-18	3516	251	675	94	7.6	61	13	86	14	40	10	**8.78**	456	99	8.0	3.9	<0.1	<0.1	2.0	**2**	6.0
26-Apr-19	3694	336	868	290	7.4	72	<2	87	18	48	20	**16.9**	623	75	11	11.6	<0.1	<0.1	10	**14**	5.4
17-Oct-19	3802	402	1110	426	8.0	130	<2	126	27	71	20	**2.36**	393	35	12	2.4	0.5	<0.1	1.2	1	2.3
23-Apr-20	3898	654	1390	513	7.8	120	<2	140	40	87	37	**7.41**	845	63	18	23.5	<0.1	<0.1	22.1	<1	1.2
13-Oct-20	4008	513	1380	478	7.9	160	9	136	34	105	30	**14.3**	1100	66	10	4.0	<0.1	<0.1	2.8	**5**	2.1
29-Apr-21	4080	366	1080	337	8.0	130	<2	96	23	78	21	**1.06**	168	26	13	6.4	0.5	<0.1	5.2	**5**	−1.4
18-Oct-21	4212	519	1400	487	8.1	190	14	141	33	106	37	**0.912**	596	67	20	11.2	0.7	0.1	7.4	1	−0.7
26-Apr-22	4258	347	963	309	8.2	120	3	90	20	74	16	**1.51**	597	41	15	5.2	<0.1	<0.1	4.8	**2**	−0.9
11-Oct-23	4517	543	1200	372	8.2	147	23	103	21	107	19	**0.395**	431	69	16	1.4	0.2	<0.1	0.9	1	−9.6
TOTAL SAMPLES		17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	
AVERAGE 2024																					

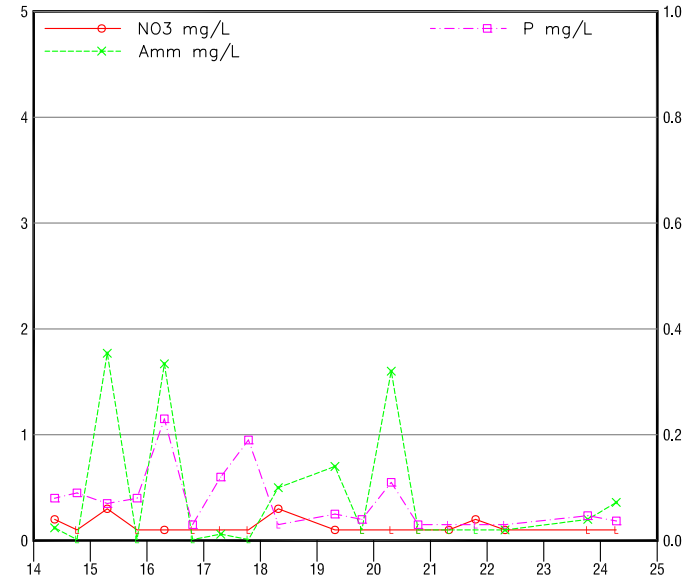
all Concentrations mg/L unless otherwise indicated

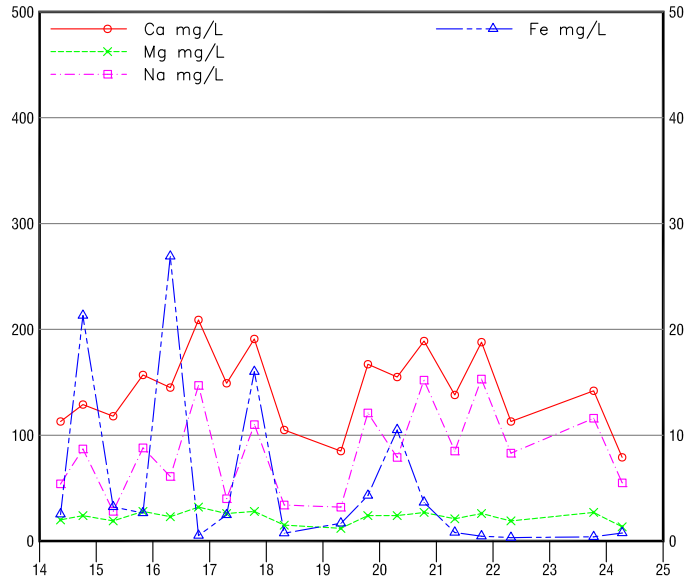
Anomalies shown in *Italics* / Exceedence in **BOLD**



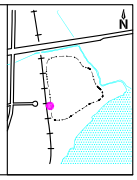








L	Concentration Reported Less Than
G	Concentration Reported Greater Than
A	Concentration Determined Anomalous
	Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

D-5

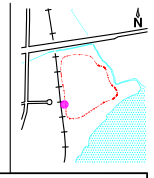
SURFACE WATER

22578520 25 Apr 25	WSP	24G052

D-5

SURFACE WATER

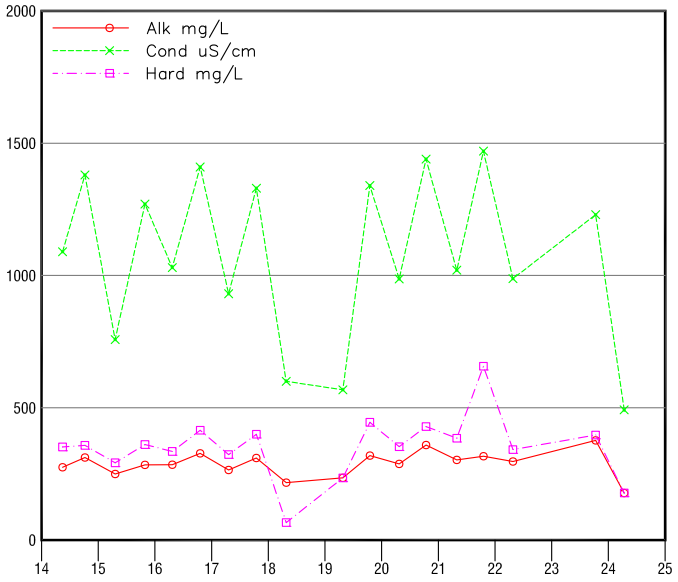
SURFACE WATER STATION

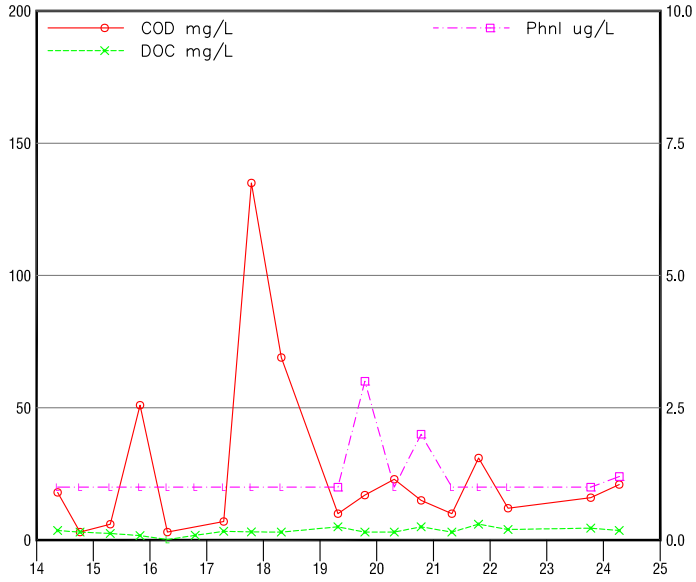


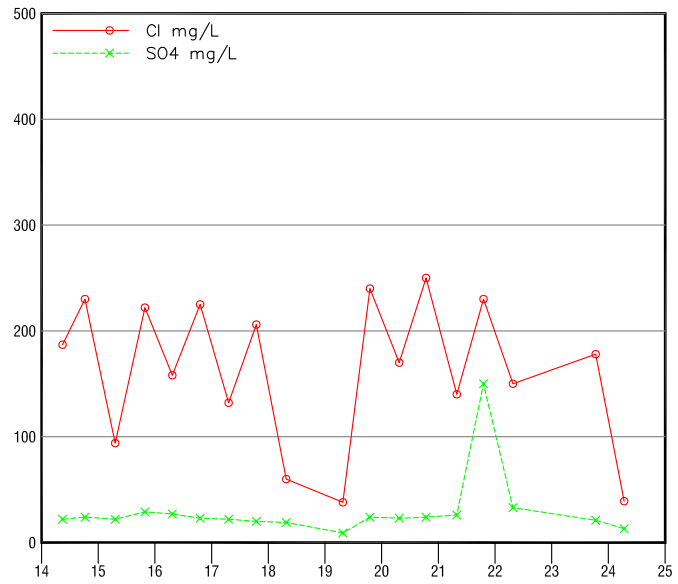
DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
16-May-14	2774	349	974	394	8.1	116	14	113	20	54	3.4	**2.53**	515	30	5.0	1.0	0.2	<0.1	0.12	<1	-3.6
07-Oct-14	2951	349	1190	408	8.1	182	4	129	24	87	5.3	**21.3**	1920	10	5.7	0.6	<0.1	<0.1	<0.01	<1	4.0
20-Apr-15	3015	340	777	375	8.0	47	8	118	19	28	6.4	**3.22**	533	2	11	2.8	0.3	<0.1	1.77	<1	4.4
29-Oct-15	3088	345	1360	508	7.9	215	57	157	28	88	5.1	**2.64**	458	121	3.3	1.5	<0.1	<0.1	<0.01	<1	0.5
22-Apr-16	3161	416	1070	458	7.8	116	8	145	23	61	15	**26.9**	2010	78	2.6	4.5	0.1	<0.1	1.67	**6**	6.0
21-Oct-16	3271	361	1990	652	7.9	355	88	209	32	147	4.9	**0.515**	536	37	3.0	0.6	<0.1	<0.1	<0.01	<1	1.7
20-Apr-17	3376	375	1090	428	8.1	134	19	149	26	40	57	**2.46**	3920	15	25	1.3	<0.1	<0.1	0.06	<1	4.9
16-Oct-17	3449	414	1560	592	7.9	227	6	191	28	110	7.2	**16.0**	2710	101	5.5	1.5	<0.1	<0.1	<0.01	<1	8.3
26-Apr-18	3517	322	759	97	7.9	53	7	105	15	34	27	**0.746**	116	80	9.0	1.3	0.3	<0.1	0.5	<1	3.6
26-Apr-19	3695	252	712	259	7.5	68	7	85	12	32	26	**1.67**	479	38	11	1.7	0.1	<0.1	0.7	**4**	2.0
17-Oct-19	3803	355	1580	516	7.9	300	7	167	24	121	6.8	**4.29**	1070	17	5.0	0.5	<0.1	<0.1	<0.1	**4**	0.9
23-Apr-20	3899	422	1220	488	7.9	190	8	155	24	79	34	**10.5**	2240	90	22	3.7	<0.1	<0.1	1.6	<1	2.0
13-Oct-20	4009	420	1780	583	8.1	300	56	189	27	152	13	**3.65**	910	34	15	0.6	<0.1	<0.1	<0.1	**5**	2.2
29-Apr-21	4081	361	1200	434	8.0	170	18	138	21	85	22	**0.807**	138	38	12	1.0	0.1	<0.1	<0.1	**4**	2.0
18-Oct-21	4213	334	1790	578	7.6	370	83	188	26	153	13	**0.459**	235	34	10	0.6	0.2	<0.1	<0.1	1	-0.5
26-Apr-22	4259	355	1090	362	8.3	150	29	113	19	83	22	**0.321**	117	21	8.0	<0.5	0.1	<0.1	0.1	<1	-2.3
11-Oct-23	4518	456	1550	512	7.7	253	5	142	27	116	15	**0.397**	1020	30	8.6	0.4	<0.1	<0.1	0.2	**2**	-2.8
12-Apr-24	4589	269	820	260	7.91	96	13.4	79	13.4	55	14	**0.762**	186	18	5.6	0.4	<0.1	<0.1	0.36	**1.6**	4.1
TOTAL SAMPLES		18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	
AVERAGE 2024																					

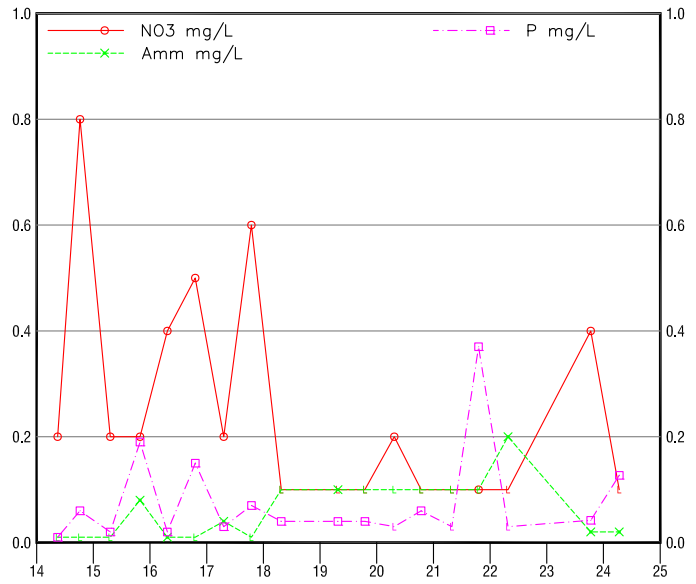
all Concentrations mg/L unless otherwise indicated

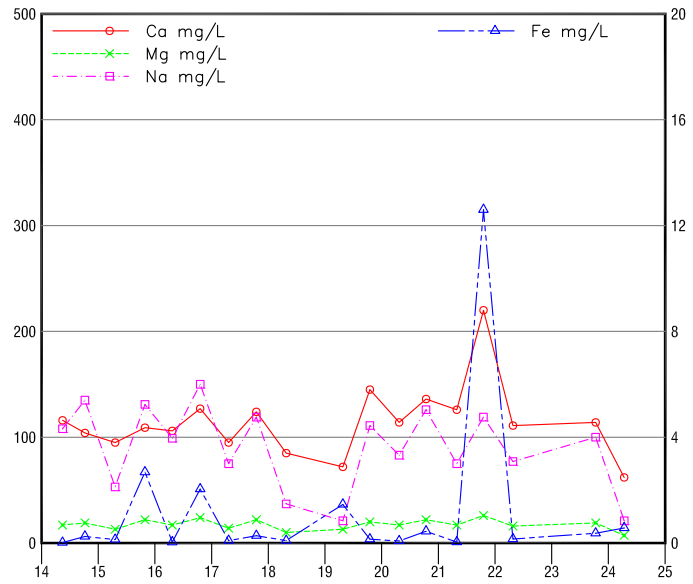
Anomalies shown in *Italics* / Exceedence in **BOLD**



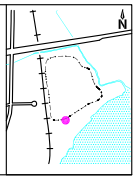








L	Concentration Reported Less Than
G	Concentration Reported Greater Than
A	Concentration Determined Anomalous
	Anomaly Not Plotted



CITY OF ORILLIA

KITCHENER STREET WASTE DIVERSION SITE

D-6

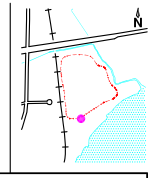
SURFACE WATER

22578520 25 Apr 25	wsp	24G053

D-6

SURFACE WATER

SURFACE WATER STATION



DATE	SAMPLE #	Alk	Cond uS/cm	Hard	pH units	Cl	SO4	Ca	Mg	Na	K	Fe	Mn ug/L	COD	DOC	TKN	NO3	NO2	Amm	Phnl ug/L	Ion B %
	PWQO											0.3								1	
16-May-14	2775	275	1090	352	8.3	187	22	116	17	108	2.5	0.02	27	18	3.6	0.3	0.2	<0.1	<0.01	<1	3.5
07-Oct-14	2952	312	1380	358	8.3	230	24	104	19	135	3.3	0.25	137	3	3.0	0.3	0.8	<0.1	<0.01	<1	-1.8
20-Apr-15	3016	250	758	292	8.2	94	22	95	13	53	2.9	0.13	33	6	2.5	0.3	0.2	<0.1	<0.01	<1	1.1
29-Oct-15	3089	284	1270	361	7.9	222	29	109	22	131	5.6	**2.68**	862	51	1.7	1.2	0.2	<0.1	0.08	<1	2.5
22-Apr-16	3162	285	1030	335	8.2	158	27	106	17	99	3.2	0.033	24	3	<0.2	0.3	0.4	<0.1	0.01	<1	1.5
19-Oct-16	3272	328	1410	415	8.1	225	23	127	24	150	3.8	**2.04**	567		1.8	0.7	0.5	<0.1	<0.01	<1	5.9
20-Apr-17	3377	265	931	323	8.2	132	22	95	14	75	2.3	0.088	32	7	3.3	0.4	0.2	<0.1	0.04	<1	-1.4
16-Oct-17	3450	310	1330	400	8.2	206	20	124	22	119	3.6	0.277	197	135	3.1	0.3	0.6	<0.1	<0.01	<1	3.5
26-Apr-18	3518	217	600	66	8.2	60	19	85	10	37	2.9	0.091	27	69	3.0	0.6	<0.1	<0.1	<0.1	<1	3.2
26-Apr-19	3696	235	568	235	8.2	38	9	72	13	21	3.0	**1.46**	431	10	5.0	<0.5	<0.1	<0.1	0.1	1	-2.1
17-Oct-19	3804	319	1340	445	8.2	240	24	145	20	111	3.8	0.143	116	17	3.0	0.5	<0.1	<0.1	<0.1	**3**	1.0
23-Apr-20	3900	288	987	353	8.3	170	23	114	17	83	3.3	0.077	43	23	3.0	<0.5	0.2	<0.1	<0.1	<1	-0.8
13-Oct-20	4010	359	1440	429	8.3	250	24	136	22	126	4.3	**0.444**	285	15	5.0	<0.5	<0.1	<0.1	<0.1	**2**	-1.5
29-Apr-21	4082	303	1020	385	8.2	140	26	126	17	75	2.7	0.038	29	10	3.0	<0.5	<0.1	<0.1	<0.1	<1	1.9
18-Oct-21	4214	317	1470	657	8.0	230	150	220	26	119	6.9	**12.6**	4730	31	6.0	<0.5	0.1	<0.1	<0.1	<1	8.8
26-Apr-22	4260	297	988	342	8.3	150	33	111	16	77	3.2	0.153	50	12	4.0	<0.5	<0.1	<0.1	0.2	<1	-2.8
11-Oct-23	4519	377	1230	397	8.2	178	21	114	19	100	3.3	**0.369**	102	16	4.5	<0.2	0.4	<0.1	0.02	1	-0.9
12-Apr-24	4590	178	492	178	7.81	39	13.1	62	7.2	21	2.7	**0.571**	28	21	3.6	0.2	<0.1	<0.1	0.02	**1.2**	7.7
TOTAL SAMPLES		18	18	18	18	18	18	18	18	18	18	18	18	17	18	18	18	18	18	18	
AVERAGE 2024																					

all Concentrations mg/L unless otherwise indicated

Anomalies shown in *Italics* / Exceedence in **BOLD**

APPENDIX E

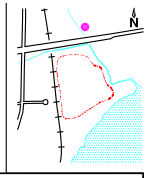
Water Quality, Metals/Special

BH1-IR

SAND AQUIFER

OBSERVATION WELL
Screen 209.7 - 208.2 masl

FORMERLY BH1-1
CONVERTED Jul 12



DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P	Se	Ag	Al	Be	Co	Ni	Zn	TDS
										mg/L								mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
30-Sep-14	2890									0.01								
15-Apr-15	2972									<0.01								199
20-Jul-15	3032			98	<0.02	<2	<0.1	<0.02		<0.01	<1	<0.02	<10		<0.1	<10	<5	180
28-Sep-15	3091									0.01								175
19-Apr-16	3163									<0.01								188
17-Jul-16	3199			96	0.02	<2	<2	<0.02		0.02	<1	<0.02	<10		<5	<10	9	171
17-Oct-16	3291									<0.01								176
24-Apr-17	3326									<0.01								168
18-Jul-17	3392			98	<0.014	<2	<2	<0.02		0.01	<1	<0.02	<10		<5	<10	<5	169
17-Oct-17	3468									0.02								164
23-Apr-18	3519									**0.08**								
16-Jul-18	3572			243	0.019	0.11	0.46	0.03		**0.24**	<0.04	<0.05	3		0.648	0.4	3	
15-Oct-18	3645									**0.23**								
23-Apr-19	3697									**1.45**								
15-Jul-19	3474			228	0.019	0.22	2.5	0.11		**0.28**	0.05	<0.05	4		0.69	0.8	5	
15-Oct-19	3823									**0.23**								
14-Apr-20	3859									**0.15**								
08-Jul-20	3911			122	0.004	0.15	0.5	0.03		**0.35**	<0.04	<0.05	5		0.293	0.4	2	
08-Oct-20	3967									**0.34**								
12-Jul-21	4093			213	<0.003	0.32	1.8	<0.09		**0.46**	0.07	<0.05	35		**1.04**	1.2	5	
29-Sep-21	4151									**0.81**								
11-Apr-22	4217									**0.14**								
11-Jul-22	4285			106	0.028	0.1	0.4	<0.09		**0.17**	<0.04	<0.05	2		0.178	<0.1	<2	
04-Oct-22	4361									**0.22**								
11-Apr-23	4413									**1.61**								
10-Jul-23	4462			210	0.023	1.6	2.9	<0.05		**1.18**	0.33	<0.01	6		**1.2**	3.8	1	
04-Oct-23	4539									**1.21**								
08-Apr-24	4612									**0.275**								
08-Jul-24	4640			171	0.033	0.9	3.3	<0.05		**0.032**	0.16	<0.01	13		**1.2**	4.3	2	
01-Oct-24	4683									**0.347**								

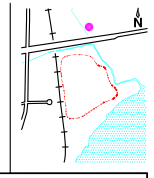
TOTAL SAMPLES	0	9	38	38	38	38	38	3	80	35	38	38	3	38	38	38	31
AVERAGE 2024									0.2180								

all Concentrations ug/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**

BH1-III

PEAT

OBSERVATION WELL
Screen 218.8 - 218.2 masl



DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P mg/L	Se	Ag	Al	Be	Co	Ni	Zn	TDS mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
30-Sep-14	2891									**0.03**								
15-Apr-15	2973									0.02								625
20-Jul-15	3033									**0.03**								912
28-Sep-15	3092									**0.04**								1030
19-Apr-16	3164									0.01								630
17-Jul-16	3200									0.02								959
17-Oct-16	3292									<0.01								1140
24-Apr-17	3327									**0.04**								570
18-Jul-17	3393									**0.04**								747
17-Oct-17	3469									0.02								1168
23-Apr-18	3520									**1.51**								
16-Jul-18	3573									**1.92**								
15-Oct-18	3646									**2.68**								
23-Apr-19	3698									**1.77**								
15-Jul-19	3748									**1.35**								
15-Oct-19	3824									**0.82**								
14-Apr-20	3860									**1.38**								
08-Jul-20	3912									**3.14**								
08-Oct-20	3968									**1.58**								
12-Jul-21	4094									**1.45**								
29-Sep-21	4152									**3.77**								
11-Apr-22	4218									**1.50**								
11-Jul-22	4286									**1.57**								
04-Oct-22	4362									**5.44**								
11-Apr-23	4414									**2.80**								
10-Jul-23	4463									**2.60**								
04-Oct-23	4540									**1.34**								
08-Apr-24	4613									**0.706**								
08-Jul-24	4641									**0.349**								
01-Oct-24	4684									**6.57**								

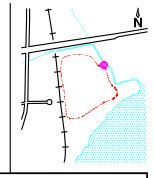
TOTAL SAMPLES	0	9	19	19	19	19	19	4	73	15	19	19	4	19	19	19	31
AVERAGE 2024									2.542								

all Concentrations ug/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**

BH2-II

SAND AQUIFER

OBSERVATION WELL
Screen 214.0 - 213.5 masl



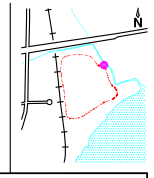
DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P mg/L	Se	Ag	Al	Be	Co	Ni	Zn	TDS mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
20-Aug-98	100983									**0.10**								434
18-Nov-98	100984									**0.11**								436
18-Aug-99	100986									<0.01								
16-Nov-99	100987									<0.01								
16-Aug-00	100989		<2	590	<5	<10	**20**	<1			<5	<10	<50		**40**	<20	<20	
19-Apr-01	100991																	393
19-Jul-01	100992																	433
17-Jul-02	100993		<2	570	<5	<10	<10	<1			<5	<10	<50		<20	20	<20	432
23-Jul-03	102541																	489
13-Jul-04	1207																	540
25-Aug-05	58253			742	<0.1	<2	<2	<0.5		**0.37**	1	<5	<10		<5	<10	8	
01-Aug-06	6813			831	<0.1	<2	<2	<0.1		**0.07**	1	<5	<10		<5	<10	<5	
15-Aug-07	78153			786	<0.02	<2	<2	<0.02		**0.11**	<0.2	<5	<10		<5	<10	9	
25-Jul-08	87253			717	<0.02	<2	<2	<0.02		**0.24**	0.9	<5	<10		<5	<10	<5	565
21-Jul-09	B09-229			791	<0.02	<2	<2	<0.02		**0.60**	0.6	0.03	<10		<5	<10	<5	564
21-Jul-10	2080			851	<0.02	<2	<2	<0.02		<0.01	<1	<0.02	20		<5	<10	<5	
20-Jul-11	2243			785	<0.02	<2	<2	0.05		**1.51**	<1	<0.02	30		<5	<10	5	
25-Jul-12	2444			1010	<0.1	3	<2	<1		0.02	<4	<0.1	14		0.6	<3	<5	
01-Aug-13	2623			863	<0.02	<2	<2	<0.02		<0.01	<1	<0.02	40		<5	<10	<5	
22-Jul-14	2834			928	<0.02	<2	<2	<0.02		<0.01	<1	<0.02	20		0.5	<10	9	
21-Jul-15	3034			813	<0.02	<2	<0.1	<0.02		0.01	<1	<0.02	30		0.3	<10	<5	521
22-Jul-16	3201			624	<0.02	<2	<2	<0.02		**0.03**	<1	<0.02	30		**5**	<10	<5	502
21-Jul-17	3394			771	<0.014	<2	<2	0.19		**0.04**	<1	<0.02	30		<5	<10	<5	505
16-Jul-18	3574			633	0.009	0.22	1.93	0.15		**0.76**	<0.04	<0.05	58		0.199	0.6	8	
19-Jul-19	3749			1100	<0.003	0.24	0.7	0.06		**0.61**	0.06	<0.05	2		0.345	2.9	4	
10-Jul-20	3913			749	0.015	0.23	0.6	0.02		**0.60**	<0.04	<0.05	1		0.26	2.1	<2	
14-Jul-21	4095			1020	<0.003	0.21	1.4	<0.09		**4.18**	0.05	<0.05	4		0.43	3	5	
14-Jul-22	4287			1080	0.009	0.25	0.2	<0.09		**1.18**	<0.04	<0.05	2		0.338	1.8	<2	
13-Jul-23	4464			1210	0.042	4.1	2	<0.05		**4.06**	2.47	<0.01	2		0.9	6.2	1	
09-Jul-24	4642			1270	0.035	1.5	1.6	<0.05		**0.086**	2.69	<0.01	2		**1**	6.4	2	
TOTAL SAMPLES AVERAGE 2024		0	3	23	23	23	23	23	0	25	23	23	23	0	23	23	23	12

all Concentrations ug/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**

BH2-III

PEAT

OBSERVATION WELL
Screen 219.0 - 216.6 masl



DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P	Se	Ag	Al	Be	Co	Ni	Zn	TDS
										mg/L								mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
29-Sep-14	2892									**0.16**								
16-Apr-15	2974									**0.33**								1590
21-Jul-15	3035									**0.12**								1600
01-Oct-15	3093									0.02								1600
20-Apr-16	3165									0.01								1540
22-Jul-16	3202									**0.16**								1310
20-Oct-16	3293									**0.15**								1530
25-Apr-17	3328									**0.16**								1470
21-Jul-17	3395									**0.03**								1670
19-Oct-17	3470									**0.23**								1609
23-Apr-18	3521									**0.26**								
19-Jul-18	3575									**0.53**								
18-Oct-18	3647									**0.35**								
26-Apr-19	3699									**0.34**								
19-Jul-19	3750									**0.33**								
18-Oct-19	3825									**0.40**								
16-Apr-20	3861									**0.60**								
10-Jul-20	3914									**0.15**								
08-Oct-20	3969									**1.0**								
14-Jul-21	4096									**0.92**								
29-Sep-21	4153									**0.60**								
14-Apr-22	4219									**0.41**								
14-Jul-22	4288									**0.29**								
05-Oct-22	4363									**0.86**								
13-Apr-23	4415									**1.14**								
13-Jul-23	4465									**1.05**								
03-Oct-23	4541									**1.41**								
10-Apr-24	4614									**0.491**								
09-Jul-24	4643									**0.031**								
02-Oct-24	4685									**0.408**								
TOTAL SAMPLES		0	3	4	4	4	4	4	1	52	3	4	4	1	4	4	4	29
AVERAGE 2024										0.3100								

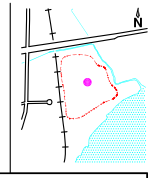
all Concentrations ug/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**

BH3-IR

SAND AQUIFER

OBSERVATION WELL
Screen 216.4 - 214.9 masl

FORMERLY BH3-IRX
CONVERTED Jul 08



DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P mg/L	Se	Ag	Al	Be	Co	Ni	Zn	TDS mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
06-Oct-14	2905	<0.1							0.4	**0.03**								
21-Apr-15	2988	<0.1							1.3	**0.03**								1440
27-Jul-15	3051			490	<0.02	<2	<2	<0.02		0.02	5	<0.02	70		**3.3**	10	6	1430
05-Oct-15	3105									**0.04**								1680
26-Apr-16	3176									**0.13**								1200
25-Jul-16	3218			353	<0.02	<2	1.7	<0.02		**0.09**	4	<0.02	70		**7**	16.6	<5	1370
25-Oct-16	3304									**0.05**								1590
01-May-17	3343									**0.07**								1380
25-Jul-17	3411			379	<0.014	<2	<2	0.12		**0.04**	<1	<0.02	60		**7**	10	7	1290
23-Oct-17	3485									**0.06**								1313
01-May-18	3536									**0.31**								
24-Jul-18	3593			424	0.007	0.41	0.8	0.05		**0.31**	0.16	<0.05	2		**5.1**	10.3	6	
22-Oct-18	3660									**1.25**								
29-Apr-19	3712									**0.51**								
23-Jul-19	3768			561	<0.003	0.5	1.2	0.18		**0.26**	0.14	<0.05	**84**		**5.21**	10.4	3	
28-Oct-19	3838									**0.24**								
24-Apr-20	3874									**0.23**								
13-Jul-20	3932			414	0.006	0.52	0.7	0.02		**0.21**	0.17	<0.05	2		**5.43**	11.4	<2	
06-Oct-20	3970									**0.28**								
16-Jul-21	4097			348	0.004	0.55	0.9	<0.09		**0.08**	0.16	<0.05	3		**5.15**	9.1	6	
01-Oct-21	4154									**0.37**								
21-Apr-22	4220									**0.31**								
19-Jul-22	4306			431	0.003	0.41	0.3	<0.09		**0.06**	0.14	<0.05	<1		**5.81**	11.7	<2	
13-Oct-22	4376									**0.31**								
19-Apr-23	4428									**0.261**								
19-Jul-23	4483									**0.405**								
16-Oct-23	4554									**0.353**								
18-Apr-24	4591									**0.105**								
17-Jul-24	4661			355	0.042	5.7	2.8	<0.05		**0.176**	9.85	0.02	<1		**4.5**	12.8	<1	
10-Oct-24	4662									**0.08**								
TOTAL SAMPLES		27	8	28	28	28	28	28	31	70	24	28	28	4	28	28	28	28
AVERAGE 2024										0.1203								

all Concentrations ug/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**

BH3-IIR

REFUSE

LEACHATE WELL
Screen 222.5 - 218.4 masl

FORMERLY BH3-IIRX
CONVERTED Sep 16

DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P	Se	Ag	Al	Be	Co	Ni	Zn	TDS
										mg/L								mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
21-Apr-15	2989	0.7		588	<0.02	8	<2	0.16	1.7	**0.45**	<10	0.04	30		**10.9**	**90**	<5	3590
29-Jul-15	3052		**11.8**	746	0.03	9	<2	0.07		**0.06**	10	0.04	60		**12.1**	**90**	5	3540
07-Oct-15	3106			668	0.06	6	<2	0.04		**0.57**	12	<0.02	50		**18**	**90**	<5	3670
27-Apr-16	3177			612	<0.02	8	<2	<0.02		**0.58**	3	0.04	50		**18**	**90**	<5	3470
25-Jul-16	3219		**6.3**	680	<0.02	9	**5.7**	<0.02		**0.55**	9	0.06	60		**22**	**69.4**	7	3600
25-Oct-16	3305			730	0.03	9	<2	0.36		**0.08**	51	0.04	**80**		**28**	**50**	6	2760
02-May-17	3344			647	0.02	10	<2	0.09		**0.16**	4	0.03	70		**20**	**50**	17	2860
25-Jul-17	3412		**6.3**	558	0.014	9	<2	0.08		**0.30**	<1	0.03	70		**19**	**50**	6	2850
23-Oct-17	3486			609	0.02	10	<2	0.35		**0.31**	5	0.02	**100**		**14**	**60**	12	2888
01-May-18	3537			591	0.01	9.2	0.26	0.14		**0.31**	1.20	<0.05	31		**16.4**	**50.1**	8	
24-Jul-18	3594		2.6	587	0.006	9.58	1.5	0.17		**0.16**	0.85	<0.05	33		**16.6**	**50.1**	6	
22-Oct-18	3661			653	<0.003	11.37	2.14	0.13		**0.19**	0.96	<0.05	34		**18.85**	**57.1**	5	
29-Apr-19	3713			502	<0.003	0.63	1.1	0.16		**0.17**	0.15	<0.05	46		**4.92**	9.2	4	
23-Jul-19	3769		3.2	537	0.018	10.1	1	0.18		**0.36**	0.93	<0.05	47		**17.1**	**57**	9	
28-Oct-19	3839			621	0.003	9.45	1.3	0.19		**0.62**	0.68	<0.05	47		**17.1**	**56.8**	5	
16-Apr-20	3875			680	0.005	9.74	2.1	0.23		**0.47**	0.96	<0.05	40		**15.4**	**49**	3	
13-Jul-20	3933		2.5	563	<0.003	11.4	0.7	0.09		**0.40**	0.56	<0.05	35		**17.2**	**55.5**	3	
06-Oct-20	3971			499	<0.003	11	0.8	0.09		**0.51**	1.4	<0.05	30		**16.5**	**55.6**	<2	
29-Apr-21	4043			628	<0.003	10.6	0.6	0.1			0.76	<0.05	32		**17.2**	**58.5**	12	
16-Jul-21	4098		2.7	474	0.005	10.1	1.2	0.22		**0.46**	0.92	<0.05	45		**16.3**	**49.2**	4	
01-Oct-21	4155			483	0.028	11.1	1.3	0.35		**0.43**	0.54	<0.05	**81**		**17.1**	**59**	4	
21-Apr-22	4221			595	0.011	10.2	<0.2	0.13		**0.46**	0.77	<0.05	30		**17.3**	**60.6**	<2	
19-Jul-22	4307		2.9	643	<0.003	10.7	0.4	<0.09		**0.22**	0.99	<0.05	31		**16.1**	**60.7**	<2	
13-Oct-22	4377			553	<0.003	8.92	1	0.12		**0.46**	0.78	<0.05	30		**14.5**	**52.7**	3	
19-Apr-23	4429			631	0.21	15	5	**8.84**		**0.476**	<10	<0.1	**1220**		**15.7**	**70**	**39**	
19-Jul-23	4484			608	0.064	33.2	**9.7**	<0.05		**0.77**	10.2	<0.01	10		**9.5**	**66.2**	2	
16-Oct-23	4555			419	<0.05	12	5	<0.5		**0.582**	17.9	<0.1	10		**15**	**68**	<10	
18-Apr-24	4592			442	0.069	29.2	**7.1**	<0.05		**1.15**	13.4	0.01	7		**17**	**70.5**	3	
17-Jul-24	4662		**5.1**	475	<0.005	26.7	**7.6**	<0.05		**0.95**	20.5	0.03	5		**14.5**	**66.2**	2	
10-Oct-24	4663			428	0.037	9	**11**	<0.05		**0.544**	29.8	<0.01	5		**14**	**70**	3	
TOTAL SAMPLES		30	41	90	90	90	90	90	34	102	86	90	90	4	90	90	90	31
AVERAGE 2024				448	0.035	21.6	9	<0.05		0.881	21.2	0.01	6		15	68.90	3	

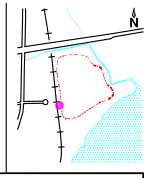
all Concentrations ug/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**

BH4-IIR

SAND AQUIFER

OBSERVATION WELL
Screen 219.9 - 218.3 masl

FORMERLY BH4-II
CONVERTED Sep 16



DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P mg/L	Se	Ag	Al	Be	Co	Ni	Zn	TDS mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
30-Sep-14	2953									0.02								
15-Apr-15	2975									0.01								658
21-Jul-15	3036			366	0.02	<2	0.9	<0.02		0.02	<1	<0.02	40		0.4	<10	7	705
28-Sep-15	3094									<0.01								707
19-Apr-16	3166									<0.01								661
19-Jul-16	3203			413	<0.02	<2	<2	<0.02		0.02	<1	<0.02	50		<5	<10	<5	786
18-Oct-16	3294									<0.01								771
24-Apr-17	3329									<0.01								710
19-Jul-17	3396			277	0.017	<2	<2	<0.02		<0.01	<1	<0.02	40		<5	<10	6	649
16-Oct-17	3471									0.02								665
23-Apr-18	3522									**0.16**								
17-Jul-18	3576			340	0.038	0.14	2.73	0.13		**0.55**	0.13	<0.05	3		0.896	0.7	6	
16-Oct-18	3648									**0.38**								
23-Apr-19	3700									**0.22**								
15-Jul-19	3751			355	0.009	0.15	3.2	0.11		**0.76**	0.15	<0.05	4		**0.914**	0.8	6	
17-Oct-19	3826									**0.26**								
14-Apr-20	3862									**0.96**								
09-Jul-20	3915			360	0.003	0.14	0.9	0.01		**0.25**	0.1	<0.05	3		0.734	0.5	<2	
13-Oct-20	9372									**0.38**								
08-Jul-21	4099			351	0.009	0.48	1.4	0.09		**5.14**	0.2	<0.05	**89**		**1.21**	0.9	2	
28-Sep-21	4156									**3.62**								
14-Apr-22	4222			381	0.008	0.26	1.2	<0.09		**4.79**								
13-Jul-22	4289			371	0.024	0.26	0.7	<0.09		**0.07**	0.15	<0.05	2		0.425	1.1	<2	
04-Oct-22	4364									**2.58**								
12-Apr-23	4416									**6.83**								
11-Jul-23	4466			398	0.018	2.9	**5.6**	<0.05		**8.97**	0.76	0.01	6		0.8	3.6	1	
03-Oct-23	4542									**13.4**								
10-Apr-24	4615									**3.14**								
11-Jul-24	4644			394	<0.005	1.1	3.9	<0.05		**0.479**	0.52	<0.01	3		0.6	2.1	2	
02-Oct-24	4686									**2.03**								
TOTAL SAMPLES		0	9	39	39	39	39	39	3	73	35	38	38	3	38	38	38	31
AVERAGE 2024										1.883								

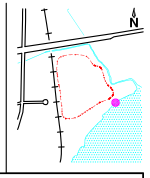
all Concentrations ug/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**

BH5-IR

SAND AQUIFER

OBSERVATION WELL
Screen 211.8 - 211.3 masl

FORMERLY BH5-I
CONVERTED Oct 10



DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P	Se	Ag	Al	Be	Co	Ni	Zn	TDS
										mg/L								mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
20-Apr-15	2990			3720	<0.02	<2	<2	<0.02		<0.01	2	<0.02	20		<0.1	<10	<5	687
30-Jul-15	3053			3660	<0.02	<2	<2	<0.02		**0.04**	<1	<0.02	40		<0.1	<10	<5	674
08-Oct-15	3107			3500	<0.02	<2	<2	<0.02		0.01	<1	<0.02	40		<5	<10	<5	683
27-Apr-16	3178			3460	<0.02	<2	<2	<0.02		<0.01	<1	<0.02	40		<5	<10	<5	709
28-Jul-16	3220			3780	<0.02	<2	0.5	<0.02		**0.04**	<1	<0.02	40		<5	3.7	<5	727
26-Oct-16	3306			3430	<0.02	<2	<2	<0.02		<0.01	4	<0.02	30		<5	<10	<5	692
03-May-17	3345			3660	<0.014	<2	<2	<0.02		<0.01	<1	<0.02	40		<5	<10	<5	670
27-Jul-17	3413			3680	<0.014	<2	<2	<0.02		**0.03**	<1	<0.02	40		<5	<10	<5	679
24-Oct-17	3487			4260	<0.014	<2	<2	<0.02		0.02	<1	<0.02	70		<5	<10	<5	691
02-May-18	3538			4000	0.004	0.17	1.82	0.05		**1.05**	0.05	<0.05	1		0.05	0.6	5	
26-Jul-18	3595			3960	0.003	0.17	2.23	0.09		**0.58**	0.05	<0.05	11		0.059	0.4	6	
25-Oct-18	3662			3910	<0.003	0.14	2.38	0.08		**0.08**	0.05	<0.05	1		0.07	0.5	7	
01-May-19	3714			670	0.005	9.19	0.3	0.3		**0.72**	0.69	<0.05	56		**17.3**	**54.6**	4	
26-Jul-19	3770			3330	<0.003	<0.08	0.9	0.05		**1.04**	<0.04	<0.05	20		0.041	0.4	4	
29-Oct-19	3840			3530	<0.003	0.15	1.2	0.06		**1.22**	<0.04	<0.05	13		0.06	0.4	7	
17-Apr-20	3876			3830	0.004	0.2	0.3	<0.01		**1.17**	0.1	<0.05	11		0.061	0.5	3	
14-Jul-20	3934			3550	<0.003	0.12	0.6	0.03		**1.98**	0.05	<0.05	19		0.062	0.5	3	
08-Oct-20	3973			3110	<0.003	0.3	0.6	0.02		**7.21**	0.07	<0.05	2		0.087	0.5	<2	
21-Apr-21	4045			3740	0.004	0.2	1.7	<0.09		**2.80**	<0.04	<0.05	6		0.028	0.5	3	
16-Jul-21	4100			3470	<0.003	0.31	1.4	<0.09		**2.89**	0.04	<0.05	5		0.08	0.5	11	
06-Oct-21	4157			3650	0.008	0.28	1.1	<0.09		**3.61**	0.07	<0.05	9		0.048	0.4	4	
21-Apr-22	4223			3770	0.011	0.21	0.3	<0.09		**4.54**	0.07	<0.05	21		0.073	0.5	<2	
20-Jul-22	4308			3870	<0.003	0.14	0.6	<0.09		<0.03	<0.04	<0.05	1		0.049	0.7	2	
13-Oct-22	4378			3220	<0.003	0.17	1	<0.09		**4.00**	<0.04	<0.05	7		0.073	0.5	2	
20-Apr-23	4430			3990	0.12	26	**27**	**8.29**		**7.26**	<5	<0.1	**14900**		**11.8**	20	**69**	
20-Jul-23	4485									**5.27**								
16-Oct-23	4556			3470	0.012	0.4	1.3	0.05		**4.88**	0.95	0.02	3		0.3	1.7	3	
18-Apr-24	4593			3320	0.009	2	2.1	<0.05		**5.78**	0.5	<0.01	2		0.3	4.1	4	
18-Jul-24	4663			3790	0.014	0.7	1.5	<0.05		**4.12**	0.81	<0.01	2		0.3	2.4	2	
10-Oct-24	4664			3480	0.015	2.2	2.4	<0.05		**3.66**	6.12	<0.01	1		0.3	3.2	2	
TOTAL SAMPLES		2	8	69	69	69	69	69	5	87	65	69	69	4	69	69	71	31
AVERAGE 2024				3530	0.013	1.6	2.0	<0.05		4.520	2.48	<0.01	2		0.3	3.2	3	

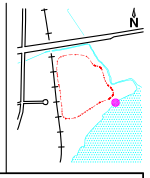
all Concentrations ug/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**

BH5-IIIR

PEAT

OBSERVATION WELL
Screen 218.0 - 217.4 masl

FORMERLY BH5-III
CONVERTED Oct 10



DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P mg/L	Se	Ag	Al	Be	Co	Ni	Zn	TDS mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
20-Apr-15	2991									**0.09**								777
30-Jul-15	3054									**0.12**								753
08-Oct-15	3108									**0.07**								735
27-Apr-16	3179									**0.08**								756
27-Jul-16	3221									**0.09**								762
26-Oct-16	3307									**0.11**								726
03-May-17	3346									**0.10**								756
27-Jul-17	3414									**0.11**								738
24-Oct-17	3488									**0.07**								747
02-May-18	3539									**0.66**								
26-Jul-18	3596									**0.83**								
25-Oct-18	3663									**1.01**								
01-May-19	3715									**1.05**								
26-Jul-19	3771									**0.80**								
29-Oct-19	3841									**0.82**								
17-Apr-20	3877									**0.86**								
14-Jul-20	3935									**0.75**								
08-Oct-20	3974									**0.73**								
22-Apr-21	4046									**0.50**								
16-Jul-21	4101									**0.89**								
30-Sep-21	4158									**0.68**								
21-Apr-22	4224									**2.29**								
20-Jul-22	4309									**0.98**								
13-Oct-22	4379									**2.08**								
20-Apr-23	4431									**4.85**								
20-Jul-23	4486									**8.45**								
16-Oct-23	4557									**3.47**								
18-Apr-24	4594									**2.46**								
18-Jul-24	4664									**1.71**								
10-Oct-24	4665									**2.49**								
TOTAL SAMPLES		1	5	5	6	5	5	6	5	72	2	5	5	4	5	5	5	28
AVERAGE 2024										2.220								

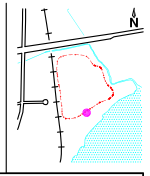
all Concentrations ug/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**

BH6R

PEAT

OBSERVATION WELL
Screen 219.4 - 217.9 masl

FORMERLY BH6X
CONVERTED Jul 13



DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P	Se	Ag	Al	Be	Co	Ni	Zn	TDS
										mg/L								mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
08-Oct-14	2908	<0.1							<0.1	**0.10**								
23-Apr-15	2992	0.1							<0.1	**0.36**								
28-Jul-15	3055									**0.35**								
06-Oct-15	3109									**0.32**								
27-Apr-16	3180									**0.34**								
29-Jul-16	3222									**0.31**								
26-Oct-16	3308									**0.30**								
02-May-17	3347									**0.36**								
25-Jul-17	3415									**0.32**								
23-Oct-17	3489									**0.17**								
01-May-18	3540									**0.54**								
25-Jul-18	3597									**0.48**								
25-Oct-18	3664									**0.54**								
01-May-19	3716									**0.45**								
26-Jul-19	3772									**0.57**								
29-Oct-19	3842									**0.40**								
17-Apr-20	3878									**0.48**								
14-Jul-20	3936									**0.44**								
07-Oct-20	3975									**0.42**								
21-Apr-21	4047									<0.03								
16-Jul-21	4102									**0.45**								
04-Oct-21	4159									**0.35**								
20-Apr-22	4225									**0.39**								
13-Oct-22	4380									**0.30**								
18-Apr-23	4432									**0.537**								
18-Jul-23	4487									**0.9**								
12-Oct-23	4558	<0.5	1	241	<0.1	6	<1	<0.1	<1	<5	<0.2	<0.1	<1	<0.5	**1.7**	5	<1	
15-Apr-24	4595									**0.549**								
17-Jul-24	4665	<0.1	0.5	246	<0.005	2.3	1.4	<0.05	0.35	**0.519**	1.21	<0.01	4	<0.02	**1.9**	<1	1	
10-Oct-24	4666									**0.521**								
TOTAL SAMPLES		29	2	2	2	2	2	2	29	42	2	2	2	2	2	2	2	0
AVERAGE 2024										0.5297								

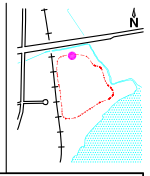
all Concentrations ug/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**

BH8R

PEAT

OBSERVATION WELL
Screen 219.0 - 217.4 masl

FORMERLY BH8X
CONVERTED Jul 13



DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P mg/L	Se	Ag	Al	Be	Co	Ni	Zn	TDS mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
02-Oct-14	2893									**0.19**								
16-Apr-15	2976									**0.16**								2680
22-Jul-15	3037									**0.46**								2580
30-Sep-15	3095									**0.03**								2490
20-Apr-16	3167									**0.37**								2450
19-Jul-16	3204									**0.06**								2630
18-Oct-16	3295									**0.03**								1290
26-Apr-17	3330									0.02								2050
20-Jul-17	3397									**0.19**								2330
18-Oct-17	3472									**0.07**								1686
23-Apr-18	3523									**0.12**								
18-Jul-18	3577									**0.12**								
17-Oct-18	3649									**0.07**								
24-Apr-19	3701									**0.18**								
18-Jul-19	3752									**0.30**								
18-Oct-19	3827									**0.40**								
15-Apr-20	3863									**0.39**								
09-Jul-20	3916									**0.36**								
09-Oct-20	3976									**0.48**								
13-Jul-21	4103									**0.17**								
30-Sep-21	4160									**0.06**								
13-Apr-22	4226									**0.40**								
14-Jul-22	4290									**0.21**								
05-Oct-22	4365									**0.13**								
13-Apr-23	4417									**0.321**								
12-Jul-23	4467									**0.472**								
04-Oct-23	4543									**0.394**								
09-Apr-24	4616	<0.5	3	371	<0.1	17	5	<0.1	<1	**0.347**	2.6	<0.1	5	<0.5	**3.6**	9	1	
09-Jul-24	4645									**0.114**								
03-Oct-24	4687									**0.119**								

TOTAL SAMPLES	1	3	4	4	4	4	4	1	47	4	4	4	1	4	4	4	20
AVERAGE 2024									0.1933								

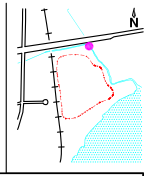
all Concentrations ug/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**

BH10R

PEAT

OBSERVATION WELL
Screen 218.8 - 217.2 masl

FORMERLY BH10
CONVERTED Jul 13



DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P mg/L	Se	Ag	Al	Be	Co	Ni	Zn	TDS mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
02-Oct-14	2894									**0.03**								
16-Apr-15	2977									**0.08**								775
22-Jul-15	3038									**0.07**								749
30-Sep-15	3096									**0.06**								791
20-Apr-16	3168									**0.03**								821
20-Jul-16	3205									**0.05**								708
19-Oct-16	3296									**0.07**								740
27-Apr-17	3331									**0.04**								699
20-Jul-17	3398									**0.08**								844
18-Oct-17	3473									**0.08**								683
23-Apr-18	3524									**0.21**								
18-Jul-18	3578									**1.09**								
17-Oct-18	3650									**0.18**								
25-Apr-19	3702									**0.41**								
18-Jul-19	3753									**0.12**								
18-Oct-19	3828									**0.09**								
15-Apr-20	3864									**0.14**								
10-Jul-20	3917									**0.18**								
09-Oct-20	3977									**0.19**								
13-Jul-21	4104									**0.13**								
30-Sep-21	4161									**0.16**								
13-Apr-22	4227									**0.08**								
13-Jul-22	4291									**0.14**								
05-Oct-22	4366									**0.17**								
13-Apr-23	4418									**0.078**								
13-Jul-23	4468									**0.168**								
05-Oct-23	4544									**0.258**								
11-Apr-24	4617									**0.134**								
11-Jul-24	4646									**0.104**								
03-Oct-24	4688									**0.198**								
TOTAL SAMPLES		0	9	19	19	19	19	19	4	73	15	19	19	4	19	19	19	32
AVERAGE 2024										0.1453								

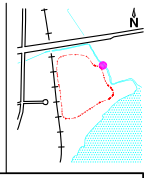
all Concentrations ug/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**

BH11R

PEAT

OBSERVATION WELL
Screen 218.9 - 217.7 masl

FORMERLY BH11
CONVERTED Jul 12



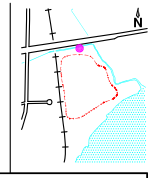
DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P	Se	Ag	Al	Be	Co	Ni	Zn	TDS
										mg/L								mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
29-Sep-14	2895	0.3							0.5	**0.05**								
17-Apr-15	2978	0.2							0.3	**0.06**								949
21-Jul-15	3039									**0.08**								938
01-Oct-15	3097									**0.05**								924
21-Apr-16	3169									**0.03**								903
22-Jul-16	3206									**0.05**								897
20-Oct-16	3297									**0.05**								1080
25-Apr-17	3332									**0.03**								727
21-Jul-17	3399									**0.07**		<0.05						882
19-Oct-17	3474									**0.07**		<0.05						895
23-Apr-18	3525									**0.10**								
19-Jul-18	3579									**0.06**								
18-Oct-18	3651									**0.08**								
26-Apr-19	3703									**0.07**								
18-Jul-19	3754									**0.04**								
18-Oct-19	3829									**0.05**								
16-Apr-20	3865									**0.09**								
10-Jul-20	3918									**0.11**								
09-Oct-20	3878									**0.08**								
12-Jul-21	4105									**0.08**								
29-Sep-21	4162									**0.11**								
14-Apr-22	4228									**0.07**								
14-Jul-22	4292									**0.06**								
05-Oct-22	4367									**0.15**								
13-Apr-23	4419									**0.149**								
13-Jul-23	4469									**0.285**								
03-Oct-23	4545									**0.256**								
11-Apr-24	4618									**0.103**								
09-Jul-24	4647									**0.063**								
02-Oct-24	4689									**0.092**								
TOTAL SAMPLES		27	11	18	18	18	18	18	31	72	14	20	18	4	18	18	18	22
AVERAGE 2024										0.0860								

all Concentrations ug/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**

BH14-I

SAND AQUIFER

OBSERVATION WELL
Screen 208.5 - 207.8 masl



DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P	Se	Ag	Al	Be	Co	Ni	Zn	TDS
										mg/L								mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
20-Aug-98	100105									**0.11**								228
18-Nov-98	100106									**0.10**								226
18-Aug-99	100108									<0.01								
16-Nov-99	100109									<0.01								
16-Aug-00	100111		<2	330	<5	<10	**20**	<1			<5	<10	<50		<20	<20	<20	
19-Apr-01	100113																	215
19-Jul-01	100114																	216
18-Jul-02	100115		<2	330	<5	<10	<10	<1			<5	<10	<50		<20	<20	<20	215
23-Jul-03	102492																	223
14-Jul-04	1213																	490
26-Aug-05	58263			342	<0.1	<2	<2	<0.5		**0.56**	<1	<5	<10		<5	<10	6	
01-Aug-06	6813			366	<0.1	<2	<2	<0.1		**0.12**	0.3	<5	<10		<5	<10	<5	
15-Aug-07	78153			317	<0.02	<2	<2	<0.02		**0.76**	<0.2	<5	<10		<5	<10	<5	
23-Jul-08	87233			231	<0.02	<2	<2	<0.02		**1.20**	<0.2	<5	20		<5	<10	<5	214
21-Jul-09	B09-236			273	<0.02	<2	<2	<0.02		**1.27**	<0.2	<0.02	<10		<5	<10	<5	206
21-Jul-10	2086			335	<0.02	<2	<2	<0.02		0.01	<1	<0.02	<10		<5	<10	<5	
20-Jul-11	2249			313	<0.02	<2	<2	0.11		**2.02**	<1	<0.02	10		<5	<10	<5	
25-Jul-12	2450			350	<0.1	<3	<2	<1		<0.02	<4	<0.1	37		<0.5	<3	**70**	
01-Aug-13	2629			344	<0.02	<2	<2	<0.02		0.01	<1	<0.02	20		<5	<10	<5	
23-Jul-14	2840			420	<0.02	<2	<2	<0.02		<0.01	<1	<0.02	<10		0.2	<10	9	
22-Jul-15	3040			389	<0.02	<2	<0.1	<0.02		<0.01	<1	<0.02	10		<0.1	<10	<5	222
20-Jul-16	3207			362	<0.02	<2	<2	<0.02		0.01	<1	<0.02	<10		<5	<10	<5	217
20-Jul-17	3400			355	<0.014	<2	<2	<0.02		0.01	<1	<0.02	<10		<5	<10	<5	207
18-Jul-18	3580			375	<0.003	0.08	1.42	0.1		**0.57**	<0.04	<0.05	2		0.011	<0.1	4	
19-Jul-19	3755			379	<0.003	0.12	1	0.09		**0.65**	<0.04	<0.05	4		0.019	<0.1	4	
10-Jul-20	3919			326	<0.003	0.1	0.5	0.01		**0.18**	<0.04	<0.05	3		0.004	<0.1	<2	
13-Jul-21	4106			358	<0.003	<0.08	0.9	<0.09		**1.67**	<0.04	<0.05	1		0.011	<0.1	3	
13-Jul-22	4293			345	0.008	0.16	<0.2	<0.09		**0.98**	<0.04	<0.05	3		<0.004	<0.1	<2	
12-Jul-23	4470			366	0.008	1.5	1.2	<0.05		**0.808**	0.22	<0.01	2		<0.1	0.6	<1	
11-Jul-24	4648			371	0.008	0.7	0.4	<0.05		**0.234**	0.19	<0.01	3		<0.1	0.5	1	
TOTAL SAMPLES		0	3	24	24	24	24	24	1	26	23	24	24	1	24	24	24	12
AVERAGE 2024																		

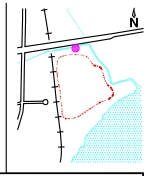
all Concentrations ug/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**

BH14-IIIR

PEAT

OBSERVATION WELL
Screen 218.9 - 217.3 masl

FORMERLY BH14-III
CONVERTED Jul 13



DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P	Se	Ag	Al	Be	Co	Ni	Zn	TDS
										mg/L								mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
02-Oct-14	2896									**0.14**								
16-Apr-15	2979									**0.10**								770
22-Jul-15	3041									**0.15**								758
29-Sep-15	3098									**0.13**								732
20-Apr-16	3170									**0.09**								679
20-Jul-16	3208									**0.10**								624
19-Oct-16	3298									**0.10**								658
27-Apr-17	3333									**0.08**								642
20-Jul-17	3401									**0.10**								614
18-Oct-17	3475									**0.12**								618
23-Apr-18	3526									**0.19**								
18-Jul-18	3581									**0.10**								
17-Oct-18	3652									**0.14**								
25-Apr-19	3704									**0.30**								
18-Jul-19	3756									**0.10**								
18-Oct-19	3830									**0.15**								
15-Apr-20	3866									**0.08**								
10-Jul-20	3920									**0.12**								
09-Oct-20	3979									**0.13**								
13-Jul-21	4107									**0.11**								
30-Sep-21	4163									**0.13**								
12-Apr-22	4229									**0.15**								
13-Jul-22	4294									**0.13**								
05-Oct-22	4368									**0.11**								
13-Apr-23	4420									**0.093**								
12-Jul-23	4471									**0.117**								
05-Oct-23	4546									**0.155**								
11-Apr-24	4619									**0.159**								
11-Jul-24	4649									**0.146**								
03-Oct-24	4690									**0.13**								
TOTAL SAMPLES		0	9	17	17	17	17	17	3	74	14	17	17	3	17	17	17	31
AVERAGE 2024										0.1450								

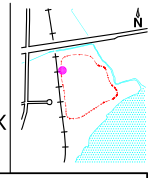
all Concentrations ug/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**

BH15-IIIR

FILL

OBSERVATION WELL
Screen 219.4 - 217.9 masl

FORMERLY BH15-IIIX
CONVERTED Jul 13



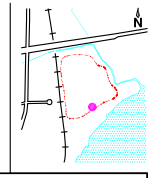
DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P	Se	Ag	Al	Be	Co	Ni	Zn	TDS
										mg/L								mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
30-Oct-97	100168									**0.35**								
19-Aug-98	100170									**0.77**								2534
17-Aug-99	100171									<0.01								
16-Aug-00	100172		<2	500	<5	<10	**30**	<1			<5	<10	<50		<20	<20	<20	
18-Jul-01	100173																	2140
17-Jul-02	100174		3	590	<5	<10	<10	<1			8	<10	<50		<20	<20	**30**	2484
23-Jul-03	102496																	2215
13-Jul-04	1215																	600
25-Jul-08	87253																	601
24-Jul-09	B09-238																	2320
21-Jul-10	2088									**0.06**								
25-Jul-12	2452									**0.06**								
01-Aug-13	2631									**0.16**								
22-Jul-14	2842									**0.31**								
22-Jul-15	3042									**0.80**								2460
19-Jul-16	3209									**0.39**								2290
20-Jul-17	3402									**0.37**								2190
19-Jul-18	3582									**0.41**								
17-Jul-19	3757									**0.46**								
09-Jul-20	3921									**0.45**								
14-Jul-21	4108									**0.49**								
13-Jul-22	4295									**0.46**								
12-Jul-23	4472									**0.666**								
11-Jul-24	4650									**0.07**								
TOTAL SAMPLES		0	2	2	2	2	2	2	0	17	2	2	2	0	2	2	2	10
AVERAGE 2024																		

all Concentrations ug/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**

BH16-I

SAND AQUIFER

OBSERVATION WELL
Screen 207.1 - 206.3 masl



DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P mg/L	Se	Ag	Al	Be	Co	Ni	Zn	TDS mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
23-Apr-15	2993									<0.01								817
28-Jul-15	3056			575	<0.02	<2	<2	<0.02		0.02	2	<0.02	50		<0.1	<10	<5	818
07-Oct-15	3110									<0.01								821
27-Apr-16	3181									<0.01								812
27-Jul-16	3223			602	<0.02	<2	0.7	<0.02		**0.04**	<1	<0.02	50		<5	5.9	<5	815
26-Oct-16	3309									<0.01								819
01-May-17	3348									<0.01								777
25-Jul-17	3416			587	<0.014	<2	<2	0.23		0.01	<1	<0.02	40		<5	<10	<5	855
23-Oct-17	3490									0.02								850
01-May-18	3541									**0.08**								
25-Jul-18	3598			703	0.012	0.19	1.59	0.08		**0.16**	0.05	<0.05	1		0.104	2.5	6	
23-Oct-18	3665									**2.78**								
01-May-19	3717									**0.27**								
24-Jul-19	3773			964	<0.003	0.22	0.8	0.06		**0.11**	0.06	<0.05	2		0.096	2.5	9	
29-Oct-19	3843									**0.04**								
17-Apr-20	3879									<0.03								
14-Jul-20	3937			714	<0.003	0.27	0.6	0.01		<0.03	0.07	<0.05	<1		0.112	2.4	<2	
07-Oct-20	3980									**0.06**								
21-Apr-21	4052									**0.15**								
16-Jul-21	4109			679	<0.003	0.22	1	<0.09		**0.13**	0.07	<0.05	5		0.102	2.2	3	
01-Oct-21	4164									<0.03								
20-Apr-22	4230									<0.03								
18-Jul-22	4311			755	<0.003	0.25	<0.2	<0.09		<0.03	<0.04	<0.05	<1		0.097	2.4	<2	
12-Oct-22	4381									**0.12**								
18-Apr-23	4433									**0.03**								
18-Jul-23	4488									**0.578**								
11-Oct-23	4559									**0.177**								
15-Apr-24	4596									**0.039**								
16-Jul-24	4666			651	0.011	0.8	2	<0.05		**0.102**	2.73	<0.01	<1		0.4	7	2	
10-Oct-24	4667									**0.027**								
TOTAL SAMPLES		1	9	38	38	38	38	38	5	74	34	38	38	4	38	38	38	31
AVERAGE 2024										0.0560								

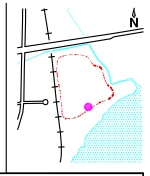
all Concentrations ug/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**

BH16-IVR

REFUSE

LEACHATE WELL
Screen 221.3 - 219.7 masl

FORMERLY BH16-IV
CONVERTED May 11



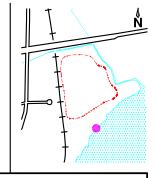
DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P mg/L	Se	Ag	Al	Be	Co	Ni	Zn	TDS mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
23-Apr-15	2994									**0.21**								1110
28-Jul-15	3057									**0.04**								1360
08-Oct-15	3111									**0.26**								1470
27-Apr-16	3182									**0.30**								1230
27-Jul-16	3224									**0.25**								1480
26-Oct-16	3310									**0.22**								1440
01-May-17	3349									**0.23**								1150
25-Jul-17	3417									**0.39**								1450
23-Oct-17	3491									**0.57**								1461
01-May-18	3542									**0.12**								
25-Jul-18	3599									**0.36**								
23-Oct-18	3666									**0.45**								
01-May-19	3718									**0.21**								
25-Jul-19	3774									**0.19**								
30-Oct-19	3844									**0.09**								
17-Apr-20	3880									**0.44**								
14-Jul-20	3938									**0.33**								
07-Oct-20	3981									**0.55**								
21-Apr-21	4053									**1.36**								
16-Jul-21	4110									**0.60**								
04-Oct-21	4165									**0.50**								
20-Apr-22	4231									**0.29**								
18-Jul-22	4312									**0.36**								
12-Oct-22	4382									**0.68**								
18-Apr-23	4434									**0.369**								
18-Jul-23	4489									**0.304**								
11-Oct-23	4560									**1.06**								
15-Apr-24	4597									**0.397**								
16-Jul-24	4667									**0.425**								
10-Oct-24	4668									**0.937**								
TOTAL SAMPLES		0	10	17	17	17	17	17	4	66	13	17	17	4	17	17	17	30
AVERAGE 2024										0.5863								

all Concentrations ug/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**

BH17-III

SAND AQUIFER

OBSERVATION WELL
Screen 215.2 - 214.6 masl



DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P	Se	Ag	Al	Be	Co	Ni	Zn	TDS
										mg/L								mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
29-Jul-15	3058			604	<0.02	<2	<2	<0.02		**0.05**	<1	<0.02	40		**1**	<10	<5	816
07-Oct-15	3112			587	<0.02	<2	<2	<0.02		0.02	<1	<0.02	40		<5	<10	<5	789
26-Apr-16	3183			548	<0.02	<2	<2	<0.02		<0.01	<1	<0.02	40		<5	<10	<5	789
28-Jul-16	3225			644	<0.02	<2	1.1	<0.02		**0.03**	<1	<0.02	40		<5	4.2	<5	833
25-Oct-16	3311			531	<0.02	<2	<2	<0.02		0.02	4	<0.02	30		<5	<10	12	760
03-May-17	3350			588	<0.014	<2	<2	<0.02		<0.01	<1	<0.02	40		<5	<10	10	758
26-Jul-17	3418			594	<0.014	<2	<2	0.04		0.02	<1	<0.02	40		<5	<10	**37**	772
23-Aug-17	3418																<5	
25-Oct-17	3492			690	0.015	<2	2	0.16		0.02	<1	<0.02	**90**		<5	<10	<5	767
30-Apr-18	3543			648	0.004	0.16	0.89	0.06		**0.24**	0.06	<0.05	2		**1.25**	0.8	3	
24-Jul-18	3600			636	<0.003	0.16	2.15	0.1		**0.84**	0.05	<0.05	2		**1.24**	0.9	5	
24-Oct-18	3667			637	<0.003	0.22	2.53	0.08		**0.08**	0.07	<0.05	3		**1.48**	1.1	5	
30-Apr-19	3719			421	0.033	2.16	1.4	1.2		**0.13**	0.21	<0.05	58		**2.48**	16.5	4	
25-Jul-19	3775			589	<0.003	0.15	1.4	0.06		**0.18**	0.08	<0.05	5		**1.209**	0.8	5	
30-Oct-19	3845			598	<0.003	0.19	1.5	0.12		**0.05**	0.07	<0.05	20		**1.23**	0.9	7	
20-Apr-20	3881			619	0.003	0.15	0.5	<0.01		**0.03**	0.24	<0.05	1		**1.19**	0.8	5	
15-Jul-20	3939			599	<0.003	0.21	0.5	0.01		**0.04**	0.09	<0.05	5		**1.35**	0.9	3	
06-Oct-20	3982			509	0.005	0.22	0.6	0.01		**0.06**	0.12	<0.05	1		**1.29**	0.9	<2	
22-Apr-21	4054			577	<0.003	0.21	<0.2	<0.09		**0.14**	0.08	<0.05	8		**1.22**	0.9	<2	
20-Jul-21	4111			620	<0.003	0.27	1.9	0.12		**0.08**	0.04	<0.05	9		**1.25**	0.9	4	
07-Oct-21	4166			630	0.008	0.26	1.2	<0.09		**0.07**	0.1	<0.05	6		**1.3**	1	2	
19-Apr-22	4232			596	0.007	0.27	0.8	0.09		<0.03	0.11	<0.05	2		**1.27**	0.9	<2	
15-Jul-22	4313			626	0.011	0.22	0.5	<0.09		<0.03	0.06	<0.05	16		**1.43**	1.1	4	
11-Oct-22	4383			532	<0.003	0.24	0.7	<0.09		<0.03	<0.04	<0.05	1		**1.247**	1	<2	
18-Apr-23	4435			528	<0.02	<2	<2	0.08		<0.002	<1	<0.1	60		**1.2**	<10	<5	
17-Jul-23	4490			570	0.024	2.3	**15.1**	<0.05		0.006	0.81	<0.01	5		**1.5**	5.6	4	
10-Oct-23	4561			555	0.018	<0.1	**7.3**	0.07		0.017	0.51	<0.01	2		**1.5**	4.6	3	
16-Apr-24	4598			581	0.017	1.7	**6.8**	<0.05		**0.03**	0.32	<0.01	3		**1.6**	4	4	
15-Jul-24	4668			586	0.011	0.8	2.4	<0.05		**0.039**	0.95	<0.01	2		**1.5**	6.4	<1	
10-Oct-24	4669			593	0.021	2.4	3.6	<0.05		**0.044**	2.03	<0.01	2		**1.6**	9.5	2	
TOTAL SAMPLES		1	8	72	72	72	72	72	5	86	68	72	72	4	72	72	74	31
AVERAGE 2024				587	0.016	1.6	4.27	<0.05		0.0377	1.10	<0.01	2		1.57	6.6	2	

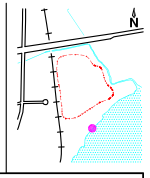
all Concentrations ug/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**

BH17-IVR

UPPER CONFINING LAYER

OBSERVATION WELL
Screen 219.3 - 217.8 masl

FORMERLY BH17-IV
CONVERTED Jul 12



DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P	Se	Ag	Al	Be	Co	Ni	Zn	TDS
										mg/L								mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
21-Apr-15	2996			64	<0.02	<2	3	<0.02		<0.01	<1	<0.02	20		<0.1	<10	<5	531
29-Jul-15	3059			120	0.02	<2	2	<0.02		0.01	<1	<0.02	30		0.6	<10	<5	659
07-Oct-15	3113			108	<0.02	<2	<2	<0.02		<0.01	<1	<0.02	40		<5	<10	<5	658
26-Apr-16	3184			43	<0.02	<2	<2	<0.02		<0.01	<1	<0.02	30		<5	<10	<5	409
28-Jul-16	3226			72	<0.02	<2	2.3	<0.02		0.02	<1	<0.02	30		<5	2.6	8	555
25-Oct-16	3312			123	<0.02	<2	<2	<0.02		<0.01	2	<0.02	30		<5	<10	<5	728
03-May-17	3351			35	<0.014	<2	2	<0.02		<0.01	<1	<0.02	20		<5	<10	<5	329
26-Jul-17	3419			89	<0.014	<2	4	0.25		0.01	<1	<0.02	40		<5	<10	6	525
25-Oct-17	3493			107	0.018	<2	<2	<0.02		0.02	<1	<0.02	60		<5	<10	<5	584
30-Apr-18	3544			47.6	0.003	0.13	2.92	0.1		**0.07**	0.10	<0.05	4		0.134	0.5	2	
24-Jul-18	3601			62.9	0.008	0.11	2.63	0.07		**0.09**	0.09	<0.05	6		0.6	0.6	5	
24-Oct-18	3668			100	0.007	0.17	2.73	0.03		**0.16**	0.15	<0.05	10		0.19	0.7	3	
30-Apr-19	3720			752	<0.003	0.23	1.4	0.19		**0.30**	0.07	<0.05	55		**1.44**	0.8	3	
25-Jul-19	3776			52.4	0.004	0.12	2	0.07		**0.68**	0.11	<0.05	15		**1.14**	1	3	
30-Oct-19	3846			82.8	0.011	0.14	3.7	0.13		**0.08**	0.17	<0.05	8		0.143	0.8	15	
20-Apr-20	3882			49	0.004	0.14	1.7	<0.01		**0.13**	0.14	<0.05	5		0.063	0.5	7	
15-Jul-20	3940			71.66	0.009	0.17	1.6	0.01		**0.24**	0.14	<0.05	19		0.434	0.8	<2	
06-Oct-20	3983			64.3	0.022	0.25	1.8	0.01		**0.64**	0.15	<0.05	9		0.411	0.6	<2	
22-Apr-21	4055			53.4	0.08	0.43	3.4	0.1		**0.22**	0.09	<0.05	55		0.358	0.6	2	
20-Jul-21	4112			87.2	0.01	0.15	1.8	<0.09		**0.41**	0.11	<0.05	25		0.269	0.6	<2	
07-Oct-21	4167			100	0.018	0.22	3.4	<0.09		<0.03	0.1	<0.05	5		0.2	0.5	4	
19-Apr-22	4233			55.52	0.004	0.19	2	<0.09		**0.04**	0.1	<0.05	7		0.108	0.9	<2	
15-Jul-22	4314			60.1	0.011	0.14	1.8	<0.09		**0.05**	0.09	<0.05	5		0.271	0.7	<2	
11-Oct-22	4384			62.7	0.009	0.14	1.5	<0.09		**0.04**	0.06	<0.05	5		0.343	0.6	<2	
18-Apr-23	4436			48	0.03	2	<2	0.42		**0.081**	<1	<0.1	**1250**		**1.7**	<10	10	
17-Jul-23	4491									**0.049**								
10-Oct-23	4562			93.3	0.014	0.2	**5.4**	0.07		**0.62**	0.16	<0.01	8		0.4	1.5	3	
16-Apr-24	4599			51.4	0.016	0.9	4.6	<0.05		**0.24**	0.36	<0.01	6		0.3	1.1	4	
15-Jul-24	4669			77.2	0.009	0.5	3.7	<0.05		**0.049**	0.41	<0.01	6		0.4	1.5	<1	
10-Oct-24	4670			74.6	0.018	1	4	<0.05		**0.166**	0.56	<0.01	5		0.5	1.7	1	
TOTAL SAMPLES		1	1	56	56	56	56	56	1	58	56	56	56	0	56	56	56	15
AVERAGE 2024				67.7	0.014	1	4.1	<0.05		0.152	0.44	<0.01	6		0.4	1.4	2	

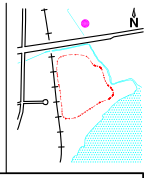
all Concentrations ug/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**

BH18R

PEAT

OBSERVATION WELL
Screen 218.7 - 217.5 masl

FORMERLY BH18
CONVERTED Jul 12



DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P	Se	Ag	Al	Be	Co	Ni	Zn	TDS
										mg/L								mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
30-Sep-14	2897									**0.03**								
15-Apr-15	2980									**0.03**								881
20-Jul-15	3043									**0.04**								870
28-Sep-15	3099									**0.03**								799
19-Apr-16	3171									0.02								786
19-Jul-16	3210									**0.03**								820
17-Oct-16	3299									<0.01								748
24-Apr-17	3334									<0.01								829
18-Jul-17	3403									0.02								865
17-Oct-17	3476									**0.06**								825
23-Apr-18	3527									**0.16**								
16-Jul-18	3583									**0.07**								
15-Oct-18	3653									**0.12**								
23-Apr-19	3705									**0.75**								
15-Jul-19	3758									**0.95**								
15-Oct-19	3831									**0.11**								
14-Apr-20	3867									**0.72**								
09-Jul-20	3922									**0.42**								
08-Oct-20	3984									**0.74**								
16-Jul-21	4113									**0.52**								
29-Sep-21	4168									**0.50**								
11-Apr-22	4234									**0.26**								
11-Jul-22	4296									**0.29**								
04-Oct-22	4369									**0.26**								
11-Apr-23	4421									**1.76**								
10-Jul-23	4473									**2.66**								
04-Oct-23	4547									**0.445**								
09-Apr-24	4620	<0.5	**10**	220	0.3	4	**10**	**15.7**	<1	**0.513**	1.2	<0.1	**975**	1.2	**3.2**	11	**32**	
08-Jul-24	4651									**0.491**								
02-Oct-24	4691									**0.177**								
TOTAL SAMPLES		1	10	18	18	18	18	18	4	73	15	18	18	4	18	18	18	31
AVERAGE 2024										0.3937								

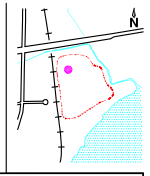
all Concentrations ug/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**

BH20R

REFUSE

LEACHATE WELL
Screen 219.8 - 218.3 masl

FORMERLY BH20
CONVERTED Nov 90



DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P mg/L	Se	Ag	Al	Be	Co	Ni	Zn	TDS mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
22-Apr-15	2997									**0.57**								1810
27-Jul-15	3060									**0.89**								1900
05-Oct-15	3114									**0.53**								2000
25-Apr-16	3185									**0.55**								1950
25-Jul-16	3227									**0.37**								1840
24-Oct-16	3313									**0.39**								1920
01-May-17	3352									**0.51**								1780
24-Jul-17	3420									**0.55**								1880
23-Oct-17	3494									**0.55**								2001
02-May-18	3545									**0.29**								
26-Jul-18	3602									**0.37**								
22-Oct-18	3669									**0.61**								
29-Apr-19	3721									**0.36**								
23-Jul-19	3777									**0.49**								
28-Oct-19	3847									**0.48**								
16-Apr-20	3883									**0.54**								
13-Jul-20	3941									**0.56**								
07-Oct-20	3985									**0.56**								
21-Apr-21	4057									**0.74**								
16-Jul-21	4114									**0.54**								
01-Oct-21	4169									**0.53**								
21-Apr-22	4235									**0.52**								
20-Jul-22	4315									**0.30**								
13-Oct-22	4385									**0.40**								
19-Apr-23	4437									**0.94**								
19-Jul-23	4492									**0.512**								
16-Oct-23	4563									**0.512**								
17-Apr-24	4600									**0.76**								
18-Jul-24	4670									**0.69**								
10-Oct-24	4671									**0.502**								
TOTAL SAMPLES		0	8	19	19	19	19	19	4	67	15	19	19	4	19	19	19	31
AVERAGE 2024										0.651								

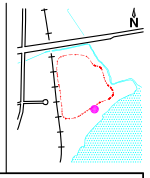
all Concentrations ug/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**

BH21-IR

SAND AQUIFER

OBSERVATION WELL
Screen 216.0 - 215.2 masl

FORMERLY BH21-I
CONVERTED Mar 95



DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P mg/L	Se	Ag	Al	Be	Co	Ni	Zn	TDS mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
22-Apr-15	2998	0.2							0.1	**0.03**								1290
29-Jul-15	3061			815	<0.02	<2	<2	<0.02		**0.89**	2	0.04	60		**2.8**	<10	<5	1310
07-Oct-15	3115									**0.04**								1280
26-Apr-16	3186									**0.04**								1230
28-Jul-16	3228			620	<0.02	<2	1	<0.02		**0.06**	<1	0.06	60		**6**	6.9	<5	1040
26-Oct-16	3314									**0.05**								1150
02-May-17	3353									**0.05**								1010
26-Jul-17	3421			499	<0.014	<2	<2	0.09		**0.05**	<1	0.04	50		<5	<10	6	936
24-Oct-17	3495									**0.07**								1017
30-Apr-18	3546									**0.21**								
23-Jul-18	3603			499	0.004	1.5	1.52	0.09		**0.26**	0.17	<0.05	15		**1.579**	2.4	4	
23-Oct-18	3670									**0.65**								
01-May-19	3722									**0.37**								
25-Jul-19	3778			383	<0.003	0.95	1	0.05		**0.95**	0.17	<0.05	9		0.831	1.5	2	
30-Oct-19	3848									**0.26**								
17-Apr-20	3884									**0.29**								
14-Jul-20	3942			307	<0.003	1.1	0.5	0.02		**0.40**	0.09	<0.05	7		0.562	1.2	<2	
07-Oct-20	3398									**0.41**								
22-Apr-21	4058									**3.48**								
16-Jul-21	4115			291	<0.003	1.04	1.1	<0.09		**4.40**	0.08	<0.05	13		0.661	1.1	6	
07-Oct-21	4170									**0.59**								
20-Apr-22	4236									**1.58**								
18-Jul-22	4316			279	<0.003	0.93	<0.2	<0.09		**0.24**	0.07	<0.05	5		0.642	1	<2	
11-Oct-22	4386									**3.90**								
17-Apr-23	4438									**0.465**								
17-Jul-23	4493									**2.51**								
11-Oct-23	4564									**1.26**								
17-Apr-24	4601									**0.712**								
17-Jul-24	4671			199	0.129	1.7	1.1	<0.05		**0.593**	1.96	0.02	5		0.8	5.8	<1	
10-Oct-24	4672									**2.85**								
TOTAL SAMPLES		30	10	35	35	35	35	35	33	78	31	35	35	4	35	35	36	31
AVERAGE 2024										1.385								

all Concentrations ug/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**

CITY OF ORILLIA
KITCHENER STREET WASTE DIVERSION SITE

METALS / FULL REPORT

22578520
27 Dec 24

wsp

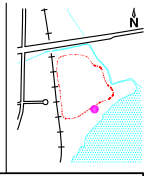
24M023

BH21-IIR

PEAT

OBSERVATION WELL

FORMERLY BH21-II
CONVERTED Mar 19



DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P mg/L	Se	Ag	Al	Be	Co	Ni	Zn	TDS mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
22-Apr-15	2999	0.1							<0.1	**0.31**								1210
29-Jul-15	3062									**0.42**								1300
07-Oct-15	3116									**0.36**								1110
26-Apr-16	3187									**0.27**								1070
28-Jul-16	3229									**0.30**								1050
26-Oct-16	3315									**0.04**								1010
02-May-17	3354									**0.10**								691
26-Jul-17	3422									**0.16**								1020
24-Oct-17	3496									**0.15**								1035
30-Apr-18	3547									**0.21**								
23-Jul-18	3604									**0.89**								
23-Oct-18	3671									**1.18**								
01-May-19	3723									**0.59**								
25-Jul-19	3779									**0.34**								
30-Oct-19	3849									**0.25**								
17-Apr-20	3885									**0.22**								
14-Jul-20	3943									**0.36**								
07-Oct-20	3987									**0.31**								
22-Apr-21	4059									**0.33**								
16-Jul-21	4116									**0.28**								
07-Oct-21	4171									**0.28**								
20-Apr-22	4237									**0.48**								
18-Jul-22	4317									**0.27**								
11-Oct-22	4387									**0.26**								
17-Apr-23	4439									**0.326**								
17-Jul-23	4494									**0.331**								
11-Oct-23	4565									**0.062**								
17-Apr-24	4602									**0.555**								
17-Jul-24	4672									**0.531**								
10-Oct-24	4673									**0.518**								
TOTAL SAMPLES		29	12	12	13	12	12	13	32	65	9	14	12	4	12	12	12	30
AVERAGE 2024										0.5347								

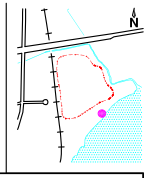
all Concentrations ug/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**

BH22-IR

SAND AQUIFER

OBSERVATION WELL
Screen 216.8 - 216.1 masl

FORMERLY BH22-I
CONVERTED Jul 88



DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P	Se	Ag	Al	Be	Co	Ni	Zn	TDS
										mg/L								mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
21-Apr-15	3000			143	<0.02	<2	<2	<0.02		**0.03**	1	<0.02	20		0.7	<10	<5	557
29-Jul-15	3063			129	<0.02	<2	<2	<0.02		**0.05**	<1	<0.02	40		0.7	<10	<5	553
07-Oct-15	3117			132	<0.02	<2	<2	<0.02		**0.04**	<1	<0.02	40		<5	<10	<5	564
26-Apr-16	3188			115	<0.02	<2	<2	<0.02		**0.06**	<1	<0.02	40		<5	<10	<5	553
28-Jul-16	3230			135	<0.02	<2	0.3	<0.02		**0.07**	<1	<0.02	40		<5	3.7	<5	572
25-Oct-16	3316			119	<0.02	<2	<2	<0.02		**0.03**	2	<0.02	30		<5	<10	<5	538
02-May-17	3355			121	<0.014	<2	<2	<0.02		**0.04**	<1	<0.02	40		<5	<10	<5	523
26-Jul-17	3423			133	<0.014	<2	<2	<0.02		**0.05**	<1	<0.02	40		<5	<10	<5	538
25-Oct-17	3497			146	<0.014	<2	<2	<0.02		**0.07**	<1	<0.02	**80**		<5	<10	<5	550
30-Apr-18	3548			139	0.005	0.14	1.12	0.08		**0.42**	0.06	<0.05	<1		0.784	0.7	2	
23-Jul-18	3605			138	0.014	0.14	2.05	0.11		**0.30**	0.05	<0.05	5		0.869	0.8	6	
24-Oct-18	3672			150	<0.003	0.21	2.89	0.08		**0.34**	0.05	<0.05	1		**1.06**	1	5	
30-Apr-19	3724			205	0.006	1.27	1.7	0.43		**0.45**	0.16	<0.05	**259**		**1.1**	3.3	4	
26-Jul-19	3780			115	<0.003	0.15	1	0.06		**0.32**	<0.04	<0.05	3		0.807	0.8	6	
30-Oct-19	3850			139	<0.003	0.18	1.5	0.1		**0.24**	0.04	<0.05	6		0.878	0.8	11	
20-Apr-20	3886			142	0.003	0.13	0.2	<0.01		**0.25**	0.16	<0.05	<1		0.81	0.7	3	
15-Jul-20	3944			146	0.003	0.2	3.7	0.03		**0.46**	0.07	<0.05	3		**0.906**	0.8	3	
06-Oct-20	3988			128	<0.003	0.17	0.7	0.03		**0.38**	0.08	<0.05	2		0.85	0.7	9	
22-Apr-21	4060			126	0.006	0.39	<0.2	0.09		**0.43**	0.1	<0.05	**89**		0.869	0.8	<2	
20-Jul-21	4117			122	0.003	0.11	0.8	<0.09		**0.39**	<0.04	<0.05	6		0.866	0.7	3	
07-Oct-21	4172			127	0.02	0.28	1.3	<0.09		**1.01**	0.05	<0.05	7		0.859	1	3	
19-Apr-22	4238			110	<0.003	0.15	0.6	<0.09		**0.67**	0.08	<0.05	1		0.866	0.9	<2	
15-Jul-22	4318			105	<0.003	0.31	0.5	<0.09		**0.35**	<0.04	<0.05	9		**0.945**	1	<2	
11-Oct-22	4388			95.6	<0.003	0.16	1.1	<0.09		**0.58**	<0.04	<0.05	<1		0.804	0.8	<2	
17-Apr-23	4440			180	0.05	7	**15**	**8.12**		**0.697**	<1	<0.1	**5210**		**4.2**	<10	**24**	
17-Jul-23	4495			112	0.022	1.7	1.3	<0.05		**0.347**	0.47	<0.01	2		**1.2**	5.3	2	
10-Oct-23	4566			105	0.017	0.1	2.1	0.06		**0.254**	0.25	<0.01	2		**1.2**	4.6	2	
16-Apr-24	4603			101	0.032	0.4	2	0.07		**0.34**	0.39	0.02	6		**1.2**	4.3	5	
15-Jul-24	4673			110	0.015	0.6	1	<0.05		**0.248**	0.34	<0.01	2		**1.2**	4.4	1	
10-Oct-24	4674			96.1	0.021	1.3	1.2	<0.05		**0.399**	0.81	<0.01	3		**1.1**	5.5	1	
TOTAL SAMPLES		0	7	72	72	72	72	72	4	83	68	72	72	4	72	72	73	31
AVERAGE 2024				102	0.023	0.8	1	<0.05		0.3290	0.51	<0.01	4		1.17	4.7	2	

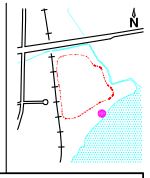
all Concentrations ug/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**

BH22-IIR

PEAT

OBSERVATION WELL

FORMERLY BH22-II
CONVERTED May 19



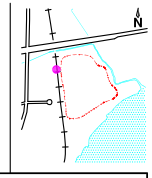
DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P	Se	Ag	Al	Be	Co	Ni	Zn	TDS
										mg/L								mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
21-Apr-15	3001			107	<0.02	<2	<2	<0.02		**0.80**	1	<0.02	30		0.4	<10	<5	638
29-Jul-15	3064			143	<0.02	<2	<2	<0.02		**0.28**	<1	<0.02	50		0.1	<10	8	645
07-Oct-15	3118			123	<0.02	<2	<2	0.35		**0.43**	<1	<0.02	50		<5	<10	<5	636
26-Apr-16	3189			88	<0.02	<2	<2	0.03		**0.41**	<1	<0.02	40		<5	<10	<5	627
28-Jul-16	3231			109	0.03	<2	1.5	0.02		**0.03**	<1	<0.02	40		<5	2.8	9	589
25-Oct-16	3317			125	0.03	<2	<2	<0.02		**0.08**	2	<0.02	50		<5	<10	10	711
02-May-17	3356			108	0.024	<2	<2	0.06		**0.20**	<1	<0.02	50		<5	<10	10	577
26-Jul-17	3424			132	0.02	<2	<2	0.17		**0.78**	<1	<0.02	70		<5	<10	6	626
25-Oct-17	3498			124	0.031	<2	<2	0.05		**0.13**	<1	<0.02	70		<5	<10	6	559
30-Apr-18	3549			71.4	0.005	0.16	1.19	0.12		**0.29**	0.09	<0.05	16		0.261	0.4	6	
23-Jul-18	3606			101	0.004	0.3	1.07	0.1		**0.17**	0.08	<0.05	21		0.115	0.4	7	
24-Oct-18	3673			99.87	0.013	0.23	2.86	0.1		**0.36**	0.10	<0.05	22		0.33	0.5	9	
30-Apr-19	3725			148	<0.003	0.14	1.8	0.07		**0.63**	<0.04	<0.05	6		**0.906**	0.7	2	
26-Jul-19	3781			104	<0.003	0.22	0.9	0.09		**0.60**	0.2	<0.05	32		0.272	0.5	6	
30-Oct-19	3851			104	0.012	0.32	1.5	0.26		**0.28**	0.1	<0.05	**88**		0.389	0.5	9	
20-Apr-20	3887			123	<0.003	0.22	0.6	<0.01		**0.92**	0.18	<0.05	19		0.464	0.5	3	
15-Jul-20	3945			131	<0.003	0.21	0.6	0.06		**0.56**	0.16	<0.05	25		0.415	0.7	4	
06-Oct-20	3989			106	0.003	0.29	0.7	0.08		**0.83**	0.17	<0.05	25		0.503	0.6	3	
22-Apr-21	4061			116	<0.003	0.51	1	0.18		**1.52**	0.12	<0.05	**116**		0.604	0.8	4	
20-Jul-21	4118			121	0.007	0.36	0.8	0.1		**1.02**	0.14	<0.05	63		0.569	0.7	7	
07-Oct-21	4173			112	0.013	0.53	1.2	0.12		**0.28**	0.24	<0.05	**85**		0.215	0.5	4	
19-Apr-22	4239			102	0.008	0.28	2.6	0.11		**1.10**	0.19	<0.05	47		0.412	0.6	3	
15-Jul-22	4319			117	<0.003	0.29	0.7	<0.09		**0.72**	0.14	<0.05	31		0.299	0.6	<2	
11-Oct-22	4389			101	<0.003	0.2	0.7	<0.09		**0.38**	0.08	<0.05	26		0.144	0.4	2	
17-Apr-23	4441			155	0.08	5	<2	2.62		**0.76**	<1	<0.1	**3000**		**2**	<10	20	
17-Jul-23	4496									**1.29**								
10-Oct-23	4567			125	0.008	0.2	5	0.1		**1.67**	0.4	<0.01	26		0.8	3.9	5	
16-Apr-24	4604			109	0.014	0.8	2.9	<0.05		**1.21**	0.16	0.01	20		0.6	3	6	
15-Jul-24	4674			127	<0.005	0.7	2	<0.05		**1.56**	0.54	<0.01	27		0.7	4.5	2	
10-Oct-24	4675			113	0.006	0.9	2.9	<0.05		**0.453**	0.49	<0.01	16		0.3	6.1	1	
TOTAL SAMPLES		1	12	76	76	76	76	76	5	89	72	76	76	4	76	76	76	31
AVERAGE 2024				116	0.007	0.8	2.6	<0.05		1.074	0.40	<0.01	21		0.5	4.5	3	

all Concentrations ug/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**

BH23

PEAT

OBSERVATION WELL
Screen 219.7 - 218.2 masl



DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P	Se	Ag	Al	Be	Co	Ni	Zn	TDS
										mg/L								mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
12-Aug-94	100723			170	<0.2	2	**8**	<5		**0.10**	<1	<0.5	**160**		0.8	<1	<2	
07-Nov-94	100724		2	158	<1.0	<1	<1	**10**		**0.06**	<1	<1	68		<1	2	3	
26-Apr-95	100725		<1	117	<1	5	**6**	**30**	1	**0.03**		<1	**167**	<1	**2.0**	3	2	
16-Aug-95	100726		4	208	<1	2	<1	**15**	<1	**0.11**		<1	**85**	<1	**2.0**	<2	<1	534
25-Oct-95	100727		2	145	<1	<1	<1	<5	<1	**0.12**		<1	<5	<1	<1	<2	<1	454
17-Apr-96	100728			110	<1	<1	<1	<5	<1	<0.2		<1	<5	<1	<1	<2	<1	
19-Aug-98	100730									**0.18**								462
17-Aug-99	100731									**0.12**								
16-Aug-00	100732		<2	140	<5	<10	<10	<1			<5	<10	70		<20	<20	<20	
18-Jul-01	100733																	441
17-Jul-02	100734		3	150	<5	<10	<10	<1			<5	<10	60		<20	<20	<20	433
22-Jul-03	102529																	428
14-Jul-04	1217																	510
24-Jul-08	87243																	490
23-Jul-09	B09-225																	478
22-Jul-10	2090									**0.30**								
22-Jul-11	2253									**0.31**								
25-Jul-12	2454									**0.17**								
31-Jul-13	2633									**0.26**								
21-Jul-14	2844									**0.35**								
20-Jul-15	3044									**0.31**								506
17-Jul-16	3211									**0.25**								514
17-Jul-17	3404									**0.44**								510
16-Jul-18	3584									**1.42**								
17-Jul-19	3759									**2.26**								
08-Jul-20	3923									**0.46**								
07-Jul-21	4119									**0.51**								
12-Jul-22	4297									**0.52**								
11-Jul-23	4474									**0.668**								
10-Jul-24	4652									**0.443**								
TOTAL SAMPLES		0	8	18	18	18	18	18	4	43	14	18	18	4	18	18	18	12
AVERAGE 2024																		

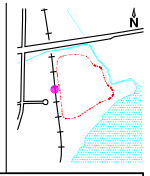
all Concentrations ug/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**

BH24R

PEAT

OBSERVATION WELL
Screen 220.9 - 220.1 masl

FORMERLY BH24
CONVERTED Apr 95



DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P	Se	Ag	Al	Be	Co	Ni	Zn	TDS
										mg/L								mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
11-Nov-89	100743									0.02								
19-Apr-90	100744									0.02								
26-Apr-95	100745		**11**	212	<1	2	<1	**12**	<1	**0.12**		**3.35**	**131**	<1	<1	<2	<1	
16-Aug-95	100746		**16**	203	<1	<1	<1	<5	<1	**0.78**		<1	60	<1	<1	<2	<1	616
25-Oct-95	100747		**10**	162	<1	<1	<1	**25**	<1	**0.22**		<1	40	<1	<1	<2	<1	604
17-Apr-96	100748			140	<1	<1	<1	<5	<1	**0.67**		<1	<5	<1	<1	<2	<1	
19-Aug-98	100750									**0.83**								490
17-Aug-99	100751									**0.14**								
16-Aug-00	100752		<2	190	<5	<10	<10	<1			<5	<10	**90**		<20	<20	<20	
18-Jul-01	100753																	462
17-Jul-02	100754		5	140	<5	<10	<10	<1			<5	<10	<50		<20	<20	<20	452
22-Jul-03	102530																	440
14-Jul-04	1218																	510
24-Jul-08	87243																	497
23-Jul-09	B09-226																	554
22-Jul-10	2091									**0.38**								
21-Jul-11	2254									**0.39**								
25-Jul-12	2455									**0.45**								
31-Jul-13	2634									**0.49**								
21-Jul-14	2845									**0.37**								
20-Jul-15	3045									**0.39**								596
17-Jul-16	3212									**0.39**								585
18-Jul-17	3405									**0.44**								553
16-Jul-18	3585									**0.63**								
17-Jul-19	3760									**1.09**								
08-Jul-20	3924									**0.46**								
07-Jul-21	4120									**0.52**								
12-Jul-22	4298									**0.51**								
11-Jul-23	4475									**0.543**								
10-Jul-24	4653									**0.301**								

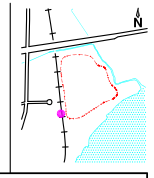
TOTAL SAMPLES AVERAGE 2024	0	5	6	6	6	6	6	4	29	2	6	6	4	6	6	6	12

all Concentrations ug/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**

BH25

SAND AQUIFER

OBSERVATION WELL
Screen 221.4 - 220.6 masl



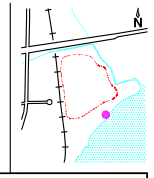
DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P	Se	Ag	Al	Be	Co	Ni	Zn	TDS
										mg/L								mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
26-Apr-95	100780		<1	134	<1	<1	<1	**13**	<1	**0.18**		**5.37**	31	<1	<1	15	<1	
16-Aug-95	100781		<1	332	<1	2	4	**10**	<1	0.004		<1	**170**	<1	**2.0**	<2	<1	504
25-Oct-95	100782		<1	306	<1	<1	<1	<5	<1	0.02		<1	**410**	<1	<1	<2	<1	540
19-Aug-98	100785									**0.10**								529
17-Aug-99	100786									<0.01								
16-Aug-00	100787		<2	330	<5	<10	**30**	<1			<5	<10	<50		<20	<20	<20	
18-Jul-01	100788																	523
17-Jul-02	100789		<2	340	<5	<10	<10	<1			<5	<10	<50		<20	<20	<20	547
23-Jul-03	102531																	551
14-Jul-04	1219																	530
24-Aug-05	58243			333	<0.1	<2	2	<0.5		**6.57**	<1	<5	<10		<0.1	<10	10	
31-Jul-06	67313			356	<0.1	<2	<2	<0.1		**2.04**	0.9	<5	<10		<5	<10	11	
16-Aug-07	78163			358	<0.02	<2	<2	<0.02		**3.86**	<0.2	<5	<10		<5	<10	15	
25-Jul-08	87253			307	<0.02	<2	<2	<0.02		**1.35**	0.4	<5	20		<5	<10	8	556
24-Jul-09	B09-227			300	<0.02	<2	<2	<0.02		**0.47**	2.0	<0.02	<10		<5	<10	8	572
23-Jul-10	2092			361	<0.02	<2	<2	<0.02		<0.01	<1	<0.02	<10		<5	<10	5	
22-Jul-11	2255			355	0.02	<2	2	0.15		**0.09**	<1	<0.02	30		<5	<10	7	
25-Jul-12	2456			374	<0.1	5	<2	<1		**0.03**	<4	<0.1	17		<0.5	<3	12	
31-Jul-13	2635			379	0.03	<2	<2	0.03		0.02	<1	<0.02	40		<5	<10	<5	
21-Jul-14	2846			414	<0.02	<2	<2	0.04		<0.01	<1	<0.02	30		0.2	<10	12	
21-Jul-15	3046			396	<0.02	<2	0.6	<0.02		0.02	<1	<0.02	30		0.2	<10	<5	649
17-Jul-16	3213			409	0.03	<2	<2	<0.02		**0.03**	<1	<0.02	40		<5	<10	<5	683
17-Jul-17	3406			374	<0.014	<2	<2	0.05		0.01	<1	<0.02	40		<5	<10	<5	612
17-Jul-18	3586			398	0.027	0.14	2.62	0.11		**1.29**	0.06	<0.05	5		0.156	0.6	8	
16-Jul-19	3761			409	0.015	0.1	2	0.07		**0.43**	0.07	<0.05	2		0.178	0.6	3	
09-Jul-20	3925			426	0.001	0.14	1.2	0.03		**0.17**	0.09	<0.05	5		0.255	0.7	3	
07-Jul-21	4121			379	0.019	0.32	1.8	<0.09		**0.40**	0.07	<0.05	55		0.273	0.5	4	
12-Jul-22	4299			435	0.03	0.24	1.1	<0.09		**1.26**	0.06	<0.05	29		0.305	0.4	<2	
11-Jul-23	4476			464	0.019	2.9	3.4	0.11		**0.442**	0.85	0.02	2		0.6	2.2	1	
10-Jul-24	4654			444	0.007	1	2.3	<0.05		**0.352**	0.59	<0.01	4		0.7	2	5	
TOTAL SAMPLES AVERAGE 2024		0	8	37	37	37	37	37	3	46	34	37	37	3	37	37	37	12

all Concentrations ug/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**

BH26

SAND AQUIFER

OBSERVATION WELL
Screen 220.6 - 216.1 masl



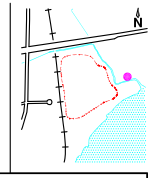
DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P	Se	Ag	Al	Be	Co	Ni	Zn	TDS
										mg/L								mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
29-Jul-15	3065			82	<0.02	<2	<2	<0.02		0.02	<1	<0.02	30		<0.1	<10	<5	535
08-Oct-15	3119			84	<0.02	<2	<2	<0.02		<0.01	<1	<0.02	30		<5	<10	<5	546
26-Apr-16	3190			57	<0.02	<2	<2	<0.02		<0.01	<1	<0.02	30		<5	<10	<5	472
29-Jul-16	3232			79	<0.02	<2	2.2	<0.02		0.01	<1	<0.02	30		<5	2.8	**27**	540
24-Aug-16	B1602561																<5	
25-Oct-16	3318			81	<0.02	<2	<2	<0.02		<0.01	2	<0.02	30		<5	<10	14	678
02-May-17	3357			49	<0.014	<2	<2	<0.02		<0.01	<1	<0.02	30		<5	<10	<5	386
26-Jul-17	3425			70	<0.014	<2	<2	<0.02		0.01	<1	<0.02	30		<5	<10	<5	477
25-Oct-17	3499			175	0.023	<2	4	0.21		0.01	<1	<0.02	**90**		<5	<10	<5	1021
30-Apr-18	3550			58.3	0.006	0.24	1.43	0.05		**0.12**	0.14	<0.05	8		0.087	0.3	3	
23-Jul-18	3607			64.7	0.028	0.21	3.62	0.14		**0.04**	0.11	<0.05	9		0.093	0.3	17	
24-Oct-18	3674			174	0.008	0.33	3.91	0.07		**0.04**	0.20	<0.05	6		0.15	0.6	5	
30-Apr-19	3726			87.4	<0.003	0.17	1.1	0.09		**0.07**	0.08	<0.05	17		0.252	0.3	9	
26-Jul-19	3782			38.8	<0.003	0.17	1.9	0.05		<0.03	0.1	<0.05	6		0.086	0.3	3	
30-Oct-19	3852			124	0.018	0.38	2.6	0.11		<0.03	0.18	<0.05	26		0.253	0.6	14	
20-Apr-20	3888			44.9	0.004	0.25	1.4	<0.01		<0.03	0.18	<0.05	8		0.111	0.4	3	
15-Jul-20	3946			63.2	0.009	0.22	1.9	0.03		**0.04**	0.14	<0.05	7		0.071	0.5	2	
06-Oct-20	3990			67.9	0.005	0.37	1.7	0.01		**0.06**	0.12	<0.05	5		0.071	0.3	<2	
22-Apr-21	4062			54.7	<0.003	0.34	1.9	<0.09		**0.06**	0.18	<0.05	10		0.076	0.4	2	
20-Jul-21	4122			63.2	0.007	0.18	2.7	<0.09		**0.05**	0.11	<0.05	10		0.114	0.4	3	
07-Oct-21	4174			64.9	0.02	0.38	**6**	<0.09		<0.03	0.21	<0.05	3		0.092	0.5	4	
19-Apr-22	4240			62.9	0.007	0.26	1.2	<0.09		<0.03	0.15	<0.05	12		0.086	0.5	4	
15-Jul-22	4320			60.6	0.007	0.2	1.9	<0.09		<0.03	0.14	<0.05	7		0.077	0.5	<2	
11-Oct-22	4390			62.8	0.005	0.21	2	<0.09		<0.03	0.13	<0.05	7		0.086	0.4	<2	
17-Apr-23	4442			54	<0.02	<2	<2	0.25		**0.145**	<1	<0.1	**220**		0.4	<10	<5	
17-Jul-23	4497			66	0.024	1.3	2.5	<0.05		0.014	0.48	<0.01	13		0.4	1.4	2	
10-Oct-23	4568			82.2	0.02	0.4	3.8	0.09		**0.083**	0.4	<0.01	16		0.3	1.1	3	
16-Apr-24	4605			58.3	0.016	0.8	2.8	<0.05		**0.025**	0.29	0.02	24		0.3	0.8	10	
15-Jul-24	4675			102	0.023	0.7	2.3	<0.05		0.016	0.64	<0.01	15		0.4	1.5	<1	
10-Oct-24	4676			85.3	0.042	0.7	2.9	<0.05		**0.021**	1.15	<0.01	8		0.4	2	<1	
TOTAL SAMPLES		1	9	78	78	78	78	78	5	91	74	78	78	4	78	78	81	31
AVERAGE 2024				82	0.027	0.7	2.7	<0.05		0.0207	0.69	<0.01	16		0.4	1	3	

all Concentrations ug/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**

BH28-I

SAND AQUIFER

OBSERVATION WELL
Screen 218.0 - 216.5 masl



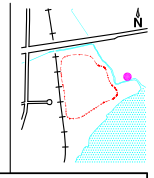
DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P	Se	Ag	Al	Be	Co	Ni	Zn	TDS
										mg/L								mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
31-Oct-08	810313																	822
23-Apr-09	0911681																	696
22-Jul-09	B09-2222																	772
30-Oct-09	0934218																	775
23-Apr-10	2033									0.01								
23-Jul-10	2093									0.01								
21-Oct-10	2138									0.02								
13-Apr-11	2215									**0.15**								
21-Jul-11	2256									**1.23**								
19-Oct-11	2313									**0.07**								
27-Apr-12	2380									0.01								
25-Jul-12	2457									**0.03**								
16-Oct-12	2523									<0.02								
25-Apr-13	05955									<0.02								
31-Jul-13	2636									**0.03**								
10-Oct-13	2705									0.01								
30-Apr-14	2785									<0.01								
23-Jul-14	2847									<0.01								
29-Sep-14	2898									0.02								
17-Apr-15	2981									0.01								751
24-Sep-15	3128									<0.01								769
05-Oct-16	3273									0.01								780
12-Oct-17	3451									<0.01								720
10-Oct-18	3617									**0.07**								
21-Oct-19	3805									**0.18**								
05-Oct-20	4011									**0.06**								
05-Oct-21	4185									**0.05**								
27-Sep-22	4343									**0.10**								
26-Sep-23	4520									**0.194**								
23-Sep-24	4643									<0.002								
TOTAL SAMPLES		0	9	17	17	17	17	17	3	46	14	17	17	3	17	17	17	26
AVERAGE 2024																		

all Concentrations ug/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**

BH28-II

FILL

OBSERVATION WELL
Screen 220.4 - 218.9 masl



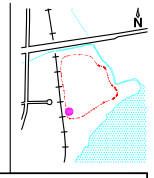
DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P	Se	Ag	Al	Be	Co	Ni	Zn	TDS
										mg/L								mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
25-Jul-08	87253			194	<0.02	<2	2	1.0		**1.09**	0.9	<5	60		<5	<10	8	414
31-Oct-08	810313																	595
23-Apr-09	0911682																	343
22-Jul-09	B09-239			224	<0.02	<2	<2	<0.02		**3.82**	1.6	<0.02	30		<5	<10	16	569
30-Oct-09	0934211																	513
23-Apr-10	2034									**1.30**								
23-Jul-10	2094			272	0.08	2	<2	0.1		**0.84**	<1	<0.02	20		<5	<10	<5	
21-Oct-10	2139									**2.25**								
13-Apr-11	2216									**0.31**								
19-Oct-11	2314									**0.34**								
27-Apr-12	2381									**1.56**								
25-Jul-12	2458			256	<0.1	9	<2	<1		**1.78**	<4	<0.1	25		**2.2**	15	14	
16-Oct-12	2524									**0.74**								
25-Apr-13	06033									**0.10**								
31-Jul-13	2637			261	0.05	<2	<2	0.2		**3.96**	<1	<0.02	60		<5	<10	<5	
10-Oct-13	2706									**1.28**								
30-Apr-14	2786									**0.06**								
23-Jul-14	2848			282	<0.02	<2	<2	0.16		**1.70**	<1	<0.02	40		0.9	<10	17	
29-Sep-14	2899									**0.80**								
17-Apr-15	2982									**0.17**								333
24-Sep-15	3129			143	<0.02	4	<2	0.18		**7.05**	1	<0.02	50		**1.8**	10	<5	731
05-Oct-16	3274			293	<0.02	3	<2	<0.02		**4.96**	<1	<0.02	50		**4.5**	<10	<5	684
12-Oct-17	3452			186	<0.014	<2	<2	<0.02		**2.28**	<1	<0.02	**110**		<5	10	<5	768
10-Oct-18	3618			79.1	0.032	3.7	0.64	0.07		**1.57**	0.48	<0.05	6		**1.83**	16.1	4	
21-Oct-19	3806			279	0.019	0.81	2	0.18		**0.43**	0.29	<0.05	4		0.784	5.2	**99**	
05-Oct-20	4012			240	0.005	2.88	2.2	0.16		**5.85**	0.31	<0.05	12		0.626	4.5	6	
05-Oct-21	4186			177	0.042	2.99	1.3	0.7		**2.30**	0.29	<0.05	28		**1.07**	7	**48**	
27-Sep-22	4344			254	0.015	2.94	2.6	0.22		**8.48**	0.36	<0.05	12		**1.4**	10.7	**46**	
26-Sep-23	4521			208	0.034	5.2	1.9	0.18		**10.6**	0.61	<0.01	18		**1.3**	13.4	**21**	
23-Sep-24	4644			35.5	0.023	10.1	2.1	0.2		**5.07**	1.44	<0.01	5		**1.8**	14	16	
TOTAL SAMPLES		0	9	36	36	36	36	36	4	51	32	36	36	4	36	36	36	26
AVERAGE 2024																		

all Concentrations ug/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**

BH29-I

SAND AQUIFER

OBSERVATION WELL
Screen 219.5 - 218.4 masl



DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P	Se	Ag	Al	Be	Co	Ni	Zn	TDS
										mg/L								mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
22-Apr-15	3003			225	<0.02	<2	<2	<0.02		<0.01	<1	<0.02	30		**1.3**	<10	<5	588
27-Jul-15	3066			201	<0.02	<2	<2	<0.02		0.01	<1	<0.02	40		**1**	<10	7	552
05-Oct-15	3120			198	<0.02	<2	<2	<0.02		<0.01	<1	<0.02	40		<5	<10	<5	552
25-Apr-16	3191			198	<0.02	<2	<2	0.03		<0.01	<1	<0.02	40		<5	<10	5	603
25-Jul-16	3233			211	<0.02	<2	0.9	<0.02		0.01	<1	<0.02	50		<5	5.1	10	576
24-Oct-16	3319			182	<0.02	<2	<2	<0.02		<0.01	2	<0.02	40		<5	<10	5	547
26-Apr-17	3335			208	<0.014	<2	<2	<0.02		<0.01	<1	<0.02	50		**1.2**	<10	<5	544
24-Jul-17	3428			210	<0.014	<2	<2	<0.02		<0.01	<1	<0.02	50		<5	<10	<5	581
17-Oct-17	3477			202	<0.014	<2	<2	0.19		**0.03**	<1	<0.02	**90**		<5	<10	6	572
23-Apr-18	3528			224	0.004	0.14	1.91	0.11		**0.25**	0.11	<0.05	2		**1.3**	1.6	8	
17-Jul-18	3587			209	0.017	0.12	2.43	0.1		**0.97**	0.06	<0.05	6		**1.14**	1.4	6	
16-Oct-18	3654			208	<0.003	0.11	1.29	0.04		**0.62**	0.06	<0.05	<1		**0.95**	1.1	3	
24-Apr-19	3706			203	0.021	0.09	1.7	0.05		**0.37**	0.08	<0.05	3		**1.29**	1.4	3	
16-Jul-19	3762			230	<0.003	0.11	0.8	0.02		**0.20**	0.09	<0.05	8		**1.05**	1.3	<2	
16-Oct-19	3832			206	0.003	0.14	1.5	0.08		**0.13**	0.07	<0.05	2		**0.967**	1	7	
15-Apr-20	3868			186	<0.003	0.11	1.7	0.07		**0.05**	0.11	<0.05	4		**1.2**	1.3	7	
08-Jul-20	3926			189	0.006	0.12	2.9	0.13		**0.17**	0.07	<0.05	<1		**1.05**	1.3	3	
06-Oct-20	3399			176	0.017	0.1	1	0.02		**0.31**	0.06	<0.05	1		**0.954**	1.1	<2	
14-Apr-21	4065			194	0.009	0.21	1.5	0.05		<0.01	0.07	<0.05	10		**1.08**	1.3	6	
12-Jul-21	4125			205	0.006	0.14	1.6	<0.09		**0.94**	0.06	<0.05	6		**1.07**	1.3	14	
28-Sep-21	4177			217	0.005	0.21	1.6	<0.09		**0.26**	<0.04	<0.05	2		**0.918**	1.1	3	
12-Apr-22	4243			208	0.011	0.22	1.3	0.13		**1.25**	0.06	<0.05	71		**1.8**	1.4	<2	
12-Jul-22	4300			205	0.021	0.12	0.4	<0.09		**0.47**	<0.04	<0.05	3		0.878	0.7	<2	
04-Oct-22	4370			225	<0.003	0.18	1.5	<0.09		**0.07**	0.05	<0.05	2		**0.92**	1.1	<2	
11-Apr-23	4422			208	0.01	<2	3	0.88		**0.247**	<1	<0.1	**970**		**2.1**	<10	7	
10-Jul-23	4477			229	0.026	4.4	1.5	0.11		**0.787**	0.53	<0.01	71		**1.8**	4.6	2	
02-Oct-23	4548			222	0.036	0.1	3.7	0.12		0.016	0.45	<0.01	2		**1.3**	3.7	3	
09-Apr-24	4621	<0.5	1	252	<0.1	0.1	<0.2	1.3	<1	**0.845**	<0.05	**0.36**	**326**	<0.5	**1.8**	2.3	9	
08-Jul-24	4655			229	0.037	1	1.4	<0.05		**0.091**	0.5	<0.01	1		**1.7**	3.8	4	
01-Oct-24	4692									**0.307**								

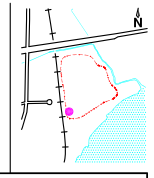
TOTAL SAMPLES	1	1	30	30	30	30	30	1	31	30	30	30	1	30	30	30	9
AVERAGE 2024			241	<0.1	1	0.7	0.7		0.4143	0.3	0.180	164		1.75	3.1	7	

all Concentrations ug/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**

BH29-II

REFUSE

OBSERVATION WELL
Screen 222.7 - 221.4 masl



DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P	Se	Ag	Al	Be	Co	Ni	Zn	TDS
										mg/L								mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
07-Oct-14	2940			210	<0.02	<2	<2	<0.02		<0.01	<1	<0.02	30		**1.1**	<10	<5	
22-Apr-15	3004			257	<0.02	<2	<2	0.31		**0.09**	2	<0.02	60		**4.6**	<10	<5	749
27-Jul-15	3067			306	<0.02	<2	<2	0.02		**0.09**	<1	<0.02	60		**4.5**	<10	9	838
05-Oct-15	3121			317	0.06	<2	<2	0.06		**0.03**	<1	<0.02	60		**10**	<10	10	781
25-Apr-16	3192			183	<0.02	<2	<2	0.11		**0.11**	<1	<0.02	60		**7**	<10	8	533
26-Jul-16	3234			288	<0.02	2	0.3	0.02		**0.04**	<1	<0.02	70		**9**	7	6	665
24-Oct-16	3320			279	0.03	<2	<2	<0.02		**0.03**	3	<0.02	60		**5**	<10	<5	821
26-Apr-17	3336			223	<0.014	2	<2	<0.02		**0.15**	<1	<0.02	70		**3.2**	<10	17	558
24-Jul-17	3429			287	<0.014	<2	<2	0.22		**0.04**	<1	<0.02	**80**		**11**	<10	12	776
17-Oct-17	3478			206	0.054	<2	<2	<0.02		**0.03**	<1	<0.02	**90**		<5	<10	16	688
23-Apr-18	3529			264	<0.003	0.78	1.38	0.15		**0.17**	0.27	<0.05	15		**3.1**	1.6	3	
17-Jul-18	3588			272	0.009	1.23	0.95	0.06		**0.20**	0.45	<0.05	13		**5.891**	5.1	5	
16-Oct-18	3655			221	0.032	0.3	2.9	0.06		**0.23**	0.77	<0.05	3		**2.27**	3.5	19	
24-Apr-19	3707			161	0.008	0.37	2.5	0.29		**0.15**	0.27	<0.05	16		**2.22**	1.3	6	
16-Jul-19	3763			376	<0.003	1.09	1.3	0.19		**0.10**	0.37	<0.05	20		**5.49**	3.8	3	
17-Oct-19	3833			250	0.01	0.33	1.4	0.09		**0.31**	1.06	<0.05	6		**3.19**	3.9	13	
15-Apr-20	3869			87.4	<0.003	0.3	0.7	0.1		**0.11**	0.19	<0.05	11		0.666	0.9	3	
08-Jul-20	3927			299	0.006	0.68	0.4	0.05		**0.11**	0.48	<0.05	30		**3.53**	4.1	5	
05-Oct-20	3994			260	<0.003	0.83	1	0.12		**0.07**	0.33	<0.05	15		**2.41**	2.9	<2	
13-Apr-21	4066			141	0.003	0.4	0.6	0.1		0.01	0.16	<0.05	12		0.825	1.2	4	
12-Jul-21	4126			263	0.003	0.45	0.8	<0.09		**0.13**	0.55	<0.05	5		0.641	1.8	<2	
12-Apr-22	4244			105	0.003	0.57	1.8	0.15		**0.12**	0.4	<0.05	11		**1.81**	1.1	2	
11-Jul-22	4301			315	0.026	0.91	0.4	0.09		**0.06**	0.38	<0.05	15		**2.45**	1.8	<2	
06-Oct-22	4371			216	0.06	0.5	2.2	<0.09		**0.08**	1.27	<0.05	4		0.381	1.7	13	
11-Apr-23	4423			70	0.2	<2	**18**	4.78		**0.188**	<1	<0.1	**670**		**2.1**	<10	**26**	
10-Jul-23	4478			325	0.039	7.2	0.7	0.06		**0.133**	0.82	<0.01	15		**4.6**	15	2	
02-Oct-23	4549			314	0.019	0.9	2.1	0.06		**0.021**	0.95	<0.01	7		**2**	4.4	6	
09-Apr-24	4622	1.1	2	65	<0.1	1	3	0.8	<1	**0.124**	0.4	<0.1	42	<0.5	0.8	4	2	
08-Jul-24	4656			209	0.04	2	0.5	<0.05		0.009	0.35	<0.01	15		**2.1**	10.1	4	

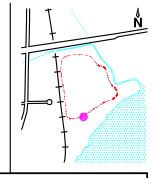
TOTAL SAMPLES	1	1	29	29	29	29	29	1	29	29	29	29	1	29	29	29	9
AVERAGE 2024			137	<0.1	2	2	0.4		0.0665	0.4	<0.01	29		1.45	7.1	3	

all Concentrations ug/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**

BH30-I

SAND AQUIFER

OBSERVATION WELL
Screen 214.0 - 212.4 masl



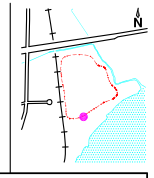
DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P	Se	Ag	Al	Be	Co	Ni	Zn	TDS
										mg/L								mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
23-Apr-15	3005			1370	<0.02	<2	<2	<0.02		<0.01	7	<0.02	30		0.3	<10	<5	993
28-Jul-15	3068			1310	<0.02	<2	<2	<0.02		0.01	3	<0.02	50		0.2	<10	<5	1030
06-Oct-15	3122			928	0.07	<2	<2	<0.02		<0.01	2	<0.02	50		<5	<10	<5	1000
25-Apr-16	3193			1130	<0.02	<2	<2	<0.02		<0.01	<1	<0.02	50		<5	<10	<5	948
29-Jul-16	3236			1430	<0.02	<2	1.1	<0.02		**0.03**	2	<0.02	60		<5	7.1	8	975
24-Oct-16	3321			1370	<0.02	<2	<2	<0.02		<0.01	23	<0.02	50		<5	<10	<5	1070
26-Apr-17	3337			1280	<0.014	<2	<2	<0.02		<0.01	<1	<0.02	60		0.1	<10	<5	884
24-Jul-17	3430			1510	0.06	<2	<2	<0.02		0.02	<1	<0.02	60		<5	<10	<5	1140
18-Oct-17	3479			1900	<0.014	<2	<2	<0.02		**0.03**	3	<0.02	**110**		<5	<10	<5	1141
23-Apr-18	3530			1460	0.005	0.21	1.15	0.09		**0.72**	0.12	<0.05	1		0.114	1.7	3	
25-Jul-18	3608			1600	0.003	0.27	1.7	0.09		**0.26**	0.11	<0.05	12		0.219	2.4	7	
22-Oct-18	3675			1810	<0.003	0.36	2.34	0.08		**0.44**	0.15	<0.05	3		0.27	3.2	8	
01-May-19	3727			49.7	<0.003	0.21	2.2	0.12		**0.16**	0.09	<0.05	11		0.168	0.3	7	
24-Jul-19	3783			1660	<0.003	0.24	1.1	0.04		**0.07**	0.12	<0.05	3		0.193	2.5	3	
29-Oct-19	3853			1670	<0.003	0.28	1.1	0.07		**0.16**	0.09	<0.05	2		0.193	2.4	5	
17-Apr-20	3889			1390	0.004	0.17	0.9	0.12		**0.06**	0.11	<0.05	2		0.085	1.5	3	
13-Jul-20	3947			1460	0.004	0.22	0.5	0.03		**0.21**	0.09	<0.05	2		0.153	2.2	2	
07-Oct-20	3995			1430	<0.003	0.29	0.6	0.02		**0.09**	0.09	<0.05	2		0.131	2.2	<2	
21-Apr-21	4067			1620	0.005	0.43	0.9	<0.09		**0.18**	0.07	<0.05	14		0.084	2.1	2	
16-Jul-21	4127			1840	<0.003	0.31	1.2	<0.09		**0.09**	0.06	<0.05	5		0.12	2.1	2	
01-Oct-21	4179			1750	<0.003	0.33	1.2	<0.09		**0.15**	<0.04	<0.05	12		0.118	2.3	2	
20-Apr-22	4245			1710	0.01	0.26	0.3	<0.09		**0.16**	0.07	<0.05	2		0.115	2	<2	
19-Jul-22	4321			1970	<0.003	0.24	0.6	<0.09		<0.03	0.11	<0.05	2		0.116	2.1	<2	
12-Oct-22	4391			2060	<0.003	0.29	0.5	<0.09		**0.05**	0.07	<0.05	3		0.153	2.3	2	
18-Apr-23	4443			1810	<0.03	<2	<2	0.32		**0.11**	3	<0.1	**400**		0.5	<10	<5	
18-Jul-23	4498									**0.054**								
12-Oct-23	4569			1880	0.022	0.3	3.4	0.05		**0.193**	6.71	<0.01	24		0.6	8.8	1	
15-Apr-24	4606			1840	0.016	1.9	3	<0.05		**0.041**	3.06	0.02	3		0.4	6.6	5	
16-Jul-24	4676			2090	0.02	0.8	2.1	<0.05		**0.036**	6.51	<0.01	1		0.5	11.2	2	
10-Oct-24	4677			2210	0.045	9.7	3.7	0.11		**0.692**	12.7	0.01	2		0.9	21.9	4	
TOTAL SAMPLES		0	0	30	30	30	30	30	0	31	30	30	30	0	30	30	30	9
AVERAGE 2024				2047	0.027	4.1	2.9	<0.05		0.2563	7.4	0.01	2		0.6	13.2	4	

all Concentrations ug/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**

BH30-II

PEAT

OBSERVATION WELL
Screen 219.8 - 219.0 masl



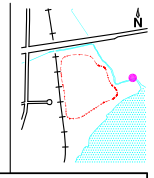
DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P	Se	Ag	Al	Be	Co	Ni	Zn	TDS
										mg/L								mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
23-Apr-15	3006			299	0.08	<2	3	<0.02		**0.03**	2	<0.02	40		**11.3**	<10	<5	1010
27-Jul-15	3069			308	0.06	<2	2	<0.02		**0.06**	1	<0.02	60		**9.5**	<10	8	1060
06-Oct-15	3123			323	0.03	<2	<2	<0.02		0.01	1	<0.02	70		**14**	<10	<5	1080
25-Apr-16	3191			261	0.1	<2	<2	0.07		<0.01	<1	<0.02	60		**14**	<10	<5	1290
29-Jul-16	3235			334	0.03	<2	2.3	<0.02		**0.04**	<1	<0.02	70		**12**	7.6	<5	1270
24-Oct-16	3322			297	<0.02	<2	<2	<0.02		<0.01	5	<0.02	70		**11**	<10	7	1310
26-Apr-17	3338			251	0.034	<2	<2	<0.02		<0.01	<1	0.03	60		**6.7**	<10	15	1110
24-Jul-17	3431			291	0.022	<2	<2	0.03		0.01	<1	<0.02	60		**8**	<10	<5	1200
18-Oct-17	3480			321	0.027	<2	<2	<0.02		**0.05**	<1	<0.02	**100**		**7**	**50**	5	1212
23-Apr-18	3531			253	0.048	0.37	0.18	<0.01		**0.04**	0.42	<0.05	12		**6.57**	3.5	3	
25-Jul-18	3609			289	0.046	0.39	1.72	0.05		**0.04**	0.29	<0.05	10		**6.05**	3.3	5	
22-Oct-18	3676			339	0.006	0.72	1.35	0.07		**0.13**	0.37	<0.05	23		**8.29**	4.4	5	
01-May-19	3728			1630	<0.003	0.3	0.9	0.12		**0.05**	0.08	<0.05	72		0.217	1.8	3	
24-Jul-19	3784			211	0.006	0.33	0.9	0.05		**0.04**	0.24	<0.05	8		**5.23**	3.1	3	
29-Oct-19	3854			319	0.003	0.67	1.6	0.08		**0.03**	0.29	<0.05	21		**7.51**	4.1	3	
17-Apr-20	3890			266	<0.003	0.5	0.9	0.01		**0.04**	0.53	<0.05	14		**6.86**	3.6	7	
13-Jul-20	3948			274	<0.003	0.43	2.5	0.01		**0.06**	0.2	<0.05	15		**6.67**	3.6	<2	
07-Oct-20	3996			252	0.007	0.48	0.4	<0.01		**0.04**	0.31	<0.05	10		**6.25**	3.6	<2	
21-Apr-21	4068			258	0.01	0.59	0.6	<0.09		**0.06**	0.29	<0.05	12		**7.04**	4.3	6	
16-Jul-21	4128			282	0.003	0.46	0.9	<0.09		**0.04**	0.21	<0.05	14		**5.7**	3	2	
01-Oct-21	4180			290	0.01	0.51	1.1	<0.09		**0.04**	0.3	<0.05	13		**5.43**	2.9	4	
20-Apr-22	4246			213	0.011	0.45	0.6	<0.09		**0.04**	0.2	<0.05	9		**4.3**	2.2	<2	
19-Jul-22	7322			231	0.016	0.32	0.8	<0.09		<0.03	0.33	<0.05	3		**2.28**	2	<2	
12-Oct-22	4392			255	0.003	0.52	2.1	<0.09		**0.05**	0.22	<0.05	12		**4.18**	2.4	<2	
18-Apr-23	4444			228	<0.02	<2	<2	0.14		**0.037**	<1	<0.1	60		**2.3**	<10	<5	
18-Jul-23	4499			236	0.04	4.5	3.1	<0.05		**0.044**	1.04	<0.01	11		**4.3**	7.1	1	
12-Oct-23	4570			245	0.011	0.9	4.3	<0.05		**0.056**	0.62	<0.01	<1		**4.3**	4.2	<1	
15-Apr-24	4607			180	0.029	1.6	3.8	<0.05		**0.036**	0.47	0.01	6		**3.3**	4.9	4	
16-Jul-24	4678			223	0.022	0.9	2.9	<0.05		**0.066**	0.96	<0.01	9		**4.5**	8	1	
10-Oct-24	4678			183	0.025	6.8	4.8	<0.05		**0.035**	2.05	<0.01	5		**3.3**	5.9	4	
TOTAL SAMPLES		0	0	31	31	31	31	31	0	31	31	31	31	0	31	31	31	9
AVERAGE 2024				195	0.025	3.1	3.8	<0.05		0.0457	1.16	<0.01	7		3.70	6	3	

all Concentrations ug/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**

S-1

BEN'S DITCH

SURFACE WATER STATION



DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P	Se	Ag	Al	Be	Co	Ni	Zn	TDS
										mg/L								mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
17-Jul-14	2811			105	0.03	<2	2	0.35		**0.04**	<1	<0.02	**80**		**1.8**	<10	**25**	
16-Jul-15	3017			73	0.03	<2	1	0.39		**0.04**	<1	0.04	**120**		0.5	3.1	18	622
25-Sep-15	3074			82	<0.02	<2	1.4	0.2		**0.07**	<1	<0.02	**140**		**3.4**	2.3	11	633
02-May-16	3146			74	0.02	<2	2.3	0.19		**0.06**	<1	<0.02	**100**		0.3	3.3	10	592
13-Jul-16	3240			88	<0.02	<2	1.5	0.37		**0.09**	<1	<0.02	**140**		**4.4**	3.3	9	579
05-Oct-16	3256			89	<0.02	<2	1.3	0.42		**0.06**	<1	<0.02	**100**		0.7	3.7	14	580
18-Apr-17	3362			66	0.157	<1	4.1	0.66		**0.05**	<1	0.02	**100**		0.3	2.9	11	564
13-Jul-17	3378			81	0.153	<2	4	0.56	<10	**0.05**	<1	<0.02	**120**		0.5	3.4	**22**	396
12-Oct-17	3435			83	<0.014	<2	1.7	0.39		**0.06**	<1	<0.02	**150**		**2.5**	3	12	484
07-May-18	3555			84.8	0.004	0.31	1.33	0.1		<0.03	0.22	<0.05	**89**		0.383	0.6	10	
11-Jul-18	3558			88.3	0.009	0.22	0.95	0.26		**0.04**	0.17	<0.05	74		**1.16**	1	13	
12-Oct-18	3635			93.6	0.013	0.38	1.45	0.53		**0.08**	0.19	<0.05	**110**		**5.44**	1.1	11	
16-Apr-19	3681			76.9	<0.003	0.19	1.3	0.12		**0.04**	0.31	<0.05	**124**		0.544	0.8	6	
11-Jul-19	3733			95.8	0.005	0.24	1.4	0.2		**0.07**	0.19	<0.05	**108**		**1.51**	0.8	11	
23-Oct-19	3789			83.2	<0.003	0.34	1.7	0.48		**0.08**	0.14	<0.05	**89**		0.409	0.1	11	
28-Apr-20	3901			86.1	0.008	0.37	1.3	0.16		**0.05**	0.21	<0.05	**188**		**2.12**	0.6	7	
15-Jul-20	3953			84	0.022	0.39	3.5	0.28		**0.13**	0.16	<0.05	**340**		**1.23**	1.2	14	
14-Oct-20	3997			84.3	0.01	0.82	1.6	0.25		**0.04**	0.14	<0.05	**97**		**2.43**	1.1	19	
30-Apr-21	4069			74.8	0.012	0.88	1.5	0.33		**0.05**	0.19	<0.05	**246**		**6.03**	0.9	8	
06-Jul-21	4133			77.8	0.018	0.54	1.2	0.32		**0.06**	0.13	<0.05	**146**		**2.1**	0.7	6	
07-Oct-21	4201			80.1	0.009	0.4	1.1	0.24		**0.06**	0.15	<0.05	**263**		**1.89**	1.1	12	
25-Apr-22	4247			72.38	0.021	0.36	1.8	0.35		<0.03	0.21	<0.05	**136**		0.455	1	9	
05-Jul-22	4271			85	0.006	0.24	1.5	0.36		**0.03**	0.15	0.09	**278**		**5.09**	1	8	642
29-Sep-22	4327			84.4	0.023	0.51	1.4	0.25		**0.06**	0.29	<0.05	**211**		**3.38**	1	9	
24-Apr-23	4397			72	<0.02	2	1.8	0.09		**0.03**	<1	<0.1	**130**		0.5	<10	<5	
05-Jul-23	4449			110	0.008	0.8	2.9	0.18		**0.049**	0.93	**0.19**	**101**		**2.6**	1.3	6	
28-Sep-23	4504			94.1	0.007	0.7	2.2	0.43		**0.075**	0.87	<0.01	**219**		**8.4**	1.4	9	
22-Apr-24	4575			93	0.013	0.5	2.4	0.15		**0.032**	0.36	0.02	38		**1.1**	0.9	9	
02-Jul-24	4627	<0.5	4	115	<0.1	2	3	0.1	<1	<5	0.7	<0.1	**204**	<0.5	**2.9**	<1	15	
25-Sep-24	4627	0.8	3	115	<0.005	0.7	3.8	0.32	1	**0.034**	0.88	0.06	**132**	<0.5	**8.3**	1.2	11	

TOTAL SAMPLES	2	19	93	93	93	93	94	8	111	87	90	93	7	93	93	93	25
AVERAGE 2024	<0.5	4	108	<0.005	1	3.1	0.19	<1	<5	0.65	<0.1	125	<0.5	4.10	<1	12	

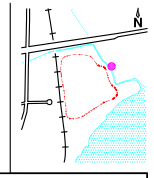
all Concentrations ug/L unless otherwise indicated

Anomalies shown in *Italics* / Exceedence in **BOLD**

S-2

WWTC EFFLUENT

SURFACE WATER STATION



DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P	Se	Ag	Al	Be	Co	Ni	Zn	TDS
										mg/L								mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
27-Apr-15	2956		1.1	50	0.04	<2	3.9	0.26		**0.06**	<1	<0.02	**210**		**1.4**	4.5	**23**	695
17-Jul-15	3018		0.9	71	0.22	<2	3.3	1.04		**0.10**	<1	0.07	**200**		**1.5**	5.2	**40**	683
24-Sep-15	3075		0.8	55	<0.02	<2	1.9	0.28		**0.09**	<1	<0.02	**240**		**3.3**	2.5	18	725
02-May-16	3147		0.5	50	0.03	<2	3.4	0.24		**0.10**	<1	<0.02	**170**		0.4	3.6	19	731
13-Jul-16	3241		0.7	56	<0.02	<2	1.9	0.32		**0.10**	<1	<0.02	**390**		**7.7**	3.9	16	675
05-Oct-16	3257		0.7	55	<0.02	<2	1.5	0.37		**0.12**	<1	<0.02	**130**		0.8	3.6	20	636
18-Apr-17	3363		1.4	41	0.025	<1	2.9	0.12		**0.07**	<1	<0.02	**170**		0.4	2.8	15	680
13-Jul-17	3379		0.9	69	<0.014	<2	1.3	0.24	<10	**0.06**	<1	<0.02	**150**		**1.2**	3.4	13	614
12-Oct-17	3436		1.0	69	0.019	<2	2.1	0.28		**0.09**	<1	<0.02	**200**		**4.6**	3.4	16	535
07-May-18	3556		0.7	57.8	0.013	0.19	1.92	0.08		**0.04**	0.29	<0.05	**236**		0.645	0.9	14	
11-Jul-18	3559		0.6	65.4	0.011	0.2	1.16	0.27		**0.06**	0.19	<0.05	68		**1.433**	1.1	18	
12-Oct-18	3636		0.9	75.4	0.012	0.71	2.05	0.62		**0.11**	0.21	<0.05	**104**		**7.81**	1.4	15	
16-Apr-19	3682		1.7	70.2	<0.003	0.19	2.1	0.11		**0.08**	0.46	<0.05	**280**		**1.16**	1.3	10	
11-Jul-19	3734		0.9	72.9	<0.003	0.27	1.6	0.2		**0.07**	0.19	<0.05	**243**		**4.09**	1.2	15	
24-Oct-19	3790		0.8	58.7	0.004	0.12	1.7	0.22		**0.10**	0.22	<0.05	**341**		**1.21**	0.4	13	
27-Apr-20	3902		0.6	66.7	0.012	0.49	2.2	0.14		**0.04**	0.2	<0.05	**367**		**1.25**	1.1	18	
15-Jul-20	3954			56.4	0.012	0.34	3.8	0.18		**0.17**	0.17	<0.05	**417**		**1.69**	1.6	20	
14-Oct-20	3998		0.8	59.6	0.019	0.58	2	0.19		**0.05**	0.16	<0.05	**154**		**4.55**	1.4	**25**	
16-Apr-21	4070		2.5	71.8	0.009	0.68	4	0.4		**0.22**	0.36	<0.05	**944**		**14.3**	1.5	18	
06-Jul-21	4134		1.1	57.2	0.006	0.35	1.3	0.45		**0.06**	0.19	<0.05	**388**		**10.4**	1.3	13	
15-Oct-21	4202		2.0	59.6	0.014	0.37	2	0.36		**0.16**	0.15	<0.05	**630**		**4.37**	1.3	**22**	
25-Apr-22	4247		1.6	60.93	0.004	0.21	2.5	0.25		<0.03	0.27	<0.05	**251**		**1.045**	1.4	12	
05-Jul-22	4272		0.6	57.4	0.005	0.29	2	0.26		**0.05**	0.16	0.08	**471**		**11.7**	1.3	13	694
29-Sep-22	4328		0.8	58.5	0.027	0.47	1.9	0.28		**0.08**	0.33	<0.05	**311**		**6.11**	1.1	15	
25-Apr-23	4398		1	62	<0.02	3	2.8	0.17		**0.067**	<1	<0.1	**320**		**4.4**	<10	12	
05-Jul-23	4450		3	86.1	0.008	0.7	3.6	0.22		**0.067**	1.2	0.06	**205**		**5.7**	2.9	11	
27-Sep-23	4505		<1	68.1	0.006	0.7	2.8	0.41		**0.112**	0.75	<0.01	**340**		**9.4**	1.6	13	
22-Apr-24	4576		1.9	76.8	0.011	0.5	3.4	0.2		**0.036**	0.58	0.01	**81**		**2.4**	1.4	16	
04-Jul-24	4628	1.5	5	93	<0.005	1.2	4.4	0.2	2	**0.092**	1	<0.01	**280**	<0.5	**105**	2.8	11	
25-Sep-24	4628	1.2	4	66	<0.1	<1	3	0.2	2	**6.70**	0.4	<0.1	71	<0.5	**13.7**	<1	16	

TOTAL SAMPLES	2	80	114	115	113	114	115	9	134	107	110	114	7	114	114	114	32
AVERAGE 2024	1.4	4	79	<0.1	<1	3.6	0.2	2	2.276	1	<0.1	144	<0.5	40	1.4	14	

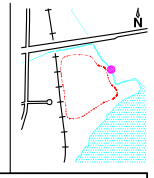
all Concentrations ug/L unless otherwise indicated

Anomalies shown in *Italics* / Exceedence in **BOLD**

S-3

BEN'S DITCH

SURFACE WATER STATION



DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P	Se	Ag	Al	Be	Co	Ni	Zn	TDS
										mg/L								mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
27-Apr-15	2957	0.4		63	0.09	<2	**6.7**	0.37	<10	**0.05**	<1	<0.02	**100**		**1.1**	4.6	**27**	658
17-Jul-15	3019			53	0.03	<2	1.1	0.46		**0.07**	<1	0.04	**150**		**1.3**	7.8	18	654
24-Sep-15	3076			73	0.02	<2	2.2	0.6		**0.09**	<1	0.03	**220**		**2.4**	2.8	15	638
02-May-16	3148			71	0.02	<2	2.6	0.21		**0.08**	<1	<0.02	**120**		0.3	3.5	12	627
13-Jul-16	3242			68	<0.02	<2	1.7	0.37		**0.10**	<1	<0.02	**390**		**7**	4	14	655
05-Oct-16	3258			82	0.03	<2	1.5	0.65		**0.09**	<1	<0.02	**150**		0.9	4	16	590
18-Apr-17	3364			58	0.026	<1	2.6	0.13		**0.05**	<1	<0.02	**130**		0.3	3.5	11	607
13-Jul-17	3380			91	<0.014	<2	1.8	0.58	<10	**0.11**	<1	0.03	**110**		**1.1**	3.2	**37**	540
12-Oct-17	3437			92	<0.014	<2	1.4	0.25		**0.05**	<1	<0.02	**120**		**2**	3	9	470
07-May-18	3557			82.2	0.01	0.35	1.33	0.06		<0.03	0.23	<0.05	**127**		0.361	0.7	9	
11-Jul-18	3560			76.3	0.008	0.24	1.08	0.27		**0.05**	0.18	<0.05	**95**		**1.433**	1.1	18	
12-Oct-18	3637			105	0.023	1.51	2.59	1.17		**0.15**	0.17	<0.05	**76**		**4.46**	1.2	13	
16-Apr-19	3683			71.7	0.003	0.17	2.4	0.17		**0.08**	0.52	<0.05	**265**		**1.12**	1.3	11	
11-Jul-19	3735			81.1	0.004	0.45	1.3	0.2		**0.08**	0.19	<0.05	**175**		**3.13**	1	13	
24-Oct-19	3791			83.8	0.058	2.02	**7.4**	2.67		**0.10**	0.28	**0.13**	**120**		**1.68**	1.1	**27**	
27-Apr-20	3903			73.3	0.006	0.37	1.7	0.17		**0.04**	0.18	<0.05	**226**		0.805	0.7	12	
15-Jul-20	3955			74.8	0.021	0.53	3.8	0.29		**0.17**	0.19	<0.05	**419**		**1.71**	1.6	19	
14-Oct-20	3999			67.8	0.056	11.4	3.3	1.11		**0.06**	0.15	<0.05	**191**		**3.64**	6.3	**25**	
16-Apr-21	4071			75.6	0.036	0.82	4.1	0.7		**0.21**	0.37	<0.05	**903**		**12.7**	5.8	17	
06-Jul-21	4135			81.8	0.004	0.54	1.2	0.24		**0.05**	0.12	<0.05	65		0.111	0.5	5	
15-Oct-21	4203			94.2	0.013	0.43	1.5	0.35		**0.11**	0.16	<0.05	**401**		**2.76**	0.9	14	
25-Apr-22	4249			68.06	0.008	0.31	1.8	0.28		<0.03	0.27	<0.05	**165**		0.581	1	9	
05-Jul-22	4273			63.9	<0.003	0.23	2	0.28		**0.05**	0.18	0.1	**440**		**10.3**	1.2	12	689
29-Sep-22	4329			83.4	0.012	0.46	1.7	0.33		**0.07**	0.17	<0.05	**251**		**4.41**	1	11	
25-Apr-23	4399			64	<0.02	3	2.6	0.15		**0.066**	<1	<0.1	**290**		**4**	<10	11	
05-Jul-23	4451			99.5	<0.005	0.6	3.3	0.18		**0.056**	1.03	0.03	**137**		**4**	1.4	8	
27-Sep-23	4506			78.8	0.009	0.7	2.8	0.46		**0.143**	0.8	<0.01	**296**		**7.4**	1.5	16	
22-Apr-24	4577			89.7	0.016	0.5	4.6	0.19		**0.038**	0.44	<0.01	**140**		**1.7**	1.4	14	
04-Jul-24	4629	1.3	4	105	<0.005	1.2	4.5	0.26	7	**0.075**	0.6	<0.01	**192**	<0.5	**86.9**	2.6	10	
25-Sep-24	4629	0.8	4	86	<0.1	<1	3	0.2	2	**6.40**	0.6	<0.1	56	<0.5	**9.9**	<1	14	

TOTAL SAMPLES	24	20	113	114	113	114	115	31	131	107	110	114	7	114	114	114	32
AVERAGE 2024	1.1	4	94	<0.1	<1	4.0	0.22	5	2.171	0.5	<0.1	129	<0.5	32.83	1.3	13	

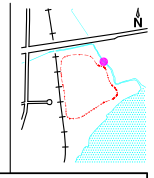
all Concentrations ug/L unless otherwise indicated

Anomalies shown in *Italics* / Exceedence in **BOLD**

S-4

BEN'S DITCH

SURFACE WATER STATION



DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P	Se	Ag	Al	Be	Co	Ni	Zn	TDS
										mg/L								mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
27-Apr-15	2958			99	0.03	<2	1.3	0.06		0.02	<1	<0.02	**160**		0.1	3.3	7	479
17-Jul-15	3020			144	0.08	<2	1.5	0.91		**0.05**	<1	0.04	30		<0.1	3.7	13	477
25-Sep-15	3077			130	<0.02	<2	0.7	0.13		**0.04**	<1	<0.02	60		0.1	2.2	<5	455
02-May-16	3149			96	<0.02	<2	1.6	0.1		0.02	<1	<0.02	40		<0.1	3.1	7	468
13-Jul-16	3243			133	<0.02	<2	0.6	0.04		**0.04**	<1	<0.02	40		<0.1	3.1	10	478
05-Oct-16	3259			151	<0.02	<2	0.5	0.22		**0.03**	<1	<0.02	40		<0.1	3.5	<5	495
18-Apr-17	3365			87	<0.014	<1	0.7	0.05		0.02	<1	<0.02	40		<0.1	2.3	<5	438
13-Jul-17	3381			117	0.139	<2	**6.2**	0.92	<10	**0.04**	<1	<0.02	60		0.3	5	**25**	345
12-Oct-17	3438			116	<0.014	<2	0.9	0.27		0.02	<1	<0.02	**80**		<0.1	2.5	<5	423
07-May-18	3506			105	0.007	0.15	1.36	0.02		<0.03	0.16	<0.05	9		0.108	0.6	4	
11-Jul-18	3561			124	0.006	0.26	0.63	0.24		**0.04**	0.12	<0.05	47		0.086	0.4	4	
12-Oct-18	3536			146	0.011	0.29	1.11	0.3		**0.05**	0.16	<0.05	43		0.195	0.6	4	
16-Apr-19	3684			78.9	0.003	0.18	0.8	0.06		<0.03	0.14	<0.05	18		0.106	0.4	3	
11-Jul-19	3736			122	<0.003	0.3	0.9	0.35		**0.06**	0.16	<0.05	61		0.101	0.4	4	
25-Oct-19	3792			111	0.006	0.28	0.8	0.49		**0.06**	0.14	<0.05	6		0.146	<0.1	5	
28-Apr-20	3904			105	0.008	0.27	0.6	0.16		**0.03**	0.14	<0.05	36		0.083	0.2	2	
15-Jul-20	3956			127	<0.003	0.23	0.6	0.1		**0.03**	0.11	<0.05	22		0.078	0.3	<2	
14-Oct-20	4000			111	0.015	0.7	0.8	0.26		<0.03	0.15	<0.05	52		0.158	0.6	4	
16-Apr-21	4072			110	0.004	1.09	0.9	0.16		<0.03	0.2	<0.05	36		0.1	0.5	4	
06-Jul-21	4136			71.8	0.011	0.57	1.6	0.53		**0.06**	0.17	<0.05	**291**		**6.09**	1	10	
15-Oct-21	4204			145	<0.003	0.36	0.4	0.11		<0.03	0.11	<0.05	27		0.089	0.2	<2	
25-Apr-22	4250			92.42	0.008	0.34	1	0.28		<0.03	0.11	<0.05	46		0.123	0.5	10	
05-Jul-22	4274			125	<0.003	0.23	0.6	0.16		<0.03	0.18	0.08	50		0.136	0.4	3	593
29-Sep-22	4330			127	0.006	0.51	0.8	0.37		**0.03**	0.09	<0.05	**89**		0.151	0.4	4	
25-Apr-23	4400			92	<0.02	3	1.2	0.04		0.017	<1	<0.1	40		0.2	<10	<5	
05-Jul-23	4452			141	0.006	0.6	2.3	0.06		**0.04**	0.62	0.02	15		0.3	1.4	4	
28-Sep-23	4507			141	0.007	0.8	1.6	0.3		**0.052**	0.57	<0.01	53		0.3	1.4	3	
22-Apr-24	4578			106	0.008	0.5	1.6	0.09		**0.024**	0.17	0.01	22		0.2	0.7	4	
04-Jul-24	4630	<0.5	4	140	<0.005	1.1	2.8	0.35	<1	**0.046**	0.3	<0.01	4	<0.5	0.4	1.4	5	
26-Sep-24	4630	<0.5	3	146	<0.1	<1	2	<0.1	<1	<5	<0.2	<0.1	5	<0.5	0.2	<1	4	

TOTAL SAMPLES	2	19	112	113	113	113	114	9	131	106	109	113	7	113	113	113	32
AVERAGE 2024	<0.5	4	131	<0.1	<1	2.1	0.15	<1	<5	<0.2	<0.1	10	<0.5	0.3	<1	4	

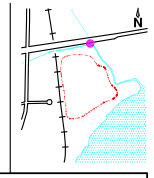
all Concentrations ug/L unless otherwise indicated

Anomalies shown in *Italics* / Exceedence in **BOLD**

S-6

MILL CREEK

SURFACE WATER STATION



DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P	Se	Ag	Al	Be	Co	Ni	Zn	TDS
										mg/L								mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
27-Apr-15	2959			87	<0.02	<2	2.1	0.04		0.02	<1	<0.02	40		0.1	2.5	20	383
16-Jul-15	3021			127	0.08	<2	1.5	0.57		**0.04**	<1	0.04	50		<0.1	4	<5	424
25-Sep-15	3078			125	<0.02	<2	0.7	0.31		**0.05**	<1	<0.02	**100**		0.2	1.9	<5	404
02-May-16	3150			85	<0.02	<2	0.7	0.27		0.01	<1	<0.02	30		<0.1	2.5	<5	401
13-Jul-16	3244			155	<0.02	<2	0.4	0.12		**0.07**	<1	<0.02	40		<0.1	3.2	<5	455
05-Oct-16	3260			135	<0.02	<2	0.3	0.19		**0.04**	<1	<0.02	40		<0.1	3.1	<5	460
18-Apr-17	3366			81	<0.014	<1	0.3	<0.02		0.02	<1	<0.02	30		<0.1	2.2	<5	370
13-Jul-17	3382			111	0.144	<2	**6.1**	0.54	10	**0.05**	<1	<0.02	40		0.2	5.5	**22**	368
12-Oct-17	3439			114	<0.014	<2	0.8	0.33		**0.03**	<1	<0.02	70		0.1	2.7	<5	432
07-May-18	3507			105	<0.003	0.18	0.46	<0.01		<0.03	0.07	<0.05	17		0.088	0.2	3	
12-Jul-18	3562			140	0.005	0.21	0.42	0.11		**0.05**	0.08	<0.05	13		0.069	0.2	2	
11-Oct-18	3639			136	0.009	2.49	0.65	0.31		**0.05**	0.11	<0.05	<1		0.137	0.4	3	
17-Apr-19	3685			78.8	<0.003	0.1	0.3	<0.01		<0.03	0.1	<0.05	15		0.061	0.2	<2	
11-Jul-19	3737			123	<0.003	0.24	0.5	0.07		**0.04**	0.07	<0.05	13		0.064	0.2	3	
24-Oct-19	3793			108	<0.003	0.13	<0.2	0.09		**0.04**	0.08	<0.05	5		0.087	<0.1	3	
27-Apr-20	3905			106	<0.003	0.32	0.3	0.06		<0.03	0.06	<0.05	21		0.046	<0.1	<2	
15-Jul-20	3957			131	0.005	0.25	0.8	0.11		**0.04**	0.13	<0.05	47		0.093	0.3	<2	
14-Oct-20	4001			117	0.008	0.67	0.7	0.18		<0.03	0.09	<0.05	**104**		0.158	0.4	4	
06-May-21	4073			95.1	<0.003	0.76	0.3	0.11		<0.03	0.08	<0.05	30		0.062	0.2	3	
06-Jul-21	4137			103	0.006	0.16	0.6	0.09		<0.03	0.11	<0.05	37		0.082	0.3	<2	
12-Oct-21	4205			160	0.027	0.66	1.5	1.27		<0.03	0.1	<0.05	**280**		0.262	<0.1	11	
25-Apr-22	4051			86.64	0.01	0.37	0.5	0.23		<0.03	0.12	<0.05	32		0.063	0.3	<2	
05-Jul-22	4275			140	0.009	0.27	0.3	<0.09		<0.03	0.09	0.08	13		0.049	0.1	<2	547
29-Sep-22	4331			131	0.025	0.54	0.6	0.33		<0.03	0.27	<0.05	**139**		0.167	0.3	4	
24-Apr-23	4401			82	<0.02	<2	0.9	0.08		**0.054**	<1	<0.1	40		0.2	<10	<5	
05-Jul-23	4453			146	<0.005	0.6	2.3	0.06		**0.033**	0.59	0.02	19		0.3	0.9	8	
28-Sep-23	4508			142	0.011	0.8	1.7	0.36		**0.116**	0.37	<0.01	**125**		0.3	<0.5	4	
23-Apr-24	4579			97.5	0.005	0.4	0.8	<0.05		0.018	0.33	<0.01	20		0.2	<0.5	3	
04-Jul-24	4632	<0.5	4	146	<0.1	2	1	<0.1	<1	<5	0.4	<0.1	4	<0.5	0.3	2	6	
25-Sep-24	4632	<0.5	3	159	0.009	0.9	2	0.19	<1	**0.022**	0.94	<0.01	**82**	<0.5	0.2	1.1	6	
TOTAL SAMPLES		2	20	112	113	112	113	114	9	130	106	109	113	7	113	113	113	32
AVERAGE 2024		<0.5	4	134	<0.1	1	1	<0.1	<1	<5	0.56	<0.01	35	<0.5	0.2	1	5	

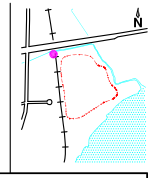
all Concentrations ug/L unless otherwise indicated

Anomalies shown in *Italics* / Exceedence in **BOLD**

S-7

MILL CREEK

SURFACE WATER STATION



DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P	Se	Ag	Al	Be	Co	Ni	Zn	TDS
										mg/L								mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
27-Apr-15	2960			94	<0.02	<2	1.1	<0.02		0.02	<1	<0.02	30		<0.1	2.2	11	386
17-Jul-15	3022			141	<0.02	<2	<0.1	0.12		0.02	<1	<0.02	50		<0.1	2.5	<5	432
25-Sep-15	3079			119	0.03	<2	0.7	0.03		**0.03**	<1	<0.02	30		0.1	2.1	7	404
03-May-16	3151			85	<0.02	<2	0.7	0.05		0.01	<1	<0.02	30		<0.1	2.4	<5	383
13-Jul-16	3245			146	<0.02	<2	0.5	0.12		**0.04**	<1	<0.02	40		<0.1	3.2	<5	461
05-Oct-16	3261			148	<0.02	<2	0.5	0.34		**0.04**	<1	<0.02	40		0.1	3.7	<5	466
18-Apr-17	3367			79	<0.014	<1	0.3	0.04		0.02	<1	<0.02	40		<0.1	2.1	<5	376
12-Jul-17	3383			106	0.129	<2	**5.1**	0.49	<10	**0.04**	<1	<0.02	40		0.3	4.4	6	370
13-Oct-17	3440			110	<0.014	<2	0.5	0.09		**0.03**	<1	<0.02	60		<0.1	2.5	<5	423
07-May-18	3508			96.3	0.003	0.21	0.36	0.03		<0.03	0.07	<0.05	4		0.067	0.1	3	
11-Jul-18	3563			144	0.012	0.43	0.72	0.27		**0.03**	0.08	<0.05	17		0.099	0.3	4	
11-Oct-18	3640			136	0.005	2.03	0.31	0.09		0.02	0.09	<0.05	<1		0.095	0.4	2	
17-Apr-19	3686			79.8	0.003	0.11	0.3	<0.01		<0.03	0.07	<0.05	11		0.05	0.2	<2	
11-Jul-19	3738			122	<0.003	0.27	0.5	0.12		**0.04**	0.08	<0.05	42		0.076	0.1	4	
24-Oct-19	3794			107	0.004	0.11	0.3	0.06		**0.03**	0.07	<0.05	29		0.07	<0.1	4	
27-Apr-20	3906			106	0.004	0.32	0.3	0.04		<0.03	0.07	<0.05	19		0.046	0.1	<2	
15-Jul-20	3958			136	0.009	0.28	0.6	0.13		<0.03	0.16	<0.05	69		0.112	0.3	<2	
14-Oct-20	4002			120	0.006	0.37	0.5	<0.01		<0.03	0.08	<0.05	27		0.099	0.3	2	
30-Apr-21	4074			91.1	0.003	0.39	0.5	0.13		<0.03	0.11	<0.05	61		0.08	0.3	3	
06-Jul-21	4138			105	0.007	0.16	0.6	0.17		<0.03	0.09	<0.05	44		0.101	0.4	2	
12-Oct-21	4206			149	0.005	0.28	0.4	0.18		<0.03	0.09	<0.05	56		0.09	<0.1	3	
25-Apr-22	4052			87.89	0.003	0.4	0.6	0.34		<0.03	0.13	<0.05	69		0.077	0.3	3	
06-Jul-22	4276			131	0.009	0.22	0.4	0.11		<0.03	0.12	0.08	63		0.094	0.1	2	544
29-Sep-22	4332			127	0.017	0.4	0.4	0.13		<0.03	0.25	<0.05	63		0.141	0.3	<2	
24-Apr-23	4402			83	<0.02	<2	0.9	0.03		0.007	<1	<0.1	40		0.2	<10	**56**	
06-Jul-23	4454			145	0.008	0.6	2.3	0.09		**0.022**	0.55	0.02	42		0.3	0.8	2	
02-Oct-23	4509			143	0.008	0.5	2.4	0.14		**0.04**	0.4	<0.01	39		0.3	0.9	3	
22-Apr-24	4580			99.1	0.008	0.5	1.2	0.07		**0.021**	0.2	<0.01	4		0.2	<0.5	3	
03-Jul-24	4632	<0.5	4	148	<0.1	2	1	<0.1	<1	<5	0.4	<0.1	6	<0.5	0.3	1	5	
26-Sep-24	4632	<0.5	3	160	<0.005	0.6	1.8	0.12	<1	0.007	0.81	<0.01	46	<0.5	0.2	0.6	3	
TOTAL SAMPLES		2	21	113	114	113	114	115	9	134	107	110	114	7	114	114	114	32
AVERAGE 2024		<0.5	4	136	<0.005	1	1.3	<0.1	<1	<5	0.47	<0.01	19	<0.5	0.2	1	4	

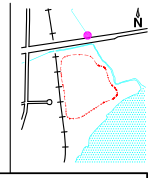
all Concentrations ug/L unless otherwise indicated

Anomalies shown in *Italics* / Exceedence in **BOLD**

S-8

BEN'S DITCH

SURFACE WATER STATION



DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P	Se	Ag	Al	Be	Co	Ni	Zn	TDS
										mg/L								mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
27-Apr-15	2961			109	<0.02	<2	2.4	0.14		**0.03**	<1	<0.02	40		0.2	4.2	10	670
16-Jul-15	3023			132	<0.02	<2	1.2	0.41		**0.03**	<1	0.02	40		<0.1	3.5	<5	690
25-Sep-15	3080			143	0.09	<2	2.4	0.41		**0.03**	<1	<0.02	30		0.2	3.7	11	658
02-May-16	3152			125	<0.02	<2	2.5	0.22		0.02	<1	<0.02	40		0.2	4.1	7	649
13-Jul-16	3246			136	<0.02	<2	1.1	0.18		**0.04**	<1	<0.02	30		<0.1	3.8	<5	584
05-Oct-16	3262			145	<0.02	<2	1.4	0.53		**0.03**	<1	<0.02	**80**		0.1	4.4	<5	655
18-Apr-17	3368			112	0.021	<1	2.9	0.49		**0.04**	<1	<0.02	60		0.1	3.5	14	654
13-Jul-17	3384			74	0.316	<2	**6.8**	1.28	<10	**0.07**	<1	<0.02	70		0.3	6.4	14	333
12-Oct-17	3441			124	0.045	<2	**5.2**	4.37		**0.13**	<1	0.03	**110**		0.5	3.6	**49**	470
07-May-18	3509			112	0.003	0.24	1.98	0.1		<0.03	0.24	<0.05	9		0.114	0.5	6	
11-Jul-18	3564			130	0.007	0.24	1.06	0.34		**0.04**	0.27	<0.05	19		0.115	0.7	4	
11-Oct-18	3641			183	0.026	1.05	1.89	1.63		**0.08**	0.26	<0.05	<1		0.414	1.5	11	
17-Apr-19	3687			106	0.019	0.3	2.4	0.44		<0.03	0.54	<0.05	40		0.159	1	10	
11-Jul-19	3739			132	0.006	0.23	1.1	0.18		**0.04**	0.34	<0.05	10		0.094	0.5	3	
24-Oct-19	3795			130	0.01	0.37	1.4	0.96		**0.05**	0.21	<0.05	12		0.223	0.4	10	
27-Apr-20	3907			150	0.016	0.57	1.2	0.4		**0.03**	0.37	<0.05	55		0.167	0.6	5	
15-Jul-20	3959			58	0.011	0.6	2.6	0.49		<0.03	0.18	<0.05	**144**		0.145	0.9	6	
14-Oct-20	4003			145	0.014	0.75	2.2	1.1		**0.03**	0.25	<0.05	**115**		0.335	1.5	9	
06-May-21	4075			119	0.014	0.55	1.7	0.66		**0.03**	0.26	<0.05	**106**		0.223	1.3	10	
06-Jul-21	4139			65.9	0.02	1.53	3.3	1.77		**0.07**	0.18	<0.05	**316**		0.246	1.1	14	
12-Oct-21	4207			154	0.024	0.46	2.1	1.26		**0.04**	0.22	<0.05	**112**		0.217	0.3	11	
25-Apr-22	4053			86.92	0.025	1.07	2.6	0.54		<0.03	0.26	<0.05	**90**		0.16	0.9	13	
05-Jul-22	4277			110	0.007	0.94	2.5	0.42		<0.03	0.32	0.07	**97**		0.152	0.7	8	556
29-Sep-22	4333			119	0.029	0.95	2.1	1.65		**0.04**	0.17	<0.05	**249**		0.29	1	9	
24-Apr-23	4403			106	<0.02	<2	2.3	0.2		**0.036**	<1	<0.1	50		0.3	<10	<5	
05-Jul-23	4455			84.5	<0.005	0.8	3.3	0.09		**0.088**	0.91	0.02	10		0.3	1	5	
28-Sep-23	4510			201	0.114	3.5	**14.1**	**8.57**		**0.238**	0.66	0.02	**1360**		**1.2**	3.4	**41**	
23-Apr-24	4581			128	0.018	0.8	2.9	0.28		**0.031**	0.85	<0.01	34		0.3	1.3	7	
04-Jul-24	4633	<0.5	4	133	<0.005	1.3	3.6	0.18	<1	**0.064**	0.42	<0.01	7	<0.5	0.3	1.6	7	
25-Sep-24	4633	0.6	2	120	<0.1	<1	4.1	0.1	<1	<5	0.3	<0.01	5	<0.5	0.2	<1	9	

TOTAL SAMPLES	2	20	113	114	113	114	115	9	133	107	110	114	7	114	114	114	32
AVERAGE 2024	<0.5	3	127	<0.1	<1	3.5	0.19	<1	<5	0.52	<0.01	15	<0.5	0.3	<1	8	

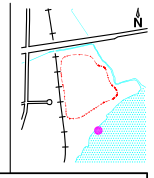
all Concentrations ug/L unless otherwise indicated

Anomalies shown in *Italics* / Exceedence in **BOLD**

S-9

LAKE SIMCOE

SURFACE WATER STATION



DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P mg/L	Se	Ag	Al	Be	Co	Ni	Zn	TDS mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
22-Oct-08	810223	<0.5		31	<0.1	<2	<2	<0.1	<1	**0.03**	1	<0.1	30		<0.5	<10	<5	208
16-Apr-09	0910933	<0.5		31	<0.1	<2	<2	<0.1	<0.5	0.01	<1	<0.1	40		<0.5	<10	<5	233
15-Jul-09	0921633	<0.5		31	<0.1	<2	<2	<0.1	<0.5	0.01	<1	<0.1	20		<0.5	<10	<5	218
21-Oct-09	0933462	<0.5		36	<0.1	<2	<2	0.4	<0.5	**0.07**	<1	**0.3**	**110**		0.8	<10	<5	228
14-Apr-10	2015	<0.5		30	<0.1	<2	<2	<0.1	<0.5	<0.01	<1	<0.1	20		<0.5	<10	7	
14-Jul-10	2066	<0.5		28	<0.1	<2	<2	<0.1	<0.5	**0.03**	<1	<0.1	<10		<0.5	<10	<5	
03-Nov-10	2170	<0.5		42	<0.1	<2	<2	1.3	1.4	**0.14**	<1	<0.1	**160**		<0.5	<10	<5	
27-Apr-11	2197	<0.1		39	<0.02	<2	<2	0.04	0.4	<0.01	<1	<0.02	**90**		<0.1	<10	10	
09-Aug-11	2285	0.5		42	<0.02	2	<2	0.35	0.4	**0.16**	<1	<0.02	**150**		0.1	<10	<5	
11-Oct-11	2345	0.1		35	<0.02	<2	<2	0.13	0.5	**0.04**	1	<0.02	30		<0.1	<10	<5	
02-May-12	2412	0.1		33	<0.02	<2	<2	<1	0.3	**0.07**	<1	<0.1	**80**		<0.1	<10	<5	
18-Jul-12	2430	<3		28	<0.1	<3	<2	<1	<1	**0.08**	<4	<0.1	16		<0.5	<3	<5	
31-Oct-12	2504	<3		28	<0.1	4	<2	<1	<1	<0.02	<4	<0.1	11		<0.5	<3	<5	
02-May-13	2574	<15		37	<20	<2	<2	<10	<7	<0.02	<25	<2	32		<2	<5	<5	
24-Jul-13	2665	<0.1		32	<0.02	<2	<2	<0.02	0.3	**0.52**	<1	<0.02	40		<0.1	<10	<5	
24-Oct-13	2684	<0.1		42	<0.02	<2	4	0.06	0.3	0.01	<1	<0.02	20		<0.1	<10	**93**	
05-May-14	2760	<0.1		28	<0.02	<0.2	4	0.18	0.5	**0.04**	<1	<0.02	40		<0.1	1.4	8	
18-Jul-14	2818	0.2		33	<0.02	<2	1.3	0.08	0.5	**0.13**	<1	<0.02	<10		<0.1	<10	13	
26-Sep-14	2880	0.3		34	0.05	<2	1	0.09	0.6	**0.09**	<1	<0.02	30		0.1	2.2	<5	
28-Apr-15	2962	0.1		33	0.04	<2	2.1	0.22	<10	**0.04**	<1	<0.02	20		<0.1	2.1	9	250
16-Jul-15	3024			35	<0.02	<2	0.1	0.04		**0.03**	<1	<0.02	30		0.1	1.9	<5	234
12-Jul-16	3247			29	<0.02	<2	0.3	<0.02		**0.03**	<1	<0.02	30		<0.1	1.6	<5	208
12-Jul-17	3385			27	0.131	<2	**5.3**	0.26	<10	**0.03**	<1	<0.02	20		0.1	3.7	<5	214
12-Jul-18	3565			26.7	0.003	0.12	0.51	0.03		0.02	0.07	<0.05	7		0.042	0.3	<2	
11-Jul-19	3740			25.8	<0.003	0.18	0.5	0.03		<0.03	0.08	<0.05	9		0.036	0.2	3	
21-Jul-20	3960			27.9	<0.003	0.16	0.6	0.02		<0.03	0.06	<0.05	6		0.043	0.3	<2	
21-Jul-21	4140			26.2	<0.003	0.12	<0.2	<0.09		<0.03	0.09	<0.05	3		0.06	<0.1	2	
04-Jul-22	4278			29.4	0.004	<0.08	0.4	<0.09		<0.03	0.07	0.05	3		0.022	0.2	<2	237
04-Jul-23	4456			33.8	<0.005	0.4	1.3	<0.05		0.014	0.29	0.01	13		0.2	<0.5	1	
02-Jul-24	4634	<0.5	2	37	<0.005	0.7	1.6	<0.05	<1	0.007	0.2	<0.01	17	<0.5	0.3	<0.5	5	
TOTAL SAMPLES		23	19	93	94	93	94	95	30	113	87	90	94	6	94	94	94	27
AVERAGE 2024																		

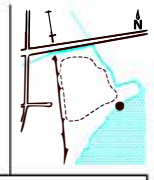
all Concentrations ug/L unless otherwise indicated

Anomalies shown in *Italics* / Exceedence in **BOLD**

S-11

LAKE SIMCOE

SURFACE WATER STATION



DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P	Se	Ag	Al	Be	Co	Ni	Zn	TDS
										mg/L								mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
18-Jul-14	2820			53	<0.02	<2	1.2	0.1		**0.03**	<1	<0.02	20		0.5	<10	10	
16-Jul-15	3025			37	<0.02	<2	0.3	0.07		**0.04**	<1	<0.02	30		0.1	1.6	<5	249
25-Sep-15	3081			48	<0.02	7	1.1	0.36		**0.24**	<1	<0.02	**90**		0.6	1.9	6	337
03-May-16	3153			30	<0.02	<2	1	0.29		**0.06**	<1	<0.02	30		<0.1	1.7	<5	232
12-Jul-16	3248			30	<0.02	<2	0.5	0.16		**0.05**	<1	<0.02	40		<0.1	1.7	<5	203
06-Oct-16	3263			38	<0.02	<2	0.5	0.15		**0.03**	<1	<0.02	30		<0.1	2.5	<5	219
19-Apr-17	3369			43	0.045	<1	2.1	1.04		**0.13**	<1	0.04	60		0.4	2.2	12	293
12-Jul-17	3386			42	0.126	<2	5	0.32	<10	**0.03**	<1	<0.02	30		0.2	3.6	<5	275
13-Oct-17	3442			52	<0.014	<2	0.9	0.52		**0.10**	<1	<0.02	40		0.3	1.7	**31**	199
07-May-18	3510			28.4	0.008	0.4	0.72	0.1		<0.03	0.07	<0.05	15		0.079	0.3	5	
12-Jul-18	3566			31.9	0.005	0.29	1.27	0.26		**0.14**	0.09	<0.05	49		0.168	0.4	4	
12-Oct-18	3642			38.3	0.011	1.6	0.71	0.33		**0.12**	0.10	<0.05	<1		0.316	0.5	3	
17-Apr-19	3688			27	0.021	0.11	0.6	0.03		<0.03	0.14	<0.05	30		0.114	0.3	<2	
11-Jul-19	3741			35	0.005	0.27	0.7	0.16		<0.03	0.08	<0.05	40		0.091	0.3	3	
24-Oct-19	3796			33.5	0.008	0.17	0.6	0.16		<0.03	0.08	<0.05	74		0.113	<0.1	2	
28-Apr-20	3908			84.6	0.056	0.93	2.7	1.34		**0.14**	0.15	<0.05	**471**		**1.33**	0.9	11	
21-Jul-20	3961			43.9	0.005	0.24	0.9	0.07		<0.03	0.08	<0.05	36		0.211	0.5	3	
14-Oct-20	4004			32.6	0.018	0.23	1	0.15		<0.03	0.08	<0.05	44		0.118	0.4	3	
30-Apr-21	4076			39.8	0.011	0.28	1	0.13		<0.03	0.09	<0.05	69		0.7	0.5	3	
21-Jul-21	4141			28.1	<0.003	0.26	<0.2	<0.09		<0.03	0.09	<0.05	4		0.081	<0.1	<2	
12-Oct-21	4208			58.6	0.01	0.25	0.8	0.3		<0.03	0.09	<0.05	**125**		0.358	<0.1	4	
25-Apr-22	4254			50.38	0.019	0.37	1.1	0.5		<0.03	0.14	<0.05	**112**		0.295	0.6	4	
04-Jul-22	4279			29.3	<0.003	<0.08	0.5	<0.09		<0.03	0.08	0.06	14		0.133	0.2	<2	250
29-Sep-22	4334			32.7	0.008	0.31	0.5	0.12		<0.03	<0.04	<0.05	49		0.103	0.3	<2	
25-Apr-23	4404			34	<0.02	<2	0.8	0.03		**0.088**	<1	<0.1	30		0.1	<10	<5	
04-Jul-23	4457			46.1	0.005	0.5	1.7	0.06		0.016	0.47	<0.01	13		0.4	<0.5	2	
03-Oct-23	4511			63.9	0.006	0.7	3	0.23		**0.118**	0.61	<0.01	**148**		**2.1**	0.9	6	
23-Apr-24	4582			45.3	0.013	0.8	1.5	0.6		**0.128**	0.35	<0.01	**459**		0.5	0.9	4	
02-Jul-24	4635	<0.5	3	69	<0.1	0.8	2.1	0.1	<1	**0.074**	0.06	<0.01	**99**	<0.5	**1.3**	0.8	3	
26-Sep-24	4634	<0.5	1	35	<0.1	<1	<1	<0.1	<1	0.09	<0.2	<0.1	8	<0.5	0.3	<1	2	
TOTAL SAMPLES		2	20	93	94	93	94	95	9	110	88	90	94	7	94	94	94	25
AVERAGE 2024		<0.5	2	50	<0.1	<1	1.2	0.2	<1	3.067	<0.2	<0.1	189	<0.5	0.70	<1	3	

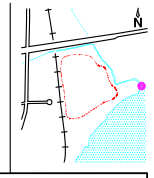
all Concentrations ug/L unless otherwise indicated

Anomalies shown in *Italics* / Exceedence in **BOLD**

S-14

LAKE SIMCOE

SURFACE WATER STATION



DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P	Se	Ag	Al	Be	Co	Ni	Zn	TDS
										mg/L								mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
13-Apr-99	101730		<2	30	<0.1	<10	5	<1		<0.01	<5	<0.1	<50		<2	<20	<20	
09-Aug-99	101731		<2	30	0.1	<10	<1	1		<0.01	<5	<0.1	<50		<2	<20	<20	
08-Nov-99	101732		<2	30	<0.1	<10	2	<1		<0.01	<5	<0.1	<50		<2	<20	<20	
17-Apr-00	101733		<2	30	<0.1	<10	<1	<1		<0.01	<5	<0.1	<50		<2	<20	<20	
08-Aug-00	101734		<2	20	<0.1	<10	<1	<1		<0.01	<5	<0.1	<50		<0.2	<20	<20	
30-Apr-01	101735			30	<0.1	<10	1	<1		<0.01	<5	<0.1	<50		<0.5	<20	<20	182
11-Jul-01	101736		<1	40	0.5	<10	<0.5	**16**		**0.04**	<1	0.1	<50		**1.0**	<20	20	186
10-Jul-02	101737		2	30	**1.1**	<10	4	**6**			<5	**0.9**	<50		**2.2**	20	20	187
15-Jul-03	102576		<1	28	<0.1	<2	<2	<0.5		<0.01	<1	<0.1	<5		<0.1	<10	<5	193
06-Jul-04	1198		2	39	**0.9**	<1	<2	**10**		**0.11**	<1	<5	15		0.2	<10	16	500
15-Aug-05	58153		<1	51	**1.3**	<2	<2	**15**		0.02	<1	<0.1	**80**		0.2	<10	**26**	
08-Aug-06	6883		1	31	0.1	<2	<2	2		**0.03**	0.4	<0.1	<10		<5	<10	7	
09-Aug-07	7893		<0.5	28	<0.1	<2	<2	<0.1		<0.01	<1	<0.1	<10		<0.5	<10	<5	196
16-Jul-08	87163		1	28	<0.1	<2	<2	<0.1		<0.01	<1	<0.1	<10		<0.5	<10	20	198
15-Jul-09	0921631		<0.5	28	<0.1	<2	<2	<0.1		<0.01	4	<0.1	<10		<0.5	<10	<5	207
14-Jul-10	2071		<0.5	25	<0.1	<2	<2	<0.1		<0.01	<1	<0.1	<10		<0.5	<10	<5	
09-Aug-11	2290		0.7	24	<0.02	<2	<2	0.04		0.01	<1	<0.02	60		<0.1	<10	<5	
18-Jul-12	2435		<3	27	<0.1	<3	<2	<1		**0.05**	<4	<0.1	11		<0.5	<3	<5	
24-Jul-13	2670		0.5	31	<0.02	<2	<2	<0.02		<0.01	<1	<0.02	20		<0.1	<10	<5	
18-Jul-14	2823		0.6	36	<0.02	<2	1.3	0.11		<0.01	<1	<0.02	<10		<0.1	<10	13	
16-Jul-15	3026		0.4	28	<0.02	<2	<0.1	<0.02		<0.01	<1	<0.02	20		<0.1	1.8	<5	214
12-Jul-16	3249		0.3	28	<0.02	<2	0.5	<0.02		<0.01	<1	<0.02	20		<0.1	1.7	<5	213
12-Jul-17	3387		0.5	25	0.353	<2	4.3	0.38	<10	<0.01	<1	<0.02	10		0.1	3	<5	195
12-Jul-18	3567		0.4	27.3	0.003	0.11	0.62	0.05		<0.01	0.07	<0.05	5		0.013	0.3	<2	
11-Jul-19	3742		0.4	27.2	<0.003	0.14	1	0.06		<0.03	0.09	<0.05	3		0.024	0.2	3	
21-Jul-20	3962		0.4	29	<0.003	0.24	0.6	<0.01		<0.03	0.06	<0.05	2		0.025	0.3	<2	
21-Jul-21	4142		0.4	28.1	<0.003	0.23	<0.2	<0.09		**0.04**	0.07	<0.05	2		0.077	0.1	<2	
04-Jul-22	4280		0.3	27.7	<0.003	0.24	0.5	<0.09		<0.03	0.09	<0.05	4		0.033	0.2	<2	242
04-Jul-23	4458		<1	31	0.005	0.5	1.1	<0.05		0.006	0.34	<0.01	4		0.1	<0.5	<1	
02-Jul-24	4636	<0.5	0.5	34	<0.005	0.7	1.4	<0.05	<1	0.003	<0.05	<0.01	10	<0.5	0.1	<0.5	14	

TOTAL SAMPLES	1	33	64	65	64	65	65	8	85	59	63	65	6	65	65	65	14
AVERAGE 2024																	

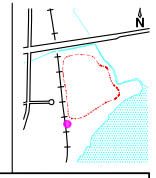
all Concentrations ug/L unless otherwise indicated

Anomalies shown in *Italics* / Exceedence in **BOLD**

S-18

CN RAIL DRAIN

SURFACE WATER STATION



DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P	Se	Ag	Al	Be	Co	Ni	Zn	TDS
										mg/L								mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
23-Oct-08	810233			234	<0.1	<2	<2	<0.1		0.02	6	<0.1	30		<0.5	<10	**102**	920
15-Apr-09	0910924			186	0.1	<2	<2	<0.1		0.02	4	<0.1	10		<0.5	<10	**101**	775
16-Jul-09	0921629			231	<0.1	<2	<2	2.1		0.02	8	<0.1	10		<0.5	<10	**53**	923
22-Oct-09	0933458			208	<0.1	<2	<2	0.3		0.02	<1	**0.4**	<10		**1.4**	<10	**44**	886
15-Apr-10	2020			209	<0.1	<2	<2	0.2		<0.01	<1	<0.1	<10		<0.5	<10	**36**	
15-Jul-10	2075			186	<0.1	<2	<2	<0.1		**0.03**	<1	<0.1	<10		<0.5	<10	19	
04-Nov-10	2175			241	0.1	<2	<2	0.3		0.02	1	<0.1	<10		<0.5	<10	**35**	
26-Apr-11	2202			180	0.13	<2	<2	0.24		0.01	<1	<0.02	50		<0.1	<10	**104**	
08-Aug-11	2294			193	0.1	<2	<2	0.21		**0.03**	1	<0.02	60		<0.1	<10	**42**	
12-Oct-11	2350			285	0.12	<2	<2	0.51		**0.03**	3	<0.02	40		0.4	<10	**42**	
04-May-12	2417			185	0.15	<2	<2	<1		0.01	1	<0.1	**220**		<0.1	<10	**104**	
18-Jul-12	2439			235	0.3	<3	3	<1		**0.05**	<4	<0.1	26		<0.5	4	**110**	
31-Oct-12	2509			124	<0.1	7	2	<1		**0.06**	<4	<0.1	23		<0.5	6	**61**	
02-May-13	2579			154	<20	<2	<2	<10		**0.03**	<25	<2	17		<2	<5	**116**	
25-Jul-13	2674			206	0.27	<2	<2	0.58		**0.04**	<1	<0.02	40		<0.1	<10	**229**	
25-Oct-13	2689			151	0.2	<2	**6**	0.2		**0.05**	1	<0.02	40		<0.1	<10	**201**	
06-May-14	2765			153	0.15	0.3	2.5	0.16		**0.04**	<1	<0.02	60		0.1	2.7	**75**	
17-Jul-14	2827			214	0.23	<2	2.2	0.3		**0.03**	<1	<0.02	20		<0.1	<10	**193**	
25-Sep-14	2885			186	0.26	<2	2.5	0.63		**0.04**	<1	<0.02	30		0.2	4.9	**184**	
27-Apr-15	2967			153	0.12	<2	3.2	0.12		0.02	<1	<0.02	30		<0.1	4.1	**95**	660
17-Jul-15	3027			214	0.27	<2	3.4	1.09		**0.03**	1	0.04	50		<0.1	4.7	**108**	826
13-Jul-16	3250			201	0.26	<2	2.8	2.06		**0.06**	<1	<0.02	50		<0.1	4.7	**131**	793
12-Jul-17	3388			167	0.069	<2	1.2	0.2	<10	**0.05**	<1	<0.02	40		0.3	3.7	**71**	669
11-Jul-18	3568			192	0.116	0.24	0.91	0.14		**0.05**	0.40	<0.05	7		0.163	0.5	**85**	
11-Jul-19	3743			205	0.213	0.43	1.3	0.33		**0.07**	0.45	<0.05	42		0.07	0.6	**175**	
15-Jul-20	3963			194	0.041	0.42	1.1	0.44		**0.79**	0.23	<0.05	**136**		0.776	0.9	18	
06-Jul-21	4143			185	0.075	0.66	2.3	1.01		**0.10**	0.42	<0.05	**357**		0.478	1.3	**44**	
05-Jul-22	4281			195	0.119	0.46	1.3	0.55		**0.05**	0.52	<0.05	**105**		0.287	0.7	**76**	884
06-Jul-23	4459			209	0.076	0.7	4.2	0.1		**0.061**	0.99	0.05	16		0.6	1.7	**43**	
03-Jul-24	4637	<0.5	**6**	199	0.071	1.2	**5.2**	0.66	<1	**0.108**	0.74	<0.01	**177**	<0.5	0.8	3.3	**52**	
TOTAL SAMPLES		1	19	67	67	66	67	68	3	67	67	66	67	2	67	67	67	27
AVERAGE 2024																		

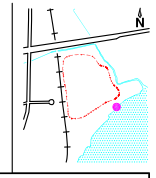
all Concentrations ug/L unless otherwise indicated

Anomalies shown in *Italics* / Exceedence in **BOLD**

D-1

SURFACE WATER

SURFACE WATER STATION



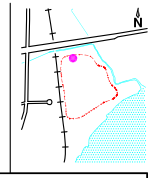
DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P	Se	Ag	Al	Be	Co	Ni	Zn	TDS
										mg/L								mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
31-Oct-12	2565			94	<0.1	<3	2	<1		**0.08**	<4	<0.1	72		0.7	8	6	
07-Oct-13	2749	0.5	1.1	129	0.46	3	**9**	0.79	2.8	**0.15**	<1	0.02	**80**		0.5	<10	**24**	
16-May-14	2770			141	0.07	1	2.2	4.24		**0.36**	<1	<0.02	70		**1.5**	6.4	20	
20-Apr-15	3011			88	0.11	<2	**8**	2.74		**0.15**	<1	0.02	**220**		0.9	6.6	**40**	605
20-Apr-17	3372			100	0.104	<1	1.9	3.34	3.1	**0.18**	<1	0.04	70		0.9	5.1	**47**	628
16-Oct-17	3445			113	0.028	<1	1.6	0.1		**0.47**	<1	<0.02	70		<0.1	3.6	**21**	649
26-Apr-18	3513			79.3	0.109	1.71	**9.06**	2.58		**0.10**	0.18	**0.12**	**242**		0.707	5	13	
25-Apr-19	3691			88.8	0.139	0.93	2.6	3.95		**0.17**	0.2	<0.05	**273**		0.491	3.1	16	
17-Oct-19	3799			86.57	0.014	0.35	1.3	0.53		**0.52**	0.17	<0.05	6		0.228	0.9	6	
29-Apr-21	4077			134	0.284	3.76	**6.8**	**16.9**		**0.26**	0.65	**0.11**	**1660**		**1.34**	4.8	**35**	
26-Apr-22	4255			78.9	0.02	1.1	3.3	0.59		**0.05**	0.18	<0.05	53		0.379	3	5	
12-Apr-24	4585	0.7	2	75.3	0.046	1.6	**7**	1.57	4	**0.195**	0.4	0.02	**306**	<0.5	0.8	3.3	9	
TOTAL SAMPLES		2	2	12	12	12	12	12	3	12	12	12	12	1	12	12	12	3
AVERAGE 2024																		

all Concentrations ug/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**

D-2

SURFACE WATER

SURFACE WATER STATION



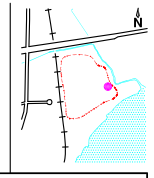
DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P	Se	Ag	Al	Be	Co	Ni	Zn	TDS
										mg/L								mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
31-Oct-12	2566			153	0.5	16	**76**	**9**		**0.12**	4	<0.1	**95**		**4.8**	**56**	**80**	
07-Oct-13	2750	0.4	0.6	170	**0.59**	<2	**9**	0.83	0.7	**0.05**	<1	0.04	70		0.5	<10	10	
20-Apr-15	3012			48	0.1	<2	**8.9**	1.73		**0.13**	<1	0.03	40		0.4	5.2	15	418
22-Apr-16	3158			62	0.08	<2	**9.5**	**11.2**		**0.15**	<1	<0.02	50		0.7	5.1	16	449
26-Apr-18	3514			46.7	0.045	0.45	**6.94**	0.91		**0.12**	0.13	**0.13**	12		0.69	2.4	5	
25-Apr-19	3692			74.4	0.103	1.01	**9.9**	**8.96**		**0.14**	0.16	0.06	**554**		0.827	4.2	13	
12-Apr-24	1994695	<0.5	<1	21	0.032	0.4	1.6	0.08	<1	**0.159**	<0.05	<0.01	71	<0.5	0.2	<0.5	2	
TOTAL SAMPLES		2	2	7	7	7	7	7	2	7	7	7	7	1	7	7	7	2
AVERAGE 2024																		

all Concentrations ug/L unless otherwise indicated
Anomalies shown in *Italics* / Exceedence in **BOLD**

D-3

SURFACE WATER

SURFACE WATER STATION



DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P mg/L	Se	Ag	Al	Be	Co	Ni	Zn	TDS mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
31-Oct-12	2567			143	<0.1	4	**6**	2		**0.05**	<4	<0.1	**294**		**1.2**	13	7	
07-Oct-13	2751	5.5	**118**	350	**1.38**	35	**225**	**32.7**	20.4	**0.89**	2	**0.41**	**540**		**5**	**40**	**208**	
20-Apr-15	3013			97	0.35	8	**37.6**	**10.2**		**0.53**	2	0.08	**80**		**2.6**	21.6	**89**	1070
22-Apr-16	3159			139	0.18	10	**20.5**	**11.5**		**0.43**	1	0.09	**110**		**3.3**	18.6	**119**	971
20-Apr-17	3374			88	0.278	6	**30.1**	**9.23**	4.8	**0.42**	<1	**0.16**	**120**		**2.1**	20.3	**118**	798
26-Apr-18	3515			67	0.103	3.7	**26.7**	2.26		**0.08**	0.21	**0.12**	16		**1.41**	13.5	**52**	
25-Apr-19	3693			74.2	0.117	4.75	**27.6**	0.83		**0.03**	0.17	<0.05	19		**1.563**	15.3	**62**	
18-Oct-19	3801			83.2	0.074	1.94	**20.2**	3.15		**0.08**	0.21	<0.05	6		**0.939**	8	**576**	
13-Oct-20	4007			200	**0.573**	20.8	**37.9**	**33.6**		**0.65**	0.32	**0.37**	**6240**		**8.68**	**34.8**	**1150**	
29-Apr-21	4079			126	0.054	5.26	**13.4**	2.09		**0.04**	0.18	<0.05	**118**		**1.95**	15.3	**41**	
18-Oct-21	4211			146	0.212	8.13	**35.5**	4.11		**0.09**	0.24	<0.05	**166**		**1.91**	17.9	**96**	
26-Apr-22	4257			85.9	0.07	3.72	**17.4**	2.31		<0.03	0.15	<0.05	**142**		**1.33**	11	**41**	
11-Oct-23	4516			148	0.146	6.9	**37.3**	1.62		**0.234**	0.53	0.01	46		**1.6**	15.8	**92**	
12-Apr-24	4587	3.1	**8**	69.5	0.069	3.3	**19**	1.47	3	**0.094**	0.37	0.02	**141**	<0.5	0.8	6.3	**33**	

TOTAL SAMPLES AVERAGE 2024	2	2	14	14	14	14	14	3	14	14	14	14	1	14	14	14	3

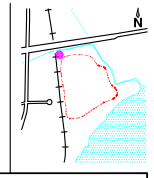
all Concentrations ug/L unless otherwise indicated

Anomalies shown in *Italics* / Exceedence in **BOLD**

D-4

SURFACE WATER

SURFACE WATER STATION



DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P	Se	Ag	Al	Be	Co	Ni	Zn	TDS
										mg/L								mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
16-May-14	2773			232	<0.02	0.3	0.5	0.13		**0.14**	<1	<0.02	70		**1.8**	5.7	12	
07-Oct-14	2950			197	0.08	<2	**5.8**	1.65		**0.19**	4	<0.02	50		**1.3**	10	8	
20-Apr-15	3014			94	0.07	<2	3.4	0.46		0.02	<1	<0.02	<10		0.7	4	8	421
29-Oct-15	3087			122	<0.02	25	0.3	0.09		0.02	<1	<0.02	30		**1.1**	6.6	7	633
22-Apr-16	3160			136	<0.02	<2	0.4	0.02		0.02	<1	<0.02	30		**1**	5.2	<5	701
19-Oct-16	3270			184	<0.02	<2	0.8	0.06		**0.03**	<1	<0.02	40		**1.7**	8.1	<5	883
20-Apr-17	3375			174	0.056	<1	0.8	0.14	0.5	**0.07**	<1	<0.02	70		**1.5**	5.4	<5	663
16-Oct-17	3448			139	<0.014	<1	0.6	0.04		**0.04**	<1	<0.02	70		0.9	5.5	<5	668
26-Apr-18	3516			148	0.005	0.64	0.74	0.08		**0.10**	0.08	<0.05	2		0.453	1.3	4	
26-Apr-19	3694			165	0.02	2	1.1	0.41		**0.22**	0.12	<0.05	31		0.834	2.9	4	
17-Oct-19	3802			134	<0.003	0.42	0.2	<0.01		<0.03	0.11	<0.05	1		0.733	2.2	<2	
23-Apr-20	3898			157	<0.003	1.5	0.3	0.01		<0.03	0.12	<0.05	2		**1.4**	3.6	<2	
13-Oct-20	4008			174	0.013	0.88	0.7	0.53		**0.05**	0.14	<0.05	20		**1.52**	4.4	3	
29-Apr-21	4080			110	<0.003	0.73	0.3	<0.09		<0.03	0.12	<0.05	2		0.67	2.5	<2	
18-Oct-21	4212			144	0.006	0.91	<0.2	<0.09		<0.03	0.12	<0.05	8		**1.03**	3.1	2	
26-Apr-22	4258			102	0.003	0.61	0.2	0.14		**0.05**	0.13	<0.05	4		0.73	2.6	<2	
11-Oct-23	4517			118	0.007	1	1.3	0.06		**0.029**	0.89	<0.01	7		0.7	4.5	<1	
TOTAL SAMPLES		0	0	17	17	17	17	17	1	17	17	17	17	0	17	17	17	6
AVERAGE 2024																		

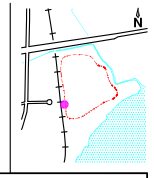
all Concentrations ug/L unless otherwise indicated

Anomalies shown in *Italics* / Exceedence in **BOLD**

D-5

SURFACE WATER

SURFACE WATER STATION



DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P mg/L	Se	Ag	Al	Be	Co	Ni	Zn	TDS mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
16-May-14	2774			192	<0.02	<0.2	0.9	0.25		**0.08**	<1	<0.02	60		0.6	3.4	7	
07-Oct-14	2951			453	0.04	<2	**7**	0.82		**0.09**	2	<0.02	30		**1.2**	5.6	9	
20-Apr-15	3015			218	0.07	<2	4.7	0.61		**0.07**	<1	<0.02	20		0.9	5.1	17	437
29-Oct-15	3088			176	<0.02	<2	0.9	0.06		**0.08**	<1	<0.02	40		0.6	6.3	5	761
22-Apr-16	3161			521	0.05	<2	1.7	1.16		**0.23**	<1	<0.02	60		**2.6**	4.9	<5	648
21-Oct-16	3271			188	0.04	<2	1.9	0.08		**0.03**	<1	<0.02	60		0.9	6	<5	1100
20-Apr-17	3376			251	0.058	<1	1	0.42	8.4	**0.12**	<1	<0.02	**90**		**2.1**	7.1	9	656
16-Oct-17	3449			481	0.094	<1	0.9	0.19		**0.19**	<1	<0.02	**90**		**1.2**	5	**61**	836
26-Apr-18	3517			241	<0.003	0.15	0.93	0.02		<0.03	0.12	<0.05	12		0.284	1.1	<2	
26-Apr-19	3695			200	0.067	0.4	2	0.53		**0.05**	0.17	<0.05	**191**		0.535	1.8	4	
17-Oct-19	3803			360	<0.003	0.27	0.9	0.11		**0.04**	0.23	<0.05	2		0.62	0.6	3	
23-Apr-20	3899			384	0.015	0.38	0.9	0.38		**0.11**	0.18	<0.05	7		**1.6**	2.3	2	
13-Oct-20	4009			199	0.026	0.59	1.9	1.17		**0.03**	0.2	<0.05	**284**		**1.9**	1.6	15	
29-Apr-21	4081			263	<0.003	0.79	0.6	0.09		<0.03	0.15	<0.05	22		0.43	1.4	<2	
18-Oct-21	4213			262	0.036	0.56	1.4	0.41		<0.03	0.24	<0.05	**144**		0.557	1.1	5	
26-Apr-22	4259			240	0.003	0.29	0.7	0.21		<0.03	0.19	<0.05	40		0.3	1.2	<2	
11-Oct-23	4518			406	0.015	0.7	1.7	0.22		**0.047**	0.94	<0.01	**95**		**1.4**	2.8	2	
12-Apr-24	4589	<0.5	3	169	0.014	0.6	1.7	0.22	1	**0.037**	0.24	0.01	**142**	<0.5	0.4	0.9	3	
TOTAL SAMPLES		1	1	18	18	18	18	18	2	18	18	18	18	1	18	18	18	6
AVERAGE 2024																		

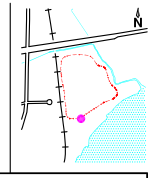
all Concentrations ug/L unless otherwise indicated

Anomalies shown in *Italics* / Exceedence in **BOLD**

D-6

SURFACE WATER

SURFACE WATER STATION



DATE	SAMPLE #	Sb	As	Ba	Cd	Cr	Cu	Pb	Mo	P	Se	Ag	Al	Be	Co	Ni	Zn	TDS
										mg/L								mg/L
	PWQO	20	5		0.5		5	5	40	0.02	100	0.1	75	1100	0.9	25	20	
16-May-14	2775			134	<0.02	<0.2	1.2	0.03		0.01	<1	<0.02	60		<0.1	2.6	16	
07-Oct-14	2952			155	0.06	<2	**5.7**	0.55		**0.06**	1	<0.02	30		<0.1	4.1	**38**	
20-Apr-15	3016			112	0.05	<2	3.4	0.43		0.02	<1	<0.02	20		0.2	3.8	**22**	437
29-Oct-15	3089			223	0.16	<2	**5.1**	2.05		**0.19**	<1	0.07	40		0.4	6.6	**63**	692
22-Apr-16	3162			140	<0.02	<2	1.1	0.03		0.02	<1	<0.02	30		0.1	2.8	9	583
19-Oct-16	3272			219	0.08	<2	3.7	1.32		**0.15**	<1	<0.02	50		0.4	4.3	**44**	759
20-Apr-17	3377			104	<0.014	<1	1	<0.02	0.5	**0.03**	<1	<0.02	70		<0.1	2.7	8	501
16-Oct-17	3450			183	0.015	<1	0.9	0.04		**0.07**	<1	<0.02	70		<0.1	3.3	**48**	684
26-Apr-18	3518			81.8	0.008	0.17	1.15	0.04		**0.04**	0.42	<0.05	29		0.037	0.4	8	
26-Apr-19	3696			95.2	0.008	0.18	1	0.08		**0.04**	0.16	<0.05	**114**		0.02	5.5	5	
17-Oct-19	3804			190	0.005	0.34	0.9	0.07		**0.04**	0.26	<0.05	<1		0.073	0.6	14	
23-Apr-20	3900			123	0.004	0.24	0.7	0.04		<0.03	0.24	<0.05	24		0.045	0.4	8	
13-Oct-20	4010			155	0.034	0.35	1.1	0.23		**0.06**	0.19	<0.05	**126**		0.167	0.2	**24**	
29-Apr-21	4082			132	0.005	0.15	0.7	<0.09		<0.03	0.23	<0.05	5		0.04	0.4	4	
18-Oct-21	4214			441	0.307	2.8	**8.8**	3.34		**0.37**	1.31	<0.05	**1170**		**1.27**	3.5	**228**	
26-Apr-22	4260			111	0.01	12.6	1.2	0.2		<0.03	0.37	<0.05	9		0.048	0.6	3	
11-Oct-23	4519			161	0.012	0.5	1.6	<0.05		**0.042**	0.73	<0.01	17		0.3	<0.5	4	
12-Apr-24	4590	<0.5	2	42.2	0.023	0.7	2	1.02	<1	**0.127**	0.19	0.01	**364**	<0.5	0.4	1.2	7	
TOTAL SAMPLES		1	1	18	18	18	18	18	2	18	18	18	18	1	18	18	18	6
AVERAGE 2024																		

all Concentrations ug/L unless otherwise indicated

Anomalies shown in *Italics* / Exceedence in **BOLD**

APPENDIX F

Documentation

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	Kitchener Street Waste Diversion Site
Location (e.g. street address, lot, concession)	Lot 11 & 12, Concession 4, City of Orillia
GPS Location (taken within the property boundary at front gate/ front entry)	17 626050E 4938430N
Municipality	City of Orillia
Client and/or Site Owner	City of Orillia
Monitoring Period (Year)	2024
This Monitoring Report is being submitted under the following:	
Environmental Compliance Approval (ECA) Number (formerly "Certificate of Approval" (C of A)) :	5204-B4RRK2
Director's Order No.:	-
Provincial Officer's Order No.:	-

Other:			
Report Submission Frequency	(•) **Annual** ( ) **Other**		
The site is: **(Operation Status)**	(•) **Open** ( ) **Inactive** ( ) **Closed**		
Is there an active waste transfer station at the site?	( ) **Yes** (•) **No**		
Does this WDS have a Closure Plan?	(•) **Not yet submitted** ( ) **Submitted and under review** ( ) **Submitted and approved**		
Total Approved Capacity	1300000	*Units*	Cubic Metres
Maximum Approved Fill Rate		*Units*	Tonnes per Year
Total Waste Received within Monitoring Period (Year)	4,057	*Units*	Tonnes
Total Waste Received within Monitoring Period (Year) *Describe the methodology used to determine this quantity*	Weighed		
Estimated Remaining Capacity	448,191	*Units*	Cubic Metres
Estimated Remaining Capacity *Describe the methodology used to determine this quantity*	Estimation based on Waste Volumes		
Estimated Remaining Capacity *Date Last Determined*	25-Apr-2025		
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: Tree brush and debris
Subject Waste Approved Waste Classes: Hazardous & Liquid Industrial *(separate waste classes by comma)*	112, 121, 145, 146, 147, 148, 212, 213, 221, 242, 243, 252, 261, 263, 312 limited to Sharps Waste, and 331		

Year Site Opened *(enter the Calendar Year only)*	1943	**Current ECA Issue Date**	23-Dec-2022
Is your Site required to submit Financial Assurance?		○ **Yes** ◉ **No**	
Describe how your WDS is designed.		○ Natural Attenuation only ○ Fully engineered Facility ◉ Partially engineered Facility	
Does your Site have an approved Contaminant Attenuation Zone?		○ **Yes** ◉ **No**	
If closed, specify ECA, control or authorizing document closure date:			
Has the nature of the operations at the site changed during this monitoring period?	○ **Yes** ◉ **No**		
If yes, provide details:	na		

Have any measurements been taken since the last reporting period that indicate landfill gas volumes have exceeded the MOE limits for subsurface or adjacent buildings? (i.e. exceeded the LEL for methane)	○ Yes ◉ No

Groundwater WDS Verification:

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

Sampling and Monitoring Program Status:

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

Groundwater Sampling Location	**Description/Explanation for change (change in name or location, additions, deletions)**	**Date**
See report - Table B-1		

3) a) Some or all groundwater, leachate and landfill gas sampling and monitoring requirements have been established or defined outside of a ministry ECA, authorizing, or control document, *or Ministry concurrence.*	◯ **Yes** ◉ **No** ◯ **Not Applicable**

b) If yes, the sampling and monitoring identified under 3(a) for the monitoring period being reported on was successfully completed in accordance with established protocols, frequencies, locations, and parameters developed as per the Technical Guidance Document:	◯ **Yes** ◯ **No** ◉ **Not Applicable**	If no, list exceptions below or attach additional information.

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

4) All field work for groundwater investigations was done in accordance with Standard Operating Procedures (SOP) as established/outlined per the Technical Guidance Document (including internal/external QA/QC requirements) (Note: A SOP can be from a published source, developed internally by the site owner's consultant, or adopted by the consultant from another organization):	(●) Yes ( ) No	
Sampling and Monitoring Program Results/WDS Conditions and Assessment:		
5) The site has an adequate buffer, Contaminant Attenuation Zone (CAZ) and/ or contingency plan in place. Design and operational measures, including the size and configuration of any CAZ, are adequate to prevent potential human health impacts and impairment of the environment.	(●) Yes ( ) No	
6) The site meets compliance and assessment criteria.	(●) Yes ( ) No	
7) The site continues to perform as anticipated. There have been no unusual trends/ changes in measured leachate and groundwater levels or concentrations.	(●) Yes ( ) No	

1) Is one or more of the following risk reduction practices in place at the site: ***(a)*** **There is minimal reliance on natural attenuation of leachate due to the presence of an effective waste liner and active leachate collection/ treatment; or** ***(b)*** **There is a predictive monitoring program in-place (modeled indicator concentrations projected over time for key locations); or** ***(c)*** **The site meets the following two conditions (typically achieved after 15 years or longer of site operation):** ***i.*** **The site has developed stable leachate mound(s) and stable leachate plume geometry/ concentrations; and** ***ii.*** **Seasonal and annual water levels and water quality fluctuations are well understood.**	◉ **Yes** ○ **No**	**Note which practice(s):**	☐ **(a)** ☒ **(b)** ☐ **(c)**
9) Have trigger values for contingency plans or site remedial actions been exceeded (where they exist):	○ **Yes** ◉ **No** ○ **Not Applicable**	No trigger exceedances in 2023 - the reported zinc exceedance in the spring monitoring is considered to be anomalous (please see report Section 7 for details)	

Groundwater CEP Declaration:

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

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

30-Apr-2025

Recommendations:

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

◉ **No changes to the monitoring program are recommended** ○ **The following change(s) to the monitoring program is/ are recommended:**	
◉ **No Changes to site design and operation are recommended** ○ **The following change(s) to the site design and operation is/are recommended:**	
Name:	Paul Dewaele, M.Sc., P.Eng.
Seal:	

Signature:		**Date:**	30-Apr-2025
CEP Contact Information:	Per below		
Company:	Northern Geo Environmental Ltd.		
Address:			
Telephone No.:	705-790-9447	Fax No. :	
E-mail Address:	pdewaele@northerngeo.ca		
Co-signers for additional expertise provided:			
Signature:		**Date:**	
Signature:		**Date:**	

Surface Water WDS Verification:

Provide the name of surface water body/bodies potentially receiving the WDS effluent and the approximate distance to the waterbody (including the nearest surface water body/bodies to the site):	
Name (s)	Lake Simcoe. See report text.

Distance(s)	See report text.

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

Sampling and Monitoring Program Status:

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

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

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 *, or Ministry concurrence.*	( ) **Yes** (●) **No** ( ) **Not Applicable**	
b) If yes, all surface water sampling and monitoring identified under 3 (a) was successfully completed in accordance with the established program from the site, including sampling protocols, frequencies, locations and parameters) as developed per the Technical Guidance Document:	( ) **Yes** ( ) **No** (●) **Not Applicable**	If no, specify below or provide details in an attachment.

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

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

Sampling and Monitoring Program Results/WDS Conditions and Assessment:

5) The receiving water body meets surface water-related compliance criteria and assessment criteria: i.e., there are no exceedances of criteria, based on MOE legislation, regulations, Water Management Policies, Guidelines and Provincial Water Quality Objectives and other assessment criteria (e.g., CWQGs, APVs), as noted in Table A or Table B in the Technical Guidance Document (Section 4.6):	( ) Yes (◉) No

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

Parameter	Compliance or Assessment Criteria or Background	Amount by which Compliance or Assessment Criteria or Background Exceeded
e.g. Nickel	e.g. ECA limit, PWQO, background	e.g. X% above PWQO
See Section 6.0 of Report		
6) In my opinion, any exceedances listed in Question 5 are the result of non-WDS related influences (such as background, road salting, sampling site conditions)?	(•) **Yes** ( ) **No**	See report text - related to Wastewater Treatment Plant, not landfill

7) All monitoring program surface water parameter concentrations fall within a stable or decreasing trend. The site is not characterized by historical ranges of concentrations above assessment and compliance criteria.	(●) **Yes** ( ) **No**	
8) For the monitoring program parameters, does the water quality in the groundwater zones adjacent to surface water receivers exceed assessment or compliance criteria (e.g. , PWQOs, CWQGs, or toxicity values for aquatic biota (APVs)):	(●) Yes ( ) No ( ) Not Known ( ) Not Applicable	See report text - off-site (urban runoff) and wastewater plant influences are not related to the landfill
9) Have trigger values for contingency plans or site remedial actions been exceeded (where they exist):	( ) **Yes** ( ) **No** (●) **Not Applicable**	No triggers for surface water

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, *as deemed appropriate for this site in my professional judgement,* the Monitoring and Reporting for Waste Disposal Sites Groundwater and Surface Water Technical Guidance Document (MOE, 2010, or as amended), and associated monitoring and sampling guidance documents, as amended from time to time. I have reviewed all of the data collected for the above-referenced site for the monitoring period(s) identified in this checklist. Except as otherwise agreed with the ministry for certain parameters, all of the analytical work has been undertaken by a laboratory which is accredited for the parameters 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:

30-Apr-2025

Recommendations:

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

(●) **No Changes to the monitoring program are recommended** ( ) **The following change(s) to the monitoring program is/are recommended:**	See report Section 9.0
(●) **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	Licensed and practicing geo-environmental engineer.
Date:	30-Apr-2024
CEP Contact Information:	Per below.
Company:	Northern Geo Environmental Ltd
Address:	
Telephone No.:	705-790-9447
Fax No. :	
E-mail Address:	pdewaele@northerngeo.ca

Save As		**Print Form**

Content Copy Of Original

AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 5204-B4RRK2
Issue Date: December 23, 2022

The Corporation of the City of Orillia
50 Andrew St S, No. 300
Orillia, Ontario
L3V 7T5

Site Location: Kitchener Street Landfill Site (Orillia)
100 Kitchener Street
Lot 11 & 12, Concession 4
Orillia City, County of Simcoe
L3V 6Z9

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 40.5 hectare Waste Disposal Site which includes the following:
a. a 24.3 hectare landfill site for the disposal of solid, non-hazardous waste;
b. a Public Drop-Off and Transfer Area for the transfer and temporary storage of solid, non-hazardous waste;
c. a Composting Facility for the open windrow composting of organic waste;
d. a Household Hazardous Waste Depot for the transfer, bulking and temporary storage of Waste Electrical and Electronic Equipment and the following classes of hazardous waste: 112, 121, 145, 146, 147, 148, 212, 213, 221, 242, 243, 252, 261, 263, 312 limited to Sharps Waste, and 331 as outlined in the "New Ontario Waste Classes" dated January 1986;
e. a Reuse Depot for the temporary storage and transfer of reusable items limited to solid, non-hazardous waste, Waste Electrical and Electronic Equipment, and Ontario waste classes: 145 (paint), 147 (fertilizer), 148 (cleaning products), 212 (antifreeze), 213 (car products), 252 (oil), 263 (caulking, fibre glass, and asphalt patches/tars), and 331 (aerosols and propane) as defined in the "New Ontario Waste Classes" dated January 1986, or the most recent version.

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

"Approval" means this Environmental Compliance Approval No. A250601;
"Brush and Tree Wood" means branches greater than 2.5 cm in diameter, Christmas trees, tree stumps and other like material;
"Competent Personnel" means an employee who has received training in accordance

with Conditions 50.1 and 50.2 and is qualified because of knowledge, training and experience, to organize the work and its performance;
"Composting Facility" means the part of the Site that is used to compost organic waste including food waste and Leaf and Yard Waste from residential, industrial, commercial, and institutional sources;
"Compost" has the same meaning as set out in the document "Ontario Compost Quality Standards" dated July 25, 2012, as amended.
"Composting" has the same meaning as set out in the document "Ontario Compost Quality Standards" dated July 25, 2012, as amended. Composting consists of the thermophilic phase (also known as the active composting or pasteurization phase) and the curing phase.
"Compost Quality Standards" means the Ministry standards for compost as set out in the document entitled "Ontario Compost Quality Standards" dated July 25, 2012, as amended;
"Compost Standards Document" means the Ministry's document entitled "Ontario Compost Quality Standards" dated July 25, 2012, as amended and including the following documents to provide operational guidance to accompany the "Ontario Compost Quality Standards":
a. Guidance for Generators of Category AA, A, and B Compost and the Ontario Compost Quality Standards – Maturity, Effective July 1st, 2015, as amended;
b. Guidance for Generators of Category AA, A, and B Compost and the Ontario Compost Quality Standards – Foreign Matter, Effective July 1st, 2015, as amended;
c. Guidance for Generators of Category AA, A, and B Compost and the Ontario Compost Quality Standards – Sharp Foreign Matter, Effective July 1st, 2015, as amended;

“Contaminant Attenuation Zone” or “CAZ” means the Contaminant Attenuation Zone;

“Director” means any Ministry employee appointed in writing by the Minister pursuant to section 5 of the Act as a Director for the purposes of Part II.1 of the EPA;
“District Manager” means the District Manager in the Barrie District Office;
“District Office” refers to the Ministry of the Environment, Conservation and Parks' Barrie District Office;
“EPA” means the *Environmental Protection Act,* R.S.O. 1990, C.E-19, as amended from time to time;
"Finished Compost" means the Organic Waste that has been fully processed, as required, and is considered ready for sampling and testing for compliance with the Compost Quality Standards;
“Guideline” means the Ministry publication entitled "Guideline for the Production of Compost in Ontario", dated July 2012, or the most recent revision;
"Household Hazardous Waste Depot " or “HHW Depot” means the part of the Site that is used to transfer, bulk and temporarily store Waste Electrical and Electronic Equipment and the following Ontario waste classes: 112, 121, 145, 146, 147, 148, 212,

213, 221, 242, 243, 252, 261, 263, 312 limited to Sharps Waste, and 331 as outlined in the “New Ontario Waste Classes” dated January 1986, as amended.
"Immature Compost" means the Organic Waste which has been thermophilically composted but not cured and screened, if screening is required;
“Leaf and Yard Waste” means waste consisting of leaves, grass clippings, pumpkins and other plant materials and includes branches no larger than 2.5 cm in diameter;
"Ministry" refers to the Ontario Ministry of the Environment, Conservation and Parks;
"Ontario Regulation 267" means Ontario Regulation 267/03 made under the *Nutrient Management Act, 2002;*
“Operator” has the same meaning as “operator” as defined in s.25 of the EPA;
"Organic Waste" means solid non-hazardous waste derived from plants or animals, including wastes consisting of other compounds of carbon, all readily biodegradable, and limited to wastes listed in Condition 45.1 of this Approval;
"Organic Waste Mix" means the mixture of the incoming Organic Waste, the amendment materials, overs from the screening process and/or additives approved in this Approval;
“Owner" means the Corporation of the City of Orillia 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 from time to time;
“Point of Compliance” means the boundary at which the Reasonable Use Guideline shall be evaluated;
"Provincial Officer" means any person designated in writing by the Minister as a provincial officer pursuant to section 5 of the OWRA or section 5 of the EPA or section 17 of PA;
"Public Drop-Off and Transfer Area" means the part of the Site that is used to receive, temporarily store and transfer solid, non-hazardous waste from residential, industrial, commercial and institutional sources.
“PWQO” means the Provincial Water Quality Objectives included in the Ministry Guideline entitled “Water Management - Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment” dated July 1994;
“QA/QC” means quality assurance and quality control;
“Reasonable Use Guideline” means the Ministry Guideline B-7 entitled "Incorporation of the Reasonable Use Concept into MOE Groundwater Management Activities", dated April 1994;
“Regulation 347" or “Reg. 347” means Regulation 347, R.R.O. 1990, General - Waste Management, made under the EPA, as amended from time to time;
“Reuse Depot” means the part of the Site that is used to temporarily store and transfer reusable items limited to solid, non-hazardous waste, Waste Electrical and Electronic Equipment, and Ontario waste classes: 145 (paint), 147 (fertilizer), 148 (cleaning products), 212 (antifreeze), 213 (car products), 252 (oil), 263 (caulking, fibre glass, and asphalt patches/tars), and 331 (aerosols and propane) as defined in the “New Ontario Waste Classes” dated January 1986, or the most recent version; and
“Site” means the entire waste disposal site, including the buffer lands, and contaminant

attenuation zone approved by this Approval, shown and identified in Schedule “A”; and
“Solid Non-Hazardous Waste” means municipal waste, solid non-hazardous industrial waste or materials that do not exceed Schedule 4 of Regulation 347.
“Source Separated Organics” or "SSO" means waste that has been segregated by the generator consisting of solid or semi-solid food waste from residential, commercial or institutional kitchens, restaurants and food processing operations including meat, bone, dairy and dairy related products, packaging materials that have been in direct contact with and are contaminated by these wastes, and other waste of vegetable and animal origin or waste of a similar nature, designated by the Owner as compatible with the Owner's waste processing operation.
"Standards Document" means the Ministry document entitled “Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act”, revised version April 15, 2011, or the most recent version;
“Storage Building” means the Storage Building that is shown on the east side of Figure 3: Waste Diversion Site Plan listed in the Design, Operations and Maintenance Plan (Item 56 of Schedule “A”).
"Waste Electrical and Electronic Equipment" means devices listed in Schedules 1 through 7 of Ontario Regulation 393/04 Waste Electrical and Electronic Equipment made under the Waste Diversion Act, 2002.

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

TERMS AND CONDITIONS

GENERAL

1.0 Compliance

1.1 The Owner shall ensure that any person authorized to carry out work on or operate any aspect of the Site is notified of the Approval and the conditions herein and shall take all reasonable measures to ensure the person complies with the same.
1.2 Any person authorized to carry out work on or operate any aspect of the Site shall comply with the conditions of this Approval.

2.0 In Accordance

2.1 Except as otherwise provided for in this Approval, the Site shall be designed, developed, constructed, operated and maintained in accordance with the conditions in this Approval and the supporting documentation listed in Schedule “A”.

3.0 Other Legal Obligations

3.1 The issuance of, and compliance with, this Approval does not:
(a) relieve any person of any obligation to comply with any provision of the EPA or any other 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 request that any further information related to compliance with this Approval be provided to the Ministry;

unless a provision of this Approval specifically refers to the other requirement or authority and clearly states that the other requirement or authority is to be replaced or limited by this Approval.

4.0 Adverse Effect

4.1 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.

4.2 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.

5.0 Furnish Information

5.1 Any information requested by the Ministry 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 in a timely manner.

5.2 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 subordinate legal instrument, 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 condition of this Approval or any statute, regulation or other subordinate legal requirement; or

(b) acceptance by the Ministry of the information's completeness or accuracy.

5.3 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.

6.0 Interpretation

6.1 Where there is a conflict between a provision of any document, including the application, referred to in this Approval, and the conditions of this Approval, the conditions in this Approval shall take precedence.

6.2 Where there is a conflict between the application and a provision in any documents 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 in writing **.**

6.3 Where there is a conflict between any two documents listed in Schedule "A", other than the application, the document bearing the most recent date shall take precedence.

6.4 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.

7.0 Certificate of Requirement

7.1 Pursuant to Section 197 of the EPA, no person having an interest in the Site shall deal with the Site in any way without first giving a copy of this Approval to each person acquiring an interest in the Site as a result of the dealing.
7.2 If not completed by the issuance of this Approval, then two (2) copies of a completed Certificate of Requirement, containing a registerable description of the Site, shall be submitted to the Director for the Director's signature within sixty (60) calendar days of the date of this Approval.
7.3 If not completed by the issuance of this Approval, then the Certificate of Requirement shall be registered in the appropriate land registry office on title to the Site and a duplicate registered copy shall be submitted to the Director within 10 calendar days of receiving the Certificate of Requirement signed by the Director.

8.0 No Transfer or Encumbrance

8.1 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 is satisfied with the arrangements made to ensure that all conditions of this Approval will be carried out and that sufficient financial assurance is deposited with the Ministry to ensure that these conditions will be carried out.

9.0 Change of Owner

9.1 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;
(d) the partners, where the Owner or Operator is or at any time becomes a partnership and 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;
(e) the name of the corporation where the Owner or Operator is or at any time becomes a corporation, other than a municipal corporation, and a copy of the most current information filed under the *Corporations Information Act* , R. S. O. 1990, c. C.39, shall be included in the notification.
9.2 In the event of any change in the ownership of the Site, other than a change to a successor municipality, the Owner shall notify in writing the succeeding owner of the existence of this Approval, and a copy of such notice shall be forwarded to the Director and District Manager.

10.0 Inspections

10.1 No person shall hinder or obstruct a Provincial Officer from carrying out any and all inspections authorized by the OWRA, the EPA, or the PA, 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 or the PA.

WASTE MINIMIZATION

11.0 Waste Advisory Committee and Waste Minimization Plan

11.1 The Owner shall maintain and fund, a waste advisory committee ("committee") which will incorporate, as a minimum, the following features:
(a) The committee's mandate is to advise and assist the Owner in:
i. the preparation and implementation of a Waste Minimization Plan;
ii. improving the operation and management of the landfill;
iii. reviewing all action plans with respect to waste management which are under consideration by the Owner;
iv. advising the Owner on all issues relating to waste management; and
v. such other waste management matters that may from time to time be referred to by the Owner.
(b) Membership on the committee will include representatives of local public interest groups, Orillia residents, the business community and elected officials, with City staff in an advisory capacity;
(c) the committee's members will be appointed by the City Council after each municipal election;
(d) the committee shall be comprised of no less than 8 members at any time; and
(e) adequate funding shall be allocated to the committee on a regular, budgetary basis.
11.2 (1) By **June 30, 2021** and every five (5) years thereafter the Owner shall submit to the District Manager for review, an updated five (5) Year Waste Minimization plan that addresses the following:
(a) A statement of goals, to include that:
i. all waste received at the landfill will be sorted;
ii. no toxic substances will be landfilled;
iii. no reusable, recyclable or compostable materials will be landfilled.
(b) A multi-dimensional, community-wide and sustained public education program which will promote the goals.
(c) A phased plan with specific target objectives including:
i. sorting and separating at the source;
ii. reduction, reuse and recycling;
iii. household and municipal composting;
iv. a community resource centre; and
v. the strategic use of bans on materials such as cardboard.
(2) As a component of the waste minimization plan, the Owner shall prepare a strategy plan that shall discuss how the plan shall be implemented. Some of the details to be included in the plan shall include but not be limited to the following:

(a) all financial, technical and human resources necessary for the implementation of the plan;

(b) the timetable when each component of the plan will become operational;
(c) the amount of solid waste reduction and diversion (re-use, re-cycle and compost) which is projected for each component of the plan;
(d) details of how the implementation of each component of the plan will be managed;
(e) methods and frequency of monitoring the progress of implementation of each component of the plan; and
(f) procedures for assessing new or unforeseen opportunities.
(3) In preparing the strategy, the Owner will consider the recommendations of the Committee, and community members from the City.
11.3 The Owner shall continue to evaluate alternative approaches to solid waste management and shall implement waste diversion programs which are technically and economically feasible provided that:
(a) the Owner has notified and obtained written approval from the District Manager prior to implementation of the program; and
(b) the implementation of the waste diversion program does not entail design changes to the Site. Programs involving changes to the Site design require Director's approval.

CONSTRUCTION, INSTALLATION AND PLANNING

12.0 Major Works

12.1 For the purposes of this Approval, Major Works includes, but is not limited to the following:
i. Stormwater management system; and
ii. Gas management system.
12.2 A final detailed design shall be prepared for each Major Work to be constructed at the Site consistent with the conceptual design of the Site as presented in the Design, Operations and Maintenance Plan (Item 56 of Schedule “A”).
12.3 The final detailed design of each Major Work shall include the following:
i. design drawings and specifications;
ii. a detailed quality assurance / quality control (QA/QC) program for construction of the major work, including necessary precautions to avoid disturbance to the underlying soils; and;
iii. details on the monitoring, maintenance, repair and replacement of the engineered components of the major work, if any.
12.4 The final detailed design of each Major Work shall be submitted to the Director for approval, with two (2) copies to the District Manager.
12.5 No construction of a Major Work shall commence prior to the Director approving, in writing, the final detailed design of that Major Work. Each major work shall be constructed in accordance with the approved final detailed design and the QA/QC procedures shall be implemented as approved by the Director.

12.6 Any design optimization or modification that is inconsistent with the conceptual design shall be clearly identified, along with an explanation of the reasons for the change.

GENERAL OPERATIONS

13.0 Operations Manual

13.1 The Design, Operations and Maintenance Plan shall be retained at the Site; kept up to date through periodic revisions; and be available for inspection by Ministry staff. Changes to the Design, Operations and Maintenance Plan shall be submitted to the Director for approval.

14.0 Hours of Operation

14.1 The Owner shall set operational hours to the public which provides an adequate level of service. The hours of operation to the public shall be any day of the week, during daylight hours.

14.2 Hours of operation to the public may be changed by the Owner at any time, provided that the hours are correctly posted at the Site gate, and that suitable public notice is given of any change.

14.3 The Owner shall notify the District Manager, in writing, of any changes to the hours of operation to the public.

14.4 On-Site equipment used for daily Site preparations and closing activities shall only be used Monday through Saturday from 6:00 AM to 8:00 PM.

14.5 No waste shall be received or removed at the Site except during Monday through Saturday from 8:00 AM to 6:00 PM and while under the supervision of Competent Personnel.

14.6 Despite Condition 14.5, the Site may temporarily receive waste outside of the set hours of operation only during emergency situations and under the supervision of Competent Personnel .

15.0 Site Access

15.1 Access to the Site for disposal and related waste operations is limited to the main entrance off of Kitchener Street.

16.0 Site Security

16.1 During non-operating hours, the Site entrance and exit gates shall be locked and the Site shall be secured against access by unauthorized persons.

17.0 Roads and Traffic

17.1 The access road and on-Site roads shall be provided and maintained in a manner that vehicles hauling waste to and on the Site may travel readily and safely on any operating day. On-Site roads must be clear of mud, ice and debris which may create hazardous conditions.

18.0 Waste Inspection and Procedures

18.1 i. The Owner shall ensure that Competent Personnel are available at all times during the hours of operation of this Site.

ii. Competent Personnel shall conduct appropriate inspections and ensure that appropriate controls are in place to prevent the acceptance of non-approved waste as reflected by this Approval and to prevent the acceptance of waste from outside the

approved service area.
iii. The Owner shall record in the daily records any occurrence of non-approved waste delivered to the Site, the name of the waste hauler delivering the waste and waste generator (if known).
iv. The Owner shall forthwith notify the District Manager of any and all waste load refusals at the Site related to requirements in this Approval, including service area and waste types.
18.2 The loading or unloading of waste shall occur under the supervision of Competent Personnel.
18.3 Waste vehicles must be directed to appropriate areas for waste disposal.

19.0 Litter Control

19.1 The Owner shall take all practical steps to prevent the escape of litter from the Site. All loose, windblown litter shall be collected on a daily basis and disposed of at the landfill working face when the Site is active and at a licensed waste disposal site when the Site no longer accepts waste for final disposal.

20.0 Vermin, Scavenging, Dust, Odour, Noise, etc.

20.1 The Site shall be operated and maintained such that the vermin, vectors, dust, odour, noise and traffic do not create an adverse effect off-Site.
20.2 No scavenging is to occur at the Site.
20.3 The Owner shall control fugitive dust emissions from onsite sources including but not limited to onsite roads, stockpiled cover material and closed landfill area prior to seeding especially during times of dry weather conditions. If necessary, major sources of dust shall be treated with water and/or dust suppression materials to minimize the overall dust emissions from the Site.
20.4 The Owner shall comply with noise criteria in Ministry Guideline entitled "Noise Guidelines for Landfill Sites."

21.0 Signage

21.1 A sign shall be maintained at the main entrance/exit to the Site on which is legibly displayed the following information:
(a) the name of the Site and Owner;
(b) the number of the Approval;
(c) the name of the Operator;
(d) the normal hours of operation;
(e) the allowable and prohibited waste types;
(f) a warning against unauthorized access;
(g) the telephone number to which complaints may be directed;
(h) a twenty-four (24) hour emergency telephone number (if different from above); and
(i) a warning against dumping outside the Site
21.2 The Owner shall post and maintain signs to direct vehicles to working face and recycling areas.

22.0 Burning of Waste

22.1 The burning of waste is not permitted at the Site.

23.0 Handling of Wastes

23.1 All wastes accepted or generated at this Site shall be managed and disposed in accordance with the EPA and Regulation 347.

LANDFILL

24.0 Capacity

24.1 The Owner shall only accept and deposit waste for landfilling at the Site as long as the total Site capacity for waste and waste cover, excluding final cover, does not exceed 1,300,000 cubic meters.

25.0 Service Area and Waste Type

25.1 Only municipal waste as defined by Reg. 347 that has been generated in the City of Orillia shall be landfilled at the Site. No liquid industrial waste or hazardous waste as defined under Reg. 347 shall be disposed of at the landfill.

25.2 (a) The Owner shall accept contaminated materials for landfilling in accordance with the plan for the Receipt of Contaminated Materials as identified in the Design, Operations and Maintenance Plan (Item 56 of Schedule “A”).

(b) In the event additional testing is required to stockpile contaminated materials as identified in Item 56 of Schedule "A", and the analytical results identify the contaminated materials as not being solid non-hazardous waste, the Owner shall have those contaminated materials transported to an appropriate waste disposal site forthwith.

26.0 Landfill Staging

26.1 Waste landfilling operations shall proceed in the various cells in the following order:

i. Cell 5;
ii. Cell 8;
iii. Cell 9;
iv. Cell 10;
v. Cell 11; and
vi. Cell 12.

27.0 Landfill Operations

27.1 No use shall be made of the peat zone in or around the landfill that might reduce the effective attenuation capability of the peat to handle leachate migration away from the landfill.

27.2 The Owner shall clearly define the boundaries of the limit of waste by installing permanent markers that are visible year-round.

27.3 Composting operations shall occur within the approved footprint of the landfill.

27.4 No waste shall be landfilled within one (1) metre of the seasonal high water table and no waste shall be landfilled in ponded water at any time. The limits on the depth of fill shall be clearly marked within the fill area to ensure the minimum one metre separation distance is maintained.

27.5 No waste shall be placed above the final contours shown in the plans and specifications noted as part of the Design, Operations and Maintenance Plan (Item 56 of Schedule “A”).

27.6 No waste shall be landfilled outside of the limit of fill area as shown in the Design,

Operations and Maintenance Plan (Item 56 of Schedule “A”).

28.0 Asbestos Waste

28.1 Any waste that is considered asbestos waste shall be handled in accordance with Section 17 of Reg. 347, as amended from time to time.

28.2 A suitable sized excavation for the asbestos waste shall be made by the Owner in a location away from the active landfilling face, or the active face of the landfill shall be shut down during this procedure to bury the asbestos containing waste.

28.3 All asbestos waste shall be inspected to ensure that the asbestos waste is properly bagged or contained and free from puncture, tears or leaks.

28.4 The asbestos waste shall be placed in the excavation to avoid damage to the containers and to prevent dust and spillage.

28.5 Upon completion of the unloading and deposition of the asbestos in the excavation, at least 1.25 metres of cover or waste material shall be placed over the asbestos.

28.6 All asbestos waste shall be deposited to a level no higher than 1.25 metres below the general elevation of the disposal area to ensure that daily cover material removal in the future does not encounter the asbestos waste.

29.0 Cover Material

29.1 (1) Daily Cover - By the end of each working day, the entire working face shall be covered and compacted with a minimum thickness of 150 mm of daily cover material.

(2) Intermediate Cover - In areas where landfilling has been temporarily discontinued for more than one (1) month, a minimum thickness of 300 mm of soil cover material shall be placed and compacted.

(3) Final Cover – In areas where landfilling has reached the final grade, the final cover shall be placed in accordance with the Design, Operations and Maintenance Plan (Item 56 of Schedule “A”) which includes the following:

(a) 300 mm of clear stone or fill;
(b) 16 oz geotextile layer;
(c) 40 mm LLDPE geomembrane;
(d) 16 oz geotextile layer;
(e) 200 mm of sand;
(f) 12 oz geotextile layer;
(g) 350 mm of fill;
(h) 150 mm of top soil; and
(i) vegetation.

29.2 The following materials, may be used as daily cover material in accordance with the Design, Operations and Maintenance Plan (Item 56 in Schedule "A"):

(a) Heavy-duty reinforced vinyl membrane may be used provided that a stockpile of soil is made available at the Site, at all times should the weather conditions render use of the alternative daily cover unsuitable;
(b) Excavated soils from the Site;
(c) Clean and contaminated soils accepted at the Site for landfilling;
(d) Wood chips;

29.3 The contaminated soil listed in Condition 29.2 shall meet the Toxicity Characteristic Leaching Procedure (TCLP) criteria specified in Schedule IV of Reg. 347 as amended from time to time.
29.4 Only clean native soil or soil that meets Table 7 of the Standards Document for industrial/commercial/community property use shall be used for intermediate and final cover.
29.5 The application of daily cover material shall not result in any nuisance including odour, dust, and litter.

30.0 Landfill Gas
30.1 The Owner shall ensure that the on-Site structures approved in this notice and all future structures will:
(a) be situated and constructed in a manner which minimizes the potential for explosive hazards due to landfill gas;
(b) have methane detection and alarm equipment installed and maintained, with active venting or an effective passive venting system to relieve any possible landfill gas accumulation; and
(c) be routinely monitored for explosive methane gas levels, especially enclosed structures which at times are occupied by people.
30.2 The design of the Site and any plans, specifications and descriptions for the control of landfill gas must ensure that the subsurface migration of landfill gas meets the limits identified in Section (14) of O. Reg. 232/98 (Ontario Regulation 232/98 - Landfilling Sites).
31.0 Surface Water Management
31.1 Surface water runoff from the landfilling area shall be collected and directed to the on-Site stormwater management ponds, and shall not be directly discharged off-Site.
31.2 Temporary berms and ditches shall be constructed around the active waste disposal area, as necessary, to prevent clean surface water runoff generated in non-operating areas from contacting the active working face.
32.0 Buffer
32.1 A minimum buffer area width of thirty (30) metres shall be maintained between the perimeter of the approved fill area and the property line.
33.0 Landfill Gas Collection System
33.1 The Owner shall construct and operate a landfill gas collection system in accordance with the detailed design listed in Items 55 and 56 of Schedule “A”.
33.2 For the landfill gas collection system in Cells 5 through 12, the Owner shall submit the final detailed design to the Director for approval, with copies to the District Manager prior to construction. Approval from the Director is required prior to commencing construction of the landfill gas collection system in Cells 5 through 12.
33.3 Within one hundred and twenty (120) days of commissioning of each stage of the gas collection system, the Owner shall submit to the District Manager a construction report detailing the construction activities and any design changes made to the landfill gas collection system during construction.

33.4 (1) Following commissioning of the landfill gas collection system, at least once a year, the Owner shall conduct an evaluation of the effectiveness of the landfill gas collection system and submit to the District Manager. This shall include an assessment of the system design, adequacy of the vent spacing to prevent ballooning of the final cover, and any possible improvements that can be implemented.
(2) Should there be an indication of inadequate system performance based on regular monitoring results or the system effectiveness evaluation required in Condition 33.4 (1) the Owner shall forthwith prepare a detailed plan for improvement of the gas collection system and submit to the Director for approval.
33.5 Any gas vent that needs to be replaced due to damage or is deemed to be not functioning properly, the Owner shall replace the gas vent within a reasonable time frame of identifying the need for replacement. Any such changes to the gas collection system shall be documented in the annual report.

PUBLIC DROP-OFF AND TRANSFER AREA

34.0 Service Area and Waste Type

34.1 (1) Only solid, non-hazardous waste generated from residential, commercial, institutional and industrial sources (including construction and demolition waste) within the City of Orillia shall be accepted at the Public Drop-Off and Transfer Area for temporary storage and transfer.
(2) With the exception of wood waste, no putrescible waste shall be accepted at the Public Drop-Off and Transfer Area;
(3) Asbestos waste shall not be accepted at the Public Drop-Off and Transfer Area; and
(4) If incidental amounts of non-approved wastes are accepted at the Public Drop-Off and Transfer Area, the Owner shall remove the non-approved waste forthwith.

35.0 Capacity

35.1 The Owner shall ensure that:
(a) the maximum amount of waste stored at the Public Drop-Off and Transfer Area shall not exceed 90 cubic meters; and
(b) with the exception of statutory holidays, the Owner shall ensure that incoming waste material shall be removed from the Public Drop-Off and Transfer Area within 2 weeks of receipt.
35.2 In the event that waste or recyclable materials cannot be removed from the Public Drop-Off and Transfer Area and the total approved storage capacity is reached, the Owner shall cease accepting additional waste to ensure the total approved storage capacity does not exceed the maximum amount approved by this Approval.

36.0 Storage and Operations

36.1 Waste shall be placed in the appropriate bins before the end of each operating day. No overnight storage of waste on the pad is permitted.
36.2 All storage bins shall be covered prior to the end of each operating day.
36.3 All storage containers/bins used to store waste and/or recyclable materials shall be maintained in good condition to prevent leakage. The Owner shall immediately remove from service any leaking container. Containers/bins used to store clean scrap metal may be equipped with drainage holes to permit the drainage of rainwater.

HOUSEHOLD HAZARDOUS WASTE (HHW) DEPOT

37.0 Service Area and Waste Type

37.1 (1) Only the following types of wastes that were generated by residential, industrial, commercial and institutional sources within the City of Orillia and the Townships of Ramara, Severn, and Oro-Medonte shall be accepted at the Site for temporary storage, bulking, and transfer at the HHW Depot:

(a) Ontario waste classes: 112, 121, 145, 146, 147, 148, 212, 213, 221, 242, 243, 252, 261, 263, 312 limited to Sharps Waste, and 331 as defined in the “New Ontario Waste Classes” dated January 1986, or the most recent version, including wet cell batteries and small dry cell batteries, household cleaners and detergents, aerosols, waxes and polishes, fluorescent tubes, energy efficient light bulbs, mercury switches and thermostats; and

(b) Waste Electrical and Electronic Equipment.

(2) The quantity of industrial, commercial and institutional waste accepted shall not exceed ten percent (10%) of the total waste accepted at the HHW Depot.

38.0 Capacity

38.1 The Owner shall ensure that:

(a) the total amount of waste received at the HHW Depot shall not exceed 8 cubic meters per day;

(b) the total amount of Waste Electrical and Electronic Equipment that is received at the HHW Depot shall not exceed 6 cubic meters per day;

(c) the maximum amount of waste stored at the HHW Depot shall not exceed 48 cubic meters;

(d) the maximum amount of Waste Electrical and Electronic Equipment stored at the HHW Depot and Storage Building shall not exceed 38 cubic meters; and

(e) with the exception of statutory holidays, the Owner shall ensure that incoming waste material shall be removed from the HHW Depot and Storage Building within 90 days.

38.2 In the event that waste or recyclable materials cannot be removed from the HHW Depot and the total approved storage capacity is reached, the Owner shall cease accepting additional waste to ensure the total approved storage capacity does not exceed the maximum amount approved by this Approval.

39.0 Site Access

39.1 The HHW Depot shall be maintained in a secure manner at all times, such that unauthorized persons cannot enter.

39.2 All points of access to the HHW Depot shall be posted to warn that the area contains hazardous materials.

40.0 HHW Depot Operations

40.1 Incoming waste shall be inspected by Competent Personnel prior to being accepted at the HHW Depot to ensure that the HHW Depot is approved to accept that type of waste.

40.2 (1) The City shall ensure that no PCB waste are accepted at the Site.

(2) Oil and oil-based paints which have been manufactured prior to 1972, paints and thinners having an oily appearance, rubber based paints (concrete paints/stains),

adhesives, urethane elastomers manufactured prior to 1977, pesticides manufactured prior to 1977, any of these materials whose manufacturing date cannot be determined, and any container having contained these materials may contain PCBs. The City shall undertake a waste screening procedure for PCBs that includes, but is not limited to the following:
(a) The City shall ensure that an approved PCB storage site is available to take and store any confirmed PCB waste that is inadvertently received at the Site;
(b) The City shall ensure a waste tracking system is established to property identify the source of any confirmed PCB waste;
(c) Any PCB suspect material shall be segregated and shall not be mixed or bulked. All PCB suspect material shall be sampled and analyzed for PCB content. Each individual suspect container or a representative proportional composite of not more than ten (10) individual suspect containers shall be sampled and analyzed;
(d) Any material that may be mixed or bulked shall be sampled and analyzed for PCB content. Each individual bulk container or drum shall be sampled and analyzed; and
(e) Any material that has measure levels greater than fifty (50) parts per million is considered to be PCB waste as defined in Ontario Regulation 362. PCB waste shall be removed from the Site to an approved PCB storage site in accordance with written instructions from a Director as defined in Ontario Regulation 362, or a Waste Management System Environmental Compliance Approval which specifies the manner in which PCB waste may be stored, handled, collected, transported or disposed of.
(3) Light ballasts and/or capacitors, that are suspected of containing PCBs, shall be handled as follows:
(i) they shall be stored segregated from other waste, in a clearly labelled, leak-proof container;
(ii) the number of light ballasts and capacitors that may be stored at the HHW Depot shall be limited to a maximum of 35 individual units;
(iii) They shall only be transported to a PCB waste site as defined by Ontario Regulation 262, Waste Management - PCBs, made under the EPA.
40.3 All storage of waste shall be in accordance with the Ministry's "Guidelines for Environmental Protection Measures at Chemical and Waste Storage Facilities," dated May 2007, and its amendments;
40.4 All Sharps Waste received at the Site shall be labelled, handled and stored in accordance with Ministry's "Guideline C-4: The Management of Biomedical Waste in Ontario" dated November 2009, and its amendments.
40.5 The HHW Depot shall be inspected by Competent Personnel on each operating day to ensure the proper storage and handling of hazardous waste and that the integrity of waste containers is intact.

41.0 Health and Safety

41.1 The Owner shall ensure that adequate firefighting equipment is available at the HHW Depot location at all times and that on-Site staff are familiar with the use of such equipment.
41.2 The City shall ensure that the local police and fire departments are informed of the

operation at the HHW Depot at all times and are kept up-to-date on the types and quantities of waste that the facility handles.
41.3 Not less than once per calendar year, the City shall ensure that a fire and explosion prevention inspection is carried out by a qualified person who is either a representative from the City of Orillia Fire Department, a Professional Engineer or who has specialized training in fire and explosion hazards.

REUSE DEPOT

42.0 Service Area and Waste Type

42.1 Only the following types of wastes that were generated by residential, industrial, commercial and institutional sources within the City of Orillia and the Townships of Ramara, Severn, and Oro-Medonte shall be accepted at the Site for temporary storage, and transfer at the Reuse Depot:
(a) Ontario waste classes: 145 (paint), 147 (fertilizer), 148 (cleaning products), 212 (antifreeze), 213 (car products), 252 (oil), 263 (caulking, fibre glass, and asphalt patches/tars), and 331 (aerosols and propane) as defined in the “New Ontario Waste Classes” dated January 1986, or the most recent version;
(b) Waste Electrical and Electronic Equipment; and
(c) Solid non-hazardous waste.

43.0 Capacity

43.1 The Owner shall ensure that:
(a) the total amount of waste received at the Reuse Depot shall not exceed 25 cubic meters per day;
(b) the maximum amount of waste stored at the Reuse Depot shall not exceed 25 cubic meters; and
(c) with the exception of statutory holidays, the Owner shall ensure that incoming waste material shall be removed from the Reuse Depot within 90 days.
43.3 Incoming waste shall be inspected by Competent Personnel, prior to being accepted at the Reuse Depot, to ensure that the Reuse Depot is approved to accept that type of waste.

44.0 Site Access

44.1 The Reuse Depot shall be maintained in a secure manner during non-operating hours, such that unauthorized persons cannot enter.
44.2 All points of access to the Reuse Depot shall be posted to warn that the area contains hazardous materials.

COMPOSTING

45.0 Service Area and Waste Type

45.1 This Site is approved to receive Leaf and Yard Waste, wood chips, Source Separated Organics and Brush and Tree Wood from residential, institutional, commercial and industrial sectors located within the geographic boundaries of the City of Orillia and the Townships of Ramara, Severn and Oro-Medonte for composting at the Composting Facility.
45.2 The Site is prohibited from accepting the following categories of waste in any amounts:

(a) sewage biosolids;
(b) pulp and paper biosolids;
(c) domestic septage;
(d) pet waste, diapers and hygiene products;
(e) any waste that exceeds the metal concentrations set out in Schedule "B" of this Approval.

46.0 Capacity

46.1 The Site is approved to receive a total maximum of 200 tonnes per day of waste approved in Condition 45.1, subject to the following individual annual limits:
(a) 2,900 tonnes per year of Leaf and Yard Waste;
(b) 550 tonnes per year of woodchips;
(c) 1,900 tonnes per year of Source Separated Organics; and
(d) 800 tonnes per year of Brush and Tree Wood.

47.0 Compost Operations

47.1 Incoming waste shall be inspected by Competent Personnel prior to being received to ensure that the Composting Facility is approved to accept that type of waste.
47.2 The Owner shall conduct composting operations as follows:
(a) all waste receipt, waste processing (excluding wood chipping/grinding) and active composting and curing phases shall take place on the compost pad;
(b) windrows shall be arranged in a manner which permits equipment access to the composting and storage areas for efficient turning of the windrows, to allow access for emergency vehicles and to permit efficient drainage of surface water from the compost pad;
(c) windrows shall be constructed at bulk densities and heights which promote aerobic conditions;
(d) during the pathogen inactivation phase:
i. all waste being composted must be maintained at a temperature of at least 55 ^{o} C for a cumulative time period of at least 15 days;
ii. the temperature must be monitored and recorded daily at locations at least one metre internal to the face of each windrow;
iii. the temperature readings shall be taken every fifteen (15) metres along the length of the windrow section or at six (6) representative locations, whichever method yields more locations; and
iv. the windrow must be turned at least once every three (3) days and /or at least five (5) times throughout the fifteen (15) day period;
(e) during the remaining portion of the composting process, the temperature of the windrows shall be monitored a minimum of weekly and the windrows shall be turned as required to maintain aerobic conditions;
(f) compost shall be cured for six (6) months;
(g) during the curing phase, the windrows shall be turned at least once per month; and
(h) no compost shall be removed from the composting pad until it has completed the entire composting process including the curing phase; and

(i) only clean water shall be used to moisten windrows during the thermophilic phase and curing phase.
47.3 The Owner shall either use dedicated equipment for handling pre- and post-pathogen inactivation phase compost or shall thoroughly clean equipment in between handling pre- and post-pathogen inactivation phase compost.

48.0 Finished Compost Quality Monitoring

48.1 The Owner shall sample and analyse the Finished Compost in accordance with the following requirements:

a. the Owner shall maintain a Quality Assurance/Quality Control (QA/QC) program for sampling and analysis of the Organic Waste and the Finished Compost, as required by this Approval;
b. all required analytical results shall be from a laboratory service provider accredited to the ISO/IEC:17025:2005 standard;
c. the Owner shall contact their laboratory service provider for recommended sample preparation methods, sample containers, and other materials and instructions for sample collection and handling and shall prepare a written sampling protocol. This protocol shall be made available to the Ministry staff, upon request;
d. The Organic Waste, Organic Waste Mix, Immature Compost, and Finished Compost sampling/composite sample preparation and testing methods and procedures shall be as set out in Appendix 1 and Appendix 2 of the Compost Standards Document;
e. Retesting due to sample failure is as set out in the Compost Standards Document.

48.2 Compost shall comply with the pathogen reduction Compost Quality Standards set out in the Compost Standards Document. Until such a time that the Compost Standards Document dated July 25, 2012 is amended, the Organic Waste Mix is considered to be Immature Compost when it complies with the following pathogen reduction requirements:

a. using the windrow composting method, the Organic Waste Mix has been maintained at a minimum temperature of 55 degrees Celsius for at least 15 (fifteen) days; and
b. the Organic Waste Mix does not exceed the following pathogen concentrations:
    i. 1,000 colony forming units (CFU) E. coli or most probable number (MPN)/gram total solids (on a dry weight basis); and
    ii. 3 MPN Salmonella/4 grams total solids (on a dry weight basis, based on an analysis of the entire 4g sample).

48.3 Compost shall comply with the maturity requirements set out in the Compost Standards Document. Until such a time that the Compost Standards Document dated

July 25, 2012 is amended, Immature Compost is considered to be Finished Compost when it complies with the following maturity requirements:

a. the Immature Compost has been maintained at ≥ 40% moisture during curing; and
b. the Immature Compost has been cured for a minimum period of twenty one (21) days from the day the last portion of material went into the batch, and the respiration rate is:
    i. less than, or equal to, 400 milligrams of oxygen per kilogram of volatile solids (on a dry weight basis) per hour; or
    ii. less than, or equal to, 4 milligrams of carbon in the form of carbon dioxide per gram of organic matter (on a dry weight basis) per day.

48.4 Compost shall comply with the metal, total foreign matter and sharp foreign matter content limits set out in the Compost Standards Document for its intended end use criteria. Until such a time that the Compost Standards Document dated July 25, 2012 is amended, Finished Compost is considered to be Compost when it complies with the following requirements:

a. Compost must not contain regulated metals in a concentration that exceeds any of the limits set out in Table 3.1 of the Compost Standards Document, as calculated on a dry weight basis, for the applicable end-use of the Organic Waste processed at the Site. Until such a time that the Compost Standards Document dated July 25, 2012 is amended, Finished Compost must not exceed the metal concentrations in Table 3.1 of Schedule "C" for the applicable end-use of the Organic Waste processed at the Site.
b. Compost shall comply with the total foreign matter content and sharp foreign matter content limits set out in Table 3.3, of the Compost Standards Document, as calculated on a dry weight basis, for the applicable end-use of the Organic Waste processed at the Site. Until such a time that the Compost Standards Document dated July 25, 2012 is amended, Finished Compost must not exceed the foreign matter content and sharp foreign matter concentrations in Table 3.3 of Schedule "C" for the applicable end-use of the Organic Waste processed at the Site.

48.5 Prior to being transferred from the Site, the Owner shall:

a. conduct quality control testing of the Organic Waste Mix, the Immature Compost and the Finished Compost in accordance with the requirements set out in the Compost Standards Document and listed in conditions 48.1 to 48.4. The quality control testing under condition 48.4 shall only be conducted on Finished Compost; and
b. conduct a review of the data associated with the batch of Compost, which shall

include, but not be limited to:

i. temperature readings and residency times achieved during the composting process; and

ii. analytical results of the Compost.

48.6 Finished Compost is considered to be Compost when it complies with Compost Quality Standards for the intended end use category.

48.7 Finished Compost which does not exceed the maximum concentrations for metals as set out in Column 2 of Table 3.1 of the Compost Standards Document and which complies with the foreign matter quality requirements, the maturity criteria, the pathogen reduction requirements and the pasteurization temperature and residency time requirements set out in the Compost Standards Document may be transferred off Site:

a. for unrestricted use as Category AA Compost; or

b. for use as a non-agricultural source material in accordance with the NMA.

48.8 Finished Compost which does not exceed the maximum concentrations for metals as set out in Column 3 of Table 3.1 of the Compost Standards Document and which complies with the foreign matter quality requirements, the maturity criteria, the pathogen reduction requirements and the pasteurization temperature and residency time requirements set out in the Compost Standards Document may be transferred off Site:

a. for unrestricted use as Category A Compost, provided that the labelling requirements as specified in the Compost Standards Document are met; or

b. for use as a non-agricultural source material in accordance with the NMA.

48.9 Finished Compost which does not exceed the maximum concentrations for metals as set out in Column 4 of Table 3.1 of the Compost Standards Document and which complies with the foreign matter quality requirements, the maturity criteria, the pathogen reduction requirements and the pasteurization temperature and residency time requirements set out in the Compost Standards Document may be transferred off Site:

a. for use as a non-agricultural source material in accordance with the NMA; or

b. for use at a waste disposal facility approved to receive this type of waste.

48.10 Finished Compost which does not exceed the maximum concentrations for metals as set out in Table 3.1 of the Compost Standards Document and which complies with the foreign matter quality requirements, the pathogen reduction requirements and the pasteurization temperature and residency time requirements but

not with the maturity requirements set out in the Compost Standards Document is considered to be an Immature Compost and a waste and shall:

a. continue to undergo curing at the Site; or
b. be disposed of as waste at a waste disposal site approved by the Ministry, or its equivalent if in jurisdictions outside of Ontario, to accept such waste.

48.11 Finished Compost which does not exceed the maximum concentrations for metals as set out in Table 3.1 of the Compost Standards Document and which complies with the foreign matter quality requirements, the maturity requirements but not with the pathogen reduction requirements and the pasteurization temperature and residency time requirements set out in the Compost Standards Document is considered to be a waste and shall:

a. be returned to the Composting process for pasteurization as set out in this Approval; or
b. be disposed of as waste at a waste disposal site approved by the Ministry, or its equivalent if in jurisdictions outside of Ontario, to accept such waste.

48.12 If Finished Compost exceeds the maximum concentrations for metals in Compost for its intended end use, as set out in Table 3.1 of the Compost Standards Document, but meets the maximum concentrations for metals in feedstock listed in Table 3.2 of the Compost Standards Document, it may be returned to the Composting process as waste for re-processing.

48.13 Finished Compost which does not exceed the maximum concentrations for metals as set out in Table 3.1 of the Compost Standards Document and which complies with the maturity requirements and the pathogen reduction requirements and the pasteurization temperature and residency time requirements but not with the foreign matter quality requirements set out in the Compost Standards Document is considered to be a waste and shall:

a. be re-screened as set out in this Approval; or
b. be disposed of as waste at a waste disposal site approved by the Ministry, or its equivalent if in jurisdictions outside of Ontario, to accept such waste.

49.0 Stormwater Management

49.1 The compost pad shall be designed and maintained to minimize the accumulation of standing water on the compost pad. All surface water and compost impacted water shall be collected and managed by either through recirculation into the composting process or disposal in accordance with Regulation 347 or the OWRA.

TRAINING

50.0 Training

50.1 Staff shall be trained in the operation and management of the Site, or area(s)

within the Site, in accordance with the specific job requirements of each individual operator, and which may include procedures for receiving, screening and handling of waste, health and safety concerns pertaining to the waste that the operator will handle, maintenance of the specific equipment which they operate at the Site and emergency response procedures.

50.2 The Owner shall ensure that Site personnel who operate any aspect of the Site or carry out any activity required under this Approval are trained and receive annual refresher training in:

(a) the relevant waste management legislation including EPA, Reg. 347, regulations and guidelines;

(b) major environmental and occupational health and safety concerns pertaining to the waste to be handled;

(c) the proper handling of wastes;

(d) the management procedures including the use and operation of equipment for the processes and wastes to be handled;

(e) the emergency response procedures;

(f) the specific written procedures for the control of nuisance conditions;

(g) the terms, conditions and operating requirements of this Approval; and

(h) proper inspection, receiving and recording procedures and the activities to be undertaken during and after a load rejection.

INSPECTIONS AND RECORD KEEPING

51.0 Daily Inspections and Log Book

51.1 An inspection of the entire Site and all equipment on the Site shall be conducted each day the Site is in operation to ensure that the Site 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 Site if needed.

51.2 A record of the daily Site inspections shall be kept in a daily log book or a dedicated electronic file that includes:

(a) the name and signature of person that conducted the inspection;

(b) the date and time of the inspection;

(c) the list of any deficiencies discovered;

(d) the recommendations for remedial action; and

(e) the date, time and description of actions taken.

52.0 Monthly Inspections and Log Book

52.1 During Site operations, the Owner shall inspect the Site monthly for the following items but not limited to these items:

(a) General settlement areas or depressions on the waste mound;

(b) Shear and tension cracks on the waste mound;

(c) Condition of surface water drainage works;

(d) Erosion and sedimentation in surface water drainage system;

(e) Presence of any ponded water on the waste mound;

(f) Adequacy of cover material;

(g) Evidence of vegetative stress, distressed poplars or side slope plantings on or adjacent to the waste mound;

(h) Condition of groundwater monitoring wells and gas wells;
(i) Presence of insects, vermin, rodents and scavenging animals on or adjacent to the waste mound;
(j) Condition of fence surrounding the Site;
(k) Condition of on-Site ponds; and,
(l) General Site appearance.
52.2 The Owner shall inspect the waste mound and surrounding areas monthly for presence of leachate seeps. The Owner will make best efforts to repair leachate seeps within 48 hours of discovery, depending on weather and ground conditions. In the event the leachate seeps are not addressed within 48 hours of discovery, the Owner shall document in the daily log book the reasons for which the seep(s) were not repaired within the 48 hour timeframe.
52.3 The Owner shall establish and maintain a written record of the monthly Site inspections. This record shall be in the form of a log and/or a dedicated electronic file and it shall include, as a minimum, the following information:
(a) date and time of inspection;
(b) name, title and signature of trained personnel that conducted the inspection;
(c) a listing of any deficiencies observed;
(d) recommendations for remedial action; and
(e) the date, time and description of actions taken to address the deficiency.

53.0 Record Keeping

53.1 The Owner shall establish and maintain a written record of daily operations at the Site. This record must be in a form of a log and/or a dedicated electronic file and it shall include as a minimum the following information:
(a) the type, date and time of arrival, hauler, and quantity (tonnes) of all waste received at the Site;
(b) the type, date and time of departure, destination and quantity (tonnes) of all Category A, Category B, non-agricultural source material or waste transferred from the Site;
(c) quantity of finished compost transferred from the Site;
(d) daily compost temperature reading; and
(e) activities undertaken on Site.
53.2 The Owner shall maintain a written record of all compost related monitoring, sampling and testing activities at the Site. This record shall include, as a minimum, the following information:
(a) sample collection locations and volume of the samples collected;
(b) day and time of collection;
(c) sample handling procedures;
(d) parameters tested for and the resulting concentrations;
(e) name of the laboratory facility doing the testing; and
(f) conclusions drawn with respect to the results of the testing.
53.3 The Owner shall maintain a written record of all emergency situations at the Site. This record shall include, as a minimum, the following information:

(a) type of the emergency situation and the resulting environmental impact;
(b) date, time, location and cause of the emergency situation;
(c) actions taken to address the impact;
(d) description of how any waste generated as a result of the emergency situation was stored and/or removed from the Site; and
(e) actions taken to prevent the re-occurrence of a similar emergency situation in the future.

53.4 The Owner shall establish and maintain a written record of complaints received about the Site. The records shall be kept at the Municipal Office. This record shall be in the form of a log or a dedicated electronic file and it shall include, as a minimum, the following information:
(a) date and time of any complaints received at the Site;
(b) name, address and telephone number of the complainant (if provided);
(c) nature of the complaint;
(d) activities taking place on Site at the time of the complaint;
(e) meteorological conditions at the time of the complaint.
(f) date and description of any remedial actions taken to address the received complaints.

53.5 The Owner shall establish and maintain a written record of all occurrences of refusal of acceptance or discovering of unapproved waste landfilled at the Site. This record shall be in a form of a log or a dedicated electronic file and it shall include, as a minimum, the following information:
(a) waste generator (if known);
(b) type of unapproved waste;
(c) an approximation on the amount of unapproved waste;
(d) nature of unapproved waste;
(e) steps taken to remove waste material; and
(f) actions taken by the Owner to prevent recurrence.

53.6 The Owner shall maintain a written record of employee training required by Condition 50.1 and 50.2 which shall include:
(a) date of training;
(b) name and signature of person who has been trained; and
(c) description of the training provided.

54.0 Record Retention

54.1 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.

54.2 The Owner shall retain all documentation listed in Schedule “A” for as long as this Approval is valid.

54.3 The Owner shall retain employee training records as long as the employee is working at the Site.

54.4 The Owner shall make all of the above documents available for inspection upon request of Ministry staff.

MONITORING, TRIGGER MECHANISM, AND CONTINGENCY PLANS

55.0 Environmental Monitoring Program

55.1 (1) The Owner shall conduct environmental monitoring at the Site in accordance with the environmental monitoring program outlined in Schedule “D”.

(2) In the event the Owner recommends any changes to the environmental monitoring plan in the Annual Report, the Owner shall provide a cover letter with the submission of the annual report that clearly indicates the report contains proposed changes to the environmental monitoring plan and request the District Office review the proposed changes. The cover letter shall be addressed to the District Manager.

(3) Within fourteen (14) days of receiving written correspondence from the District Office confirming that the District Office is in agreement with the proposed changes to the environmental monitoring program identified in Condition 55.1 (2), the Owner shall forward a letter identifying the proposed changes, copies of the correspondences from the District Manager and all other correspondences and responses related to Condition 55.1 (2), to the Director requesting the Approval be amended to approve the proposed changes to the environmental monitoring plan prior to implementation.

(4) 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.

56.0 Groundwater Monitors

56.1 The Owner shall ensure all groundwater monitoring wells are properly capped, locked and protected from damage.

56.2 All groundwater monitoring wells whether included in the monitoring program or not shall be assessed, repaired, replaced or decommissioned as required. Any well being decommissioned shall be decommissioned in accordance with good standard practice that will prevent contamination through the abandoned well and in accordance with Ontario Regulation 903.

56.3 The Owner shall repair or replace any monitoring well included in the monitoring program which is destroyed or in any way made inoperable for sampling such that no more than one sampling event is missed.

56.4 Any monitoring well included in the monitoring program that is no longer required as part of the groundwater monitoring program may be decommissioned provided its removal from the monitoring program has been approved by the Director. A report on the decommissioning shall be provided in the annual monitoring report for the period during which the well was decommissioned.

57.0 Compliance Criteria

57.1 The Site shall be operated in such a way to ensure compliance with the Ministry's PWQOs at monitoring points along the property line that have the potential to be impacted by leachate from the Site.

58.0 Trigger Mechanism and Contingency Plans

58.1 The Trigger Mechanism Plan shall be carried out by the Owner in accordance with Items 20 through 24 set out in Schedule "A".

58.2 In the event of a confirmed exceedance of a site-specific trigger level, 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.

58.3 In the event the Owner has to implement contingency plans to address exceedances of the groundwater or surface water trigger mechanisms, the conceptual contingency plans identified in Item 31 in Schedule "A" are deemed acceptable as possible options for addressing the exceedances. For any contingency plan, the Owner shall submit all necessary information and detailed designs for approval and obtain approval for the detailed design prior to implementing any contingency plan.

58.4 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 Director and 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 and District Manager for approval within 90 days after confirmation of the exceedances; and

(c) The contingency measures shall be implemented by the Owner upon approval by the Director.

58.5 The Owner shall ensure that any proposed changes to the Site-specific trigger levels for leachate impacts to the surface water or groundwater, shall be approved in advance by the Director prior to implementation.

COMPLAINTS PROCEDURE AND EMERGENCY SITUATIONS

59.0 Complaints Procedure

59.1 If at any time the Owner receives complaints regarding the operation of the Site, the Owner shall respond to these complaints according to the following procedure:

(a) The Owner shall record each complaint in accordance with Condition 53.4;

(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 and forward a formal reply to the complainant; and

(c) The Owner shall 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 re-occurrence of similar incidents.

59.2 The Owner shall post the Site complaints procedure at the Site entrance along with the name and phone number of a suitable, local contact to receive complaints or questions related to the Site. All complaints and the Owner’s actions taken to remedy the complaints must be summarized in the Annual Report.

59.3 With the exception of weekends and statutory holidays, all complaints received by

the Owner are to be reported to the District Manager within (2) business days of receipt.

60.0 Emergency Situations

60.1 In the event of a fire or discharge of a contaminant to the environment, Site staff shall contact the Ministry's Spills Action Centre (1-800-268-6060) and the District Office of the Ministry, as well as other applicable agencies as required.

60.2 The Owner shall submit to the District Manager a written report within three (3) days of the spill or incident, outlining the nature of the incident, remedial measures taken and measures taken to prevent future occurrences at the Site.

60.3 The Owner shall maintain an Emergency Response Manual for the Site, in consultation with local emergency response agencies. The Emergency Response Manual should indicate the responsibility of each of the stakeholders with respect to handling possible emergency situations, including the situation of a HHW Depot hazardous spill.

60.4 The Emergency Response Manual shall be updated on an as-needed basis and be provided to the District Manager within one month of the revision date.

60.5 The Owner shall ensure that adequate firefighting and contingency spill cleanup equipment is available and that emergency response personnel are familiar with its use and location.

REPORTING

61.0 Annual Reporting

61.1 A written report on the development, operation, closure and monitoring of the Site shall be completed annually (the “Annual Report”). The Annual Report shall be submitted to the District Manager by **April 30** of each year and shall cover the year ending the preceding December 31st.

61.2 The Annual Report shall include but not be limited to the following:

(a) a summary of type and quantity of incoming waste accepted during the reporting period;

(b) a summary of the amount of wastes refused for disposal at the Site, the reasons for refusal and the carrier who brought the waste to the Site;

(c) a summary of the total volume of waste, daily cover, intermediate cover, and final cover deposited or placed at the landfill during the reporting period, the remaining capacity of the landfill and remaining life expectancy of the landfill;

(d) a discussion on the progress of landfilling and the application of the final cover and vegetative cover;

(e) a summary of the Reuse Depot and HHW Depot operations;

(f) a section of text describing the landfill's hydrogeologic setting;

(g) a water table contour map;

(h) a location map illustrating the Site relative to nearby potentially sensitive groundwater and/or surface water features;

(i) a Site plan(s) illustrating the approved landfill footprint;

(j) stratigraphic cross-sections which clearly illustrate the subsurface distribution of geological materials;

(k) a description of the QA/QC sampling protocols and any problems encountered during the sampling events which may have impacted the reliability of analytical results;
(l) the status of all monitoring wells and a statement as to compliance with Ontario Regulation 903;
(m) a complete list of all sampling locations, sampling frequencies, target parameters and trigger levels assessed in the Environmental Monitoring Program for the reporting period;
(n) a table presenting all analytical results for all parameters. The analytical results for the critical contaminants must be presented graphically on time-series graphs, and must be compared to the trigger levels for compliance with Conditions 57 and 58;
(o) interpretive analysis of the results of all groundwater and surface water monitoring, including an assessment of the need to amend the monitoring programs, especially as they concern future sampling parameters, frequency and protocol;
(p) an assessment with regards to compliance of the groundwater and surface water quality with regards to the PWQOs;
(q) a discussion on the contaminated attenuation zone and the adequacy of the area for attenuation;
(r) a description of any significant landfill gas collection system maintenance or operational problems encountered and the actions taken for remediation;
(s) any changes to the gas collection system implemented over the reporting period including the installation of new extraction vents;
(t) a summary of any complaints received and the steps taken to identify, resolve and remediate the issue;
(u) any environmental and operational problems encountered during the operation of the Site (including odour and vector problems) and any mitigative actions taken;
(v) a statement as to compliance with all terms and conditions of this Approval and all other relevant Ministry groundwater and surface water requirements;
(w) any recommendations to minimize impacts and improve Site operations and monitoring programs; and
(x) any other information with respect to the Site which the District Manager or Director may require from time to time.
61.3 A written report on the development, operation, closure and monitoring of the Composting Facility shall be completed annually (the “Composting Facility Annual Report”). The Composting Facility Annual Report shall be submitted to the District Manager by **April 30** of each year and shall cover the year ending the preceding December 31st.
61.4 The Composting Facility Annual Report shall include but not be limited to the following:
(a) a monthly mass balance of the Organics Waste received, processed, and transferred from the Site as finished compost, Category A, Category B, non-agricultural source material and outgoing residual wastes;
(b) a summary of pile locations, pile record forms, pile residence time, temperature monitoring records, turning records, sampling analysis records and results to verify that

all compost transferred from the Site met the requirements of Condition 48.0;
(c) any environmental and operational problems encountered during the operation of the Composting Facility (including odour and vector problems) and any mitigative actions taken;
(d) a statement as to compliance with all Composting Facility related terms and conditions;
(e) any recommendations to minimize impacts and improve Composting Facility operations and monitoring programs.

SITE CLOSURE

62.0 HHW Depot

62.1 (a) The Owner shall submit, for approval by the Director, a written Closure Plan at least six (6) months prior to the permanent closure of the HHW Depot. This plan must include, as a minimum, a description of the work that will be done to facilitate closure of the HHW Depot and a schedule for completion of that work; and
(b) Within ten (10) days after closure of the HHW Depot, the Owner shall notify the Director, in writing, that the HHW Depot is closed and that the HHW Depot Closure Plan has been implemented.

63.0 Composting Facility

63.1 (a) The Owner shall submit, for approval by the Director, a written Closure Plan at least six (6) months prior to the permanent closure of the Composting Facility. This plan must include, as a minimum, a description of the work that will be done to facilitate closure of the Composting Facility and a schedule for completion of that work; and
(b) Within ten (10) days after closure of the Composting Facility, the Owner shall notify the Director, in writing, that the Composting Facility is closed and that the Composting Facility Closure Plan has been implemented.

64.0 Landfill

64.1 At least two (2) years prior to closure or when 90% of the Site capacity is reached, whichever comes first, the Owner shall submit to the Director for approval, with copies to the District Manager, a detailed Site closure plan pertaining to the termination of landfilling operations at this Site, the Reuse Depotand the Public Drop-off and Transfer Area,post-closure inspection, maintenance, monitoring, and end use. The plan shall include the following:
(a) a plan showing Site appearance after closure;
(b) a description of the proposed end use of the Site, that shall include a discussion on the EA commitment to dedicate portion of the lands within the Site that are not required for Site post-closure operations and monitoring, to be used for community recreational purpose.
(c) a description of the procedures for closure of the Site:

i. advance notification of the public of the landfill closure;
ii. posting a sign at the Site entrance indicating the landfill is

closed and identifying any alternative was disposal arrangements;
iii. completion, inspection and maintenance of the final cover and landscaping;
iv. Site security;
v. removal of unnecessary landfill-related structures, buildings and facilities; and
vi. final construction of any control, treatment, disposal and monitoring facilities for leachate, groundwater, surface water and landfill gas;

(d) a schedule indicating the time-period for implementing sub-conditions i) to vi) above.
(e) descriptions of the procedures for post-closure care of the Site, including:

i. Operation, inspection and maintenance of the control, treatment, disposal and monitoring facilities for leachate, groundwater, surface water and landfill gas;
ii. Record keeping and reporting; and
iii. Complaint contact and response procedures;

(f) an assessment of the adequacy of and need to implement the contingency plans for leachate and methane gas;
(g) an updated estimate of the Contaminating Lifespan of the Site, based on the results of the monitoring programs to date; and
(h) A description of how pollinator friendly plants were considered in the final vegetative cover for the landfill and/or in the landscaping within the Site.
64.2 A vegetative cover consisting of vegetation that is suited to local conditions and that is capable with minimal care of providing vigorous, plentiful cover no later than its third growing season shall be established over the entire landfill cover to control erosion and minimize evapotranspiration. The Owner shall complete planting as soon as possible after reaching final contours. The vegetative cover seed shall be in accordance with Ontario Provincial Standard Specifications and good practice.
64.3 Final slopes above grade at the time of Site closure within the waste fill area shall be within the range of 4H:1V (25%) and 20H:1V (5%).

65.0 Post-Closure

65.1 The Site shall be closed in accordance with the closure plans as approved by the Director.
65.2 Upon closure of the Site, the Owner shall update the sign at the front gate of the Site to indicate the following:
i. the name of the Site and Owner;

ii. the Environmental Compliance Approval number;
iii. the name of the Operator;
iv. a warning against unauthorized access;
v. the telephone number to which complaints or questions may be directed;
vi. 24 hour emergency telephone number;
vii. the Site is closed;
viii. dumping outside of the gate is illegal; and
ix. alternative locations for waste disposal.
65.3 Upon closure of the Site, the following features will be inspected, recorded and maintained on a monthly basis:
i. evidence of settlement;
ii. evidence of leachate seeps;
iii. cover soil integrity;
iv. evidence of illegal waste dumping;
v. vegetative cover; and
vi. surface water drainage works.
65.4 Any deficiencies identified in Condition 65.3 shall be repaired within one month time of notice.
65.5 Illegal waste shall be removed and disposed of within 48 hours of detection.
65.6 An inspection of the entire Site shall be conducted by the Owner twice per year.

SCHEDULE "A"

This Schedule "A" forms part of Environmental Compliance Approval No. A250601

1. Hydrogeological Site Assessment and 1989 Monitoring Report prepared by Gartner Lee Limited and dated June 1990
2. City of Orillia Landfill 1990 Monitoring Final Report prepared by Gartner Lee Limited and dated July 1991.
3. Response to MOE comments on the report entitled "Supporting Documentation to an Application for a Certificate of Approval, Kitchener Street Landfill Service Area Interim Expansion" prepared by Proctor and Redfern Limited and dated September 1990.
4. Supporting documentation to an Application for a Certificate of Approval, Kitchener Street Landfill Service Area Interim Expansion prepared by Proctor and Redfern Limited and dated September 1990 (Revised November 1990).
5. Letters dated September 8, 1998 and September 10, 1998, from the City of Orillia to Approvals Branch, MOE
6. A letter report dated August 15, 1998, by Dixon Hydrogeology Limited on the proposed alternative final cover and attached Site Location Map (Figure 1).
7. A letter dated December 2, 1998, to Tesfaye Gebrezghi, Environmental Assessment and Approvals Branch, MOE, and attached technical papers on GCL.
8. A letter dated February 15, 1999, to Tesfaye Gebrezghi, Environmental Assessment and Approvals Branch, MOE, regarding final covers and attached February 1991 Proctor and Redfern map (Figure 3) showing elevation contours.
9. Letter dated August 18, 1992 to Mr. Ian Gray, District Officer, Ministry of the Environment from Mr. R.F. Meadley City Engineer, Commissioner of Public Works, City

of Orillia that provided a comprehensive plan for receipt of contaminated materials directed to the landfill.
10. Letter dated June 9, 1995 to Mr. Ian Gray, District Officer, Ministry of the Environment from Mr. Peter Dance, Manager of Environmental Services, City of Orillia providing a revision/amendment to the comprehensive plan for receipt of contaminated material directed to the landfill.
11. Letter report and supporting documentation dated December 21, 2005 addressed to Mr. Ian Parrott, Ministry of the Environment from Mr. Peter Dance, City of Orillia. The report is entitled " *City of Orillia - Condition 17(2) - Receipt of Contaminated Material - Provisional Certificate of Approval No. A250601 - Kitchener Street Landfill* " prepared by the City of Orillia. The supporting documentation included a letter dated December 15, 2005 to Mr. Greg Preston, City of Orillia from Mr. Ben Kempel, Conestoga Rover and Associates that provided a peer review of the letter report.
12. Letter dated June 1, 2006 to Mr. Peter Dance, City of Orillia from Mr. Dale Gable, Ministry of the Environment providing comments on the Plan for Receipt of Contaminated Material .
13. Letter dated May 1, 2006 addressed to Mr. Ian Parrott, Ministry of the Environment from Mr. Peter Dance, City of Orillia requesting an amendment to the Design and Operations Plan to permit the use of a steel clad building to store for the diversion program at the Site.
14. Letter dated June 1, 2006 addressed to Mr. Peter Dance, City of Orillia, from Mr. Dale Gable, Ministry of the Environment requesting additional information on landfill gas monitoring for the proposed building.
15. Letter dated June 8, 2006 addressed to Mr. Dale Gable, Ministry of the Environment from Mr. Peter Dance, City of Orillia providing information on the construction of the building and landfill gas monitoring for the building.
16. Letter Report entitled " *City of Orillia - Condition 34 (Updated Environmental Monitoring Program) Provisional Certificate of Approval No. A250601 - Kitchener Street Waste Diversion Site* " dated December 21, 2005 addressed to Mr. Ian Parrott, Ministry of the Environment from Mr. Peter Dance, City of Orillia.
17. Letter dated November 27, 2006 addressed to Mr. Peter Dance, City of Orillia from Mr. Dale Gable, Ministry of the Environment requesting toluene be added to the parameter suite for BH 26.
18. Letter dated December 7, 2006 addressed to Mr. Dale Gable, Ministry of the Environment from Mr. Peter Dance, City of Orillia indicating toluene has been added to the parameter suite for environmental monitoring well BH 26.
19. Letter dated January 4, 2007 addressed to Mr. Dale Gable, Ministry of the Environment from Mr. Peter Dance, City of Orillia indicating that zinc shall be added to analytical suite for borehole 5-I, 17-III and 22-IR.
20. Letter report dated February 27, 2006 addressed to Mr. Greg Preston, City of Orillia from Mr. Frank Barone, Golder Associates Ltd. The report is entitled " *Proposed Groundwater Trigger Mechanism - Kitchener Street Waste Diversion Site - City of Orillia* ".

21. Letter dated September 29, 2006 addressed to Mr. Phil Bye, Ministry of the Environment from Mr. Frank Barone, Golder Associates Ltd. providing a response on the Ministry's comments on the peat attenuation study.
22. Letter dated November 28, 2006 addressed to Mr. Peter Dance, City of Orillia from Mr. Dale Gable, Ministry of the Environment providing comments on the trigger mechanism plan.
23. Letter dated December 11, 2006 addressed to Mr. Dale Gable, Ministry of the Environment from Mr. Peter Dance, City of Orillia providing a rationale for the trigger mechanism level for ammonia.
24. Letter dated January 2, 2007 addressed to Mr. Peter Dance, City of Orillia from Mr. Dale Gable, Ministry of the Environment indicating the proposed trigger mechanism for ammonia is acceptable.
25. Report entitled " *Assessment of Attenuation Capacity - Kitchener Street Landfill Waste Diversion Site* " prepared by Golder Associates Ltd. dated October 2005.
26. Report entitled " *Kitchener Street Waste Diversion Site - Design, Operation and Maintenance Plan* " prepared by City of Orillia dated December 2005.
27. Letter dated May 23, 2006 addressed to Mr. Peter Dance, City of Orillia from Mr. Phil Bye, Ministry of the Envrionment providing comments on the Assessment of Attenuation Capacity Study.
28. Letter dated September 29, 2006 addressed to Mr. Phil Bye, Ministry of the Environment from Mr. Peter Dance, City of Orillia providing responding to Ministry comments on the attenuation study.
29. Letter dated December 18, 2006 addressed to Mr. Peter Dance, City of Orillia from Mr. Dale I. Gable, Ministry of the Environment requesting additional information pertaining to the Design, Operations and Maintenance Plan.
30. Letter dated January 8, 2007 addressed to Mr. Dale Gable, Ministry of the Environment from Mr. Peter Dance, City of Orillia providing additional information on the Design, Operations and Maintenance Plan as requested in the December 18, 2006 letter.
31. Letter dated June 20. 2006 addressed to Mr. Dale Gable, Ministry of the Environment from Mr. Peter Dance, City of Orillia providing conceptual contingency plans as required by the Certificate.
32. Application for a Certificate of Approval for a Waste Disposal Site signed by Peter G. Dance, director of Public Works, City of Orillia, dated July 25, 2011.
33. Letter dated July 25, 2011 addressed to S. Sideris, Ministry of Environment from P. Dance, City of Orillia requesting an amendment to Certificate of Approval No. A250601 to permit the construction and operation of a push wall bin system and establish diversion depots for asphalt shingles, plastic flower pots and mattresses, including the following attachments:
- Description of push wall bin system (with plans)
- Description of diversion depots for asphalt shingles, flower pots & mattresses
- Comments on Certificate of Approval Application form
34. Letter dated November 12, 2014 addressed to Cindy Hood, MOECC, Barrie District

Office from Andrew Schell, C.E.T., Director of Environmental Services, City of Orillia regarding Revised Water Monitoring Program.
35. Letter dated December 17, 2014 addressed to Andrew Schell, C.E.T., Director of Environmental Services, City of Orillia from Cindy Hood, MOECC, Barrie District Office providing response to November 12, 2014 Letter the district is in agreement with proposed change.
36. Letter and supporting documentation dated December 19, 2014 addressed to MOECC, EAASIB, 2 St. Clair Ave. West, Floor 12A, Toronto, ON, M4V 1L5 from Andrew Schell, C.E.T., Director of Environmental Services, City of Orillia regarding ECA #A250601 Application Revised Environmental Monitoring Program.
37. Application dated October 5, 2015 addressed to the Ministry of the Environment and Climate Change from Mr. Andrew Schell, City of Orillia requesting an amendment to the Design and Operations Plan to permit the demolition of the existing Equipment Building and small office and replace both with a new equipment building with an administration wing, including all attachments.
38. Environmental Compliance Approval Application dated June 9, 2016 and signed Mr. Andrew Schell, Director of Environmental Services, the Corporation of the City of Orillia, including the attached supporting documentation.
39. Report titled "City of Orillia, Kitchener Street Waste Diversion Site, Design, Operation and Maintenance Plan Update" dated February 2016 prepared by SLR Global Environmental Solutions.
40. Report titled "Kitchener Street Waste Diversion Site, City of Orillia, 2014 Annual Monitoring Report" dated April 2015 prepared by Golder Associates Ltd.
41. Environmental Compliance Approval Application, signed by Peter G. Dance, Director of Public Works, City of Orillia, dated September 26, 2012.
42. Part E: Green Bin / Yard Waste Windrow Composting, Design, Operations & Maintenance Plan, prepared by the Public Works Department, revised January 2013.
43. Environmental Compliance Approval Application, signed by Andrew Schell, Director of Environmental Services, City of Orillia, dated July 8, 2016.
44. Composting Site Design, Operations & Maintenance Plan, prepared by City of Orillia Environmental Services Department, Revised July 2016.
45. Covering letter dated August 23, 1990 from the City of Orillia to the Ministry of the Environment.
46. The application dated August 23, 1990 submitted by the City of Orillia for a Provisional Certificate of Approval, Waste Disposal Site (Transfer).
47. Letter and report dated August 27, 1990 from Laidlaw Environmental Services to the City of Orillia regarding their proposal to provide services for the proposed Household Hazardous Waste facility.
48. Technical report entitled “Household Hazardous Waste Facility” prepared by the City of Orillia.
49. Site plan and site location plan dated July, 1990.
50. City of Orillia map showing location of the Orillia Sanitary Landfill Site
51. Copy of Generator Registration Report dated August 20, 1990

52. Letter dated August 30, 1994 addressed to Dave Bell of the Ministry of Environment and Energy from Peter G. Dance, P. Eng., Manager of Environmental Services, City of Orillia.
53. Environmental Compliance Approval Application dated September 17, 2017 and signed by Andrew Schell, Director of Environmental Services and Operations, the Corporation of the City of Orillia, including the attached supporting documentation.
54. Report titled "Waste Diversion Site Consolidated Design, Operations and Maintenance Plan" dated September 2018 and prepared by the City of Orillia.
55. Detailed final cover and passive gas collection design drawings for Cells 1 to 4 titled “Detailed Design of Capping System for Cells 1-4” dated September 10, 2018 and prepared by SLR Consulting.
56. "Waste Diversion Site Consolidated Design, Operations and Maintenance Plan" dated November 2022 and prepared by the City of Orillia.
57. Environmental Compliance Approval Application dated October 19, 2021 and signed by Andrew Schell, General Manager of Environment and Infrastructure Services Department, the Corporation of the City of Orillia, including the attached supporting documentation.
58. Emails dated October 16, 2022, December 8, 2022, and December 14, 2022 from Greg Preston, City of Orillia, to Nick Zambito, Ministry, regarding the Ministry's comments on the application and the City of Orillia's response.

SCHEDULE "B"

This Schedule "B" forms part of Environmental Compliance Approval No. A250601

Table 3.2 - Maximum Concentration for Metals in Feedstock

Item	Column 1	Column 2
	Metal	**Feed for Category AA Compost**
		mg/kg dry weight
1.	**Arsenic**	75
2.	**Cadmium**	20
3.	**Chromium**	1060
4.	**Cobalt**	150
5.	**Copper**	**760**
6.	**Lead**	500
7.	**Mercury**	5
8.	**Molybdenum**	**20**
9.	**Nickel**	180
10.	**Selenium**	14
11.	**Zinc**	1850

SCHEDULE "C"

This Schedule "C" forms part of Environmental Compliance Approval No. A250601

Compost Quality Standards

TABLE 3.1 - Maximum Concentration of Metals in Compost

Item	Column 1	Column 1	Column 2
	Metal	Category AA Compost	Category A Compost
		mg/kg dry weight	***mg/kg dry weight***
1.	**Arsenic**	13	13
2.	**Cadmium**	3	3
3.	**Chromium**	210	210
4.	**Cobalt**	34	34
5.	**Copper**	100	400
6.	**Lead**	150	150
7.	**Mercury**	0.8	0.8
8.	**Molybdenum**	5	5
9.	**Nickel**	62	62
10.	**Selenium**	2	2
11.	**Zinc**	500	700

TABLE 3.3 - Maximum Concentration of Foreign Matter and Sharps in Compost

Parameter	Category AA Compost	Category A Compost
Foreign matter	Total foreign matter greater than 3 mm shall not exceed 1.0%, calculated on a dry weight basis, and plastic cannot exceed 0.5%; and Compost shall not contain any foreign matter greater than 25 mm per 500 ml.	Total foreign matter greater than 3 mm shall not exceed 1.0%, calculated on a dry weight basis, and plastic cannot exceed 0.5%; and Compost shall not contain any foreign matter greater than 25 mm per 500 ml.
Sharp foreign matter	Compost shall contain no material of a size or shape that can reasonably cause human or animal injury.	Compost shall contain no material of a size or shape that can reasonably cause human or animal injury.

TABLE A1 - Baseline Sampling Frequency of Compost (Metals, Pathogens, Maturity and Foreign Matter)

Compost Produced Annually (wet	Baseline Number of Samples (per year)*	Minimum Additional Samples for Compost Containing Human Body Waste Feedstock (per year)

tonnes)		
<5000	4	+ 2
5000-15000	6	+ 2
15000-50000	12	+ 4
>50000	+ 2 more samples for every additional 10,000 tonnes above the 12 Baseline samples.	+ 4 additional samples above the Baseline Number of Samples

*The Owner is permitted to reduce the baseline sampling frequency above by 50%. However, the baseline sampling frequency shall be resumed in accordance with section A1.1.3 of the Compost Standards Document if any individual sample fails to meet any one of the quality standards and/or whenever there is a change in the feedstock or compost characteristics.

SCHEDULE "D"

This Schedule "D" forms part of Environmental Compliance Approval No. A250601

Parameters	**Groundwater Monitoring Stations – Spring & Fall**	**Groundwater Monitoring Stations – Summer**
Major Ions and Total Phosphorus	1-IR, 1-III, 2-III, 3-IR, 3-IIR, 4-11, 5-IR, 5-IIIR, 6R*, 8R, 10R, 11R, 14-IIIR, 16-I, 16-IVR, 17-III, 17-IVR, 18R, 20R, 21-IR, 21-II, 22-IR, 22-II, 26, 27-I, 27-IIR, 29-I, 29-II, 30-1, 30-II *6R excludes major ions	1-IR, 1-III, 2-II, 2-III, 3-IR, 3-IIR, 4-11, 5-IR, 5-IIIR, 6R*, 8R, 10R, 11R, 14-I, 14-IIIR, 15-IIIR, 16-I, 16-IVR, 17-III, 17-IVR, 18R, 20R, 21-IR, 21-II, 22-IR, 22-II, 23, 24R, 25, 26, 27-I, 27-IIR, 29-I, 29-II, 30-1, 30-II *6R excludes major ions
Trace Metals and o-Phosphate	3-IIR, 5-IR, 17-III, 17-IVR, 22-IR, 22-II, 26, 27-IIR, 29-I, 29-II, 30-1, 30-II	1-IR, 2-II, 3-IR, 3-IIR, 4-11, 5-IR, 14-I, 16-I, 17-III, 17-IVR, 21-IR, 22-IR, 22-II, 25, 26, 27-IIR, 29-I, 29-II, 30-1, 30-II
BTEX	5-IR, 5-IIIR, 6R, 11R, 17-III, 22-IR, 22-II, 26	5-IR, 5-IIIR, 6R, 11R, 17-III, 22-IR, 22-II, 26
VOC	3-IR, 3-IIR, 21-IR, 21-II	3-IR, 3-IIR, 21-IR, 21-II
Arsenic	-	3-IIR
Water Levels*	1-IR, 1-II, 1-III, 2-I, 2-II, 2-III, 3-IR, 3-IIR, 4-I, 4-11, 5-IR, 5-IIR, 5-IIIR, 6, 7, 8, 10R, 11R, 13, 14-I, 14-II, 14-III, 15-I, 15-II, 15-III, 16-I, 16-II, 16-III, 16-IV, 17-I, 17-II, 17-III, 17-	

	IVR, 18R, 19, 20R, 21-IR, 21-II, 22-IR, 22-II, 23, 24R, 25, 26, 27-I, 27-IIR, 29-I, 29-II, 30-1, 30-II, T1, T2, and T3 * Water levels are measured in each sampling session.

Parameters	**Surface Water Monitoring Stations – Spring & Fall**	**Surface Water Monitoring Stations – Summer**
Major Ions (with BOD), Trace Metals, o-Phosphate, Total Phosphorus, and Suspended Solids	S-1, S-2, S-3, S-4, S-6, S-7, S-8, S-11, D-1, D-2, D-3, D-4, D-5, D-6	S-1, S-2, S-3, S-4, S-6, S-7, S-8, S-9, S-11, S-14, S-18, S-19
Arsenic	S-2	S-2, S-14

Notes:(1) Major ions include: alkalinity, conductivity, hardness, pH, chloride, sulphate, calcium, magnesium, sodium, potassium, phenols, nitrite, nitrate, ammonia, TKN, organic nitrogen, COD, DOC, DIC, iron, manganese.
(2) Trace metals include: aluminum, barium, cadmium, chromium, cobalt, copper, lead, nickel, selenium, silver, and zinc.
(3) o-Phosphate measured at same locations as Trace Metals.
(4) 2 field blanks and 2 travel blanks required.

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

1. The reason for inclusion of the definitions is to define the specific meaning of terms and simplify the wording of conditions in this Environmental Compliance Approval.

2. The reason for Conditions 1.0 and 2.0 is to ensure that the Site is designed, operated, monitored and maintained in accordance with the application and supporting documentation submitted by the Owner, and not in a manner which the Director has not been asked to consider.

3. The reason for Conditions 3.0, 4.0 and 6.0 is to clarify the legal rights and responsibilities of the Owner under this Approval.

4. Conditions 5.1 and 5.2 are included to ensure that the appropriate Ministry staff have ready access to information and the operations of the Site, which are approved under this Approval.

5. Condition 5.3 has been included in order to clarify what information may be subject to the Freedom of Information Act.

6. Condition 7.0 is included, pursuant to subsection 197(1) of the EPA, to provide that any persons having an interest in the Site are aware that the land has been approved

and used for the purposes of waste disposal.

7. The reasons for Condition 8.0 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.

8. The reasons for Condition 9.0 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.

9. The reason for Condition 10.0 is to ensure that appropriate Ministry staff have ready access to the Site for inspection of facilities, equipment, practices and operations required by the conditions in this Environmental Compliance Approval. This condition is supplementary to the powers of entry afforded a Provincial Officer pursuant to the EPA and OWRA.

10. The reasons for Condition 11.1 is to ensure the Owner has an established plan to address waste minimization for the landfill, educating the public on waste reduction at their homes and business and encourage the public on methods of reduction.

11. The reasons for Conditions 11.2 and 11.3 are to ensure the Owner investigates and evaluates alternative approaches to solid waste management. This is to ensure the long-term health and safety of the public and the environment.

12. The reason for Conditions 12.0, 13.0 and 26.0 is to ensure that the Site is designed, constructed and operated in an environmentally acceptable manner, based on the conceptual design and operations for the Site.

13. The reasons for Condition 14.0 are to specify the normal hours of operation for the landfill Site and a mechanism for amendment of the hours of operation.

14. The reasons for Conditions 15.0, 16.0 and 44.0 are to specify site access to/from the Site 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.

15. The reason for Condition 17.0 is to ensure that access roads are clear and do not pose a safety hazard to the general public.

16. Condition 18.0 is necessary in order to ensure that all waste loads are inspected and waste that is disposed of at the site is in accordance with the terms and conditions in this Environmental Compliance Approval.

17. The reasons for Conditions 19.0, 20.0, 30.0, 31.0, 33.0, 36.0, 40.0, 41.0, 47.0 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.

18. The reason for Condition 21.0 is to ensure that users of the Site are fully aware of important information and restrictions related to Site operations under this Approval.

19. The reason for Condition 22.0 is that open burning of municipal waste is unacceptable because of concerns with air emissions, smoke and other nuisance affects, and the potential fire hazard.

20. Condition 23.0 is included in order to ensure that waste disposal, waste transfer operations at the site is undertaken in accordance with applicable Ministry of the Environment regulations and guidelines. Compliance with these regulations and guidelines will ensure that the site does not cause and adverse effect on the environment.

21. The reason for Conditions 24.0, 27.0 and 32.0 is to specify restrictions on the extent of landfilling at this Site based on the Owner's application and supporting documentation. These limits define the approved volumetric capacity of the site. Approval to landfill beyond these limits would require an application with supporting documentation submitted to the Director.

22. The reason for Condition 25.0 is to specify the approved areas from which waste may be accepted for landfilling and the types and amounts of waste that may be accepted for disposal at the landfill, based on the Owner's application and supporting documentation.

23. The reason for Condition 28.0 is to ensure asbestos waste is handled and disposed of in accordance with Reg. 347 as amended from time to time. Proper handling and disposal of asbestos waste ensures that the asbestos waste does not cause an adverse impact on the environment and also does not affect human health.

24. The reason for Condition 29.0 is to ensure that landfilling operations are conducted in an environmentally acceptable manner. Daily and intermediate cover is used to control potential nuisance effects, to facilitate vehicle access on the site, and to ensure an acceptable site appearance is maintained. The final cover is used to minimize leachate generation by limiting stormwater infiltration and to provide an aesthetically pleasing and suitable end use for the site.

25. The reason for Condition 33.0 is to protect the geomembrane used in the final cover

by preventing the ballooning of the geomembrane through landfill gas venting. As Cells 1 to 4 have been closed for over 20 years, landfill gas generation in these cells has been greatly reduced.

26. The reason for Conditions 34.0 and 35.0 is to specify the approved areas from which waste may be accepted for public drop-off and the types and amounts of waste that may be accepted for public drop-off, based on the Owner's application and supporting documentation.

27. The reason for Conditions 37.0 and 38.0 is to specify the approved areas from which waste may be accepted at the Household Hazardous Waste Depot and the types and amounts of waste that may be accepted at the Household Hazardous Waste Depot, based on the Owner's application and supporting documentation.

28. The reasons for Condition 39.0 is to specify site access to/from the Household Hazardous Waste Depot and to ensure the controlled access and integrity of the Household Hazardous Waste Depot by preventing unauthorized access. This is to ensure the health and safety of the public.

29. The reason for Conditions 42.0 and 43.0 is to specify the approved areas from which waste may be accepted for reuse and the types and amounts of waste that may be accepted for reuse, based on the Owner's application and supporting documentation.

30. The reason for Conditions 44.0 and 45.0 is to specify the approved areas from which waste may be accepted for composting and the types and amounts of waste that may be accepted for composting, based on the Owner's application and supporting documentation.

31. The reason for Condition 48.0 is to ensure that the finished compost does not pose a hazard to the health and safety of the environment or people, and to provide options for the Owner in the event that the resulting compost is not suitable for unrestricted use.

32. The reason for Condition 49.0 is to ensure that stormwater runoff and leachate generated at the Site is disposed of in an environmentally acceptable manner and to ensure that the compost mass which has completed the pathogen inactivation phase is not re-innoculated with pathogens.

33. The reason for Condition 50.0 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.

34. Conditions 51.0, 52.0 and 53.0 are needed to ensure regular inspections of the site

are conducted in order to protect the natural environment and to ensure that detailed records of Site inspections are recorded and maintained for inspection and information purposes.

35. The reason for Condition 54.0 is to ensure that accurate waste records are maintained to ensure compliance with the conditions in this Environmental Compliance Approval (such as fill rate,site capacity, record keeping, annual reporting, and financial assurance requirements), the EPA and its regulations.

36. The reason for Conditions 55.0 and 57.0 is to demonstrate that the landfill 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.

37. The reasons for Condition 56.0 are to ensure the integrity of the groundwater monitoring network and protection of the natural environment.

38. The reason for Condition 58.0 is to ensure that the Owner follows a plan with an organized set of procedures for identifying and responding to unexpected but possible problems at the Site. A remedial action / contingency plan is necessary to ensure protection of the natural environment.

39. The reason for Condition 59.0 is to ensure that any complaints regarding landfill operations at this Site are responded to in a timely and efficient manner.

40. The reasons for Condition 60.0 are to ensure that the Ministry is informed of any spills or fires at the Site and to provide public health and safety and environmental protection.

41. The reasons for Condition 61.0 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.

42. The reasons for Conditions 62.0, 63.0 and 64.0 are to ensure that final closure of the Site is completed in an aesthetically pleasing manner and to ensure the long-term protection of the natural environment.

43. The reason for Condition 65.0 is to ensure the waste transfer and processing facility is closed in an appropriate manner.

Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). 5204-B4RRK2 issued on October 9, 2018

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

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

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

The Notice should also include:

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

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

This Notice must be served upon:

Registrar*
Ontario Land Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5
OLT.Registrar@ontario.ca

and

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

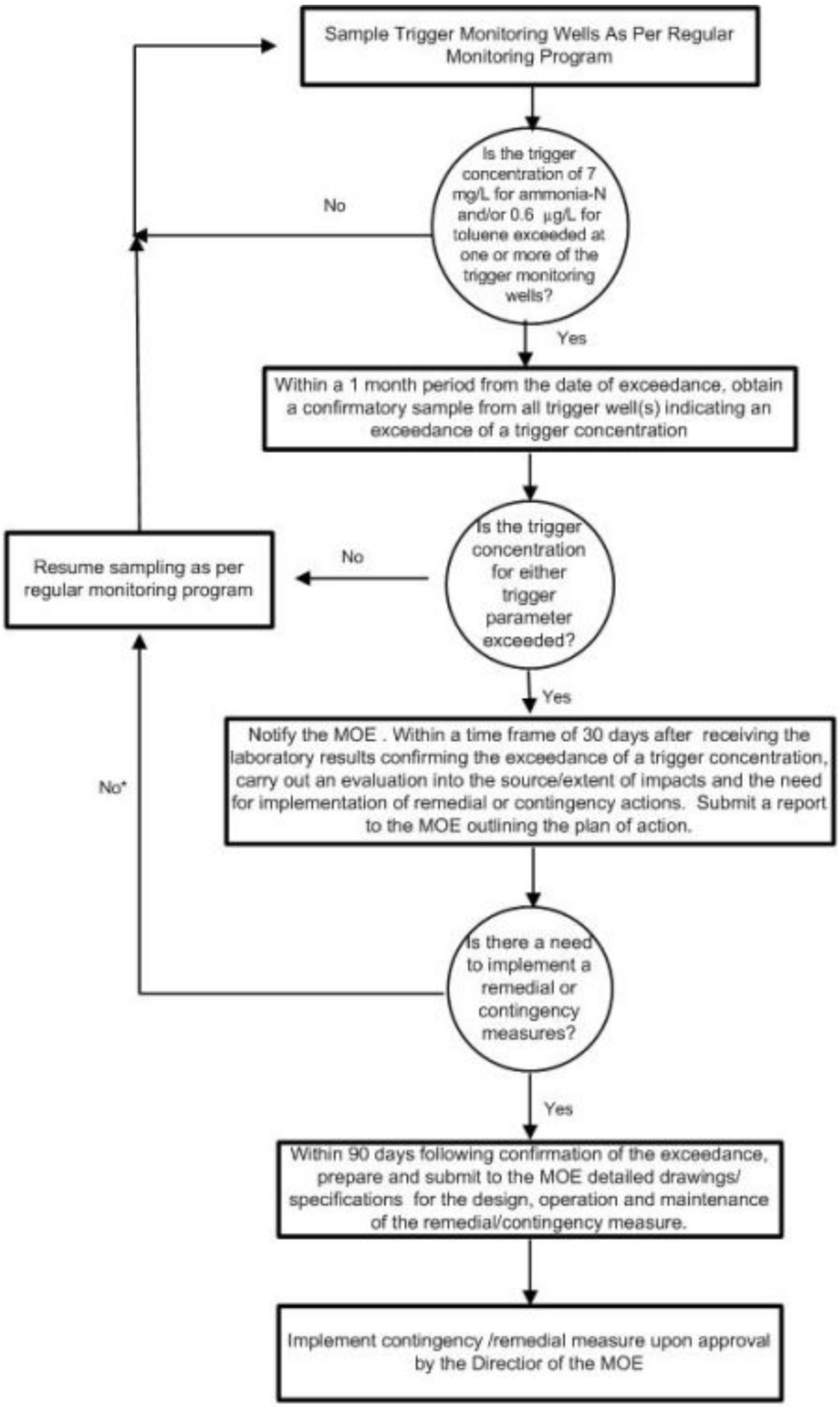
*** Further information on the Ontario Land Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349 or 1 (866) 448-2248, or** www.oltt.gov.on.ca

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

DATED AT TORONTO this 23rd day of December, 2022

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

NZ/
c: District Manager, MECP Barrie
Greg Preston M.Sc., B.Sc.(Env.)
Manager of Environmental Services, The Corporation of the City of Orillia



* - Any proposed changes to the trigger mechanism shall be approved by the Director of the MOE prior to implementation

APPENDIX G

Certificates of Analysis

TESTMARK Laboratories Ltd.
Committed to Quality and Service

CERTIFICATE OF ANALYSIS

Client:	Hannah Curry	Work Order Number:	553271
Company:	City of Orillia - Waste Diversion Site	PO #:	83585
Address:	40 Kitchener St.	Regulation:	Information not provided
	Orillia, ON, L3V 6Z9	Project #:	Fall WDS Sampling GW Inside 1
Phone:	(705) 325-2394	DWS #:	
Email:	hcurry@orillia.ca	Sampled By:	Hannah Curry
Date Order Received:	10/11/2024	Analysis Started:	10/11/2024
Arrival Temperature:	15.8 C	Analysis Completed:	10/21/2024

WORK ORDER SUMMARY

ANALYSES WERE PERFORMED ON THE FOLLOWING SAMPLES. THE RESULTS RELATE ONLY TO THE ITEMS TESTED.

Sample Description	Lab ID	Matrix	Type	Comments	Date Collected	Time Collected
BH3-IR (4662)	2067111	Ground Water	None		10/10/2024	9:25 AM
BH3-IIR (4663)	2067112	Ground Water	None		10/10/2024	10:00 AM
BH5-IR (4664)	2067113	Ground Water	None		10/10/2024	10:15 AM
BH5-IIIR (4665)	2067114	Ground Water	None		10/10/2024	10:25 AM
BH6R (4666)	2067115	Ground Water	None		10/10/2024	2:45 PM
BH16-I (4667)	2067116	Ground Water	None		10/10/2024	11:45 AM
BH16-IVR (4668)	2067117	Ground Water	None		10/10/2024	11:25 AM
BH17-III (4669)	2067118	Ground Water	None		10/10/2024	1:45 PM
BH17-IVR (4670)	2067119	Ground Water	None		10/10/2024	2:10 PM
BH20R (4671)	2067120	Ground Water	None		10/10/2024	12:00 PM
BH21-IR (4672)	2067121	Ground Water	None		10/10/2024	10:05 AM
BH21-IIR (4673)	2067122	Ground Water	None		10/10/2024	9:35 AM
BH22-IR (4674)	2067123	Ground Water	None		10/10/2024	11:25 AM
BH22-IIR (4675)	2067124	Ground Water	None		10/10/2024	11:10 AM
BH26 (4676)	2067125	Ground Water	None		10/10/2024	10:15 AM
BH30-I (4677)	2067126	Ground Water	None		10/10/2024	2:20 PM
BH30-II (4678)	2067127	Ground Water	None		10/10/2024	10:40 AM

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 553271

Sample Description	Lab ID	Matrix	Type	Comments	Date Collected	Time Collected
Duplicate 21IRD (4679)	2067128	Ground Water	None		10/10/2024	10:05 AM
Duplicate B516-I (4680)	2067129	Ground Water	None		10/10/2024	11:45 AM
Travel Blank (4681)	2067130	Ground Water	None		10/10/2024	
Field Blank BH17-III (4682)	2067131	Ground Water	None		10/10/2024	1:45 PM

METHODS AND INSTRUMENTATION

THE FOLLOWING METHODS WERE USED FOR YOUR SAMPLE(S):

Method	Lab	Description	Reference
Alkalinity (A1.0)	Mississauga	Determination of Alkalinity by Titration	Modified from APHA-2320B
Ammonia Water (A42)	Kirkland Lake	Determination of Ammonia/Ammonium in Water	Modified from EPA 350.1
Ammonium Water (A42.3)	Kirkland Lake	Calculation of Ammonium in Water	Modified from APHA 4500
Anions Water (mg/L by IC) (A5)	Mississauga	Determination of Anions in Water by Ion Chromatography	Modified from SW846-9056A
BTEX/F1 Water (A127)	Mississauga	Determination of PHC BTEX/F1 in Water - Tier 1 CCME	Modified from CWS PHC Tier I CCME
Carbonate (A94)	Mississauga	Determination of Carbonate and Bi-Carbonate	Modified from APHA-2320
Conductivity of Water (A12)	Mississauga	Determination of Conductivity in Water at 25°C	Modified from SM 2510 B
DIC Water (A55)	Mississauga	Determination of Dissolved Inorganic Carbon in Water	Modified from SM-5310 C
DOC Water (A55.1)	Mississauga	Determination of Dissolved Organic Carbon in Water	Modified from SM-5310 C
Field pH (R112)	Mississauga	Client Supplied Field Determination of pH of Water	Field Test
Field Temp (R113)	Mississauga	Client Supplied Field Determination of Temperature of Water	Field Test
ICPMS Dis. Water (A13.3)	Garson	Determination of Dissolved Metals in Water by ICP/MS -> Lab-Filtered	Modified from SW846-6020A
ICPMS Reg. Water (A13.1)	Garson	Determination of Metals in Water by ICP/MS	Modified from SW846-6020A
Ion Balance (A91)	Mississauga	Calculation of Ion Balance	Modified from APHA-1030E
OP Water (A23.1)	Mississauga	Determination of Ortho-Phosphate in Water.	Modified from EPA 365.3 and ESS 310.2.
Organic Nitrogen (A58)	Kirkland Lake	Determination of Organic Nitrogen	Modified from APHA-4500
pH of Water (A2.0)	Mississauga	Determination of Water pH by Ion Selective Electrode	Modified from APHA-4500H+ B
Phenols 4AAP (T38)	Mississauga	Determination of Total Phenols by 4AAP	Modified from APHA-5530
Reg. Hardness (A13)	Garson	Determination of Total Hardness	Modified from APHA-2340B
TKN Water Dig. (A58)	Kirkland Lake	Determination of Total Kjeldahl Nitrogen in Waters with Block Digestion.	Modified from SM-4500 NORG-D
TP Water (A23.2)	Kirkland Lake	Determination of Total Phosphorus in Water.	Modified from EPA 365.3 and ESS 310.2,

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 553271

Method	Lab	Description	Reference
Un-Ionized NH3 (A42.4)	Kirkland Lake	Calculation of Un-Ionized Ammonia, based on Client Field pH and Temperature	Modified from APHA-4500
VOC Water (A14)	Mississauga	Determination of Volatile Organic Compounds in Water by P&T/GC/MS	Modified from EPA SW846-8260 B

REPORT COMMENTS

VOC analysis for sample 2067129 "Duplicate B516-I (4680)" is not required, as per the client. (No vials received.) 10/21/24 KJB

This report has been approved by:

Brad Halvorson, B.Sc.
Laboratory Director

WORK ORDER RESULTS

Sample Description	BH3 - IR (4662)		BH3 - IIR (4663)		BH5 - IR (4664)		BH5 - IIIR (4665)		
Sample Date	10/10/2024 9:25 AM		10/10/2024 10:00 AM		10/10/2024 10:15 AM		10/10/2024 10:25 AM		
Lab ID	2067111		2067112		2067113		2067114		
Anions	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Chloride	157.0	0.2	501.0	0.2	134.0	0.2	108.0	0.2	mg/L
Nitrate (as N)	<0.05	0.05	0.05	0.05	<0.05	0.05	0.15	0.05	mg/L
Nitrite (as N)	<0.05	0.05	<0.05	0.05	<0.05	0.05	<0.05	0.05	mg/L
Sulphate	2.3	0.5	<0.5	0.5	20.4	0.5	5.1	0.5	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 553271

Sample Description	BH6R (4666)		BH16 - I (4667)		BH16 - IVR (4668)		BH17 - III (4669)		
Sample Date	10/10/2024 2:45 PM		10/10/2024 11:45 AM		10/10/2024 11:25 AM		10/10/2024 1:45 PM		
Lab ID	2067115		2067116		2067117		2067118		
Anions	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Chloride	49.6	0.2	183.0	0.2	89.6	0.2	217.0	0.2	mg/L
Nitrate (as N)	<0.05	0.05	<0.05	0.05	0.19	0.05	<0.05	0.05	mg/L
Nitrite (as N)	<0.05	0.05	<0.05	0.05	<0.05	0.05	<0.05	0.05	mg/L
Sulphate	<0.5	0.5	<0.5	0.5	29.1	0.5	29.6	0.5	mg/L

Sample Description	BH17 - IVR (4670)		BH20R (4671)		BH21 - IR (4672)		BH21 - IIR (4673)		
Sample Date	10/10/2024 2:10 PM		10/10/2024 12:00 PM		10/10/2024 10:05 AM		10/10/2024 9:35 AM		
Lab ID	2067119		2067120		2067121		2067122		
Anions	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Chloride	130.0	0.2	168.0	0.2	103.0	0.2	77.4	0.2	mg/L
Nitrate (as N)	0.28	0.05	0.19	0.05	0.07	0.05	<0.05	0.05	mg/L
Nitrite (as N)	<0.05	0.05	<0.05	0.05	<0.05	0.05	<0.05	0.05	mg/L
Sulphate	37.3	0.5	<0.5	0.5	<0.5	0.5	40.2	0.5	mg/L

Sample Description	BH22 - IR (4674)		BH22 - IIR (4675)		BH26 (4676)		BH30 - I (4677)		
Sample Date	10/10/2024 11:25 AM		10/10/2024 11:10 AM		10/10/2024 10:15 AM		10/10/2024 2:20 PM		
Lab ID	2067123		2067124		2067125		2067126		
Anions	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Chloride	145.0	0.2	116.0	0.2	124.0	0.2	151.0	0.2	mg/L
Nitrate (as N)	0.08	0.05	0.07	0.05	<0.05	0.05	<0.05	0.05	mg/L
Nitrite (as N)	<0.05	0.05	<0.05	0.05	<0.05	0.05	<0.05	0.05	mg/L
Sulphate	9.8	0.5	64.2	0.5	9.7	0.5	0.7	0.5	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 553271

Sample Description	BH30 - II (4678)		Duplicate 21IRD (4679)		Duplicate B516 - I (4680)		Travel Blank (4681)		
Sample Date	10/10/2024 10:40 AM		10/10/2024 10:05 AM		10/10/2024 11:45 AM		10/10/2024 12:00 AM		
Lab ID	2067127		2067128		2067129		2067130		
Anions	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Chloride	57.3	0.2	91.5	0.2	178.0	0.2	<0.2	0.2	mg/L
Nitrate (as N)	<0.05	0.05	0.07	0.05	<0.05	0.05	<0.05	0.05	mg/L
Nitrite (as N)	<0.05	0.05	<0.05	0.05	<0.05	0.05	<0.05	0.05	mg/L
Sulphate	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	mg/L

Sample Description	Field Blank BH17 - III (4682)		
Sample Date	10/10/2024 1:45 PM		
Lab ID	2067131		
Anions	Result	MDL	Units
Chloride	<0.2	0.2	mg/L
Nitrate (as N)	<0.05	0.05	mg/L
Nitrite (as N)	<0.05	0.05	mg/L
Sulphate	<0.5	0.5	mg/L

Sample Description	BH3 - IR (4662)		BH3 - IIR (4663)		BH5 - IR (4664)		BH5 - IIIR (4665)		
Sample Date	10/10/2024 9:25 AM		10/10/2024 10:00 AM		10/10/2024 10:15 AM		10/10/2024 10:25 AM		
Lab ID	2067111		2067112		2067113		2067114		
Field Parameters	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Field pH	6.46	N/A	6.88	N/A	6.84	N/A	6.99	N/A	pH
Field Temp	11	N/A	13.2	N/A	8.5	N/A	11.6	N/A	°C

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 553271

Sample Description	BH6R (4666)		BH16 - I (4667)		BH16 - IVR (4668)		BH17 - III (4669)		
Sample Date	10/10/2024 2:45 PM		10/10/2024 11:45 AM		10/10/2024 11:25 AM		10/10/2024 1:45 PM		
Lab ID	2067115		2067116		2067117		2067118		
Field Parameters	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Field pH	6.69	N/A	6.94	N/A	7.09	N/A	6.98	N/A	pH
Field Temp	10.3	N/A	8.8	N/A	10.2	N/A	8	N/A	°C

Sample Description	BH17 - IVR (4670)		BH20R (4671)		BH21 - IR (4672)		BH21 - IIR (4673)		
Sample Date	10/10/2024 2:10 PM		10/10/2024 12:00 PM		10/10/2024 10:05 AM		10/10/2024 9:35 AM		
Lab ID	2067119		2067120		2067121		2067122		
Field Parameters	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Field pH	7.16	N/A	6.71	N/A	6.92	N/A	6.76	N/A	pH
Field Temp	10.6	N/A	9.8	N/A	9.1	N/A	12.2	N/A	°C

Sample Description	BH22 - IR (4674)		BH22 - IIR (4675)		BH26 (4676)		BH30 - I (4677)		
Sample Date	10/10/2024 11:25 AM		10/10/2024 11:10 AM		10/10/2024 10:15 AM		10/10/2024 2:20 PM		
Lab ID	2067123		2067124		2067125		2067126		
Field Parameters	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Field pH	6.97	N/A	7.08	N/A	6.87	N/A	6.7	N/A	pH
Field Temp	8.9	N/A	10.9	N/A	10.3	N/A	8.6	N/A	°C

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 553271

Sample Description	BH30 - II (4678)		Duplicate 21IRD (4679)		Duplicate B516 - I (4680)		
Sample Date	10/10/2024 10:40 AM		10/10/2024 10:05 AM		10/10/2024 11:45 AM		
Lab ID	2067127		2067128		2067129		
Field Parameters	Result	MDL	Result	MDL	Result	MDL	Units
Field pH	7.56	N/A	6.92	N/A	6.94	N/A	pH
Field Temp	10.3	N/A	9.1	N/A	8.8	N/A	°C

Sample Description	BH3 - IR (4662)		BH3 - IIR (4663)		BH5 - IR (4664)		BH5 - IIIR (4665)		
Sample Date	10/10/2024 9:25 AM		10/10/2024 10:00 AM		10/10/2024 10:15 AM		10/10/2024 10:25 AM		
Lab ID	2067111		2067112		2067113		2067114		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Ammonia (as N)	0.46	0.01	344.0	0.8*	0.67	0.01	0.76	0.01	mg/L
Ammonium (as N) (Calc.)	0.46	0.01	343.00	0.01	0.67	0.01	0.76	0.01	mg/L
Anion Sum (Calc.)	19	N/A	14.2	N/A	11.2	N/A	10.5	N/A	meq
Bicarbonate (Calc.)	879	1	<1	1	422	1	442	1	mg/L as CaCO3
Carbonate (Calc.)	1	1	<1	1	2	1	2	1	mg/L as CaCO3
Cation Sum (Calc.)	25.4	N/A	36.3	N/A	12.9	N/A	12.4	N/A	meq
Conductivity	2370	2*	5890	4*	1280	1	1270	1	µS/cm
Dissolved Inorganic Carbon	243	4*	511	8*	86	4*	121	4*	mg/L
Dissolved Organic Carbon	22.7	0.4	134	4*	3.7	0.4	34.7	0.8*	mg/L
Ion Balance (Calc.)	14.4	N/A	43.8	N/A	7.05	N/A	8.3	N/A	%
Organic Nitrogen (as N) (Calc.)	3.9	0.2	2.0	0.2	3.9	0.2	20.0	0.2	mg/L
Orthophosphate (as P)			0.175	0.005	0.392	0.005			mg/L
pH	7.18	N/A	7.21	N/A	7.64	N/A	7.56	N/A	pH
Total Alkalinity	880	2	<2	2	424	2	444	2	mg/L as CaCO3

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 553271

Sample Description	BH3 - IR (4662)		BH3 - IIR (4663)		BH5 - IR (4664)		BH5 - IIIR (4665)		
Sample Date	10/10/2024 9:25 AM		10/10/2024 10:00 AM		10/10/2024 10:15 AM		10/10/2024 10:25 AM		
Lab ID	2067111		2067112		2067113		2067114		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Total Hardness (as CaCO3) (Calc.)	1020.0	0.1	752.0	0.1	1100.0	0.1	569.0	0.1	mg/L
Total Kjeldahl Nitrogen	4.3	0.4*	346	4*	4.5	0.4*	20.8	0.4*	mg/L
Total Phenols	0.0017	0.0004	0.0016	0.0004	0.0019	0.0004	0.0020	0.0004	mg/L
Total Phosphorus (as P)	0.080	0.002	0.544	0.002	3.66	0.04*	2.49	0.04*	mg/L
Un-Ionized Ammonia (Calc.)	<0.002	0.002	0.620	0.002	<0.002	0.002	<0.002	0.002	mg/L

Sample Description	BH6R (4666)		BH16 - I (4667)		BH16 - IVR (4668)		BH17 - III (4669)		
Sample Date	10/10/2024 2:45 PM		10/10/2024 11:45 AM		10/10/2024 11:25 AM		10/10/2024 1:45 PM		
Lab ID	2067115		2067116		2067117		2067118		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Ammonia (as N)	28.1	0.2*	0.17	0.01	33.0	0.2*	0.26	0.01	mg/L
Ammonium (as N) (Calc.)	28.10	0.01	0.17	0.01	32.90	0.01	0.26	0.01	mg/L
Anion Sum (Calc.)	13.4	N/A	14	N/A	16.8	N/A	13.1	N/A	meq
Bicarbonate (Calc.)	729	1	536	1	832	1	384	1	mg/L as CaCO3
Carbonate (Calc.)	1	1	2	1	1	1	1	1	mg/L as CaCO3
Cation Sum (Calc.)	16.1	N/A	16.2	N/A	19.7	N/A	14.6	N/A	meq
Conductivity	1800	2*	1680	2*	2330	2*	1230	2*	µS/cm
Dissolved Inorganic Carbon			139	4*	244	8*	81	4*	mg/L
Dissolved Organic Carbon			7.4	0.4	75	2*	4.3	0.4	mg/L
Ion Balance (Calc.)	9.15	N/A	7.28	N/A	7.95	N/A	5.42	N/A	%
Organic Nitrogen (as N) (Calc.)			1.1	0.2	8.7	0.2	2.1	0.2	mg/L
Orthophosphate (as P)							0.006	0.005	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 553271

Sample Description	BH6R (4666)		BH16 - I (4667)		BH16 - IVR (4668)		BH17 - III (4669)		
Sample Date	10/10/2024 2:45 PM		10/10/2024 11:45 AM		10/10/2024 11:25 AM		10/10/2024 1:45 PM		
Lab ID	2067115		2067116		2067117		2067118		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
pH	7.27	N/A	7.55	N/A	7.21	N/A	7.57	N/A	pH
Total Alkalinity	730	2	538	2	833	2	385	2	mg/L as CaCO3
Total Hardness (as CaCO3) (Calc.)			642.0	0.1	634.0	0.1	558.0	0.1	mg/L
Total Kjeldahl Nitrogen	35.3	0.4*	1.3	0.4*	41.7	0.4*	2.4	0.4*	mg/L
Total Phenols	0.0020	0.0004	0.0015	0.0004	0.0015	0.0004	0.0014	0.0004	mg/L
Total Phosphorus (as P)	0.521	0.002	0.028	0.002	0.937	0.002	0.044	0.002	mg/L
Un-Ionized Ammonia (Calc.)	0.026	0.002	<0.002	0.002	0.076	0.002	<0.002	0.002	mg/L

Sample Description	BH17 - IVR (4670)		BH20R (4671)		BH21 - IR (4672)		BH21 - IIR (4673)		
Sample Date	10/10/2024 2:10 PM		10/10/2024 12:00 PM		10/10/2024 10:05 AM		10/10/2024 9:35 AM		
Lab ID	2067119		2067120		2067121		2067122		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Ammonia (as N)	0.08	0.01	95.4	0.2*	8.91	0.03*	32.5	0.2*	mg/L
Ammonium (as N) (Calc.)	0.08	0.01	95.30	0.01	8.90	0.01	32.50	0.01	mg/L
Anion Sum (Calc.)	8.08	N/A	4.79	N/A	10.7	N/A	15.7	N/A	meq
Bicarbonate (Calc.)	219	1	<1	1	471	1	772	1	mg/L as CaCO3
Carbonate (Calc.)	1	1	<1	1	1	1	1	1	mg/L as CaCO3
Cation Sum (Calc.)	11.7	N/A	39.4	N/A	12.6	N/A	18.9	N/A	meq
Conductivity	966	1	4380	4*	1210	1	2050	2*	µS/cm
Dissolved Inorganic Carbon	8	4*	544	8*	127	4*	230	4*	mg/L
Dissolved Organic Carbon	4.7	0.4	58	2*	16.7	0.4	44.6	0.8*	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 553271

Sample Description	BH17 - IVR (4670)		BH20R (4671)		BH21 - IR (4672)		BH21 - IIR (4673)		
Sample Date	10/10/2024 2:10 PM		10/10/2024 12:00 PM		10/10/2024 10:05 AM		10/10/2024 9:35 AM		
Lab ID	2067119		2067120		2067121		2067122		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Ion Balance (Calc.)	18.3	N/A	78.3	N/A	8.15	N/A	9.25	N/A	%
Organic Nitrogen (as N) (Calc.)	1.6	0.2	11.6	0.2	3.4	0.2	6.6	0.2	mg/L
Orthophosphate (as P)	0.010	0.005							mg/L
pH	7.7	N/A	7.09	N/A	7.45	N/A	7.26	N/A	pH
Total Alkalinity	220	2	<2	2	472	2	773	2	mg/L as CaCO3
Total Hardness (as CaCO3) (Calc.)	428.0	0.1	1380.0	0.1	886.0	0.1	704.0	0.1	mg/L
Total Kjeldahl Nitrogen	1.7	0.4*	107	1*	12.3	0.4*	39.1	0.4*	mg/L
Total Phenols	0.0010	0.0004	0.0015	0.0004	0.0017	0.0004	0.0018	0.0004	mg/L
Total Phosphorus (as P)	0.166	0.002	0.502	0.002	2.85	0.02*	0.518	0.002	mg/L
Un-Ionized Ammonia (Calc.)	<0.002	0.002	0.089	0.002	0.013	0.002	0.041	0.002	mg/L

Sample Description	BH22 - IR (4674)		BH22 - IIR (4675)		BH26 (4676)		BH30 - I (4677)		
Sample Date	10/10/2024 11:25 AM		10/10/2024 11:10 AM		10/10/2024 10:15 AM		10/10/2024 2:20 PM		
Lab ID	2067123		2067124		2067125		2067126		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Ammonia (as N)	0.27	0.01	0.24	0.01	<0.01	0.01	0.18	0.01	mg/L
Ammonium (as N) (Calc.)	0.27	0.01	0.24	0.01	<0.01	0.01	0.18	0.01	mg/L
Anion Sum (Calc.)	9.09	N/A	8.12	N/A	6.94	N/A	9.91	N/A	meq
Bicarbonate (Calc.)	292	1	214	1	195	1	343	1	mg/L as CaCO3
Carbonate (Calc.)	<1	1	<1	1	1	1	<1	1	mg/L as CaCO3
Cation Sum (Calc.)	10.5	N/A	10.6	N/A	10	N/A	22.3	N/A	meq

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 553271

Sample Description	BH22 - IR (4674)		BH22 - IIR (4675)		BH26 (4676)		BH30 - I (4677)		
Sample Date	10/10/2024 11:25 AM		10/10/2024 11:10 AM		10/10/2024 10:15 AM		10/10/2024 2:20 PM		
Lab ID	2067123		2067124		2067125		2067126		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Conductivity	1110	1	976	1	859	1	1200	1	µS/cm
Dissolved Inorganic Carbon	58	4*	66	4*	73	2*	209	4*	mg/L
Dissolved Organic Carbon	6.0	0.4	8.6	0.4	8.7	0.4	12.5	0.4	mg/L
Ion Balance (Calc.)	7.2	N/A	13.2	N/A	18.1	N/A	38.5	N/A	%
Organic Nitrogen (as N) (Calc.)	1.0	0.2	2.1	0.2	1.2	0.2	2.5	0.2	mg/L
Orthophosphate (as P)	0.114	0.005	0.210	0.005	0.009	0.005	0.045	0.005	mg/L
pH	7.55	N/A	7.66	N/A	7.75	N/A	7.38	N/A	pH
Total Alkalinity	293	2	215	2	196	2	344	2	mg/L as CaCO3
Total Hardness (as CaCO3) (Calc.)	535.0	0.1	357.0	0.1	379.0	0.1	1110.0	0.1	mg/L
Total Kjeldahl Nitrogen	1.3	0.4*	2.3	0.4*	1.2	0.4*	2.7	0.4*	mg/L
Total Phenols	0.0015	0.0004	0.0016	0.0004	0.0013	0.0004	0.0012	0.0004	mg/L
Total Phosphorus (as P)	0.399	0.002	0.453	0.002	0.021	0.002	0.692	0.002	mg/L
Un-Ionized Ammonia (Calc.)	<0.002	0.002	<0.002	0.002	<0.002	0.002	<0.002	0.002	mg/L

Sample Description	BH30 - II (4678)		Duplicate 21IRD (4679)		Duplicate B516 - I (4680)		Travel Blank (4681)		
Sample Date	10/10/2024 10:40 AM		10/10/2024 10:05 AM		10/10/2024 11:45 AM		10/10/2024 12:00 AM		
Lab ID	2067127		2067128		2067129		2067130		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Ammonia (as N)	8.76	0.05*	10.10	0.03*	0.03	0.01			mg/L
Ammonium (as N) (Calc.)	8.46	0.01	10.10	0.01	0.03	0.01			mg/L
Anion Sum (Calc.)	7.7	N/A	8.34	N/A	13.9	N/A	0	N/A	meq
Bicarbonate (Calc.)	367	1	350	1	536	1	<1	1	mg/L as CaCO3

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 553271

Sample Description	BH30 - II (4678)		Duplicate 21IRD (4679)		Duplicate B516 - I (4680)		Travel Blank (4681)		
Sample Date	10/10/2024 10:40 AM		10/10/2024 10:05 AM		10/10/2024 11:45 AM		10/10/2024 12:00 AM		
Lab ID	2067127		2067128		2067129		2067130		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Carbonate (Calc.)	2	1	<1	1	2	1	<1	1	mg/L as CaCO3
Cation Sum (Calc.)	16.3	N/A	12.3	N/A	16.7	N/A	0.00336	N/A	meq
Conductivity	959	1	1040	1	1690	2*	3	1	µS/cm
Dissolved Inorganic Carbon	174	4*	129	4*	85	4*			mg/L
Dissolved Organic Carbon	9.6	0.4	16.4	0.8*	3.6	0.4			mg/L
Ion Balance (Calc.)	35.8	N/A	19.2	N/A	9.15	N/A	N/A	N/A	%
Organic Nitrogen (as N) (Calc.)	0.3	0.2	3.6	0.2	1.4	0.2			mg/L
Orthophosphate (as P)	0.040	0.005							mg/L
pH	7.68	N/A	7.42	N/A	7.62	N/A	4.05	N/A	pH
Total Alkalinity	369	2	351	2	538	2	<2	2	mg/L as CaCO3
Total Hardness (as CaCO3) (Calc.)	510.0	0.1	887.0	0.1	630.0	0.1			mg/L
Total Kjeldahl Nitrogen	8.9	0.4*	13.7	0.4*	1.4	0.4*			mg/L
Total Phenols	0.0010	0.0004	0.0017	0.0004	0.0016	0.0004			mg/L
Total Phosphorus (as P)	0.035	0.002	3.59	0.02*	0.026	0.002			mg/L
Un-Ionized Ammonia (Calc.)	0.058	0.002	0.015	0.002	<0.002	0.002			mg/L

Sample Description	Field Blank BH17 - III (4682)		
Sample Date	10/10/2024 1:45 PM		
Lab ID	2067131		
General Chemistry	Result	MDL	Units
Anion Sum (Calc.)	0	N/A	meq

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 553271

Sample Description	Field Blank BH17 - III (4682)
Sample Date	10/10/2024 1:45 PM
Lab ID	2067131

General Chemistry	Result	MDL	Units
Bicarbonate (Calc.)	<1	1	mg/L as CaCO3
Carbonate (Calc.)	<1	1	mg/L as CaCO3
Cation Sum (Calc.)	0	N/A	meq
Conductivity	3	1	µS/cm
Ion Balance (Calc.)	N/A	N/A	%
pH	4.05	N/A	pH
Total Alkalinity	<2	2	mg/L as CaCO3

Sample Description	BH3 - IR (4662)		BH3 - IIR (4663)		BH5 - IR (4664)		BH5 - IIIR (4665)		
Sample Date	10/10/2024 9:25 AM		10/10/2024 10:00 AM		10/10/2024 10:15 AM		10/10/2024 10:25 AM		
Lab ID	2067111		2067112		2067113		2067114		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Aluminum			5	1	1	1			ug/L
Dissolved Barium			428	1*	3480	1*			ug/L
Dissolved Cadmium			0.037	0.005	0.015	0.005			ug/L
Dissolved Calcium	258000	500*	110000	500*	133000	500*	126000	500*	ug/L
Dissolved Chromium			9	1*	2.2	0.1			ug/L
Dissolved Cobalt			14	1*	0.3	0.1			ug/L
Dissolved Copper			11	2*	2.4	0.2			ug/L
Dissolved Iron	18200	100*	720	100*	2840	100*	1290	10	ug/L
Dissolved Lead			<0.05	0.05	<0.05	0.05			ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 553271

Sample Description	BH3 - IR (4662)		BH3 - IIR (4663)		BH5 - IR (4664)		BH5 - IIIR (4665)		
Sample Date	10/10/2024 9:25 AM		10/10/2024 10:00 AM		10/10/2024 10:15 AM		10/10/2024 10:25 AM		
Lab ID	2067111		2067112		2067113		2067114		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Magnesium	73600	40*	101000	40*	34700	4	19700	4	ug/L
Dissolved Manganese	1760	1*	242	1*	245.0	0.1	200.0	0.1	ug/L
Dissolved Nickel			70	5*	3.2	0.5			ug/L
Dissolved Potassium	2690	50	162000	500*	2120	50	75000	500*	ug/L
Dissolved Selenium			29.8	0.5*	6.12	0.05			ug/L
Dissolved Silver			<0.01	0.01	<0.01	0.01			ug/L
Dissolved Sodium	146000	500*	416000	500*	75800	500*	58500	500*	ug/L
Dissolved Zinc			3	1	2	1			ug/L

Sample Description	BH6R (4666)		BH16 - I (4667)		BH16 - IVR (4668)		BH17 - III (4669)		
Sample Date	10/10/2024 2:45 PM		10/10/2024 11:45 AM		10/10/2024 11:25 AM		10/10/2024 1:45 PM		
Lab ID	2067115		2067116		2067117		2067118		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Aluminum							2	1	ug/L
Dissolved Barium							593	1*	ug/L
Dissolved Cadmium							0.021	0.005	ug/L
Dissolved Calcium	187000	500*	158000	500*	174000	500*	148000	500*	ug/L
Dissolved Chromium							2.4	0.1	ug/L
Dissolved Cobalt							1.6	0.1	ug/L
Dissolved Copper							3.6	0.2	ug/L
Dissolved Iron	248	10	8540	100*	39800	100*	14000	100*	ug/L
Dissolved Lead							<0.05	0.05	ug/L
Dissolved Magnesium	31600	4	49700	4	37500	4	29000	4	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 553271

Sample Description	BH6R (4666)		BH16 - I (4667)		BH16 - IVR (4668)		BH17 - III (4669)		
Sample Date	10/10/2024 2:45 PM		10/10/2024 11:45 AM		10/10/2024 11:25 AM		10/10/2024 1:45 PM		
Lab ID	2067115		2067116		2067117		2067118		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Manganese	872	1*	67.0	0.1	816	1*	1450	1*	ug/L
Dissolved Nickel							9.5	0.5	ug/L
Dissolved Potassium	27300	500*	3150	50	197000	500*	1160	50	ug/L
Dissolved Selenium							2.03	0.05	ug/L
Dissolved Silver							<0.01	0.01	ug/L
Dissolved Sodium	79400	500*	94800	500*	64700	500*	108000	500*	ug/L
Dissolved Zinc							2	1	ug/L

Sample Description	BH17 - IVR (4670)		BH20R (4671)		BH21 - IR (4672)		BH21 - IIR (4673)		
Sample Date	10/10/2024 2:10 PM		10/10/2024 12:00 PM		10/10/2024 10:05 AM		10/10/2024 9:35 AM		
Lab ID	2067119		2067120		2067121		2067122		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Aluminum	5	1							ug/L
Dissolved Barium	74.6	0.1							ug/L
Dissolved Cadmium	0.018	0.005							ug/L
Dissolved Calcium	117000	500*	302000	500*	147000	500*	210000	500*	ug/L
Dissolved Chromium	1.0	0.1							ug/L
Dissolved Cobalt	0.5	0.1							ug/L
Dissolved Copper	4.0	0.2							ug/L
Dissolved Iron	99	10	570	100*	26100	100*	24900	100*	ug/L
Dissolved Lead	<0.05	0.05							ug/L
Dissolved Magnesium	24100	4	138000	40*	31400	4	33900	4	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 553271

Sample Description	BH17 - IVR (4670)		BH20R (4671)		BH21 - IR (4672)		BH21 - IIR (4673)		
Sample Date	10/10/2024 2:10 PM		10/10/2024 12:00 PM		10/10/2024 10:05 AM		10/10/2024 9:35 AM		
Lab ID	2067119		2067120		2067121		2067122		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Manganese	32.4	0.1	1330	1*	1120	1*	1040	1*	ug/L
Dissolved Nickel	1.7	0.5							ug/L
Dissolved Potassium	878	50	98200	500*	41800	500*	102000	500*	ug/L
Dissolved Selenium	0.56	0.05							ug/L
Dissolved Silver	<0.01	0.01							ug/L
Dissolved Sodium	87400	500*	236000	500*	35800	500*	66700	500*	ug/L
Dissolved Zinc	1	1							ug/L

Sample Description	BH22 - IR (4674)		BH22 - IIR (4675)		BH26 (4676)		BH30 - I (4677)		
Sample Date	10/10/2024 11:25 AM		10/10/2024 11:10 AM		10/10/2024 10:15 AM		10/10/2024 2:20 PM		
Lab ID	2067123		2067124		2067125		2067126		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Aluminum	3	1	16	1	8	1	2	1	ug/L
Dissolved Barium	96.1	0.1	113.0	0.1	85.3	0.1	2210	1*	ug/L
Dissolved Cadmium	0.021	0.005	0.006	0.005	0.042	0.005	0.045	0.005	ug/L
Dissolved Calcium	138000	500*	109000	500*	116000	500*	249000	500*	ug/L
Dissolved Chromium	1.3	0.1	0.9	0.1	0.7	0.1	9.7	0.1	ug/L
Dissolved Cobalt	1.1	0.1	0.3	0.1	0.4	0.1	0.9	0.1	ug/L
Dissolved Copper	1.2	0.2	2.9	0.2	2.9	0.2	3.7	0.2	ug/L
Dissolved Iron	5670	100*	7010	100*	94	10	18500	100*	ug/L
Dissolved Lead	<0.05	0.05	<0.05	0.05	<0.05	0.05	0.11	0.05	ug/L
Dissolved Magnesium	27400	4	16200	4	15500	4	62100	40*	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 553271

Sample Description	BH22 - IR (4674)		BH22 - IIR (4675)		BH26 (4676)		BH30 - I (4677)		
Sample Date	10/10/2024 11:25 AM		10/10/2024 11:10 AM		10/10/2024 10:15 AM		10/10/2024 2:20 PM		
Lab ID	2067123		2067124		2067125		2067126		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Manganese	3220	1*	437	1*	64.3	0.1	331	1*	ug/L
Dissolved Nickel	5.5	0.5	6.1	0.5	2.0	0.5	21.9	0.5	ug/L
Dissolved Potassium	982	50	2630	50	4550	50	4160	50	ug/L
Dissolved Selenium	0.81	0.05	0.49	0.05	1.15	0.05	12.70	0.05	ug/L
Dissolved Silver	<0.01	0.01	<0.01	0.01	<0.01	0.01	0.01	0.01	ug/L
Dissolved Sodium	29500	50	84200	500*	64500	500*	105000	500*	ug/L
Dissolved Zinc	1	1	1	1	<1	1	4	1	ug/L

Sample Description	BH30 - II (4678)		Duplicate 21IRD (4679)		Duplicate B516 - I (4680)		Travel Blank (4681)		
Sample Date	10/10/2024 10:40 AM		10/10/2024 10:05 AM		10/10/2024 11:45 AM		10/10/2024 12:00 AM		
Lab ID	2067127		2067128		2067129		2067130		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Aluminum	5	1							ug/L
Dissolved Barium	183	1*							ug/L
Dissolved Cadmium	0.025	0.005							ug/L
Dissolved Calcium	125000	500*	143000	500*	160000	500*	<50	50	ug/L
Dissolved Chromium	6.8	0.1							ug/L
Dissolved Cobalt	3.3	0.1							ug/L
Dissolved Copper	4.8	0.2							ug/L
Dissolved Iron	4340	100*	24700	100*	12900	100*	14	10	ug/L
Dissolved Lead	<0.05	0.05							ug/L
Dissolved Magnesium	44100	4	31600	4	48600	4	7	4	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 553271

Sample Description	BH30 - II (4678)		Duplicate 21IRD (4679)		Duplicate B516 - I (4680)		Travel Blank (4681)		
Sample Date	10/10/2024 10:40 AM		10/10/2024 10:05 AM		10/10/2024 11:45 AM		10/10/2024 12:00 AM		
Lab ID	2067127		2067128		2067129		2067130		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Manganese	1370	1*	1070	1*	164.0	0.1	0.2	0.1	ug/L
Dissolved Nickel	5.9	0.5							ug/L
Dissolved Potassium	6130	50	40900	500*	26300	500*	<50	50	ug/L
Dissolved Selenium	2.05	0.05							ug/L
Dissolved Silver	<0.01	0.01							ug/L
Dissolved Sodium	143000	500*	34600	500*	91500	500*	63	50	ug/L
Dissolved Zinc	4	1							ug/L

Sample Description	Field Blank BH17 - III (4682)		
Sample Date	10/10/2024 1:45 PM		
Lab ID	2067131		
Metals (Dissolved)	Result	MDL	Units
Dissolved Calcium	<50	50	ug/L
Dissolved Iron	<10	10	ug/L
Dissolved Magnesium	<4	4	ug/L
Dissolved Manganese	0.1	0.1	ug/L
Dissolved Potassium	<50	50	ug/L
Dissolved Sodium	<50	50	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 553271

Sample Description	BH5 - IR (4664)		BH5 - IIIR (4665)		BH6R (4666)		BH17 - III (4669)		
Sample Date	10/10/2024 10:15 AM		10/10/2024 10:25 AM		10/10/2024 2:45 PM		10/10/2024 1:45 PM		
Lab ID	2067113		2067114		2067115		2067118		
Petroleum Hydrocarbons (Water)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Benzene	<0.2	0.2	<0.2	0.2	0.3	0.2	<0.2	0.2	ug/L
Ethylbenzene	<0.4	0.4	<0.4	0.4	<0.4	0.4	<0.4	0.4	ug/L
Toluene	<0.4	0.4	<0.4	0.4	<0.4	0.4	<0.4	0.4	ug/L
m+p-Xylene	<0.4	0.4	<0.4	0.4	0.6	0.4	<0.4	0.4	ug/L
o-Xylene	<0.4	0.4	<0.4	0.4	<0.4	0.4	<0.4	0.4	ug/L
Total Xylenes (Calc.)	<0.4	0.4	<0.4	0.4	0.6	0.4	<0.4	0.4	ug/L
1,4-dichlorobenzene-d4 (Surr.)	103	N/A	99.1	N/A	103	N/A	97.4	N/A	% Rec
undecane (Surr.)	104	N/A	111	N/A	114	N/A	115	N/A	% Rec

Sample Description	BH22 - IR (4674)		BH22 - IIR (4675)		BH26 (4676)		
Sample Date	10/10/2024 11:25 AM		10/10/2024 11:10 AM		10/10/2024 10:15 AM		
Lab ID	2067123		2067124		2067125		
Petroleum Hydrocarbons (Water)	Result	MDL	Result	MDL	Result	MDL	Units
Benzene	<0.2	0.2	<0.2	0.2	<0.2	0.2	ug/L
Ethylbenzene	<0.4	0.4	<0.4	0.4	<0.4	0.4	ug/L
Toluene	0.5	0.4	<0.4	0.4	<0.4	0.4	ug/L
m+p-Xylene	0.4	0.4	<0.4	0.4	<0.4	0.4	ug/L
o-Xylene	<0.4	0.4	<0.4	0.4	<0.4	0.4	ug/L
Total Xylenes (Calc.)	0.4	0.4	<0.4	0.4	<0.4	0.4	ug/L
1,4-dichlorobenzene-d4 (Surr.)	102	N/A	103	N/A	104	N/A	% Rec
undecane (Surr.)	112	N/A	110	N/A	111	N/A	% Rec

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 553271

Sample Description	BH3 - IR (4662)		BH3 - IIR (4663)		BH21 - IR (4672)		BH21 - IIR (4673)		
Sample Date	10/10/2024 9:25 AM		10/10/2024 10:00 AM		10/10/2024 10:05 AM		10/10/2024 9:35 AM		
Lab ID	2067111		2067112		2067121		2067122		
Volatile Organic Compounds	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Benzene	0.9	0.2	3.5	0.2	<0.2	0.2	<0.2	0.2	ug/L
Ethylbenzene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Toluene	<0.5	0.5	<0.5	0.5	<0.5	0.5	1.7	0.5	ug/L
m+p-Xylene	<0.5	0.5	1.2	0.5	<0.5	0.5	<0.5	0.5	ug/L
o-Xylene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Total Xylenes (Calc.)	<0.5	0.5	1.2	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,1,1,2-Tetrachloroethane	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,1,1-Trichloroethane	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,1,2,2-Tetrachloroethane	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,1,2-Trichloroethane	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,1-Dichloroethane	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,1-Dichloroethylene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,1-Dichloropropene	<0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L
1,2,4-Trichlorobenzene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,2-Dibromo-3-chloropropane	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
1,2-Dibromoethane	<0.2	0.2	<0.2	0.2	<0.2	0.2	<0.2	0.2	ug/L
1,2-Dichlorobenzene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,2-Dichloroethane	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,2-Dichloroethane-d4 (Surr)	103	N/A	105	N/A	103	N/A	102	N/A	% Rec
1,2-Dichloropropane	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,3-Dichlorobenzene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,3-Dichloropropane	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
1,4-Dichlorobenzene	<0.5	0.5	0.8	0.5	0.7	0.5	1.3	0.5	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 553271

Sample Description	BH3 - IR (4662)		BH3 - IIR (4663)		BH21 - IR (4672)		BH21 - IIR (4673)		
Sample Date	10/10/2024 9:25 AM		10/10/2024 10:00 AM		10/10/2024 10:05 AM		10/10/2024 9:35 AM		
Lab ID	2067111		2067112		2067121		2067122		
Volatile Organic Compounds	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
1-Bromo-4-fluorobenzene (Surr.)	102	N/A	111	N/A	103	N/A	108	N/A	% Rec
Acetone	<30	30	<30	30	<30	30	<30	30	ug/L
Bromobenzene	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
Bromochloromethane	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
Bromodichloromethane	<0.2	0.2	<0.2	0.2	<0.2	0.2	<0.2	0.2	ug/L
Bromoform	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Bromomethane	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Carbon tetrachloride	<0.2	0.2	<0.2	0.2	<0.2	0.2	<0.2	0.2	ug/L
Chlorobenzene	<0.5	0.5	2.9	0.5	1.8	0.5	5.0	0.5	ug/L
Chloroethane	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
Chloroform	<1	1	<1	1	<1	1	<1	1	ug/L
Chloromethane	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
cis - + trans-1,3-Dichloropropene (Calc.)	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
cis-1,2-Dichloroethylene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
cis-1,3-Dichloropropene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Dibromochloromethane	<2	2	<2	2	<2	2	<2	2	ug/L
Dibromomethane	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
Dichlorodifluoromethane	<2	2	<2	2	<2	2	<2	2	ug/L
Dichloromethane	<5	5	<5	5	<5	5	<5	5	ug/L
Hexachlorobutadiene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Methyl ethyl ketone	<20	20	<20	20	<20	20	<20	20	ug/L
Methyl isobutyl ketone (MIBK)	<20	20	<20	20	<20	20	<20	20	ug/L
Methyl tert-butyl ether (MTBE)	<2	2	<2	2	<2	2	<2	2	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 553271

Sample Description	BH3 - IR (4662)		BH3 - IIR (4663)		BH21 - IR (4672)		BH21 - IIR (4673)		
Sample Date	10/10/2024 9:25 AM		10/10/2024 10:00 AM		10/10/2024 10:05 AM		10/10/2024 9:35 AM		
Lab ID	2067111		2067112		2067121		2067122		
Volatile Organic Compounds	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
n-Hexane	<5	5	<5	5	<5	5	<5	5	ug/L
Styrene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Tetrachloroethylene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Toluene-d8 (Surr.)	102	N/A	101	N/A	101	N/A	105	N/A	% Rec
Trans-1,2-dichloroethylene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Trans-1,3-dichloropropene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Trichloroethylene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Trichlorofluoromethane	<5	5	<5	5	<5	5	<5	5	ug/L
Vinyl chloride	<0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L

Sample Description	Duplicate 21IRD (4679)		Travel Blank (4681)		Field Blank BH17 - III (4682)		
Sample Date	10/10/2024 10:05 AM		10/10/2024 12:00 AM		10/10/2024 1:45 PM		
Lab ID	2067128		2067130		2067131		
Volatile Organic Compounds	Result	MDL	Result	MDL	Result	MDL	Units
Benzene	<0.2	0.2	<0.2	0.2	<0.2	0.2	ug/L
Ethylbenzene	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Toluene	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
m+p-Xylene	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
o-Xylene	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Total Xylenes (Calc.)	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,1,1,2-Tetrachloroethane	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,1,1-Trichloroethane	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 553271

Sample Description	Duplicate 21IRD (4679)		Travel Blank (4681)		Field Blank BH17 - III (4682)		
Sample Date	10/10/2024 10:05 AM		10/10/2024 12:00 AM		10/10/2024 1:45 PM		
Lab ID	2067128		2067130		2067131		
Volatile Organic Compounds	Result	MDL	Result	MDL	Result	MDL	Units
1,1,2,2-Tetrachloroethane	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,1,2-Trichloroethane	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,1-Dichloroethane	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,1-Dichloroethylene	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,1-Dichloropropene	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L
1,2,4-Trichlorobenzene	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,2-Dibromo-3-chloropropane	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
1,2-Dibromoethane	<0.2	0.2	<0.2	0.2	<0.2	0.2	ug/L
1,2-Dichlorobenzene	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,2-Dichloroethane	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,2-Dichloroethane-d4 (Surr)	99.6	N/A	101	N/A	98.7	N/A	% Rec
1,2-Dichloropropane	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,3-Dichlorobenzene	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,3-Dichloropropane	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
1,4-Dichlorobenzene	1.0	0.5	<0.5	0.5	<0.5	0.5	ug/L
1-Bromo-4-fluorobenzene (Surr.)	102	N/A	105	N/A	104	N/A	% Rec
Acetone	<30	30	<30	30	<30	30	ug/L
Bromobenzene	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
Bromochloromethane	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
Bromodichloromethane	<0.2	0.2	9.3	0.2	9.3	0.2	ug/L
Bromoform	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Bromomethane	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Carbon tetrachloride	<0.2	0.2	<0.2	0.2	<0.2	0.2	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 553271

Sample Description	Duplicate 21IRD (4679)		Travel Blank (4681)		Field Blank BH17 - III (4682)		
Sample Date	10/10/2024 10:05 AM		10/10/2024 12:00 AM		10/10/2024 1:45 PM		
Lab ID	2067128		2067130		2067131		
Volatile Organic Compounds	Result	MDL	Result	MDL	Result	MDL	Units
Chlorobenzene	2.1	0.5	<0.5	0.5	<0.5	0.5	ug/L
Chloroethane	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
Chloroform	<1	1	25	1	25	1	ug/L
Chloromethane	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
cis - + trans-1,3-Dichloropropene (Calc.)	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
cis-1,2-Dichloroethylene	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
cis-1,3-Dichloropropene	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Dibromochloromethane	<2	2	3	2	3	2	ug/L
Dibromomethane	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
Dichlorodifluoromethane	<2	2	<2	2	<2	2	ug/L
Dichloromethane	<5	5	<5	5	<5	5	ug/L
Hexachlorobutadiene	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Methyl ethyl ketone	<20	20	<20	20	<20	20	ug/L
Methyl isobutyl ketone (MIBK)	<20	20	<20	20	<20	20	ug/L
Methyl tert-butyl ether (MTBE)	<2	2	<2	2	<2	2	ug/L
n-Hexane	<5	5	<5	5	<5	5	ug/L
Styrene	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Tetrachloroethylene	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Toluene-d8 (Surr.)	102	N/A	104	N/A	103	N/A	% Rec
Trans-1,2-dichloroethylene	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Trans-1,3-dichloropropene	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Trichloroethylene	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Trichlorofluoromethane	<5	5	<5	5	<5	5	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 553271

Sample Description	Duplicate 21IRD (4679)		Travel Blank (4681)		Field Blank BH17 - III (4682)		
Sample Date	10/10/2024 10:05 AM		10/10/2024 12:00 AM		10/10/2024 1:45 PM		
Lab ID	2067128		2067130		2067131		
Volatile Organic Compounds	Result	MDL	Result	MDL	Result	MDL	Units
Vinyl chloride	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L

LEGEND

Dates: Dates are formatted as mm/dd/year throughout this report.

MDL: Method detection limit or minimum reporting limit.

[ ]: Results for laboratory replicates are shown in square brackets immediately below the associated sample result for ease of comparison.

% Rec: Surrogate compounds are added to the sample in some cases and the recovery is reported as a % recovered.

Organic Soil Analysis: Data reported for organic analysis in soils samples are corrected for moisture content.

Quality Control: All associated Quality Control data is available on request.

Field Data: Reports containing Field Parameters represent data that has been collected and provided by the client. Testmark is not responsible for the validity of this data which may be used in subsequent calculations.

Sample Condition Deviations: A noted sample condition deviation may affect the validity of the result. Results apply to the sample(s) as received.

Reproduction of Report: Report shall not be reproduced, except in full, without the approval of Testmark Laboratories Ltd.

ICPMS Dustfall Insoluble: The ICPMS Dustfall Insoluble Portion method analyzes only the particulate matter from the Dustfall Sampler which is retained on the analysis filter during the Dustfall method.

Regulation Comparisons: Disclaimer: Please note that regulation criteria are provided for comparative purposes, however the onus on ensuring the validity of this comparison rests with the client.

*Dilution: In the MDL column an asterisk (*) indicates a sample dilution was performed.

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

TESTMARK Laboratories Ltd.
Committed to Quality and Service

CERTIFICATE OF ANALYSIS

Client:	Hannah Curry	Work Order Number:	552410
Company:	City of Orillia - Waste Diversion Site	PO #:	83585
Address:	40 Kitchener St. Orillia, ON, L3V 6Z9	Regulation:	Information not provided
		Project #:	Fall WDS Sampling GW Outside 1
Phone:	(705) 325-2394	DWS #:	
Email:	hcurry@orillia.ca	Sampled By:	Hannah Curry
Date Order Received:	10/4/2024	Analysis Started:	10/4/2024
Arrival Temperature:	13 C	Analysis Completed:	10/11/2024

WORK ORDER SUMMARY

ANALYSES WERE PERFORMED ON THE FOLLOWING SAMPLES. THE RESULTS RELATE ONLY TO THE ITEMS TESTED.

Sample Description	Lab ID	Matrix	Type	Comments	Date Collected	Time Collected
BH1-IR (4683)	2064046	Ground Water	None		10/1/2024	2:40 PM
BH1-III (4684)	2064047	Ground Water	None		10/1/2024	1:50 PM
BH2-III (4685)	2064048	Ground Water	None		10/2/2024	9:40 AM
BH4-IIR (4686)	2064049	Ground Water	None		10/2/2024	11:10 AM
BH8R (4687)	2064050	Ground Water	None		10/3/2024	12:50 PM
BH10R (4688)	2064051	Ground Water	None		10/3/2024	10:35 AM
BH11R (4689)	2064052	Ground Water	None		10/2/2024	10:10 AM
BH14-IIIR (4690)	2064053	Ground Water	None		10/3/2024	11:15 AM
BH18R (4691)	2064054	Ground Water	None		10/2/2024	10:50 AM
BH29-I (4692)	2064055	Ground Water	None		10/1/2024	11:20 AM
Duplicate BH4-IIRD (4694)	2064056	Ground Water	None		10/2/2024	11:10 AM
Duplicate BH501-IR (4695)	2064057	Ground Water	None		10/1/2024	2:40 PM
Travel Blank (4696)	2064058	Ground Water	None		10/1/2024	
Field Blank 11R (4697)	2064059	Ground Water	None		10/2/2024	10:10 AM

METHODS AND INSTRUMENTATION

THE FOLLOWING METHODS WERE USED FOR YOUR SAMPLE(S):

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 552410

Method	Lab	Description	Reference
Alkalinity (A1.0)	Mississauga	Determination of Alkalinity by Titration	Modified from APHA-2320B
Ammonia Water (A42)	Kirkland Lake	Determination of Ammonia/Ammonium in Water	Modified from EPA 350.1
Ammonium Water (A42.3)	Kirkland Lake	Calculation of Ammonium in Water	Modified from APHA 4500
Anions Water (mg/L by IC) (A5)	Mississauga	Determination of Anions in Water by Ion Chromatography	Modified from SW846-9056A
BTEX/F1 Water (A127)	Mississauga	Determination of PHC BTEX/F1 in Water - Tier 1 CCME	Modified from CWS PHC Tier I CCME
Carbonate (A94)	Mississauga	Determination of Carbonate and Bi-Carbonate	Modified from APHA-2320
Conductivity of Water (A12)	Mississauga	Determination of Conductivity in Water at 25°C	Modified from SM 2510 B
DIC Water (A55)	Mississauga	Determination of Dissolved Inorganic Carbon in Water	Modified from SM-5310 C
DOC Water (A55.1)	Mississauga	Determination of Dissolved Organic Carbon in Water	Modified from SM-5310 C
Field pH (R112)	Mississauga	Client Supplied Field Determination of pH of Water	Field Test
Field Temp (R113)	Mississauga	Client Supplied Field Determination of Temperature of Water	Field Test
ICPMS Dis. Water (A13.3)	Garson	Determination of Dissolved Metals in Water by ICP/MS -> Lab-Filtered	Modified from SW846-6020A
ICPMS Reg. Water (A13)	Garson	Determination of Metals in Water by ICP/MS	Modified from SW846-6020A
OP Water (A23.1)	Mississauga	Determination of Ortho-Phosphate in Water.	Modified from EPA 365.3 and ESS 310.2.
pH of Water (A2.0)	Mississauga	Determination of Water pH by Ion Selective Electrode	Modified from APHA-4500H+ B
Phenols 4AAP (T38)	Mississauga	Determination of Total Phenols by 4AAP	Modified from APHA-5530
Reg. Hardness (A13)	Garson	Determination of Total Hardness	Modified from APHA-2340B
TKN Water Dig. (A58)	Kirkland Lake	Determination of Total Kjeldahl Nitrogen in Waters with Block Digestion.	Modified from SM-4500 NORG-D
TP Water (A23.2)	Kirkland Lake	Determination of Total Phosphorus in Water.	Modified from EPA 365.3 and ESS 310.2,
Un-Ionized NH3 (A42.4)	Kirkland Lake	Calculation of Un-Ionized Ammonia, based on Client Field pH and Temperature	Modified from APHA-4500
VOC Water (A14)	Mississauga	Determination of Volatile Organic Compounds in Water by P&T/GC/MS	Modified from EPA SW846-8260 B

This report has been approved by:

Brad Halvorson, B.Sc.
Laboratory Director

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 552410

WORK ORDER RESULTS

Sample Description	BH1 - IR (4683)		BH1 - III (4684)		BH2 - III (4685)		BH4 - IIR (4686)		
Sample Date	10/1/2024 2:40 PM		10/1/2024 1:50 PM		10/2/2024 9:40 AM		10/2/2024 11:10 AM		
Lab ID	2064046		2064047		2064048		2064049		
Anions	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Chloride	187.0	0.2	614	1*	173.0	0.2	246.0	0.2	mg/L
Nitrate (as N)	<0.05	0.05	0.31	0.05	0.06	0.05	<0.05	0.05	mg/L
Nitrite (as N)	<0.05	0.05	<0.05	0.05	<0.05	0.05	<0.05	0.05	mg/L
Sulphate	13.6	0.5	0.5	0.5	0.6	0.5	27.7	0.5	mg/L

Sample Description	BH8R (4687)		BH10R (4688)		BH11R (4689)		BH14 - IIIR (4690)		
Sample Date	10/3/2024 12:50 PM		10/3/2024 10:35 AM		10/2/2024 10:10 AM		10/3/2024 11:15 AM		
Lab ID	2064050		2064051		2064052		2064053		
Anions	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Chloride	59.7	0.2	107.0	0.2	156.0	0.2	86.2	0.2	mg/L
Nitrate (as N)	1.15	0.05	0.58	0.05	0.07	0.05	<0.05	0.05	mg/L
Nitrite (as N)	<0.05	0.05	<0.05	0.05	<0.05	0.05	<0.05	0.05	mg/L
Sulphate	0.9	0.5	<0.5	0.5	2.1	0.5	<0.5	0.5	mg/L

Sample Description	BH18R (4691)		BH29 - I (4692)		Duplicate BH4 - IIRD (4694)		Duplicate BH501 - IR (4695)		
Sample Date	10/2/2024 10:50 AM		10/1/2024 11:20 AM		10/2/2024 11:10 AM		10/1/2024 2:40 PM		
Lab ID	2064054		2064055		2064056		2064057		
Anions	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Chloride	614	1*	91.1	0.2	238.0	0.2	185.0	0.2	mg/L
Nitrate (as N)	0.54	0.05	0.19	0.05	<0.05	0.05	<0.05	0.05	mg/L
Nitrite (as N)	<0.05	0.05	<0.05	0.05	<0.05	0.05	<0.05	0.05	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 552410

Sample Description	BH18R (4691)		BH29 - I (4692)		Duplicate BH4 - IIRD (4694)		Duplicate BH501 - IR (4695)		
Sample Date	10/2/2024 10:50 AM		10/1/2024 11:20 AM		10/2/2024 11:10 AM		10/1/2024 2:40 PM		
Lab ID	2064054		2064055		2064056		2064057		
Anions	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Sulphate	2.6	0.5	20.1	0.5	26.7	0.5	13.5	0.5	mg/L

Sample Description	Travel Blank (4696)		Field Blank 11R (4697)		
Sample Date	10/1/2024 12:00 AM		10/2/2024 10:10 AM		
Lab ID	2064058		2064059		
Anions	Result	MDL	Result	MDL	Units
Bromide	<0.05	0.05	<0.05	0.05	mg/L
Chloride	0.2	0.2	0.3	0.2	mg/L
Fluoride	<0.05	0.05	<0.05	0.05	mg/L
Nitrate (as N)	<0.05	0.05	<0.05	0.05	mg/L
Nitrite (as N)	<0.05	0.05	<0.05	0.05	mg/L
Sulphate	<0.5	0.5	<0.5	0.5	mg/L

Sample Description	BH1 - IR (4683)		BH1 - III (4684)		BH2 - III (4685)		BH4 - IIR (4686)		
Sample Date	10/1/2024 2:40 PM		10/1/2024 1:50 PM		10/2/2024 9:40 AM		10/2/2024 11:10 AM		
Lab ID	2064046		2064047		2064048		2064049		
Field Parameters	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Field pH	7.05	N/A	6.64	N/A	6.65	N/A	6.94	N/A	pH
Field Temp	10.7	N/A	16	N/A	9.3	N/A	11.2	N/A	°C

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 552410

Sample Description	BH8R (4687)		BH10R (4688)		BH11R (4689)		BH14 - IIIR (4690)		
Sample Date	10/3/2024 12:50 PM		10/3/2024 10:35 AM		10/2/2024 10:10 AM		10/3/2024 11:15 AM		
Lab ID	2064050		2064051		2064052		2064053		
Field Parameters	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Field pH	7.16	N/A	7.24	N/A	6.79	N/A	7.08	N/A	pH
Field Temp	16.2	N/A	11.9	N/A	12.6	N/A	12.4	N/A	°C

Sample Description	BH18R (4691)		BH29 - I (4692)		Duplicate BH4 - IIRD (4694)		Duplicate BH501 - IR (4695)		
Sample Date	10/2/2024 10:50 AM		10/1/2024 11:20 AM		10/2/2024 11:10 AM		10/1/2024 2:40 PM		
Lab ID	2064054		2064055		2064056		2064057		
Field Parameters	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Field pH	6.27	N/A	6.89	N/A	6.94	N/A	7.05	N/A	pH
Field Temp	13	N/A	12.3	N/A	11.2	N/A	10.7	N/A	°C

Sample Description	BH1 - IR (4683)		BH1 - III (4684)		BH2 - III (4685)		BH4 - IIR (4686)		
Sample Date	10/1/2024 2:40 PM		10/1/2024 1:50 PM		10/2/2024 9:40 AM		10/2/2024 11:10 AM		
Lab ID	2064046		2064047		2064048		2064049		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Ammonia (as N)	0.07	0.01	0.37	0.01	13.8	0.1*	0.29	0.01	mg/L
Ammonium (as N) (Calc.)	0.07	0.01	0.37	0.01	13.80	0.01	0.29	0.01	mg/L
Bicarbonate (Calc.)	219	1	344	1	1080	1	302	1	mg/L as CaCO3
Carbonate (Calc.)	<1	1	<1	1	3	1	1	1	mg/L as CaCO3
Conductivity	1060	1	2540	4*	3220	4*	1420	1	µS/cm
Dissolved Inorganic Carbon	61	2*	95	2*	274	8*	82	2*	mg/L
Dissolved Organic Carbon	20.8	0.4	57.6	0.8*	33.9	0.8*	2.6	0.4	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 552410

Sample Description	BH1 - IR (4683)		BH1 - III (4684)		BH2 - III (4685)		BH4 - IIR (4686)		
Sample Date	10/1/2024 2:40 PM		10/1/2024 1:50 PM		10/2/2024 9:40 AM		10/2/2024 11:10 AM		
Lab ID	2064046		2064047		2064048		2064049		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
pH	7.57	N/A	7.27	N/A	7.4	N/A	7.56	N/A	pH
Total Alkalinity	220	2	345	2	1080	2	303	2	mg/L as CaCO3
Total Hardness (as CaCO3) (Calc.)	399.0	0.1	1130.0	0.1	1200.0	0.1	978.0	0.1	mg/L
Total Kjeldahl Nitrogen	3.2	0.4*	30	4*	19.5	0.4*	2.1	0.4*	mg/L
Total Phenols	0.0020	0.0004	0.0010	0.0004	0.0010	0.0004	0.0019	0.0004	mg/L
Total Phosphorus (as P)	0.354	0.002	6.57	0.04*	0.408	0.002	2.03	0.02*	mg/L
Un-Ionized Ammonia (Calc.)	<0.002	0.002	<0.002	0.002	0.011	0.002	<0.002	0.002	mg/L

Sample Description	BH8R (4687)		BH10R (4688)		BH11R (4689)		BH14 - IIIR (4690)		
Sample Date	10/3/2024 12:50 PM		10/3/2024 10:35 AM		10/2/2024 10:10 AM		10/3/2024 11:15 AM		
Lab ID	2064050		2064051		2064052		2064053		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Ammonia (as N)	61.1	0.2*	1.13	0.01	0.21	0.01	1.75	0.01	mg/L
Ammonium (as N) (Calc.)	60.80	0.01	1.13	0.01	0.21	0.01	1.75	0.01	mg/L
Bicarbonate (Calc.)	1250	1	474	1	590	1	533	1	mg/L as CaCO3
Carbonate (Calc.)	6	1	3	1	2	1	2	1	mg/L as CaCO3
Conductivity	3040	4*	1270	1	1620	2*	1320	1	µS/cm
Dissolved Inorganic Carbon	305	8*	125	4*	152	4*	140	4*	mg/L
Dissolved Organic Carbon	40.5	0.8*	21.0	0.4	31.3	0.8*	40.3	0.8*	mg/L
pH	7.75	N/A	7.85	N/A	7.59	N/A	7.53	N/A	pH
Total Alkalinity	1260	2	477	2	592	2	535	2	mg/L as CaCO3

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 552410

Sample Description	BH8R (4687)		BH10R (4688)		BH11R (4689)		BH14 - IIIR (4690)		
Sample Date	10/3/2024 12:50 PM		10/3/2024 10:35 AM		10/2/2024 10:10 AM		10/3/2024 11:15 AM		
Lab ID	2064050		2064051		2064052		2064053		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Total Hardness (as CaCO3) (Calc.)	891.0	0.1	497.0	0.1	564.0	0.1	548.0	0.1	mg/L
Total Kjeldahl Nitrogen	73.1	0.8*	4.3	0.4*	3.8	0.4*	5.9	0.4*	mg/L
Total Phenols	0.0012	0.0004	0.0030	0.0004	0.0018	0.0004	0.0017	0.0004	mg/L
Total Phosphorus (as P)	0.119	0.002	0.198	0.002	0.092	0.002	0.130	0.002	mg/L
Un-Ionized Ammonia (Calc.)	0.263	0.002	0.004	0.002	<0.002	0.002	0.005	0.002	mg/L

Sample Description	BH18R (4691)		BH29 - I (4692)		Duplicate BH4 - IIRD (4694)		Duplicate BH501 - IR (4695)		
Sample Date	10/2/2024 10:50 AM		10/1/2024 11:20 AM		10/2/2024 11:10 AM		10/1/2024 2:40 PM		
Lab ID	2064054		2064055		2064056		2064057		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Ammonia (as N)	1.07	0.01	<0.01	0.01	<0.01	0.01	0.07	0.01	mg/L
Ammonium (as N) (Calc.)	1.07	0.01	<0.01	0.01	<0.01	0.01	0.07	0.01	mg/L
Bicarbonate (Calc.)	331	1	443	1	301	1	223	1	mg/L as CaCO3
Carbonate (Calc.)	<1	1	1	1	1	1	1	1	mg/L as CaCO3
Conductivity	2650	4*	1180	1	1420	1	1180	1	µS/cm
Dissolved Inorganic Carbon	88	4*	116	4*	84	2*	60	2*	mg/L
Dissolved Organic Carbon	67	2*	6.1	0.4	2.5	0.4	20.8	0.4	mg/L
Orthophosphate (as P)			0.008	0.005					mg/L
pH	7.06	N/A	7.53	N/A	7.61	N/A	7.74	N/A	pH
Total Alkalinity	331	2	444	2	302	2	228	2	mg/L as CaCO3
Total Hardness (as CaCO3) (Calc.)	743.0	0.1	832.0	0.1	922.0	0.1	292.0	0.1	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 552410

Sample Description	BH18R (4691)		BH29 - I (4692)		Duplicate BH4 - IIRD (4694)		Duplicate BH501 - IR (4695)		
Sample Date	10/2/2024 10:50 AM		10/1/2024 11:20 AM		10/2/2024 11:10 AM		10/1/2024 2:40 PM		
Lab ID	2064054		2064055		2064056		2064057		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Total Kjeldahl Nitrogen	7.3	0.4*	3.2	0.4*	2.3	0.4*	3.1	0.4*	mg/L
Total Phenols	0.0027	0.0004	0.0021	0.0004	0.0019	0.0004	0.0020	0.0004	mg/L
Total Phosphorus (as P)	0.177	0.002	0.307	0.002	0.990	0.002	0.328	0.002	mg/L
Un-Ionized Ammonia (Calc.)	<0.002	0.002	<0.002	0.002	<0.002	0.002	<0.002	0.002	mg/L

Sample Description	Travel Blank (4696)		Field Blank 11R (4697)		
Sample Date	10/1/2024 12:00 AM		10/2/2024 10:10 AM		
Lab ID	2064058		2064059		
General Chemistry	Result	MDL	Result	MDL	Units
Bicarbonate (Calc.)	<1	1	<1	1	mg/L as CaCO3
Carbonate (Calc.)	<1	1	<1	1	mg/L as CaCO3
P-Alkalinity (pH 8.3)	<2	2	<2	2	mg/L as CaCO3
pH	4.29	N/A	4.09	N/A	pH
Total Alkalinity	<2	2	<2	2	mg/L as CaCO3

Sample Description	BH1 - IR (4683)		BH1 - III (4684)		BH2 - III (4685)		BH4 - IIR (4686)		
Sample Date	10/1/2024 2:40 PM		10/1/2024 1:50 PM		10/2/2024 9:40 AM		10/2/2024 11:10 AM		
Lab ID	2064046		2064047		2064048		2064049		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Calcium	78000	500*	211000	500*	298000	500*	131000	500*	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 552410

Sample Description	BH1 - IR (4683)		BH1 - III (4684)		BH2 - III (4685)		BH4 - IIR (4686)		
Sample Date	10/1/2024 2:40 PM		10/1/2024 1:50 PM		10/2/2024 9:40 AM		10/2/2024 11:10 AM		
Lab ID	2064046		2064047		2064048		2064049		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Iron	2550	10	3810	100*	5590	100*	530	10	ug/L
Dissolved Magnesium	14500	4	18600	4	97200	40*	21600	4	ug/L
Dissolved Manganese	356	1*	570	1*	836	1*	94.1	0.1	ug/L
Dissolved Potassium	1820	50	1260	50	26700	500*	2330	50	ug/L
Dissolved Sodium	99300	500*	308000	500*	211000	500*	152000	500*	ug/L

Sample Description	BH8R (4687)		BH10R (4688)		BH11R (4689)		BH14 - IIIR (4690)		
Sample Date	10/3/2024 12:50 PM		10/3/2024 10:35 AM		10/2/2024 10:10 AM		10/3/2024 11:15 AM		
Lab ID	2064050		2064051		2064052		2064053		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Calcium	223000	500*	131000	500*	148000	500*	140000	500*	ug/L
Dissolved Iron	774	10	1360	10	3450	100*	1250	10	ug/L
Dissolved Magnesium	93900	40*	42100	4	46700	4	47900	4	ug/L
Dissolved Manganese	482	1*	359	1*	353	1*	408	1*	ug/L
Dissolved Potassium	85100	500*	20700	500*	29500	500*	23000	500*	ug/L
Dissolved Sodium	168000	500*	87800	500*	150000	500*	81800	500*	ug/L

Sample Description	BH18R (4691)		BH29 - I (4692)		Duplicate BH4 - IIRD (4694)		Duplicate BH501 - IR (4695)		
Sample Date	10/2/2024 10:50 AM		10/1/2024 11:20 AM		10/2/2024 11:10 AM		10/1/2024 2:40 PM		
Lab ID	2064054		2064055		2064056		2064057		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Calcium	253000	500*	193000	500*	131000	500*	131000	500*	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 552410

Sample Description	BH18R (4691)		BH29 - I (4692)		Duplicate BH4 - IIRD (4694)		Duplicate BH501 - IR (4695)		
Sample Date	10/2/2024 10:50 AM		10/1/2024 11:20 AM		10/2/2024 11:10 AM		10/1/2024 2:40 PM		
Lab ID	2064054		2064055		2064056		2064057		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Iron	6030	100*	2370	10	555	10	6080	100*	ug/L
Dissolved Magnesium	24500	4	35900	4	21500	4	22300	4	ug/L
Dissolved Manganese	578	1*	1070	1*	104.0	0.1	625	1*	ug/L
Dissolved Potassium	682	50	1290	50	2340	50	2460	50	ug/L
Dissolved Sodium	252000	500*	24700	50	154000	500*	127000	500*	ug/L

Sample Description	BH11R (4689)		
Sample Date	10/2/2024 10:10 AM		
Lab ID	2064052		
Petroleum Hydrocarbons (Water)	Result	MDL	Units
Benzene	<0.2	0.2	ug/L
Ethylbenzene	<0.4	0.4	ug/L
Toluene	<0.4	0.4	ug/L
m+p-Xylene	<0.4	0.4	ug/L
o-Xylene	<0.4	0.4	ug/L
Total Xylenes (Calc.)	<0.4	0.4	ug/L
1,4-dichlorobenzene-d4 (Surr.)	96.8	N/A	% Rec
undecane (Surr.)	131	N/A	% Rec

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 552410

Sample Description	Travel Blank (4696)		Field Blank 11R (4697)		
Sample Date	10/1/2024 12:00 AM		10/2/2024 10:10 AM		
Lab ID	2064058		2064059		
Volatile Organic Compounds	Result	MDL	Result	MDL	Units
Benzene	<0.2	0.2	<0.2	0.2	ug/L
Ethylbenzene	<0.5	0.5	<0.5	0.5	ug/L
Toluene	<0.5	0.5	<0.5	0.5	ug/L
m+p-Xylene	<0.5	0.5	<0.5	0.5	ug/L
o-Xylene	<0.5	0.5	<0.5	0.5	ug/L
Total Xylenes (Calc.)	<0.5	0.5	<0.5	0.5	ug/L
1,1,1,2-Tetrachloroethane	<0.5	0.5	<0.5	0.5	ug/L
1,1,1-Trichloroethane	<0.5	0.5	<0.5	0.5	ug/L
1,1,2,2-Tetrachloroethane	<0.5	0.5	<0.5	0.5	ug/L
1,1,2-Trichloroethane	<0.5	0.5	<0.5	0.5	ug/L
1,1-Dichloroethane	<0.5	0.5	<0.5	0.5	ug/L
1,1-Dichloroethylene	<0.5	0.5	<0.5	0.5	ug/L
1,1-Dichloropropene	<0.1	0.1	<0.1	0.1	ug/L
1,2,4-Trichlorobenzene	<0.5	0.5	<0.5	0.5	ug/L
1,2-Dibromo-3-chloropropane	<0.3	0.3	<0.3	0.3	ug/L
1,2-Dibromoethane	<0.2	0.2	<0.2	0.2	ug/L
1,2-Dichlorobenzene	<0.5	0.5	<0.5	0.5	ug/L
1,2-Dichloroethane	<0.5	0.5	<0.5	0.5	ug/L
1,2-Dichloroethane-d4 (Surr)	101	N/A	104	N/A	% Rec
1,2-Dichloropropane	<0.5	0.5	<0.5	0.5	ug/L
1,3-Dichlorobenzene	<0.5	0.5	<0.5	0.5	ug/L
1,3-Dichloropropane	<0.3	0.3	<0.3	0.3	ug/L
1,4-Dichlorobenzene	<0.5	0.5	<0.5	0.5	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 552410

Sample Description	Travel Blank (4696)		Field Blank 11R (4697)		
Sample Date	10/1/2024 12:00 AM		10/2/2024 10:10 AM		
Lab ID	2064058		2064059		
Volatile Organic Compounds	Result	MDL	Result	MDL	Units
1-Bromo-4-fluorobenzene (Surr.)	75.3	N/A	77.4	N/A	% Rec
Acetone	<30	30	<30	30	ug/L
Bromobenzene	<0.3	0.3	<0.3	0.3	ug/L
Bromochloromethane	<0.3	0.3	<0.3	0.3	ug/L
Bromodichloromethane	13.5	0.2	11.0	0.2	ug/L
Bromoform	<0.5	0.5	<0.5	0.5	ug/L
Bromomethane	<0.5	0.5	<0.5	0.5	ug/L
Carbon tetrachloride	<0.2	0.2	<0.2	0.2	ug/L
Chlorobenzene	<0.5	0.5	<0.5	0.5	ug/L
Chloroethane	<0.3	0.3	<0.3	0.3	ug/L
Chloroform	38	1	30	1	ug/L
Chloromethane	<0.3	0.3	<0.3	0.3	ug/L
cis - + trans-1,3-Dichloropropene (Calc.)	<0.5	0.5	<0.5	0.5	ug/L
cis-1,2-Dichloroethylene	<0.5	0.5	<0.5	0.5	ug/L
cis-1,3-Dichloropropene	<0.5	0.5	<0.5	0.5	ug/L
Dibromochloromethane	3	2	2	2	ug/L
Dibromomethane	<0.3	0.3	<0.3	0.3	ug/L
Dichlorodifluoromethane	<2	2	<2	2	ug/L
Dichloromethane	<5	5	<5	5	ug/L
Hexachlorobutadiene	<0.5	0.5	<0.5	0.5	ug/L
Methyl ethyl ketone	<20	20	<20	20	ug/L
Methyl isobutyl ketone (MIBK)	<20	20	<20	20	ug/L
Methyl tert-butyl ether (MTBE)	<2	2	<2	2	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 552410

Sample Description	Travel Blank (4696)		Field Blank 11R (4697)		
Sample Date	10/1/2024 12:00 AM		10/2/2024 10:10 AM		
Lab ID	2064058		2064059		
Volatile Organic Compounds	Result	MDL	Result	MDL	Units
n-Hexane	<5	5	<5	5	ug/L
Styrene	<0.5	0.5	<0.5	0.5	ug/L
Tetrachloroethylene	<0.5	0.5	<0.5	0.5	ug/L
Toluene-d8 (Surr.)	113	N/A	112	N/A	% Rec
Trans-1,2-dichloroethylene	<0.5	0.5	<0.5	0.5	ug/L
Trans-1,3-dichloropropene	<0.5	0.5	<0.5	0.5	ug/L
Trichloroethylene	<0.5	0.5	<0.5	0.5	ug/L
Trichlorofluoromethane	<5	5	<5	5	ug/L
Vinyl chloride	<0.1	0.1	<0.1	0.1	ug/L

LEGEND

Dates: Dates are formatted as mm/dd/year throughout this report.

MDL: Method detection limit or minimum reporting limit.

[ ]: Results for laboratory replicates are shown in square brackets immediately below the associated sample result for ease of comparison.

% Rec: Surrogate compounds are added to the sample in some cases and the recovery is reported as a % recovered.

Organic Soil Analysis: Data reported for organic analysis in soils samples are corrected for moisture content.

Quality Control: All associated Quality Control data is available on request.

Field Data: Reports containing Field Parameters represent data that has been collected and provided by the client. Testmark is not responsible for the validity of this data which may be used in subsequent calculations.

Sample Condition Deviations: A noted sample condition deviation may affect the validity of the result. Results apply to the sample(s) as received.

Reproduction of Report: Report shall not be reproduced, except in full, without the approval of Testmark Laboratories Ltd.

ICPMS Dustfall Insoluble: The ICPMS Dustfall Insoluble Portion method analyzes only the particulate matter from the Dustfall Sampler which is retained on the analysis filter during the Dustfall method.

Regulation Comparisons: Disclaimer: Please note that regulation criteria are provided for comparative purposes, however the onus on ensuring the validity of this comparison rests with the client.

*Dilution: In the MDL column an asterisk (*) indicates a sample dilution was performed.

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

TESTMARK Laboratories Ltd.
Committed to Quality and Service

CERTIFICATE OF ANALYSIS

Client:	Hannah Curry	Work Order Number:	551625
Company:	City of Orillia - Waste Diversion Site	PO #:	83585
Address:	40 Kitchener St. Orillia, ON, L3V 6Z9	Regulation:	Information not provided
		Project #:	Fall WDS Sampling SW
Phone:	(705) 325-2394	DWS #:	
Email:	hcurry@orillia.ca	Sampled By:	Hannah Curry
Date Order Received:	9/27/2024	Analysis Started:	9/27/2024
Arrival Temperature:	9.1 C	Analysis Completed:	10/7/2024

WORK ORDER SUMMARY

ANALYSES WERE PERFORMED ON THE FOLLOWING SAMPLES. THE RESULTS RELATE ONLY TO THE ITEMS TESTED.

Sample Description	Lab ID	Matrix	Type	Comments	Date Collected	Time Collected
S-1 (4627)	2060970	Surface Water	None		9/25/2024	10:30 AM
S-2 (4628)	2060971	Surface Water	None		9/25/2024	2:25 PM
S-3 (4629)	2060972	Surface Water	None		9/25/2024	9:30 AM
S-4 (4630)	2060973	Surface Water	None		9/26/2024	9:20 AM
S-6 (4632)	2060974	Surface Water	None		9/25/2024	12:10 PM
S-7 (4632)	2060975	Surface Water	None		9/26/2024	11:30 AM
S-8 (4633)	2060976	Surface Water	None		9/25/2024	11:35 AM
S-11 (4634)	2060977	Surface Water	None		9/26/2024	1:45 PM
Duplicate 7D (4635)	2060978	Surface Water	None		9/26/2024	11:30 AM
Duplicate 502 (4636)	2060979	Surface Water	None		9/25/2024	2:25 PM

METHODS AND INSTRUMENTATION

THE FOLLOWING METHODS WERE USED FOR YOUR SAMPLE(S):

Method	Lab	Description	Reference
Alkalinity (A1.0)	Garson	Determination of Alkalinity by Titration	Modified from APHA-2320B
Ammonia Water (A42)	Garson	Determination of Ammonia/Ammonium in Water	Modified from EPA 350.1

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 551625

Method	Lab	Description	Reference
Anions Water (mg/L by IC) (A5)	Garson	Determination of Anions in Water by Ion Chromatography	Modified from SW846-9056A
BOD (A3)	Mississauga	Determination of Biochemical Oxygen Demand (BOD) 5-Day	Modified from SM-5210 B
Carbonate (A94)	Garson	Determination of Carbonate and Bi-Carbonate	Modified from APHA-2320
Conductivity of Water (A12)	Garson	Determination of Conductivity in Water at 25°C	Modified from SM 2510 B
DIC Water (A55)	Mississauga	Determination of Dissolved Inorganic Carbon in Water	Modified from SM-5310 C
DOC Water (A55.1)	Mississauga	Determination of Dissolved Organic Carbon in Water	Modified from SM-5310 C
Field pH (R112)	Mississauga	Client Supplied Field Determination of pH of Water	Field Test
Field Temp (R113)	Mississauga	Client Supplied Field Determination of Temperature of Water	Field Test
ICPMS Dis. Water (0.2um) (A13)	Garson	Determination of Dissolved Metals in Water by ICP/MS -> Lab-Filtered	Modified from SW846-6020A
ICPMS Dis. Water (A13)	Garson	Determination of Dissolved Metals in Water by ICP/MS -> Lab-Filtered	Modified from SW846-6020A
ICPMS Dis. Water (A13.3)	Garson	Determination of Dissolved Metals in Water by ICP/MS -> Lab-Filtered	Modified from SW846-6020A
ICPMS Reg. Water (A13)	Garson	Determination of Metals in Water by ICP/MS	Modified from SW846-6020A
ICPMS Tot. Water (A13.2)	Garson	Determination of Total Metals in Water by ICP/MS with Digestion	Modified from SW846-6020A
Ion Balance (A91)	Garson	Calculation of Ion Balance	Modified from APHA-1030E
OP Water (A23.1)	Mississauga	Determination of Ortho-Phosphate in Water.	Modified from EPA 365.3 and ESS 310.2.
Organic Nitrogen (A58)	Garson	Determination of Organic Nitrogen	Modified from APHA-4500
pH of Water (A2.0)	Garson	Determination of Water pH by Ion Selective Electrode	Modified from APHA-4500H+ B
Phenols 4AAP (T38)	Mississauga	Determination of Total Phenols by 4AAP	Modified from APHA-5530
Reg. Hardness (A13)	Garson	Determination of Total Hardness	Modified from APHA-2340B
TKN Water Dig. (A58)	Garson	Determination of Total Kjeldahl Nitrogen in Waters with Block Digestion.	Modified from SM-4500 NORG-D
TP Water (A23.2)	Garson	Determination of Total Phosphorus in Water.	Modified from EPA 365.3 and ESS 310.2,
TSS (A27)	Mississauga	Determination of Total Suspended Solids in water by gravimetry	Modified from SM-2540

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 551625

This report has been approved by:

Brad Halvorson, B.Sc.
Laboratory Director

WORK ORDER RESULTS

Sample Description	S - 1 (4627)		S - 2 (4628)		S - 3 (4629)		S - 4 (4630)		
Sample Date	9/25/2024 10:30 AM		9/25/2024 2:25 PM		9/25/2024 9:30 AM		9/26/2024 9:20 AM		
Lab ID	2060970		2060971		2060972		2060973		
Anions	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Bromide	0.74	0.05	1.0	0.1*	<0.05	0.05	0.44	0.05	mg/L
Chloride	203.0	0.2	252.0	0.4*	225.0	0.2	150.0	0.2	mg/L
Fluoride	<0.05	0.05	<0.1	0.1*	<0.05	0.05	<0.05	0.05	mg/L
Nitrate (as N)	8.81	0.05	17.1	0.1*	12.70	0.05	0.16	0.05	mg/L
Nitrite (as N)	<0.05	0.05	<0.1	0.1*	<0.05	0.05	<0.05	0.05	mg/L
Sulphate	57.4	0.5	105	1*	78.3	0.5	9.3	0.5	mg/L

Sample Description	S - 6 (4632)		S - 7 (4632)		S - 8 (4633)		S - 11 (4634)		
Sample Date	9/25/2024 12:10 PM		9/26/2024 11:30 AM		9/25/2024 11:35 AM		9/26/2024 1:45 PM		
Lab ID	2060974		2060975		2060976		2060977		
Anions	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Bromide	<0.05	0.05	<0.05	0.05	0.39	0.05	<0.05	0.05	mg/L
Chloride	147.0	0.2	151.0	0.2	134.0	0.2	77.2	0.2	mg/L
Fluoride	0.10	0.05	<0.05	0.05	<0.05	0.05	<0.05	0.05	mg/L
Nitrate (as N)	0.12	0.05	0.09	0.05	0.49	0.05	0.47	0.05	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 551625

Sample Description	S - 6 (4632)		S - 7 (4632)		S - 8 (4633)		S - 11 (4634)		
Sample Date	9/25/2024 12:10 PM		9/26/2024 11:30 AM		9/25/2024 11:35 AM		9/26/2024 1:45 PM		
Lab ID	2060974		2060975		2060976		2060977		
Anions	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Nitrite (as N)	<0.05	0.05	<0.05	0.05	<0.05	0.05	<0.05	0.05	mg/L
Sulphate	9.4	0.5	6.3	0.5	13.2	0.5	21.4	0.5	mg/L

Sample Description	Duplicate 7D (4635)		Duplicate 502 (4636)		
Sample Date	9/26/2024 11:30 AM		9/25/2024 2:25 PM		
Lab ID	2060978		2060979		
Anions	Result	MDL	Result	MDL	Units
Bromide	<0.05	0.05	<0.1	0.1*	mg/L
Chloride	153.0	0.2	254.0	0.4*	mg/L
Fluoride	<0.05	0.05	<0.1	0.1*	mg/L
Nitrate (as N)	0.11	0.05	17.3	0.1*	mg/L
Nitrite (as N)	<0.05	0.05	<0.1	0.1*	mg/L
Sulphate	7.9	0.5	106	1*	mg/L

Sample Description	S - 1 (4627)		S - 2 (4628)		S - 3 (4629)		S - 4 (4630)		
Sample Date	9/25/2024 10:30 AM		9/25/2024 2:25 PM		9/25/2024 9:30 AM		9/26/2024 9:20 AM		
Lab ID	2060970		2060971		2060972		2060973		
Field Parameters	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Field pH	7.45	N/A	6.92	N/A	6.81	N/A	7.18	N/A	pH
Field Temp	17.6	N/A	17.6	N/A	20.7	N/A	17.4	N/A	°C

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 551625

Sample Description	S - 6 (4632)		S - 7 (4632)		S - 8 (4633)		S - 11 (4634)		
Sample Date	9/25/2024 12:10 PM		9/26/2024 11:30 AM		9/25/2024 11:35 AM		9/26/2024 1:45 PM		
Lab ID	2060974		2060975		2060976		2060977		
Field Parameters	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Field pH	7.1	N/A	7.33	N/A	6.86	N/A	7.63	N/A	pH
Field Temp	16.7	N/A	15.6	N/A	17.6	N/A	22.1	N/A	°C

Sample Description	Duplicate 7D (4635)		Duplicate 502 (4636)		
Sample Date	9/26/2024 11:30 AM		9/25/2024 2:25 PM		
Lab ID	2060978		2060979		
Field Parameters	Result	MDL	Result	MDL	Units
Field pH	7.33	N/A	6.92	N/A	pH
Field Temp	15.6	N/A	17.6	N/A	°C

Sample Description	S - 1 (4627)		S - 2 (4628)		S - 3 (4629)		S - 4 (4630)		
Sample Date	9/25/2024 10:30 AM		9/25/2024 2:25 PM		9/25/2024 9:30 AM		9/26/2024 9:20 AM		
Lab ID	2060970		2060971		2060972		2060973		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Ammonia (as N)	0.12	0.01	0.03	0.01	0.09	0.01	0.05	0.01	mg/L
Anion Sum (Calc.)	9.76	N/A	11.5	N/A	10.5	N/A	8.27	N/A	meq
Bicarbonate (Calc.)	164	1	116	1	144	1	234	1	mg/L as CaCO3
Carbonate (Calc.)	<1	1	<1	1	<1	1	<1	1	mg/L as CaCO3
Cation Sum (Calc.)	11	N/A	12.9	N/A	11.9	N/A	9.46	N/A	meq
Conductivity	1070	1	1290	1	1170	1	876	1	µS/cm
Dissolved Inorganic Carbon	23	2*	25	2*	24	2*	48	2*	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 551625

Sample Description	S - 1 (4627)		S - 2 (4628)		S - 3 (4629)		S - 4 (4630)		
Sample Date	9/25/2024 10:30 AM		9/25/2024 2:25 PM		9/25/2024 9:30 AM		9/26/2024 9:20 AM		
Lab ID	2060970		2060971		2060972		2060973		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Organic Carbon	4.3	0.4	6.3	0.4	5.5	0.4	6.9	0.4	mg/L
Ion Balance (Calc.)	5.97	N/A	5.74	N/A	6.25	N/A	6.71	N/A	%
Organic Nitrogen (as N) (Calc.)	<0.2	0.2	<0.2	0.2	<0.2	0.2	<0.2	0.2	mg/L
Orthophosphate (as P)	0.033	0.005	0.049	0.005	0.039	0.005	0.014	0.005	mg/L
pH	7.5	N/A	7.44	N/A	7.43	N/A	7.62	N/A	pH
Total Alkalinity	165	2	116	2	144	2	235	2	mg/L as CaCO3
Total Hardness (as CaCO3) (Calc.)	275.0	0.1	280.0	0.1	282.0	0.1	297.0	0.1	mg/L
Total Kjeldahl Nitrogen	0.2	0.2*	<0.2	0.2*	<0.2	0.2*	<0.2	0.2*	mg/L
Total Phenols	0.0010	0.0004	0.0010	0.0004	0.0013	0.0004	0.0010	0.0004	mg/L
Total Phosphorus (as P)	0.034	0.002	0.093	0.002	0.052	0.002	0.018	0.002	mg/L

Sample Description	S - 6 (4632)		S - 7 (4632)		S - 8 (4633)		S - 11 (4634)		
Sample Date	9/25/2024 12:10 PM		9/26/2024 11:30 AM		9/25/2024 11:35 AM		9/26/2024 1:45 PM		
Lab ID	2060974		2060975		2060976		2060977		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Ammonia (as N)	0.02	0.01	<0.01	0.01	0.28	0.01	0.20	0.01	mg/L
Anion Sum (Calc.)	8.32	N/A	8.78	N/A	6.35	N/A	4.56	N/A	meq
Bicarbonate (Calc.)	242	1	267	1	139	1	118	1	mg/L as CaCO3
Carbonate (Calc.)	<1	1	1	1	<1	1	<1	1	mg/L as CaCO3
Cation Sum (Calc.)	9.67	N/A	10.1	N/A	7.05	N/A	4.76	N/A	meq
Conductivity	889	1	938	1	687	1	490	1	µS/cm
Dissolved Inorganic Carbon	43	2*	61	2*	24	2*	28	2*	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 551625

Sample Description	S - 6 (4632)		S - 7 (4632)		S - 8 (4633)		S - 11 (4634)		
Sample Date	9/25/2024 12:10 PM		9/26/2024 11:30 AM		9/25/2024 11:35 AM		9/26/2024 1:45 PM		
Lab ID	2060974		2060975		2060976		2060977		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Organic Carbon	5.8	0.4	7.2	0.4	8.1	0.4	5.4	0.4	mg/L
Ion Balance (Calc.)	7.5	N/A	6.99	N/A	5.22	N/A	2.15	N/A	%
Organic Nitrogen (as N) (Calc.)	<0.2	0.2	<0.2	0.2	<0.2	0.2	0.5	0.2	mg/L
Orthophosphate (as P)	0.019	0.005	0.012	0.005	0.018	0.005	0.047	0.005	mg/L
pH	7.58	N/A	7.69	N/A	7.32	N/A	7.82	N/A	pH
Total Alkalinity	243	2	268	2	139	2	119	2	mg/L as CaCO3
Total Hardness (as CaCO3) (Calc.)	307.0	0.1	332.0	0.1	186.0	0.1	159.0	0.1	mg/L
Total Kjeldahl Nitrogen	<0.2	0.2*	<0.2	0.2*	<0.2	0.2*	0.7	0.2*	mg/L
Total Phenols	0.0013	0.0004	0.0013	0.0004	0.0012	0.0004	0.0013	0.0004	mg/L
Total Phosphorus (as P)	0.022	0.002	0.007	0.002	0.029	0.002	0.046	0.002	mg/L

Sample Description	Duplicate 7D (4635)		Duplicate 502 (4636)		
Sample Date	9/26/2024 11:30 AM		9/25/2024 2:25 PM		
Lab ID	2060978		2060979		
General Chemistry	Result	MDL	Result	MDL	Units
Ammonia (as N)	<0.01	0.01	0.04	0.01	mg/L
Anion Sum (Calc.)	8.83	N/A	11.6	N/A	meq
Bicarbonate (Calc.)	262	1	117	1	mg/L as CaCO3
Carbonate (Calc.)	2	1	<1	1	mg/L as CaCO3
Cation Sum (Calc.)	10.2	N/A	13	N/A	meq
Conductivity	927	1	1270	1	µS/cm
Dissolved Inorganic Carbon	66	2*	26	2*	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 551625

Sample Description	Duplicate 7D (4635)		Duplicate 502 (4636)		
Sample Date	9/26/2024 11:30 AM		9/25/2024 2:25 PM		
Lab ID	2060978		2060979		
General Chemistry	Result	MDL	Result	MDL	Units
Dissolved Organic Carbon	7.2	0.4	6.8	0.4	mg/L
Ion Balance (Calc.)	7.2	N/A	5.69	N/A	%
Organic Nitrogen (as N) (Calc.)	<0.2	0.2	<0.2	0.2	mg/L
Orthophosphate (as P)	0.007	0.005	0.058	0.005	mg/L
pH	7.79	N/A	7.45	N/A	pH
Total Alkalinity	264	2	117	2	mg/L as CaCO3
Total Hardness (as CaCO3) (Calc.)	335.0	0.1	284.0	0.1	mg/L
Total Kjeldahl Nitrogen	<0.2	0.2*	<0.2	0.2*	mg/L
Total Phenols	0.0012	0.0004	0.0010	0.0004	mg/L
Total Phosphorus (as P)	0.013	0.002	0.080	0.002	mg/L

Sample Description	S - 1 (4627)		S - 2 (4628)		S - 3 (4629)		S - 4 (4630)		
Sample Date	9/25/2024 10:30 AM		9/25/2024 2:25 PM		9/25/2024 9:30 AM		9/26/2024 9:20 AM		
Lab ID	2060970		2060971		2060972		2060973		
Metals (Dissolved - 0.2um)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Aluminum	35	1	71	1	56	1	5	1	ug/L

Sample Description	S - 6 (4632)		S - 7 (4632)		S - 8 (4633)		S - 11 (4634)		
Sample Date	9/25/2024 12:10 PM		9/26/2024 11:30 AM		9/25/2024 11:35 AM		9/26/2024 1:45 PM		
Lab ID	2060974		2060975		2060976		2060977		
Metals (Dissolved - 0.2um)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Aluminum	3	1	2	1	5	1	8	1	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 551625

Sample Description	Duplicate 7D (4635)		Duplicate 502 (4636)		
Sample Date	9/26/2024 11:30 AM		9/25/2024 2:25 PM		
Lab ID	2060978		2060979		
Metals (Dissolved - 0.2um)	Result	MDL	Result	MDL	Units
Dissolved Aluminum	4	1	74	1	ug/L

Sample Description	S - 1 (4627)		S - 2 (4628)		S - 3 (4629)		S - 4 (4630)		
Sample Date	9/25/2024 10:30 AM		9/25/2024 2:25 PM		9/25/2024 9:30 AM		9/26/2024 9:20 AM		
Lab ID	2060970		2060971		2060972		2060973		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Aluminum	38	1	67	1	61	1	6	1	ug/L
Dissolved Antimony	0.8	0.5	1.2	0.5	0.8	0.5	<0.5	0.5	ug/L
Dissolved Arsenic	4	1	4	1	4	1	3	1	ug/L
Dissolved Arsenic [rr]	3	1							ug/L
Dissolved Barium	101	1	66	1	86	1	152	10*	ug/L
Dissolved Beryllium	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Dissolved Bismuth	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Boron	84	2	148	2	122	2	16	2	ug/L
Dissolved Cadmium	<0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L
Dissolved Calcium	81900	500*	84500	500*	82900	500*	89200	500*	ug/L
Dissolved Cerium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Cesium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Chromium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Cobalt	6.5	0.1	13.7	0.1	9.9	0.1	0.2	0.1	ug/L
Dissolved Copper	3	1	3	1	3	1	2	1	ug/L
Dissolved Europium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Gallium	3	1	2	1	3	1	4	1	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 551625

Sample Description	S - 1 (4627)		S - 2 (4628)		S - 3 (4629)		S - 4 (4630)		
Sample Date	9/25/2024 10:30 AM		9/25/2024 2:25 PM		9/25/2024 9:30 AM		9/26/2024 9:20 AM		
Lab ID	2060970		2060971		2060972		2060973		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Iron	100	20	81	20	120	20	190	20	ug/L
Dissolved Lanthanum	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Lead	0.1	0.1	0.2	0.1	0.2	0.1	<0.1	0.1	ug/L
Dissolved Lithium	<5	5	<5	5	<5	5	<5	5	ug/L
Dissolved Magnesium	16600	4	17400	4	17200	4	17800	4	ug/L
Dissolved Manganese	54	1	7	1	35	1	103	1	ug/L
Dissolved Mercury	<0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L
Dissolved Molybdenum	1	1	2	1	2	1	<1	1	ug/L
Dissolved Nickel	1	1	2	1	1	1	<1	1	ug/L
Dissolved Niobium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Phosphorus	55	50	67	50	64	50	<50	50	ug/L
Dissolved Potassium	9190	100	15000	100	12100	100	3120	100	ug/L
Dissolved Rhodium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Rubidium	6	1	11	1	8	1	2	1	ug/L
Dissolved Scandium	<1	1	<1	1	<1	1	2	1	ug/L
Dissolved Selenium	0.7	0.2	0.4	0.2	0.6	0.2	<0.2	0.2	ug/L
Dissolved Silicon	3400	600	2800	600	3300	600	5300	600	ug/L
Dissolved Silver	<0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L
Dissolved Sodium	120000	1000*	157000	1000*	137000	1000*	78600	1000*	ug/L
Dissolved Strontium	247	1	253	1	254	1	224	1	ug/L
Dissolved Sulfur	17800	800	33900	800	25500	800	3400	800	ug/L
Dissolved Tellurium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Thallium	<0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L
Dissolved Thorium	<1	1	<1	1	<1	1	<1	1	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 551625

Sample Description	S - 1 (4627)		S - 2 (4628)		S - 3 (4629)		S - 4 (4630)		
Sample Date	9/25/2024 10:30 AM		9/25/2024 2:25 PM		9/25/2024 9:30 AM		9/26/2024 9:20 AM		
Lab ID	2060970		2060971		2060972		2060973		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Tin	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Titanium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Tungsten	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Uranium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Vanadium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Yttrium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Zinc	10	1	17	1	27	1	12	1	ug/L
Dissolved Zinc [rr]	10	1			28	1	7	1	ug/L
Dissolved Zirconium	<1	1	<1	1	<1	1	<1	1	ug/L

Sample Description	S - 6 (4632)		S - 7 (4632)		S - 8 (4633)		S - 11 (4634)		
Sample Date	9/25/2024 12:10 PM		9/26/2024 11:30 AM		9/25/2024 11:35 AM		9/26/2024 1:45 PM		
Lab ID	2060974		2060975		2060976		2060977		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Aluminum	3	1	5	1	9	1	8	1	ug/L
Dissolved Antimony	<0.5	0.5	<0.5	0.5	0.6	0.5	<0.5	0.5	ug/L
Dissolved Arsenic	3	1	3	1	2	1	1	1	ug/L
Dissolved Barium	158	10*	165	10*	120	1	35	1	ug/L
Dissolved Beryllium	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Dissolved Bismuth	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Boron	12	2	6	2	39	2	16	2	ug/L
Dissolved Cadmium	<0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L
Dissolved Calcium	92500	500*	98000	500*	54700	500*	44200	50	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 551625

Sample Description	S - 6 (4632)		S - 7 (4632)		S - 8 (4633)		S - 11 (4634)		
Sample Date	9/25/2024 12:10 PM		9/26/2024 11:30 AM		9/25/2024 11:35 AM		9/26/2024 1:45 PM		
Lab ID	2060974		2060975		2060976		2060977		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Cerium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Cesium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Chromium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Cobalt	0.2	0.1	0.2	0.1	0.2	0.1	0.3	0.1	ug/L
Dissolved Copper	1	1	2	1	3	1	<1	1	ug/L
Dissolved Europium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Gallium	4	1	5	1	4	1	1	1	ug/L
Dissolved Iron	222	20	226	20	221	20	82	20	ug/L
Dissolved Lanthanum	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Lead	<0.1	0.1	<0.1	0.1	0.1	0.1	<0.1	0.1	ug/L
Dissolved Lithium	<5	5	<5	5	<5	5	<5	5	ug/L
Dissolved Magnesium	19500	4	20200	4	9980	4	8920	4	ug/L
Dissolved Manganese	122	1	60	1	115	1	4	1	ug/L
Dissolved Mercury	<0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L
Dissolved Molybdenum	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Nickel	<1	1	<1	1	1	1	<1	1	ug/L
Dissolved Niobium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Phosphorus	<50	50	<50	50	<50	50	90	50	ug/L
Dissolved Potassium	3240	100	3080	100	3860	100	3110	100	ug/L
Dissolved Rhodium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Rubidium	2	1	2	1	2	1	2	1	ug/L
Dissolved Scandium	2	1	2	1	<1	1	<1	1	ug/L
Dissolved Selenium	0.4	0.2	0.4	0.2	0.3	0.2	<0.2	0.2	ug/L
Dissolved Silicon	5900	600	6480	600	2300	600	<600	600	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 551625

Sample Description	S - 6 (4632)		S - 7 (4632)		S - 8 (4633)		S - 11 (4634)		
Sample Date	9/25/2024 12:10 PM		9/26/2024 11:30 AM		9/25/2024 11:35 AM		9/26/2024 1:45 PM		
Lab ID	2060974		2060975		2060976		2060977		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Silver	<0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L
Dissolved Sodium	76500	1000*	79300	1000*	77100	1000*	39600	100	ug/L
Dissolved Strontium	218	1	222	1	257	1	139	1	ug/L
Dissolved Sulfur	3500	800	3100	800	5100	800	7500	800	ug/L
Dissolved Tellurium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Thallium	<0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L
Dissolved Thorium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Tin	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Titanium	<1	1	1	1	<1	1	<1	1	ug/L
Dissolved Tungsten	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Uranium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Vanadium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Yttrium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Zinc	6	1	14	1	15	1	5	1	ug/L
Dissolved Zinc [rr]			14	1	16	1			ug/L
Dissolved Zirconium	<1	1	<1	1	<1	1	<1	1	ug/L

Sample Description	Duplicate 7D (4635)		Duplicate 502 (4636)		
Sample Date	9/26/2024 11:30 AM		9/25/2024 2:25 PM		
Lab ID	2060978		2060979		
Metals (Dissolved)	Result	MDL	Result	MDL	Units
Dissolved Aluminum	7	1	78	1	ug/L
Dissolved Antimony	<0.5	0.5	1.1	0.5	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 551625

Sample Description	Duplicate 7D (4635)		Duplicate 502 (4636)		
Sample Date	9/26/2024 11:30 AM		9/25/2024 2:25 PM		
Lab ID	2060978		2060979		
Metals (Dissolved)	Result	MDL	Result	MDL	Units
Dissolved Arsenic	3	1	4	1	ug/L
Dissolved Arsenic [rr]			4	1	ug/L
Dissolved Barium	166	10*	64	1	ug/L
Dissolved Beryllium	<0.5	0.5	<0.5	0.5	ug/L
Dissolved Bismuth	<1	1	<1	1	ug/L
Dissolved Boron	7	2	152	2	ug/L
Dissolved Cadmium	<0.1	0.1	<0.1	0.1	ug/L
Dissolved Calcium	99200	500*	85100	500*	ug/L
Dissolved Cerium	<1	1	<1	1	ug/L
Dissolved Cesium	<1	1	<1	1	ug/L
Dissolved Chromium	<1	1	<1	1	ug/L
Dissolved Cobalt	0.2	0.1	13.7	0.1	ug/L
Dissolved Copper	1	1	3	1	ug/L
Dissolved Europium	<1	1	<1	1	ug/L
Dissolved Gallium	5	1	2	1	ug/L
Dissolved Iron	247	20	93	20	ug/L
Dissolved Lanthanum	<1	1	<1	1	ug/L
Dissolved Lead	<0.1	0.1	0.2	0.1	ug/L
Dissolved Lithium	<5	5	<5	5	ug/L
Dissolved Magnesium	20900	4	17700	4	ug/L
Dissolved Manganese	63	1	7	1	ug/L
Dissolved Mercury	<0.1	0.1	<0.1	0.1	ug/L
Dissolved Molybdenum	<1	1	2	1	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 551625

Sample Description	Duplicate 7D (4635)		Duplicate 502 (4636)		
Sample Date	9/26/2024 11:30 AM		9/25/2024 2:25 PM		
Lab ID	2060978		2060979		
Metals (Dissolved)	Result	MDL	Result	MDL	Units
Dissolved Nickel	<1	1	2	1	ug/L
Dissolved Niobium	<1	1	<1	1	ug/L
Dissolved Phosphorus	<50	50	70	50	ug/L
Dissolved Potassium	3080	100	15000	100	ug/L
Dissolved Rhodium	<1	1	<1	1	ug/L
Dissolved Rubidium	2	1	11	1	ug/L
Dissolved Scandium	2	1	<1	1	ug/L
Dissolved Selenium	<0.2	0.2	<0.2	0.2	ug/L
Dissolved Silicon	6630	600	2900	600	ug/L
Dissolved Silver	<0.1	0.1	<0.1	0.1	ug/L
Dissolved Sodium	79300	1000*	157000	1000*	ug/L
Dissolved Strontium	223	1	252	1	ug/L
Dissolved Sulfur	3400	800	35100	800	ug/L
Dissolved Tellurium	<1	1	<1	1	ug/L
Dissolved Thallium	<0.1	0.1	<0.1	0.1	ug/L
Dissolved Thorium	<1	1	<1	1	ug/L
Dissolved Tin	<1	1	<1	1	ug/L
Dissolved Titanium	1	1	<1	1	ug/L
Dissolved Tungsten	<1	1	<1	1	ug/L
Dissolved Uranium	<1	1	<1	1	ug/L
Dissolved Vanadium	<1	1	<1	1	ug/L
Dissolved Yttrium	<1	1	<1	1	ug/L
Dissolved Zinc	16	1	21	1	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 551625

Sample Description	Duplicate 7D (4635)		Duplicate 502 (4636)		
Sample Date	9/26/2024 11:30 AM		9/25/2024 2:25 PM		
Lab ID	2060978		2060979		
Metals (Dissolved)	Result	MDL	Result	MDL	Units
Dissolved Zinc [rr]	16	1	22	1	ug/L
Dissolved Zirconium	<1	1	<1	1	ug/L

Sample Description	S - 1 (4627)		S - 2 (4628)		S - 3 (4629)		S - 4 (4630)		
Sample Date	9/25/2024 10:30 AM		9/25/2024 2:25 PM		9/25/2024 9:30 AM		9/26/2024 9:20 AM		
Lab ID	2060970		2060971		2060972		2060973		
Metals (Total)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Total Aluminum	132	1	210	1	179	1	35	1	ug/L
Total Arsenic			0.4	0.1					ug/L
Total Barium	115.0	0.1	68.2	0.1	95.3	0.1	146	1*	ug/L
Total Cadmium	<0.005	0.005	<0.005	0.005	0.018	0.005	0.007	0.005	ug/L
Total Chromium	0.7	0.1	0.7	0.1	0.8	0.1	0.6	0.1	ug/L
Total Cobalt	8.3	0.1	15.5	0.1	11.7	0.1	0.2	0.1	ug/L
Total Copper	3.8	0.2	7.2	0.2	4.4	0.2	2.3	0.2	ug/L
Total Lead	0.32	0.05	0.23	0.05	0.31	0.05	0.19	0.05	ug/L
Total Nickel	1.2	0.5	1.3	0.5	1.4	0.5	0.7	0.5	ug/L
Total Selenium	0.88	0.05	1.01	0.05	0.41	0.05	0.49	0.05	ug/L
Total Silver	0.06	0.01	0.02	0.01	0.02	0.01	0.01	0.01	ug/L
Total Zinc	11	1	16	1	14	1	4	1	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 551625

Sample Description	S - 6 (4632)		S - 7 (4632)		S - 8 (4633)		S - 11 (4634)		
Sample Date	9/25/2024 12:10 PM		9/26/2024 11:30 AM		9/25/2024 11:35 AM		9/26/2024 1:45 PM		
Lab ID	2060974		2060975		2060976		2060977		
Metals (Total)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Total Aluminum	82	1	46	1	113	1	60	1	ug/L
Total Barium	159	1*	160	1*	141	1*	38.6	0.1	ug/L
Total Cadmium	0.009	0.005	<0.005	0.005	0.015	0.005	<0.005	0.005	ug/L
Total Chromium	0.9	0.1	0.6	0.1	1.2	0.1	0.6	0.1	ug/L
Total Cobalt	0.2	0.1	0.2	0.1	0.2	0.1	0.5	0.1	ug/L
Total Copper	2.0	0.2	1.8	0.2	4.1	0.2	1.4	0.2	ug/L
Total Lead	0.19	0.05	0.12	0.05	0.61	0.05	0.14	0.05	ug/L
Total Nickel	1.1	0.5	0.6	0.5	1.4	0.5	<0.5	0.5	ug/L
Total Selenium	0.94	0.05	0.81	0.05	0.67	0.05	0.61	0.05	ug/L
Total Silver	<0.01	0.01	<0.01	0.01	<0.01	0.01	<0.01	0.01	ug/L
Total Zinc	4	1	3	1	9	1	2	1	ug/L

Sample Description	Duplicate 7D (4635)		Duplicate 502 (4636)		
Sample Date	9/26/2024 11:30 AM		9/25/2024 2:25 PM		
Lab ID	2060978		2060979		
Metals (Total)	Result	MDL	Result	MDL	Units
Total Aluminum	42	1	220	1	ug/L
Total Arsenic			0.6	0.1	ug/L
Total Arsenic [rr]			0.6	0.1	ug/L
Total Barium	150	1*	68.7	0.1	ug/L
Total Cadmium	<0.005	0.005	<0.005	0.005	ug/L
Total Chromium	0.7	0.1	0.8	0.1	ug/L
Total Cobalt	0.2	0.1	15.6	0.1	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 551625

Sample Description	Duplicate 7D (4635)		Duplicate 502 (4636)		
Sample Date	9/26/2024 11:30 AM		9/25/2024 2:25 PM		
Lab ID	2060978		2060979		
Metals (Total)	**Result**	**MDL**	**Result**	**MDL**	**Units**
Total Copper	1.6	0.2	3.9	0.2	ug/L
Total Lead	0.11	0.05	0.23	0.05	ug/L
Total Nickel	0.5	0.5	1.4	0.5	ug/L
Total Selenium	0.58	0.05	0.85	0.05	ug/L
Total Silver	<0.01	0.01	<0.01	0.01	ug/L
Total Zinc	2	1	15	1	ug/L

Sample Description	S - 1 (4627)		S - 2 (4628)		S - 3 (4629)		S - 4 (4630)		
Sample Date	9/25/2024 10:30 AM		9/25/2024 2:25 PM		9/25/2024 9:30 AM		9/26/2024 9:20 AM		
Lab ID	2060970		2060971		2060972		2060973		
Oxygen Demand	**Result**	**MDL**	**Result**	**MDL**	**Result**	**MDL**	**Result**	**MDL**	**Units**
BOD (5 day)	<1	1	<1	1	1.2	1	<1	1	mg/L

Sample Description	S - 6 (4632)		S - 7 (4632)		S - 8 (4633)		S - 11 (4634)		
Sample Date	9/25/2024 12:10 PM		9/26/2024 11:30 AM		9/25/2024 11:35 AM		9/26/2024 1:45 PM		
Lab ID	2060974		2060975		2060976		2060977		
Oxygen Demand	**Result**	**MDL**	**Result**	**MDL**	**Result**	**MDL**	**Result**	**MDL**	**Units**
BOD (5 day)	<1	1	<1	1	<1	1	2	1	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 551625

Sample Description	Duplicate 7D (4635)		Duplicate 502 (4636)		
Sample Date	9/26/2024 11:30 AM		9/25/2024 2:25 PM		
Lab ID	2060978		2060979		
Oxygen Demand	Result	MDL	Result	MDL	Units
BOD (5 day)	<1	1	1.3	1	mg/L

Sample Description	S - 1 (4627)		S - 2 (4628)		S - 3 (4629)		S - 4 (4630)		
Sample Date	9/25/2024 10:30 AM		9/25/2024 2:25 PM		9/25/2024 9:30 AM		9/26/2024 9:20 AM		
Lab ID	2060970		2060971		2060972		2060973		
Solids	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Total Suspended Solids	1.70	0.67	1.70	0.67	2.70	0.67	2.00	0.67	mg/L

Sample Description	S - 6 (4632)		S - 7 (4632)		S - 8 (4633)		S - 11 (4634)		
Sample Date	9/25/2024 12:10 PM		9/26/2024 11:30 AM		9/25/2024 11:35 AM		9/26/2024 1:45 PM		
Lab ID	2060974		2060975		2060976		2060977		
Solids	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Total Suspended Solids	11.5	1	5.30	0.67	6.00	0.67	5.30	0.67	mg/L

Sample Description	Duplicate 7D (4635)		Duplicate 502 (4636)		
Sample Date	9/26/2024 11:30 AM		9/25/2024 2:25 PM		
Lab ID	2060978		2060979		
Solids	Result	MDL	Result	MDL	Units
Total Suspended Solids	6.00	0.67	3.00	0.67	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 551625

LEGEND

Dates: Dates are formatted as mm/dd/year throughout this report.

[rr]: After a parameter name indicates a re-run of that parameter. If multiple re-runs exist they are suffixed by a number. Sample may not have been handled according to the recommended temperature, hold time and head space requirements of the method after the initial analysis.

MDL: Method detection limit or minimum reporting limit.

[ ]: Results for laboratory replicates are shown in square brackets immediately below the associated sample result for ease of comparison.

Organic Soil Analysis: Data reported for organic analysis in soils samples are corrected for moisture content.

Quality Control: All associated Quality Control data is available on request.

Field Data: Reports containing Field Parameters represent data that has been collected and provided by the client. Testmark is not responsible for the validity of this data which may be used in subsequent calculations.

Sample Condition Deviations: A noted sample condition deviation may affect the validity of the result. Results apply to the sample(s) as received.

Reproduction of Report: Report shall not be reproduced, except in full, without the approval of Testmark Laboratories Ltd.

ICPMS Dustfall Insoluble: The ICPMS Dustfall Insoluble Portion method analyzes only the particulate matter from the Dustfall Sampler which is retained on the analysis filter during the Dustfall method.

Regulation Comparisons: Disclaimer: Please note that regulation criteria are provided for comparative purposes, however the onus on ensuring the validity of this comparison rests with the client.

*Dilution: In the MDL column an asterisk (*) indicates a sample dilution was performed.

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

TESTMARK Laboratories Ltd.
Committed to Quality and Service

CERTIFICATE OF ANALYSIS

Client:	Hannah Curry	Work Order Number:	541986
Company:	City of Orillia - Waste Diversion Site	PO #:	83585
Address:	40 Kitchener St.	Regulation:	Information not provided
	Orillia, ON, L3V 6Z9	Project #:	Summer WDS Sampling GW Inside
Phone:	(705) 325-2394	DWS #:	
Email:	hcurry@orillia.ca	Sampled By:	Hannah Curry
Date Order Received:	7/19/2024	Analysis Started:	7/19/2024
Arrival Temperature:	10.3 C	Analysis Completed:	7/26/2024

WORK ORDER SUMMARY

ANALYSES WERE PERFORMED ON THE FOLLOWING SAMPLES. THE RESULTS RELATE ONLY TO THE ITEMS TESTED.

Sample Description	Lab ID	Matrix	Type	Comments	Date Collected	Time Collected
BH3-IR (4661)	2031457	Ground Water	None		7/17/2024	10:10 AM
BH3-IIR (4662)	2031458	Ground Water	None		7/17/2024	9:30 AM
BH5-IR (4663)	2031459	Ground Water	None		7/18/2024	12:30 PM
BH5-IIIR (4664)	2031460	Ground Water	None		7/18/2024	12:50 PM
BH6R (4665)	2031461	Ground Water	None		7/17/2024	2:00 PM
BH16-I (4666)	2031462	Ground Water	None		7/16/2024	1:10 PM
BH16-IVR (4667)	2031463	Ground Water	None		7/16/2024	12:30 PM
BH17-III (4668)	2031464	Ground Water	None		7/15/2024	2:20 PM
BH17-IVR (4669)	2031465	Ground Water	None		7/15/2024	2:55 PM
BH20R (4670)	2031466	Ground Water	None		7/18/2024	10:25 AM
BH21-IR (4671)	2031467	Ground Water	None		7/17/2024	12:00 PM
BH21-IIR (4672)	2031468	Ground Water	None		7/17/2024	12:20 PM
BH22-IR (4673)	2031469	Ground Water	None		7/15/2024	10:50 AM
BH22-IIR (4674)	2031470	Ground Water	None		7/15/2024	10:35 AM
BH26 (4675)	2031471	Ground Water	None		7/15/2024	9:50 AM
BH30-I (4676)	2031472	Ground Water	None		7/16/2024	3:15 PM
BH30-II (4678)	2031473	Ground Water	None		7/16/2024	2:50 PM

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541986

Sample Description	Lab ID	Matrix	Type	Comments	Date Collected	Time Collected
Duplicate BH17IVRD (4679)	2031474	Ground Water	None		7/15/2024	2:55 PM
Duplicate BH526 (4680)	2031475	Ground Water	None		7/15/2024	9:50 AM
Travel Blank (4681)	2031476	Ground Water	None		7/15/2024	
Field Blank BH3-IR (4682)	2031477	Ground Water	None		7/17/2024	10:10 AM

METHODS AND INSTRUMENTATION

THE FOLLOWING METHODS WERE USED FOR YOUR SAMPLE(S):

Method	Lab	Description	Reference
Alkalinity (A1.0)	Mississauga	Determination of Alkalinity by Titration	Modified from APHA-2320B
Ammonia Water (A42)	Kirkland Lake	Determination of Ammonia/Ammonium in Water	Modified from EPA 350.1
Ammonium Water (A42.3)	Kirkland Lake	Calculation of Ammonium in Water	Modified from APHA 4500
Anions Water (mg/L by IC) (A5)	Mississauga	Determination of Anions in Water by Ion Chromatography	Modified from SW846-9056A
BTEX/F1 Water (A127)	Mississauga	Determination of PHC BTEX/F1 in Water - Tier 1 CCME	Modified from CWS PHC Tier I CCME
Carbonate (A94)	Mississauga	Determination of Carbonate and Bi-Carbonate	Modified from APHA-2320
Conductivity of Water (A12)	Mississauga	Determination of Conductivity in Water at 25°C	Modified from SM 2510 B
DIC Water (A55)	Mississauga	Determination of Dissolved Inorganic Carbon in Water	Modified from SM-5310 C
DOC Water (A55.1)	Mississauga	Determination of Dissolved Organic Carbon in Water	Modified from SM-5310 C
Field pH (R112)	Mississauga	Client Supplied Field Determination of pH of Water	Field Test
Field Temp (R113)	Mississauga	Client Supplied Field Determination of Temperature of Water	Field Test
ICPMS Dis. Water FF (A13.3)	Garson	Determination of Dissolved Metals in Water by ICP/MS -> Field-Filtered	Modified from SW846-6020A
ICPMS Reg. Water (A13.1)	Garson	Determination of Metals in Water by ICP/MS	Modified from SW846-6020A
Ion Balance (A91)	Mississauga	Calculation of Ion Balance	Modified from APHA-1030E
OP Water (A23.1)	Mississauga	Determination of Ortho-Phosphate in Water.	Modified from EPA 365.3 and ESS 310.2.
Organic Nitrogen (A58)	Kirkland Lake	Determination of Organic Nitrogen	Modified from APHA-4500
pH of Water (A2.0)	Mississauga	Determination of Water pH by Ion Selective Electrode	Modified from APHA-4500H+ B
Phenols 4AAP (T38)	Mississauga	Determination of Total Phenols by 4AAP	Modified from APHA-5530
Reg. Hardness (A13)	Garson	Determination of Total Hardness	Modified from APHA-2340B
TKN Water Dig. (A58)	Kirkland Lake	Determination of Total Kjeldahl Nitrogen in Waters with Block Digestion.	Modified from SM-4500 NORG-D
TP Water (A23.2)	Kirkland Lake	Determination of Total Phosphorus in Water.	Modified from EPA 365.3 and ESS 310.2,

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541986

Method	Lab	Description	Reference
Un-Ionized NH3 (A42.4)	Kirkland Lake	Calculation of Un-Ionized Ammonia, based on Client Field pH and Temperature	Modified from APHA-4500
VOC Water (A14)	Mississauga	Determination of Volatile Organic Compounds in Water by P&T/GC/MS	Modified from EPA SW846-8260 B

This report has been approved by:

Marc Creighton
Laboratory Director

WORK ORDER RESULTS

Sample Description	BH3 - IR (4661)		BH3 - IIR (4662)		BH5 - IR (4663)		BH5 - IIIR (4664)		
Sample Date	7/17/2024 10:10 AM		7/17/2024 9:30 AM		7/18/2024 12:30 PM		7/18/2024 12:50 PM		
Lab ID	2031457		2031458		2031459		2031460		
Anions	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Chloride	197.0	0.2	564	2*	133.0	0.2	105.0	0.2	mg/L
Nitrate (as N)	<0.05	0.05	0.05	0.05	0.07	0.05	0.17	0.05	mg/L
Nitrite (as N)	<0.05	0.05	<0.05	0.05	<0.05	0.05	<0.05	0.05	mg/L
Sulphate	2.2	0.5	<0.5	0.5	19.6	0.5	10.3	0.5	mg/L

Sample Description	BH6R (4665)		BH16 - I (4666)		BH16 - IVR (4667)		BH17 - III (4668)		
Sample Date	7/17/2024 2:00 PM		7/16/2024 1:10 PM		7/16/2024 12:30 PM		7/15/2024 2:20 PM		
Lab ID	2031461		2031462		2031463		2031464		
Anions	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Chloride	49.6	0.2	174.0	0.2	122.0	0.2	193.0	0.2	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541986

Sample Description	BH6R (4665)		BH16 - I (4666)		BH16 - IVR (4667)		BH17 - III (4668)		
Sample Date	7/17/2024 2:00 PM		7/16/2024 1:10 PM		7/16/2024 12:30 PM		7/15/2024 2:20 PM		
Lab ID	2031461		2031462		2031463		2031464		
Anions	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Nitrate (as N)	<0.05	0.05	<0.05	0.05	<0.05	0.05	<0.05	0.05	mg/L
Nitrite (as N)	<0.05	0.05	<0.05	0.05	<0.05	0.05	<0.05	0.05	mg/L
Sulphate	<0.5	0.5	<0.5	0.5	0.6	0.5	25.0	0.5	mg/L

Sample Description	BH17 - IVR (4669)		BH20R (4670)		BH21 - IR (4671)		BH21 - IIR (4672)		
Sample Date	7/15/2024 2:55 PM		7/18/2024 10:25 AM		7/17/2024 12:00 PM		7/17/2024 12:20 PM		
Lab ID	2031465		2031466		2031467		2031468		
Anions	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Chloride	52.9	0.2	164.0	0.2	104.0	0.2	73.4	0.2	mg/L
Nitrate (as N)	3.43	0.05	0.06	0.05	<0.05	0.05	<0.05	0.05	mg/L
Nitrite (as N)	<0.05	0.05	<0.05	0.05	<0.05	0.05	<0.05	0.05	mg/L
Sulphate	11.3	0.5	<0.5	0.5	<0.5	0.5	1.5	0.5	mg/L

Sample Description	BH22 - IR (4673)		BH22 - IIR (4674)		BH26 (4675)		BH30 - I (4676)		
Sample Date	7/15/2024 10:50 AM		7/15/2024 10:35 AM		7/15/2024 9:50 AM		7/16/2024 3:15 PM		
Lab ID	2031469		2031470		2031471		2031472		
Anions	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Chloride	150.0	0.2	101.0	0.2	99.2	0.2	223.0	0.2	mg/L
Nitrate (as N)	0.09	0.05	0.19	0.05	0.19	0.05	<0.05	0.05	mg/L
Nitrite (as N)	<0.05	0.05	<0.05	0.05	<0.05	0.05	<0.05	0.05	mg/L
Sulphate	10.8	0.5	5.4	0.5	5.1	0.5	3.6	0.5	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541986

Sample Description	BH30 - II (4678)		Duplicate BH17IVRD (4679)		Duplicate BH526 (4680)		Travel Blank (4681)		
Sample Date	7/16/2024 2:50 PM		7/15/2024 2:55 PM		7/15/2024 9:50 AM		7/15/2024 12:00 AM		
Lab ID	2031473		2031474		2031475		2031476		
Anions	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Chloride	72.7	0.2	52.9	0.2	98.8	0.2	0.7	0.2	mg/L
Nitrate (as N)	0.10	0.05	3.43	0.05	0.19	0.05	<0.05	0.05	mg/L
Nitrite (as N)	<0.05	0.05	<0.05	0.05	<0.05	0.05	<0.05	0.05	mg/L
Sulphate	<0.5	0.5	11.4	0.5	4.9	0.5	<0.5	0.5	mg/L

Sample Description	Field Blank BH3 - IR (4682)		
Sample Date	7/17/2024 10:10 AM		
Lab ID	2031477		
Anions	Result	MDL	Units
Chloride	0.3	0.2	mg/L
Nitrate (as N)	<0.05	0.05	mg/L
Nitrite (as N)	<0.05	0.05	mg/L
Sulphate	<0.5	0.5	mg/L

Sample Description	BH3 - IR (4661)		BH3 - IIR (4662)		BH5 - IR (4663)		BH5 - IIIR (4664)		
Sample Date	7/17/2024 10:10 AM		7/17/2024 9:30 AM		7/18/2024 12:30 PM		7/18/2024 12:50 PM		
Lab ID	2031457		2031458		2031459		2031460		
Field Parameters	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Field pH	6.28	N/A	6.46	N/A	6.89	N/A	6.71	N/A	pH
Field Temp	14.6	N/A	14.7	N/A	9.3	N/A	9.9	N/A	°C

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541986

Sample Description	BH6R (4665)		BH16 - I (4666)		BH16 - IVR (4667)		BH17 - III (4668)		
Sample Date	7/17/2024 2:00 PM		7/16/2024 1:10 PM		7/16/2024 12:30 PM		7/15/2024 2:20 PM		
Lab ID	2031461		2031462		2031463		2031464		
Field Parameters	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Field pH	6.4	N/A	6.63	N/A	6.49	N/A	6.75	N/A	pH
Field Temp	12.1	N/A	11.4	N/A	15.2	N/A	8.5	N/A	°C

Sample Description	BH17 - IVR (4669)		BH20R (4670)		BH21 - IR (4671)		BH21 - IIR (4672)		
Sample Date	7/15/2024 2:55 PM		7/18/2024 10:25 AM		7/17/2024 12:00 PM		7/17/2024 12:20 PM		
Lab ID	2031465		2031466		2031467		2031468		
Field Parameters	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Field pH	6.63	N/A	6.28	N/A	6.6	N/A	6.39	N/A	pH
Field Temp	13	N/A	12	N/A	9.4	N/A	18.4	N/A	°C

Sample Description	BH22 - IR (4673)		BH22 - IIR (4674)		BH26 (4675)		BH30 - I (4676)		
Sample Date	7/15/2024 10:50 AM		7/15/2024 10:35 AM		7/15/2024 9:50 AM		7/16/2024 3:15 PM		
Lab ID	2031469		2031470		2031471		2031472		
Field Parameters	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Field pH	6.79	N/A	6.6	N/A	6.71	N/A	6.52	N/A	pH
Field Temp	8.7	N/A	15.7	N/A	13.7	N/A	10.5	N/A	°C

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541986

Sample Description	BH30 - II (4678)		Duplicate BH17IVRD (4679)		Duplicate BH526 (4680)		
Sample Date	7/16/2024 2:50 PM		7/15/2024 2:55 PM		7/15/2024 9:50 AM		
Lab ID	2031473		2031474		2031475		
Field Parameters	Result	MDL	Result	MDL	Result	MDL	Units
Field pH	6.89	N/A	6.63	N/A	6.71	N/A	pH
Field Temp	15.5	N/A	13	N/A	13.7	N/A	°C

Sample Description	BH3 - IR (4661)		BH3 - IIR (4662)		BH5 - IR (4663)		BH5 - IIIR (4664)		
Sample Date	7/17/2024 10:10 AM		7/17/2024 9:30 AM		7/18/2024 12:30 PM		7/18/2024 12:50 PM		
Lab ID	2031457		2031458		2031459		2031460		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Ammonia (as N)	0.33	0.01	312.0	0.8*	0.06	0.01	0.75	0.01	mg/L
Ammonium (as N) (Calc.)	0.33	0.01	312.00	0.01	0.06	0.01	0.75	0.01	mg/L
Anion Sum (Calc.)	15.5	N/A	44.1	N/A	12.3	N/A	11.8	N/A	meq
Bicarbonate (Calc.)	600	1	1710	1	494	1	524	1	mg/L as CaCO3
Carbonate (Calc.)	2	1	2	1	1	1	<1	1	mg/L as CaCO3
Cation Sum (Calc.)	27.2	N/A	35.8	N/A	13.8	N/A	13.3	N/A	meq
Conductivity	1780	1	4640	1	961	1	1060	1	µS/cm
Dissolved Inorganic Carbon	241	8*	502	8*	109	4*	116	4*	mg/L
Dissolved Organic Carbon	20.2	0.8*	120	4*	3.4	0.4	29.8	0.8*	mg/L
Ion Balance (Calc.)	27.4	N/A	-10.4	N/A	5.75	N/A	5.98	N/A	%
Organic Nitrogen (as N) (Calc.)	1.2	0.2	<0.2	0.2	1.0	0.2	14.3	0.2	mg/L
Orthophosphate (as P)	0.009	0.005	0.009	0.005	0.039	0.005			mg/L
pH	7.58	N/A	7.17	N/A	7.43	N/A	7.24	N/A	pH
Total Alkalinity	602	2	1710	4	495	2	525	2	mg/L as CaCO3

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541986

Sample Description	BH3 - IR (4661)		BH3 - IIR (4662)		BH5 - IR (4663)		BH5 - IIIR (4664)		
Sample Date	7/17/2024 10:10 AM		7/17/2024 9:30 AM		7/18/2024 12:30 PM		7/18/2024 12:50 PM		
Lab ID	2031457		2031458		2031459		2031460		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Total Hardness (as CaCO3) (Calc.)	963.0	0.1	711.0	0.1	946.0	0.1	443.0	0.1	mg/L
Total Kjeldahl Nitrogen	1.6	0.4*	296	3*	1.1	0.4*	15.0	0.4*	mg/L
Total Phenols	0.0018	0.0004	0.0015	0.0004	0.0016	0.0004	0.0012	0.0004	mg/L
Total Phosphorus (as P)	0.176	0.002	0.95	0.02*	4.12	0.02*	1.71	0.02*	mg/L
Un-Ionized Ammonia (Calc.)	<0.002	0.002	0.240	0.002	<0.002	0.002	<0.002	0.002	mg/L

Sample Description	BH6R (4665)		BH16 - I (4666)		BH16 - IVR (4667)		BH17 - III (4668)		
Sample Date	7/17/2024 2:00 PM		7/16/2024 1:10 PM		7/16/2024 12:30 PM		7/15/2024 2:20 PM		
Lab ID	2031461		2031462		2031463		2031464		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Ammonia (as N)	32.6	0.2*	0.09	0.01	31.6	0.2*	0.12	0.01	mg/L
Ammonium (as N) (Calc.)	32.60	0.01	0.09	0.01	31.60	0.01	0.12	0.01	mg/L
Anion Sum (Calc.)	14.2	N/A	15.4	N/A	18	N/A	10.9	N/A	meq
Bicarbonate (Calc.)	779	1	634	1	889	1	303	1	mg/L as CaCO3
Carbonate (Calc.)	<1	1	1	1	<1	1	<1	1	mg/L as CaCO3
Cation Sum (Calc.)	15.6	N/A	17.4	N/A	20.7	N/A	14.8	N/A	meq
Conductivity			1090	1	2010	1	1400	1	µS/cm
Dissolved Inorganic Carbon			145	4*	256	4*	95	4*	mg/L
Dissolved Organic Carbon			6.6	0.4	60	2*	3.4	0.4	mg/L
Ion Balance (Calc.)	4.7	N/A	6.1	N/A	6.98	N/A	15.2	N/A	%
Organic Nitrogen (as N) (Calc.)			3.2	0.2	5.0	0.2	6.0	0.2	mg/L
Orthophosphate (as P)			0.005	0.005			<0.005	0.005	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541986

Sample Description	BH6R (4665)		BH16 - I (4666)		BH16 - IVR (4667)		BH17 - III (4668)		
Sample Date	7/17/2024 2:00 PM		7/16/2024 1:10 PM		7/16/2024 12:30 PM		7/15/2024 2:20 PM		
Lab ID	2031461		2031462		2031463		2031464		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
P-Alkalinity (pH 8.3)	<2	2							mg/L as CaCO3
pH	6.79	N/A	7.37	N/A	6.94	N/A	7.43	N/A	pH
Total Alkalinity	779	2	635	2	890	2	304	2	mg/L as CaCO3
Total Hardness (as CaCO3) (Calc.)			644.0	0.1	550.0	0.1	492.0	0.1	mg/L
Total Kjeldahl Nitrogen			3.3	0.4*	36.6	0.4*	6.1	0.4*	mg/L
Total Phenols			0.0013	0.0004	0.0010	0.0004	0.0010	0.0004	mg/L
Total Phosphorus (as P)	0.519	0.002	0.102	0.002	0.425	0.002	0.039	0.002	mg/L
Un-Ionized Ammonia (Calc.)	0.018	0.002	<0.002	0.002	0.027	0.002	<0.002	0.002	mg/L

Sample Description	BH17 - IVR (4669)		BH20R (4670)		BH21 - IR (4671)		BH21 - IIR (4672)		
Sample Date	7/15/2024 2:55 PM		7/18/2024 10:25 AM		7/17/2024 12:00 PM		7/17/2024 12:20 PM		
Lab ID	2031465		2031466		2031467		2031468		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Ammonia (as N)	0.03	0.01	95.6	0.2*	7.70	0.03*	25.4	0.2*	mg/L
Ammonium (as N) (Calc.)	0.03	0.01	95.60	0.01	7.69	0.01	25.40	0.01	mg/L
Anion Sum (Calc.)	7	N/A	37.5	N/A	10.9	N/A	15.9	N/A	meq
Bicarbonate (Calc.)	315	1	2000	1	485	1	841	1	mg/L as CaCO3
Carbonate (Calc.)	1	1	2	1	<1	1	<1	1	mg/L as CaCO3
Cation Sum (Calc.)	10.3	N/A	43.3	N/A	12.3	N/A	17.8	N/A	meq
Conductivity	877	1	3590	1	710	1	1660	1	µS/cm
Dissolved Inorganic Carbon	74	4*	520	8*	108	4*	200	4*	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541986

Sample Description	BH17 - IVR (4669)		BH20R (4670)		BH21 - IR (4671)		BH21 - IIR (4672)		
Sample Date	7/15/2024 2:55 PM		7/18/2024 10:25 AM		7/17/2024 12:00 PM		7/17/2024 12:20 PM		
Lab ID	2031465		2031466		2031467		2031468		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Organic Carbon	4.7	0.4	56	2*	12.2	0.4	41.7	0.8*	mg/L
Ion Balance (Calc.)	19.1	N/A	7.18	N/A	6.03	N/A	5.64	N/A	%
Organic Nitrogen (as N) (Calc.)	1.2	0.2	15.4	0.2	2.2	0.2	4.7	0.2	mg/L
Orthophosphate (as P)	0.008	0.005			0.009	0.005			mg/L
pH	7.61	N/A	6.93	N/A	7.2	N/A	6.87	N/A	pH
pH [rr]	7.77	N/A							pH
Total Alkalinity	316	2	2000	4	486	2	842	2	mg/L as CaCO3
Total Hardness (as CaCO3) (Calc.)	322.0	0.1	1330.0	0.1	648.0	0.1	607.0	0.1	mg/L
Total Kjeldahl Nitrogen	1.2	0.4*	111	1*	9.9	0.4*	30.1	0.4*	mg/L
Total Phenols	0.0015	0.0004	0.0010	0.0004	0.0010	0.0004	0.0010	0.0004	mg/L
Total Phosphorus (as P)	0.049	0.002	0.69	0.02*	0.593	0.002	0.531	0.002	mg/L
Un-Ionized Ammonia (Calc.)	<0.002	0.002	0.040	0.002	0.005	0.002	0.022	0.002	mg/L

Sample Description	BH22 - IR (4673)		BH22 - IIR (4674)		BH26 (4675)		BH30 - I (4676)		
Sample Date	7/15/2024 10:50 AM		7/15/2024 10:35 AM		7/15/2024 9:50 AM		7/16/2024 3:15 PM		
Lab ID	2031469		2031470		2031471		2031472		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Ammonia (as N)	0.25	0.01	1.05	0.01	0.03	0.01	0.16	0.01	mg/L
Ammonium (as N) (Calc.)	0.25	0.01	1.05	0.01	0.03	0.01	0.16	0.01	mg/L
Anion Sum (Calc.)	9.85	N/A	8.79	N/A	8.05	N/A	18.1	N/A	meq
Bicarbonate (Calc.)	328	1	355	1	311	1	713	1	mg/L as CaCO3

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541986

Sample Description	BH22 - IR (4673)		BH22 - IIR (4674)		BH26 (4675)		BH30 - I (4676)		
Sample Date	7/15/2024 10:50 AM		7/15/2024 10:35 AM		7/15/2024 9:50 AM		7/16/2024 3:15 PM		
Lab ID	2031469		2031470		2031471		2031472		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Carbonate (Calc.)	<1	1	<1	1	1	1	1	1	mg/L as CaCO3
Cation Sum (Calc.)	11.1	N/A	11.3	N/A	9.07	N/A	20.6	N/A	meq
Conductivity	801	1	1010	1	789	1	1510	1	µS/cm
Dissolved Inorganic Carbon	76	4*	60	4*	56	2*	97	4*	mg/L
Dissolved Organic Carbon	5.7	0.4	10.3	0.4	9.8	0.4	6.7	0.4	mg/L
Ion Balance (Calc.)	5.97	N/A	12.5	N/A	5.96	N/A	6.46	N/A	%
Organic Nitrogen (as N) (Calc.)	1.2	0.2	2.5	0.2	1.7	0.2	1.3	0.2	mg/L
Orthophosphate (as P)	0.007	0.005	0.269	0.005	0.008	0.005	0.011	0.005	mg/L
pH	7.48	N/A	7.38	N/A	7.58	N/A	7.31	N/A	pH
Total Alkalinity	329	2	356	2	312	2	714	2	mg/L as CaCO3
Total Hardness (as CaCO3) (Calc.)	478.0	0.1	329.0	0.1	277.0	0.1	703.0	0.1	mg/L
Total Kjeldahl Nitrogen	1.4	0.4*	3.6	0.4*	1.7	0.4*	1.5	0.4*	mg/L
Total Phenols	0.0010	0.0004	0.0010	0.0004	0.0010	0.0004	0.0010	0.0004	mg/L
Total Phosphorus (as P)	0.248	0.002	1.56	0.02*	0.016	0.002	0.036	0.002	mg/L
Un-Ionized Ammonia (Calc.)	<0.002	0.002	<0.002	0.002	<0.002	0.002	<0.002	0.002	mg/L

Sample Description	BH30 - II (4678)		Duplicate BH17IVRD (4679)		Duplicate BH526 (4680)		Travel Blank (4681)		
Sample Date	7/16/2024 2:50 PM		7/15/2024 2:55 PM		7/15/2024 9:50 AM		7/15/2024 12:00 AM		
Lab ID	2031473		2031474		2031475		2031476		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Ammonia (as N)	7.35	0.03*	0.03	0.01	0.06	0.01			mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541986

Sample Description	BH30 - II (4678)		Duplicate BH17IVRD (4679)		Duplicate BH526 (4680)		Travel Blank (4681)		
Sample Date	7/16/2024 2:50 PM		7/15/2024 2:55 PM		7/15/2024 9:50 AM		7/15/2024 12:00 AM		
Lab ID	2031473		2031474		2031475		2031476		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Ammonium (as N) (Calc.)	7.33	0.01	0.03	0.01	0.06	0.01			mg/L
Anion Sum (Calc.)	15.3	N/A	8.49	N/A	7.99	N/A	0.0848	N/A	meq
Bicarbonate (Calc.)	801	1	405	1	311	1	4	1	mg/L as CaCO3
Carbonate (Calc.)	2	1	2	1	<1	1	<1	1	mg/L as CaCO3
Cation Sum (Calc.)	17.5	N/A	10.1	N/A	9.04	N/A	0.0326	N/A	meq
Conductivity	1000	1	792	1	628	1			µS/cm
Dissolved Inorganic Carbon	186	4*	74	2*	75	2*			mg/L
Dissolved Organic Carbon	8.2	0.4	4.8	0.4	10.6	0.4			mg/L
Ion Balance (Calc.)	6.71	N/A	8.66	N/A	6.17	N/A	N/A	N/A	%
Organic Nitrogen (as N) (Calc.)	1.4	0.2	0.7	0.2	0.9	0.2			mg/L
Orthophosphate (as P)	0.013	0.005	0.010	0.005	0.005	0.005			mg/L
pH	7.46	N/A	7.59	N/A	7.49	N/A	6.1	N/A	pH
Total Alkalinity	803	2	406	2	312	2	4	2	mg/L as CaCO3
Total Hardness (as CaCO3) (Calc.)	497.0	0.1	328.0	0.1	305.0	0.1			mg/L
Total Kjeldahl Nitrogen	8.7	0.4*	0.8	0.4*	1.0	0.4*			mg/L
Total Phenols	0.0010	0.0004	0.0015	0.0004	0.0010	0.0004			mg/L
Total Phosphorus (as P)	0.066	0.002	0.052	0.002	0.014	0.002			mg/L
Un-Ionized Ammonia (Calc.)	0.016	0.002	<0.002	0.002	<0.002	0.002			mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541986

Sample Description	Field Blank BH3 - IR (4682)
Sample Date	7/17/2024 10:10 AM
Lab ID	2031477

General Chemistry	Result	MDL	Units
Anion Sum (Calc.)	0.00846	N/A	meq
Bicarbonate (Calc.)	<1	1	mg/L as CaCO3
Carbonate (Calc.)	<1	1	mg/L as CaCO3
Cation Sum (Calc.)	0.0951	N/A	meq
Ion Balance (Calc.)	N/A	N/A	%
pH	5.18	N/A	pH
Total Alkalinity	<2	2	mg/L as CaCO3

Sample Description	BH3 - IR (4661)		BH3 - IIR (4662)		BH5 - IR (4663)		BH5 - IIIR (4664)		
Sample Date	7/17/2024 10:10 AM		7/17/2024 9:30 AM		7/18/2024 12:30 PM		7/18/2024 12:50 PM		
Lab ID	2031457		2031458		2031459		2031460		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Aluminum	<1	1	5	1	2	1			ug/L
Dissolved Arsenic			5.1	0.1					ug/L
Dissolved Barium	355	1*	475	1*	3790	1*			ug/L
Dissolved Cadmium	0.042	0.005	<0.005	0.005	0.014	0.005			ug/L
Dissolved Calcium	285000	500*	123000	500*	148000	500*	138000	500*	ug/L
Dissolved Chromium	5.7	0.1	26.7	0.1	0.7	0.1			ug/L
Dissolved Cobalt	4.5	0.1	14.5	0.1	0.3	0.1			ug/L
Dissolved Copper	2.8	0.2	7.6	0.2	1.5	0.2			ug/L
Dissolved Iron	1840	10	351	10	3320	100*	1630	10	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541986

Sample Description	BH3 - IR (4661)		BH3 - IIR (4662)		BH5 - IR (4663)		BH5 - IIIR (4664)		
Sample Date	7/17/2024 10:10 AM		7/17/2024 9:30 AM		7/18/2024 12:30 PM		7/18/2024 12:50 PM		
Lab ID	2031457		2031458		2031459		2031460		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Lead	<0.05	0.05	<0.05	0.05	<0.05	0.05			ug/L
Dissolved Magnesium	77200	40*	104000	40*	35000	4	21700	4	ug/L
Dissolved Manganese	1830	1*	262.0	0.1	263.0	0.1	236.0	0.1	ug/L
Dissolved Nickel	12.8	0.5	66.2	0.5	2.4	0.5			ug/L
Dissolved Potassium	2660	50	167000	500*	2280	50	75700	500*	ug/L
Dissolved Selenium	9.85	0.05	20.50	0.05	0.81	0.05			ug/L
Dissolved Silver	0.02	0.01	0.03	0.01	<0.01	0.01			ug/L
Dissolved Sodium	148000	500*	381000	5000*	78900	500*	61400	500*	ug/L
Dissolved Zinc	<1	1	2	1	2	1			ug/L

Sample Description	BH6R (4665)		BH16 - I (4666)		BH16 - IVR (4667)		BH17 - III (4668)		
Sample Date	7/17/2024 2:00 PM		7/16/2024 1:10 PM		7/16/2024 12:30 PM		7/15/2024 2:20 PM		
Lab ID	2031461		2031462		2031463		2031464		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Aluminum	4	1	<1	1			2	1	ug/L
Dissolved Antimony	<0.1	0.1							ug/L
Dissolved Arsenic	0.5	0.1							ug/L
Dissolved Barium	246	1*	651	1*			586	1*	ug/L
Dissolved Beryllium	<0.02	0.02							ug/L
Dissolved Bismuth	<0.05	0.05							ug/L
Dissolved Boron	585	2							ug/L
Dissolved Cadmium	<0.005	0.005	0.011	0.005			0.011	0.005	ug/L
Dissolved Calcium	186000	500*	176000	500*	188000	500*	152000	500*	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541986

Sample Description	BH6R (4665)		BH16 - I (4666)		BH16 - IVR (4667)		BH17 - III (4668)		
Sample Date	7/17/2024 2:00 PM		7/16/2024 1:10 PM		7/16/2024 12:30 PM		7/15/2024 2:20 PM		
Lab ID	2031461		2031462		2031463		2031464		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Cerium	<1	1							ug/L
Dissolved Cesium	<0.01	0.01							ug/L
Dissolved Chromium	2.3	0.1	0.8	0.1			0.8	0.1	ug/L
Dissolved Cobalt	1.9	0.1	0.4	0.1			1.5	0.1	ug/L
Dissolved Copper	1.4	0.2	2.0	0.2			2.4	0.2	ug/L
Dissolved Europium	<1	1							ug/L
Dissolved Gallium	7	1							ug/L
Dissolved Iron	6210	100*	8540	100*	37300	1000*	13600	100*	ug/L
Dissolved Lanthanum	<1	1							ug/L
Dissolved Lead	<0.05	0.05	<0.05	0.05			<0.05	0.05	ug/L
Dissolved Lithium	8	1							ug/L
Dissolved Magnesium	30500	4	52100	4	37200	4	29400	4	ug/L
Dissolved Manganese	820	1*	68.9	0.1	800	1*	1350	1*	ug/L
Dissolved Mercury	<0.1	0.1							ug/L
Dissolved Molybdenum	0.35	0.05							ug/L
Dissolved Nickel	4.4	0.5	7.0	0.5			6.4	0.5	ug/L
Dissolved Niobium	<1	1							ug/L
Dissolved Phosphorus	320	50							ug/L
Dissolved Potassium	26900	500*	3190	50	204000	500*	1160	50	ug/L
Dissolved Rhodium	<1	1							ug/L
Dissolved Rubidium	10.2	0.2							ug/L
Dissolved Scandium	5	1							ug/L
Dissolved Selenium	1.21	0.05	2.73	0.05			0.95	0.05	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541986

Sample Description	BH6R (4665)		BH16 - I (4666)		BH16 - IVR (4667)		BH17 - III (4668)		
Sample Date	7/17/2024 2:00 PM		7/16/2024 1:10 PM		7/16/2024 12:30 PM		7/15/2024 2:20 PM		
Lab ID	2031461		2031462		2031463		2031464		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Silicon	10100	50							ug/L
Dissolved Silver	<0.01	0.01	<0.01	0.01			<0.01	0.01	ug/L
Dissolved Sodium	71000	500*	97000	500*	66200	500*	108000	500*	ug/L
Dissolved Strontium	436.0	0.2							ug/L
Dissolved Sulfur	2700	500							ug/L
Dissolved Tellurium	<0.2	0.2							ug/L
Dissolved Thallium	<0.01	0.01							ug/L
Dissolved Thorium	<0.1	0.1							ug/L
Dissolved Tin	0.1	0.1							ug/L
Dissolved Titanium	4.4	0.3							ug/L
Dissolved Tungsten	<0.1	0.1							ug/L
Dissolved Uranium	0.01	0.01							ug/L
Dissolved Vanadium	0.7	0.5							ug/L
Dissolved Yttrium	<1	1							ug/L
Dissolved Zinc	1	1	2	1			<1	1	ug/L
Dissolved Zirconium	<0.2	0.2							ug/L

Sample Description	BH17 - IVR (4669)		BH20R (4670)		BH21 - IR (4671)		BH21 - IIR (4672)		
Sample Date	7/15/2024 2:55 PM		7/18/2024 10:25 AM		7/17/2024 12:00 PM		7/17/2024 12:20 PM		
Lab ID	2031465		2031466		2031467		2031468		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Aluminum	6	1			5	1			ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541986

Sample Description	BH17 - IVR (4669)		BH20R (4670)		BH21 - IR (4671)		BH21 - IIR (4672)		
Sample Date	7/15/2024 2:55 PM		7/18/2024 10:25 AM		7/17/2024 12:00 PM		7/17/2024 12:20 PM		
Lab ID	2031465		2031466		2031467		2031468		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Barium	77.2	0.1			199	1*			ug/L
Dissolved Cadmium	0.009	0.005			0.129	0.005			ug/L
Dissolved Calcium	112000	500*	345000	500*	147000	500*	210000	500*	ug/L
Dissolved Chromium	0.5	0.1			1.7	0.1			ug/L
Dissolved Cobalt	0.4	0.1			0.8	0.1			ug/L
Dissolved Copper	3.7	0.2			1.1	0.2			ug/L
Dissolved Iron	94	10	779	10	25200	100*	25700	100*	ug/L
Dissolved Lead	<0.05	0.05			<0.05	0.05			ug/L
Dissolved Magnesium	20900	4	149000	40*	31600	4	31500	4	ug/L
Dissolved Manganese	14.7	0.1	1380	1*	1020	1*	991	1*	ug/L
Dissolved Nickel	1.5	0.5			5.8	0.5			ug/L
Dissolved Potassium	841	50	113000	500*	38500	500*	86600	500*	ug/L
Dissolved Selenium	0.41	0.05			1.96	0.05			ug/L
Dissolved Silver	<0.01	0.01			0.02	0.01			ug/L
Dissolved Sodium	66500	500*	247000	500*	30900	500*	56100	500*	ug/L
Dissolved Zinc	<1	1			<1	1			ug/L

Sample Description	BH22 - IR (4673)		BH22 - IIR (4674)		BH26 (4675)		BH30 - I (4676)		
Sample Date	7/15/2024 10:50 AM		7/15/2024 10:35 AM		7/15/2024 9:50 AM		7/16/2024 3:15 PM		
Lab ID	2031469		2031470		2031471		2031472		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Aluminum	2	1	27	1	15	1	1	1	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541986

Sample Description	BH22 - IR (4673)		BH22 - IIR (4674)		BH26 (4675)		BH30 - I (4676)		
Sample Date	7/15/2024 10:50 AM		7/15/2024 10:35 AM		7/15/2024 9:50 AM		7/16/2024 3:15 PM		
Lab ID	2031469		2031470		2031471		2031472		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Barium	110.0	0.1	127	1*	102.0	0.1	2090	1*	ug/L
Dissolved Cadmium	0.015	0.005	<0.005	0.005	0.023	0.005	0.020	0.005	ug/L
Dissolved Calcium	148000	500*	120000	500*	105000	500*	234000	500*	ug/L
Dissolved Chromium	0.6	0.1	0.7	0.1	0.7	0.1	0.8	0.1	ug/L
Dissolved Cobalt	1.2	0.1	0.7	0.1	0.4	0.1	0.5	0.1	ug/L
Dissolved Copper	1.0	0.2	2.0	0.2	2.3	0.2	2.1	0.2	ug/L
Dissolved Iron	6180	100*	6490	100*	88	10	15500	100*	ug/L
Dissolved Lead	<0.05	0.05	<0.05	0.05	<0.05	0.05	<0.05	0.05	ug/L
Dissolved Magnesium	29100	4	16900	4	14300	4	56500	4	ug/L
Dissolved Manganese	3370	1*	411	1*	26.9	0.1	281.0	0.1	ug/L
Dissolved Nickel	4.4	0.5	4.5	0.5	1.5	0.5	11.2	0.5	ug/L
Dissolved Potassium	925	50	4090	50	6670	50	3520	50	ug/L
Dissolved Selenium	0.34	0.05	0.54	0.05	0.64	0.05	6.51	0.05	ug/L
Dissolved Silver	<0.01	0.01	<0.01	0.01	<0.01	0.01	<0.01	0.01	ug/L
Dissolved Sodium	28800	500*	87300	500*	56200	500*	95600	500*	ug/L
Dissolved Zinc	1	1	2	1	<1	1	2	1	ug/L

Sample Description	BH30 - II (4678)		Duplicate BH17IVRD (4679)		Duplicate BH526 (4680)		Travel Blank (4681)		
Sample Date	7/16/2024 2:50 PM		7/15/2024 2:55 PM		7/15/2024 9:50 AM		7/15/2024 12:00 AM		
Lab ID	2031473		2031474		2031475		2031476		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Aluminum	9	1	6	1	19	1			ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541986

Sample Description	BH30 - II (4678)		Duplicate BH17IVRD (4679)		Duplicate BH526 (4680)		Travel Blank (4681)		
Sample Date	7/16/2024 2:50 PM		7/15/2024 2:55 PM		7/15/2024 9:50 AM		7/15/2024 12:00 AM		
Lab ID	2031473		2031474		2031475		2031476		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Aluminum rr ₁							1	1	ug/L
Dissolved Aluminum rr ₂							<1	1	ug/L
Dissolved Antimony rr ₁							0.2	0.1	ug/L
Dissolved Antimony rr ₂							<0.1	0.1	ug/L
Dissolved Arsenic rr ₁							<0.1	0.1	ug/L
Dissolved Arsenic rr ₂							0.1	0.1	ug/L
Dissolved Barium	223	1*	77.7	0.1	106.0	0.1			ug/L
Dissolved Barium rr ₁							30.7	0.1	ug/L
Dissolved Barium rr ₂							31.1	0.1	ug/L
Dissolved Beryllium rr ₁							<0.02	0.02	ug/L
Dissolved Beryllium rr ₂							<0.02	0.02	ug/L
Dissolved Bismuth rr ₁							<0.05	0.05	ug/L
Dissolved Bismuth rr ₂							<0.05	0.05	ug/L
Dissolved Boron rr ₁							<2	2	ug/L
Dissolved Boron rr ₂							<2	2	ug/L
Dissolved Cadmium	0.022	0.005	0.014	0.005	0.024	0.005			ug/L
Dissolved Cadmium rr ₁							0.012	0.005	ug/L
Dissolved Cadmium rr ₂							0.013	0.005	ug/L
Dissolved Calcium	149000	500*	110000	500*	109000	500*			ug/L
Dissolved Calcium rr ₁							746	50	ug/L
Dissolved Calcium rr ₂							739	50	ug/L
Dissolved Cerium rr ₁							<1	1	ug/L
Dissolved Cerium rr ₂							<1	1	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541986

Sample Description	BH30 - II (4678)		Duplicate BH17IVRD (4679)		Duplicate BH526 (4680)		Travel Blank (4681)		
Sample Date	7/16/2024 2:50 PM		7/15/2024 2:55 PM		7/15/2024 9:50 AM		7/15/2024 12:00 AM		
Lab ID	2031473		2031474		2031475		2031476		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Cesium rr ₁							<0.01	0.01	ug/L
Dissolved Cesium rr ₂							<0.01	0.01	ug/L
Dissolved Chromium	0.9	0.1	0.5	0.1	0.7	0.1			ug/L
Dissolved Chromium rr ₁							0.1	0.1	ug/L
Dissolved Chromium rr ₂							<0.1	0.1	ug/L
Dissolved Cobalt	4.5	0.1	0.4	0.1	0.4	0.1			ug/L
Dissolved Cobalt rr ₁							0.7	0.1	ug/L
Dissolved Cobalt rr ₂							0.7	0.1	ug/L
Dissolved Copper	2.9	0.2	3.8	0.2	2.5	0.2			ug/L
Dissolved Copper rr ₁							<0.2	0.2	ug/L
Dissolved Copper rr ₂							<0.2	0.2	ug/L
Dissolved Europium rr ₁							<1	1	ug/L
Dissolved Europium rr ₂							<1	1	ug/L
Dissolved Gallium rr ₁							1	1	ug/L
Dissolved Gallium rr ₂							1	1	ug/L
Dissolved Iron	21700	100*	94	10	94	10			ug/L
Dissolved Iron rr ₁							<10	10	ug/L
Dissolved Iron rr ₂							<10	10	ug/L
Dissolved Lanthanum rr ₁							<1	1	ug/L
Dissolved Lanthanum rr ₂							<1	1	ug/L
Dissolved Lead	<0.05	0.05	<0.05	0.05	<0.05	0.05			ug/L
Dissolved Lead rr ₁							0.07	0.05	ug/L
Dissolved Lead rr ₂							<0.05	0.05	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541986

Sample Description	BH30 - II (4678)		Duplicate BH17IVRD (4679)		Duplicate BH526 (4680)		Travel Blank (4681)		
Sample Date	7/16/2024 2:50 PM		7/15/2024 2:55 PM		7/15/2024 9:50 AM		7/15/2024 12:00 AM		
Lab ID	2031473		2031474		2031475		2031476		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Lithium rr ₁							6	1	ug/L
Dissolved Lithium rr ₂							6	1	ug/L
Dissolved Magnesium	50400	4	20600	4	14500	4			ug/L
Dissolved Magnesium rr ₁							272	4	ug/L
Dissolved Magnesium rr ₂							307	4	ug/L
Dissolved Manganese	1790	1*	15.2	0.1	28.2	0.1			ug/L
Dissolved Manganese rr ₁							1.6	0.1	ug/L
Dissolved Manganese rr ₂							1.9	0.1	ug/L
Dissolved Mercury rr ₁							<0.1	0.1	ug/L
Dissolved Mercury rr ₂							<0.1	0.1	ug/L
Dissolved Molybdenum rr ₁							0.97	0.05	ug/L
Dissolved Molybdenum rr ₂							0.07	0.05	ug/L
Dissolved Nickel	8.0	0.5	1.5	0.5	1.5	0.5			ug/L
Dissolved Nickel rr ₁							4.9	0.5	ug/L
Dissolved Nickel rr ₂							5.0	0.5	ug/L
Dissolved Niobium rr ₁							<1	1	ug/L
Dissolved Niobium rr ₂							<1	1	ug/L
Dissolved Phosphorus rr ₁							<50	50	ug/L
Dissolved Phosphorus rr ₂							<50	50	ug/L
Dissolved Potassium	6090	50	841	50	6680	50			ug/L
Dissolved Potassium rr ₁							200	50	ug/L
Dissolved Potassium rr ₂							210	50	ug/L
Dissolved Rhodium rr ₁							<1	1	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541986

Sample Description	BH30 - II (4678)		Duplicate BH17IVRD (4679)		Duplicate BH526 (4680)		Travel Blank (4681)		
Sample Date	7/16/2024 2:50 PM		7/15/2024 2:55 PM		7/15/2024 9:50 AM		7/15/2024 12:00 AM		
Lab ID	2031473		2031474		2031475		2031476		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Rhodium rr ₂							<1	1	ug/L
Dissolved Rubidium rr ₁							0.3	0.2	ug/L
Dissolved Rubidium rr ₂							0.3	0.2	ug/L
Dissolved Scandium rr ₁							4	1	ug/L
Dissolved Scandium rr ₂							3	1	ug/L
Dissolved Selenium	0.96	0.05	0.39	0.05	0.58	0.05			ug/L
Dissolved Selenium rr ₁							<0.05	0.05	ug/L
Dissolved Selenium rr ₂							0.10	0.05	ug/L
Dissolved Silicon rr ₁							7760	50	ug/L
Dissolved Silicon rr ₂							7770	50	ug/L
Dissolved Silver	<0.01	0.01	<0.01	0.01	<0.01	0.01			ug/L
Dissolved Silver rr ₁							<0.01	0.01	ug/L
Dissolved Silver rr ₂							<0.01	0.01	ug/L
Dissolved Sodium	132000	500*	66700	500*	55200	500*			ug/L
Dissolved Sodium rr ₁							663	50	ug/L
Dissolved Sodium rr ₂							653	50	ug/L
Dissolved Strontium rr ₁							45.1	0.2	ug/L
Dissolved Strontium rr ₂							54.2	0.2	ug/L
Dissolved Sulfur rr ₁							<500	500	ug/L
Dissolved Sulfur rr ₂							<500	500	ug/L
Dissolved Tellurium rr ₁							<0.2	0.2	ug/L
Dissolved Tellurium rr ₂							<0.2	0.2	ug/L
Dissolved Thallium rr ₁							0.04	0.01	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541986

Sample Description	BH30 - II (4678)		Duplicate BH17IVRD (4679)		Duplicate BH526 (4680)		Travel Blank (4681)		
Sample Date	7/16/2024 2:50 PM		7/15/2024 2:55 PM		7/15/2024 9:50 AM		7/15/2024 12:00 AM		
Lab ID	2031473		2031474		2031475		2031476		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Thallium rr ₂							<0.01	0.01	ug/L
Dissolved Thorium rr ₁							<0.1	0.1	ug/L
Dissolved Thorium rr ₂							<0.1	0.1	ug/L
Dissolved Tin rr ₁							<0.1	0.1	ug/L
Dissolved Tin rr ₂							<0.1	0.1	ug/L
Dissolved Titanium rr ₁							2.0	0.3	ug/L
Dissolved Titanium rr ₂							1.5	0.3	ug/L
Dissolved Tungsten rr ₁							<0.1	0.1	ug/L
Dissolved Tungsten rr ₂							<0.1	0.1	ug/L
Dissolved Uranium rr ₁							<0.01	0.01	ug/L
Dissolved Uranium rr ₂							<0.01	0.01	ug/L
Dissolved Vanadium rr ₁							<0.5	0.5	ug/L
Dissolved Vanadium rr ₂							<0.5	0.5	ug/L
Dissolved Yttrium rr ₁							<1	1	ug/L
Dissolved Yttrium rr ₂							<1	1	ug/L
Dissolved Zinc	1	1	<1	1	1	1			ug/L
Dissolved Zinc rr ₁							<1	1	ug/L
Dissolved Zinc rr ₂							<1	1	ug/L
Dissolved Zirconium rr ₁							<0.2	0.2	ug/L
Dissolved Zirconium rr ₂							<0.2	0.2	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541986

Sample Description	Field Blank BH3 - IR (4682)		
Sample Date	7/17/2024 10:10 AM		
Lab ID	2031477		
Metals (Dissolved)	Result	MDL	Units
Dissolved Aluminum rr ₁	<1	1	ug/L
Dissolved Aluminum rr ₂	<1	1	ug/L
Dissolved Antimony rr ₁	<0.1	0.1	ug/L
Dissolved Antimony rr ₂	<0.1	0.1	ug/L
Dissolved Arsenic rr ₁	<0.1	0.1	ug/L
Dissolved Arsenic rr ₂	<0.1	0.1	ug/L
Dissolved Barium rr ₁	14.3	0.1	ug/L
Dissolved Barium rr ₂	14.9	0.1	ug/L
Dissolved Beryllium rr ₁	<0.02	0.02	ug/L
Dissolved Beryllium rr ₂	<0.02	0.02	ug/L
Dissolved Bismuth rr ₁	<0.05	0.05	ug/L
Dissolved Bismuth rr ₂	<0.05	0.05	ug/L
Dissolved Boron rr ₁	<2	2	ug/L
Dissolved Boron rr ₂	<2	2	ug/L
Dissolved Cadmium rr ₁	<0.005	0.005	ug/L
Dissolved Cadmium rr ₂	0.006	0.005	ug/L
Dissolved Calcium rr ₁	320	50	ug/L
Dissolved Calcium rr ₂	310	50	ug/L
Dissolved Cerium rr ₁	<1	1	ug/L
Dissolved Cerium rr ₂	<1	1	ug/L
Dissolved Cesium rr ₁	<0.01	0.01	ug/L
Dissolved Cesium rr ₂	<0.01	0.01	ug/L
Dissolved Chromium rr ₁	<0.1	0.1	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541986

Sample Description	Field Blank BH3 - IR (4682)		
Sample Date	7/17/2024 10:10 AM		
Lab ID	2031477		
Metals (Dissolved)	Result	MDL	Units
Dissolved Chromium rr ₂	<0.1	0.1	ug/L
Dissolved Cobalt rr ₁	0.5	0.1	ug/L
Dissolved Cobalt rr ₂	0.5	0.1	ug/L
Dissolved Copper rr ₁	<0.2	0.2	ug/L
Dissolved Copper rr ₂	0.2	0.2	ug/L
Dissolved Europium rr ₁	<1	1	ug/L
Dissolved Europium rr ₂	<1	1	ug/L
Dissolved Gallium rr ₁	<1	1	ug/L
Dissolved Gallium rr ₂	<1	1	ug/L
Dissolved Iron rr ₁	<10	10	ug/L
Dissolved Iron rr ₂	<10	10	ug/L
Dissolved Lanthanum rr ₁	<1	1	ug/L
Dissolved Lanthanum rr ₂	<1	1	ug/L
Dissolved Lead rr ₁	<0.05	0.05	ug/L
Dissolved Lead rr ₂	<0.05	0.05	ug/L
Dissolved Lithium rr ₁	<1	1	ug/L
Dissolved Lithium rr ₂	<1	1	ug/L
Dissolved Magnesium rr ₁	87	4	ug/L
Dissolved Magnesium rr ₂	97	4	ug/L
Dissolved Manganese rr ₁	0.9	0.1	ug/L
Dissolved Manganese rr ₂	1.0	0.1	ug/L
Dissolved Mercury rr ₁	<0.1	0.1	ug/L
Dissolved Mercury rr ₂	<0.1	0.1	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541986

Sample Description	Field Blank BH3 - IR (4682)		
Sample Date	7/17/2024 10:10 AM		
Lab ID	2031477		
Metals (Dissolved)	Result	MDL	Units
Dissolved Molybdenum rr 1	0.23	0.05	ug/L
Dissolved Molybdenum rr 2	<0.05	0.05	ug/L
Dissolved Nickel rr 1	3.7	0.5	ug/L
Dissolved Nickel rr 2	3.8	0.5	ug/L
Dissolved Niobium rr 1	<1	1	ug/L
Dissolved Niobium rr 2	<1	1	ug/L
Dissolved Phosphorus rr 1	<50	50	ug/L
Dissolved Phosphorus rr 2	<50	50	ug/L
Dissolved Potassium rr 1	88	50	ug/L
Dissolved Potassium rr 2	89	50	ug/L
Dissolved Rhodium rr 1	<1	1	ug/L
Dissolved Rhodium rr 2	<1	1	ug/L
Dissolved Rubidium rr 1	<0.2	0.2	ug/L
Dissolved Rubidium rr 2	<0.2	0.2	ug/L
Dissolved Scandium rr 1	<1	1	ug/L
Dissolved Scandium rr 2	<1	1	ug/L
Dissolved Selenium rr 1	<0.05	0.05	ug/L
Dissolved Selenium rr 2	<0.05	0.05	ug/L
Dissolved Silicon rr 1	995	50	ug/L
Dissolved Silicon rr 2	1160	50	ug/L
Dissolved Silver rr 1	<0.01	0.01	ug/L
Dissolved Silver rr 2	<0.01	0.01	ug/L
Dissolved Sodium rr 1	160	50	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541986

Sample Description	Field Blank BH3 - IR (4682)		
Sample Date	7/17/2024 10:10 AM		
Lab ID	2031477		
Metals (Dissolved)	Result	MDL	Units
Dissolved Sodium rr 2	160	50	ug/L
Dissolved Strontium rr 1	18.2	0.2	ug/L
Dissolved Strontium rr 2	21.3	0.2	ug/L
Dissolved Sulfur rr 1	<500	500	ug/L
Dissolved Sulfur rr 2	<500	500	ug/L
Dissolved Tellurium rr 1	<0.2	0.2	ug/L
Dissolved Tellurium rr 2	<0.2	0.2	ug/L
Dissolved Thallium rr 1	<0.01	0.01	ug/L
Dissolved Thallium rr 2	<0.01	0.01	ug/L
Dissolved Thorium rr 1	<0.1	0.1	ug/L
Dissolved Thorium rr 2	<0.1	0.1	ug/L
Dissolved Tin rr 1	<0.1	0.1	ug/L
Dissolved Tin rr 2	<0.1	0.1	ug/L
Dissolved Titanium rr 1	<0.3	0.3	ug/L
Dissolved Titanium rr 2	<0.3	0.3	ug/L
Dissolved Tungsten rr 1	<0.1	0.1	ug/L
Dissolved Tungsten rr 2	<0.1	0.1	ug/L
Dissolved Uranium rr 1	<0.01	0.01	ug/L
Dissolved Uranium rr 2	<0.01	0.01	ug/L
Dissolved Vanadium rr 1	<0.5	0.5	ug/L
Dissolved Vanadium rr 2	<0.5	0.5	ug/L
Dissolved Yttrium rr 1	<1	1	ug/L
Dissolved Yttrium rr 2	<1	1	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541986

Sample Description	Field Blank BH3 - IR (4682)		
Sample Date	7/17/2024 10:10 AM		
Lab ID	2031477		
Metals (Dissolved)	Result	MDL	Units
Dissolved Zinc rr ₁	<1	1	ug/L
Dissolved Zinc rr ₂	<1	1	ug/L
Dissolved Zirconium rr ₁	<0.2	0.2	ug/L
Dissolved Zirconium rr ₂	<0.2	0.2	ug/L

Sample Description	BH5 - IR (4663)		BH5 - IIIR (4664)		BH6R (4665)		BH17 - III (4668)		
Sample Date	7/18/2024 12:30 PM		7/18/2024 12:50 PM		7/17/2024 2:00 PM		7/15/2024 2:20 PM		
Lab ID	2031459		2031460		2031461		2031464		
Petroleum Hydrocarbons (Water)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
F1 (C6-C10) - Less BTEX (Calc.)	<20	20	<20	20	<20	20	<20	20	ug/L
F1 (C6-C10) Incl. BTEX	<20	20	<20	20	<20	20	<20	20	ug/L
Benzene	<0.2	0.2	<0.2	0.2	0.9	0.2	<0.2	0.2	ug/L
Ethylbenzene	<0.4	0.4	<0.4	0.4	<0.4	0.4	<0.4	0.4	ug/L
Toluene	<0.4	0.4	<0.4	0.4	<0.4	0.4	<0.4	0.4	ug/L
m+p-Xylene	<0.4	0.4	<0.4	0.4	0.5	0.4	<0.4	0.4	ug/L
o-Xylene	<0.4	0.4	<0.4	0.4	<0.4	0.4	<0.4	0.4	ug/L
Total Xylenes (Calc.)	<0.4	0.4	<0.4	0.4	0.5	0.4	<0.4	0.4	ug/L
1,4-dichlorobenzene-d4 (Surr.)	106	N/A	99.6	N/A	107	N/A	105	N/A	% Rec
undecane (Surr.)	103	N/A	104	N/A	110	N/A	101	N/A	% Rec

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541986

Sample Description	BH22 - IR (4673)		BH22 - IIR (4674)		BH26 (4675)		Duplicate BH526 (4680)		
Sample Date	7/15/2024 10:50 AM		7/15/2024 10:35 AM		7/15/2024 9:50 AM		7/15/2024 9:50 AM		
Lab ID	2031469		2031470		2031471		2031475		
Petroleum Hydrocarbons (Water)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
F1 (C6-C10) - Less BTEX (Calc.)	<20	20	<20	20	<20	20	<20	20	ug/L
F1 (C6-C10) Incl. BTEX	<20	20	<20	20	<20	20	<20	20	ug/L
Benzene	<0.2	0.2	<0.2	0.2	<0.2	0.2	<0.2	0.2	ug/L
Ethylbenzene	<0.4	0.4	<0.4	0.4	<0.4	0.4	<0.4	0.4	ug/L
Toluene	<0.4	0.4	<0.4	0.4	<0.4	0.4	<0.4	0.4	ug/L
m+p-Xylene	<0.4	0.4	<0.4	0.4	<0.4	0.4	<0.4	0.4	ug/L
o-Xylene	<0.4	0.4	<0.4	0.4	<0.4	0.4	<0.4	0.4	ug/L
Total Xylenes (Calc.)	<0.4	0.4	<0.4	0.4	<0.4	0.4	<0.4	0.4	ug/L
1,4-dichlorobenzene-d4 (Surr.)	102	N/A	104	N/A	100	N/A	105	N/A	% Rec
undecane (Surr.)	100	N/A	100	N/A	98.9	N/A	99.5	N/A	% Rec

Sample Description	BH3 - IR (4661)		BH3 - IIR (4662)		BH21 - IR (4671)		BH21 - IIR (4672)		
Sample Date	7/17/2024 10:10 AM		7/17/2024 9:30 AM		7/17/2024 12:00 PM		7/17/2024 12:20 PM		
Lab ID	2031457		2031458		2031467		2031468		
Volatile Organic Compounds	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Benzene	0.7	0.2	3.8	0.2	<0.2	0.2	<0.2	0.2	ug/L
Ethylbenzene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Toluene	<0.5	0.5	<0.5	0.5	<0.5	0.5	1.3	0.5	ug/L
m+p-Xylene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
o-Xylene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Total Xylenes (Calc.)	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,1,1,2-Tetrachloroethane	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541986

Sample Description	BH3 - IR (4661)		BH3 - IIR (4662)		BH21 - IR (4671)		BH21 - IIR (4672)		
Sample Date	7/17/2024 10:10 AM		7/17/2024 9:30 AM		7/17/2024 12:00 PM		7/17/2024 12:20 PM		
Lab ID	2031457		2031458		2031467		2031468		
Volatile Organic Compounds	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
1,1,1-Trichloroethane	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,1,2,2-Tetrachloroethane	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,1,2-Trichloroethane	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,1-Dichloroethane	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,1-Dichloroethylene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,1-Dichloropropene	<0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L
1,2,4-Trichlorobenzene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,2-Dibromo-3-chloropropane	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
1,2-Dibromoethane	<0.2	0.2	<0.2	0.2	<0.2	0.2	<0.2	0.2	ug/L
1,2-Dichlorobenzene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,2-Dichloroethane	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,2-Dichloroethane-d4 (Surr)	95.8	N/A	104	N/A	97.6	N/A	99.2	N/A	% Rec
1,2-Dichloropropane	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,3-Dichlorobenzene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,3-Dichloropropane	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
1,4-Dichlorobenzene	<0.5	0.5	0.9	0.5	0.6	0.5	1.0	0.5	ug/L
1-Bromo-4-fluorobenzene (Surr.)	80.8	N/A	93.3	N/A	82.4	N/A	82.3	N/A	% Rec
Acetone	<30	30	<30	30	<30	30	<30	30	ug/L
Bromobenzene	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
Bromochloromethane	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
Bromodichloromethane	<0.2	0.2	<0.2	0.2	<0.2	0.2	<0.2	0.2	ug/L
Bromoform	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Bromomethane	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541986

Sample Description	BH3 - IR (4661)		BH3 - IIR (4662)		BH21 - IR (4671)		BH21 - IIR (4672)		
Sample Date	7/17/2024 10:10 AM		7/17/2024 9:30 AM		7/17/2024 12:00 PM		7/17/2024 12:20 PM		
Lab ID	2031457		2031458		2031467		2031468		
Volatile Organic Compounds	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Carbon tetrachloride	<0.2	0.2	<0.2	0.2	<0.2	0.2	<0.2	0.2	ug/L
Chlorobenzene	<0.5	0.5	2.6	0.5	1.4	0.5	4.1	0.5	ug/L
Chloroethane	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
Chloroform	<1	1	<1	1	<1	1	<1	1	ug/L
Chloromethane	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
cis - + trans-1,3-Dichloropropene (Calc.)	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
cis-1,2-Dichloroethylene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
cis-1,3-Dichloropropene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Dibromochloromethane	<2	2	<2	2	<2	2	<2	2	ug/L
Dibromomethane	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
Dichlorodifluoromethane	<2	2	<2	2	<2	2	<2	2	ug/L
Dichloromethane	<5	5	<5	5	<5	5	<5	5	ug/L
Hexachlorobutadiene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Methyl ethyl ketone	<20	20	<20	20	<20	20	<20	20	ug/L
Methyl isobutyl ketone (MIBK)	<20	20	<20	20	<20	20	<20	20	ug/L
Methyl tert-butyl ether (MTBE)	<2	2	<2	2	<2	2	<2	2	ug/L
n-Hexane	<5	5	<5	5	<5	5	<5	5	ug/L
Styrene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Tetrachloroethylene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Toluene-d8 (Surr.)	97.2	N/A	93.8	N/A	97.6	N/A	96.2	N/A	% Rec
Trans-1,2-dichloroethylene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Trans-1,3-dichloropropene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Trichloroethylene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541986

Sample Description	BH3 - IR (4661)		BH3 - IIR (4662)		BH21 - IR (4671)		BH21 - IIR (4672)		
Sample Date	7/17/2024 10:10 AM		7/17/2024 9:30 AM		7/17/2024 12:00 PM		7/17/2024 12:20 PM		
Lab ID	2031457		2031458		2031467		2031468		
Volatile Organic Compounds	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Trichlorofluoromethane	<5	5	<5	5	<5	5	<5	5	ug/L
Vinyl chloride	<0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L

Sample Description	Travel Blank (4681)		Field Blank BH3 - IR (4682)		
Sample Date	7/15/2024 12:00 AM		7/17/2024 10:10 AM		
Lab ID	2031476		2031477		
Volatile Organic Compounds	Result	MDL	Result	MDL	Units
Benzene	<0.2	0.2	<0.2	0.2	ug/L
Ethylbenzene	<0.5	0.5	<0.5	0.5	ug/L
Toluene	<0.5	0.5	<0.5	0.5	ug/L
m+p-Xylene	<0.5	0.5	<0.5	0.5	ug/L
o-Xylene	<0.5	0.5	<0.5	0.5	ug/L
Total Xylenes (Calc.)	<0.5	0.5	<0.5	0.5	ug/L
1,1,1,2-Tetrachloroethane	<0.5	0.5	<0.5	0.5	ug/L
1,1,1-Trichloroethane	<0.5	0.5	<0.5	0.5	ug/L
1,1,2,2-Tetrachloroethane	<0.5	0.5	<0.5	0.5	ug/L
1,1,2-Trichloroethane	<0.5	0.5	<0.5	0.5	ug/L
1,1-Dichloroethane	<0.5	0.5	<0.5	0.5	ug/L
1,1-Dichloroethylene	<0.5	0.5	<0.5	0.5	ug/L
1,1-Dichloropropene	<0.1	0.1	<0.1	0.1	ug/L
1,2,4-Trichlorobenzene	<0.5	0.5	<0.5	0.5	ug/L
1,2-Dibromo-3-chloropropane	<0.3	0.3	<0.3	0.3	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541986

Sample Description	Travel Blank (4681)		Field Blank BH3 - IR (4682)		
Sample Date	7/15/2024 12:00 AM		7/17/2024 10:10 AM		
Lab ID	2031476		2031477		
Volatile Organic Compounds	Result	MDL	Result	MDL	Units
1,2-Dibromoethane	<0.2	0.2	<0.2	0.2	ug/L
1,2-Dichlorobenzene	<0.5	0.5	<0.5	0.5	ug/L
1,2-Dichloroethane	<0.5	0.5	<0.5	0.5	ug/L
1,2-Dichloroethane-d4 (Surr)	94.4	N/A	96.4	N/A	% Rec
1,2-Dichloropropane	<0.5	0.5	<0.5	0.5	ug/L
1,3-Dichlorobenzene	<0.5	0.5	<0.5	0.5	ug/L
1,3-Dichloropropane	<0.3	0.3	<0.3	0.3	ug/L
1,4-Dichlorobenzene	<0.5	0.5	<0.5	0.5	ug/L
1-Bromo-4-fluorobenzene (Surr.)	78.4	N/A	80.9	N/A	% Rec
Acetone	<30	30	<30	30	ug/L
Bromobenzene	<0.3	0.3	<0.3	0.3	ug/L
Bromochloromethane	<0.3	0.3	<0.3	0.3	ug/L
Bromodichloromethane	<0.2	0.2	<0.2	0.2	ug/L
Bromoform	<0.5	0.5	<0.5	0.5	ug/L
Bromomethane	<0.5	0.5	<0.5	0.5	ug/L
Carbon tetrachloride	<0.2	0.2	<0.2	0.2	ug/L
Chlorobenzene	<0.5	0.5	<0.5	0.5	ug/L
Chloroethane	<0.3	0.3	<0.3	0.3	ug/L
Chloroform	<1	1	<1	1	ug/L
Chloromethane	<0.3	0.3	<0.3	0.3	ug/L
cis - + trans-1,3-Dichloropropene (Calc.)	<0.5	0.5	<0.5	0.5	ug/L
cis-1,2-Dichloroethylene	<0.5	0.5	<0.5	0.5	ug/L
cis-1,3-Dichloropropene	<0.5	0.5	<0.5	0.5	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541986

Sample Description	Travel Blank (4681)		Field Blank BH3 - IR (4682)		
Sample Date	7/15/2024 12:00 AM		7/17/2024 10:10 AM		
Lab ID	2031476		2031477		
Volatile Organic Compounds	Result	MDL	Result	MDL	Units
Dibromochloromethane	<2	2	<2	2	ug/L
Dibromomethane	<0.3	0.3	<0.3	0.3	ug/L
Dichlorodifluoromethane	<2	2	<2	2	ug/L
Dichloromethane	<5	5	<5	5	ug/L
Hexachlorobutadiene	<0.5	0.5	<0.5	0.5	ug/L
Methyl ethyl ketone	<20	20	<20	20	ug/L
Methyl isobutyl ketone (MIBK)	<20	20	<20	20	ug/L
Methyl tert-butyl ether (MTBE)	<2	2	<2	2	ug/L
n-Hexane	<5	5	<5	5	ug/L
Styrene	<0.5	0.5	<0.5	0.5	ug/L
Tetrachloroethylene	<0.5	0.5	<0.5	0.5	ug/L
Toluene-d8 (Surr.)	94.3	N/A	98.6	N/A	% Rec
Trans-1,2-dichloroethylene	<0.5	0.5	<0.5	0.5	ug/L
Trans-1,3-dichloropropene	<0.5	0.5	<0.5	0.5	ug/L
Trichloroethylene	<0.5	0.5	<0.5	0.5	ug/L
Trichlorofluoromethane	<5	5	<5	5	ug/L
Vinyl chloride	<0.1	0.1	<0.1	0.1	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541986

LEGEND

Dates: Dates are formatted as mm/dd/year throughout this report.

[rr]: After a parameter name indicates a re-run of that parameter. If multiple re-runs exist they are suffixed by a number. Sample may not have been handled according to the recommended temperature, hold time and head space requirements of the method after the initial analysis.

MDL: Method detection limit or minimum reporting limit.

[ ]: Results for laboratory replicates are shown in square brackets immediately below the associated sample result for ease of comparison.

% Rec: Surrogate compounds are added to the sample in some cases and the recovery is reported as a % recovered.

Organic Soil Analysis: Data reported for organic analysis in soils samples are corrected for moisture content.

Quality Control: All associated Quality Control data is available on request.

Field Data: Reports containing Field Parameters represent data that has been collected and provided by the client. Testmark is not responsible for the validity of this data which may be used in subsequent calculations.

Sample Condition Deviations: A noted sample condition deviation may affect the validity of the result. Results apply to the sample(s) as received.

Reproduction of Report: Report shall not be reproduced, except in full, without the approval of Testmark Laboratories Ltd.

ICPMS Dustfall Insoluble: The ICPMS Dustfall Insoluble Portion method analyzes only the particulate matter from the Dustfall Sampler which is retained on the analysis filter during the Dustfall method.

Regulation Comparisons: Disclaimer: Please note that regulation criteria are provided for comparative purposes, however the onus on ensuring the validity of this comparison rests with the client.

*Dilution: In the MDL column an asterisk (*) indicates a sample dilution was performed.

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

TESTMARK Laboratories Ltd.
Committed to Quality and Service

CERTIFICATE OF ANALYSIS

Client:	Hannah Curry	Work Order Number:	541144
Company:	City of Orillia - Waste Diversion Site	PO #:	83585
Address:	40 Kitchener St.	Regulation:	Information not provided
	Orillia, ON, L3V 6Z9	Project #:	Summer WDS Sampling GW Outside
Phone:	(705) 325-2394	DWS #:	
Email:	hcurry@orillia.ca	Sampled By:	Hannah Curry
Date Order Received:	7/12/2024	Analysis Started:	7/12/2024
Arrival Temperature:	10.9 C	Analysis Completed:	7/24/2024

WORK ORDER SUMMARY

ANALYSES WERE PERFORMED ON THE FOLLOWING SAMPLES. THE RESULTS RELATE ONLY TO THE ITEMS TESTED.

Sample Description	Lab ID	Matrix	Type	Comments	Date Collected	Time Collected
BH1-IR (4640)	2028578	Ground Water	None		7/8/2024	2:25 PM
BH1-III (4641)	2028579	Ground Water	None		7/8/2024	2:05 PM
BH2-II (4642)	2028580	Ground Water	None		7/9/2024	10:45 AM
BH2-III (4643)	2028581	Ground Water	None		7/9/2024	10:25 AM
BH4-IIR (4644)	2028582	Ground Water	None		7/11/2024	2:45 PM
BH8R (4645)	2028583	Ground Water	None		7/9/2024	2:30 PM
BH10R (4646)	2028584	Ground Water	None		7/11/2024	10:20 AM
BH11R (4647)	2028585	Ground Water	None		7/9/2024	3:15 PM
BH14-I (4648)	2028586	Ground Water	None		7/11/2024	12:00 PM
BH14-IIIR (4649)	2028587	Ground Water	None		7/11/2024	12:15 PM
BH15-IIIR (4650)	2028588	Ground Water	None		7/11/2024	2:15 PM
BH18R (4651)	2028589	Ground Water	None		7/8/2024	3:15 PM
BH23 (4652)	2028590	Ground Water	None		7/10/2024	10:00 AM
BH24R (4653)	2028591	Ground Water	None		7/10/2024	1:00 PM
BH25 (4654)	2028592	Ground Water	None		7/10/2024	1:55 PM
BH29-I (4655)	2028593	Ground Water	None		7/8/2024	12:35 PM
BH29-II (4656)	2028594	Ground Water	None		7/8/2024	10:40 AM

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541144

Sample Description	Lab ID	Matrix	Type	Comments	Date Collected	Time Collected
Duplicate BH24RD (4657)	2028595	Ground Water	None		7/10/2024	1:00 PM
Duplicate BH523 (4658)	2028596	Ground Water	None		7/10/2024	10:00 AM
Travel Blank (4659)	2028597	Ground Water	None		7/8/2024	
Field Blank BH IIR (4647)	2028598	Ground Water	None		7/9/2024	3:15 PM

METHODS AND INSTRUMENTATION

THE FOLLOWING METHODS WERE USED FOR YOUR SAMPLE(S):

Method	Lab	Description	Reference
Alkalinity (A1.0)	Garson	Determination of Alkalinity by Titration	Modified from APHA-2320B
Ammonia Water (A42)	Garson	Determination of Ammonia/Ammonium in Water	Modified from EPA 350.1
Ammonium Water (A42.3)	Garson	Calculation of Ammonium in Water	Modified from APHA 4500
Anions Water (mg/L by IC) (A5)	Garson	Determination of Anions in Water by Ion Chromatography	Modified from SW846-9056A
BTEX/F1 Water (A127)	Mississauga	Determination of PHC BTEX/F1 in Water - Tier 1 CCME	Modified from CWS PHC Tier I CCME
Carbonate (A94)	Garson	Determination of Carbonate and Bi-Carbonate	Modified from APHA-2320
Conductivity of Water (A12)	Garson	Determination of Conductivity in Water at 25°C	Modified from SM 2510 B
DIC Water (A55)	Mississauga	Determination of Dissolved Inorganic Carbon in Water	Modified from SM-5310 C
DOC Water (A55.1)	Mississauga	Determination of Dissolved Organic Carbon in Water	Modified from SM-5310 C
Field pH (R112)	Mississauga	Client Supplied Field Determination of pH of Water	Field Test
Field Temp (R113)	Mississauga	Client Supplied Field Determination of Temperature of Water	Field Test
ICPMS Dis. Water FF (A13.3)	Garson	Determination of Dissolved Metals in Water by ICP/MS -> Field-Filtered	Modified from SW846-6020A
ICPMS Reg. Water (A13)	Garson	Determination of Metals in Water by ICP/MS	Modified from SW846-6020A
Ion Balance (A91)	Garson	Calculation of Ion Balance	Modified from APHA-1030E
OP Water (A23.1)	Mississauga	Determination of Ortho-Phosphate in Water.	Modified from EPA 365.3 and ESS 310.2.
Organic Nitrogen (A58)	Garson	Determination of Organic Nitrogen	Modified from APHA-4500
pH of Water (A2.0)	Garson	Determination of Water pH by Ion Selective Electrode	Modified from APHA-4500H+ B
Phenols 4AAP (T38)	Mississauga	Determination of Total Phenols by 4AAP	Modified from APHA-5530
Reg. Hardness (A13)	Garson	Determination of Total Hardness	Modified from APHA-2340B
TKN Water Dig. (A58)	Garson	Determination of Total Kjeldahl Nitrogen in Waters with Block Digestion.	Modified from SM-4500 NORG-D
TP Water (A23.2)	Garson	Determination of Total Phosphorus in Water.	Modified from EPA 365.3 and ESS 310.2,

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541144

Method	Lab	Description	Reference
Un-Ionized NH3 (A42.4)	Garson	Calculation of Un-Ionized Ammonia, based on Client Field pH and Temperature	Modified from APHA-4500
VOC Water (A14)	Mississauga	Determination of Volatile Organic Compounds in Water by P&T/GC/MS	Modified from EPA SW846-8260 B

This report has been approved by:

Marc Creighton
Laboratory Director

WORK ORDER RESULTS

Sample Description	BH1 - IR (4640)		BH1 - III (4641)		BH2 - II (4642)		BH2 - III (4643)		
Sample Date	7/8/2024 2:25 PM		7/8/2024 2:05 PM		7/9/2024 10:45 AM		7/9/2024 10:25 AM		
Lab ID	2028578		2028579		2028580		2028581		
Anions	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Chloride	173.0	0.8*	444	1*	112.0	0.8*	315	2*	mg/L
Nitrate (as N)	<0.2	0.2*	<0.25	0.25*	<0.2	0.2*	<0.5	0.5*	mg/L
Nitrite (as N)	<0.2	0.2*	<0.25	0.25*	<0.2	0.2*	<0.5	0.5*	mg/L
Sulphate	8	2*	<2.5	2.5*	<2	2*	<5	5*	mg/L

Sample Description	BH4 - IIR (4644)		BH8R (4645)		BH10R (4646)		BH11R (4647)		
Sample Date	7/11/2024 2:45 PM		7/9/2024 2:30 PM		7/11/2024 10:20 AM		7/9/2024 3:15 PM		
Lab ID	2028582		2028583		2028584		2028585		
Anions	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Chloride	264.0	0.8*	95	2*	99.7	0.8*	134	1*	mg/L
Chloride [rr]			50	2*					mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541144

Sample Description	BH4 - IIR (4644)		BH8R (4645)		BH10R (4646)		BH11R (4647)		
Sample Date	7/11/2024 2:45 PM		7/9/2024 2:30 PM		7/11/2024 10:20 AM		7/9/2024 3:15 PM		
Lab ID	2028582		2028583		2028584		2028585		
Anions	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Nitrate (as N)	<0.2	0.2*	<0.5	0.5*	<0.2	0.2*	<0.25	0.25*	mg/L
Nitrate (as N) [rr]			<0.5	0.5*					mg/L
Nitrite (as N)	<0.2	0.2*	<0.5	0.5*	<0.2	0.2*	<0.25	0.25*	mg/L
Nitrite (as N) [rr]			<0.5	0.5*					mg/L
Sulphate	17	2*	<5	5*	<2	2*	<2.5	2.5*	mg/L
Sulphate [rr]			<5	5*					mg/L

Sample Description	BH14 - I (4648)		BH14 - IIIR (4649)		BH15 - IIIR (4650)		BH18R (4651)		
Sample Date	7/11/2024 12:00 PM		7/11/2024 12:15 PM		7/11/2024 2:15 PM		7/8/2024 3:15 PM		
Lab ID	2028586		2028587		2028588		2028589		
Anions	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Chloride	10.1	0.2	73.1	0.8*	49	1*	563	1*	mg/L
Nitrate (as N)	<0.05	0.05	<0.2	0.2*	<0.25	0.25*	<0.25	0.25*	mg/L
Nitrite (as N)	<0.05	0.05	<0.2	0.2*	<0.25	0.25*	<0.25	0.25*	mg/L
Sulphate	3.4	0.5	<2	2*	<2.5	2.5*	<2.5	2.5*	mg/L

Sample Description	BH23 (4652)		BH24R (4653)		BH25 (4654)		BH29 - I (4655)		
Sample Date	7/10/2024 10:00 AM		7/10/2024 1:00 PM		7/10/2024 1:55 PM		7/8/2024 12:35 PM		
Lab ID	2028590		2028591		2028592		2028593		
Anions	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Chloride	142.0	0.4*	171.0	0.8*	219.0	0.8*	77.8	0.2	mg/L
Nitrate (as N)	<0.1	0.1*	<0.2	0.2*	<0.2	0.2*	<0.05	0.05	mg/L
Nitrite (as N)	<0.1	0.1*	<0.2	0.2*	<0.2	0.2*	<0.05	0.05	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541144

Sample Description	BH23 (4652)		BH24R (4653)		BH25 (4654)		BH29 - I (4655)		
Sample Date	7/10/2024 10:00 AM		7/10/2024 1:00 PM		7/10/2024 1:55 PM		7/8/2024 12:35 PM		
Lab ID	2028590		2028591		2028592		2028593		
Anions	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Sulphate	<1	1*	<2	2*	24	2*	8.8	0.5	mg/L

Sample Description	BH29 - II (4656)		Duplicate BH24RD (4657)		Duplicate BH523 (4658)		Travel Blank (4659)		
Sample Date	7/8/2024 10:40 AM		7/10/2024 1:00 PM		7/10/2024 10:00 AM		7/8/2024 12:00 AM		
Lab ID	2028594		2028595		2028596		2028597		
Anions	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Chloride	3.1	0.8*	174.0	0.8*	137.0	0.6*	0.4	0.2	mg/L
Fluoride							<0.05	0.05	mg/L
Nitrate (as N)	<0.2	0.2*	<0.2	0.2*	<0.15	0.15*	<0.05	0.05	mg/L
Nitrite (as N)	<0.2	0.2*	<0.2	0.2*	<0.15	0.15*	<0.05	0.05	mg/L
Sulphate	3	2*	<2	2*	<1.5	1.5*	<0.5	0.5	mg/L

Sample Description	Field Blank BH IIR (4647)		
Sample Date	7/9/2024 3:15 PM		
Lab ID	2028598		
Anions	Result	MDL	Units
Chloride	136.0	0.8*	mg/L
Fluoride	<0.2	0.2*	mg/L
Nitrate (as N)	<0.2	0.2*	mg/L
Nitrite (as N)	<0.2	0.2*	mg/L
Sulphate	<2	2*	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541144

Sample Description	BH1 - IR (4640)		BH1 - III (4641)		BH2 - II (4642)		BH2 - III (4643)		
Sample Date	7/8/2024 2:25 PM		7/8/2024 2:05 PM		7/9/2024 10:45 AM		7/9/2024 10:25 AM		
Lab ID	2028578		2028579		2028580		2028581		
Field Parameters	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Field pH	7.21	N/A	6.81	N/A	7.41	N/A	7.04	N/A	pH
Field Temp	11.8	N/A	17	N/A	11.5	N/A	12.6	N/A	°C

Sample Description	BH4 - IIR (4644)		BH8R (4645)		BH10R (4646)		BH11R (4647)		
Sample Date	7/11/2024 2:45 PM		7/9/2024 2:30 PM		7/11/2024 10:20 AM		7/9/2024 3:15 PM		
Lab ID	2028582		2028583		2028584		2028585		
Field Parameters	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Field pH	6.81	N/A	7.23	N/A	6.93	N/A	7.26	N/A	pH
Field Temp	12.5	N/A	14.8	N/A	14.8	N/A	13.8	N/A	°C

Sample Description	BH14 - I (4648)		BH14 - IIIR (4649)		BH15 - IIIR (4650)		BH18R (4651)		
Sample Date	7/11/2024 12:00 PM		7/11/2024 12:15 PM		7/11/2024 2:15 PM		7/8/2024 3:15 PM		
Lab ID	2028586		2028587		2028588		2028589		
Field Parameters	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Field pH	7.83	N/A	6.72	N/A	11.5	N/A	6.53	N/A	pH
Field Temp	9.5	N/A	11.5	N/A	6.64	N/A	15.1	N/A	°C

Sample Description	BH23 (4652)		BH24R (4653)		BH25 (4654)		BH29 - I (4655)		
Sample Date	7/10/2024 10:00 AM		7/10/2024 1:00 PM		7/10/2024 1:55 PM		7/8/2024 12:35 PM		
Lab ID	2028590		2028591		2028592		2028593		
Field Parameters	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Field pH	6.9	N/A	7.06	N/A	7.33	N/A	7.1	N/A	pH

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541144

Sample Description	BH23 (4652)		BH24R (4653)		BH25 (4654)		BH29 - I (4655)		
Sample Date	7/10/2024 10:00 AM		7/10/2024 1:00 PM		7/10/2024 1:55 PM		7/8/2024 12:35 PM		
Lab ID	2028590		2028591		2028592		2028593		
Field Parameters	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Field Temp	16	N/A	12.6	N/A	12.6	N/A	16.3	N/A	°C

Sample Description	BH29 - II (4656)		Duplicate BH24RD (4657)		Duplicate BH523 (4658)		
Sample Date	7/8/2024 10:40 AM		7/10/2024 1:00 PM		7/10/2024 10:00 AM		
Lab ID	2028594		2028595		2028596		
Field Parameters	Result	MDL	Result	MDL	Result	MDL	Units
Field pH	6.87	N/A	7.06	N/A	6.9	N/A	pH
Field Temp	16.3	N/A	12.6	N/A	16	N/A	°C

Sample Description	BH1 - IR (4640)		BH1 - III (4641)		BH2 - II (4642)		BH2 - III (4643)		
Sample Date	7/8/2024 2:25 PM		7/8/2024 2:05 PM		7/9/2024 10:45 AM		7/9/2024 10:25 AM		
Lab ID	2028578		2028579		2028580		2028581		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Ammonia (as N)	0.08	0.01	0.11	0.01	0.34	0.01	16.40	0.05*	mg/L
Ammonium (as N) (Calc.)	0.08	0.01	0.11	0.01	0.34	0.01	16.40	0.01	mg/L
Anion Sum (Calc.)	8.12	N/A	18.3	N/A	7.96	N/A	29.3	N/A	meq
Bicarbonate (Calc.)	187	1	350	1	289	1	1230	1	mg/L as CaCO3
Carbonate (Calc.)	<1	1	1	1	2	1	7	1	mg/L as CaCO3
Cation Sum (Calc.)	10.1	N/A	20.2	N/A	16	N/A	35.2	N/A	meq
Conductivity	963	1	1970	1	760	1	2900	1	µS/cm
Dissolved Inorganic Carbon	58	2*	86	2*	137	8*	198	2*	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541144

Sample Description	BH1 - IR (4640)		BH1 - III (4641)		BH2 - II (4642)		BH2 - III (4643)		
Sample Date	7/8/2024 2:25 PM		7/8/2024 2:05 PM		7/9/2024 10:45 AM		7/9/2024 10:25 AM		
Lab ID	2028578		2028579		2028580		2028581		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Organic Carbon	16.6	0.4	61	2*	8.9	0.4	31.6	0.8*	mg/L
Ion Balance (Calc.)	10.9	N/A	4.94	N/A	33.6	N/A	9.15	N/A	%
Organic Nitrogen (as N) (Calc.)	0.6	0.2	1.7	0.2	0.3	0.2	<0.2	0.2	mg/L
Orthophosphate (as P)	0.011	0.005			0.013	0.005			mg/L
pH	7.71	N/A	7.64	N/A	7.82	N/A	7.79	N/A	pH
Total Alkalinity	188	2	351	2	291	2	1240	2	mg/L as CaCO3
Total Hardness (as CaCO3) (Calc.)	268.0	0.1	687.0	0.1	833.0	0.1	1090.0	0.1	mg/L
Total Kjeldahl Nitrogen	0.7	0.2*	1.8	0.2*	0.6	0.2*	14.5	0.6*	mg/L
Total Phenols	0.0008	0.0004	0.0010	0.0004	0.0010	0.0004	0.0013	0.0004	mg/L
Total Phosphorus (as P)	0.032	0.002	0.349	0.004*	0.086	0.002	0.031	0.002	mg/L
Un-Ionized Ammonia (Calc.)	<0.002	0.002	<0.002	0.002	<0.002	0.002	0.041	0.002	mg/L

Sample Description	BH4 - IIR (4644)		BH8R (4645)		BH10R (4646)		BH11R (4647)		
Sample Date	7/11/2024 2:45 PM		7/9/2024 2:30 PM		7/11/2024 10:20 AM		7/9/2024 3:15 PM		
Lab ID	2028582		2028583		2028584		2028585		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Ammonia (as N)	0.09	0.01	60.8	0.2*	1.08	0.01	0.19	0.01	mg/L
Ammonium (as N) (Calc.)	0.09	0.01	60.50	0.01	1.08	0.01	0.19	0.01	mg/L
Anion Sum (Calc.)	13.5	N/A	7.53	N/A	11.9	N/A	14.3	N/A	meq
Bicarbonate (Calc.)	344	1	293	1	545	1	629	1	mg/L as CaCO3
Carbonate (Calc.)	2	1	2	1	4	1	5	1	mg/L as CaCO3
Cation Sum (Calc.)	15.4	N/A	29.5	N/A	14.8	N/A	17.8	N/A	meq

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541144

Sample Description	BH4 - IIR (4644)		BH8R (4645)		BH10R (4646)		BH11R (4647)		
Sample Date	7/11/2024 2:45 PM		7/9/2024 2:30 PM		7/11/2024 10:20 AM		7/9/2024 3:15 PM		
Lab ID	2028582		2028583		2028584		2028585		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Conductivity	1440	1	2610	1	1250	1	1490	1	µS/cm
Dissolved Inorganic Carbon	84	2*	323	8*	124	8*	143	4*	mg/L
Dissolved Organic Carbon	2.3	0.4	38.2	0.8*	20.2	0.4	27.0	0.4	mg/L
Ion Balance (Calc.)	6.57	N/A	59.3	N/A	10.9	N/A	10.9	N/A	%
Organic Nitrogen (as N) (Calc.)	<0.2	0.2	<0.2	0.2	0.6	0.2	0.9	0.2	mg/L
Orthophosphate (as P)	<0.005	0.005							mg/L
pH	7.86	N/A	7.81	N/A	7.91	N/A	7.92	N/A	pH
Total Alkalinity	346	2	1470	10	549	2	634	2	mg/L as CaCO3
Total Hardness (as CaCO3) (Calc.)	875.0	0.1	913.0	0.1	463.0	0.1	470.0	0.1	mg/L
Total Kjeldahl Nitrogen	0.2	0.2*	56.9	0.6*	1.7	0.2*	1.1	0.2*	mg/L
Total Phenols	0.0039	0.0004	0.0010	0.0004	0.0016	0.0004	0.0012	0.0004	mg/L
Total Phosphorus (as P)	0.479	0.002	0.114	0.002	0.104	0.002	0.063	0.002	mg/L
Un-Ionized Ammonia (Calc.)	<0.002	0.002	0.276	0.002	0.003	0.002	<0.002	0.002	mg/L

Sample Description	BH14 - I (4648)		BH14 - IIIR (4649)		BH15 - IIIR (4650)		BH18R (4651)		
Sample Date	7/11/2024 12:00 PM		7/11/2024 12:15 PM		7/11/2024 2:15 PM		7/8/2024 3:15 PM		
Lab ID	2028586		2028587		2028588		2028589		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Ammonia (as N)	0.12	0.01	1.67	0.01	31.4	0.2*	1.00	0.01	mg/L
Ammonium (as N) (Calc.)	0.12	0.01	1.67	0.01	0.70	0.01	1.00	0.01	mg/L
Anion Sum (Calc.)	3.75	N/A	12	N/A	17.1	N/A	22.5	N/A	meq
Bicarbonate (Calc.)	202	1	599	1	951	1	399	1	mg/L as CaCO3

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541144

Sample Description	BH14 - I (4648)		BH14 - IIIR (4649)		BH15 - IIIR (4650)		BH18R (4651)		
Sample Date	7/11/2024 12:00 PM		7/11/2024 12:15 PM		7/11/2024 2:15 PM		7/8/2024 3:15 PM		
Lab ID	2028586		2028587		2028588		2028589		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Carbonate (Calc.)	2	1	4	1	3	1	1	1	mg/L as CaCO3
Cation Sum (Calc.)	4.76	N/A	15.8	N/A	20.1	N/A	24.9	N/A	meq
Conductivity	406	1	1260	1	1760	1	2280	1	µS/cm
Dissolved Inorganic Carbon	46	2*	138	4*	224	8*	96	2*	mg/L
Dissolved Organic Carbon	1.3	0.4	35.9	0.8*	20.9	0.4	81	2*	mg/L
Ion Balance (Calc.)	11.9	N/A	13.7	N/A	8.06	N/A	5.06	N/A	%
Organic Nitrogen (as N) (Calc.)	<0.2	0.2	0.6	0.2	<0.2	0.2	2.1	0.2	mg/L
Orthophosphate (as P)	0.012	0.005							mg/L
pH	8.07	N/A	7.82	N/A	7.51	N/A	7.52	N/A	pH
Total Alkalinity	204	2	603	2	954	2	400	2	mg/L as CaCO3
Total Hardness (as CaCO3) (Calc.)	305.0	0.1	491.0	0.1	722.0	0.1	669.0	0.1	mg/L
Total Kjeldahl Nitrogen	0.3	0.2*	2.3	0.2*	25.7	0.6*	3.1	0.2*	mg/L
Total Phenols	0.0010	0.0004	0.0007	0.0004	0.0006	0.0004	0.0010	0.0004	mg/L
Total Phosphorus (as P)	0.234	0.002	0.146	0.002	0.070	0.002	0.491	0.002	mg/L
Un-Ionized Ammonia (Calc.)	<0.002	0.002	<0.002	0.002	30.700	0.002	<0.002	0.002	mg/L

Sample Description	BH23 (4652)		BH24R (4653)		BH25 (4654)		BH29 - I (4655)		
Sample Date	7/10/2024 10:00 AM		7/10/2024 1:00 PM		7/10/2024 1:55 PM		7/8/2024 12:35 PM		
Lab ID	2028590		2028591		2028592		2028593		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Ammonia (as N)	0.06	0.01	0.50	0.01	0.26	0.01	0.05	0.01	mg/L
Ammonium (as N) (Calc.)	0.06	0.01	0.50	0.01	0.26	0.01	0.05	0.01	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541144

Sample Description	BH23 (4652)		BH24R (4653)		BH25 (4654)		BH29 - I (4655)		
Sample Date	7/10/2024 10:00 AM		7/10/2024 1:00 PM		7/10/2024 1:55 PM		7/8/2024 12:35 PM		
Lab ID	2028590		2028591		2028592		2028593		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Anion Sum (Calc.)	9.03	N/A	11.3	N/A	11.2	N/A	7.65	N/A	meq
Bicarbonate (Calc.)	302	1	387	1	275	1	318	1	mg/L as CaCO3
Carbonate (Calc.)	2	1	3	1	2	1	2	1	mg/L as CaCO3
Cation Sum (Calc.)	10.1	N/A	12.9	N/A	14.6	N/A	13	N/A	meq
Conductivity	984	1	1220	1	1050	1	817	1	µS/cm
Dissolved Inorganic Carbon	72	2*	95	2*	93	2*	123	2*	mg/L
Dissolved Organic Carbon	5.8	0.4	5.1	0.4	4.0	0.4	6.0	0.4	mg/L
Ion Balance (Calc.)	5.59	N/A	6.61	N/A	13.2	N/A	25.9	N/A	%
Organic Nitrogen (as N) (Calc.)	0.3	0.2	<0.2	0.2	0.2	0.2	0.3	0.2	mg/L
Orthophosphate (as P)					0.022	0.005	0.020	0.005	mg/L
pH	7.89	N/A	7.86	N/A	7.83	N/A	7.77	N/A	pH
Total Alkalinity	304	2	390	2	277	2	320	2	mg/L as CaCO3
Total Hardness (as CaCO3) (Calc.)	307.0	0.1	388.0	0.1	630.0	0.1	774.0	0.1	mg/L
Total Kjeldahl Nitrogen	0.4	0.2*	0.8	0.2*	0.5	0.2*	0.4	0.2*	mg/L
Total Phenols	0.0012	0.0004	0.0012	0.0004	0.0010	0.0004	0.0013	0.0004	mg/L
Total Phosphorus (as P)	0.443	0.002	0.301	0.002	0.352	0.002	0.091	0.002	mg/L
Un-Ionized Ammonia (Calc.)	<0.002	0.002	<0.002	0.002	<0.002	0.002	<0.002	0.002	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541144

Sample Description	BH29 - II (4656)		Duplicate BH24RD (4657)		Duplicate BH523 (4658)		Travel Blank (4659)		
Sample Date	7/8/2024 10:40 AM		7/10/2024 1:00 PM		7/10/2024 10:00 AM		7/8/2024 12:00 AM		
Lab ID	2028594		2028595		2028596		2028597		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Ammonia (as N)	3.33	0.01	0.49	0.01	0.07	0.01			mg/L
Ammonium (as N) (Calc.)	3.32	0.01	0.49	0.01	0.07	0.01			mg/L
Anion Sum (Calc.)	7.1	N/A	11.3	N/A	8.85	N/A	0.0826	N/A	meq
Bicarbonate (Calc.)	420	1	383	1	304	1	4	1	mg/L as CaCO3
Carbonate (Calc.)	2	1	2	1	<1	1	<1	1	mg/L as CaCO3
Cation Sum (Calc.)	12.1	N/A	13.1	N/A	10.4	N/A	0.0971	N/A	meq
Conductivity	775	1	1210	1	977	1			µS/cm
Dissolved Inorganic Carbon	134	4*	91	8*	70	4*			mg/L
Dissolved Organic Carbon	7.8	0.4	5.0	0.4	5.7	0.4			mg/L
Ion Balance (Calc.)	26	N/A	7.38	N/A	8.05	N/A	N/A	N/A	%
Organic Nitrogen (as N) (Calc.)	0.2	0.2	0.3	0.2	0.4	0.2			mg/L
Orthophosphate (as P)	0.005	0.005							mg/L
pH	7.67	N/A	7.83	N/A	7.42	N/A	6.42	N/A	pH
Total Alkalinity	422	2	385	2	305	2	4	2	mg/L as CaCO3
Total Hardness (as CaCO3) (Calc.)	551.0	0.1	375.0	0.1	305.0	0.1			mg/L
Total Kjeldahl Nitrogen	3.5	0.2*	0.8	0.2*	0.4	0.2*			mg/L
Total Phenols	0.0015	0.0004	0.0012	0.0004	0.0011	0.0004			mg/L
Total Phosphorus (as P)	0.009	0.002	0.310	0.002	0.446	0.002			mg/L
Un-Ionized Ammonia (Calc.)	0.007	0.002	<0.002	0.002	<0.002	0.002			mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541144

Sample Description	Field Blank BH IIR (4647)
Sample Date	7/9/2024 3:15 PM
Lab ID	2028598

General Chemistry	Result	MDL	Units
Anion Sum (Calc.)	14.4	N/A	meq
Bicarbonate (Calc.)	629	1	mg/L as CaCO3
Carbonate (Calc.)	6	1	mg/L as CaCO3
Cation Sum (Calc.)	0.0326	N/A	meq
Ion Balance (Calc.)	N/A	N/A	%
pH	8.03	N/A	pH
Total Alkalinity	635	2	mg/L as CaCO3

Sample Description	BH1 - IR (4640)		BH1 - III (4641)		BH2 - II (4642)		BH2 - III (4643)		
Sample Date	7/8/2024 2:25 PM		7/8/2024 2:05 PM		7/9/2024 10:45 AM		7/9/2024 10:25 AM		
Lab ID	2028578		2028579		2028580		2028581		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Aluminum	13	1			2	1			ug/L
Dissolved Barium	171	1*			1270	1*			ug/L
Dissolved Cadmium	0.033	0.005			0.035	0.005			ug/L
Dissolved Calcium	85100	500*	162000	500*	149000	500*	306000	500*	ug/L
Dissolved Chromium	0.9	0.1			1.5	0.1			ug/L
Dissolved Cobalt	1.2	0.1			1.0	0.1			ug/L
Dissolved Copper	3.3	0.2			1.6	0.2			ug/L
Dissolved Iron	4430	100*	3180	100*	3930	100*	10100	100*	ug/L
Dissolved Lead	<0.05	0.05			<0.05	0.05			ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541144

Sample Description	BH1 - IR (4640)		BH1 - III (4641)		BH2 - II (4642)		BH2 - III (4643)		
Sample Date	7/8/2024 2:25 PM		7/8/2024 2:05 PM		7/9/2024 10:45 AM		7/9/2024 10:25 AM		
Lab ID	2028578		2028579		2028580		2028581		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Magnesium	13900	4	15400	4	71500	40*	103000	40*	ug/L
Dissolved Manganese	410	1*	452	1*	195.0	0.1	1060	1*	ug/L
Dissolved Nickel	4.3	0.5			6.4	0.5			ug/L
Dissolved Potassium	1690	50	1440	50	3380	50	34900	500*	ug/L
Dissolved Selenium	0.16	0.05			2.69	0.05			ug/L
Dissolved Silver	<0.01	0.01			<0.01	0.01			ug/L
Dissolved Sodium	107000	500*	245000	500*	58000	500*	240000	500*	ug/L
Dissolved Zinc	2	1			2	1			ug/L

Sample Description	BH4 - IIR (4644)		BH8R (4645)		BH10R (4646)		BH11R (4647)		
Sample Date	7/11/2024 2:45 PM		7/9/2024 2:30 PM		7/11/2024 10:20 AM		7/9/2024 3:15 PM		
Lab ID	2028582		2028583		2028584		2028585		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Aluminum	3	1							ug/L
Dissolved Barium	394	1*							ug/L
Dissolved Cadmium	<0.005	0.005							ug/L
Dissolved Calcium	136000	500*	230000	500*	134000	500*	140000	500*	ug/L
Dissolved Chromium	1.1	0.1							ug/L
Dissolved Cobalt	0.6	0.1							ug/L
Dissolved Copper	3.9	0.2							ug/L
Dissolved Iron	611	10	6050	100*	1180	10	2260	10	ug/L
Dissolved Lead	<0.05	0.05							ug/L
Dissolved Magnesium	23600	4	107000	40*	45100	4	44200	4	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541144

Sample Description	BH4 - IIR (4644)		BH8R (4645)		BH10R (4646)		BH11R (4647)		
Sample Date	7/11/2024 2:45 PM		7/9/2024 2:30 PM		7/11/2024 10:20 AM		7/9/2024 3:15 PM		
Lab ID	2028582		2028583		2028584		2028585		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Manganese	105.0	0.1	608	1*	340	1*	328	1*	ug/L
Dissolved Nickel	2.1	0.5							ug/L
Dissolved Potassium	2000	50	86500	500*	20600	50	30100	500*	ug/L
Dissolved Selenium	0.52	0.05							ug/L
Dissolved Silver	<0.01	0.01							ug/L
Dissolved Sodium	151000	500*	158000	500*	87900	500*	146000	500*	ug/L
Dissolved Zinc	2	1							ug/L

Sample Description	BH14 - I (4648)		BH14 - IIIR (4649)		BH15 - IIIR (4650)		BH18R (4651)		
Sample Date	7/11/2024 12:00 PM		7/11/2024 12:15 PM		7/11/2024 2:15 PM		7/8/2024 3:15 PM		
Lab ID	2028586		2028587		2028588		2028589		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Aluminum	3	1							ug/L
Dissolved Barium	371	1*							ug/L
Dissolved Cadmium	0.008	0.005							ug/L
Dissolved Calcium	28000	50	141000	500*	211000	500*	238000	500*	ug/L
Dissolved Chromium	0.7	0.1							ug/L
Dissolved Cobalt	<0.1	0.1							ug/L
Dissolved Copper	0.4	0.2							ug/L
Dissolved Iron	252	10	956	10	43100	100*	6070	100*	ug/L
Dissolved Lead	<0.05	0.05							ug/L
Dissolved Magnesium	32500	4	55700	4	68800	40*	22700	4	ug/L
Dissolved Manganese	8.1	0.1	472	1*	1280	1*	1250	1*	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541144

Sample Description	BH14 - I (4648)		BH14 - IIIR (4649)		BH15 - IIIR (4650)		BH18R (4651)		
Sample Date	7/11/2024 12:00 PM		7/11/2024 12:15 PM		7/11/2024 2:15 PM		7/8/2024 3:15 PM		
Lab ID	2028586		2028587		2028588		2028589		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Nickel	0.5	0.5							ug/L
Dissolved Potassium	1810	50	23000	500*	36700	500*	732	50	ug/L
Dissolved Selenium	0.19	0.05							ug/L
Dissolved Silver	<0.01	0.01							ug/L
Dissolved Sodium	14800	50	80800	500*	66900	500*	252000	500*	ug/L
Dissolved Zinc	1	1							ug/L

Sample Description	BH23 (4652)		BH24R (4653)		BH25 (4654)		BH29 - I (4655)		
Sample Date	7/10/2024 10:00 AM		7/10/2024 1:00 PM		7/10/2024 1:55 PM		7/8/2024 12:35 PM		
Lab ID	2028590		2028591		2028592		2028593		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Aluminum					4	1	1	1	ug/L
Dissolved Barium					444	1*	229	1*	ug/L
Dissolved Cadmium					0.007	0.005	0.037	0.005	ug/L
Dissolved Calcium	104000	500*	135000	500*	142000	500*	183000	500*	ug/L
Dissolved Chromium					1.0	0.1	1.0	0.1	ug/L
Dissolved Cobalt					0.7	0.1	1.7	0.1	ug/L
Dissolved Copper					2.3	0.2	1.4	0.2	ug/L
Dissolved Iron	4160	100*	7980	100*	289	10	1490	10	ug/L
Dissolved Lead					<0.05	0.05	<0.05	0.05	ug/L
Dissolved Magnesium	15300	4	19600	4	35900	4	36300	4	ug/L
Dissolved Manganese	614	1*	1620	1*	313	1*	1140	1*	ug/L
Dissolved Nickel					2.0	0.5	3.8	0.5	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541144

Sample Description	BH23 (4652)		BH24R (4653)		BH25 (4654)		BH29 - I (4655)		
Sample Date	7/10/2024 10:00 AM		7/10/2024 1:00 PM		7/10/2024 1:55 PM		7/8/2024 12:35 PM		
Lab ID	2028590		2028591		2028592		2028593		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Potassium	2360	50	3570	50	4260	50	1210	50	ug/L
Dissolved Selenium					0.59	0.05	0.50	0.05	ug/L
Dissolved Silver					<0.01	0.01	<0.01	0.01	ug/L
Dissolved Sodium	81600	500*	102000	500*	101000	500*	19000	50	ug/L
Dissolved Zinc					5	1	4	1	ug/L

Sample Description	BH29 - II (4656)		Duplicate BH24RD (4657)		Duplicate BH523 (4658)		Travel Blank (4659)		
Sample Date	7/8/2024 10:40 AM		7/10/2024 1:00 PM		7/10/2024 10:00 AM		7/8/2024 12:00 AM		
Lab ID	2028594		2028595		2028596		2028597		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Aluminum	15	1					1	1	ug/L
Dissolved Aluminum [rr]							1	1	ug/L
Dissolved Antimony							0.2	0.1	ug/L
Dissolved Antimony [rr]							<0.1	0.1	ug/L
Dissolved Arsenic							0.2	0.1	ug/L
Dissolved Arsenic [rr]							0.1	0.1	ug/L
Dissolved Barium	209	1*					30.4	0.1	ug/L
Dissolved Barium [rr]							30.2	0.1	ug/L
Dissolved Beryllium							<0.02	0.02	ug/L
Dissolved Beryllium [rr]							<0.02	0.02	ug/L
Dissolved Bismuth							<0.05	0.05	ug/L
Dissolved Bismuth [rr]							<0.05	0.05	ug/L
Dissolved Boron							<2	2	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541144

Sample Description	BH29 - II (4656)		Duplicate BH24RD (4657)		Duplicate BH523 (4658)		Travel Blank (4659)		
Sample Date	7/8/2024 10:40 AM		7/10/2024 1:00 PM		7/10/2024 10:00 AM		7/8/2024 12:00 AM		
Lab ID	2028594		2028595		2028596		2028597		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Boron [rr]							11	2	ug/L
Dissolved Cadmium	0.040	0.005					<0.005	0.005	ug/L
Dissolved Cadmium [rr]							<0.005	0.005	ug/L
Dissolved Calcium	209000	500*	135000	500*	107000	500*	732	50	ug/L
Dissolved Calcium [rr]							689	50	ug/L
Dissolved Cerium							<1	1	ug/L
Dissolved Cerium [rr]							<1	1	ug/L
Dissolved Cesium							<0.01	0.01	ug/L
Dissolved Cesium [rr]							<0.01	0.01	ug/L
Dissolved Chromium	2.0	0.1					0.2	0.1	ug/L
Dissolved Chromium [rr]							0.6	0.1	ug/L
Dissolved Cobalt	2.1	0.1					0.7	0.1	ug/L
Dissolved Cobalt [rr]							0.6	0.1	ug/L
Dissolved Copper	0.5	0.2					<0.2	0.2	ug/L
Dissolved Copper [rr]							0.2	0.2	ug/L
Dissolved Europium							<1	1	ug/L
Dissolved Europium [rr]							<1	1	ug/L
Dissolved Gallium							<1	1	ug/L
Dissolved Gallium [rr]							1	1	ug/L
Dissolved Iron	21800	100*	8060	100*	4660	100*	10	10	ug/L
Dissolved Iron [rr]							<10	10	ug/L
Dissolved Lanthanum							<1	1	ug/L
Dissolved Lanthanum [rr]							<1	1	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541144

Sample Description	BH29 - II (4656)		Duplicate BH24RD (4657)		Duplicate BH523 (4658)		Travel Blank (4659)		
Sample Date	7/8/2024 10:40 AM		7/10/2024 1:00 PM		7/10/2024 10:00 AM		7/8/2024 12:00 AM		
Lab ID	2028594		2028595		2028596		2028597		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Lead	<0.05	0.05					<0.05	0.05	ug/L
Dissolved Lead [rr]							<0.05	0.05	ug/L
Dissolved Lithium							5	1	ug/L
Dissolved Lithium [rr]							5	1	ug/L
Dissolved Magnesium	12300	4	19500	4	15600	4	340	4	ug/L
Dissolved Magnesium [rr]							296	4	ug/L
Dissolved Manganese	906	1*	1690	1*	616	1*	1.8	0.1	ug/L
Dissolved Manganese [rr]							1.8	0.1	ug/L
Dissolved Mercury							<0.1	0.1	ug/L
Dissolved Mercury [rr]							<0.1	0.1	ug/L
Dissolved Molybdenum							0.94	0.05	ug/L
Dissolved Molybdenum [rr]							<0.05	0.05	ug/L
Dissolved Nickel	10.1	0.5					4.4	0.5	ug/L
Dissolved Nickel [rr]							4.2	0.5	ug/L
Dissolved Niobium							<1	1	ug/L
Dissolved Niobium [rr]							<1	1	ug/L
Dissolved Phosphorus							<50	50	ug/L
Dissolved Phosphorus [rr]							<50	50	ug/L
Dissolved Potassium	4130	50	3580	50	2350	50	200	50	ug/L
Dissolved Potassium [rr]							190	50	ug/L
Dissolved Rhodium							<1	1	ug/L
Dissolved Rhodium [rr]							<1	1	ug/L
Dissolved Rubidium							0.3	0.2	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541144

Sample Description	BH29 - II (4656)		Duplicate BH24RD (4657)		Duplicate BH523 (4658)		Travel Blank (4659)		
Sample Date	7/8/2024 10:40 AM		7/10/2024 1:00 PM		7/10/2024 10:00 AM		7/8/2024 12:00 AM		
Lab ID	2028594		2028595		2028596		2028597		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Rubidium [rr]							0.3	0.2	ug/L
Dissolved Scandium							2	1	ug/L
Dissolved Scandium [rr]							2	1	ug/L
Dissolved Selenium	0.35	0.05					0.19	0.05	ug/L
Dissolved Selenium [rr]							<0.05	0.05	ug/L
Dissolved Silicon							5150	50	ug/L
Dissolved Silicon [rr]							4580	50	ug/L
Dissolved Silver	<0.01	0.01					<0.01	0.01	ug/L
Dissolved Silver [rr]							<0.01	0.01	ug/L
Dissolved Sodium	11100	50	106000	500*	83900	500*	624	50	ug/L
Dissolved Sodium [rr]							549	50	ug/L
Dissolved Strontium							47.2	0.2	ug/L
Dissolved Strontium [rr]							45.8	0.2	ug/L
Dissolved Sulfur							850	500	ug/L
Dissolved Sulfur [rr]							<500	500	ug/L
Dissolved Tellurium							<0.2	0.2	ug/L
Dissolved Tellurium [rr]							<0.2	0.2	ug/L
Dissolved Thallium							0.04	0.01	ug/L
Dissolved Thallium [rr]							<0.01	0.01	ug/L
Dissolved Thorium							<0.1	0.1	ug/L
Dissolved Thorium [rr]							<0.1	0.1	ug/L
Dissolved Tin							<0.1	0.1	ug/L
Dissolved Tin [rr]							<0.1	0.1	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541144

Sample Description	BH29 - II (4656)		Duplicate BH24RD (4657)		Duplicate BH523 (4658)		Travel Blank (4659)		
Sample Date	7/8/2024 10:40 AM		7/10/2024 1:00 PM		7/10/2024 10:00 AM		7/8/2024 12:00 AM		
Lab ID	2028594		2028595		2028596		2028597		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Titanium							1.1	0.3	ug/L
Dissolved Titanium [rr]							0.9	0.3	ug/L
Dissolved Tungsten							<0.1	0.1	ug/L
Dissolved Tungsten [rr]							0.1	0.1	ug/L
Dissolved Uranium							<0.01	0.01	ug/L
Dissolved Uranium [rr]							<0.01	0.01	ug/L
Dissolved Vanadium							<0.5	0.5	ug/L
Dissolved Vanadium [rr]							<0.5	0.5	ug/L
Dissolved Yttrium							<1	1	ug/L
Dissolved Yttrium [rr]							<1	1	ug/L
Dissolved Zinc	4	1					5	1	ug/L
Dissolved Zinc [rr]							18	1	ug/L
Dissolved Zirconium							<0.2	0.2	ug/L
Dissolved Zirconium [rr]							<0.2	0.2	ug/L

Sample Description	Field Blank BH IIR (4647)		
Sample Date	7/9/2024 3:15 PM		
Lab ID	2028598		
Metals (Dissolved)	Result	MDL	Units
Dissolved Aluminum	<1	1	ug/L
Dissolved Aluminum [rr]	1	1	ug/L
Dissolved Antimony	<0.1	0.1	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541144

Sample Description	Field Blank BH IIR (4647)		
Sample Date	7/9/2024 3:15 PM		
Lab ID	2028598		
Metals (Dissolved)	Result	MDL	Units
Dissolved Antimony [rr]	<0.1	0.1	ug/L
Dissolved Arsenic	<0.1	0.1	ug/L
Dissolved Arsenic [rr]	<0.1	0.1	ug/L
Dissolved Barium	12.9	0.1	ug/L
Dissolved Barium [rr]	12.6	0.1	ug/L
Dissolved Beryllium	<0.02	0.02	ug/L
Dissolved Beryllium [rr]	<0.02	0.02	ug/L
Dissolved Bismuth	<0.05	0.05	ug/L
Dissolved Bismuth [rr]	<0.05	0.05	ug/L
Dissolved Boron	<2	2	ug/L
Dissolved Boron [rr]	<2	2	ug/L
Dissolved Cadmium	<0.005	0.005	ug/L
Dissolved Cadmium [rr]	<0.005	0.005	ug/L
Dissolved Calcium	280	50	ug/L
Dissolved Calcium [rr]	250	50	ug/L
Dissolved Cerium	<1	1	ug/L
Dissolved Cerium [rr]	<1	1	ug/L
Dissolved Cesium	<0.01	0.01	ug/L
Dissolved Cesium [rr]	<0.01	0.01	ug/L
Dissolved Chromium	<0.1	0.1	ug/L
Dissolved Chromium [rr]	0.2	0.1	ug/L
Dissolved Cobalt	0.4	0.1	ug/L
Dissolved Cobalt [rr]	0.4	0.1	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541144

Sample Description	Field Blank BH IIR (4647)		
Sample Date	7/9/2024 3:15 PM		
Lab ID	2028598		
Metals (Dissolved)	Result	MDL	Units
Dissolved Copper	<0.2	0.2	ug/L
Dissolved Copper [rr]	<0.2	0.2	ug/L
Dissolved Europium	<1	1	ug/L
Dissolved Europium [rr]	<1	1	ug/L
Dissolved Gallium	<1	1	ug/L
Dissolved Gallium [rr]	<1	1	ug/L
Dissolved Iron	<10	10	ug/L
Dissolved Iron [rr]	14	10	ug/L
Dissolved Lanthanum	<1	1	ug/L
Dissolved Lanthanum [rr]	<1	1	ug/L
Dissolved Lead	<0.05	0.05	ug/L
Dissolved Lead [rr]	<0.05	0.05	ug/L
Dissolved Lithium	<1	1	ug/L
Dissolved Lithium [rr]	<1	1	ug/L
Dissolved Magnesium	101	4	ug/L
Dissolved Magnesium [rr]	85	4	ug/L
Dissolved Manganese	0.9	0.1	ug/L
Dissolved Manganese [rr]	0.8	0.1	ug/L
Dissolved Mercury	<0.1	0.1	ug/L
Dissolved Mercury [rr]	<0.1	0.1	ug/L
Dissolved Molybdenum	0.37	0.05	ug/L
Dissolved Molybdenum [rr]	0.25	0.05	ug/L
Dissolved Nickel	3.0	0.5	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541144

Sample Description	Field Blank BH IIR (4647)
Sample Date	7/9/2024 3:15 PM
Lab ID	2028598

Metals (Dissolved)	Result	MDL	Units
Dissolved Nickel [rr]	2.8	0.5	ug/L
Dissolved Niobium	<1	1	ug/L
Dissolved Niobium [rr]	<1	1	ug/L
Dissolved Phosphorus	<50	50	ug/L
Dissolved Phosphorus [rr]	<50	50	ug/L
Dissolved Potassium	94	50	ug/L
Dissolved Potassium [rr]	84	50	ug/L
Dissolved Rhodium	<1	1	ug/L
Dissolved Rhodium [rr]	<1	1	ug/L
Dissolved Rubidium	<0.2	0.2	ug/L
Dissolved Rubidium [rr]	<0.2	0.2	ug/L
Dissolved Scandium	<1	1	ug/L
Dissolved Scandium [rr]	<1	1	ug/L
Dissolved Selenium	<0.05	0.05	ug/L
Dissolved Selenium [rr]	<0.05	0.05	ug/L
Dissolved Silicon	695	50	ug/L
Dissolved Silicon [rr]	480	50	ug/L
Dissolved Silver	<0.01	0.01	ug/L
Dissolved Silver [rr]	<0.01	0.01	ug/L
Dissolved Sodium	180	50	ug/L
Dissolved Sodium [rr]	160	50	ug/L
Dissolved Strontium	17.0	0.2	ug/L
Dissolved Strontium [rr]	17.1	0.2	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541144

Sample Description	Field Blank BH IIR (4647)		
Sample Date	7/9/2024 3:15 PM		
Lab ID	2028598		
Metals (Dissolved)	Result	MDL	Units
Dissolved Sulfur	<500	500	ug/L
Dissolved Sulfur [rr]	<500	500	ug/L
Dissolved Tellurium	<0.2	0.2	ug/L
Dissolved Tellurium [rr]	<0.2	0.2	ug/L
Dissolved Thallium	<0.01	0.01	ug/L
Dissolved Thallium [rr]	<0.01	0.01	ug/L
Dissolved Thorium	<0.1	0.1	ug/L
Dissolved Thorium [rr]	<0.1	0.1	ug/L
Dissolved Tin	<0.1	0.1	ug/L
Dissolved Tin [rr]	<0.1	0.1	ug/L
Dissolved Titanium	<0.3	0.3	ug/L
Dissolved Titanium [rr]	<0.3	0.3	ug/L
Dissolved Tungsten	<0.1	0.1	ug/L
Dissolved Tungsten [rr]	<0.1	0.1	ug/L
Dissolved Uranium	<0.01	0.01	ug/L
Dissolved Uranium [rr]	<0.01	0.01	ug/L
Dissolved Vanadium	<0.5	0.5	ug/L
Dissolved Vanadium [rr]	<0.5	0.5	ug/L
Dissolved Yttrium	<1	1	ug/L
Dissolved Yttrium [rr]	<1	1	ug/L
Dissolved Zinc	16	1	ug/L
Dissolved Zinc [rr]	16	1	ug/L
Dissolved Zirconium	<0.2	0.2	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541144

Sample Description	Field Blank BH IIR (4647)		
Sample Date	7/9/2024 3:15 PM		
Lab ID	2028598		
Metals (Dissolved)	Result	MDL	Units
Dissolved Zirconium [rr]	<0.2	0.2	ug/L

Sample Description	BH11R (4647)		
Sample Date	7/9/2024 3:15 PM		
Lab ID	2028585		
Petroleum Hydrocarbons (Water)	Result	MDL	Units
F1 (C6-C10) - Less BTEX (Calc.)	<20	20	ug/L
F1 (C6-C10) Incl. BTEX	<20	20	ug/L
Benzene	<0.2	0.2	ug/L
Ethylbenzene	<0.4	0.4	ug/L
Toluene	<0.4	0.4	ug/L
m+p-Xylene	<0.4	0.4	ug/L
o-Xylene	<0.4	0.4	ug/L
Total Xylenes (Calc.)	<0.4	0.4	ug/L
1,4-dichlorobenzene-d4 (Surr.)	103	N/A	% Rec
undecane (Surr.)	107	N/A	% Rec

Sample Description	Travel Blank (4659)		Field Blank BH IIR (4647)		
Sample Date	7/8/2024 12:00 AM		7/9/2024 3:15 PM		
Lab ID	2028597		2028598		
Volatile Organic Compounds	Result	MDL	Result	MDL	Units
Benzene	<0.2	0.2	<0.2	0.2	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541144

Sample Description	Travel Blank (4659)		Field Blank BH IIR (4647)		
Sample Date	7/8/2024 12:00 AM		7/9/2024 3:15 PM		
Lab ID	2028597		2028598		
Volatile Organic Compounds	Result	MDL	Result	MDL	Units
Ethylbenzene	<0.5	0.5	<0.5	0.5	ug/L
Toluene	<0.5	0.5	<0.5	0.5	ug/L
m+p-Xylene	<0.5	0.5	<0.5	0.5	ug/L
o-Xylene	<0.5	0.5	<0.5	0.5	ug/L
Total Xylenes (Calc.)	<0.5	0.5	<0.5	0.5	ug/L
1,1,1,2-Tetrachloroethane	<0.5	0.5	<0.5	0.5	ug/L
1,1,1-Trichloroethane	<0.5	0.5	<0.5	0.5	ug/L
1,1,2,2-Tetrachloroethane	<0.5	0.5	<0.5	0.5	ug/L
1,1,2-Trichloroethane	<0.5	0.5	<0.5	0.5	ug/L
1,1-Dichloroethane	<0.5	0.5	<0.5	0.5	ug/L
1,1-Dichloroethylene	<0.5	0.5	<0.5	0.5	ug/L
1,1-Dichloropropene	<0.1	0.1	<0.1	0.1	ug/L
1,2,4-Trichlorobenzene	<0.5	0.5	<0.5	0.5	ug/L
1,2-Dibromo-3-chloropropane	<0.3	0.3	<0.3	0.3	ug/L
1,2-Dibromoethane	<0.2	0.2	<0.2	0.2	ug/L
1,2-Dichlorobenzene	<0.5	0.5	<0.5	0.5	ug/L
1,2-Dichloroethane	<0.5	0.5	<0.5	0.5	ug/L
1,2-Dichloroethane-d4 (Surr)	97.3	N/A	108	N/A	% Rec
1,2-Dichloropropane	<0.5	0.5	<0.5	0.5	ug/L
1,3-Dichlorobenzene	<0.5	0.5	<0.5	0.5	ug/L
1,3-Dichloropropane	<0.3	0.3	<0.3	0.3	ug/L
1,4-Dichlorobenzene	<0.5	0.5	<0.5	0.5	ug/L
1-Bromo-4-fluorobenzene (Surr.)	71.3	N/A	72.6	N/A	% Rec

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541144

Sample Description	Travel Blank (4659)		Field Blank BH IIR (4647)		
Sample Date	7/8/2024 12:00 AM		7/9/2024 3:15 PM		
Lab ID	2028597		2028598		
Volatile Organic Compounds	Result	MDL	Result	MDL	Units
Acetone	<30	30	<30	30	ug/L
Bromobenzene	<0.3	0.3	<0.3	0.3	ug/L
Bromochloromethane	<0.3	0.3	<0.3	0.3	ug/L
Bromodichloromethane	<0.2	0.2	<0.2	0.2	ug/L
Bromoform	<0.5	0.5	<0.5	0.5	ug/L
Bromomethane	<0.5	0.5	<0.5	0.5	ug/L
Carbon tetrachloride	<0.2	0.2	<0.2	0.2	ug/L
Chlorobenzene	<0.5	0.5	<0.5	0.5	ug/L
Chloroethane	<0.3	0.3	<0.3	0.3	ug/L
Chloroform	<1	1	<1	1	ug/L
Chloromethane	<0.3	0.3	<0.3	0.3	ug/L
cis - + trans-1,3-Dichloropropene (Calc.)	<0.5	0.5	<0.5	0.5	ug/L
cis-1,2-Dichloroethylene	<0.5	0.5	<0.5	0.5	ug/L
cis-1,3-Dichloropropene	<0.5	0.5	<0.5	0.5	ug/L
Dibromochloromethane	<2	2	<2	2	ug/L
Dibromomethane	<0.3	0.3	<0.3	0.3	ug/L
Dichlorodifluoromethane	<2	2	<2	2	ug/L
Dichloromethane	<5	5	<5	5	ug/L
Hexachlorobutadiene	<0.5	0.5	<0.5	0.5	ug/L
Methyl ethyl ketone	<20	20	<20	20	ug/L
Methyl isobutyl ketone (MIBK)	<20	20	<20	20	ug/L
Methyl tert-butyl ether (MTBE)	<2	2	<2	2	ug/L
n-Hexane	<5	5	<5	5	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 541144

Sample Description	Travel Blank (4659)		Field Blank BH IIR (4647)		
Sample Date	7/8/2024 12:00 AM		7/9/2024 3:15 PM		
Lab ID	2028597		2028598		
Volatile Organic Compounds	Result	MDL	Result	MDL	Units
Styrene	<0.5	0.5	<0.5	0.5	ug/L
Tetrachloroethylene	<0.5	0.5	<0.5	0.5	ug/L
Toluene-d8 (Surr.)	107	N/A	108	N/A	% Rec
Trans-1,2-dichloroethylene	<0.5	0.5	<0.5	0.5	ug/L
Trans-1,3-dichloropropene	<0.5	0.5	<0.5	0.5	ug/L
Trichloroethylene	<0.5	0.5	<0.5	0.5	ug/L
Trichlorofluoromethane	<5	5	<5	5	ug/L
Vinyl chloride	<0.1	0.1	<0.1	0.1	ug/L

LEGEND

Dates: Dates are formatted as mm/dd/year throughout this report.

[rr]: After a parameter name indicates a re-run of that parameter. If multiple re-runs exist they are suffixed by a number. Sample may not have been handled according to the recommended temperature, hold time and head space requirements of the method after the initial analysis.

MDL: Method detection limit or minimum reporting limit.

[ ]: Results for laboratory replicates are shown in square brackets immediately below the associated sample result for ease of comparison.

% Rec: Surrogate compounds are added to the sample in some cases and the recovery is reported as a % recovered.

Organic Soil Analysis: Data reported for organic analysis in soils samples are corrected for moisture content.

Quality Control: All associated Quality Control data is available on request.

Field Data: Reports containing Field Parameters represent data that has been collected and provided by the client. Testmark is not responsible for the validity of this data which may be used in subsequent calculations.

Sample Condition Deviations: A noted sample condition deviation may affect the validity of the result. Results apply to the sample(s) as received.

Reproduction of Report: Report shall not be reproduced, except in full, without the approval of Testmark Laboratories Ltd.

ICPMS Dustfall Insoluble: The ICPMS Dustfall Insoluble Portion method analyzes only the particulate matter from the Dustfall Sampler which is retained on the analysis filter during the Dustfall method.

Regulation Comparisons: Disclaimer: Please note that regulation criteria are provided for comparative purposes, however the onus on ensuring the validity of this comparison rests with the client.

*Dilution: In the MDL column an asterisk (*) indicates a sample dilution was performed.

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

TESTMARK Laboratories Ltd.
Committed to Quality and Service

CERTIFICATE OF ANALYSIS

Client:	Hannah Curry	Work Order Number:	540291
Company:	City of Orillia - Waste Diversion Site	PO #:	83585
Address:	40 Kitchener St.	Regulation:	Information not provided
	Orillia, ON, L3V 6Z9	Project #:	Summer WDS Sampling SW
Phone:	(705) 325-2394	DWS #:	
Email:	hcurry@orillia.ca	Sampled By:	Hannah Curry
Date Order Received:	7/5/2024	Analysis Started:	7/5/2024
Arrival Temperature:	9.5 C	Analysis Completed:	7/16/2024

WORK ORDER SUMMARY

ANALYSES WERE PERFORMED ON THE FOLLOWING SAMPLES. THE RESULTS RELATE ONLY TO THE ITEMS TESTED.

Sample Description	Lab ID	Matrix	Type	Comments	Date Collected	Time Collected
S-1 (4627)	2025556	Surface Water	None		7/2/2024	3:05 PM
S-2 (4628)	2025557	Surface Water	None		7/4/2024	2:00 PM
S-3 (4629)	2025558	Surface Water	None		7/4/2024	1:40 PM
S-4 (4630)	2025559	Surface Water	None		7/4/2024	2:20 PM
S-6 (4632)	2025560	Surface Water	None		7/4/2024	9:40 AM
S-7 (4632)	2025561	Surface Water	None		7/3/2024	2:15 PM
S-8 (4633)	2025562	Surface Water	None		7/4/2024	9:10 AM
S-9 (4634)	2025563	Surface Water	None		7/2/2024	11:17 AM
S-11 (4635)	2025564	Surface Water	None		7/2/2024	11:45 AM
S-14 (4636)	2025565	Surface Water	None		7/2/2024	10:00 AM
S-18 (4637)	2025566	Surface Water	None		7/3/2024	3:05 PM
Duplicate 1D (4638)	2025567	Surface Water	None		7/2/2024	3:05 PM
Duplicate 518 (4639)	2025568	Surface Water	None		7/3/2024	3:05 PM

METHODS AND INSTRUMENTATION

THE FOLLOWING METHODS WERE USED FOR YOUR SAMPLE(S):

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 540291

Method	Lab	Description	Reference
Alkalinity (A1.0)	Garson	Determination of Alkalinity by Titration	Modified from APHA-2320B
Ammonia Water (A42)	Garson	Determination of Ammonia/Ammonium in Water	Modified from EPA 350.1
Anions Water (mg/L by IC) (A5)	Garson	Determination of Anions in Water by Ion Chromatography	Modified from SW846-9056A
BOD (A3)	Mississauga	Determination of Biochemical Oxygen Demand (BOD) 5-Day	Modified from SM-5210 B
Carbonate (A94)	Garson	Determination of Carbonate and Bi-Carbonate	Modified from APHA-2320
Conductivity of Water (A12)	Garson	Determination of Conductivity in Water at 25°C	Modified from SM 2510 B
DIC Water (A55)	Mississauga	Determination of Dissolved Inorganic Carbon in Water	Modified from SM-5310 C
DOC Water (A55.1)	Mississauga	Determination of Dissolved Organic Carbon in Water	Modified from SM-5310 C
Field pH (R112)	Mississauga	Client Supplied Field Determination of pH of Water	Field Test
Field Temp (R113)	Mississauga	Client Supplied Field Determination of Temperature of Water	Field Test
ICPMS Dis. Water (0.2um) FF (A13)	Garson	Determination of Dissolved Metals in Water by ICP/MS -> Field-Filtered	Modified from SW846-6020A
ICPMS Dis. Water FF (A13)	Garson	Determination of Dissolved Metals in Water by ICP/MS -> Field-Filtered	Modified from SW846-6020A
ICPMS Reg. Water (A13.1)	Garson	Determination of Metals in Water by ICP/MS	Modified from SW846-6020A
ICPMS Tot. Water (A13.2)	Garson	Determination of Total Metals in Water by ICP/MS with Digestion	Modified from SW846-6020A
Ion Balance (A91)	Garson	Calculation of Ion Balance	Modified from APHA-1030E
OP Water (A23.1)	Mississauga	Determination of Ortho-Phosphate in Water.	Modified from EPA 365.3 and ESS 310.2.
Organic Nitrogen (A58)	Garson	Determination of Organic Nitrogen	Modified from APHA-4500
pH of Water (A2.0)	Garson	Determination of Water pH by Ion Selective Electrode	Modified from APHA-4500H+ B
Phenols 4AAP (T38)	Mississauga	Determination of Total Phenols by 4AAP	Modified from APHA-5530
Reg. Hardness (A13)	Garson	Determination of Total Hardness	Modified from APHA-2340B
TKN Water Dig. (A58)	Garson	Determination of Total Kjeldahl Nitrogen in Waters with Block Digestion.	Modified from SM-4500 NORG-D
TP Water (A23.2)	Garson	Determination of Total Phosphorus in Water.	Modified from EPA 365.3 and ESS 310.2,
TSS (A27)	Mississauga	Determination of Total Suspended Solids in water by gravimetry	Modified from SM-2540

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 540291

This report has been approved by:

Marc Creighton
Laboratory Director

WORK ORDER RESULTS

Sample Description	S - 1 (4627)		S - 2 (4628)		S - 3 (4629)		S - 4 (4630)		
Sample Date	7/2/2024 3:05 PM		7/4/2024 2:00 PM		7/4/2024 1:40 PM		7/4/2024 2:20 PM		
Lab ID	2025556		2025557		2025558		2025559		
Anions	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Chloride	216.0	0.6*	247.0	0.8*	230.0	0.8*	163.0	0.6*	mg/L
Nitrate (as N)	8.62	0.15*	14.8	0.2*	11.7	0.2*	<0.15	0.15*	mg/L
Nitrite (as N)	<0.15	0.15*	<0.2	0.2*	<0.2	0.2*	<0.15	0.15*	mg/L
Sulphate	43.4	1.5*	87	2*	69	2*	5.1	1.5*	mg/L

Sample Description	S - 6 (4632)		S - 7 (4632)		S - 8 (4633)		S - 9 (4634)		
Sample Date	7/4/2024 9:40 AM		7/3/2024 2:15 PM		7/4/2024 9:10 AM		7/2/2024 11:17 AM		
Lab ID	2025560		2025561		2025562		2025563		
Anions	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Chloride	144.0	0.6*	144.0	0.6*	203.0	0.6*	73.7	0.2	mg/L
Nitrate (as N)	<0.15	0.15*	<0.15	0.15*	<0.15	0.15*	0.23	0.05	mg/L
Nitrite (as N)	<0.15	0.15*	<0.15	0.15*	<0.15	0.15*	<0.05	0.05	mg/L
Sulphate	3.9	1.5*	4.5	1.5*	7.9	1.5*	16.4	0.5	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 540291

Sample Description	S - 11 (4635)		S - 14 (4636)		S - 18 (4637)		Duplicate 1D (4638)		
Sample Date	7/2/2024 11:45 AM		7/2/2024 10:00 AM		7/3/2024 3:05 PM		7/2/2024 3:05 PM		
Lab ID	2025564		2025565		2025566		2025567		
Anions	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Chloride	140.0	0.4*	69.0	0.2	243.0	0.8*	207.0	0.8*	mg/L
Nitrate (as N)	3.3	0.1*	<0.05	0.05	0.3	0.2*	7.0	0.2*	mg/L
Nitrite (as N)	<0.1	0.1*	<0.05	0.05	<0.2	0.2*	<0.2	0.2*	mg/L
Sulphate	28	1*	15.6	0.5	26	2*	39	2*	mg/L

Sample Description	Duplicate 518 (4639)		
Sample Date	7/3/2024 3:05 PM		
Lab ID	2025568		
Anions	Result	MDL	Units
Chloride	245.0	0.8*	mg/L
Nitrate (as N)	0.3	0.2*	mg/L
Nitrite (as N)	<0.2	0.2*	mg/L
Sulphate	21	2*	mg/L

Sample Description	S - 1 (4627)		S - 2 (4628)		S - 3 (4629)		S - 4 (4630)		
Sample Date	7/2/2024 3:05 PM		7/4/2024 2:00 PM		7/4/2024 1:40 PM		7/4/2024 2:20 PM		
Lab ID	2025556		2025557		2025558		2025559		
Field Parameters	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Field pH	8.1	N/A	7.49	N/A	7.57	N/A	7.64	N/A	pH
Field Temp	21	N/A	7.3	N/A	19.9	N/A	22.9	N/A	°C

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 540291

Sample Description	S - 6 (4632)		S - 7 (4632)		S - 8 (4633)		S - 9 (4634)		
Sample Date	7/4/2024 9:40 AM		7/3/2024 2:15 PM		7/4/2024 9:10 AM		7/2/2024 11:17 AM		
Lab ID	2025560		2025561		2025562		2025563		
Field Parameters	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Field pH	7.54	N/A	7.5	N/A	7.43	N/A	8.09	N/A	pH
Field Temp	20.1	N/A	21.3	N/A	19.1	N/A	20.6	N/A	°C

Sample Description	S - 11 (4635)		S - 14 (4636)		S - 18 (4637)		Duplicate 1D (4638)		
Sample Date	7/2/2024 11:45 AM		7/2/2024 10:00 AM		7/3/2024 3:05 PM		7/2/2024 3:05 PM		
Lab ID	2025564		2025565		2025566		2025567		
Field Parameters	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Field pH	8.08	N/A	8.17	N/A	7.32	N/A	8.1	N/A	pH
Field Temp	21	N/A	20.2	N/A	13.8	N/A	21	N/A	°C

Sample Description	Duplicate 518 (4639)		
Sample Date	7/3/2024 3:05 PM		
Lab ID	2025568		
Field Parameters	Result	MDL	Units
Field pH	7.32	N/A	pH
Field Temp	13.8	N/A	°C

Sample Description	S - 1 (4627)		S - 2 (4628)		S - 3 (4629)		S - 4 (4630)		
Sample Date	7/2/2024 3:05 PM		7/4/2024 2:00 PM		7/4/2024 1:40 PM		7/4/2024 2:20 PM		
Lab ID	2025556		2025557		2025558		2025559		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Ammonia (as N)	0.02	0.01	0.25	0.01	0.08	0.01	0.06	0.01	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 540291

Sample Description	S - 1 (4627)		S - 2 (4628)		S - 3 (4629)		S - 4 (4630)		
Sample Date	7/2/2024 3:05 PM		7/4/2024 2:00 PM		7/4/2024 1:40 PM		7/4/2024 2:20 PM		
Lab ID	2025556		2025557		2025558		2025559		
General Chemistry	**Result**	**MDL**	**Result**	**MDL**	**Result**	**MDL**	**Result**	**MDL**	**Units**
Anion Sum (Calc.)	10.4	N/A	11.5	N/A	10.9	N/A	8.63	N/A	meq
Bicarbonate (Calc.)	195	1	150	1	168	1	235	1	mg/L as CaCO3
Carbonate (Calc.)	2	1	<1	1	1	1	2	1	mg/L as CaCO3
Cation Sum (Calc.)	10.6	N/A	12.1	N/A	11.9	N/A	8.79	N/A	meq
Conductivity	1080	1	1260	1	1210	1	921	1	µS/cm
Dissolved Inorganic Carbon	45	2*	35	2*	40	2*	54	2*	mg/L
Dissolved Organic Carbon	6.4	0.4	6.7	0.4	6.8	0.4	7.4	0.4	mg/L
Ion Balance (Calc.)	0.952	N/A	2.54	N/A	4.39	N/A	0.918	N/A	%
Organic Nitrogen (as N) (Calc.)	0.6	0.2	1.1	0.2	<0.2	0.2	0.6	0.2	mg/L
Orthophosphate (as P)	0.013	0.005	0.024	0.005	0.019	0.005	0.017	0.005	mg/L
pH	7.98	N/A	7.84	N/A	7.89	N/A	8	N/A	pH
Total Alkalinity	197	2	151	2	169	2	237	2	mg/L as CaCO3
Total Hardness (as CaCO3) (Calc.)	311.0	0.1	313.0	0.1	307.0	0.1	295.0	0.1	mg/L
Total Kjeldahl Nitrogen	0.7	0.2*	1.35	0.02	<0.2	0.2*	0.6	0.2*	mg/L
Total Phenols	0.0014	0.0004	0.0013	0.0004	0.0010	0.0004	0.0017	0.0004	mg/L
Total Phosphorus (as P)	0.053	0.002	0.092	0.002	0.075	0.002	0.046	0.002	mg/L

Sample Description	S - 6 (4632)		S - 7 (4632)		S - 8 (4633)		S - 9 (4634)		
Sample Date	7/4/2024 9:40 AM		7/3/2024 2:15 PM		7/4/2024 9:10 AM		7/2/2024 11:17 AM		
Lab ID	2025560		2025561		2025562		2025563		
General Chemistry	**Result**	**MDL**	**Result**	**MDL**	**Result**	**MDL**	**Result**	**MDL**	**Units**
Ammonia (as N)	0.04	0.01	0.02	0.01	0.18	0.01	<0.01	0.01	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 540291

Sample Description	S - 6 (4632)		S - 7 (4632)		S - 8 (4633)		S - 9 (4634)		
Sample Date	7/4/2024 9:40 AM		7/3/2024 2:15 PM		7/4/2024 9:10 AM		7/2/2024 11:17 AM		
Lab ID	2025560		2025561		2025562		2025563		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Anion Sum (Calc.)	8.32	N/A	8.37	N/A	9.26	N/A	4.29	N/A	meq
Bicarbonate (Calc.)	250	1	252	1	202	1	111	1	mg/L as CaCO3
Carbonate (Calc.)	2	1	3	1	2	1	1	1	mg/L as CaCO3
Cation Sum (Calc.)	8.57	N/A	8.64	N/A	9.2	N/A	4.69	N/A	meq
Conductivity	884	1	888	1	994	1	477	1	µS/cm
Dissolved Inorganic Carbon	59	2*	61	2*	45	2*	27	2*	mg/L
Dissolved Organic Carbon	6.7	0.4	6.2	0.4	8.2	0.4	4.4	0.4	mg/L
Ion Balance (Calc.)	1.48	N/A	1.59	N/A	-0.325	N/A	4.45	N/A	%
Organic Nitrogen (as N) (Calc.)	0.5	0.2	0.3	0.2	0.6	0.2	0.5	0.2	mg/L
Orthophosphate (as P)	0.022	0.005	0.061	0.005	0.031	0.005	<0.005	0.005	mg/L
pH	8	N/A	8.02	N/A	7.92	N/A	8.09	N/A	pH
Total Alkalinity	252	2	255	2	204	2	112	2	mg/L as CaCO3
Total Hardness (as CaCO3) (Calc.)	300.0	0.1	308.0	0.1	260.0	0.1	150.0	0.1	mg/L
Total Kjeldahl Nitrogen	0.5	0.2*	0.3	0.2*	0.7	0.2*	0.5	0.2*	mg/L
Total Phenols	0.0015	0.0004	0.0015	0.0004	0.0010	0.0004	0.0013	0.0004	mg/L
Total Phosphorus (as P)	0.035	0.002	0.054	0.002	0.064	0.002	0.007	0.002	mg/L

Sample Description	S - 11 (4635)		S - 14 (4636)		S - 18 (4637)		Duplicate 1D (4638)		
Sample Date	7/2/2024 11:45 AM		7/2/2024 10:00 AM		7/3/2024 3:05 PM		7/2/2024 3:05 PM		
Lab ID	2025564		2025565		2025566		2025567		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Ammonia (as N)	<0.01	0.01	<0.01	0.01	0.08	0.01	0.02	0.01	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 540291

Sample Description	S - 11 (4635)		S - 14 (4636)		S - 18 (4637)		Duplicate 1D (4638)		
Sample Date	7/2/2024 11:45 AM		7/2/2024 10:00 AM		7/3/2024 3:05 PM		7/2/2024 3:05 PM		
Lab ID	2025564		2025565		2025566		2025567		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Anion Sum (Calc.)	7.09	N/A	4.14	N/A	13.3	N/A	10.1	N/A	meq
Bicarbonate (Calc.)	149	1	112	1	355	1	200	1	mg/L as CaCO3
Carbonate (Calc.)	2	1	1	1	3	1	2	1	mg/L as CaCO3
Cation Sum (Calc.)	6.82	N/A	4.43	N/A	13.2	N/A	10.3	N/A	meq
Conductivity	738	1	449	1	1370	1	1110	1	µS/cm
Dissolved Inorganic Carbon	34	2*	26	2*	88	2*	46	2*	mg/L
Dissolved Organic Carbon	5.1	0.4	4.0	0.4	3.2	0.4	6.2	0.4	mg/L
Ion Balance (Calc.)	-1.94	N/A	3.38	N/A	-0.377	N/A	0.98	N/A	%
Organic Nitrogen (as N) (Calc.)	0.7	0.2	0.4	0.2	0.5	0.2	0.8	0.2	mg/L
Orthophosphate (as P)	<0.005	0.005	<0.005	0.005	0.045	0.005	0.012	0.005	mg/L
pH	8.06	N/A	8.03	N/A	7.87	N/A	8.07	N/A	pH
Total Alkalinity	151	2	113	2	358	2	202	2	mg/L as CaCO3
Total Hardness (as CaCO3) (Calc.)	218.0	0.1	148.0	0.1	420.0	0.1	316.0	0.1	mg/L
Total Kjeldahl Nitrogen	0.7	0.2*	0.4	0.2*	0.6	0.2*	0.8	0.2*	mg/L
Total Phenols	0.0010	0.0004	0.0015	0.0004	0.0010	0.0004	0.0012	0.0004	mg/L
Total Phosphorus (as P)	0.074	0.002	0.003	0.002	0.108	0.002	0.038	0.002	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 540291

Sample Description	Duplicate 518 (4639)
Sample Date	7/3/2024 3:05 PM
Lab ID	2025568

General Chemistry	Result	MDL	Units
Ammonia (as N)	0.10	0.01	mg/L
Anion Sum (Calc.)	13.2	N/A	meq
Bicarbonate (Calc.)	354	1	mg/L as CaCO3
Carbonate (Calc.)	3	1	mg/L as CaCO3
Cation Sum (Calc.)	13.3	N/A	meq
Conductivity	1430	1	µS/cm
Dissolved Inorganic Carbon	88	2*	mg/L
Dissolved Organic Carbon	3.3	0.4	mg/L
Ion Balance (Calc.)	0.377	N/A	%
Organic Nitrogen (as N) (Calc.)	0.6	0.2	mg/L
Orthophosphate (as P)	0.048	0.005	mg/L
pH	7.89	N/A	pH
Total Alkalinity	357	2	mg/L as CaCO3
Total Hardness (as CaCO3) (Calc.)	415.0	0.1	mg/L
Total Kjeldahl Nitrogen	0.7	0.2*	mg/L
Total Phenols	0.0010	0.0004	mg/L
Total Phosphorus (as P)	0.091	0.002	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 540291

Sample Description	S - 1 (4627)		S - 2 (4628)		S - 3 (4629)		S - 4 (4630)		
Sample Date	7/2/2024 3:05 PM		7/4/2024 2:00 PM		7/4/2024 1:40 PM		7/4/2024 2:20 PM		
Lab ID	2025556		2025557		2025558		2025559		
Metals (Dissolved - 0.2um)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Aluminum	178	1	224	1	175	1	10	1	ug/L

Sample Description	S - 6 (4632)		S - 7 (4632)		S - 8 (4633)		S - 9 (4634)		
Sample Date	7/4/2024 9:40 AM		7/3/2024 2:15 PM		7/4/2024 9:10 AM		7/2/2024 11:17 AM		
Lab ID	2025560		2025561		2025562		2025563		
Metals (Dissolved - 0.2um)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Aluminum	5	1	3	1	4	1	10	1	ug/L

Sample Description	S - 11 (4635)		S - 14 (4636)		S - 18 (4637)		Duplicate 1D (4638)		
Sample Date	7/2/2024 11:45 AM		7/2/2024 10:00 AM		7/3/2024 3:05 PM		7/2/2024 3:05 PM		
Lab ID	2025564		2025565		2025566		2025567		
Metals (Dissolved - 0.2um)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Aluminum	86	1	4	1	10	1	183	1	ug/L

Sample Description	Duplicate 518 (4639)		
Sample Date	7/3/2024 3:05 PM		
Lab ID	2025568		
Metals (Dissolved - 0.2um)	Result	MDL	Units
Dissolved Aluminum	5	1	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 540291

Sample Description	S - 1 (4627)		S - 2 (4628)		S - 3 (4629)		S - 4 (4630)		
Sample Date	7/2/2024 3:05 PM		7/4/2024 2:00 PM		7/4/2024 1:40 PM		7/4/2024 2:20 PM		
Lab ID	2025556		2025557		2025558		2025559		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Aluminum	204	1	280	1	192	1	4	1	ug/L
Dissolved Antimony	<0.5	0.5	1.5	0.5	1.3	0.5	<0.5	0.5	ug/L
Dissolved Arsenic	4	1	5	1	4	1	4	1	ug/L
Dissolved Arsenic [rr]			5	1					ug/L
Dissolved Barium	115	1	93	1	105	1	140	10*	ug/L
Dissolved Beryllium	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Dissolved Bismuth	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Boron	94	2	254	2	223	2	32	2	ug/L
Dissolved Cadmium	<0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L
Dissolved Calcium	86200	500*	86800	500*	88100	500*	78700	500*	ug/L
Dissolved Cerium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Cesium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Chromium	2	1	2	1	<1	1	2	1	ug/L
Dissolved Cobalt	2.9	0.1	115.0	0.1	80.0	0.1	0.3	0.1	ug/L
Dissolved Copper	3	1	4	1	4	1	2	1	ug/L
Dissolved Europium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Gallium	4	1	3	1	3	1	5	1	ug/L
Dissolved Iron	170	20	120	20	110	20	221	20	ug/L
Dissolved Lanthanum	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Lead	0.1	0.1	0.2	0.1	0.2	0.1	<0.1	0.1	ug/L
Dissolved Lithium	<5	5	6	5	5	5	<5	5	ug/L
Dissolved Magnesium	18800	4	19300	4	18600	4	17300	4	ug/L
Dissolved Manganese	36	1	31	1	53	1	177	1	ug/L
Dissolved Mercury	<0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 540291

Sample Description	S - 1 (4627)		S - 2 (4628)		S - 3 (4629)		S - 4 (4630)		
Sample Date	7/2/2024 3:05 PM		7/4/2024 2:00 PM		7/4/2024 1:40 PM		7/4/2024 2:20 PM		
Lab ID	2025556		2025557		2025558		2025559		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Molybdenum	<1	1	2	1	7	1	<1	1	ug/L
Dissolved Nickel	2	1	3	1	3	1	2	1	ug/L
Dissolved Niobium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Phosphorus	<50	50	60	50	<50	50	<50	50	ug/L
Dissolved Potassium	7530	100	13800	100	11100	100	2010	100	ug/L
Dissolved Rhodium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Rubidium	6	1	11	1	9	1	2	1	ug/L
Dissolved Scandium	2	1	3	1	2	1	3	1	ug/L
Dissolved Selenium	0.7	0.2	1.0	0.2	1.1	0.2	0.5	0.2	ug/L
Dissolved Silicon	3000	600	3800	600	4300	600	3900	600	ug/L
Dissolved Silver	<0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L
Dissolved Sodium	103000	1000*	132000	1000*	128000	1000*	76800	1000*	ug/L
Dissolved Strontium	313	1	345	1	324	1	300	1	ug/L
Dissolved Sulfur	22400	800	39700	800	31800	800	6300	800	ug/L
Dissolved Tellurium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Thallium	<0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L
Dissolved Thorium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Tin	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Titanium	<1	1	1	1	1	1	1	1	ug/L
Dissolved Tungsten	2	1	<1	1	<1	1	<1	1	ug/L
Dissolved Uranium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Vanadium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Yttrium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Zinc	15	1	25	1	14	1	9	1	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 540291

Sample Description	S - 1 (4627)		S - 2 (4628)		S - 3 (4629)		S - 4 (4630)		
Sample Date	7/2/2024 3:05 PM		7/4/2024 2:00 PM		7/4/2024 1:40 PM		7/4/2024 2:20 PM		
Lab ID	2025556		2025557		2025558		2025559		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Zinc [rr]			24	1			9	1	ug/L
Dissolved Zirconium	<1	1	<1	1	<1	1	<1	1	ug/L

Sample Description	S - 6 (4632)		S - 7 (4632)		S - 8 (4633)		S - 9 (4634)		
Sample Date	7/4/2024 9:40 AM		7/3/2024 2:15 PM		7/4/2024 9:10 AM		7/2/2024 11:17 AM		
Lab ID	2025560		2025561		2025562		2025563		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Aluminum	4	1	6	1	7	1	10	1	ug/L
Dissolved Antimony	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Dissolved Arsenic	4	1	4	1	4	1	2	1	ug/L
Dissolved Barium	146	10*	148	10*	133	10*	37	1	ug/L
Dissolved Beryllium	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Dissolved Bismuth	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Boron	13	2	20	2	52	2	21	2	ug/L
Dissolved Cadmium	<0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L
Dissolved Calcium	81100	500*	83300	500*	72300	500*	44200	50	ug/L
Dissolved Cerium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Cesium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Chromium	2	1	2	1	2	1	1	1	ug/L
Dissolved Cobalt	0.3	0.1	0.3	0.1	0.3	0.1	0.3	0.1	ug/L
Dissolved Copper	1	1	1	1	3	1	1	1	ug/L
Dissolved Europium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Gallium	5	1	5	1	4	1	1	1	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 540291

Sample Description	S - 6 (4632)		S - 7 (4632)		S - 8 (4633)		S - 9 (4634)		
Sample Date	7/4/2024 9:40 AM		7/3/2024 2:15 PM		7/4/2024 9:10 AM		7/2/2024 11:17 AM		
Lab ID	2025560		2025561		2025562		2025563		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Iron	253	20	224	20	243	20	120	20	ug/L
Dissolved Lanthanum	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Lead	<0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L
Dissolved Lithium	<5	5	<5	5	<5	5	<5	5	ug/L
Dissolved Magnesium	18400	4	19100	4	14200	4	8990	4	ug/L
Dissolved Manganese	200	1	89	1	170	1	4	1	ug/L
Dissolved Mercury	<0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L
Dissolved Molybdenum	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Nickel	2	1	1	1	2	1	1	1	ug/L
Dissolved Niobium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Phosphorus	<50	50	<50	50	<50	50	<50	50	ug/L
Dissolved Potassium	1480	100	3160	100	2880	100	2660	100	ug/L
Dissolved Potassium [rr]			2930	100					ug/L
Dissolved Rhodium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Rubidium	1	1	1	1	2	1	2	1	ug/L
Dissolved Scandium	4	1	4	1	2	1	<1	1	ug/L
Dissolved Selenium	0.4	0.2	0.4	0.2	0.8	0.2	0.2	0.2	ug/L
Dissolved Silicon	4900	600	4800	600	3200	600	740	600	ug/L
Dissolved Silver	<0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L
Dissolved Sodium	67500	1000*	64200	1000*	98700	1000*	38100	100	ug/L
Dissolved Strontium	251	1	253	1	391	1	167	1	ug/L
Dissolved Sulfur	5400	800	5900	800	8590	800	10600	800	ug/L
Dissolved Tellurium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Thallium	<0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 540291

Sample Description	S - 6 (4632)		S - 7 (4632)		S - 8 (4633)		S - 9 (4634)		
Sample Date	7/4/2024 9:40 AM		7/3/2024 2:15 PM		7/4/2024 9:10 AM		7/2/2024 11:17 AM		
Lab ID	2025560		2025561		2025562		2025563		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Thorium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Tin	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Titanium	2	1	2	1	1	1	<1	1	ug/L
Dissolved Tungsten	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Uranium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Vanadium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Yttrium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Zinc	8	1	5	1	11	1	5	1	ug/L
Dissolved Zirconium	<1	1	<1	1	<1	1	<1	1	ug/L

Sample Description	S - 11 (4635)		S - 14 (4636)		S - 18 (4637)		Duplicate 1D (4638)		
Sample Date	7/2/2024 11:45 AM		7/2/2024 10:00 AM		7/3/2024 3:05 PM		7/2/2024 3:05 PM		
Lab ID	2025564		2025565		2025566		2025567		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Aluminum	99	1	4	1	8	1	198	1	ug/L
Dissolved Antimony	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Dissolved Arsenic	3	1	2	1	6	1	5	1	ug/L
Dissolved Barium	69	1	34	1	199	10*	112	1	ug/L
Dissolved Beryllium	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Dissolved Bismuth	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Boron	46	2	17	2	27	2	86	2	ug/L
Dissolved Cadmium	<0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L
Dissolved Calcium	59200	500*	42800	50	118000	500*	84400	500*	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 540291

Sample Description	S - 11 (4635)		S - 14 (4636)		S - 18 (4637)		Duplicate 1D (4638)		
Sample Date	7/2/2024 11:45 AM		7/2/2024 10:00 AM		7/3/2024 3:05 PM		7/2/2024 3:05 PM		
Lab ID	2025564		2025565		2025566		2025567		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Cerium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Cesium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Chromium	1	1	1	1	3	1	2	1	ug/L
Dissolved Cobalt	1.4	0.1	0.1	0.1	0.6	0.1	2.8	0.1	ug/L
Dissolved Copper	2	1	1	1	3	1	3	1	ug/L
Dissolved Europium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Gallium	2	1	1	1	6	1	4	1	ug/L
Dissolved Iron	160	20	110	20	408	20	180	20	ug/L
Dissolved Lanthanum	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Lead	<0.1	0.1	<0.1	0.1	<0.1	0.1	0.1	0.1	ug/L
Dissolved Lithium	<5	5	<5	5	<5	5	<5	5	ug/L
Dissolved Magnesium	13100	4	8620	4	21500	4	18000	4	ug/L
Dissolved Manganese	11	1	2	1	293	1	35	1	ug/L
Dissolved Mercury	<0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L
Dissolved Molybdenum	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Nickel	1	1	<1	1	3	1	2	1	ug/L
Dissolved Niobium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Phosphorus	<50	50	<50	50	65	50	<50	50	ug/L
Dissolved Potassium	4550	100	2680	100	4930	100	7360	100	ug/L
Dissolved Rhodium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Rubidium	3	1	1	1	<1	1	6	1	ug/L
Dissolved Scandium	<1	1	<1	1	4	1	2	1	ug/L
Dissolved Selenium	0.6	0.2	0.3	0.2	0.8	0.2	0.6	0.2	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 540291

Sample Description	S - 11 (4635)		S - 14 (4636)		S - 18 (4637)		Duplicate 1D (4638)		
Sample Date	7/2/2024 11:45 AM		7/2/2024 10:00 AM		7/3/2024 3:05 PM		7/2/2024 3:05 PM		
Lab ID	2025564		2025565		2025566		2025567		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Silicon	1400	600	1200	600	6000	600	2800	600	ug/L
Dissolved Silver	<0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L
Dissolved Sodium	60600	1000*	34500	100	122000	1000*	101000	1000*	ug/L
Dissolved Strontium	225	1	162	1	292	1	301	1	ug/L
Dissolved Sulfur	16200	800	10200	800	16000	800	22000	800	ug/L
Dissolved Tellurium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Thallium	<0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L
Dissolved Thorium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Tin	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Titanium	<1	1	<1	1	2	1	<1	1	ug/L
Dissolved Tungsten	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Uranium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Vanadium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Yttrium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Zinc	15	1	14	1	52	1	16	1	ug/L
Dissolved Zinc [rr]	15	1	13	1					ug/L
Dissolved Zirconium	<1	1	<1	1	<1	1	<1	1	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 540291

Sample Description	Duplicate 518 (4639)		
Sample Date	7/3/2024 3:05 PM		
Lab ID	2025568		
Metals (Dissolved)	Result	MDL	Units
Dissolved Aluminum	6	1	ug/L
Dissolved Antimony	<0.5	0.5	ug/L
Dissolved Arsenic	7	1	ug/L
Dissolved Barium	201	10*	ug/L
Dissolved Beryllium	<0.5	0.5	ug/L
Dissolved Bismuth	<1	1	ug/L
Dissolved Boron	28	2	ug/L
Dissolved Cadmium	<0.1	0.1	ug/L
Dissolved Calcium	119000	500*	ug/L
Dissolved Cerium	<1	1	ug/L
Dissolved Cesium	<1	1	ug/L
Dissolved Chromium	2	1	ug/L
Dissolved Cobalt	0.6	0.1	ug/L
Dissolved Copper	3	1	ug/L
Dissolved Europium	<1	1	ug/L
Dissolved Gallium	6	1	ug/L
Dissolved Iron	454	20	ug/L
Dissolved Lanthanum	<1	1	ug/L
Dissolved Lead	<0.1	0.1	ug/L
Dissolved Lithium	<5	5	ug/L
Dissolved Magnesium	21900	4	ug/L
Dissolved Manganese	291	1	ug/L
Dissolved Mercury	<0.1	0.1	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 540291

Sample Description	Duplicate 518 (4639)		
Sample Date	7/3/2024 3:05 PM		
Lab ID	2025568		
Metals (Dissolved)	Result	MDL	Units
Dissolved Molybdenum	<1	1	ug/L
Dissolved Nickel	3	1	ug/L
Dissolved Niobium	<1	1	ug/L
Dissolved Phosphorus	65	50	ug/L
Dissolved Potassium	4870	100	ug/L
Dissolved Rhodium	<1	1	ug/L
Dissolved Rubidium	<1	1	ug/L
Dissolved Scandium	4	1	ug/L
Dissolved Selenium	1.0	0.2	ug/L
Dissolved Silicon	5800	600	ug/L
Dissolved Silver	<0.1	0.1	ug/L
Dissolved Sodium	123000	1000*	ug/L
Dissolved Strontium	291	1	ug/L
Dissolved Sulfur	16300	800	ug/L
Dissolved Tellurium	<1	1	ug/L
Dissolved Thallium	<0.1	0.1	ug/L
Dissolved Thorium	<1	1	ug/L
Dissolved Tin	<1	1	ug/L
Dissolved Titanium	2	1	ug/L
Dissolved Tungsten	<1	1	ug/L
Dissolved Uranium	<1	1	ug/L
Dissolved Vanadium	<1	1	ug/L
Dissolved Yttrium	<1	1	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 540291

Sample Description	Duplicate 518 (4639)		
Sample Date	7/3/2024 3:05 PM		
Lab ID	2025568		
Metals (Dissolved)	**Result**	**MDL**	**Units**
Dissolved Zinc	57	1	ug/L
Dissolved Zirconium	<1	1	ug/L

Sample Description	S - 1 (4627)		S - 2 (4628)		S - 3 (4629)		S - 4 (4630)		
Sample Date	7/2/2024 3:05 PM		7/4/2024 2:00 PM		7/4/2024 1:40 PM		7/4/2024 2:20 PM		
Lab ID	2025556		2025557		2025558		2025559		
Metals (Total)	**Result**	**MDL**	**Result**	**MDL**	**Result**	**MDL**	**Result**	**MDL**	**Units**
Total Aluminum	247	1	628	1	467	1	95	1	ug/L
Total Arsenic			1.0	0.1					ug/L
Total Arsenic [rr]			0.8	0.1					ug/L
Total Cadmium	<0.005	0.005	<0.005	0.005	<0.005	0.005	<0.005	0.005	ug/L
Total Calcium	87600	500*	88100	500*	91800	500*	83100	500*	ug/L
Total Chromium	1.0	0.1	1.2	0.1	1.2	0.1	1.1	0.1	ug/L
Total Cobalt	2.8	0.1	105.0	0.1	86.9	0.1	0.4	0.1	ug/L
Total Copper	3.3	0.2	4.4	0.2	4.5	0.2	2.8	0.2	ug/L
Total Iron	279	10	163	10	228	10	685	10	ug/L
Total Lead	0.22	0.05	0.31	0.05	0.26	0.05	0.35	0.05	ug/L
Total Magnesium	17100	4	18200	4	19000	4	16400	4	ug/L
Total Manganese	37.0	0.1	35.1	0.1	59.6	0.1	187.0	0.1	ug/L
Total Nickel	1.6	0.5	2.8	0.5	2.6	0.5	1.4	0.5	ug/L
Total Potassium	6980	50	13500	50	11800	50	1970	50	ug/L
Total Potassium [rr]			12900	500*					ug/L
Total Selenium	0.54	0.05	0.80	0.05	0.60	0.05	0.30	0.05	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 540291

Sample Description	S - 1 (4627)		S - 2 (4628)		S - 3 (4629)		S - 4 (4630)		
Sample Date	7/2/2024 3:05 PM		7/4/2024 2:00 PM		7/4/2024 1:40 PM		7/4/2024 2:20 PM		
Lab ID	2025556		2025557		2025558		2025559		
Metals (Total)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Total Silver	<0.01	0.01	<0.01	0.01	<0.01	0.01	<0.01	0.01	ug/L
Total Sodium	104000	500*	130000	500*	131000	500*	78900	500*	ug/L
Total Zinc	28	1	11	1	10	1	5	1	ug/L
Total Zinc [rr]							4	1	ug/L

Sample Description	S - 6 (4632)		S - 7 (4632)		S - 8 (4633)		S - 9 (4634)		
Sample Date	7/4/2024 9:40 AM		7/3/2024 2:15 PM		7/4/2024 9:10 AM		7/2/2024 11:17 AM		
Lab ID	2025560		2025561		2025562		2025563		
Metals (Total)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Total Aluminum	18	1	98	1	35	1	17	1	ug/L
Total Cadmium	<0.005	0.005	<0.005	0.005	<0.005	0.005	<0.005	0.005	ug/L
Total Calcium	82200	500*	90900	500*	76300	500*	42900	50	ug/L
Total Chromium	0.8	0.1	1.1	0.1	1.3	0.1	0.7	0.1	ug/L
Total Cobalt	0.3	0.1	0.3	0.1	0.3	0.1	0.3	0.1	ug/L
Total Copper	1.7	0.2	2.1	0.2	3.6	0.2	1.6	0.2	ug/L
Total Iron	534	10	824	10	530	10	100	10	ug/L
Total Lead	0.06	0.05	0.21	0.05	0.18	0.05	<0.05	0.05	ug/L
Total Magnesium	17100	4	19500	4	13100	4	8670	4	ug/L
Total Manganese	195.0	0.1	125.0	0.1	225.0	0.1	6.7	0.1	ug/L
Total Nickel	1.0	0.5	1.3	0.5	1.6	0.5	<0.5	0.5	ug/L
Total Potassium	1350	50	1310	50	2660	50	2550	50	ug/L
Total Potassium [rr]			1240	50					ug/L
Total Selenium	0.26	0.05	0.15	0.05	0.42	0.05	0.20	0.05	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 540291

Sample Description	S - 6 (4632)		S - 7 (4632)		S - 8 (4633)		S - 9 (4634)		
Sample Date	7/4/2024 9:40 AM		7/3/2024 2:15 PM		7/4/2024 9:10 AM		7/2/2024 11:17 AM		
Lab ID	2025560		2025561		2025562		2025563		
Metals (Total)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Total Silver	<0.01	0.01	<0.01	0.01	<0.01	0.01	<0.01	0.01	ug/L
Total Sodium	65000	500*	69900	500*	101000	500*	37000	50	ug/L
Total Zinc	6	1	7	1	7	1	2	1	ug/L

Sample Description	S - 11 (4635)		S - 14 (4636)		S - 18 (4637)		Duplicate 1D (4638)		
Sample Date	7/2/2024 11:45 AM		7/2/2024 10:00 AM		7/3/2024 3:05 PM		7/2/2024 3:05 PM		
Lab ID	2025564		2025565		2025566		2025567		
Metals (Total)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Total Aluminum	102	1	10	1	177	1	269	1	ug/L
Total Arsenic			0.5	0.1					ug/L
Total Cadmium	<0.005	0.005	<0.005	0.005	0.071	0.005	<0.005	0.005	ug/L
Total Calcium	61800	500*	41000	50	126000	500*	92100	500*	ug/L
Total Chromium	0.8	0.1	0.7	0.1	1.2	0.1	1.1	0.1	ug/L
Total Cobalt	1.3	0.1	0.1	0.1	0.8	0.1	3.0	0.1	ug/L
Total Copper	2.1	0.2	1.4	0.2	5.2	0.2	4.0	0.2	ug/L
Total Iron	176	10	101	10	1090	10	303	10	ug/L
Total Lead	0.10	0.05	<0.05	0.05	0.66	0.05	0.28	0.05	ug/L
Total Magnesium	12100	4	7900	4	21200	4	17500	4	ug/L
Total Manganese	15.0	0.1	4.0	0.1	289.0	0.1	40.3	0.1	ug/L
Total Nickel	0.8	0.5	<0.5	0.5	3.3	0.5	1.6	0.5	ug/L
Total Potassium	4220	50	2270	50	4280	50	7290	50	ug/L
Total Selenium	0.06	0.05	<0.05	0.05	0.74	0.05	0.46	0.05	ug/L
Total Silver	<0.01	0.01	<0.01	0.01	<0.01	0.01	<0.01	0.01	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 540291

Sample Description	S - 11 (4635)		S - 14 (4636)		S - 18 (4637)		Duplicate 1D (4638)		
Sample Date	7/2/2024 11:45 AM		7/2/2024 10:00 AM		7/3/2024 3:05 PM		7/2/2024 3:05 PM		
Lab ID	2025564		2025565		2025566		2025567		
Metals (Total)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Total Sodium	62800	500*	31700	50	125000	500*	107000	500*	ug/L
Total Zinc	3	1	1	1	53	1	30	1	ug/L
Total Zinc [rr]	4	1	2	1					ug/L

Sample Description	Duplicate 518 (4639)		
Sample Date	7/3/2024 3:05 PM		
Lab ID	2025568		
Metals (Total)	Result	MDL	Units
Total Aluminum	125	1	ug/L
Total Cadmium	0.074	0.005	ug/L
Total Calcium	125000	500*	ug/L
Total Chromium	1.2	0.1	ug/L
Total Cobalt	0.7	0.1	ug/L
Total Copper	4.8	0.2	ug/L
Total Iron	929	10	ug/L
Total Lead	0.43	0.05	ug/L
Total Magnesium	21100	4	ug/L
Total Manganese	296.0	0.1	ug/L
Total Nickel	2.4	0.5	ug/L
Total Potassium	4480	50	ug/L
Total Selenium	0.85	0.05	ug/L
Total Silver	<0.01	0.01	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 540291

Sample Description	Duplicate 518 (4639)		
Sample Date	7/3/2024 3:05 PM		
Lab ID	2025568		
Metals (Total)	**Result**	**MDL**	**Units**
Total Sodium	127000	500*	ug/L
Total Zinc	51	1	ug/L

Sample Description	S - 1 (4627)		S - 2 (4628)		S - 3 (4629)		S - 4 (4630)		
Sample Date	7/2/2024 3:05 PM		7/4/2024 2:00 PM		7/4/2024 1:40 PM		7/4/2024 2:20 PM		
Lab ID	2025556		2025557		2025558		2025559		
Oxygen Demand	**Result**	**MDL**	**Result**	**MDL**	**Result**	**MDL**	**Result**	**MDL**	**Units**
BOD (5 day)	<1	1	3.2	1	2.7	1	2.3	1	mg/L

Sample Description	S - 6 (4632)		S - 7 (4632)		S - 8 (4633)		S - 9 (4634)		
Sample Date	7/4/2024 9:40 AM		7/3/2024 2:15 PM		7/4/2024 9:10 AM		7/2/2024 11:17 AM		
Lab ID	2025560		2025561		2025562		2025563		
Oxygen Demand	**Result**	**MDL**	**Result**	**MDL**	**Result**	**MDL**	**Result**	**MDL**	**Units**
BOD (5 day)	1.2	1	1.1	1	2.9	1	1	1	mg/L

Sample Description	S - 11 (4635)		S - 14 (4636)		S - 18 (4637)		Duplicate 1D (4638)		
Sample Date	7/2/2024 11:45 AM		7/2/2024 10:00 AM		7/3/2024 3:05 PM		7/2/2024 3:05 PM		
Lab ID	2025564		2025565		2025566		2025567		
Oxygen Demand	**Result**	**MDL**	**Result**	**MDL**	**Result**	**MDL**	**Result**	**MDL**	**Units**
BOD (5 day)	1.2	1	1.6	1	2	1	3.8	1	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 540291

Sample Description	Duplicate 518 (4639)		
Sample Date	7/3/2024 3:05 PM		
Lab ID	2025568		
Oxygen Demand	Result	MDL	Units
BOD (5 day)	1.4	1	mg/L

Sample Description	S - 1 (4627)		S - 2 (4628)		S - 3 (4629)		S - 4 (4630)		
Sample Date	7/2/2024 3:05 PM		7/4/2024 2:00 PM		7/4/2024 1:40 PM		7/4/2024 2:20 PM		
Lab ID	2025556		2025557		2025558		2025559		
Solids	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Total Suspended Solids	2.00	0.67	3.70	0.67	3.30	0.67	6.00	0.67	mg/L

Sample Description	S - 6 (4632)		S - 7 (4632)		S - 8 (4633)		S - 9 (4634)		
Sample Date	7/4/2024 9:40 AM		7/3/2024 2:15 PM		7/4/2024 9:10 AM		7/2/2024 11:17 AM		
Lab ID	2025560		2025561		2025562		2025563		
Solids	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Total Suspended Solids	1.70	0.67	11.00	0.67	2.00	0.67	1.70	0.67	mg/L

Sample Description	S - 11 (4635)		S - 14 (4636)		S - 18 (4637)		Duplicate 1D (4638)		
Sample Date	7/2/2024 11:45 AM		7/2/2024 10:00 AM		7/3/2024 3:05 PM		7/2/2024 3:05 PM		
Lab ID	2025564		2025565		2025566		2025567		
Solids	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Total Suspended Solids	1.00	0.67	<0.67	0.67	2.30	0.67	1.00	0.67	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 540291

Sample Description	Duplicate 518 (4639)		
Sample Date	7/3/2024 3:05 PM		
Lab ID	2025568		
Solids	Result	MDL	Units
Total Suspended Solids	10.00	0.67	mg/L

LEGEND

Dates: Dates are formatted as mm/dd/year throughout this report.

[rr]: After a parameter name indicates a re-run of that parameter. If multiple re-runs exist they are suffixed by a number. Sample may not have been handled according to the recommended temperature, hold time and head space requirements of the method after the initial analysis.

MDL: Method detection limit or minimum reporting limit.

[ ]: Results for laboratory replicates are shown in square brackets immediately below the associated sample result for ease of comparison.

Organic Soil Analysis: Data reported for organic analysis in soils samples are corrected for moisture content.

Quality Control: All associated Quality Control data is available on request.

Field Data: Reports containing Field Parameters represent data that has been collected and provided by the client. Testmark is not responsible for the validity of this data which may be used in subsequent calculations.

Sample Condition Deviations: A noted sample condition deviation may affect the validity of the result. Results apply to the sample(s) as received.

Reproduction of Report: Report shall not be reproduced, except in full, without the approval of Testmark Laboratories Ltd.

ICPMS Dustfall Insoluble: The ICPMS Dustfall Insoluble Portion method analyzes only the particulate matter from the Dustfall Sampler which is retained on the analysis filter during the Dustfall method.

Regulation Comparisons: Disclaimer: Please note that regulation criteria are provided for comparative purposes, however the onus on ensuring the validity of this comparison rests with the client.

*Dilution: In the MDL column an asterisk (*) indicates a sample dilution was performed.

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

TESTMARK Laboratories Ltd.
Committed to Quality and Service

CERTIFICATE OF ANALYSIS

Client:	Hannah Curry	Work Order Number:	531577
Company:	City of Orillia - Waste Diversion Site	PO #:	83585
Address:	40 Kitchener St. Orillia, ON, L3V 6Z9	Regulation:	Information not provided
		Project #:	Spring WDS Sampling Drainage
Phone:	(705) 325-2394	DWS #:	
Email:	hcurry@orillia.ca	Sampled By:	Hannah Curry
Date Order Received:	4/16/2024	Analysis Started:	4/16/2024
Arrival Temperature:	11.2 C	Analysis Completed:	4/25/2024

WORK ORDER SUMMARY

ANALYSES WERE PERFORMED ON THE FOLLOWING SAMPLES. THE RESULTS RELATE ONLY TO THE ITEMS TESTED.

Sample Description	Lab ID	Matrix	Type	Comments	Date Collected	Time Collected
D-1 (4585)	1994691	Surface Water	None		4/12/2024	11:00 AM
D-3 (4587)	1994692	Surface Water	None		4/12/2024	8:57 AM
D-5 (4589)	1994693	Surface Water	None		4/12/2024	9:45 AM
D-6 (4590)	1994694	Surface Water	None		4/12/2024	10:24 AM
D-2	1994695	Surface Water	None		4/12/2024	9:22 AM

METHODS AND INSTRUMENTATION

THE FOLLOWING METHODS WERE USED FOR YOUR SAMPLE(S):

Method	Lab	Description	Reference
Alkalinity (A1.0)	Garson	Determination of Alkalinity by Titration	Modified from APHA-2320B
Ammonia Water (A42)	Kirkland Lake	Determination of Ammonia/Ammonium in Water	Modified from EPA 350.1
Anions Water (mg/L by IC) (A5)	Garson	Determination of Anions in Water by Ion Chromatography	Modified from SW846-9056A
BOD (A3)	Mississauga	Determination of Biochemical Oxygen Demand (BOD) 5-Day	Modified from SM-5210 B
Carbonate (A94)	Garson	Determination of Carbonate and Bi-Carbonate	Modified from APHA-2320
Conductivity of Water (A12)	Mississauga	Determination of Conductivity in Water at 25°C	Modified from SM 2510 B
DIC Water (A55)	Mississauga	Determination of Dissolved Inorganic Carbon in Water	Modified from SM-5310 C

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 531577

Method	Lab	Description	Reference
DOC Water (A55.1)	Mississauga	Determination of Dissolved Organic Carbon in Water	Modified from SM-5310 C
Field pH (R112)	Mississauga	Client Supplied Field Determination of pH of Water	Field Test
Field Temp (R113)	Mississauga	Client Supplied Field Determination of Temperature of Water	Field Test
ICPMS Dis. Water (0.2um) (A13.3)	Garson	Determination of Dissolved Metals in Water by ICP/MS -> Lab-Filtered	Modified from SW846-6020A
ICPMS Dis. Water (A13.3)	Garson	Determination of Dissolved Metals in Water by ICP/MS -> Lab-Filtered	Modified from SW846-6020A
ICPMS Reg. Water (A13)	Garson	Determination of Metals in Water by ICP/MS	Modified from SW846-6020A
ICPMS Tot. Water (A13.2)	Garson	Determination of Total Metals in Water by ICP/MS with Digestion	Modified from SW846-6020A
Ion Balance (A91)	Garson	Calculation of Ion Balance	Modified from APHA-1030E
OP Water (A23.1)	Mississauga	Determination of Ortho-Phosphate in Water.	Modified from EPA 365.3 and ESS 310.2.
Organic Nitrogen (A58)	Garson	Determination of Organic Nitrogen	Modified from APHA-4500
pH of Water (A2.0)	Mississauga	Determination of Water pH by Ion Selective Electrode	Modified from APHA-4500H+ B
Phenols 4AAP (T38)	Mississauga	Determination of Total Phenols by 4AAP	Modified from APHA-5530
Reg. Hardness (A13)	Garson	Determination of Total Hardness	Modified from APHA-2340B
TKN Water Dig. (A58)	Garson	Determination of Total Kjeldahl Nitrogen in Waters with Block Digestion.	Modified from SM-4500 NORG-D
TP Water (A23.2)	Kirkland Lake	Determination of Total Phosphorus in Water.	Modified from EPA 365.3 and ESS 310.2,
TSS (A27)	Mississauga	Determination of Total Suspended Solids in water by gravimetry	Modified from SM-2540

This report has been approved by:

Marc Creighton
Laboratory Director

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 531577

WORK ORDER RESULTS

Sample Description	D - 1 (4585)		D - 3 (4587)		D - 5 (4589)		D - 6 (4590)		
Sample Date	4/12/2024 11:00 AM		4/12/2024 8:57 AM		4/12/2024 9:45 AM		4/12/2024 10:24 AM		
Lab ID	1994691		1994692		1994693		1994694		
Anions	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Chloride	51.7	0.2	21.6	0.2	96.1	0.2	39.4	0.2	mg/L
Nitrate (as N)	0.66	0.05	4.45	0.05	<0.05	0.05	<0.05	0.05	mg/L
Nitrite (as N)	<0.05	0.05	<0.05	0.05	<0.05	0.05	<0.05	0.05	mg/L
Sulphate	22.4	0.5	25.4	0.5	13.4	0.5	13.1	0.5	mg/L

Sample Description	D - 2		
Sample Date	4/12/2024 9:22 AM		
Lab ID	1994695		
Anions	Result	MDL	Units
Chloride	0.8	0.2	mg/L
Nitrate (as N)	0.88	0.05	mg/L
Nitrite (as N)	<0.05	0.05	mg/L
Sulphate	3.1	0.5	mg/L

Sample Description	D - 1 (4585)		D - 3 (4587)		D - 5 (4589)		D - 6 (4590)		
Sample Date	4/12/2024 11:00 AM		4/12/2024 8:57 AM		4/12/2024 9:45 AM		4/12/2024 10:24 AM		
Lab ID	1994691		1994692		1994693		1994694		
Field Parameters	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Field pH	7.3	N/A	6.88	N/A	7.03	N/A	7	N/A	pH
Field Temp	12	N/A	8.6	N/A	11.8	N/A	11.2	N/A	°C

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 531577

Sample Description	D - 2		
Sample Date	4/12/2024 9:22 AM		
Lab ID	1994695		
Field Parameters	**Result**	**MDL**	**Units**
Field pH	7.39	N/A	pH
Field Temp	11	N/A	°C

Sample Description	D - 1 (4585)		D - 3 (4587)		D - 5 (4589)		D - 6 (4590)		
Sample Date	4/12/2024 11:00 AM		4/12/2024 8:57 AM		4/12/2024 9:45 AM		4/12/2024 10:24 AM		
Lab ID	1994691		1994692		1994693		1994694		
General Chemistry	**Result**	**MDL**	**Result**	**MDL**	**Result**	**MDL**	**Result**	**MDL**	**Units**
Ammonia (as N)	0.80	0.01	0.46	0.01	0.36	0.01	0.02	0.01	mg/L
Anion Sum (Calc.)	6.32	N/A	6.35	N/A	7.43	N/A	4.32	N/A	meq
Bicarbonate (Calc.)	263	1	309	1	267	1	177	1	mg/L as CaCO3
Carbonate (Calc.)	2	1	2	1	2	1	1	1	mg/L as CaCO3
Cation Sum (Calc.)	7.22	N/A	7.85	N/A	8.06	N/A	5.04	N/A	meq
Conductivity	715	1	724	1	820	1	492	1	µS/cm
Dissolved Inorganic Carbon	60	4*	71	4*	63	4*	43	4*	mg/L
Dissolved Organic Carbon	24	2*	20	2*	5.6	0.8*	3.6	0.4	mg/L
Ion Balance (Calc.)	6.65	N/A	10.6	N/A	4.07	N/A	7.69	N/A	%
Organic Nitrogen (as N) (Calc.)	2.0	0.2	2.2	0.2	<0.2	0.2	0.2	0.2	mg/L
Orthophosphate (as P)	0.089	0.005	0.024	0.005	0.005	0.005	0.062	0.005	mg/L
pH	7.93	N/A	7.86	N/A	7.91	N/A	7.81	N/A	pH
Total Alkalinity	265	2	311	2	269	2	178	2	mg/L as CaCO3
Total Hardness (as CaCO3) (Calc.)	228.0	0.1	266.0	0.1	260.0	0.1	178.0	0.1	mg/L
Total Kjeldahl Nitrogen	2.7	0.2*	2.7	0.2*	0.4	0.2*	0.2	0.2*	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 531577

Sample Description	D - 1 (4585)		D - 3 (4587)		D - 5 (4589)		D - 6 (4590)		
Sample Date	4/12/2024 11:00 AM		4/12/2024 8:57 AM		4/12/2024 9:45 AM		4/12/2024 10:24 AM		
Lab ID	1994691		1994692		1994693		1994694		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Total Phenols	0.0022	0.0004	0.0018	0.0004	0.0016	0.0004	0.0012	0.0004	mg/L
Total Phosphorus (as P)	0.196	0.002	0.094	0.002	0.037	0.002	0.127	0.002	mg/L

Sample Description	D - 2		
Sample Date	4/12/2024 9:22 AM		
Lab ID	1994695		
General Chemistry	Result	MDL	Units
Ammonia (as N)	0.03	0.01	mg/L
Anion Sum (Calc.)	2.49	N/A	meq
Bicarbonate (Calc.)	143	1	mg/L as CaCO3
Carbonate (Calc.)	1	1	mg/L as CaCO3
Cation Sum (Calc.)	3.11	N/A	meq
Conductivity	306	1	µS/cm
Dissolved Inorganic Carbon	36	4*	mg/L
Dissolved Organic Carbon	6.7	0.8*	mg/L
Ion Balance (Calc.)	11.1	N/A	%
Organic Nitrogen (as N) (Calc.)	0.4	0.2	mg/L
Orthophosphate (as P)	0.059	0.005	mg/L
pH	7.97	N/A	pH
Total Alkalinity	144	2	mg/L as CaCO3
Total Hardness (as CaCO3) (Calc.)	138.0	0.1	mg/L
Total Kjeldahl Nitrogen	0.4	0.2*	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 531577

Sample Description	D - 2		
Sample Date	4/12/2024 9:22 AM		
Lab ID	1994695		
General Chemistry	**Result**	**MDL**	**Units**
Total Phenols	0.0013	0.0004	mg/L
Total Phosphorus (as P)	0.159	0.002	mg/L

Sample Description	D - 1 (4585)		D - 3 (4587)		D - 5 (4589)		D - 6 (4590)		
Sample Date	4/12/2024 11:00 AM		4/12/2024 8:57 AM		4/12/2024 9:45 AM		4/12/2024 10:24 AM		
Lab ID	1994691		1994692		1994693		1994694		
Metals (Dissolved - 0.2um)	**Result**	**MDL**	**Result**	**MDL**	**Result**	**MDL**	**Result**	**MDL**	**Units**
Dissolved Aluminum	9	1	19	1	2	1	6	1	ug/L

Sample Description	D - 2		
Sample Date	4/12/2024 9:22 AM		
Lab ID	1994695		
Metals (Dissolved - 0.2um)	**Result**	**MDL**	**Units**
Dissolved Aluminum	4	1	ug/L

Sample Description	D - 1 (4585)		D - 3 (4587)		D - 5 (4589)		D - 6 (4590)		
Sample Date	4/12/2024 11:00 AM		4/12/2024 8:57 AM		4/12/2024 9:45 AM		4/12/2024 10:24 AM		
Lab ID	1994691		1994692		1994693		1994694		
Metals (Dissolved)	**Result**	**MDL**	**Result**	**MDL**	**Result**	**MDL**	**Result**	**MDL**	**Units**
Dissolved Aluminum	15	1	47	1	8	1	54	1	ug/L
Dissolved Antimony	0.7	0.5	3.1	0.5	<0.5	0.5	<0.5	0.5	ug/L
Dissolved Arsenic	2	1	8	1	3	1	2	1	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 531577

Sample Description	D - 1 (4585)		D - 3 (4587)		D - 5 (4589)		D - 6 (4590)		
Sample Date	4/12/2024 11:00 AM		4/12/2024 8:57 AM		4/12/2024 9:45 AM		4/12/2024 10:24 AM		
Lab ID	1994691		1994692		1994693		1994694		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Barium	75	1	79	1	184	10*	45	1	ug/L
Dissolved Beryllium	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Dissolved Bismuth	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Boron	151	2	380	2	63	2	9	2	ug/L
Dissolved Cadmium	<0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L
Dissolved Calcium	72200	500*	91600	500*	80900	500*	66600	500*	ug/L
Dissolved Cerium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Cesium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Chromium	6	1	4	1	<1	1	<1	1	ug/L
Dissolved Cobalt	0.7	0.1	0.9	0.1	0.6	0.1	0.3	0.1	ug/L
Dissolved Copper	7	1	19	1	2	1	2	1	ug/L
Dissolved Europium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Gallium	2	1	2	1	5	1	1	1	ug/L
Dissolved Iron	322	20	378	20	381	20	287	20	ug/L
Dissolved Lanthanum	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Lead	0.2	0.1	0.8	0.1	<0.1	0.1	0.2	0.1	ug/L
Dissolved Lithium	<5	5	<5	5	<5	5	<5	5	ug/L
Dissolved Magnesium	12200	4	11300	4	13200	4	7540	4	ug/L
Dissolved Manganese	3	1	57	1	187	1	16	1	ug/L
Dissolved Mercury	<0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L
Dissolved Molybdenum	4	1	3	1	1	1	<1	1	ug/L
Dissolved Nickel	4	1	8	1	3	1	2	1	ug/L
Dissolved Niobium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Phosphorus	97	50	70	50	<50	50	94	50	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 531577

Sample Description	D - 1 (4585)		D - 3 (4587)		D - 5 (4589)		D - 6 (4590)		
Sample Date	4/12/2024 11:00 AM		4/12/2024 8:57 AM		4/12/2024 9:45 AM		4/12/2024 10:24 AM		
Lab ID	1994691		1994692		1994693		1994694		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Potassium	44500	1000*	21400	100	16800	100	3050	100	ug/L
Dissolved Rhodium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Rubidium	9	1	9	1	1	1	<1	1	ug/L
Dissolved Scandium	3	1	3	1	3	1	3	1	ug/L
Dissolved Selenium	1.3	0.2	1.2	0.2	0.5	0.2	0.5	0.2	ug/L
Dissolved Silicon	5800	600	5300	600	4400	600	4300	600	ug/L
Dissolved Silver	<0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L
Dissolved Sodium	33000	100	40700	100	56800	1000*	23100	100	ug/L
Dissolved Strontium	251	1	271	1	194	1	120	1	ug/L
Dissolved Sulfur	10700	800	13200	800	7000	800	7300	800	ug/L
Dissolved Tellurium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Thallium	<0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L
Dissolved Thorium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Tin	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Titanium	4	1	5	1	2	1	4	1	ug/L
Dissolved Tungsten	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Uranium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Vanadium	2	1	<1	1	<1	1	<1	1	ug/L
Dissolved Yttrium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Zinc	9	1	42	1	4	1	7	1	ug/L
Dissolved Zirconium	<1	1	<1	1	<1	1	<1	1	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 531577

Sample Description	D - 2
Sample Date	4/12/2024 9:22 AM
Lab ID	1994695

Metals (Dissolved)	Result	MDL	Units
Dissolved Aluminum	7	1	ug/L
Dissolved Antimony	<0.5	0.5	ug/L
Dissolved Arsenic	<1	1	ug/L
Dissolved Barium	23	1	ug/L
Dissolved Beryllium	<0.5	0.5	ug/L
Dissolved Bismuth	<1	1	ug/L
Dissolved Boron	28	2	ug/L
Dissolved Cadmium	<0.1	0.1	ug/L
Dissolved Calcium	50900	500*	ug/L
Dissolved Cerium	<1	1	ug/L
Dissolved Cesium	<1	1	ug/L
Dissolved Chromium	3	1	ug/L
Dissolved Cobalt	0.3	0.1	ug/L
Dissolved Copper	2	1	ug/L
Dissolved Europium	<1	1	ug/L
Dissolved Gallium	<1	1	ug/L
Dissolved Iron	212	20	ug/L
Dissolved Lanthanum	<1	1	ug/L
Dissolved Lead	<0.1	0.1	ug/L
Dissolved Lithium	<5	5	ug/L
Dissolved Magnesium	4560	4	ug/L
Dissolved Manganese	<1	1	ug/L
Dissolved Mercury	<0.1	0.1	ug/L
Dissolved Molybdenum	<1	1	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 531577

Sample Description	D - 2
Sample Date	4/12/2024 9:22 AM
Lab ID	1994695

Metals (Dissolved)	Result	MDL	Units
Dissolved Nickel	2	1	ug/L
Dissolved Niobium	<1	1	ug/L
Dissolved Phosphorus	120	50	ug/L
Dissolved Potassium	7930	100	ug/L
Dissolved Rhodium	<1	1	ug/L
Dissolved Rubidium	3	1	ug/L
Dissolved Scandium	1	1	ug/L
Dissolved Selenium	0.3	0.2	ug/L
Dissolved Silicon	1500	600	ug/L
Dissolved Silver	<0.1	0.1	ug/L
Dissolved Sodium	1540	100	ug/L
Dissolved Strontium	127	1	ug/L
Dissolved Sulfur	3100	800	ug/L
Dissolved Tellurium	<1	1	ug/L
Dissolved Thallium	<0.1	0.1	ug/L
Dissolved Thorium	<1	1	ug/L
Dissolved Tin	<1	1	ug/L
Dissolved Titanium	1	1	ug/L
Dissolved Tungsten	<1	1	ug/L
Dissolved Uranium	<1	1	ug/L
Dissolved Vanadium	1	1	ug/L
Dissolved Yttrium	<1	1	ug/L
Dissolved Zinc	2	1	ug/L
Dissolved Zirconium	<1	1	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 531577

Sample Description	D - 1 (4585)		D - 3 (4587)		D - 5 (4589)		D - 6 (4590)		
Sample Date	4/12/2024 11:00 AM		4/12/2024 8:57 AM		4/12/2024 9:45 AM		4/12/2024 10:24 AM		
Lab ID	1994691		1994692		1994693		1994694		
Metals (Total)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Total Aluminum	306	1	141	1	142	1	368	1	ug/L
Total Barium	75.3	0.1	69.5	0.1	169	1*	44.0	0.1	ug/L
Total Cadmium	0.046	0.005	0.069	0.005	0.014	0.005	0.025	0.005	ug/L
Total Calcium	74500	500*	88500	500*	79200	500*	64400	500*	ug/L
Total Chromium	1.6	0.1	3.3	0.1	0.6	0.1	0.7	0.1	ug/L
Total Cobalt	0.8	0.1	0.8	0.1	0.4	0.1	0.4	0.1	ug/L
Total Copper	6.3	0.2	19.0	0.2	1.7	0.2	2.1	0.2	ug/L
Total Iron	788	10	384	10	762	10	571	10	ug/L
Total Lead	1.57	0.05	1.47	0.05	0.22	0.05	1.02	0.05	ug/L
Total Magnesium	12000	4	11300	4	13400	4	7500	4	ug/L
Total Manganese	38.4	0.1	60.7	0.1	186.0	0.1	28.8	0.1	ug/L
Total Nickel	3.3	0.5	6.3	0.5	0.9	0.5	1.2	0.5	ug/L
Total Potassium	44400	500*	20800	50	14200	50	2790	50	ug/L
Total Selenium	0.40	0.05	0.37	0.05	0.24	0.05	0.25	0.05	ug/L
Total Silver	0.02	0.01	0.02	0.01	0.01	0.01	0.01	0.01	ug/L
Total Sodium	29200	500*	37700	500*	54900	500*	22300	50	ug/L
Total Zinc	14	1	33	1	3	1	8	1	ug/L

Sample Description	D - 2		
Sample Date	4/12/2024 9:22 AM		
Lab ID	1994695		
Metals (Total)	Result	MDL	Units
Total Aluminum	71	1	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 531577

Sample Description	D - 2
Sample Date	4/12/2024 9:22 AM
Lab ID	1994695

Metals (Total)	Result	MDL	Units
Total Barium	21.0	0.1	ug/L
Total Cadmium	0.032	0.005	ug/L
Total Calcium	51800	50	ug/L
Total Chromium	0.4	0.1	ug/L
Total Cobalt	0.2	0.1	ug/L
Total Copper	1.6	0.2	ug/L
Total Iron	295	10	ug/L
Total Lead	0.08	0.05	ug/L
Total Magnesium	4430	4	ug/L
Total Manganese	5.3	0.1	ug/L
Total Nickel	<0.5	0.5	ug/L
Total Potassium	7010	50	ug/L
Total Selenium	<0.05	0.05	ug/L
Total Silver	<0.01	0.01	ug/L
Total Sodium	1450	50	ug/L
Total Zinc	1	1	ug/L

Sample Description	D - 1 (4585)		D - 3 (4587)		D - 5 (4589)		D - 6 (4590)		
Sample Date	4/12/2024 11:00 AM		4/12/2024 8:57 AM		4/12/2024 9:45 AM		4/12/2024 10:24 AM		
Lab ID	1994691		1994692		1994693		1994694		
Oxygen Demand	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
BOD (5 day)	4.5	2	2.9	2	<2	2	2.4	2	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 531577

Sample Description	D - 2		
Sample Date	4/12/2024 9:22 AM		
Lab ID	1994695		
Oxygen Demand	Result	MDL	Units
BOD (5 day)	2.4	2	mg/L

Sample Description	D - 1 (4585)		D - 3 (4587)		D - 5 (4589)		D - 6 (4590)		
Sample Date	4/12/2024 11:00 AM		4/12/2024 8:57 AM		4/12/2024 9:45 AM		4/12/2024 10:24 AM		
Lab ID	1994691		1994692		1994693		1994694		
Solids	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Total Suspended Solids	8.33	0.67	4.00	0.67	50.0	1.3	15.30	0.67	mg/L

Sample Description	D - 2		
Sample Date	4/12/2024 9:22 AM		
Lab ID	1994695		
Solids	Result	MDL	Units
Total Suspended Solids	4.30	0.67	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 531577

LEGEND

Dates: Dates are formatted as mm/dd/year throughout this report.

[rr]: After a parameter name indicates a re-run of that parameter. If multiple re-runs exist they are suffixed by a number. Sample may not have been handled according to the recommended temperature, hold time and head space requirements of the method after the initial analysis.

MDL: Method detection limit or minimum reporting limit.

[ ]: Results for laboratory replicates are shown in square brackets immediately below the associated sample result for ease of comparison.

Organic Soil Analysis: Data reported for organic analysis in soils samples are corrected for moisture content.

Quality Control: All associated Quality Control data is available on request.

Field Data: Reports containing Field Parameters represent data that has been collected and provided by the client. Testmark is not responsible for the validity of this data which may be used in subsequent calculations.

Sample Condition Deviations: A noted sample condition deviation may affect the validity of the result. Results apply to the sample(s) as received.

Reproduction of Report: Report shall not be reproduced, except in full, without the approval of Testmark Laboratories Ltd.

ICPMS Dustfall Insoluble: The ICPMS Dustfall Insoluble Portion method analyzes only the particulate matter from the Dustfall Sampler which is retained on the analysis filter during the Dustfall method.

Regulation Comparisons: Disclaimer: Please note that regulation criteria are provided for comparative purposes, however the onus on ensuring the validity of this comparison rests with the client.

*Dilution: In the MDL column an asterisk (*) indicates a sample dilution was performed.

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

TESTMARK Laboratories Ltd.
Committed to Quality and Service

CERTIFICATE OF ANALYSIS

Client:	Hannah Curry	Work Order Number:	531961
Company:	City of Orillia - Waste Diversion Site	PO #:	83585
Address:	40 Kitchener St.	Regulation:	Information not provided
	Orillia, ON, L3V 6Z9	Project #:	Spring WDS Sampling GW Inside
Phone:	(705) 325-2394	DWS #:	
Email:	hcurry@orillia.ca	Sampled By:	Hannah Curry
Date Order Received:	4/19/2024	Analysis Started:	4/19/2024
Arrival Temperature:	9.8 C	Analysis Completed:	4/29/2024

WORK ORDER SUMMARY

ANALYSES WERE PERFORMED ON THE FOLLOWING SAMPLES. THE RESULTS RELATE ONLY TO THE ITEMS TESTED.

Sample Description	Lab ID	Matrix	Type	Comments	Date Collected	Time Collected
BH3-IR (4591)	1996016	Ground Water	None		4/18/2024	1:10 PM
BH3-IIR (4592)	1996017	Ground Water	None		4/18/2024	12:43 PM
BH5-IR (4593)	1996018	Ground Water	None		4/18/2024	3:00 PM
BH5-IIIR (4594)	1996019	Ground Water	None		4/18/2024	3:18 PM
BH6R (4595)	1996020	Ground Water	None		4/15/2024	2:46 PM
BH16-I (4596)	1996021	Ground Water	None		4/15/2024	10:19 AM
BH16-IVR (4597)	1996022	Ground Water	None		4/15/2024	10:40 AM
BH17-III (4598)	1996023	Ground Water	None		4/16/2024	1:45 PM
BH17-IVR (4599)	1996024	Ground Water	None		4/16/2024	2:14 PM
BH20R (4600)	1996025	Ground Water	None		4/17/2024	2:52 PM
BH21-IR (4601)	1996026	Ground Water	None		4/17/2024	10:26 AM
BH21-IIR (4602)	1996027	Ground Water	None		4/17/2024	10:47 AM
BH22-IR (4603)	1996028	Ground Water	None		4/16/2024	12:32 PM
BH22-IIR (4604)	1996029	Ground Water	None		4/16/2024	1:15 PM
BH26 (4605)	1996030	Ground Water	None		4/16/2024	11:56 AM
BH30-I (4606)	1996031	Ground Water	None		4/15/2024	12:30 PM
BH30-II (4607)	1996032	Ground Water	None		4/15/2024	12:46 PM

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 531961

Sample Description	Lab ID	Matrix	Type	Comments	Date Collected	Time Collected
Duplicate BH30-ID (4608)	1996033	Ground Water	None		4/15/2024	12:30 PM
Duplicate BH505 - IR (4609)	1996034	Ground Water	None		4/18/2024	3:00 PM
Travel Blank (4610)	1996035	Ground Water	None		4/15/2024	
Field Blank BH 16 - IVR (4611)	1996036	Ground Water	None		4/15/2024	10:45 AM

METHODS AND INSTRUMENTATION

THE FOLLOWING METHODS WERE USED FOR YOUR SAMPLE(S):

Method	Lab	Description	Reference
Alkalinity (A1.0)	Garson	Determination of Alkalinity by Titration	Modified from APHA-2320B
Ammonia Water (A42)	Kirkland Lake	Determination of Ammonia/Ammonium in Water	Modified from EPA 350.1
Ammonium Water (A42.3)	Kirkland Lake	Calculation of Ammonium in Water	Modified from APHA 4500
Anions Water (mg/L by IC) (A5)	Garson	Determination of Anions in Water by Ion Chromatography	Modified from SW846-9056A
BTEX/F1 Water (A127)	Mississauga	Determination of PHC BTEX/F1 in Water - Tier 1 CCME	Modified from CWS PHC Tier I CCME
Carbonate (A94)	Garson	Determination of Carbonate and Bi-Carbonate	Modified from APHA-2320
Conductivity of Water (A12)	Garson	Determination of Conductivity in Water at 25°C	Modified from SM 2510 B
DIC Water (A55)	Mississauga	Determination of Dissolved Inorganic Carbon in Water	Modified from SM-5310 C
DOC Water (A55.1)	Mississauga	Determination of Dissolved Organic Carbon in Water	Modified from SM-5310 C
Field pH (R112)	Mississauga	Client Supplied Field Determination of pH of Water	Field Test
Field Temp (R113)	Mississauga	Client Supplied Field Determination of Temperature of Water	Field Test
ICPMS Dis. Water FF (A13)	Garson	Determination of Dissolved Metals in Water by ICP/MS -> Field-Filtered	Modified from SW846-6020A
ICPMS Dis. Water FF (A13.3)	Garson	Determination of Dissolved Metals in Water by ICP/MS -> Field-Filtered	Modified from SW846-6020A
ICPMS Reg. Water (A13)	Garson	Determination of Metals in Water by ICP/MS	Modified from SW846-6020A
Ion Balance (A91)	Garson	Calculation of Ion Balance	Modified from APHA-1030E
OP Water (A23.1)	Mississauga	Determination of Ortho-Phosphate in Water.	Modified from EPA 365.3 and ESS 310.2.
Organic Nitrogen (A58)	Garson	Determination of Organic Nitrogen	Modified from APHA-4500
pH of Water (A2.0)	Garson	Determination of Water pH by Ion Selective Electrode	Modified from APHA-4500H+ B
Phenols 4AAP (T38)	Mississauga	Determination of Total Phenols by 4AAP	Modified from APHA-5530
Reg. Hardness (A13)	Garson	Determination of Total Hardness	Modified from APHA-2340B
TKN Water Dig. (A58)	Garson	Determination of Total Kjeldahl Nitrogen in Waters with Block Digestion.	Modified from SM-4500 NORG-D

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 531961

Method	Lab	Description	Reference
TP Water (A23.2)	Kirkland Lake	Determination of Total Phosphorus in Water.	Modified from EPA 365.3 and ESS 310.2,
Un-Ionized NH3 (A42.4)	Kirkland Lake	Calculation of Un-Ionized Ammonia, based on Client Field pH and Temperature	Modified from APHA-4500
VOC Water (A14)	Mississauga	Determination of Volatile Organic Compounds in Water by P&T/GC/MS	Modified from EPA SW846-8260 B

This report has been approved by:

Marc Creighton
Laboratory Director

WORK ORDER RESULTS

Sample Description	BH3 - IR (4591)		BH3 - IIR (4592)		BH5 - IR (4593)		BH5 - IIIR (4594)		
Sample Date	4/18/2024 1:10 PM		4/18/2024 12:43 PM		4/18/2024 3:00 PM		4/18/2024 3:18 PM		
Lab ID	1996016		1996017		1996018		1996019		
Anions	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Chloride	243	2*	632	2*	143	1*	113.0	0.8*	mg/L
Nitrate (as N)	<0.5	0.5*	<0.5	0.5*	<0.25	0.25*	<0.2	0.2*	mg/L
Nitrite (as N)	<0.5	0.5*	<0.5	0.5*	<0.25	0.25*	<0.2	0.2*	mg/L
Sulphate	7	5*	<5	5*	18.0	2.5*	16	2*	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 531961

Sample Description	BH6R (4595)		BH16 - I (4596)		BH16 - IVR (4597)		BH17 - III (4598)		
Sample Date	4/15/2024 2:46 PM		4/15/2024 10:19 AM		4/15/2024 10:40 AM		4/16/2024 1:45 PM		
Lab ID	1996020		1996021		1996022		1996023		
Anions	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Chloride	79	1*	196	1*	142	1*	223.0	0.8*	mg/L
Nitrate (as N)	<0.25	0.25*	<0.25	0.25*	<0.25	0.25*	<0.2	0.2*	mg/L
Nitrite (as N)	<0.25	0.25*	<0.25	0.25*	<0.25	0.25*	<0.2	0.2*	mg/L
Sulphate	<2.5	2.5*	<2.5	2.5*	3.3	2.5*	27	2*	mg/L

Sample Description	BH17 - IVR (4599)		BH20R (4600)		BH21 - IR (4601)		BH21 - IIR (4602)		
Sample Date	4/16/2024 2:14 PM		4/17/2024 2:52 PM		4/17/2024 10:26 AM		4/17/2024 10:47 AM		
Lab ID	1996024		1996025		1996026		1996027		
Anions	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Chloride	53.0	0.4*	225	2*	109	1*	70	1*	mg/L
Nitrate (as N)	4.9	0.1*	<0.5	0.5*	<0.25	0.25*	<0.25	0.25*	mg/L
Nitrite (as N)	<0.1	0.1*	<0.5	0.5*	<0.25	0.25*	<0.25	0.25*	mg/L
Sulphate	15	1*	<5	5*	<2.5	2.5*	14.0	2.5*	mg/L

Sample Description	BH22 - IR (4603)		BH22 - IIR (4604)		BH26 (4605)		BH30 - I (4606)		
Sample Date	4/16/2024 12:32 PM		4/16/2024 1:15 PM		4/16/2024 11:56 AM		4/15/2024 12:30 PM		
Lab ID	1996028		1996029		1996030		1996031		
Anions	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Chloride	165.0	0.6*	166.0	0.6*	48.0	0.2	225	1*	mg/L
Nitrate (as N)	<0.15	0.15*	<0.15	0.15*	7.96	0.05	<0.25	0.25*	mg/L
Nitrite (as N)	<0.15	0.15*	<0.15	0.15*	<0.05	0.05	<0.25	0.25*	mg/L
Sulphate	12.0	1.5*	<1.5	1.5*	9.3	0.5	7.8	2.5*	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 531961

Sample Description	BH30 - II (4607)		Duplicate BH30 - ID (4608)		Duplicate BH505 - IR (4609)		Travel Blank (4610)		
Sample Date	4/15/2024 12:46 PM		4/15/2024 12:30 PM		4/18/2024 3:00 PM		4/15/2024 12:00 AM		
Lab ID	1996032		1996033		1996034		1996035		
Anions	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Bromide							<0.05	0.05	mg/L
Chloride	45.3	0.8*	221	1*	144.0	0.6*	0.3	0.2	mg/L
Fluoride							<0.05	0.05	mg/L
Nitrate (as N)	<0.2	0.2*	<0.25	0.25*	<0.15	0.15*	<0.05	0.05	mg/L
Nitrite (as N)	<0.2	0.2*	<0.25	0.25*	<0.15	0.15*	<0.05	0.05	mg/L
Sulphate	4	2*	7.8	2.5*	20.9	1.5*	<0.5	0.5	mg/L

Sample Description	Field Blank BH 16 - IVR (4611)		
Sample Date	4/15/2024 10:45 AM		
Lab ID	1996036		
Anions	Result	MDL	Units
Bromide	<0.05	0.05	mg/L
Chloride	0.3	0.2	mg/L
Fluoride	<0.05	0.05	mg/L
Nitrate (as N)	<0.05	0.05	mg/L
Nitrite (as N)	<0.05	0.05	mg/L
Sulphate	<0.5	0.5	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 531961

Sample Description	BH3 - IR (4591)		BH3 - IIR (4592)		BH5 - IR (4593)		BH5 - IIIR (4594)		
Sample Date	4/18/2024 1:10 PM		4/18/2024 12:43 PM		4/18/2024 3:00 PM		4/18/2024 3:18 PM		
Lab ID	1996016		1996017		1996018		1996019		
Field Parameters	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Field pH	6.71	N/A	6.75	N/A	7.13	N/A	6.92	N/A	pH
Field Temp	12.7	N/A	12	N/A	9.9	N/A	8.3	N/A	°C

Sample Description	BH6R (4595)		BH16 - I (4596)		BH16 - IVR (4597)		BH17 - III (4598)		
Sample Date	4/15/2024 2:46 PM		4/15/2024 10:19 AM		4/15/2024 10:40 AM		4/16/2024 1:45 PM		
Lab ID	1996020		1996021		1996022		1996023		
Field Parameters	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Field pH	6.65	N/A	6.82	N/A	6.63	N/A	6.99	N/A	pH
Field Temp	8.5	N/A	10.6	N/A	8	N/A	3.1	N/A	°C

Sample Description	BH17 - IVR (4599)		BH20R (4600)		BH21 - IR (4601)		BH21 - IIR (4602)		
Sample Date	4/16/2024 2:14 PM		4/17/2024 2:52 PM		4/17/2024 10:26 AM		4/17/2024 10:47 AM		
Lab ID	1996024		1996025		1996026		1996027		
Field Parameters	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Field pH	7.43	N/A	6.58	N/A	6.8	N/A	6.89	N/A	pH
Field Temp	6.4	N/A	9.8	N/A	7.3	N/A	5.4	N/A	°C

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 531961

Sample Description	BH22 - IR (4603)		BH22 - IIR (4604)		BH26 (4605)		BH30 - I (4606)		
Sample Date	4/16/2024 12:32 PM		4/16/2024 1:15 PM		4/16/2024 11:56 AM		4/15/2024 12:30 PM		
Lab ID	1996028		1996029		1996030		1996031		
Field Parameters	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Field pH	6.98	N/A	6.99	N/A	7.01	N/A	6.77	N/A	pH
Field Temp	7.3	N/A	5.7	N/A	9	N/A	10.8	N/A	°C

Sample Description	BH30 - II (4607)		Duplicate BH30 - ID (4608)		Duplicate BH505 - IR (4609)		
Sample Date	4/15/2024 12:46 PM		4/15/2024 12:30 PM		4/18/2024 3:00 PM		
Lab ID	1996032		1996033		1996034		
Field Parameters	Result	MDL	Result	MDL	Result	MDL	Units
Field pH	7.02	N/A	6.77	N/A	7.13	N/A	pH
Field Temp	10	N/A	10.8	N/A	9.9	N/A	°C

Sample Description	BH3 - IR (4591)		BH3 - IIR (4592)		BH5 - IR (4593)		BH5 - IIIR (4594)		
Sample Date	4/18/2024 1:10 PM		4/18/2024 12:43 PM		4/18/2024 3:00 PM		4/18/2024 3:18 PM		
Lab ID	1996016		1996017		1996018		1996019		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Ammonia (as N)	0.29	0.01	332.0	0.8*	0.06	0.01	0.96	0.01	mg/L
Ammonium (as N) (Calc.)	0.29	0.01	332.00	0.01	0.06	0.01	0.96	0.01	mg/L
Anion Sum (Calc.)	21.7	N/A	49.9	N/A	12.2	N/A	11.6	N/A	meq
Bicarbonate (Calc.)	894	1	1950	1	473	1	493	1	mg/L as CaCO3
Carbonate (Calc.)	<1	1	2	1	<1	1	<1	1	mg/L as CaCO3
Cation Sum (Calc.)	23.9	N/A	35.8	N/A	12.6	N/A	12.4	N/A	meq
Conductivity	2180	1	5670	1	1250	1	1260	1	µS/cm

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 531961

Sample Description	BH3 - IR (4591)		BH3 - IIR (4592)		BH5 - IR (4593)		BH5 - IIIR (4594)		
Sample Date	4/18/2024 1:10 PM		4/18/2024 12:43 PM		4/18/2024 3:00 PM		4/18/2024 3:18 PM		
Lab ID	1996016		1996017		1996018		1996019		
General Chemistry	**Result**	**MDL**	**Result**	**MDL**	**Result**	**MDL**	**Result**	**MDL**	**Units**
Dissolved Inorganic Carbon	178	8*	542	8*	96	4*	121	4*	mg/L
Dissolved Organic Carbon	18.0	0.8*	127	4*	4.2	0.8*	31	2*	mg/L
Ion Balance (Calc.)	4.82	N/A	-16.5	N/A	1.61	N/A	3.33	N/A	%
Organic Nitrogen (as N) (Calc.)	1.1	0.2	<0.2	0.2	<0.2	0.2	2.3	0.2	mg/L
Orthophosphate (as P)			0.395	0.005	0.277	0.005			mg/L
pH	6.89	N/A	7.08	N/A	7.34	N/A	7.14	N/A	pH
Total Alkalinity	895	2	1950	10	474	2	494	2	mg/L as CaCO3
Total Hardness (as CaCO3) (Calc.)	874.0	0.1	772.0	0.1	1130.0	0.1	544.0	0.1	mg/L
Total Kjeldahl Nitrogen	1.4	0.2*	288	1*	<0.2	0.2*	3.3	0.2*	mg/L
Total Phenols	0.0010	0.0004	0.0011	0.0004	0.0011	0.0004	0.0010	0.0004	mg/L
Total Phosphorus (as P)	0.105	0.002	1.15	0.04*	5.78	0.04*	2.46	0.04*	mg/L
Un-Ionized Ammonia (Calc.)	<0.002	0.002	0.405	0.002	<0.002	0.002	<0.002	0.002	mg/L

Sample Description	BH6R (4595)		BH16 - I (4596)		BH16 - IVR (4597)		BH17 - III (4598)		
Sample Date	4/15/2024 2:46 PM		4/15/2024 10:19 AM		4/15/2024 10:40 AM		4/16/2024 1:45 PM		
Lab ID	1996020		1996021		1996022		1996023		
General Chemistry	**Result**	**MDL**	**Result**	**MDL**	**Result**	**MDL**	**Result**	**MDL**	**Units**
Ammonia (as N)	43.80	0.01	0.08	0.01	26.0	0.2*	0.22	0.01	mg/L
Ammonium (as N) (Calc.)	43.80	0.01	0.07	0.01	26.00	0.01	0.22	0.01	mg/L
Anion Sum (Calc.)	16.3	N/A	15.5	N/A	19	N/A	13.5	N/A	meq
Bicarbonate (Calc.)	856	1	607	1	911	1	408	1	mg/L as CaCO3
Carbonate (Calc.)	<1	1	<1	1	<1	1	<1	1	mg/L as CaCO3

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 531961

Sample Description	BH6R (4595)		BH16 - I (4596)		BH16 - IVR (4597)		BH17 - III (4598)		
Sample Date	4/15/2024 2:46 PM		4/15/2024 10:19 AM		4/15/2024 10:40 AM		4/16/2024 1:45 PM		
Lab ID	1996020		1996021		1996022		1996023		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Cation Sum (Calc.)	16.7	N/A	16.8	N/A	19.7	N/A	14.2	N/A	meq
Conductivity			1570	1	2100	1	1380	1	µS/cm
Dissolved Inorganic Carbon			140	4*	241	4*	104	2*	mg/L
Dissolved Organic Carbon			7.6	0.8*	54	2*	4.2	0.8*	mg/L
Ion Balance (Calc.)	1.21	N/A	4.02	N/A	1.81	N/A	2.53	N/A	%
Organic Nitrogen (as N) (Calc.)			0.8	0.2	<0.2	0.2	<0.2	0.2	mg/L
Orthophosphate (as P)							0.007	0.005	mg/L
pH	7.03	N/A	7.07	N/A	6.75	N/A	7.05	N/A	pH
Total Alkalinity	857	2	608	2	911	2	408	2	mg/L as CaCO3
Total Hardness (as CaCO3) (Calc.)			633.0	0.1	648.0	0.1	442.0	0.1	mg/L
Total Kjeldahl Nitrogen			0.8	0.2*	23.3	0.2*	0.4	0.2*	mg/L
Total Phenols			0.0010	0.0004	0.0011	0.0004	0.0012	0.0004	mg/L
Total Phosphorus (as P)	0.549	0.002	0.039	0.002	0.397	0.002	0.030	0.002	mg/L
Un-Ionized Ammonia (Calc.)	0.032	0.002	<0.002	0.002	0.018	0.002	<0.002	0.002	mg/L

Sample Description	BH17 - IVR (4599)		BH20R (4600)		BH21 - IR (4601)		BH21 - IIR (4602)		
Sample Date	4/16/2024 2:14 PM		4/17/2024 2:52 PM		4/17/2024 10:26 AM		4/17/2024 10:47 AM		
Lab ID	1996024		1996025		1996026		1996027		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Ammonia (as N)	0.11	0.01	103.0	0.3*	8.51	0.03*	16.3	0.1*	mg/L
Ammonium (as N) (Calc.)	0.11	0.01	103.00	0.01	8.50	0.01	16.30	0.01	mg/L
Anion Sum (Calc.)	7.14	N/A	39.3	N/A	11.4	N/A	11.3	N/A	meq

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 531961

Sample Description	BH17 - IVR (4599)		BH20R (4600)		BH21 - IR (4601)		BH21 - IIR (4602)		
Sample Date	4/16/2024 2:14 PM		4/17/2024 2:52 PM		4/17/2024 10:26 AM		4/17/2024 10:47 AM		
Lab ID	1996024		1996025		1996026		1996027		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Bicarbonate (Calc.)	320	1	2010	1	508	1	553	1	mg/L as CaCO3
Carbonate (Calc.)	<1	1	1	1	<1	1	<1	1	mg/L as CaCO3
Cation Sum (Calc.)	8.13	N/A	37.8	N/A	12.7	N/A	12.6	N/A	meq
Conductivity	790	1	3840	1	1240	1	1250	1	µS/cm
Dissolved Inorganic Carbon	77	2*	540	8*	125	4*	135	4*	mg/L
Dissolved Organic Carbon	4.9	0.8*	56	2*	14.1	0.8*	33	2*	mg/L
Ion Balance (Calc.)	6.48	N/A	-1.95	N/A	5.39	N/A	5.44	N/A	%
Organic Nitrogen (as N) (Calc.)	0.9	0.2	<0.2	0.2	<0.2	0.2	<0.2	0.2	mg/L
Orthophosphate (as P)	0.009	0.005							mg/L
pH	7.25	N/A	6.74	N/A	7.1	N/A	7.09	N/A	pH
Total Alkalinity	321	2	2010	10	509	2	554	2	mg/L as CaCO3
Total Hardness (as CaCO3) (Calc.)	285.0	0.1	1350.0	0.1	736.0	0.1	464.0	0.1	mg/L
Total Kjeldahl Nitrogen	1.0	0.2*	89.4	0.4*	7.7	0.2*	15.1	0.2*	mg/L
Total Phenols	0.0010	0.0004	0.0010	0.0004	0.0012	0.0004	0.0011	0.0004	mg/L
Total Phosphorus (as P)	0.240	0.002	0.76	0.04*	0.712	0.002	0.555	0.002	mg/L
Un-Ionized Ammonia (Calc.)	<0.002	0.002	0.072	0.002	0.008	0.002	0.016	0.002	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 531961

Sample Description	BH22 - IR (4603)		BH22 - IIR (4604)		BH26 (4605)		BH30 - I (4606)		
Sample Date	4/16/2024 12:32 PM		4/16/2024 1:15 PM		4/16/2024 11:56 AM		4/15/2024 12:30 PM		
Lab ID	1996028		1996029		1996030		1996031		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Ammonia (as N)	0.25	0.01	0.83	0.01	0.03	0.01	0.19	0.01	mg/L
Ammonium (as N) (Calc.)	0.25	0.01	0.83	0.01	0.03	0.01	0.19	0.01	mg/L
Anion Sum (Calc.)	10.3	N/A	10	N/A	5.5	N/A	16.7	N/A	meq
Bicarbonate (Calc.)	330	1	325	1	233	1	619	1	mg/L as CaCO3
Carbonate (Calc.)	<1	1	<1	1	<1	1	<1	1	mg/L as CaCO3
Cation Sum (Calc.)	10.3	N/A	10.6	N/A	6.41	N/A	18.2	N/A	meq
Conductivity	1090	1	1080	1	640	1	1680	1	µS/cm
Dissolved Inorganic Carbon	81	2*	86	4*	52	2*	150	4*	mg/L
Dissolved Organic Carbon	6.4	0.8*	10.1	0.8*	12.3	0.8*	7.6	0.8*	mg/L
Ion Balance (Calc.)	0	N/A	2.91	N/A	7.64	N/A	4.3	N/A	%
Organic Nitrogen (as N) (Calc.)	0.4	0.2	0.9	0.2	0.7	0.2	<0.2	0.2	mg/L
Orthophosphate (as P)	0.011	0.005	0.079	0.005	0.006	0.005	0.006	0.005	mg/L
pH	7.26	N/A	7.25	N/A	7.2	N/A	7.08	N/A	pH
Total Alkalinity	331	2	326	2	233	2	620	2	mg/L as CaCO3
Total Hardness (as CaCO3) (Calc.)	514.0	0.1	334.0	0.1	247.0	0.1	706.0	0.1	mg/L
Total Kjeldahl Nitrogen	0.7	0.2*	1.7	0.2*	0.7	0.2*	0.3	0.2*	mg/L
Total Phenols	0.0010	0.0004	0.0010	0.0004	0.0010	0.0004	0.0011	0.0004	mg/L
Total Phosphorus (as P)	0.340	0.002	1.210	0.006*	0.025	0.002	0.041	0.002	mg/L
Un-Ionized Ammonia (Calc.)	<0.002	0.002	<0.002	0.002	<0.002	0.002	<0.002	0.002	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 531961

Sample Description	BH30 - II (4607)		Duplicate BH30 - ID (4608)		Duplicate BH505 - IR (4609)		Travel Blank (4610)		
Sample Date	4/15/2024 12:46 PM		4/15/2024 12:30 PM		4/18/2024 3:00 PM		4/15/2024 12:00 AM		
Lab ID	1996032		1996033		1996034		1996035		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Ammonia (as N)	3.08	0.01	0.25	0.01	0.10	0.01			mg/L
Ammonium (as N) (Calc.)	3.07	0.01	0.25	0.01	0.09	0.01			mg/L
Anion Sum (Calc.)	12.3	N/A	16.6	N/A	12.2	N/A	0.00874	N/A	meq
Bicarbonate (Calc.)	668	1	620	1	468	1	<1	1	mg/L as CaCO3
Carbonate (Calc.)	1	1	<1	1	<1	1	<1	1	mg/L as CaCO3
Cation Sum (Calc.)	14.6	N/A	17.9	N/A	12.7	N/A	0.00619	N/A	meq
Conductivity	1280	1	1690	1	1230	1			µS/cm
Dissolved Inorganic Carbon	159	4*	154	4*	111	4*			mg/L
Dissolved Organic Carbon	7.2	0.8*	9	2*	3.9	0.8*			mg/L
Ion Balance (Calc.)	8.55	N/A	3.77	N/A	2.01	N/A	-17.1	N/A	%
Organic Nitrogen (as N) (Calc.)	<0.2	0.2	<0.2	0.2	<0.2	0.2			mg/L
Orthophosphate (as P)	<0.005	0.005	0.011	0.005	0.377	0.005			mg/L
pH	7.28	N/A	7.08	N/A	7.32	N/A	5.17	N/A	pH
Total Alkalinity	669	2	621	2	469	2	<2	2	mg/L as CaCO3
Total Hardness (as CaCO3) (Calc.)	533.0	0.1	690.0	0.1	936.0	0.1			mg/L
Total Kjeldahl Nitrogen	3.2	0.2*	0.2	0.2*	<0.2	0.2*			mg/L
Total Phenols	0.0010	0.0004	0.0010	0.0004	0.0010	0.0004			mg/L
Total Phosphorus (as P)	0.036	0.002	0.030	0.002	6.75	0.04*			mg/L
Un-Ionized Ammonia (Calc.)	0.006	0.002	<0.002	0.002	<0.002	0.002			mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 531961

Sample Description	Field Blank BH 16 - IVR (4611)
Sample Date	4/15/2024 10:45 AM
Lab ID	1996036

General Chemistry	Result	MDL	Units
Anion Sum (Calc.)	0.00987	N/A	meq
Bicarbonate (Calc.)	<1	1	mg/L as CaCO3
Carbonate (Calc.)	<1	1	mg/L as CaCO3
Cation Sum (Calc.)	0	N/A	meq
Ion Balance (Calc.)	-100	N/A	%
pH	5.09	N/A	pH
Total Alkalinity	<2	2	mg/L as CaCO3

Sample Description	BH3 - IR (4591)		BH3 - IIR (4592)		BH5 - IR (4593)		BH5 - IIIR (4594)		
Sample Date	4/18/2024 1:10 PM		4/18/2024 12:43 PM		4/18/2024 3:00 PM		4/18/2024 3:18 PM		
Lab ID	1996016		1996017		1996018		1996019		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Aluminum			7	1	2	1			ug/L
Dissolved Barium			442	1*	3320	1*			ug/L
Dissolved Cadmium			0.069	0.005	0.009	0.005			ug/L
Dissolved Calcium	234000	5000*	114000	500*	128000	500*	124000	500*	ug/L
Dissolved Chromium			29.2	0.1	2.0	0.1			ug/L
Dissolved Cobalt			17.0	0.1	0.3	0.1			ug/L
Dissolved Copper			7.1	0.2	2.1	0.2			ug/L
Dissolved Iron	20200	200*	354	10	3190	100*	1790	20	ug/L
Dissolved Lead			<0.05	0.05	<0.05	0.05			ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 531961

Sample Description	BH3 - IR (4591)		BH3 - IIR (4592)		BH5 - IR (4593)		BH5 - IIIR (4594)		
Sample Date	4/18/2024 1:10 PM		4/18/2024 12:43 PM		4/18/2024 3:00 PM		4/18/2024 3:18 PM		
Lab ID	1996016		1996017		1996018		1996019		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Magnesium	73600	40*	113000	40*	37900	4	23200	4	ug/L
Dissolved Manganese	1700	10*	272.0	0.1	250.0	0.1	268	1	ug/L
Dissolved Nickel			70.5	0.5	4.1	0.5			ug/L
Dissolved Potassium	2610	100	153000	5000*	2270	50	71700	1000*	ug/L
Dissolved Selenium			13.40	0.05	0.50	0.05			ug/L
Dissolved Silver			0.01	0.01	<0.01	0.01			ug/L
Dissolved Sodium	139000	1000*	383000	5000*	68100	500*	55800	1000*	ug/L
Dissolved Zinc			3	1	4	1			ug/L

Sample Description	BH16 - I (4596)		BH16 - IVR (4597)		BH17 - III (4598)		BH17 - IVR (4599)		
Sample Date	4/15/2024 10:19 AM		4/15/2024 10:40 AM		4/16/2024 1:45 PM		4/16/2024 2:14 PM		
Lab ID	1996021		1996022		1996023		1996024		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Aluminum					3	1	6	1	ug/L
Dissolved Barium					581	1*	51.4	0.1	ug/L
Dissolved Cadmium					0.017	0.005	0.019	0.005	ug/L
Dissolved Calcium	164000	500*	188000	500*	144000	500*	79000	500*	ug/L
Dissolved Chromium					1.7	0.1	0.9	0.1	ug/L
Dissolved Cobalt					1.6	0.1	0.3	0.1	ug/L
Dissolved Copper					6.8	0.2	4.6	0.2	ug/L
Dissolved Iron	8690	200*	40100	2000*	13700	100*	98	10	ug/L
Dissolved Lead					<0.05	0.05	<0.05	0.05	ug/L
Dissolved Magnesium	54200	4	39800	4	29100	4	18600	4	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 531961

Sample Description	BH16 - I (4596)		BH16 - IVR (4597)		BH17 - III (4598)		BH17 - IVR (4599)		
Sample Date	4/15/2024 10:19 AM		4/15/2024 10:40 AM		4/16/2024 1:45 PM		4/16/2024 2:14 PM		
Lab ID	1996021		1996022		1996023		1996024		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Manganese	79	1	957	10*	1450	1*	16.1	0.1	ug/L
Dissolved Nickel					4.0	0.5	1.1	0.5	ug/L
Dissolved Potassium	3270	100	164000	10000*	1150	50	614	50	ug/L
Dissolved Selenium					0.32	0.05	0.36	0.05	ug/L
Dissolved Silver					<0.01	0.01	<0.01	0.01	ug/L
Dissolved Sodium	93300	1000*	62600	1000*	104000	500*	61400	500*	ug/L
Dissolved Zinc					4	1	6	1	ug/L

Sample Description	BH20R (4600)		BH21 - IR (4601)		BH21 - IIR (4602)		BH22 - IR (4603)		
Sample Date	4/17/2024 2:52 PM		4/17/2024 10:26 AM		4/17/2024 10:47 AM		4/16/2024 12:32 PM		
Lab ID	1996025		1996026		1996027		1996028		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Aluminum							6	1	ug/L
Dissolved Barium							101.0	0.1	ug/L
Dissolved Cadmium							0.032	0.005	ug/L
Dissolved Calcium	293000	5000*	149000	500*	141000	500*	134000	500*	ug/L
Dissolved Chromium							0.4	0.1	ug/L
Dissolved Cobalt							1.2	0.1	ug/L
Dissolved Copper							2.0	0.2	ug/L
Dissolved Iron	411	20	25000	200*	18700	200*	6390	100*	ug/L
Dissolved Lead							0.07	0.05	ug/L
Dissolved Magnesium	137000	40*	32400	4	23000	4	28400	4	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 531961

Sample Description	BH20R (4600)		BH21 - IR (4601)		BH21 - IIR (4602)		BH22 - IR (4603)		
Sample Date	4/17/2024 2:52 PM		4/17/2024 10:26 AM		4/17/2024 10:47 AM		4/16/2024 12:32 PM		
Lab ID	1996025		1996026		1996027		1996028		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Manganese	1270	10*	1170	10*	836	10*	3510	1*	ug/L
Dissolved Nickel							4.3	0.5	ug/L
Dissolved Potassium	102000	1000*	41000	1000*	63100	1000*	830	50	ug/L
Dissolved Selenium							0.39	0.05	ug/L
Dissolved Silver							0.02	0.01	ug/L
Dissolved Sodium	210000	1000*	35400	100	45200	100	28500	50	ug/L
Dissolved Zinc							5	1	ug/L

Sample Description	BH22 - IIR (4604)		BH26 (4605)		BH30 - I (4606)		BH30 - II (4607)		
Sample Date	4/16/2024 1:15 PM		4/16/2024 11:56 AM		4/15/2024 12:30 PM		4/15/2024 12:46 PM		
Lab ID	1996029		1996030		1996031		1996032		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Aluminum	20	1	24	1	3	1	6	1	ug/L
Dissolved Barium	109.0	0.1	58.3	0.1	1840	1*	180	1*	ug/L
Dissolved Cadmium	0.014	0.005	0.016	0.005	0.016	0.005	0.029	0.005	ug/L
Dissolved Calcium	109000	500*	76100	500*	197000	500*	126000	500*	ug/L
Dissolved Chromium	0.8	0.1	0.8	0.1	1.9	0.1	1.6	0.1	ug/L
Dissolved Cobalt	0.6	0.1	0.3	0.1	0.4	0.1	3.3	0.1	ug/L
Dissolved Copper	2.9	0.2	2.8	0.2	3.0	0.2	3.8	0.2	ug/L
Dissolved Iron	6470	100*	89	10	14000	100*	15400	100*	ug/L
Dissolved Lead	<0.05	0.05	<0.05	0.05	<0.05	0.05	<0.05	0.05	ug/L
Dissolved Magnesium	17000	4	11400	4	52900	4	48500	4	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 531961

Sample Description	BH22 - IIR (4604)		BH26 (4605)		BH30 - I (4606)		BH30 - II (4607)		
Sample Date	4/16/2024 1:15 PM		4/16/2024 11:56 AM		4/15/2024 12:30 PM		4/15/2024 12:46 PM		
Lab ID	1996029		1996030		1996031		1996032		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Manganese	475	1*	6.8	0.1	266.0	0.1	1670	1*	ug/L
Dissolved Nickel	3.0	0.5	0.8	0.5	6.6	0.5	4.9	0.5	ug/L
Dissolved Potassium	3990	50	4140	50	3390	50	4770	50	ug/L
Dissolved Selenium	0.16	0.05	0.29	0.05	3.06	0.05	0.47	0.05	ug/L
Dissolved Silver	0.01	0.01	0.02	0.01	0.02	0.01	0.01	0.01	ug/L
Dissolved Sodium	82900	500*	35600	50	88500	500*	94300	500*	ug/L
Dissolved Zinc	6	1	10	1	5	1	4	1	ug/L

Sample Description	Duplicate BH30 - ID (4608)		Duplicate BH505 - IR (4609)		
Sample Date	4/15/2024 12:30 PM		4/18/2024 3:00 PM		
Lab ID	1996033		1996034		
Metals (Dissolved)	Result	MDL	Result	MDL	Units
Dissolved Aluminum	3	1	3	1	ug/L
Dissolved Barium	1810	1*	3490	1*	ug/L
Dissolved Cadmium	0.021	0.005	0.011	0.005	ug/L
Dissolved Calcium	196000	500*	131000	500*	ug/L
Dissolved Chromium	0.3	0.1	1.8	0.1	ug/L
Dissolved Cobalt	0.4	0.1	0.3	0.1	ug/L
Dissolved Copper	3.2	0.2	2.8	0.2	ug/L
Dissolved Iron	14200	100*	3290	100*	ug/L
Dissolved Lead	<0.05	0.05	<0.05	0.05	ug/L
Dissolved Magnesium	49900	4	37100	4	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 531961

Sample Description	Duplicate BH30 - ID (4608)		Duplicate BH505 - IR (4609)		
Sample Date	4/15/2024 12:30 PM		4/18/2024 3:00 PM		
Lab ID	1996033		1996034		
Metals (Dissolved)	Result	MDL	Result	MDL	Units
Dissolved Manganese	297.0	0.1	243.0	0.1	ug/L
Dissolved Nickel	6.2	0.5	4.2	0.5	ug/L
Dissolved Potassium	3330	50	2180	50	ug/L
Dissolved Selenium	2.98	0.05	0.66	0.05	ug/L
Dissolved Silver	0.01	0.01	0.01	0.01	ug/L
Dissolved Sodium	89300	500*	69500	500*	ug/L
Dissolved Zinc	5	1	7	1	ug/L

Sample Description	BH5 - IR (4593)		BH5 - IIIR (4594)		BH6R (4595)		BH17 - III (4598)		
Sample Date	4/18/2024 3:00 PM		4/18/2024 3:18 PM		4/15/2024 2:46 PM		4/16/2024 1:45 PM		
Lab ID	1996018		1996019		1996020		1996023		
Petroleum Hydrocarbons (Water)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Benzene	<0.2	0.2	<0.2	0.2	0.9	0.2	<0.2	0.2	ug/L
Ethylbenzene	<0.4	0.4	<0.4	0.4	<0.4	0.4	<0.4	0.4	ug/L
Toluene	<0.4	0.4	<0.4	0.4	<0.4	0.4	<0.4	0.4	ug/L
m+p-Xylene	<0.4	0.4	<0.4	0.4	<0.4	0.4	<0.4	0.4	ug/L
o-Xylene	<0.4	0.4	<0.4	0.4	<0.4	0.4	<0.4	0.4	ug/L
Total Xylenes (Calc.)	<0.4	0.4	<0.4	0.4	<0.4	0.4	<0.4	0.4	ug/L
1,4-dichlorobenzene-d4 (Surr.)	102	N/A	101	N/A	106	N/A	101	N/A	% Rec

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 531961

Sample Description	BH22 - IR (4603)		BH22 - IIR (4604)		BH26 (4605)		Duplicate BH505 - IR (4609)		
Sample Date	4/16/2024 12:32 PM		4/16/2024 1:15 PM		4/16/2024 11:56 AM		4/18/2024 3:00 PM		
Lab ID	1996028		1996029		1996030		1996034		
Petroleum Hydrocarbons (Water)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Benzene	<0.2	0.2	<0.2	0.2	<0.2	0.2	<0.2	0.2	ug/L
Ethylbenzene	<0.4	0.4	<0.4	0.4	<0.4	0.4	<0.4	0.4	ug/L
Toluene	<0.4	0.4	<0.4	0.4	<0.4	0.4	<0.4	0.4	ug/L
m+p-Xylene	<0.4	0.4	<0.4	0.4	<0.4	0.4	<0.4	0.4	ug/L
o-Xylene	<0.4	0.4	<0.4	0.4	<0.4	0.4	<0.4	0.4	ug/L
Total Xylenes (Calc.)	<0.4	0.4	<0.4	0.4	<0.4	0.4	<0.4	0.4	ug/L
1,4-dichlorobenzene-d4 (Surr.)	101	N/A	100	N/A	102	N/A	101	N/A	% Rec

Sample Description	BH3 - IR (4591)		BH3 - IIR (4592)		BH21 - IR (4601)		BH21 - IIR (4602)		
Sample Date	4/18/2024 1:10 PM		4/18/2024 12:43 PM		4/17/2024 10:26 AM		4/17/2024 10:47 AM		
Lab ID	1996016		1996017		1996026		1996027		
Volatile Organic Compounds	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Benzene	0.9	0.2	4.3	0.2	<0.2	0.2	0.3	0.2	ug/L
Ethylbenzene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Toluene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
m+p-Xylene	<0.5	0.5	1.2	0.5	<0.5	0.5	<0.5	0.5	ug/L
o-Xylene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Total Xylenes (Calc.)	<0.5	0.5	1.2	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,1,1,2-Tetrachloroethane	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,1,1-Trichloroethane	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,1,2,2-Tetrachloroethane	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,1,2-Trichloroethane	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 531961

Sample Description	BH3 - IR (4591)		BH3 - IIR (4592)		BH21 - IR (4601)		BH21 - IIR (4602)		
Sample Date	4/18/2024 1:10 PM		4/18/2024 12:43 PM		4/17/2024 10:26 AM		4/17/2024 10:47 AM		
Lab ID	1996016		1996017		1996026		1996027		
Volatile Organic Compounds	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
1,1-Dichloroethane	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,1-Dichloroethylene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,1-Dichloropropene	<0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L
1,2,4-Trichlorobenzene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,2-Dibromo-3-chloropropane	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
1,2-Dibromoethane	<0.2	0.2	<0.2	0.2	<0.2	0.2	<0.2	0.2	ug/L
1,2-Dichlorobenzene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,2-Dichloroethane	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,2-Dichloroethane-d4 (Surr)	105	N/A	110	N/A	108	N/A	102	N/A	% Rec
1,2-Dichloropropane	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,3-Dichlorobenzene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
1,3-Dichloropropane	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
1,4-Dichlorobenzene	<0.5	0.5	0.8	0.5	<0.5	0.5	1.1	0.5	ug/L
1-Bromo-4-fluorobenzene (Surr.)	84.9	N/A	90	N/A	85.4	N/A	81.6	N/A	% Rec
Acetone	<30	30	<30	30	<30	30	<30	30	ug/L
Bromobenzene	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
Bromochloromethane	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
Bromodichloromethane	<0.2	0.2	<0.2	0.2	<0.2	0.2	<0.2	0.2	ug/L
Bromoform	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Bromomethane	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Carbon tetrachloride	<0.2	0.2	<0.2	0.2	<0.2	0.2	<0.2	0.2	ug/L
Chlorobenzene	<0.5	0.5	2.6	0.5	1.5	0.5	3.1	0.5	ug/L
Chloroethane	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 531961

Sample Description	BH3 - IR (4591)		BH3 - IIR (4592)		BH21 - IR (4601)		BH21 - IIR (4602)		
Sample Date	4/18/2024 1:10 PM		4/18/2024 12:43 PM		4/17/2024 10:26 AM		4/17/2024 10:47 AM		
Lab ID	1996016		1996017		1996026		1996027		
Volatile Organic Compounds	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Chloroform	<1	1	<1	1	<1	1	<1	1	ug/L
Chloromethane	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
cis - + trans-1,3-Dichloropropene (Calc.)	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
cis-1,2-Dichloroethylene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
cis-1,3-Dichloropropene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Dibromochloromethane	<2	2	<2	2	<2	2	<2	2	ug/L
Dibromomethane	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
Dichlorodifluoromethane	<2	2	<2	2	<2	2	<2	2	ug/L
Dichloromethane	<5	5	<5	5	<5	5	<5	5	ug/L
Hexachlorobutadiene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Methyl ethyl ketone	<20	20	<20	20	<20	20	<20	20	ug/L
Methyl isobutyl ketone (MIBK)	<20	20	<20	20	<20	20	<20	20	ug/L
Methyl tert-butyl ether (MTBE)	<2	2	<2	2	<2	2	<2	2	ug/L
n-Hexane	<5	5	<5	5	<5	5	<5	5	ug/L
Styrene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Tetrachloroethylene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Toluene-d8 (Surr.)	110	N/A	108	N/A	110	N/A	109	N/A	% Rec
Trans-1,2-dichloroethylene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Trans-1,3-dichloropropene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Trichloroethylene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Trichlorofluoromethane	<5	5	<5	5	<5	5	<5	5	ug/L
Vinyl chloride	<0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 531961

Sample Description	Travel Blank (4610)		Field Blank BH 16 - IVR (4611)		
Sample Date	4/15/2024 12:00 AM		4/15/2024 10:45 AM		
Lab ID	1996035		1996036		
Volatile Organic Compounds	Result	MDL	Result	MDL	Units
Benzene	<0.2	0.2	<0.2	0.2	ug/L
Ethylbenzene	<0.5	0.5	<0.5	0.5	ug/L
Toluene	<0.5	0.5	<0.5	0.5	ug/L
m+p-Xylene	<0.5	0.5	<0.5	0.5	ug/L
o-Xylene	<0.5	0.5	<0.5	0.5	ug/L
Total Xylenes (Calc.)	<0.5	0.5	<0.5	0.5	ug/L
1,1,1,2-Tetrachloroethane	<0.5	0.5	<0.5	0.5	ug/L
1,1,1-Trichloroethane	<0.5	0.5	<0.5	0.5	ug/L
1,1,2,2-Tetrachloroethane	<0.5	0.5	<0.5	0.5	ug/L
1,1,2-Trichloroethane	<0.5	0.5	<0.5	0.5	ug/L
1,1-Dichloroethane	<0.5	0.5	<0.5	0.5	ug/L
1,1-Dichloroethylene	<0.5	0.5	<0.5	0.5	ug/L
1,1-Dichloropropene	<0.1	0.1	<0.1	0.1	ug/L
1,2,4-Trichlorobenzene	<0.5	0.5	<0.5	0.5	ug/L
1,2-Dibromo-3-chloropropane	<0.3	0.3	<0.3	0.3	ug/L
1,2-Dibromoethane	<0.2	0.2	<0.2	0.2	ug/L
1,2-Dichlorobenzene	<0.5	0.5	<0.5	0.5	ug/L
1,2-Dichloroethane	<0.5	0.5	<0.5	0.5	ug/L
1,2-Dichloroethane-d4 (Surr)	103	N/A	104	N/A	% Rec
1,2-Dichloropropane	<0.5	0.5	<0.5	0.5	ug/L
1,3-Dichlorobenzene	<0.5	0.5	<0.5	0.5	ug/L
1,3-Dichloropropane	<0.3	0.3	<0.3	0.3	ug/L
1,4-Dichlorobenzene	<0.5	0.5	<0.5	0.5	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 531961

Sample Description	Travel Blank (4610)		Field Blank BH 16 - IVR (4611)		
Sample Date	4/15/2024 12:00 AM		4/15/2024 10:45 AM		
Lab ID	1996035		1996036		
Volatile Organic Compounds	Result	MDL	Result	MDL	Units
1-Bromo-4-fluorobenzene (Surr.)	78.6	N/A	83.7	N/A	% Rec
Acetone	<30	30	<30	30	ug/L
Bromobenzene	<0.3	0.3	<0.3	0.3	ug/L
Bromochloromethane	<0.3	0.3	<0.3	0.3	ug/L
Bromodichloromethane	<0.2	0.2	<0.2	0.2	ug/L
Bromoform	<0.5	0.5	<0.5	0.5	ug/L
Bromomethane	<0.5	0.5	<0.5	0.5	ug/L
Carbon tetrachloride	<0.2	0.2	<0.2	0.2	ug/L
Chlorobenzene	<0.5	0.5	<0.5	0.5	ug/L
Chloroethane	<0.3	0.3	<0.3	0.3	ug/L
Chloroform	<1	1	<1	1	ug/L
Chloromethane	<0.3	0.3	<0.3	0.3	ug/L
cis - + trans-1,3-Dichloropropene (Calc.)	<0.5	0.5	<0.5	0.5	ug/L
cis-1,2-Dichloroethylene	<0.5	0.5	<0.5	0.5	ug/L
cis-1,3-Dichloropropene	<0.5	0.5	<0.5	0.5	ug/L
Dibromochloromethane	<2	2	<2	2	ug/L
Dibromomethane	<0.3	0.3	<0.3	0.3	ug/L
Dichlorodifluoromethane	<2	2	<2	2	ug/L
Dichloromethane	<5	5	<5	5	ug/L
Hexachlorobutadiene	<0.5	0.5	<0.5	0.5	ug/L
Methyl ethyl ketone	<20	20	<20	20	ug/L
Methyl isobutyl ketone (MIBK)	<20	20	<20	20	ug/L
Methyl tert-butyl ether (MTBE)	<2	2	<2	2	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 531961

Sample Description	Travel Blank (4610)		Field Blank BH 16 - IVR (4611)		
Sample Date	4/15/2024 12:00 AM		4/15/2024 10:45 AM		
Lab ID	1996035		1996036		
Volatile Organic Compounds	Result	MDL	Result	MDL	Units
n-Hexane	<5	5	<5	5	ug/L
Styrene	<0.5	0.5	<0.5	0.5	ug/L
Tetrachloroethylene	<0.5	0.5	<0.5	0.5	ug/L
Toluene-d8 (Surr.)	106	N/A	112	N/A	% Rec
Trans-1,2-dichloroethylene	<0.5	0.5	<0.5	0.5	ug/L
Trans-1,3-dichloropropene	<0.5	0.5	<0.5	0.5	ug/L
Trichloroethylene	<0.5	0.5	<0.5	0.5	ug/L
Trichlorofluoromethane	<5	5	<5	5	ug/L
Vinyl chloride	<0.1	0.1	<0.1	0.1	ug/L

LEGEND

Dates: Dates are formatted as mm/dd/year throughout this report.

MDL: Method detection limit or minimum reporting limit.

[ ]: Results for laboratory replicates are shown in square brackets immediately below the associated sample result for ease of comparison.

% Rec: Surrogate compounds are added to the sample in some cases and the recovery is reported as a % recovered.

Organic Soil Analysis: Data reported for organic analysis in soils samples are corrected for moisture content.

Quality Control: All associated Quality Control data is available on request.

Field Data: Reports containing Field Parameters represent data that has been collected and provided by the client. Testmark is not responsible for the validity of this data which may be used in subsequent calculations.

Sample Condition Deviations: A noted sample condition deviation may affect the validity of the result. Results apply to the sample(s) as received.

Reproduction of Report: Report shall not be reproduced, except in full, without the approval of Testmark Laboratories Ltd.

ICPMS Dustfall Insoluble: The ICPMS Dustfall Insoluble Portion method analyzes only the particulate matter from the Dustfall Sampler which is retained on the analysis filter during the Dustfall method.

Regulation Comparisons: Disclaimer: Please note that regulation criteria are provided for comparative purposes, however the onus on ensuring the validity of this comparison rests with the client.

*Dilution: In the MDL column an asterisk (*) indicates a sample dilution was performed.

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

TESTMARK Laboratories Ltd.
Committed to Quality and Service

CERTIFICATE OF ANALYSIS

Client:	Hannah Curry	Work Order Number:	530818
Company:	City of Orillia - Waste Diversion Site	PO #:	83585
Address:	40 Kitchener St.	Regulation:	Information not provided
	Orillia, ON, L3V 6Z9	Project #:	Spring WDS Sampling GW Outside
Phone:	(705) 325-2394	DWS #:	
Email:	hcurry@orillia.ca	Sampled By:	Hannah Curry
Date Order Received:	4/12/2024	Analysis Started:	4/9/2024
Arrival Temperature:	9.4 C	Analysis Completed:	4/20/2024

WORK ORDER SUMMARY

ANALYSES WERE PERFORMED ON THE FOLLOWING SAMPLES. THE RESULTS RELATE ONLY TO THE ITEMS TESTED.

Sample Description	Lab ID	Matrix	Type	Comments	Date Collected	Time Collected
BH1-IR (4612)	1992011	Ground Water	None		4/8/2024	10:28 AM
BH1-III (4613)	1992012	Ground Water	None		4/8/2024	10:48 AM
BH18R (4620)	1992264	Ground Water	None		4/9/2024	10:07 AM
BH29-I (4621)	1992265	Ground Water	None		4/9/2024	11:48 AM
BH29-II (4622)	1992266	Ground Water	None		4/9/2024	12:10 PM
BH8R (4616)	1992267	Ground Water	None		4/9/2024	1:26 PM
Duplicate BH 501 - III (4624)	1992268	Ground Water	None		4/9/2024	10:48 AM
BH2-III (4614)	1993321	Ground Water	None		4/10/2024	2:42 PM
BH4-IIR (4615)	1993322	Ground Water	None		4/10/2024	11:56 AM
BH10R (4617)	1993323	Ground Water	None		4/11/2024	12:36 PM
BH11R (4618)	1993324	Ground Water	None		4/11/2024	10:18 AM
BH14-IIIR (4619)	1993325	Ground Water	None		4/11/2024	11:31 AM
Duplicate BH2-IIID (4623)	1993326	Ground Water	None		4/10/2024	2:42 PM
Travel Blank (4625)	1993327	Ground Water	None		4/8/2024	
Field Blank 2-III (4626)	1993328	Ground Water	None		4/10/2024	2:56 PM

METHODS AND INSTRUMENTATION

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 530818

THE FOLLOWING METHODS WERE USED FOR YOUR SAMPLE(S):

Method	Lab	Description	Reference
Alkalinity (A1.0)	Mississauga	Determination of Alkalinity by Titration	Modified from APHA-2320B
Ammonia Water (A42)	Kirkland Lake	Determination of Ammonia/Ammonium in Water	Modified from EPA 350.1
Ammonium Water (A42.3)	Kirkland Lake	Calculation of Ammonium in Water	Modified from APHA 4500
Anions Water (mg/L by IC) (A5)	Mississauga	Determination of Anions in Water by Ion Chromatography	Modified from SW846-9056A
BTEX/F1 Water (A127)	Mississauga	Determination of PHC BTEX/F1 in Water - Tier 1 CCME	Modified from CWS PHC Tier I CCME
Carbonate (A94)	Mississauga	Determination of Carbonate and Bi-Carbonate	Modified from APHA-2320
Conductivity of Water (A12)	Mississauga	Determination of Conductivity in Water at 25°C	Modified from SM 2510 B
DIC Water (A55)	Mississauga	Determination of Dissolved Inorganic Carbon in Water	Modified from SM-5310 C
DOC Water (A55.1)	Mississauga	Determination of Dissolved Organic Carbon in Water	Modified from SM-5310 C
Field pH (R112)	Mississauga	Client Supplied Field Determination of pH of Water	Field Test
Field Temp (R113)	Mississauga	Client Supplied Field Determination of Temperature of Water	Field Test
ICPMS Dis. Water (A13)	Garson	Determination of Dissolved Metals in Water by ICP/MS -> Lab-Filtered	Modified from SW846-6020A
ICPMS Dis. Water (A13.3)	Garson	Determination of Dissolved Metals in Water by ICP/MS -> Lab-Filtered	Modified from SW846-6020A
ICPMS Reg. Water (A13)	Garson	Determination of Metals in Water by ICP/MS	Modified from SW846-6020A
ICPMS Reg. Water (A13.1)	Garson	Determination of Metals in Water by ICP/MS	Modified from SW846-6020A
Ion Balance (A91)	Mississauga	Calculation of Ion Balance	Modified from APHA-1030E
OP Water (A23.1)	Mississauga	Determination of Ortho-Phosphate in Water.	Modified from EPA 365.3 and ESS 310.2.
Organic Nitrogen (A58)	Garson	Determination of Organic Nitrogen	Modified from APHA-4500
pH of Water (A2.0)	Mississauga	Determination of Water pH by Ion Selective Electrode	Modified from APHA-4500H+ B
Phenols 4AAP (T38)	Mississauga	Determination of Total Phenols by 4AAP	Modified from APHA-5530
Reg. Hardness (A13)	Garson	Determination of Total Hardness	Modified from APHA-2340B
TKN Water Dig. (A58)	Garson	Determination of Total Kjeldahl Nitrogen in Waters with Block Digestion.	Modified from SM-4500 NORG-D
TP Water (A23.2)	Kirkland Lake	Determination of Total Phosphorus in Water.	Modified from EPA 365.3 and ESS 310.2,
Un-Ionized NH3 (A42.4)	Kirkland Lake	Calculation of Un-Ionized Ammonia, based on Client Field pH and Temperature	Modified from APHA-4500
VOC Water (A14)	Mississauga	Determination of Volatile Organic Compounds in Water by P&T/GC/MS	Modified from EPA SW846-8260 B

REPORT COMMENTS

Samples received past recommended hold time for dissolved metals, proceed with analysis as per client 04/11/24 JP

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 530818

This report has been approved by:

Marc Creighton
Laboratory Director

WORK ORDER RESULTS

Sample Description	BH1 - IR (4612)		BH1 - III (4613)		BH18R (4620)		BH29 - I (4621)		
Sample Date	4/8/2024 10:28 AM		4/8/2024 10:48 AM		4/9/2024 10:07 AM		4/9/2024 11:48 AM		
Lab ID	1992011		1992012		1992264		1992265		
Anions	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Chloride	233.0	0.2	249.0	0.2	686	1*	88.4	0.2	mg/L
Nitrate (as N)	<0.05	0.05	<0.05	0.05	<0.05	0.05	0.06	0.05	mg/L
Nitrite (as N)	<0.05	0.05	<0.05	0.05	<0.05	0.05	<0.05	0.05	mg/L
Sulphate	10.5	0.5	<0.5	0.5	<0.5	0.5	10.7	0.5	mg/L

Sample Description	BH29 - II (4622)		BH8R (4616)		Duplicate BH 501 - III (4624)		BH2 - III (4614)		
Sample Date	4/9/2024 12:10 PM		4/9/2024 1:26 PM		4/9/2024 10:48 AM		4/10/2024 2:42 PM		
Lab ID	1992266		1992267		1992268		1993321		
Anions	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Chloride	1.2	0.2	92	1*	269.0	0.2	330.0	0.2	mg/L
Nitrate (as N)	<0.05	0.05	<0.05	0.05	<0.05	0.05	0.09	0.05	mg/L
Nitrite (as N)	<0.05	0.05	<0.05	0.05	<0.05	0.05	<0.05	0.05	mg/L
Sulphate	0.6	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 530818

Sample Description	BH4 - IIR (4615)		BH10R (4617)		BH11R (4618)		BH14 - IIIR (4619)		
Sample Date	4/10/2024 11:56 AM		4/11/2024 12:36 PM		4/11/2024 10:18 AM		4/11/2024 11:31 AM		
Lab ID	1993322		1993323		1993324		1993325		
Anions	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Chloride	269.0	0.2	108.0	0.2	90.1	0.2	90.9	0.2	mg/L
Nitrate (as N)	<0.05	0.05	<0.05	0.05	<0.05	0.05	<0.05	0.05	mg/L
Nitrite (as N)	<0.05	0.05	<0.05	0.05	<0.05	0.05	<0.05	0.05	mg/L
Sulphate	20.3	0.5	<0.5	0.5	6.2	0.5	<0.5	0.5	mg/L

Sample Description	Duplicate BH2 - IIID (4623)		Travel Blank (4625)		Field Blank 2 - III (4626)		
Sample Date	4/10/2024 2:42 PM		4/8/2024 12:00 AM		4/10/2024 2:56 PM		
Lab ID	1993326		1993327		1993328		
Anions	Result	MDL	Result	MDL	Result	MDL	Units
Chloride	336.0	0.2	0.3	0.2	0.3	0.2	mg/L
Nitrate (as N)	<0.05	0.05	<0.05	0.05	<0.05	0.05	mg/L
Nitrite (as N)	<0.05	0.05	<0.05	0.05	<0.05	0.05	mg/L
Sulphate	<0.5	0.5	<0.5	0.5	<0.5	0.5	mg/L

Sample Description	BH1 - IR (4612)		BH1 - III (4613)		BH18R (4620)		BH29 - I (4621)		
Sample Date	4/8/2024 10:28 AM		4/8/2024 10:48 AM		4/9/2024 10:07 AM		4/9/2024 11:48 AM		
Lab ID	1992011		1992012		1992264		1992265		
Field Parameters	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Field pH	7.1	N/A	6.89	N/A	6.39	N/A	6.85	N/A	pH
Field Temp	8.8	N/A	5.8	N/A	6.2	N/A	10.9	N/A	°C

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 530818

Sample Description	BH29 - II (4622)		BH8R (4616)		Duplicate BH 501 - III (4624)		BH2 - III (4614)		
Sample Date	4/9/2024 12:10 PM		4/9/2024 1:26 PM		4/9/2024 10:48 AM		4/10/2024 2:42 PM		
Lab ID	1992266		1992267		1992268		1993321		
Field Parameters	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Field pH	7.44	N/A	6.98	N/A	6.82	N/A	6.85	N/A	pH
Field Temp	6.2	N/A	6.2	N/A	5.6	N/A	7.5	N/A	°C

Sample Description	BH4 - IIR (4615)		BH10R (4617)		BH11R (4618)		BH14 - IIIR (4619)		
Sample Date	4/10/2024 11:56 AM		4/11/2024 12:36 PM		4/11/2024 10:18 AM		4/11/2024 11:31 AM		
Lab ID	1993322		1993323		1993324		1993325		
Field Parameters	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Field pH	6.97	N/A	7.31	N/A	6.8	N/A	7.09	N/A	pH
Field Temp	7.2	N/A	6.4	N/A	4.1	N/A	6.8	N/A	°C

Sample Description	Duplicate BH2 - IIID (4623)		
Sample Date	4/10/2024 2:42 PM		
Lab ID	1993326		
Field Parameters	Result	MDL	Units
Field pH	6.85	N/A	pH
Field Temp	7.5	N/A	°C

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 530818

Sample Description	BH1 - IR (4612)		BH1 - III (4613)		BH18R (4620)		BH29 - I (4621)		
Sample Date	4/8/2024 10:28 AM		4/8/2024 10:48 AM		4/9/2024 10:07 AM		4/9/2024 11:48 AM		
Lab ID	1992011		1992012		1992264		1992265		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Ammonia (as N)	0.03	0.01	0.26	0.01	0.45	0.01	0.05	0.01	mg/L
Ammonium (as N) (Calc.)	0.03	0.01	0.26	0.01	0.45	0.01	0.04	0.01	mg/L
Anion Sum (Calc.)	11.2	N/A	10.9	N/A	26.6	N/A	10.8	N/A	meq
Bicarbonate (Calc.)	266	1	237	1	440	1	495	1	mg/L as CaCO3
Carbonate (Calc.)	<1	1	<1	1	<1	1	<1	1	mg/L as CaCO3
Cation Sum (Calc.)	10.6	N/A	10.4	N/A	23.5	N/A	11.7	N/A	meq
Conductivity	1250	1	1250	1	2760	1	1140	1	µS/cm
Dissolved Inorganic Carbon	64	2*	60	2*	113	4*	119	4*	mg/L
Dissolved Organic Carbon	20.0	0.8*	34	2*	68	2*	7.3	0.8*	mg/L
Ion Balance (Calc.)	-2.75	N/A	-2.35	N/A	-6.19	N/A	4	N/A	%
Organic Nitrogen (as N) (Calc.)	0.8	0.2	1.0	0.2	3.0	0.2	<0.2	0.2	mg/L
Orthophosphate (as P)							0.018	0.005	mg/L
pH	7.22	N/A	7.01	N/A	6.62	N/A	7.22	N/A	pH
Total Alkalinity	266	2	237	2	440	2	496	2	mg/L as CaCO3
Total Hardness (as CaCO3) (Calc.)	451.0	0.1	320.0	0.1	773.0	0.1	792.0	0.1	mg/L
Total Kjeldahl Nitrogen	0.8	0.2*	1.3	0.2*	3.5	0.2*	<0.2	0.2*	mg/L
Total Phenols	0.0016	0.0004	0.0015	0.0004	0.0013	0.0004	0.0018	0.0004	mg/L
Total Phosphorus (as P)	0.278	0.002	0.706	0.002	0.513	0.002	0.845	0.002	mg/L
Un-Ionized Ammonia (Calc.)	<0.002	0.002	<0.002	0.002	<0.002	0.002	<0.002	0.002	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 530818

Sample Description	BH29 - II (4622)		BH8R (4616)		Duplicate BH 501 - III (4624)		BH2 - III (4614)		
Sample Date	4/9/2024 12:10 PM		4/9/2024 1:26 PM		4/9/2024 10:48 AM		4/10/2024 2:42 PM		
Lab ID	1992266		1992267		1992268		1993321		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Ammonia (as N)	1.38	0.01	53.2	0.2*	0.42	0.01	14.9	0.1*	mg/L
Ammonium (as N) (Calc.)	1.37	0.01	53.10	0.01	0.42	0.01	14.90	0.01	mg/L
Anion Sum (Calc.)	5.66	N/A	23.5	N/A	11.7	N/A	28.2	N/A	meq
Bicarbonate (Calc.)	342	1	1270	1	250	1	1150	1	mg/L as CaCO3
Carbonate (Calc.)	<1	1	2	1	<1	1	<1	1	mg/L as CaCO3
Cation Sum (Calc.)	6.32	N/A	24.4	N/A	11.2	N/A	30.1	N/A	meq
Conductivity	655	1	2600	1	1340	1	2820	1	µS/cm
Dissolved Inorganic Carbon	85	4*	347	8*	67	4*	299	8*	mg/L
Dissolved Organic Carbon	7.1	0.8*	33	2*	36	2*	31	2*	mg/L
Ion Balance (Calc.)	5.51	N/A	1.88	N/A	-2.18	N/A	3.26	N/A	%
Organic Nitrogen (as N) (Calc.)	<0.2	0.2	1.6	0.2	0.9	0.2	<0.2	0.2	mg/L
Orthophosphate (as P)	0.045	0.005							mg/L
pH	7.22	N/A	7.09	N/A	7.08	N/A	6.8	N/A	pH
Total Alkalinity	343	2	1270	8	250	2	1150	2	mg/L as CaCO3
Total Hardness (as CaCO3) (Calc.)	291.0	0.1	870.0	0.1	319.0	0.1	912.0	0.1	mg/L
Total Kjeldahl Nitrogen	1.1	0.2*	54.8	0.4*	1.3	0.2*	14.4	0.8*	mg/L
Total Phenols	0.0014	0.0004	0.0016	0.0004	0.0014	0.0004	0.0010	0.0004	mg/L
Total Phosphorus (as P)	0.124	0.002	0.347	0.002	0.203	0.002	0.491	0.002	mg/L
Un-Ionized Ammonia (Calc.)	0.005	0.002	0.070	0.002	<0.002	0.002	0.016	0.002	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 530818

Sample Description	BH4 - IIR (4615)		BH10R (4617)		BH11R (4618)		BH14 - IIIR (4619)		
Sample Date	4/10/2024 11:56 AM		4/11/2024 12:36 PM		4/11/2024 10:18 AM		4/11/2024 11:31 AM		
Lab ID	1993322		1993323		1993324		1993325		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Ammonia (as N)	0.09	0.01	0.96	0.01	0.07	0.01	1.49	0.01	mg/L
Ammonium (as N) (Calc.)	0.09	0.01	0.95	0.01	0.07	0.01	1.49	0.01	mg/L
Anion Sum (Calc.)	13.5	N/A	12.2	N/A	11.1	N/A	12.7	N/A	meq
Bicarbonate (Calc.)	336	1	555	1	513	1	618	1	mg/L as CaCO3
Carbonate (Calc.)	<1	1	2	1	<1	1	1	1	mg/L as CaCO3
Cation Sum (Calc.)	13.3	N/A	13.1	N/A	12.4	N/A	13.9	N/A	meq
Conductivity	1490	1	1260	1	1220	1	1330	1	µS/cm
Dissolved Inorganic Carbon	91	4*	125	4*	98	4*	149	4*	mg/L
Dissolved Organic Carbon	2.2	0.4	17.8	0.8*	22.2	0.8*	33	2*	mg/L
Ion Balance (Calc.)	-0.746	N/A	3.56	N/A	5.53	N/A	4.51	N/A	%
Organic Nitrogen (as N) (Calc.)	0.2	0.2	0.7	0.2	1.1	0.2	1.1	0.2	mg/L
pH	7.37	N/A	7.65	N/A	7.24	N/A	7.28	N/A	pH
Total Alkalinity	337	2	557	2	514	2	619	2	mg/L as CaCO3
Total Hardness (as CaCO3) (Calc.)	776.0	0.1	395.0	0.1	332.0	0.1	459.0	0.1	mg/L
Total Kjeldahl Nitrogen	0.3	0.2*	1.7	0.2*	1.2	0.2*	2.6	0.2*	mg/L
Total Phenols	0.0009	0.0004	0.0011	0.0004	0.0012	0.0004	0.0010	0.0004	mg/L
Total Phosphorus (as P)	3.14	0.02*	0.134	0.002	0.103	0.002	0.159	0.002	mg/L
Un-Ionized Ammonia (Calc.)	<0.002	0.002	0.003	0.002	<0.002	0.002	0.003	0.002	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 530818

Sample Description	Duplicate BH2 - IIID (4623)		Travel Blank (4625)		Field Blank 2 - III (4626)		
Sample Date	4/10/2024 2:42 PM		4/8/2024 12:00 AM		4/10/2024 2:56 PM		
Lab ID	1993326		1993327		1993328		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Units
Ammonia (as N)	15.6	0.1*					mg/L
Ammonium (as N) (Calc.)	15.60	0.01					mg/L
Anion Sum (Calc.)	28.5	N/A	0.00874	N/A	0.00959	N/A	meq
Bicarbonate (Calc.)	1160	1	<1	1	<1	1	mg/L as CaCO3
Carbonate (Calc.)	<1	1	<1	1	<1	1	mg/L as CaCO3
Cation Sum (Calc.)	31.9	N/A	0.00265	N/A	0.000779	N/A	meq
Conductivity	2860	1					µS/cm
Dissolved Inorganic Carbon	289	8*					mg/L
Dissolved Organic Carbon	28.5	0.8*					mg/L
Ion Balance (Calc.)	5.63	N/A	-53.5	N/A	-85	N/A	%
Organic Nitrogen (as N) (Calc.)	0.9	0.2					mg/L
pH	6.93	N/A	3.41	N/A	3.81	N/A	pH
Total Alkalinity	1160	2	<2	2	<2	2	mg/L as CaCO3
Total Hardness (as CaCO3) (Calc.)	935.0	0.1					mg/L
Total Kjeldahl Nitrogen	16.5	0.4*					mg/L
Total Phenols	0.0010	0.0004					mg/L
Total Phosphorus (as P)	0.531	0.002					mg/L
Un-Ionized Ammonia (Calc.)	0.017	0.002					mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 530818

Sample Description	BH18R (4620)		BH29 - I (4621)		BH29 - II (4622)		BH8R (4616)		
Sample Date	4/9/2024 10:07 AM		4/9/2024 11:48 AM		4/9/2024 12:10 PM		4/9/2024 1:26 PM		
Lab ID	1992264		1992265		1992266		1992267		
Metals	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Aluminum	975	10*	326	1	42	1	5	1	ug/L
Antimony	<0.5	0.5	<0.5	0.5	1.1	0.5	<0.5	0.5	ug/L
Arsenic	10	1	1	1	2	1	3	1	ug/L
Barium	220	10*	252	10*	65	1	371	10*	ug/L
Beryllium	1.2	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Bismuth	<1	1	<1	1	<1	1	<1	1	ug/L
Boron	<2	2	37	2	14	2	1580	2	ug/L
Cadmium	0.3	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L
Calcium	271000	5000*	258000	5000*	108000	500*	199000	500*	ug/L
Cerium	29	1	19	1	12	1	<1	1	ug/L
Cesium	<1	1	<1	1	<1	1	<1	1	ug/L
Chromium	4	1	3	1	1	1	17	1	ug/L
Cobalt	3.2	0.1	2.9	0.1	0.8	0.1	3.6	0.1	ug/L
Copper	10	1	6	1	3	1	5	1	ug/L
Europium	<1	1	<1	1	<1	1	<1	1	ug/L
Gallium	7	1	7	1	2	1	9	1	ug/L
Iron	8620	200*	4430	200*	1420	20	1550	20	ug/L
Lanthanum	10	1	9	1	6	1	<1	1	ug/L
Lead	15.7	0.1	1.3	0.1	0.8	0.1	<0.1	0.1	ug/L
Lithium	6	5	<5	5	<5	5	24	5	ug/L
Magnesium	23500	4	36000	4	5190	4	90500	40*	ug/L
Manganese	1130	10*	1340	10*	217	1	699	10*	ug/L
Mercury	<0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L
Molybdenum	<1	1	<1	1	<1	1	<1	1	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 530818

Sample Description	BH18R (4620)		BH29 - I (4621)		BH29 - II (4622)		BH8R (4616)		
Sample Date	4/9/2024 10:07 AM		4/9/2024 11:48 AM		4/9/2024 12:10 PM		4/9/2024 1:26 PM		
Lab ID	1992264		1992265		1992266		1992267		
Metals	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Nickel	11	1	9	1	4	1	9	1	ug/L
Niobium	<1	1	<1	1	<1	1	1	1	ug/L
Phosphorus	400	50	52	50	<50	50	<50	50	ug/L
Potassium	450	100	1180	100	720	100	69000	1000*	ug/L
Rhenium	<1	1	<1	1	<1	1	<1	1	ug/L
Rhodium	<1	1	<1	1	<1	1	<1	1	ug/L
Rubidium	3	1	2	1	2	1	25	1	ug/L
Scandium	4	1	5	1	2	1	6	1	ug/L
Selenium	1.2	0.2	0.5	0.2	0.4	0.2	2.6	0.2	ug/L
Silicon	8060	600	9530	600	4100	600	12000	6000*	ug/L
Silver	<0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L
Sodium	219000	1000*	13300	100	9210	100	124000	1000*	ug/L
Strontium	509	1	420	1	402	1	787	1	ug/L
Sulfur	<800	800	<800	800	<800	800	<800	800	ug/L
Tellurium	<1	1	<1	1	<1	1	<1	1	ug/L
Thallium	<0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L
Thorium	1	1	<1	1	<1	1	<1	1	ug/L
Tin	<1	1	<1	1	<1	1	<1	1	ug/L
Titanium	19	1	4	1	3	1	3	1	ug/L
Tungsten	<1	1	<1	1	<1	1	<1	1	ug/L
Uranium	1	1	<1	1	4	1	<1	1	ug/L
Vanadium	6	1	1	1	3	1	5	1	ug/L
Yttrium	6	1	5	1	<1	1	<1	1	ug/L
Zinc	32	1	12	1	2	1	1	1	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 530818

Sample Description	BH18R (4620)		BH29 - I (4621)		BH29 - II (4622)		BH8R (4616)		
Sample Date	4/9/2024 10:07 AM		4/9/2024 11:48 AM		4/9/2024 12:10 PM		4/9/2024 1:26 PM		
Lab ID	1992264		1992265		1992266		1992267		
Metals	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Zirconium	18	1	<1	1	<1	1	<1	1	ug/L

Sample Description	Duplicate BH 501 - III (4624)		
Sample Date	4/9/2024 10:48 AM		
Lab ID	1992268		
Metals	Result	MDL	Units
Aluminum	2360	10*	ug/L
Antimony	<0.5	0.5	ug/L
Arsenic	5	1	ug/L
Barium	135	10*	ug/L
Beryllium	<0.5	0.5	ug/L
Bismuth	<1	1	ug/L
Boron	2	2	ug/L
Cadmium	0.1	0.1	ug/L
Calcium	106000	500*	ug/L
Cerium	18	1	ug/L
Cesium	<1	1	ug/L
Chromium	4	1	ug/L
Cobalt	3.4	0.1	ug/L
Copper	13	1	ug/L
Europium	<1	1	ug/L
Gallium	4	1	ug/L
Iron	4890	200*	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 530818

Sample Description	Duplicate BH 501 - III (4624)		
Sample Date	4/9/2024 10:48 AM		
Lab ID	1992268		
Metals	Result	MDL	Units
Lanthanum	9	1	ug/L
Lead	3.8	0.1	ug/L
Lithium	<5	5	ug/L
Magnesium	13100	4	ug/L
Manganese	445	10*	ug/L
Mercury	<0.1	0.1	ug/L
Molybdenum	<1	1	ug/L
Nickel	8	1	ug/L
Niobium	<1	1	ug/L
Phosphorus	541	50	ug/L
Potassium	1230	100	ug/L
Rhenium	<1	1	ug/L
Rhodium	<1	1	ug/L
Rubidium	4	1	ug/L
Scandium	3	1	ug/L
Selenium	0.4	0.2	ug/L
Silicon	5500	600	ug/L
Silver	<0.1	0.1	ug/L
Sodium	128000	1000*	ug/L
Strontium	197	1	ug/L
Sulfur	<800	800	ug/L
Tellurium	<1	1	ug/L
Thallium	<0.1	0.1	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 530818

Sample Description	Duplicate BH 501 - III (4624)		
Sample Date	4/9/2024 10:48 AM		
Lab ID	1992268		
Metals	Result	MDL	Units
Thorium	<1	1	ug/L
Tin	<1	1	ug/L
Titanium	24	1	ug/L
Tungsten	<1	1	ug/L
Uranium	<1	1	ug/L
Vanadium	9	1	ug/L
Yttrium	6	1	ug/L
Zinc	39	1	ug/L
Zirconium	3	1	ug/L

Sample Description	BH1 - IR (4612)		BH1 - III (4613)		BH18R (4620)		BH29 - I (4621)		
Sample Date	4/8/2024 10:28 AM		4/8/2024 10:48 AM		4/9/2024 10:07 AM		4/9/2024 11:48 AM		
Lab ID	1992011		1992012		1992264		1992265		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Aluminum							2	1	ug/L
Dissolved Barium							203	1*	ug/L
Dissolved Cadmium							0.021	0.005	ug/L
Dissolved Calcium	89700	500*	82600	500*	209000	5000*	168000	500*	ug/L
Dissolved Chromium							0.1	0.1	ug/L
Dissolved Cobalt							1.8	0.1	ug/L
Dissolved Copper							<0.2	0.2	ug/L
Dissolved Iron	1790	20	1090	20	4140	200*	135	10	ug/L
Dissolved Lead							<0.05	0.05	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 530818

Sample Description	BH1 - IR (4612)		BH1 - III (4613)		BH18R (4620)		BH29 - I (4621)		
Sample Date	4/8/2024 10:28 AM		4/8/2024 10:48 AM		4/9/2024 10:07 AM		4/9/2024 11:48 AM		
Lab ID	1992011		1992012		1992264		1992265		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Magnesium	12300	4	7400	4	25800	4	31300	4	ug/L
Dissolved Manganese	600	10*	273	1	1140	10*	1080	1*	ug/L
Dissolved Nickel							2.3	0.5	ug/L
Dissolved Potassium	1640	100	1000	100	420	100	1120	50	ug/L
Dissolved Selenium							<0.05	0.05	ug/L
Dissolved Silver							0.36	0.01	ug/L
Dissolved Sodium	115000	1000*	127000	1000*	248000	1000*	15100	50	ug/L
Dissolved Zinc							9	1	ug/L

Sample Description	BH29 - II (4622)		BH8R (4616)		Duplicate BH 501 - III (4624)		BH2 - III (4614)		
Sample Date	4/9/2024 12:10 PM		4/9/2024 1:26 PM		4/9/2024 10:48 AM		4/10/2024 2:42 PM		
Lab ID	1992266		1992267		1992268		1993321		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Aluminum	6	1							ug/L
Dissolved Barium	60.0	0.1							ug/L
Dissolved Cadmium	0.013	0.005							ug/L
Dissolved Calcium	107000	500*	198000	5000*	91200	500*	238000	5000*	ug/L
Dissolved Chromium	0.4	0.1							ug/L
Dissolved Cobalt	0.8	0.1							ug/L
Dissolved Copper	<0.2	0.2							ug/L
Dissolved Iron	75	10	212	20	1030	20	8160	200*	ug/L
Dissolved Lead	<0.05	0.05							ug/L
Dissolved Magnesium	5830	4	88400	40*	8580	4	79800	40*	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 530818

Sample Description	BH29 - II (4622)		BH8R (4616)		Duplicate BH 501 - III (4624)		BH2 - III (4614)		
Sample Date	4/9/2024 12:10 PM		4/9/2024 1:26 PM		4/9/2024 10:48 AM		4/10/2024 2:42 PM		
Lab ID	1992266		1992267		1992268		1993321		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Manganese	253.0	0.1	777	10*	344	10*	1070	10*	ug/L
Dissolved Nickel	1.9	0.5							ug/L
Dissolved Potassium	978	50	68900	1000*	1010	100	43100	1000*	ug/L
Dissolved Selenium	<0.05	0.05							ug/L
Dissolved Silver	0.02	0.01							ug/L
Dissolved Sodium	10600	50	123000	1000*	134000	1000*	240000	1000*	ug/L
Dissolved Zinc	4	1							ug/L

Sample Description	BH4 - IIR (4615)		BH10R (4617)		BH11R (4618)		BH14 - IIIR (4619)		
Sample Date	4/10/2024 11:56 AM		4/11/2024 12:36 PM		4/11/2024 10:18 AM		4/11/2024 11:31 AM		
Lab ID	1993322		1993323		1993324		1993325		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Calcium	124000	500*	121000	500*	101000	500*	132000	500*	ug/L
Dissolved Iron	673	20	1140	20	2450	20	797	20	ug/L
Dissolved Magnesium	20300	4	39400	4	30300	4	44500	4	ug/L
Dissolved Manganese	102	1	356	10*	242	1	504	10*	ug/L
Dissolved Potassium	1700	100	19200	100	21500	1000*	20400	1000*	ug/L
Dissolved Sodium	122000	1000*	75000	1000*	98900	1000*	71500	1000*	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 530818

Sample Description	Duplicate BH2 - IIID (4623)		
Sample Date	4/10/2024 2:42 PM		
Lab ID	1993326		
Metals (Dissolved)	Result	MDL	Units
Dissolved Calcium	256000	5000*	ug/L
Dissolved Iron	8720	200*	ug/L
Dissolved Magnesium	84000	40*	ug/L
Dissolved Manganese	1120	10*	ug/L
Dissolved Potassium	44700	1000*	ug/L
Dissolved Sodium	252000	1000*	ug/L

Sample Description	BH11R (4618)		
Sample Date	4/11/2024 10:18 AM		
Lab ID	1993324		
Petroleum Hydrocarbons (Water)	Result	MDL	Units
F1 (C6-C10) - Less BTEX (Calc.)	<20	20	ug/L
F1 (C6-C10) Incl. BTEX	<20	20	ug/L
Benzene	<0.2	0.2	ug/L
Ethylbenzene	<0.4	0.4	ug/L
Toluene	<0.4	0.4	ug/L
m+p-Xylene	<0.4	0.4	ug/L
o-Xylene	<0.4	0.4	ug/L
Total Xylenes (Calc.)	<0.4	0.4	ug/L
1,4-dichlorobenzene-d4 (Surr.)	102	N/A	% Rec
undecane (Surr.)	106	N/A	% Rec

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 530818

Sample Description	Travel Blank (4625)		Field Blank 2 - III (4626)		
Sample Date	4/8/2024 12:00 AM		4/10/2024 2:56 PM		
Lab ID	1993327		1993328		
Volatile Organic Compounds	Result	MDL	Result	MDL	Units
Benzene	<0.2	0.2	<0.2	0.2	ug/L
Ethylbenzene	<0.5	0.5	<0.5	0.5	ug/L
Toluene	<0.5	0.5	<0.5	0.5	ug/L
m+p-Xylene	<0.5	0.5	<0.5	0.5	ug/L
o-Xylene	<0.5	0.5	<0.5	0.5	ug/L
Total Xylenes (Calc.)	<0.5	0.5	<0.5	0.5	ug/L
1,1,1,2-Tetrachloroethane	<0.5	0.5	<0.5	0.5	ug/L
1,1,1-Trichloroethane	<0.5	0.5	<0.5	0.5	ug/L
1,1,2,2-Tetrachloroethane	<0.5	0.5	<0.5	0.5	ug/L
1,1,2-Trichloroethane	<0.5	0.5	<0.5	0.5	ug/L
1,1-Dichloroethane	<0.5	0.5	<0.5	0.5	ug/L
1,1-Dichloroethylene	<0.5	0.5	<0.5	0.5	ug/L
1,1-Dichloropropene	<0.1	0.1	<0.1	0.1	ug/L
1,2,4-Trichlorobenzene	<0.5	0.5	<0.5	0.5	ug/L
1,2-Dibromo-3-chloropropane	<0.3	0.3	<0.3	0.3	ug/L
1,2-Dibromoethane	<0.2	0.2	<0.2	0.2	ug/L
1,2-Dichlorobenzene	<0.5	0.5	<0.5	0.5	ug/L
1,2-Dichloroethane	<0.5	0.5	<0.5	0.5	ug/L
1,2-Dichloroethane-d4 (Surr)	110	N/A	107	N/A	% Rec
1,2-Dichloropropane	<0.5	0.5	<0.5	0.5	ug/L
1,3-Dichlorobenzene	<0.5	0.5	<0.5	0.5	ug/L
1,3-Dichloropropane	<0.3	0.3	<0.3	0.3	ug/L
1,4-Dichlorobenzene	<0.5	0.5	<0.5	0.5	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 530818

Sample Description	Travel Blank (4625)		Field Blank 2 - III (4626)		
Sample Date	4/8/2024 12:00 AM		4/10/2024 2:56 PM		
Lab ID	1993327		1993328		
Volatile Organic Compounds	Result	MDL	Result	MDL	Units
1-Bromo-4-fluorobenzene (Surr.)	96.9	N/A	95.7	N/A	% Rec
Acetone	<30	30	<30	30	ug/L
Bromobenzene	<0.3	0.3	<0.3	0.3	ug/L
Bromochloromethane	<0.3	0.3	<0.3	0.3	ug/L
Bromodichloromethane	<0.2	0.2	<0.2	0.2	ug/L
Bromoform	<0.5	0.5	<0.5	0.5	ug/L
Bromomethane	<0.5	0.5	<0.5	0.5	ug/L
Carbon tetrachloride	<0.2	0.2	<0.2	0.2	ug/L
Chlorobenzene	<0.5	0.5	<0.5	0.5	ug/L
Chloroethane	<0.3	0.3	<0.3	0.3	ug/L
Chloroform	<1	1	<1	1	ug/L
Chloromethane	<0.3	0.3	<0.3	0.3	ug/L
cis - + trans-1,3-Dichloropropene (Calc.)	<0.5	0.5	<0.5	0.5	ug/L
cis-1,2-Dichloroethylene	<0.5	0.5	<0.5	0.5	ug/L
cis-1,3-Dichloropropene	<0.5	0.5	<0.5	0.5	ug/L
Dibromochloromethane	<2	2	<2	2	ug/L
Dibromomethane	<0.3	0.3	<0.3	0.3	ug/L
Dichlorodifluoromethane	<2	2	<2	2	ug/L
Dichloromethane	<5	5	<5	5	ug/L
Hexachlorobutadiene	<0.5	0.5	<0.5	0.5	ug/L
Methyl ethyl ketone	<20	20	<20	20	ug/L
Methyl isobutyl ketone (MIBK)	<20	20	<20	20	ug/L
Methyl tert-butyl ether (MTBE)	<2	2	<2	2	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 530818

Sample Description	Travel Blank (4625)		Field Blank 2 - III (4626)		
Sample Date	4/8/2024 12:00 AM		4/10/2024 2:56 PM		
Lab ID	1993327		1993328		
Volatile Organic Compounds	Result	MDL	Result	MDL	Units
n-Hexane	<5	5	<5	5	ug/L
Styrene	<0.5	0.5	<0.5	0.5	ug/L
Tetrachloroethylene	<0.5	0.5	<0.5	0.5	ug/L
Toluene-d8 (Surr.)	87.4	N/A	87.9	N/A	% Rec
Trans-1,2-dichloroethylene	<0.5	0.5	<0.5	0.5	ug/L
Trans-1,3-dichloropropene	<0.5	0.5	<0.5	0.5	ug/L
Trichloroethylene	<0.5	0.5	<0.5	0.5	ug/L
Trichlorofluoromethane	<5	5	<5	5	ug/L
Vinyl chloride	<0.1	0.1	<0.1	0.1	ug/L

LEGEND

Dates: Dates are formatted as mm/dd/year throughout this report.

MDL: Method detection limit or minimum reporting limit.

[ ]: Results for laboratory replicates are shown in square brackets immediately below the associated sample result for ease of comparison.

% Rec: Surrogate compounds are added to the sample in some cases and the recovery is reported as a % recovered.

Organic Soil Analysis: Data reported for organic analysis in soils samples are corrected for moisture content.

Quality Control: All associated Quality Control data is available on request.

Field Data: Reports containing Field Parameters represent data that has been collected and provided by the client. Testmark is not responsible for the validity of this data which may be used in subsequent calculations.

Sample Condition Deviations: A noted sample condition deviation may affect the validity of the result. Results apply to the sample(s) as received.

Reproduction of Report: Report shall not be reproduced, except in full, without the approval of Testmark Laboratories Ltd.

ICPMS Dustfall Insoluble: The ICPMS Dustfall Insoluble Portion method analyzes only the particulate matter from the Dustfall Sampler which is retained on the analysis filter during the Dustfall method.

Regulation Comparisons: Disclaimer: Please note that regulation criteria are provided for comparative purposes, however the onus on ensuring the validity of this comparison rests with the client.

pH Results: pH results are outside the standard calibration range of 4 to 10 pH units.

*Dilution: In the MDL column an asterisk (*) indicates a sample dilution was performed.

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

TESTMARK Laboratories Ltd.
Committed to Quality and Service

CERTIFICATE OF ANALYSIS

Client:	Hannah Curry	Work Order Number:	532176
Company:	City of Orillia - Waste Diversion Site	PO #:	83585
Address:	40 Kitchener St. Orillia, ON, L3V 6Z9	Regulation:	Information not provided
		Project #:	Spring WDS Sampling SW
Phone:	(705) 325-2394	DWS #:	
Email:	hcurry@orillia.ca	Sampled By:	Hannah Curry
Date Order Received:	4/23/2024	Analysis Started:	4/23/2024
Arrival Temperature:	14.6 C	Analysis Completed:	5/2/2024

WORK ORDER SUMMARY

ANALYSES WERE PERFORMED ON THE FOLLOWING SAMPLES. THE RESULTS RELATE ONLY TO THE ITEMS TESTED.

Sample Description	Lab ID	Matrix	Type	Comments	Date Collected	Time Collected
S-1 (4575)	1997021	Surface Water	None		4/22/2024	9:20 AM
S-2 (4576)	1997022	Surface Water	None		4/22/2024	11:12 AM
S-3 (4577)	1997023	Surface Water	None		4/22/2024	10:06 AM
S-4 (4578)	1997024	Surface Water	None		4/22/2024	11:43 AM
S-7 (4580)	1997025	Surface Water	None		4/22/2024	1:48 PM
Duplicate 4D (4583)	1997026	Surface Water	None		4/22/2024	11:43 AM

METHODS AND INSTRUMENTATION

THE FOLLOWING METHODS WERE USED FOR YOUR SAMPLE(S):

Method	Lab	Description	Reference
Alkalinity (A1.0)	Garson	Determination of Alkalinity by Titration	Modified from APHA-2320B
Ammonia Water (A42)	Kirkland Lake	Determination of Ammonia/Ammonium in Water	Modified from EPA 350.1
Anions Water (mg/L by IC) (A5)	Garson	Determination of Anions in Water by Ion Chromatography	Modified from SW846-9056A
BOD (A3)	Mississauga	Determination of Biochemical Oxygen Demand (BOD) 5-Day	Modified from SM-5210 B
Carbonate (A94)	Garson	Determination of Carbonate and Bi-Carbonate	Modified from APHA-2320
Conductivity of Water (A12)	Garson	Determination of Conductivity in Water at 25°C	Modified from SM 2510 B

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 532176

Method	Lab	Description	Reference
DIC Water (A55)	Mississauga	Determination of Dissolved Inorganic Carbon in Water	Modified from SM-5310 C
DOC Water (A55.1)	Mississauga	Determination of Dissolved Organic Carbon in Water	Modified from SM-5310 C
Field pH (R112)	Mississauga	Client Supplied Field Determination of pH of Water	Field Test
Field Temp (R113)	Mississauga	Client Supplied Field Determination of Temperature of Water	Field Test
ICPMS Dis. Water (0.2um) (A13)	Garson	Determination of Dissolved Metals in Water by ICP/MS -> Lab-Filtered	Modified from SW846-6020A
ICPMS Dis. Water (A13)	Garson	Determination of Dissolved Metals in Water by ICP/MS -> Lab-Filtered	Modified from SW846-6020A
ICPMS Reg. Water (A13)	Garson	Determination of Metals in Water by ICP/MS	Modified from SW846-6020A
ICPMS Tot. Water (A13.2)	Garson	Determination of Total Metals in Water by ICP/MS with Digestion	Modified from SW846-6020A
Ion Balance (A91)	Garson	Calculation of Ion Balance	Modified from APHA-1030E
OP Water (A23.1)	Mississauga	Determination of Ortho-Phosphate in Water.	Modified from EPA 365.3 and ESS 310.2.
Organic Nitrogen (A58)	Garson	Determination of Organic Nitrogen	Modified from APHA-4500
pH of Water (A2.0)	Garson	Determination of Water pH by Ion Selective Electrode	Modified from APHA-4500H+ B
Phenols 4AAP (T38)	Mississauga	Determination of Total Phenols by 4AAP	Modified from APHA-5530
Reg. Hardness (A13)	Garson	Determination of Total Hardness	Modified from APHA-2340B
TKN Water Dig. (A58)	Garson	Determination of Total Kjeldahl Nitrogen in Waters with Block Digestion.	Modified from SM-4500 NORG-D
TP Water (A23.2)	Kirkland Lake	Determination of Total Phosphorus in Water.	Modified from EPA 365.3 and ESS 310.2,
TSS (A27)	Mississauga	Determination of Total Suspended Solids in water by gravimetry	Modified from SM-2540

REPORT COMMENTS

Samples received past recommended hold time for dissolved metals, proceed with analysis as per client 04/23/24 JP

This report has been approved by:

Marc Creighton
Laboratory Director

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 532176

WORK ORDER RESULTS

Sample Description	S - 1 (4575)		S - 2 (4576)		S - 3 (4577)		S - 4 (4578)		
Sample Date	4/22/2024 9:20 AM		4/22/2024 11:12 AM		4/22/2024 10:06 AM		4/22/2024 11:43 AM		
Lab ID	1997021		1997022		1997023		1997024		
Anions	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Chloride	185.0	0.6*	221.0	0.6*	205.0	0.6*	168.0	0.6*	mg/L
Nitrate (as N)	4.00	0.15*	8.94	0.15*	6.35	0.15*	0.28	0.15*	mg/L
Nitrite (as N)	<0.15	0.15*	<0.15	0.15*	<0.15	0.15*	<0.15	0.15*	mg/L
Sulphate	30.7	1.5*	59.6	1.5*	44.3	1.5*	12.0	1.5*	mg/L

Sample Description	S - 7 (4580)		Duplicate 4D (4583)		
Sample Date	4/22/2024 1:48 PM		4/22/2024 11:43 AM		
Lab ID	1997025		1997026		
Anions	Result	MDL	Result	MDL	Units
Chloride	129.0	0.4*	167.0	0.6*	mg/L
Nitrate (as N)	<0.1	0.1*	0.30	0.15*	mg/L
Nitrite (as N)	<0.1	0.1*	<0.15	0.15*	mg/L
Sulphate	10	1*	12.0	1.5*	mg/L

Sample Description	S - 1 (4575)		S - 2 (4576)		S - 3 (4577)		S - 4 (4578)		
Sample Date	4/22/2024 9:20 AM		4/22/2024 11:12 AM		4/22/2024 10:06 AM		4/22/2024 11:43 AM		
Lab ID	1997021		1997022		1997023		1997024		
Field Parameters	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Field pH	6.86	N/A	7.25	N/A	7.14	N/A	7.65	N/A	pH
Field Temp	8.5	N/A	11.2	N/A	9.3	N/A	8.6	N/A	°C

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 532176

Sample Description	S - 7 (4580)		Duplicate 4D (4583)		
Sample Date	4/22/2024 1:48 PM		4/22/2024 11:43 AM		
Lab ID	1997025		1997026		
Field Parameters	Result	MDL	Result	MDL	Units
Field pH	7.75	N/A	7.65	N/A	pH
Field Temp	9.5	N/A	8.6	N/A	°C

Sample Description	S - 1 (4575)		S - 2 (4576)		S - 3 (4577)		S - 4 (4578)		
Sample Date	4/22/2024 9:20 AM		4/22/2024 11:12 AM		4/22/2024 10:06 AM		4/22/2024 11:43 AM		
Lab ID	1997021		1997022		1997023		1997024		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Ammonia (as N)	0.09	0.01	0.04	0.01	0.06	0.01	0.10	0.01	mg/L
Anion Sum (Calc.)	9.58	N/A	11.1	N/A	10.4	N/A	8.92	N/A	meq
Bicarbonate (Calc.)	223	1	213	1	221	1	237	1	mg/L as CaCO3
Carbonate (Calc.)	<1	1	<1	1	<1	1	1	1	mg/L as CaCO3
Cation Sum (Calc.)	9.92	N/A	11.3	N/A	11.2	N/A	9.2	N/A	meq
Conductivity	1000	1	1190	1	1070	1	889	1	µS/cm
Dissolved Inorganic Carbon	55	2*	52	2*	54.4	0.8*	56	2*	mg/L
Dissolved Organic Carbon	4.7	0.4	4.3	0.4	4.6	0.4	5.2	0.4	mg/L
Ion Balance (Calc.)	1.74	N/A	0.893	N/A	3.7	N/A	1.55	N/A	%
Organic Nitrogen (as N) (Calc.)	<0.2	0.2	<0.2	0.2	<0.2	0.2	<0.2	0.2	mg/L
Orthophosphate (as P)	0.010	0.005	0.007	0.005	0.013	0.005	0.011	0.005	mg/L
pH	7.63	N/A	7.54	N/A	7.6	N/A	7.73	N/A	pH
Total Alkalinity	224	2	214	2	222	2	238	2	mg/L as CaCO3
Total Hardness (as CaCO3) (Calc.)	279.0	0.1	321.0	0.1	298.0	0.1	272.0	0.1	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 532176

Sample Description	S - 1 (4575)		S - 2 (4576)		S - 3 (4577)		S - 4 (4578)		
Sample Date	4/22/2024 9:20 AM		4/22/2024 11:12 AM		4/22/2024 10:06 AM		4/22/2024 11:43 AM		
Lab ID	1997021		1997022		1997023		1997024		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Total Kjeldahl Nitrogen	<0.2	0.2*	<0.2	0.2*	<0.2	0.2*	<0.2	0.2*	mg/L
Total Phenols	0.0013	0.0004	0.0010	0.0004	0.0010	0.0004	0.0010	0.0004	mg/L
Total Phosphorus (as P)	0.032	0.002	0.036	0.002	0.038	0.002	0.024	0.002	mg/L

Sample Description	S - 7 (4580)		Duplicate 4D (4583)		
Sample Date	4/22/2024 1:48 PM		4/22/2024 11:43 AM		
Lab ID	1997025		1997026		
General Chemistry	Result	MDL	Result	MDL	Units
Ammonia (as N)	0.27	0.01	0.28	0.01	mg/L
Anion Sum (Calc.)	7.4	N/A	8.91	N/A	meq
Bicarbonate (Calc.)	215	1	238	1	mg/L as CaCO3
Carbonate (Calc.)	1	1	1	1	mg/L as CaCO3
Cation Sum (Calc.)	7.79	N/A	9.24	N/A	meq
Conductivity	742	1	885	1	µS/cm
Dissolved Inorganic Carbon	51	2*	57	2*	mg/L
Dissolved Organic Carbon	4.9	0.4	5.5	0.4	mg/L
Ion Balance (Calc.)	2.57	N/A	1.82	N/A	%
Organic Nitrogen (as N) (Calc.)	<0.2	0.2	<0.2	0.2	mg/L
Orthophosphate (as P)	0.007	0.005	0.009	0.005	mg/L
pH	7.78	N/A	7.75	N/A	pH
Total Alkalinity	216	2	239	2	mg/L as CaCO3
Total Hardness (as CaCO3) (Calc.)	243.0	0.1	269.0	0.1	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 532176

Sample Description	S - 7 (4580)		Duplicate 4D (4583)		
Sample Date	4/22/2024 1:48 PM		4/22/2024 11:43 AM		
Lab ID	1997025		1997026		
General Chemistry	Result	MDL	Result	MDL	Units
Total Kjeldahl Nitrogen	<0.2	0.2*	<0.2	0.2*	mg/L
Total Phenols	0.0011	0.0004	0.0010	0.0004	mg/L
Total Phosphorus (as P)	0.021	0.002	0.023	0.002	mg/L

Sample Description	S - 1 (4575)		S - 2 (4576)		S - 3 (4577)		S - 4 (4578)		
Sample Date	4/22/2024 9:20 AM		4/22/2024 11:12 AM		4/22/2024 10:06 AM		4/22/2024 11:43 AM		
Lab ID	1997021		1997022		1997023		1997024		
Metals (Dissolved - 0.2um)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Aluminum	38	1	81	1	64	1	4	1	ug/L

Sample Description	S - 7 (4580)		Duplicate 4D (4583)		
Sample Date	4/22/2024 1:48 PM		4/22/2024 11:43 AM		
Lab ID	1997025		1997026		
Metals (Dissolved - 0.2um)	Result	MDL	Result	MDL	Units
Dissolved Aluminum	4	1	6	1	ug/L

Sample Description	S - 1 (4575)		S - 2 (4576)		S - 3 (4577)		S - 4 (4578)		
Sample Date	4/22/2024 9:20 AM		4/22/2024 11:12 AM		4/22/2024 10:06 AM		4/22/2024 11:43 AM		
Lab ID	1997021		1997022		1997023		1997024		
Metals (Total)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Total Aluminum	88	1	192	1	140	1	22	1	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 532176

Sample Description	S - 1 (4575)		S - 2 (4576)		S - 3 (4577)		S - 4 (4578)		
Sample Date	4/22/2024 9:20 AM		4/22/2024 11:12 AM		4/22/2024 10:06 AM		4/22/2024 11:43 AM		
Lab ID	1997021		1997022		1997023		1997024		
Metals (Total)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Total Arsenic			1.9	0.1					ug/L
Total Barium	93.0	0.1	76.8	0.1	89.7	0.1	106.0	0.1	ug/L
Total Cadmium	0.013	0.005	0.011	0.005	0.016	0.005	0.008	0.005	ug/L
Total Calcium	93400	500*	97700	500*	102000	500*	88500	500*	ug/L
Total Chromium	0.5	0.1	0.5	0.1	0.5	0.1	0.5	0.1	ug/L
Total Cobalt	1.1	0.1	2.4	0.1	1.7	0.1	0.2	0.1	ug/L
Total Copper	2.4	0.2	3.4	0.2	4.6	0.2	1.6	0.2	ug/L
Total Iron	289	10	97	10	217	10	409	10	ug/L
Total Lead	0.15	0.05	0.20	0.05	0.19	0.05	0.09	0.05	ug/L
Total Magnesium	15500	4	16700	4	16700	4	15800	4	ug/L
Total Manganese	67.7	0.1	61.1	0.1	68.5	0.1	75.2	0.1	ug/L
Total Nickel	0.9	0.5	1.4	0.5	1.4	0.5	0.7	0.5	ug/L
Total Potassium	4730	50	7830	50	6280	50	2620	50	ug/L
Total Selenium	0.36	0.05	0.58	0.05	0.44	0.05	0.17	0.05	ug/L
Total Silver	0.02	0.01	0.01	0.01	<0.01	0.01	0.01	0.01	ug/L
Total Sodium	101000	500*	116000	500*	113000	500*	93700	500*	ug/L
Total Zinc	9	1	16	1	14	1	4	1	ug/L

Sample Description	S - 7 (4580)		Duplicate 4D (4583)		
Sample Date	4/22/2024 1:48 PM		4/22/2024 11:43 AM		
Lab ID	1997025		1997026		
Metals (Total)	Result	MDL	Result	MDL	Units
Total Aluminum	38	1	21	1	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 532176

Sample Description	S - 7 (4580)		Duplicate 4D (4583)		
Sample Date	4/22/2024 1:48 PM		4/22/2024 11:43 AM		
Lab ID	1997025		1997026		
Metals (Total)	Result	MDL	Result	MDL	Units
Total Barium	99.1	0.1	108.0	0.1	ug/L
Total Cadmium	0.010	0.005	0.015	0.005	ug/L
Total Calcium	78000	500*	87500	500*	ug/L
Total Chromium	0.5	0.1	0.6	0.1	ug/L
Total Cobalt	0.2	0.1	0.2	0.1	ug/L
Total Copper	1.2	0.2	1.7	0.2	ug/L
Total Iron	356	10	444	10	ug/L
Total Lead	0.08	0.05	0.12	0.05	ug/L
Total Magnesium	15900	4	16000	4	ug/L
Total Manganese	53.8	0.1	78.3	0.1	ug/L
Total Nickel	<0.5	0.5	0.6	0.5	ug/L
Total Potassium	2240	50	2740	50	ug/L
Total Selenium	0.20	0.05	0.18	0.05	ug/L
Total Silver	<0.01	0.01	<0.01	0.01	ug/L
Total Sodium	70100	500*	92800	500*	ug/L
Total Zinc	4	1	4	1	ug/L

Sample Description	S - 1 (4575)		S - 2 (4576)		S - 3 (4577)		S - 4 (4578)		
Sample Date	4/22/2024 9:20 AM		4/22/2024 11:12 AM		4/22/2024 10:06 AM		4/22/2024 11:43 AM		
Lab ID	1997021		1997022		1997023		1997024		
Oxygen Demand	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
BOD (5 day)	<2	2	2.7	2	2.4	2	<2	2	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 532176

Sample Description	S - 7 (4580)		Duplicate 4D (4583)		
Sample Date	4/22/2024 1:48 PM		4/22/2024 11:43 AM		
Lab ID	1997025		1997026		
Oxygen Demand	Result	MDL	Result	MDL	Units
BOD (5 day)	<2	2	<2	2	mg/L

Sample Description	S - 1 (4575)		S - 2 (4576)		S - 3 (4577)		S - 4 (4578)		
Sample Date	4/22/2024 9:20 AM		4/22/2024 11:12 AM		4/22/2024 10:06 AM		4/22/2024 11:43 AM		
Lab ID	1997021		1997022		1997023		1997024		
Solids	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Total Suspended Solids	1.70	0.67	1.00	0.67	1.00	0.67	1.00	0.67	mg/L

Sample Description	S - 7 (4580)		Duplicate 4D (4583)		
Sample Date	4/22/2024 1:48 PM		4/22/2024 11:43 AM		
Lab ID	1997025		1997026		
Solids	Result	MDL	Result	MDL	Units
Total Suspended Solids	2.70	0.67	1.70	0.67	mg/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 532176

LEGEND

Dates: Dates are formatted as mm/dd/year throughout this report.

MDL: Method detection limit or minimum reporting limit.

[ ]: Results for laboratory replicates are shown in square brackets immediately below the associated sample result for ease of comparison.

Organic Soil Analysis: Data reported for organic analysis in soils samples are corrected for moisture content.

Quality Control: All associated Quality Control data is available on request.

Field Data: Reports containing Field Parameters represent data that has been collected and provided by the client. Testmark is not responsible for the validity of this data which may be used in subsequent calculations.

Sample Condition Deviations: A noted sample condition deviation may affect the validity of the result. Results apply to the sample(s) as received.

Reproduction of Report: Report shall not be reproduced, except in full, without the approval of Testmark Laboratories Ltd.

ICPMS Dustfall Insoluble: The ICPMS Dustfall Insoluble Portion method analyzes only the particulate matter from the Dustfall Sampler which is retained on the analysis filter during the Dustfall method.

Regulation Comparisons: Disclaimer: Please note that regulation criteria are provided for comparative purposes, however the onus on ensuring the validity of this comparison rests with the client.

*Dilution: In the MDL column an asterisk (*) indicates a sample dilution was performed.

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

TESTMARK Laboratories Ltd.
Committed to Quality and Service

CERTIFICATE OF ANALYSIS

Client:	Hannah Curry	Work Order Number:	532339
Company:	City of Orillia - Waste Diversion Site	PO #:	83585
Address:	40 Kitchener St. Orillia, ON, L3V 6Z9	Regulation:	Information not provided
		Project #:	Spring WDS Sampling SW
Phone:	(705) 325-2394	DWS #:	
Email:	hcurry@orillia.ca	Sampled By:	Hannah Curry
Date Order Received:	4/24/2024	Analysis Started:	4/24/2024
Arrival Temperature:	10.8 C	Analysis Completed:	5/2/2024

WORK ORDER SUMMARY

ANALYSES WERE PERFORMED ON THE FOLLOWING SAMPLES. THE RESULTS RELATE ONLY TO THE ITEMS TESTED.

Sample Description	Lab ID	Matrix	Type	Comments	Date Collected	Time Collected
S-6 (4579)	1997641	Surface Water	None		4/23/2024	11:36 AM
S-8 (4581)	1997642	Surface Water	None		4/23/2024	10:02 AM
S-11 (4582)	1997643	Surface Water	None		4/23/2024	1:50 PM
Duplicate 508 (4584)	1997644	Surface Water	None		4/23/2024	10:02 AM

METHODS AND INSTRUMENTATION

THE FOLLOWING METHODS WERE USED FOR YOUR SAMPLE(S):

Method	Lab	Description	Reference
Alkalinity (A1.0)	Garson	Determination of Alkalinity by Titration	Modified from APHA-2320B
Ammonia Water (A42)	Kirkland Lake	Determination of Ammonia/Ammonium in Water	Modified from EPA 350.1
Anions Water (mg/L by IC) (A5)	Garson	Determination of Anions in Water by Ion Chromatography	Modified from SW846-9056A
BOD (A3)	Mississauga	Determination of Biochemical Oxygen Demand (BOD) 5-Day	Modified from SM-5210 B
Carbonate (A94)	Garson	Determination of Carbonate and Bi-Carbonate	Modified from APHA-2320
Conductivity of Water (A12)	Garson	Determination of Conductivity in Water at 25°C	Modified from SM 2510 B
DIC Water (A55)	Mississauga	Determination of Dissolved Inorganic Carbon in Water	Modified from SM-5310 C
DOC Water (A55.1)	Mississauga	Determination of Dissolved Organic Carbon in Water	Modified from SM-5310 C

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 532339

Method	Lab	Description	Reference
Field pH (R112)	Mississauga	Client Supplied Field Determination of pH of Water	Field Test
Field Temp (R113)	Mississauga	Client Supplied Field Determination of Temperature of Water	Field Test
ICPMS Dis. Water (0.2um) (A13)	Garson	Determination of Dissolved Metals in Water by ICP/MS -> Lab-Filtered	Modified from SW846-6020A
ICPMS Dis. Water (A13)	Garson	Determination of Dissolved Metals in Water by ICP/MS -> Lab-Filtered	Modified from SW846-6020A
ICPMS Reg. Water (A13)	Garson	Determination of Metals in Water by ICP/MS	Modified from SW846-6020A
ICPMS Tot. Water (A13.2)	Garson	Determination of Total Metals in Water by ICP/MS with Digestion	Modified from SW846-6020A
Ion Balance (A91)	Garson	Calculation of Ion Balance	Modified from APHA-1030E
OP Water (A23.1)	Mississauga	Determination of Ortho-Phosphate in Water.	Modified from EPA 365.3 and ESS 310.2.
Organic Nitrogen (A58)	Garson	Determination of Organic Nitrogen	Modified from APHA-4500
pH of Water (A2.0)	Garson	Determination of Water pH by Ion Selective Electrode	Modified from APHA-4500H+ B
Phenols 4AAP (T38)	Mississauga	Determination of Total Phenols by 4AAP	Modified from APHA-5530
Reg. Hardness (A13)	Garson	Determination of Total Hardness	Modified from APHA-2340B
TKN Water Dig. (A58)	Garson	Determination of Total Kjeldahl Nitrogen in Waters with Block Digestion.	Modified from SM-4500 NORG-D
TP Water (A23.2)	Kirkland Lake	Determination of Total Phosphorus in Water.	Modified from EPA 365.3 and ESS 310.2,
TSS (A27)	Mississauga	Determination of Total Suspended Solids in water by gravimetry	Modified from SM-2540

This report has been approved by:

Marc Creighton
Laboratory Director

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 532339

WORK ORDER RESULTS

Sample Description	S - 6 (4579)		S - 8 (4581)		S - 11 (4582)		Duplicate 508 (4584)		
Sample Date	4/23/2024 11:36 AM		4/23/2024 10:02 AM		4/23/2024 1:50 PM		4/23/2024 10:02 AM		
Lab ID	1997641		1997642		1997643		1997644		
Anions	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Chloride	132.0	0.4*	284.0	0.8*	60.8	0.2	282.0	0.8*	mg/L
Nitrate (as N)	<0.1	0.1*	1.2	0.2*	0.07	0.05	1.3	0.2*	mg/L
Nitrite (as N)	<0.1	0.1*	<0.2	0.2*	<0.05	0.05	<0.2	0.2*	mg/L
Sulphate	10	1*	19	2*	15.3	0.5	19	2*	mg/L

Sample Description	S - 6 (4579)		S - 8 (4581)		S - 11 (4582)		Duplicate 508 (4584)		
Sample Date	4/23/2024 11:36 AM		4/23/2024 10:02 AM		4/23/2024 1:50 PM		4/23/2024 10:02 AM		
Lab ID	1997641		1997642		1997643		1997644		
Field Parameters	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Field pH	7.23	N/A	6.82	N/A	7.75	N/A	6.82	N/A	pH
Field Temp	8.2	N/A	8.5	N/A	9	N/A	8.5	N/A	°C

Sample Description	S - 6 (4579)		S - 8 (4581)		S - 11 (4582)		Duplicate 508 (4584)		
Sample Date	4/23/2024 11:36 AM		4/23/2024 10:02 AM		4/23/2024 1:50 PM		4/23/2024 10:02 AM		
Lab ID	1997641		1997642		1997643		1997644		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Ammonia (as N)	0.05	0.01	0.16	0.01	0.05	0.01	0.18	0.01	mg/L
Anion Sum (Calc.)	7.56	N/A	13.4	N/A	4.31	N/A	13.3	N/A	meq
Bicarbonate (Calc.)	220	1	298	1	139	1	298	1	mg/L as CaCO3

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 532339

Sample Description	S - 6 (4579)		S - 8 (4581)		S - 11 (4582)		Duplicate 508 (4584)		
Sample Date	4/23/2024 11:36 AM		4/23/2024 10:02 AM		4/23/2024 1:50 PM		4/23/2024 10:02 AM		
Lab ID	1997641		1997642		1997643		1997644		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Carbonate (Calc.)	1	1	1	1	<1	1	1	1	mg/L as CaCO3
Cation Sum (Calc.)	7.99	N/A	13.9	N/A	4.39	N/A	13.8	N/A	meq
Conductivity	780	1	1380	1	458	1	1390	1	µS/cm
Dissolved Inorganic Carbon	53	2*	73	2*	36.4	0.8*	16	2*	mg/L
Dissolved Organic Carbon	5.0	0.4	5.5	0.4	4.2	0.4	5.5	0.4	mg/L
Ion Balance (Calc.)	2.77	N/A	1.83	N/A	0.92	N/A	1.85	N/A	%
Organic Nitrogen (as N) (Calc.)	0.3	0.2	0.3	0.2	0.6	0.2	0.4	0.2	mg/L
Orthophosphate (as P)	0.008	0.005	0.015	0.005	0.014	0.005	0.015	0.005	mg/L
pH	7.71	N/A	7.67	N/A	7.81	N/A	7.67	N/A	pH
Total Alkalinity	221	2	299	2	140	2	299	2	mg/L as CaCO3
Total Hardness (as CaCO3) (Calc.)	245.0	0.1	348.0	0.1	159.0	0.1	353.0	0.1	mg/L
Total Kjeldahl Nitrogen	0.3	0.2*	0.5	0.2*	0.6	0.2*	0.6	0.2*	mg/L
Total Phenols	0.0011	0.0004	0.0011	0.0004	0.0011	0.0004	0.0012	0.0004	mg/L
Total Phosphorus (as P)	0.018	0.002	0.031	0.002	0.128	0.002	0.026	0.002	mg/L

Sample Description	S - 6 (4579)		S - 8 (4581)		S - 11 (4582)		Duplicate 508 (4584)		
Sample Date	4/23/2024 11:36 AM		4/23/2024 10:02 AM		4/23/2024 1:50 PM		4/23/2024 10:02 AM		
Lab ID	1997641		1997642		1997643		1997644		
Metals (Dissolved - 0.2um)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Aluminum	4	1	5	1	18	1	9	1	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 532339

Sample Description	S - 6 (4579)		S - 8 (4581)		S - 11 (4582)		Duplicate 508 (4584)		
Sample Date	4/23/2024 11:36 AM		4/23/2024 10:02 AM		4/23/2024 1:50 PM		4/23/2024 10:02 AM		
Lab ID	1997641		1997642		1997643		1997644		
Metals (Total)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Total Aluminum	20	1	34	1	459	1	35	1	ug/L
Total Barium	97.5	0.1	128	1*	45.3	0.1	132	1*	ug/L
Total Cadmium	0.005	0.005	0.018	0.005	0.013	0.005	0.005	0.005	ug/L
Total Calcium	69900	500*	100000	500*	48600	50	107000	500*	ug/L
Total Chromium	0.4	0.1	0.8	0.1	0.8	0.1	0.7	0.1	ug/L
Total Cobalt	0.2	0.1	0.3	0.1	0.5	0.1	0.3	0.1	ug/L
Total Copper	0.8	0.2	2.9	0.2	1.5	0.2	2.8	0.2	ug/L
Total Iron	337	10	589	10	592	10	577	10	ug/L
Total Lead	<0.05	0.05	0.28	0.05	0.60	0.05	0.28	0.05	ug/L
Total Magnesium	14000	4	16500	4	8530	4	16300	4	ug/L
Total Manganese	67.2	0.1	115.0	0.1	32.8	0.1	114.0	0.1	ug/L
Total Nickel	<0.5	0.5	1.3	0.5	0.9	0.5	1.1	0.5	ug/L
Total Potassium	2040	50	2570	50	2250	50	2550	50	ug/L
Total Selenium	0.33	0.05	0.85	0.05	0.35	0.05	0.80	0.05	ug/L
Total Silver	<0.01	0.01	<0.01	0.01	<0.01	0.01	<0.01	0.01	ug/L
Total Sodium	64300	500*	134000	500*	31600	50	141000	500*	ug/L
Total Zinc	3	1	7	1	4	1	6	1	ug/L

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

City of Orillia - Waste Diversion Site

Work Order Number: 532339

Sample Description	S - 6 (4579)		S - 8 (4581)		S - 11 (4582)		Duplicate 508 (4584)		
Sample Date	4/23/2024 11:36 AM		4/23/2024 10:02 AM		4/23/2024 1:50 PM		4/23/2024 10:02 AM		
Lab ID	1997641		1997642		1997643		1997644		
Oxygen Demand	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
BOD (5 day)	<2	2	2	2	2.3	2	3.4	2	mg/L

Sample Description	S - 6 (4579)		S - 8 (4581)		S - 11 (4582)		Duplicate 508 (4584)		
Sample Date	4/23/2024 11:36 AM		4/23/2024 10:02 AM		4/23/2024 1:50 PM		4/23/2024 10:02 AM		
Lab ID	1997641		1997642		1997643		1997644		
Solids	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Total Suspended Solids	2.00	0.67	4.00	0.67	57.5	1	5.00	0.67	mg/L

LEGEND

Dates: Dates are formatted as mm/dd/year throughout this report.

MDL: Method detection limit or minimum reporting limit.

[ ]: Results for laboratory replicates are shown in square brackets immediately below the associated sample result for ease of comparison.

Organic Soil Analysis: Data reported for organic analysis in soils samples are corrected for moisture content.

Quality Control: All associated Quality Control data is available on request.

Field Data: Reports containing Field Parameters represent data that has been collected and provided by the client. Testmark is not responsible for the validity of this data which may be used in subsequent calculations.

Sample Condition Deviations: A noted sample condition deviation may affect the validity of the result. Results apply to the sample(s) as received.

Reproduction of Report: Report shall not be reproduced, except in full, without the approval of Testmark Laboratories Ltd.

ICPMS Dustfall Insoluble: The ICPMS Dustfall Insoluble Portion method analyzes only the particulate matter from the Dustfall Sampler which is retained on the analysis filter during the Dustfall method.

Regulation Comparisons: Disclaimer: Please note that regulation criteria are provided for comparative purposes, however the onus on ensuring the validity of this comparison rests with the client.

*Dilution: In the MDL column an asterisk (*) indicates a sample dilution was performed.

6820 Kitimat Road Unit 4, Mississauga, ON, L5N 5M3
Phone: (905) 821-1112 Fax: (905) 821-2095 Web: www.testmark.ca

APPENDIX H

Field Notes and Procedures

APPENDIX E

WASTE DIVERSION SITE GROUND AND SURFACE WATER MONITORING PROTOCOLS

Environmental Services & Operations Department
Revised September 2018

TABLE OF CONTENTS

1.0 INTRODUCTION 1

2.0 SURFACE WATER MONITORING PROTOCOLS 1

2.1 Surface Water Monitoring Program 1
2.1.1 Station Locations 2
2.1.2 Equipment List 5
2.1.3 Field Book 6
2.2 Field Measurements 7
2.2.1 Dissolved Oxygen 11
2.2.2 Conductivity/TDS 11
2.2.3 pH 11
2.2.4 Water Temperature 11
2.2.5 Air Temperature 12
2.2.6 Water Levels 12
2.3 Sample Collection 12
2.4 Flow Measurements 13
2.5 Laboratory Submission of Samples 14
2.6 Submission of Results to Hydrogeology Consultant 14

3.0 GROUND WATER MONITORING PROTOCOLS 16

3.1 Ground Water Monitoring Program 16
3.1.1 Station Locations 16
3.1.2 Equipment List 16
3.2 Water Levels 17
3.3 Purging/Development Procedures 19
3.4 Sample Collection 21
3.5 Laboratory Submission of Samples 23
3.6 Submission of Results to Hydrogeology Consultant 23

4.0 QUALITY ASSURANCE/QUALITY CONTROL SAMPLES 25

4.1 Blind Duplicate Samples 25
4.2 Travel & Field Blanks 26

5.0 HEALTH AND SAFETY 26

LIST OF TABLES

Table 1: Calibration Log Sheet for Field Meter..... 8

Table 2: Field Summary Sheet..... 9

Table 3: Record of Weather Conditions During Surface & Ground Water Sampling Session 10

Table 4: Field Observations During Surface & Ground Water Sampling Session..... 10

Table 5: Flow Measurement Sheet 15

Table 6: Orillia Waste Diversion Site Purging and Sampling Field Record Sheet... **Error! Bookmark not defined.**

Table 7: Purge Volumes Based On Monitor Pipe Diameter 20

Table 8: Summary Sheet of Relative Response Times to Purging 24

Table 9: General Protocols 25

LIST OF FIGURES

Figure 1: Waste Diversion Site – Monitoring Locations..... 3

1.0 INTRODUCTION

These protocols have been prepared to assist staff of the City of Orillia in consistently obtaining representative water samples using a standardized set of sampling protocols. This document replaces previous sampling and protocols manuals. The protocols have been prepared by City staff and follow the framework of the 1993 Gartner Lee Limited version with updates to the current program.

This document is used for ongoing reference by City staff so that sampling methodology remains consistent over time, and to introduce new City staff to the monitoring program whenever necessary. In this way, the reviewing technical consultants may be assured of a dependable data base. It is recommended that the protocols be reviewed in the field, once annually for both ground and surface water monitoring.

Future monitoring results may dictate changes to the sampling frequency or to the analytical parameters required. This manual should be revised on an ongoing basis to reflect changes that may occur and are approved by the Ministry of the Environment and Climate Change (MOECC).

The protocols are divided into four sections dealing with surface water monitoring, ground water monitoring, quality assurance/quality control measures, and health and safety protocols.

2.0 SURFACE WATER MONITORING PROTOCOLS

The objective of the surface water monitoring program is to provide sufficient information to identify potential impacts to surface water quality related to the Waste Diversion Site.

2.1 Surface Water Monitoring Program

The monitoring program currently consists of 12 surface water monitoring stations, where nine are monitored three times a year (March/April, July/August, and October/November) and the remaining three stations are measured once per year (July/August). The program also includes sampling from an additional six known surface water drainage areas at this site during larger rainfall-runoff events (e.g., anticipated rainfall over 24 hours of at least 25 mm or events which generate sufficient surface water runoff for sample collection). Sampling of runoff from the drainage stations occurs twice a year in March/April and October/November if there is a significant rainfall event. Water samples are collected at each station and submitted to an accredited laboratory for analysis of selected parameters. The surface water monitoring program is summarized in Attachment 1.

As well, the following field measurements will be taken at each station; pH, conductivity, water and air temperature, and dissolved oxygen. These field measurements are used for the interpretation of the water chemistry data. Water level and flow measurements are also

taken at selected stations and are used to relate the surface water system to the ground water flow system. Note that sampling locations and frequency are revised from time to time based on recommendations from the City's hydrogeology consultant (i.e., a qualified professional engineer and/or professional geoscientist) and approval from the MOECC's Barrie District Office. The most recent annual water monitoring report contains the lists of stations sampled and the parameters analysed.

At each station, sample collection is performed first, followed by field measurements, and, lastly, by flow measurements. Sample collection is always performed first to ensure that sediments are not disturbed by field meters or vessels and that potential cross contamination from other locations is not carried over by field meters or vessels prior to filling sample containers.

2.1.1 Station Locations

The station locations are shown on Figure 1. Note that Stations S10, S12, S13, S15, S16, S17 and S20 were inactivated in 2015 as they provided duplicate information and as approved by the MOECC. A brief description of each station location is provided below.

Ben's Ditch

S1 located in Ben's Ditch upstream of the site entrance bridge. S1 is the furthest downstream station on Ben's Ditch prior to discharge to Lake Simcoe.

S2 located in the drainage ditch from the Wastewater Treatment Centre (WWTC), below the weir. It should be taken 2 m east of its discharge into Ben's Ditch to avoid turbulent conditions, and also to avoid mixing with water from Ben's Ditch.

S3 located in Ben's Ditch downstream of the outfall from the WWTC.

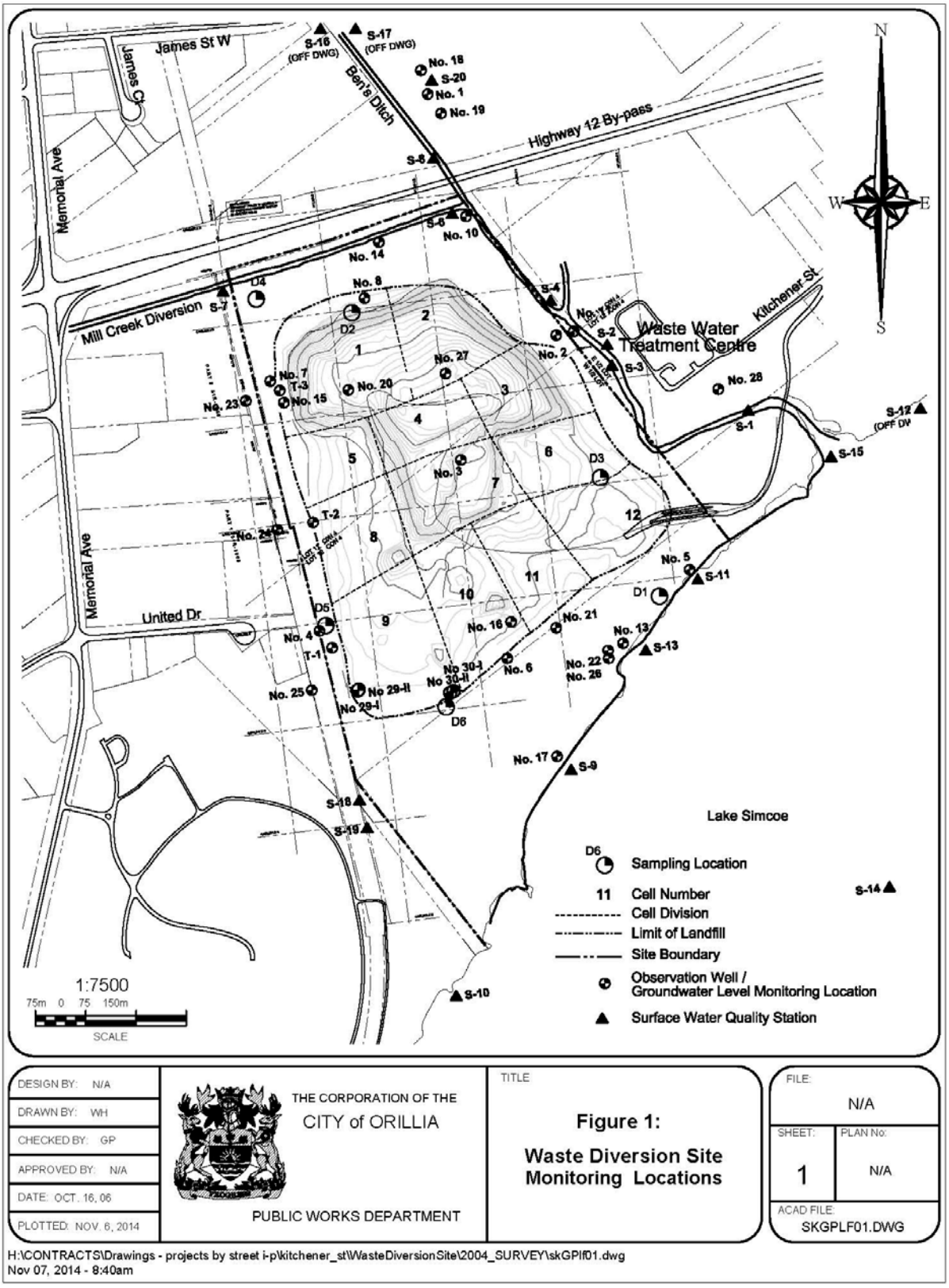
S4 located in Ben's Ditch immediately upstream of the outfall from the WWTC.

S8 located in Ben's Ditch upstream of Highway 12. S8 is the background station for Ben's Ditch.

Mill Creek Diversion

S6 located in the Mill Creek Diversion immediately upstream of its discharge into Ben's Ditch.

S7 located in the Mill Creek Diversion upstream of the former CNR line. S7 is the background station for the Mill Creek Diversion.



DESIGN BY: N/A DRAWN BY: WH CHECKED BY: GP APPROVED BY: N/A DATE: OCT. 16, 06 PLOTTED: NOV. 6, 2014	THE CORPORATION OF THE CITY of ORILLIA PUBLIC WORKS DEPARTMENT	TITLE **Figure 1:** **Waste Diversion Site Monitoring Locations**	FILE: N/A SHEET: 1 / PLAN No: N/A ACAD FILE: SKGPLF01.DWG

H:\CONTRACTS\Drawings - projects by street i-p\kitchener_st\WasteDiversionSite\2004_SURVEY\skGPlf01.dwg
Nov 07, 2014 - 8:40am

Lake Simcoe

S9 located in the near shore waters of Lake Simcoe, approximately 25 m out from ground water monitor 17.

S11 located in the near shore waters of Lake Simcoe approximately 25 m out from ground water monitor 5.

S14 located out from S13, approximately 300 m from the shore where the water begins to deepen (3 - 4m of water).

Former CNR Bed

S18 located on the east end of a culvert across the former CNR line about 60 m south of BH25.

S19 located on the east end of a culvert across the former CNR line about 55 m south of S18.

Drainage Stations

D1 located in the low-lying wet area along a drainage path along the Lake Simcoe shoreline between Boreholes 5 and 13

D2 located at the toe of Cell 1 in the roadside ditch at the intersection of the perimeter road with the northern Fire Access Road,

D3 located at the upstream end of the culvert at the southeast end of the perimeter road.

Drainage Stations (Near Relocated Composting Pad)

The following station locations will be finalized in 2014 now that the relocated composting pad has been constructed.

D4 at a location between the downstream area of the stormwater collection swale outlet and the Mill Creek Diversion;

D5 at the outlet of the stormwater collection swale;

D6 at the outlet of the channel passing south of the proposed compost pad just before it enters the low wet area draining towards the lake.

The surface water stations should be sampled in the following order:

First	S10
	S9
	S11
	S14
	S1
	S3
	S2
	S4
	S8
	S6
	S7
	S18
Last	S19
During High Rainfall Events	D1
	D3
	D2
	D4
	D6
	D5

Stream surface water monitoring stations should be sampled from downstream to upstream to prevent sampling activity upstream from influencing the water quality downstream. Background lake samples should be sampled before those stations opposite the landfill. Drainage stations should be sampled from during high rainfall events as defined earlier.

Any ground water seepage areas observed along the shores during a monitoring event should be noted in the field book. Colour and odour should be noted for seepage areas. If possible, a reasonable estimate of the flow rate of groundwater seepage should be noted. Detailed descriptions regarding the locations of any groundwater seepage areas should be maintained so that these areas can be re-visited and evaluated on a regular basis. Photographs should also be taken if possible.

2.1.2 Equipment List

The following supplies will be required in order to properly monitor the surface water stations:

a) Sample Bottles - The number of bottles needed shall be determined by the lab. **Testing for COD performed in the WWTC Laboratory.** It is advantageous to label the bottles prior to setting out;

b) Cooler – All coolers should contain cooler packs to keep them at approximately 4°C prior to delivery to the laboratory;

c) Disposable Medical Gloves - A new pair of gloves should be worn for the sampling of each surface water station. These gloves prevent cross

contamination between sampling locations, prevent surface water contamination from getting onto the hands of the sampler, and also prevent dirt, salts, etc. on the sampler's hands from getting into the sample;

d) Dissolved Oxygen/Conductivity/pH Meter and Distilled Water - for taking field measurements. Sensors must be rinsed with distilled water after each measurement. The meter should be calibrated at least daily;

e) Float, Stopwatch and Measuring Tape - for taking flow measurements;

f) Swing Arm Manual Sampler - For obtaining samples;

g) Field Book, Water Proof Paper, Pen and Pencil;

h) Safety equipment as appropriate (life jackets, safety line, hip waders, first aid kit).

Laboratory Chain of Custody sheets and sample bottles are normally prepared at the WWTC prior to sampling with sampling times noted in the field book (Table 2). Calibration of field measurement meters is also performed at the WWTC.

2.1.3 Field Book

It is important that a field book be set up prior to initiating the sampling program each year. The field book should include:

a) A map of the site and the sampling locations;
b) Field record sheets for each station (Table 2);
c) Record of Weather Conditions sheet (Table 3); and
d) Field Observations sheet (Table 4).

The field record sheets (Tables 2 to 4) are set up to allow for documentation of the following information:

a) Date, time, location;
b) Name of sampler;
c) Field measurements; pH, conductivity, water and air temperatures, dissolved oxygen, and water level readings;
d) Notes on weather, i.e., cloudy, raining, wind direction, relative velocity (e.g., very strong wind from southeast) and if sampling followed a storm event;
e) Notes on observations including erosion areas, seepage zones near the station, algae growth, discolouration or oily films on the water; and
f) Sample number/identification

The information collected in the field is as important in evaluating the surface water quality as the laboratory results. Good documentation is important. Field personnel should record any

deviation from sampling protocols (accidental or intentional), which may affect water quality results. In this way, any anomalous results may be examined by a reviewer with the deviation from protocol in mind.

2.2 Field Measurements

The following surface water field measurements should be collected:

- Dissolved oxygen;
- pH;
- Conductivity;
- Water and air temperatures;
- Water levels; and
- Flow measurements.

Field meters for dissolved oxygen and pH should be calibrated on a daily basis (when possible and as recommended by the manufacturer) prior to undertaking field measurements. Calibrations are recorded in Table 1. Field measurements should be recorded on Tables 2 through 4.

Table 1: Calibration Log Sheet for Field Meter

Date	Time	pH			Conductivity (µs/cm)	D.O. (% Sat)	Initials	Comments
		Buffer 4	Buffer 7	Slope OK?				

Table 2: Field Summary Sheet

Station	Lab No.	Staff Gauge Water Level (m)	Date (d/m/y)	Time	Field						General Comments
					pH	Cond µS	Water Temp (ºC)	Air Temp (ºC)	DO (mg/L)	WWTC Lab COD	
S1											
S2											
S3											
S4											
S6											
S7											
S8											
S9											
S11											
S14											
S14-0											
S14-1											
S14-2											
S14-3											
S14-4											
S14-5											
S18											
S19											
Duplicate 1											
Duplicate 2											

Note: Water level only measured at S1, S2, S7 and S8 (unshaded)

Completed By: _____ Date: _____ Time: _____

Table 3: Record of Weather Conditions During Surface & Ground Water Sampling Session

Sampling Date (d/m/y)	**Weather Conditions**	**Temperature** (^{o}C)	**Winds**

Table 4: Field Observations During Surface & Ground Water Sampling Session

Note: Please note in the following table any deficient wells, location(s) of any leachate seepage areas (colour, odour, estimated flow rate), dry wells, algae growth erosion areas, discolouration or oily films on the water, etc.

Date (d/m/y)	**Observation**

2.2.1 Dissolved Oxygen

Dissolved oxygen should always be the first of the field measurements to be taken. Dissolved oxygen concentrations must be determined in the field. Dissolved oxygen is mainly derived from air mixed in water by turbulence and photosynthetic processes by chlorophyll-bearing aquatic plants. Dissolved oxygen is mainly used or lost by respiration by the inhabiting animals and plants, decomposition of organic matter, reduction in volume by another gas (carbon dioxide, methane) dissolved in water, and increasing temperatures.

2.2.2 Conductivity/TDS

Conductivity is the ability of a solution to transmit electrical current. The ability of a solution to conduct electricity is proportional to the number of ions present in the conducting solution.

2.2.3 pH

The pH is a measure of the acidity or alkalinity of a solution. Solutions with pH 7 are neutral, acid solutions have a pH less than 7 and alkaline solutions have a pH greater than 7.

2.2.4 Water Temperature

Water temperature is frequently a limiting factor for fish and aquatic life. In addition, temperature, together with pH, frequently regulates the species of various chemicals in the water column such as ammonium. Water temperature is used to calculate concentrations of un-ionized ammonia. Un-ionized ammonia is toxic to fish and aquatic life in low concentrations.

Water temperature can be recorded when carrying out the field measurements discussed above. At the start and finish of each day, the temperature reading of the meter should be compared to that of an alcohol thermometer. Any differences should be noted.

Follow the steps below when measuring temperature with an alcohol thermometer.

1. Use a glass/alcohol immersible thermometer.

2. Place thermometer in the stream/lake and allow it to rest there for 2-3 minutes. Do not stick the thermometer into the bottom sediment.

3. Do not place the thermometer in any of the sample bottles being submitted to the laboratory.

4. Remove the thermometer from the stream and immediately read the temperature to the nearest 0.5°C.

5. Record the water temperature on the field data sheet in degrees Celsius.

2.2.5 Air Temperature

Air temperatures provide an important measurement in terms of assessing the nature of the stream water at the time of sampling. For example, when air temperature is compared to water temperature, it can indicate the water source, i.e., ground water versus surface water.

How to Measure Air Temperature

a) Use a dry bulb thermometer in the shade (thermometer located at WWTC).
b) Let it sit two minutes and record the temperature of the field data sheet, in degrees Celsius.
c) Measure and record this periodically throughout the day. Alternatively, this can be done at each station as a simple routine.

2.2.6 Water Levels

Staff gauges have been installed at stations S1, S2, S7 and S8. The water level should be recorded at each of these stations, by electronic water level meter or with a hand-held tape. For ergonomic and safety reasons, station stakes for measuring water level will be moved closer to the shoreline if the shoreline erodes appreciably. This will be noted in the field notes.

a) When using a water level meter, lower the meter along the stake from the top of the stake.
b) Record the depth at which the meter signals contact with water through a "beep". (Do not measure from the tip of the meter probe as this is not the zero point on these meters).
c) In choppy water, measure the peaks and troughs and then take the average reading.

2.3 Sample Collection

The following protocols are to be followed when collecting surface water samples:

a) At each creek station, sample bottles should be filled at the mid-point between the stream banks. A swing arm manual sampler should be used to retrieve samples when necessary.

b) Caution should be exercised to avoid collection of bottom sediment.

c) If the sampler is standing in the creek, or is in a boat, the sample should be taken upstream (or in the direction where the waves are moving towards the boat) of the sampler's position.

d) A swing arm manual sampler should be used to retrieve samples from the lake stations where necessary.

e) For all bottles except those with preservative, rinse the bottle three times with

ambient water.

f) The sample bottles should be filled independently in the stream, one after the other. In very shallow water, a single vessel may be used to fill all the bottles at one station, but should not be reused at another station. This will minimize cross contamination between stations.

g) Generally most sample bottles can be filled such that there is air space ("head room") at the top of the bottle. However, VOC and BOD samples must be filled such that there is no head room in the bottle. If air bubbles are present in a VOC sample, the volatile organics can volatilize into the air bubbles. If air is present in a BOD sample, chemical processes can continue after collection of the sample and can alter the analytical results.

h) If the sample bottle already has preservative in it, care should be taken in filling the bottle so that it does not overflow and dilute the preservative. A sampling vessel, as described in f) above, should be used to fill sample bottles which already contain preservatives. If the preservative is diluted, the pH level required to keep the sample preserved until analysis will not be maintained, and the results may be influenced.

i) For samples which require that preservatives be added in the field, ensure that only fresh preservatives supplied by the laboratory are used.

j) In streams which have a very low water level, care must be taken to ensure that sediment does not enter the sample bottle. Sediment in the sample can cause concentrations of various parameters to be elevated as the entire sample (water + sediment) is analyzed.

k) Immediately following the collection of samples at a station, count the bottles to verify that all samples have been collected for that station. Once samples have been collected, they should be stored in a cooler on ice until delivery to the laboratory to avoid biodegradation and chemical changes. Surface water samples are not filtered in the field and as such, influence from aquatic organisms can occur if not refrigerated.

2.4 Flow Measurements

Flow is to be measured at S7 using the "Float Method". The protocols for this method are provided below.

a) Measure a 5 m length (reach) of the stream and clear away overhanging grass.
b) At three locations (upstream, middle and downstream locations in the reach), measure the width of the stream. Depths should be measured at three points across the stream (i.e., at quarter points) at each location.
c) Record the information on the flow measurement sheet (Table 5)
d) Drop a float in the stream upstream of the 5 m measuring reach. Record the

time for the float to travel the 5 m distance.

e) Repeat the previous step three times and record the times on the flow measurement sheet.

Note: Tall grass may require cutting and removal from stream prior to flow measurement procedure being done.

2.5 Laboratory Submission of Samples

Samples should be delivered to the laboratory as soon as possible following sampling to ensure no degradation of the samples. All bottles should be labelled with job, date, station number, preservatives, and sampler's name. A permanent marker should be used to fill out the labels on the bottles. Labelling of the bottles prior to visiting the site saves considerable field time, although spare bottles should be carried in case of accidental breakage.

Chain of custody forms should be filled out listing station numbers, number of bottles, submission codes, date of sampling, job, time and date samples are shipped to laboratory, name of laboratory, and the names of personnel delivering and receiving samples. This form should be signed by the receiver and a copy retained both by the lab and by the sampler.

2.6 Submission of Results to Hydrogeology Consultant

At the end of each sampling run, copies of all field sheets should be collected, copied, and forwarded to the hydrogeology consultant. Additions or changes to the sampling program can, therefore, be made for the next sampling run in a timely manner.

Table 5: Flow Measurement Sheet

Station:

Date:

Time:

Observation:

Staff Gauge m

Location	Width	Depth			
		A 1/4 Way Across Stream	B 1/2 Way Across Stream	C 3/4 Way Across Stream	Average Depth (Depth A + Depth B+Depth C)/4
Begin of 5m reach Centre of 5m reach End of 5m reach	m m m	m m m	m m m	m m m	

Time for float to travel 5m 1) sec
2) sec
3) sec

3.0 GROUND WATER MONITORING PROTOCOLS

Ground water is monitored regularly to provide data which is used to assess the degree to which leachate contamination from the landfill is impacting the ground water regime.

3.1 Ground Water Monitoring Program

Ground water monitoring presently takes place three times annually (March/April, July/August, October/November). The ground water monitoring program is summarized in Attachment 1. Note that sampling locations and frequency are revised from time to time based on recommendations from the City's water monitoring consultant and approval by the MOECC's Barrie District Office. The most recent annual water monitoring report contains lists of stations to be sampled and the parameters for analysis.

3.1.1 Station Locations

The groundwater station locations are shown on Figure 1.

3.1.2 Equipment List

The following equipment is required prior to setting out on a ground water monitoring event:

a) Water Level Meter, Distilled Water - For obtaining ground water elevation measurements. Probe must be rinsed with distilled water before and after each measurement to prevent carrying contamination from one monitor to another.

b) Sample Bottles - It is advantageous to label the bottles prior to setting out from the site office.

c) Cooler - Should contain cooler packs to keep all samples at approximately 4°C prior to delivery to the laboratory.

d) Disposable Medical Gloves - A new pair of gloves should be worn for the sampling of each ground water monitor. These gloves prevent cross contamination between sampling locations, prevent ground water contamination from getting onto the hands of the sampler, and also prevent dirt, salts, etc. on the sampler's hands from getting into the sample.

e) In-line Disposable Filters - An adequate supply of 0.45 micron filters should be taken on each sampling run. The supply should be larger than the number of monitors to be sampled in case some of the filters become clogged by excess sediment. Filters should never be re-used.

f) Dissolved Oxygen/Conductivity/pH Meter - For taking field measurements of conductivity, pH and temperature. Sensors must be rinsed with distilled water after each measurement. The meter should be calibrated according to the owner's manual.

g) Field Book - The ground water field book can be assembled with the surface water field book. Pages should be available to record the water levels, field measurements and purging volumes (Table 6).

3.2 Water Levels

Prior to purging and sampling all the boreholes, the water level should be obtained in each ground water monitor on-site, including those that are not sampled. It is imperative that the water levels be measured prior to any water being removed from the borehole. Water level measurements are obtained to determine seasonal ground water fluctuations, hydrostatic pressures, and hydraulic gradients. These factors form the basis for the evaluation of the performance of the site.

a) Water levels can be taken the same day as the purging and sampling. All wells installed at a nested location should be measured for water levels prior to purging, in order to eliminate draw down in those adjacent wells. Purging and sampling is to be done once water levels have been measured across the entire site. Weather conditions should be reported, both for the day of measurement, and the day prior to measurement. All efforts should be made to ensure that tubing is not pulled up from its resting position prior to measuring the water level. Pulling the tubing prior to measuring the water level can bias the calculated static water elevation low.

b) Monitoring staff should always work from monitors furthest from the refuse towards those monitors situated in the refuse. This minimizes the risk of leachate contamination being passed to a clean monitor. If there is more than one monitor at a given location, work from the deepest monitor (labelled as I) to the shallowest monitor (labelled as II, III, etc.). The deeper monitors are generally cleaner than the shallower monitors, so that the risk of contamination is again minimized.

c) The water level probe must be rinsed off with distilled water before and after each reading.

d) All readings are taken from the top of the monitor pipe (if the pipe is cut unevenly, measure from the highest point). Caution should be exercised to ensure that false readings, due to sidewall condensation or pipe couplings at depth, are avoided. Confirm reading prior to recording it.

e) The condition of the monitor should be recorded if maintenance work is required. Maintenance could be required for conditions such as cracked or broken PVC pipes, dug out or "slumped-in" surface seals, loose protective casings, or previous repairs which have proved to be insufficient. If new tubing or foot valves are required, this should also be documented. If temporary repairs are made, glue or tape should not be used. Monitoring staff should also ensure that monitoring wells are clearly labelled.

Table 6: Orillia Waste Diversion Site Purging and Sampling Field Record Sheet

SAMPLING PERSONNEL: _____

BH	Lab No.	STATIC WATER LEVEL	TOTAL DEPTH OF MONITOR	PURGE VOLUME (L)			PURGING					SAMPLING					WWTC Lab COD	GENERAL COMMENTS (Smell, Colour etc.)
				Calculated 1 Well Vol.	(X3)	Actual	DATE	TIME	pH	COND	TEMP °C	DATE	TIME	pH	COND	TEMP °C		

CONVERSION FACTORS FOR PIPE : [(1” = 0.51 L/m), (1.25” = 0.79 L/m), (1.5” = 1.2 L/m), (2” = 2.03 L/m)]

e) When working at a monitor, it is critical that no foreign material be allowed to enter the monitor. Should this occur, purge the monitor immediately, and document the incident in the field book. In this way, anomalous sampling results may be explained.

3.3 Purging/Development Procedures

Purging or developing the monitors prior to sampling is required in order to remove stagnant water from the pipe and from the sand pack in the boreholes, thus allowing fresh representative ground water to move into the monitor. Although sometimes tedious, proper purging is extremely important.

a) Field parameters (conductivity, pH, temperature) should be measured in the field, in a separate container from the sample bottles. These measurements are generally taken three to four times during the purging of a monitor so that changes can be observed. These parameters should be measured following removal of each consecutive well volume, when possible. At the very minimum, they should be measured at the beginning of purging and just prior to sampling. Results should be recorded on the field data sheets and forwarded with the other field data.

b) If the calibrated volume flask used for purging purposes fills during purging, the water should be discarded several meters from the monitor to prevent infiltration back to the monitor.

c) Experience has shown that removal of three well volumes is sufficient for obtaining representative ground water samples. One well volume is the amount of water stored in the monitor prior to sampling. Table 7 can be used to readily calculate the volume of water to be removed from a given monitor. In order to increase sampling efficiency and be in line with current industry standards low yielding wells (recovery is less than 0.5 L/min) can be purged dry once and then sampled.

Table 7 shows the volume of water in litres per lineal metre of pipe, for pipes of differing diameter. If, for example, a 2 inch pipe (51 mm) had 4.3 m of water in it, then one well volume would consist of 4.3 x 2.03L = 8.73 L of water. Therefore, three times this volume, or 26.2 L (rounded to 27 L) of water would be removed from the borehole prior to sampling. In addition to the water level measurement, the total depth of each borehole on-site is required in order to calculate the total water volume in a given monitor. Well bottom depths are generally re-measured once annually to confirm well depths as fine grained material may be entering the well. A standard table may be prepared on seasonal water levels and measured well depths, and could be appended to the field book for ease of use.

Table 7: Purge Volumes Based On Monitor Pipe Diameter

Pipe Diameter		Volume of H_2O per Lineal metre of Pipe
4.0"	(102 mm)	8.00 L
2.0"	(51 mm)	2.03 L
1.75"	(44 mm)	1.55 L
1.5"	(38 mm)	1.14 L
1.25"	(32 mm)	0.79 L
1”	(25.4mm)	0.51 L

d) The field form (Table 6) can be used to document the volume of water removed from each monitor. This should be filled out for each sampling event.

e) Monitoring wells with high yields should be sampled immediately after purging instead of on the following day.

f) Purging of the monitors are conducted using the dedicated foot valves that are in place. All monitors at the site are fitted with these pumps except boreholes (BH) 27-I, 27-IIR, and 3-IIR, which each have dedicated bailers. The foot valve pumps consist of a 25 mm diameter by 75 mm long foot valve made of Delrin, attached to a 12.7 mm (inner diameter) polyethylene tubing. Water is drawn to the surface with this pump by oscillating the tubing up and down. This draws in successive aliquots of water past the foot valve and eventually results in the discharge of waters at surface.

g) If a monitor goes dry, leave it to recover for a few hours. It should then be pumped dry a second time to ensure that no stagnant water from the sand pack has entered the monitor. At this time, the tubing should be removed and drained to ensure that all stagnant water is removed from the borehole. Extreme care should be taken to prevent the tubing from contacting the ground surface as it is being drained. Again, the monitor should be left for a few hours to recover. Upon return, obtain as many samples as possible (i.e., phenolics, metals, and general chemistry samples). The water in the monitor may be considered to be representative ground water. This practice should be documented in the field book.

h) Table 8 is a summary sheet indicating how the monitors respond to purging. This table can be used to determine the order in which the monitors should be purged.

i) When installing new tubing in a monitor, or if the tubing has come into contact with the ground surface while being drained, it should be wiped down with a clean cloth or paper towel, dampened with distilled water. This should be done as the tubing is lowered down the hole. If it cannot be properly cleaned, it should be replaced.

j) If water purged from refuse/leachate wells (BH3, 20 & 27) is considered to be potent or heavily impacted by sampling staff, it should be containerized for disposal at the Wastewater Treatment Centre.

3.4 Sample Collection

a) Once the field parameters (conductivity, pH, and temperature) have stabilized after purging (i.e., less than 10% deviation in field parameter readings on consecutive well volumes), the samples can be obtained. However, some monitors will be pumped dry and the monitor will require some time to recover. Dedicated laboratory bottles should remain sealed until they are ready to be used at the sampling location.

b) All samples of ground water to be analyzed for trace metals and nutrients (phosphorous, aluminum, etc.) should be filtered in the field. Filtering causes agitation of the water samples, and also traps clay sediment in the filter. Organic compounds will be absorbed onto the clay particles in the filter, or will be lost through volatilization caused by the agitation of the water. Both instances result in anomalously low organic readings. Therefore, samples to be analyzed for organic parameters, including phenolics and volatile organics, should not be filtered. The need for filtering for various samples has been included in Table 9. As a general rule of thumb, it is better to pump slowly when obtaining all ground water samples in order to avoid agitation.

c) A high capacity 0.45 micron in-line filter (or equivalent) should be used. This filter fits onto the dedicated tubing in the borehole and filters the water as it is pumped from the hole. Care must be taken to ensure that any water leaking around the filter/tubing joint does not enter the sample bottle. The sample bottle should be held away from the filter rather than directly beneath it.

d) Samples are obtained using the dedicated foot valves. If problems arise with the foot valves due to sediment, the tubing can be removed and the foot valve cleansed with distilled water. Again, the tubing should be wiped down with a clean cloth as it is reinserted down the borehole. If problems persist, a plastic bailer can be used. The bailer should be thoroughly rinsed prior to its use. It is important to discard the first bailer volume to ensure a non-biased sample.

e) All sample bottles and lids, without preservatives already enclosed, should be rinsed with sample water prior to obtaining the sample. The only exception is for

the collection of volatile organics. These compounds can adhere to the walls of the sample bottle during the rinse and, therefore, the sample bottles for these compounds are not rinsed.

f) When sampling for volatile organic compounds (VOCs) care must be taken to prevent agitation of the water and to prevent extended contact of the sample with air. These samples are obtained using the dedicated foot valve and tubing. The tubing is filled with water and about 3 m is slowly withdrawn from the hole. Volatile bottles are slowly filled as the water is allowed to drain from the tubing. Hold the bottle on a slant, allowing the water to drain along the side of the bottle to the bottom, thus preventing agitation. A high meniscus is left on the bottles, and the lid is quickly and carefully screwed on snugly. Take care to ensure that the rubber septum in the cap of the bottles does not fall on the ground during filling. The bottles are then turned upside down and tapped. If air bubbles exist the bottle should be topped off again and recapped. It is critical that no air bubbles are found in the bottles as these compounds are found in the parts per billion range and can volatilize into air bubbles and be lost from the sample. The volatile bottles should be stored in the sample cooler upside down.

g) Phenolics are analyzed from a separate bottle with sulphuric acid preservative and, therefore, the bottles should not be rinsed. The bottles should only be filled to the specified line.

h) Samples for trace metals are filtered and preserved in the field. Extreme care should be taken to ensure that no unfiltered water enters the sample bottle from the filter. This will result in sediment entering the sample bottle. The preservative (nitric acid) will dissolve this sediment resulting in anomalously high metal values. If the sample cannot be filtered in the field due to excessive sediment, it should be filtered in the laboratory at the Wastewater Treatment Centre as soon as possible and should subsequently be preserved.

The amount of nitric acid (HNO_3) added to the samples should be sufficient to lower the pH to approximately 2. Metals can come out of solution on the walls of the sample bottle or settle out of solution if the pH is not low enough. Generally 10 drops should be added to a 250 mL sample bottle. The amount of nitric acid added is dependent on the strength of the acid used and on the original pH of the samples. It is critical that the monitoring staff inquire from the laboratory as to whether sufficient preservative is being added.

k) All samples are to be stored with a cooler pack immediately after collection. The samples should be kept in the dark at 4°C to prevent biological activity in the sample bottles. An alcohol thermometer could be kept in the cooler to monitor the temperature of the coolers. This information should be recorded on the field data sheets.

l) Staff shall coordinate with the laboratory performing the analyses to ensure that

proper preservatives, sampling bottles and filtration practices are being utilized by the sampling staff.

3.5 Laboratory Submission of Samples

Samples should be delivered to the laboratory as soon as possible following sampling, to ensure no degradation of the samples occurs. All bottles should be labelled with job, date, monitor location, sampler's name, and preservatives added. A permanent marker should be used to fill out the labels on the bottles. Labelling of the bottles prior to visiting the site saves considerable field time, although spare bottles should be carried in case of accidental breakage.

Chain of custody forms should be filled out listing the number of bottles, location and monitor number, submission codes, date of sampling, job, time and date samples sent to laboratory, name of laboratory, and the names of personnel delivering samples. This form should be signed by the receiver and a copy obtained both by the lab and by the sampler.

3.6 Submission of Results to Hydrogeology Consultant

At the end of each sampling run, copies of all field sheets should be collected, copied, and forwarded to the hydrogeology consultant. Additions or changes to the sampling program can, therefore, be made for the next sampling run in a timely manner.

Table 8: Summary Sheet of Relative Response Times to Purging

MONITOR	RELATIVE RESPONSE TIMES		
	RECOVER SLOWLY (2-3 DAYS TO SAMPLE)	INTERMEDIATE RECOVERY	IMMEDIATE RECOVERY
1-IR		X	
1-III			X
2II		X	
2III		X	
3-IR		X	
3-IIR		X	
4-II			X
5-IR			X
5-IIIR			X
6R		X	
8R	X		
10R	X		
11R			X
14-I			X
14-IIIR		X	
15-IIIR	X		
16-I			X
16-IVR			X
17-III			X
17-IVR			X
18R			X
20R			X
21-IR			X
21-II			X
22-IR		X	
22-II		X	
23			X
24R			X
25		X	
26		X	
27-I	X		
27-IIR	X		
29-I			X
29-II	X		
30-I			X
30-II			X

Table 9: General Protocols

Parameter	Volume Required	Container	Preservation	Max. Holding Time	Filtration
VOC's	40 mL	Amber Glass Vial Teflon Lined Septum	4°C; Hydrogen Chloride, No Headspace	7 Days	No
Metals/Aluminum	250 mL	HDPE	4°C; Nitric Acid (1mL 1 + 1 HNO_3)	6 Months	Yes
Chromium (VI)	250 mL	HDPE	4°C; Nitric Acid (1mL 1 + 1 HNO_3)	24 Hours	Yes
General Chemistry	500 mL	PETE (clear plastic bottle)	4°C	48 Hours	No Yes – ortho-phosphate
TKN/Ammonia/TP	250 mL	Glass Amber With Foil-Lined Cap	4°C; Sulphuric Acid (1mL 1 + 1 H_2SO_4)	28 Days	Yes
Phenols	250 mL	Glass Amber With Foil-Lined Cap	4°C; Sulphuric Acid (2.5mL CuSO4/H_3PO_4)	4 Days	No
BOD	500 mL	PETE	4°C	48 Hours	No

Note: General protocols based on Caduceon Environmental Laboratory requirements (May 2004)

4.0 QUALITY ASSURANCE/QUALITY CONTROL SAMPLES

As a means of assessing the accuracy of laboratory analyses, and potential biases due to sampling methods, a quality assurance/quality control (QA/QC) program should be in place. This program will provide a check on the laboratory and on the sampling procedures, thus validating the chemical data base put forth in annual monitoring reports.

4.1 Blind Duplicate Samples

At the Waste Diversion Site, it is recommended that approximately 10 to 15% of the total number of samples submitted to the laboratory should be QA/QC samples. This may change as recommended by the City hydrogeology consultant. Regular water quality sampling at the Waste Diversion Site occurs at:

- 36 ground water monitors (out of a total of 53 monitors at 30 locations),
- 12 surface water stations,
- Six drainage stations.

Based on this, the following numbers of quality assurance samples should be taken:

- Four blind duplicate groundwater samples per ground water sampling event (spring, summer & fall);
- Two blind duplicate surface water samples per sampling event (spring, summer & fall); and

- One blind duplicate drainage station sample per sampling event (spring and fall).

Quality assurance samples include blind duplicate samples and travel blanks. Blind duplicate samples act as checks on the sampling methodology and on the laboratory. These quality assurance samples are collected by filling up the regular "original" set of bottles, as well as a second "duplicate" set of bottles. The split sampling technique is used to collect blind duplicates of ground water samples. Since it is possible for the ground water chemistry to change as a well is pumped, this technique enables a duplicate sample to be taken which has the same chemistry as the original sample. The split sampling technique is accomplished by filling up half of the original bottle of each pair (i.e., two pairs of General Chemistry bottles, one pair of trace metals bottles, and one pair of TKN/TP/Phenols/COD bottles) and then half of the duplicate of each pair. The original is then filled, followed by the duplicate. This procedure is repeated until each pair of bottles for the sampling location has been filled. For volatile organic analyses, the split sampling technique is NOT used. In this case, the original is filled and then the duplicate is filled. This is also the method used for collecting blind duplicates at surface water stations. Blind duplicates are labelled with a fictitious sampling location (i.e., the laboratory is not aware it is a duplicate). Field sheets should record the actual blind duplicate location carefully. The locations selected for quality assurance/quality control samples should vary on each sampling run.

4.2 Travel & Field Blanks

Travel and field blanks should be taken whenever volatile organic samples are collected. These quality assurance samples indicate whether volatiles can be introduced into a sample during the field sampling work. Deionized water is placed into a volatile organic sampling bottle at the start of the sampling run. The travel blank is kept in the cooler with the other volatile organic samples. The field blank is opened to the atmosphere at the dirtiest well and transferred into a new VOC sampling vial to mimic actual sampling techniques and demonstrate that sampling methods are not resulting in cross contamination during sampling. Near the beginning of the sampling run, the travel blank bottle should be opened to the atmosphere on-site. This ensures a similar treatment to the actual samples. All travel and field blanks should be filled using laboratory supplied blank-grade deionized water and should be submitted blind with a sample identifier that does not identify it as a blank. Top the travel and field blanks up with deionized water before closing to eliminate air space.

5.0 HEALTH AND SAFETY

The primary Health and Safety issues associated with the monitoring program relate to working in water and working with leachate impacted water.

For surface water monitoring, where the person carrying out the monitoring must enter the water, two person crews should be used with one individual remaining on shore. In locations of high flow, a line should be tied to the individual entering the water to ensure this individual's safety. When operating a boat, a marine radio must be used, and the operator

must have a Pleasure Craft Operator Card.

With respect to leachate and leachate impacted water, disposable medical gloves should be worn. New gloves should be used at each location. Hands should be thoroughly washed with soap and water prior to eating and at the end of the day. Safety glasses should be worn when entering forested areas.

ATTACHMENT 1

Schedule of Parameters Measured in the Annual Water Monitoring at the Waste Diversion Site

Waste Diversion Site Annual Water Monitoring Program Schedule

SPRING & FALL SAMPLING

Parameters	1-IR	1-III	2-III	3-IR	3-IIR	4-II	5-IR	5-IIIR	6R	8R	10R	11R	14-IIIR	16-I	16-IVR	17-III	17-IVR	18R	20R	21-IR	21-II	22-IR	22-II	26	27-I	27-IIR	29-I	29-II	30-1	30-II
Groundwater																														
Major Ions	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Trace Metals					X		X									X	X					X	X	X		X	X	X	X	X
o-Phosphate					X		X									X	X					X	X	X		X	X	X	X	X
T. Phosphorus	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
BTEX							X	X	X			X				X						X	X	X						
VOC				X	X															X	X									

Surface Water	S-1	S-2	S-3	S-4	S-6	S-7	S-8	S-11	D-1	D-2	D-3	D4	D5	D6
Major Ions (with BOD)	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Trace Metals	X	X	X	X	X	X	X	X	X	X	X	X	X	X
o-Phosphate	X	X	X	X	X	X	X	X	X	X	X	X	X	X
T. Phosphorus	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Suspended Solids	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Arsenic		X												

Travel Blanks: 2

Field Blanks: 2

SUMMER SAMPLING

Parameters	1-IR	1-III	2-II	2-III	3-IR	3-IIR	4-II	5-IR	5-IIIR	6R	8R	10R	11R	14-I	14-IIIR	15-IIIR	16-I	16-IVR	17-III	17-IVR	18R	20R	21-IR	21-II	22-IR	22-II	23	24R	25	26	27-I	27-IIR	29-I	29-II	30-1	30-II
Groundwater																																			
Major Ions	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Trace Metals	X		X		X	X	X	X						X			X		X	X			X		X	X			X	X		X	X	X	X
o-Phosphate	X		X		X	X	X	X						X			X		X	X			X		X	X			X	X		X	X	X	X
T. Phosphorus	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Arsenic						X																													
BTEX								X	X	X			X						X						X	X				X					
VOC					X	X																	X	X											

Surface Water	S-1	S-2	S-3	S-4	S-6	S-7	S-8	S-9	S-11	S-14	S-18	S-19
Major Ions (with BOD)	X	X	X	X	X	X	X	X	X	X	X	X
Trace Metals	X	X	X	X	X	X	X	X	X	X	X	X
o-Phosphate	X	X	X	X	X	X	X	X	X	X	X	X
T. Phosphorus	X	X	X	X	X	X	X	X	X	X	X	X
Suspended Solids	X	X	X	X	X	X	X	X	X	X	X	X
Arsenic		X								X		

Travel Blanks: 2

Field Blanks: 2

Notes:

1.) Major Ions include: Alkalinity, Conductivity, Hardness, pH, Chloride, Sulphate, Calcium, Magnesium, Sodium, Potassium, Phenols, Nitrite, Nitrate, Ammonia, TKN, Organic Nitrogen, COD, DOC, DIC, Iron & Manganese. In addition to these items, BOD is also measured for surface water.

2.) Trace Metals include: Aluminum, Barium, Cadmium, Chromium, Cobalt, Copper, Lead, Nickel, Selenium, Silver, & Zinc. Arsenic is measured separately at specified locations.

3.) O-Phosphate measured at same locations as Trace Metals.

4.) Water Levels measured at all boreholes during each sampling session including BHs: 1-IR, 1-II, 1-III, 2-I, 2-II, 2-III, 3-IR, 3-IIR, 4-I, 4-II, 5-IR, 5-IIR, 5-IIIR, 6, 7, 8, 10R, 11R, 13, 14-I, 14-II, 14-III, 15-I, 15-II, 15-III, 16-I, 16-II, 16-III, 16-IV, 17-I, 17-II, 17-III, 17-IVR, 18R, 19, 20R, 21-IR, 21-II, 22-IR, 22-II, 23, 24R, 25, 26, 27-I, 27-IIR, 29-I, 29-II, 30-I, 30-II, T1, T2, and T3.

wsp.com