City of Guelph

2016 Annual Report – Solid Waste Resource Innovation Centre, ECA No. A170128 & 9496-9NFKJ9

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March, 2017

Project Number: 60536556

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March 20, 2017

Mr. Cameron Walsh, CFM, CET
Manager
Solid Waste Resources
Infrastructure, Development and Enterprise
City of Guelph
1 Carden Street
Guelph, ON N1H 3A1

Dear Mr. Walsh:

Project No: 60536556

Regarding: 2016 Annual Report – Solid Waste Resource Innovation Centre, ECA No. A170128 & 9496-9NFKJ9

Enclosed, please find our report for this project, addressing the requirements of the WRIC Environmental Compliance Approval (ECA).

Please do not hesitate to call me should you have any questions about this report. Thank you for allowing AECOM to be of continued service to the City of Guelph.

Sincerely,
AECOM Canada Ltd.

Terry La Chapelle, B.Sc., P.Geo.
Senior Geologist
Terry.LaChapelle@aecom.com

TLC:mm
Encl.

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Authors

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Senior Geologist

PROFESSIONAL GEOSCIENTIST ONTARIO
PATTY WONG
PRACTISING MEMBER
0801
20/3/17

Report Reviewed By:

Terry La Chapelle, B.Sc., P.Geo.
Senior Geologist

Executive Summary

The City of Guelph Solid Waste Transfer Station, Materials Recovery Facility (MRF) and Organic Waste Facility are adjacent facilities that operate under a combined Amended Provisional Certificate of Approval/Environmental Compliance Approval (C of A/ECA) issued by the Ministry of Environment, dated February 10, 2011.

The following table presents a summary of the 2016 Annual Report for the City of Guelph Solid Waste Resource Innovation Centre. The C of A/ECA specifies annual reporting requirements. These have been outlined in the left-hand column below, while the right hand column provides a reference to the section of this report where the reader will find further details.

A. Amended Provisional C of A (Waste Disposal Site)

C of A Annual Report Requirement (Condition N)	Report Reference and Summary
52. The City shall submit an annual report on the operation of the Site for the previous calendar year to the District Manager by March 31st of each year. This report will include the information required as follows: *(a) the information required by Condition 63(8) of the Certificate dealing with the Composting Site;* *63(8) By March 31st following the end of each operating year, the Owner shall prepare and submit to the District Manager, an Annual Report summarizing the operation of the Composting Site covering the previous calendar year. This Annual Report shall include, as a minimum, the following information:* *63(8)(a) A monthly mass balance of the Organic Waste received, processed and transferred from this composting site, including waste type, quantity, sources and/or disposal destinations;*	• Table 1 (Section 2.1) provides details on the organic materials received, processed and transferred from the site. 21,714 tonnes of material was received by the composting facility. Of the materials received, mixed organic materials constituted 20,216 tonnes (93%), brush constituted 913 tonnes (4%) and amendment/mulch made up the remaining 585 tonnes. During 2016, the site accepted organic material mainly from the City of Guelph (50%) and Region of Waterloo (48%). A total of 5,163 tonnes finished compost was removed from the facility in 2016 (86% of the outgoing organics). All the finished compost was shipped to a farmer in Atwood, Ontario, northwest of Guelph. A total of 850 tonnes of screening and residual compost waste from the composting process were shipped to the Transfer Station and then the Waste Management Twin Creeks Landfill in Sarnia, Ontario or to various other locations.
63(8)(b) An annual summary mass balance of the organic waste, the wood waste, the waste wood and the amendment material, received, processed and transferred from this composting site, including waste type, quantity, sources, and/or disposal destination;	• Table 1 (Section 2.1) provides details on the organic materials received, processed and transferred from the site including amendment material. In addition to the 20,216 tonnes of mixed organic material received, 913 tonnes of brush and 585 tonnes of amendment material/mulch in the form of wood chips from various sources were also accepted at the site.
63(8)(c)An annual summary of any deficiencies, items of non-compliance or process aberrations that occurred at this composting site and any remedial/mitigative action taken to correct them;	• As reported in Section 2.5, there were no deficiencies, items of non-compliance, or process aberrations in 2016.
63(8)(d) a descriptive summary of any spills, incidents or other emergency situations which have occurred at this composting site, any remedial measures taken and the measures taken to prevent future occurrences;	• As reported in Section 2.2, no spills occurred in 2016 at the composting site.
63(8)(e) A summary describing any rejected waste including quantity, waste type, reasons for rejection and origin of the rejected waste;	• As reported in Section 2.2, there were 47 tonnes of rejected material from the organics plant due to contamination. The contaminated material usually consists of curbside recyclable collection (blue cart) material that is either inadvertently placed in with the organics (green cart) by the home owner or the blue cart material is inadvertently placed in the wrong area of the split box collection trucks. The rejected material was sent to the transfer station for final disposal.
63(8)(f) The quantity, by weight and volume of compost and residues produced and the quantity of compost and residues removed from the facility;	• Table 1 (Section 2.1) shows that 5,153 tonnes of finished compost was removed from the facility. 850 tonnes of screening and residual compost waste from the composting process were shipped to the Transfer Station and then the Waste Management Twin Creeks Landfill in Sarnia, Ontario or to various other locations.

A. Amended Provisional C of A (Waste Disposal Site)

C of A Annual Report Requirement (Condition N)	Report Reference and Summary
63(8)(g) Any environmental and operational problems, that could negatively impact the environment, encountered during the operation of the composting site or identified during the facility inspections and any mitigative actions taken;	• As reported in Section 2.2, there are issues with the operation of the biofilter that at times results in stack odours being discharged. Great efforts were expended to determine the cause(s) of the issue with the biofilter. An amendment application has been submitted to the MOECC that if approved, should address the issue. There were no other confirmed deficiencies/non-compliance or environmental/operational issues related to the compost facility in 2016. The facility is operating as designed.
63(8)(h) Any changes to the WRIC Environmental Emergency Plan, the Operations Manual or the Closure Plan that have been approved by the Director since the last Annual report;	• As reported in Section 2.2, there were no changes to the WRIC Environmental Emergency Plan, the Operations Manual or the Closure Plan since the last annual report.
63(8)(i) Any recommendations to minimize environmental impacts from the operation of the composting site and to improve the composting site operations and monitoring programs in this regard;	• As discussed in Section 2.5, there were no deficiencies/non-compliance or environmental/operational issues related to the compost facility in 2016. The facility is operating as designed.
63(8)(j) A summary of any complaints received and the responses made, as required by the C of A (Air/Noise) for the composting site;	• Section 2.3 discusses the 17 odour investigations conducted by City staff in 2016. City staff were able to detect what is believed to be biofilter stack odours on five of these investigations. The City and its partners attended numerous meeting to troubleshoot the biofilter issues. As a result of these meetings, an odour system was temporarily installed for the summer of 2016 and an amendment application to the OWPF Air Environmental Compliance Approval was submitted for a permanent odour system and the installation of a mist eliminator that will prevent acid overspray onto the biofilter media.
63(8)(k) A description of the compost distribution/markets;	• As reported in Section 2.2, all compost produced at the site was shipped to a farmer in Atwood, Ontario, northwest of Guelph.
63(8)(l) Conclusions from the advanced pathogen testing as the results relate to the pasteurization temperature monitoring; and	• Section 2.4 reports samples taken from the maturation hall of the compost stream indicate that all compost that has been shipped off of the site has passed the conditions for a Class A compost under the CCME Guidelines and the conditions within the C of A/ECA. • Temperature monitoring logs of the tunnels at the composting facility show that pasteurisation at 55 degrees C was maintained for 72 hours, as required.
63(8)(m) A condition-by-condition analysis of compliance with all Conditions of this Certificate.	• Section 2.6 reports that the City is not aware of any non-compliance issues for 2016.
52(b) A monthly summary of the waste and/or recyclable materials received at the Site, including quantity, source and Ontario Regulation 347 waste classes;	• Table 2 (Section 5.1) provides details of the incoming materials. 110,829 tonnes of material was received by the site. The compost facility received 21,714 tonnes of organics (20% of the materials received in 2016). Recyclables and mixed dry materials constituted 39,530 tonnes (36%) of the total materials received at the site. This included about 34,692 tonnes of paper products and 25 tonnes of plastics. There were 5,520 tonnes (5%) brush, leaves, yard waste and mixed organics received. Non-recyclable materials (mixed solid waste organic rejected materials) constituted 44,065 tonnes (40%) of the total materials received at the site in 2016. • Recyclables accepted by the WRIC originated mainly from the City of Guelph (51%) and the United States (9%). Materials accepted at the Transfer Station were mainly from the City of Guelph, of which 73% was mixed solid waste. The Regulation 347 waste classes received at the site are summarized on Table 2.
52(c) A monthly summary of wastes and/or recyclable materials processed at the Site, including quantity and Ontario Regulation 347 waste classes.	• Table 3 (Section 5.2) provides details on processed waste at the site. There were 25,522 tonnes of marketable processed material was transferred off the site from the Material Recovery (MRF), mainly paper and cardboard products. There was 26 tonnes more of outgoing material (excluding the compost facility) compared to incoming material at the end of 2016 likely due mainly to some excavation work done on site by the same vendor that takes away concrete and rubble waste. This material was weighed when it left site but should not have been as this was not material received as inbound material. Materials that are accepted by the site are either diverted to be re-used or sent to the landfill for disposal.

A. Amended Provisional C of A (Waste Disposal Site)

C of A Annual Report Requirement (Condition N)	Report Reference and Summary
52(d) A monthly summary of wastes and/or recyclable materials transferred off-Site, including quantity, destination, and Ontario Regulation 347 waste classes.	• Table 3 (Section 5.2) provides details on the outgoing materials. Of the 95,156 tonnes of outgoing material, 25,522 tonnes (27%) is processed on-site through the Material Recovery facility (MRF) and 5,163 tonnes (20%) of finished compost was produced. No residual compost waste (overs) from the organic compost plant was generated in 2016. 53,053 tonnes of non-recyclable materials was shipped off-site from the transfer station to other destinations. • Of the 61,795 tonnes of non-processed outgoing materials from the Transfer Station, 52,798 tonnes (85% of the outgoing materials) was sent to the Waste Management Twin Creeks Landfill in Lambton County, 2,713 tonnes (4%) was sent to then Energy-from-Waste (EFW) facility in Detroit, Michigan and 2,688 tonnes (4%) was sent to the Try Recycling in London for disposal. Other facilities received less than 6% of the materials. About 4,649 tonnes (7.5%) of non-processed materials is marketable consisting of other recyclable materials such as shingles, clean wood, drywall, concrete and rubble. • Of the 25,522 tonnes of marketable processed material transferred off the site from the WRIC facility. 13,442 tonnes (53%) was paper-based goods such as cardboard and newsprint, 5,486 tonnes (21%) was organics, 2,679 tonnes (10%) was plastics and the remaining 3,915 tonnes (15%) was other recyclable materials such as aluminum, steel cans, glass, tires and metal. • 85% of the outbound waste/materials from the Transfer Station were shipped off-site to the Waste Management Twin Creeks Landfill in Lambton County.
52(e) An annual summary of the analytical results for the groundwater and surface water monitoring program including an interpretation of the results and any remedial/mitigative action undertaken,	• Section 8 discusses groundwater quality. Groundwater monitoring results indicate road salt effects at some up-gradient groundwater monitoring locations (5-96, 8-96, 18b-14, 19b-08, 20b-08, 23b-12). These are related to off-site winter road salting of the adjacent major roadways. Road salt effects are detected in some on-site downgradient groundwater monitors (6b-96, 7-96, 11b-11,13b-01, 15b-01, 17b-08, 19b-08). Monitors 5 96, 6b-96, 14b-01, 17b-08 and 19b-08 exceeded ODWS for sodium and/or chloride in 2016 as a result of road salt effects. There were no apparent leachate impacts observed in the groundwater at the site boundary. • The nitrate ODWS has historically been exceeded at 7-96 but was within ODWS in 2016 as observed since late 2012. Historically, elevated nitrate concentrations were prevalent across the site at all locations prior to development of the site and have shown a decreasing trend over the past several years. Elevated nitrates are most likely a result of surrounding and historic land use in the area and are not a result of site operations. • Exceedances of the iron ODWS, first noted in 2011, were also noted in 2016. The elevated iron concentrations at 18a-14 and 18b-14 are most likely due to the residual effects of drilling mud used during installation of these monitors. The cause of the increase in the overall iron concentrations is unknown. These iron exceedances will continue to be investigated in future monitoring events, although they are not considered to be related to site operations. Aside from the sodium, chloride and iron exceedances discussed above, there were no other exceedances of the Ontario Drinking Water Standards in 2016 for the groundwater monitors sampled for the WRIC monitoring program. • As the shallow outwash water quality is not affected by site operations, no effects to the deeper bedrock groundwater would be expected. No leachate effects were detected in the bedrock monitors sampled in 2016. • Section 8.5 discusses organic groundwater results. The 2016 organic sampling showed there were detections of DEHP, naphthalene, chloroform, bromodichloromethane, total and m-, p-xylene, dibromochloromethane, toluene, benzene, tetrachloroethylene and phenol at some of the on-site monitors. However, based on the historic detections of occasional low levels of VOC throughout the site in both upgradient and downgradient monitors, the 2016 VOC detections are not considered to be related to site operations. There are no sources of VOCs on the WRIC or Transfer station property as waste is handled within the covered buildings, truck boxes are covered when outside (preventing contact between the waste and precipitation) and no waste processing occurs on-site. • Section 8.7 discusses the Guideline B-7 assessment for monitor nest 22-11, located along the western property boundary. The iron concentrations at 22a-11 exceeded Guideline B7 limits during both 2016 monitoring events. As

A. Amended Provisional C of A (Waste Disposal Site)

C of A Annual Report Requirement (Condition N)	Report Reference and Summary
	previously discussed, iron concentrations at some of the monitor locations have been unusually high since the December 2011 monitoring event. These elevated concentrations decreased at 22a-11 during 2012 but have been variable since then. The elevated iron concentrations occurred in both upgradient and downgradient monitors and therefore, do not appear to be related to site operations. • Of the 11 sets of samples collected in 2016 at EPTS-01 (the existing on-site surface water pond, East Pond), the PWQO for zinc was exceeded during all of the 2016 monitoring events. Zinc has consistently exceeded PWQO in the past at this location. All the leachate indicator parameters concentrations were within background overburden ranges. Surface water organic sampling in August 2016 showed a low chloroform concentration at the background surface water station, EPTS-01. Low chloroform levels have historically occasionally been detected at this location. • Section 8.8 discusses surface water quality results. Monthly monitoring of the stormwater management pond in the northwest corner of the site was conducted, with samples collected at the discharge at the north end of the pond (TP1 (out)) on 11 occasions in 2016. SWM pond samples exceeded the PWQO for zinc, iron, total phosphorus and phenols during three or more 2016 sampling events. The elevated total phosphorus is a result of surrounding land use and not a result of operations at the site. Elevated zinc, total phosphorus and iron concentrations appear to be related to external factors since background surface water have also exceeded PWQO for these parameters. Metals are a common contaminant from roadway runoff. Elevated phosphorus is typical in rural and urbanized areas. No organics were detected in the stormwater management pond during 2016. • The SW 1 (Stormwater Detention Area 2) was sampled in February and March 2016 when the water levels in the detention pond went above the trigger level of 0.46 m. The February and March samples at the WRIC showed marginally elevated to similar indicator parameter concentrations compared to background surface water quality at the East Pond. 2016 SW 1 parameter concentrations are within the range of historic concentrations at this location. The Provincial Water Quality Objectives (PWQO) were exceeded for zinc in March. Zinc has historically routinely exceeded PWQO at this location, which is also observed at the East Pond. No discharge was required from Detention Pond 2 in 2016. No other samples at SW1 were collected in 2016 as the pond was frozen/snow covered or dry during the remaining months of the year. • As previously discussed, the design and operation of the WRIC and compost facility minimizes the potential for leachate generation from site activities.
52(f) An annual summary of any deficiencies, items of non-compliance or process aberrations that occurred and remedial/mitigative action taken to correct them.	• Section 11 of the report briefly discusses site compliance. In February of 2016, the City ceased accepting any and all recyclable material from Michigan. As reported by the City, there were no deficiencies or items of non-compliance in 2016 however there was a fire in the Materials Recovery Facility in July. The result of the fire was that all single stream material was redirected to Buffalo N.Y. for processing until January of 2017 when all repairs to the facility and damaged equipment were completed.
52(g) A summary to any changes to the Engineer's Report and/or the Design and Operations Report that have been approved by the Director since the last annual report;	• As stated in Section 11, there have been no changes to the Engineer's Report or to the Design and Operations Report since the last annual report. There were no changes to the WRIC Environmental Emergency Plan in 2016.
52(h) A summary of any changes to the Design and Operations Report Design and the WRIC Environmental Emergency Plan that were made in accordance with Condition 68(1) of this Certificate;	• As stated in Section 11, there have been no changes to the Engineer's Report since the last annual report. The Design and Operations Report has been updated to include the new Public Drop Off. There were no changes to the WRIC Environmental Emergency Contingency Plan in 2016.
52(i) A summary of any changes to the Design and Operations Report that have been approved by the Director since the last annual report;	• As stated in Section 11, there have been no changes to the Engineer's Report since the last annual report. The Design and Operations Report has been updated to include the new Public Drop Off. There were no changes to the WRIC Environmental Emergency Contingency Plan in 2016.
52(j) Update on activities of the PLC.	• Section 9 summarizes the 2016 PLC activities, as provided by the City.

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Appendices

1. Introduction and Background

In June 2000, Guelph's City Council made the decision to seek future solid waste disposal capacity through an agreement with a landfill owner outside of the city's corporate boundaries. Since the potential disposal site was to be distant from Guelph, the City needed a Transfer Station to facilitate waste bulking from small collection vehicles into larger transport vehicles. The City constructed the Solid Waste Transfer Station adjacent to the existing Waste Resource Innovation Centre (WRIC), formerly the Wet-Dry Recycling Centre. The WRIC was designed as a composting and multi-material recovery operation for the County of Wellington and the City of Guelph. The 29.54 ha site is located at 110 Dunlop Drive in the southeast part of Guelph. Figure 1 shows the location and layout of the Transfer Station and WRIC.

The Transfer Station has been designed to manage up to 299 tonnes/day of waste, calculated on a weekly average (six days), including municipal, industrial, commercial, and institutional wastes. The Transfer Station began receiving waste on October 14, 2003.

The City carries out a number of waste management operations at the WRIC. These operations include processing of recyclables from the City's "dry" waste stream, transfer of non-compostable materials and non-recyclable waste residues to disposal off-site, a public waste drop-off area, and a municipal hazardous special waste (MHSW) depot. The City's current composting operations have been active since 2012. The site is licensed to handle up to 1,000 tonnes of residual waste transported for disposal per day. Both the Transfer Station and WRIC facility operate under a combined Ministry of the Environment Amended Provisional Certificate of Approval C of A/ECA) No. A170128, dated February 10, 2011.

Amended Provisional C of A/ECA #A170128, Notice No. 1, dated September 22, 2011, amended Condition 58(1) with respect to the composting operation to add item 58(1)(c) on cross-contamination prevention and to add supporting reference documents to Schedule A. Amended Provisional C of A/ECA, Notice No. 2, dated November 2, 2012, provided additions to Condition 54(1) regarding the service area, approved waste types, rates and storage. Amended Provisional C of A/ECA, Notice No. 3, dated January 24, 2013, was an amendment to condition 29(4) of the C of A/ECA that provided the Public Liaison Committee to serve as a forum for their mandate for the whole site and not just for the composting site. Notice No. 3 also expanded the site service area to include New York and Michigan State. Amendment to ECA #A170128, Notice No. 4, dated January 9, 2015, provided minor changes to the ECA (i.e., amended the pre-amble of the ECA and a few of the definitions, etc.) and removed the references to the groundwater and surface water monitoring program from the waste disposal site ECA #A170128 and transferred them to the Municipal and Private Sewage Works ECA #9496-9NFKJ9, issued January 7, 2015. These amendments are included in Appendix E.

A new Public Drop Off (PDO) facility was added to the site in 2015. An application for an amendment was submitted to the MOECC in support of the change that included an updated Design and Operations Report.

As part of the requirements to develop and design the WRIC, a hydrogeological assessment was conducted in 1991[1]. Further groundwater sampling at the proposed site was completed in 1992, 1994 and 1995 prior to the construction of the site[2].

1. *Jagger Hims Limited; Hydrogeological Assessment, Proposed Wet/Dry Facility, Guelph, Ontario; Report prepared for the City of Guelph, October 1991.*
2. *Jagger Hims Limited; Groundwater Monitoring Program; Guelph Wet/Dry Recycling Facility; Draft Report completed for the City of Guelph, September 1995.*

Notes:
- Site Boundary and Fence Based on drawing "MW-1 Monitor Well Locations" Revision B dated Jan 13/09, from Lonsdale Consulting Engineers Inc.
- Google Earth Pro Aerial Photo, Imagery Date: 9/27/2013.

AECOM

Transfer Station / WRIC
City of Guelph
Annual Monitoring Program
Groundwater Monitor Location Map

Legend
- Approximate Site Boundary
- Fence
- Monitoring Well
- Surface Water Location

PROJECT NUMBER **60536556**

DATE **March 2017**

FIGURE **1**

A SIZE 8.5" x 11" (215.9mm x 279.4mm)
PLOT: 3/6/2017 10:53:39 AM
BY:----
FILE NAME: 60536556-01-FIG01.DWG

The main conclusions of these reports were:

a) Groundwater flow in the shallow subsurface is towards the northeast to the Correctional Centre pond and Clythe Creek.

b) Background groundwater quality in the area is considered hard with calcium, magnesium, and alkalinity the dominant ions. The concentrations of the other major ions (i.e., sodium, potassium, sulphate and chloride) were found for the most part to be low. The exception to this was the 1995 sample collected from monitor 5-91, which exhibited higher than background concentrations of sodium and chloride. The source of the sodium and chloride was considered unknown at that time. The only other parameter of concern was nitrate. This was found at consistently elevated levels at monitors 1a-91, 1b-91, 2b-91 and 3-91, from 1991 until locations 1a-91, 1b-91 and 3-91 were destroyed due to construction activities.

1.1 Annual Reporting Requirements

Section N, Condition 52 of the Amended Provisional Certificate of Approval (Waste Disposal Site) states that:

Composting Site

52(a) the information required by Condition 63(8) of the Certificate dealing with the Composting Site;

63(8) By March 31st following the end of each operating year, the Owner shall prepare and submit to the District Manager, an Annual Report summarizing the operation of the Composting Site covering the previous calendar year. This Annual Report shall include, as a minimum, the following information:

63(8)(a) A monthly mass balance of the Organic Waste received, processed and transferred from this composting site, including waste type, quantity, sources and/or disposal destinations.

63(8)(b) An annual summary mass balance of the organic waste, the wood waste, the waste wood and the amendment material, received, processed and transferred from this composting site, including waste type, quantity, sources, and/or disposal destination.

63(8)(c) An annual summary of any deficiencies, items of non-compliance or process aberrations that occurred at this composting site and any remedial/mitigative action taken to correct them.

63(8)(d) A descriptive summary of any spills, incidents or other emergency situations which have occurred at this composting site, any remedial measures taken and the measures taken to prevent future occurrences.

63(8)(e) A summary describing any rejected waste including quantity, waste type, reasons for rejection and origin of the rejected waste.

63(8)(f) The quantity, by weight and volume of compost and residues produced and the quantity of compost and residues removed from the facility.

63(8)(g) Any environmental and operational problems, that could negatively impact the environment, encountered during the operation of the composting site or identified during the facility inspections and any mitigative actions taken.

63(8)(h) Any changes to the WRIC Environmental Emergency Plan, the Operations Manual or the Closure Plan that have been approved by the Director since the last Annual report.

63(8)(i) Any recommendations to minimize environmental impacts from the operation of the composting site and to improve the composting site operations and monitoring programs in this regard.

63(8)(j) A summary of any complaints received and the responses made, as required by the C of A (Air/Noise) for the composting site.

63(8)(k) A description of the compost distribution/markets.

63(8)(l) Conclusions from the advanced pathogen testing as the results relate to the pasteurization temperature monitoring.

63(8)(m) A condition-by-condition analysis of compliance with all Conditions of this Certificate.

Transfer/WRIC Site

The City shall submit an annual report on the operation of the Site for the previous calendar year to the District Manager by March 31st of each year. This report will include the information required as follows:

52(b) A monthly summary of the waste and/or recyclable materials received at the Site, including quantity, source and Ontario Regulation 347 waste classes.

52(c) A monthly summary of the waste and/or recyclable materials processed at the Site, including quantity and Ontario Regulation 347 waste classes.

52(d) A monthly summary of the waste and/or recyclable materials transferred at the off-Site, including quantity, destination and Ontario Regulation 347 waste classes.

52(e) An annual summary of the analytical results for the groundwater and surface water monitoring program including an interpretation of the results and any remedial/mitigative action undertaken.

52(f) An annual summary of any deficiencies, items of non-compliance or process aberrations that occurred and remedial and mitigative measures taken to correct them.

52(g) A summary of any changes to the Engineer's Report and/or Design and Operations Report that have been approved by the Director since the last annual report.

52(h) A summary of any changes to the Design and Operations Report Design and the WRIC Environmental Emergency Plan that were made in accordance with the information specified for a waste processing site as described in the most recent version of the Ministry publication "Guide for Applying for Approval of a Waste Disposal Site".

52(i) A summary of any changes to the Design and Operations Report that have been approved by the Director since the last annual report.

52(j) An update on the activities of the PLC.

The current C of A/ECAs for the site are included in Appendix E.

2. Composting Facility

The original compost facility was shut down in 2006. The City commissioned a new compost facility design, which was completed by the summer of 2011. The composting facility is fully enclosed with all processing and finished product remaining indoors.

2.1 Material Received, Processed and Transferred

As per Section N, Condition 63(8) (a) and (b), Table 1 presents a summary of the waste volumes received, processed and transferred from the site. 21,714 tonnes of material was received by the composting facility. Of the materials received, mixed organic materials constituted 20,216 tonnes (93%), brush constituted 913 tonnes (4%) and amendment/mulch made up the remaining 585 tonnes (3%). During 2016, the site accepted organic material mainly from the City of Guelph (50%) and Region of Waterloo (48%). Amendment material was received in the form of brush from the City of Guelph or wood chips from Speedside Construction Ltd., Essential Waste Services, the City of Hamilton or the City of Guelph Parks and Recreation Department.

A total of 5,163 tonnes finished compost was removed from the facility in 2016 (86% of the outgoing organics). All the finished compost was shipped to a farmer in Atwood, Ontario, northwest of Guelph. A total of 850 tonnes of screening, residual compost and organic rejected material from the composting process were shipped to the Transfer Station and then the Waste Management Twin Creeks Landfill in Sarnia, Ontario or to various other locations.

2.2 Deficiencies / Non-Compliance and Environmental / Operational Issues

There are issues with the operation of the biofilter that at times results in stack odours being discharged. Great efforts were expended to determine the cause(s) of the issue with the biofilter. An amendment application has been submitted to the MOECC that if approved, should address the issue.

No spills occurred in 2016 at the composting site.

There were 47 tonnes of rejected material from the organics plant due to contamination. The contaminated material usually consists of curbside recyclable collection (blue cart) material that is either inadvertently placed in with the organics (green cart) by the home owner or the blue cart material is inadvertently placed in the wrong area of the split box collection trucks. The rejected material was sent to the transfer station for final disposal.

There were no changes to the WRIC Environmental Emergency Plan or the Closure Plan since the last annual report. The compost facility operated without any major incidents in 2016.

Table 1: 2016 Monthly Summary of Incoming and Outgoing Material, Composting Facility

Incoming Material	Jan Tonnes	Feb Tonnes	March Tonnes	Apr Tonnes	May Tonnes	June Tonnes	July Tonnes	Aug Tonnes	Sept Tonnes	Oct Tonnes	Nov Tonnes	Dec Tonnes	Yearly Total
Mixed Organics	1,612.87	1,343.20	1,716.37	1,542.62	1,695.16	1,750.34	1,452.61	1,768.83	1,779.24	1,685.92	2,209.22	1,660.07	20,216.45
Paper Fiber Sludge	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Brush	66.34	31.33	38.48	94.54	126.33	45.21	0.00	126.77	97.09	83.43	115.59	87.79	912.90
Ammendment/Mulch	0.00	0.00	141.03	115.68	16.92	79.60	211.91	0.00	0.00	0.00	19.16	0.82	585.12
Total Month	1,679.21	1,374.53	1,895.88	1,752.84	1,838.41	1,875.15	1,664.52	1,895.60	1,876.33	1,769.35	2,343.97	1,748.68	21,714.47

Outgoing Mixed Waste	Jan Tonnes	Feb Tonnes	March Tonnes	Apr Tonnes	May Tonnes	June Tonnes	July Tonnes	Aug Tonnes	Sept Tonnes	Oct Tonnes	Nov Tonnes	Dec Tonnes	Yearly Total
Finished Compost	504.19	314.86	321.88	399.10	476.40	436.42	453.15	263.67	619.25	396.19	588.99	389.17	5,163.27
Overs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Screening Waste	17.23	27.89	26.79	24.46	28.36	34.14	27.78	18.33	25.77	30.79	34.71	30.02	326.27
Residual Compost Waste	61.29	29.37	0.00	67.94	20.96	43.28	30.23	42.60	38.06	37.07	52.75	53.90	477.45
Organic Rejected Load	7.56	4.41	0.00	0.00	10.97	6.47	0.00	7.93	0.00	0.00	4.63	4.59	46.56
Total Month	582.71	372.12	348.67	491.50	525.72	513.84	511.16	324.60	683.08	464.05	676.45	473.09	6,013.55

2.3 Public Complaints

There were a total of 17 odour investigations conducted by City staff in 2016. City staff were able to detect what is believed to be biofilter stack odours on five of these investigations. The City and its partners attended numerous meetings to troubleshoot the biofilter issues. Washing of the biofilter cells, pH profiling, cleaning of the drains and condition assessment has been completed. As a result of these meetings, an odour system was temporarily installed during the summer of 2016 and an amendment application to the Organic Waste Processing Facility (OWPF) Air Environmental Compliance Approval was submitted for a permanent odour system and the installation of a mist eliminator that will prevent acid overspray onto the biofilter media.

2.4 Enhanced Pathogen Testing and Operations Summary

Samples taken from the maturation hall of the compost stream indicate that all compost that has been shipped off of the site has passed the conditions for a Class A[3] compost under the CCME[4] Guidelines and the conditions within the ECA.

To reduce the health risks of pathogenic organisms, organic waste must attain a temperature of 55°C for a period of three days (72-hours) using in-vessel composting methods. The compost material goes through a series of tunnels to get to its finished state. There are seven tunnels at the facility. When material is in a tunnel the temperature in each of those tunnels is measured every five minutes and the logs are stored within a supervisory control and data acquisition (SCADA) system. The operator provides a weekly report which contains a snap shot of the tunnel temperatures. The Operator also takes readings of the curing piles that are maturing in the maturation building. The spreadsheet for the weekly readings of the compost temperatures and all the weekly reports for the snapshots of tunnel temperatures are available upon request. Temperature monitoring logs of the tunnels at the composting facility show that pasteurisation at 55°C was maintained for 72 hours.

2.5 Site Operation Recommendations

There were no confirmed deficiencies/non-compliance or environmental/operational issues related to the compost facility in 2016 as per condition 63(8)(c) and 52(f). The facility is operating as designed.

2.6 Compliance with the Conditions of the Certificate of Approval

Section N, 52(a) refers to reporting requirements associated with the Composting site. Section 63 (8)(m) requires:

> *A condition-by-condition analysis of compliance with all Conditions of this Certificate.*

The City provided the following statement with respect to this condition:

> *"A condition by condition analysis of compliance of all conditions of this Certificate of Approval was done and the City is not aware of any non-compliance issues for 2016.*
>
> *The Deputy CAO of Infrastructure, Development and Enterprise Services and the Manager of Solid Waste Resources continue to put a very high priority on compliance with applicable laws. Staff training continues to be provided both in-house and by external providers, and included inspections, reporting, due diligence, environmental regulations, competent person, contingency plans, emergency procedures, certificate of approval conditions, spills, TDGA, laboratory packing and other relevant topics."*

3. *Category A = Unrestricted use. Compost that can be used in any application (i.e., agricultural, residential gardens, horticultural operations, nursery industry, other businesses.*
4. *CCME = Canadian Council of Ministers of the Environment, 2005: Guidelines for Compost Quality, PN 1340.*

3. Municipal Hazardous and Special Waste (MHSW) Operations

The Municipal Hazardous Special Waste (MHSW) screening procedures and acceptance criteria has been discussed in previous annual reports (AECOM, 2015; AECOM 2016). As required by the City, all MHSW employees must be trained in WHMIS, TDG, Spills Response, Competent Person, and First Aid.

4. Waste Transfer Station Operations

4.1 Facility Inspection and Routine Maintenance

The following information was reported by the City of Guelph. The facility is inspected on an ongoing basis by site employees. Corrective maintenance is carried out as required. There were no environmental or operational problems reported during 2016.

A log of all security and grounds inspections are recorded daily. Routine maintenance is conducted at the site that includes litter pick-up, dust control, rodent control and clean-up of external roads within 1 km of the facility. The compactor is cleaned and inspected weekly when in use. Inspection of the inside floor drains, oil and grit separator, etc., are conducted weekly. The floor drain in the loading ramp is pumped and cleaned every three weeks. Maintenance was conducted on the holding tanks, floor drains and oil and grit separator once per month. The overhead doors are oiled every three weeks. All preventative maintenance performed on equipment are filed under the equipment number (hard copy) as well as recorded electronically in the Synergen program to indicate that the required maintenance has been completed.

A log book recording the weekly inspection of the detention ponds, ditches and facility inspections is kept on-site. Weekly inspections were recorded in 2016.

4.2 Contaminant Sources

4.2.1 Site Design and Operations

To determine if the site is having an impact on the ground and surface water in the area, it is important to examine what are the potential sources of impact. The site has been designed to minimize the possible sources of impacts and limit the risk of their emission to the environment, as discussed below.

Waste is dumped from incoming collection vehicles onto an indoor tipping floor located within the transfer building. The transfer building is a steel framed, metal clad building with a reinforced, surface-hardened slab-on-grade floor. The tipping floor is curbed such that liquid discharges onto the floor cannot readily flow off of the floor to the building exterior. It is drained by floor drains and routed through an oil-water separator, with the provision to divert flows to holding tanks prior to reaching the pumping station through the sanitary sewer. Spill cleanup materials (e.g., sorbents) are kept on hand and any liquid spills on the tipping floor are cleaned up immediately. Washing of spilled materials into the floor drain system is avoided to the greatest degree possible. In the event of any potential for leachate or liquid discharge from the building, the shut-off valve for the stormwater management pond will be closed to prevent any off-site discharge.

No waste processing is undertaken in the Transfer Station, with the exception of removal of recyclable material that arrives in incoming wastes (i.e., metal, wood, cardboard). Truck boxes (both incoming waste and transfers out) are tarped when outside of the transfer building to prevent odour and dust emissions as well as to prevent contact between the waste and precipitation that could potentially produce impacted runoff.

The Transfer Station building and the scale house are serviced with a connection to the City sanitary sewer. Domestic sewage from the washrooms in the transfer building and the scale house are discharged directly to the sewage pumping station. The stormwater management pond has a valved connection to the pumping station,

which will permit any stormwater that becomes impacted to be discharged to the sanitary sewer system. The site is graded such that all runoff drains to the stormwater management pond. As all waste handling occurs within the Transfer Station building, runoff from the site will be initially considered to be unimpacted.

Ditches are located on both sides of the driveway to collect road runoff and to convey upstream runoff to the pond. A culvert conveys flow from the ditch on the west side of the driveway to the ditch on the east side and ultimately to the pond. MOECC approved dust suppressant and road salt for the internal paved areas may be used occasionally.

A Public Drop Off (PDO) facility was added to the site in 2015. There have been no changes to the Engineer's Report since the last annual report.

5. Incoming and Outgoing Waste and/or Recyclables

5.1 Summary of Incoming Materials

As per Section N, Condition 52(b) of the amended ECA Table 2 is a monthly summary of the incoming materials received at the site during 2016, based on data recorded by City staff.

As shown on Table 2, 110,829 tonnes of material was received by the site. The compost facility received 21,714 tonnes of organics (20% of the materials received in 2016). Recyclables and mixed dry materials constituted 39,530 tonnes (36%)[5] of the total materials received at the site. This included about 34,692 tonnes of paper products[6] and 25 tonnes of plastics[7]. There were 5,520 tonnes[8] (5%) brush, leaves, yard waste and mixed organics received. Non-recyclable materials (mixed solid waste organic rejected materials) constituted 44,065 tonnes (40%) of the total materials received at the site in 2016. 176 tonnes of clean wood was accepted at the Transfer Station.

The on-site Municipal Hazardous Special Waste (MHSW) depot serves residents of the City of Guelph and the County of Wellington. The depot accepted 20,480 drop offs of materials during 2016. A monthly summary of the 2016 drop off numbers are shown on the table below.

Public	Drop Offs
January	1,086
February	984
March	1,426
April	1,896
May	2,237
June	2,353
July	2,424
August	1,961
September	1,842
October	1,688
November	1,572
December	1,011
Totals	**20,480**

5. *Table 2 paper incoming (34,692 tonnes)+ plastic incoming (25 tonnes)+ other recyclable incoming to the Transfer Station and the WRIC (4,813 tonnes) = 39,530 tonnes*
6. *Table 2 incoming single stream - loose (3,089 + 19,453 tonnes) + OCC loose (6 + 1,561 tonnes) + mixed papers (8 + 636 tonnes) + commingle (31 + 9,357 tonnes) + OCC baled (113 tonnes) + single stream bagged (1.5 tonnes) + OWP Fine-Loose (3 + 434 tonnes) = 34,692 tonnes*
7. *Table 2 incoming PET #1 (0 tonnes) + HDPE#2 (13 + 11 tonnes) = 25 tonnes*
8. *Table 2 incoming mixed organics (5.5 tonnes) + yard waste (26 + 2,675 tonnes) + leaves (1,851 tonnes) + brush (2.5 + 960 tonnes) + yard waste (26 + 2,675 tonnes) = 5,520 tonnes*

Table 2: 2016 Monthly Summary of Incoming Material

Transfer Station Incoming Material

Incoming Material	Jan Tonnes	Feb Tonnes	March Tonnes	Apr Tonnes	May Tonnes	June Tonnes	July Tonnes	Aug Tonnes	Sept Tonnes	Oct Tonnes	Nov Tonnes	Dec Tonnes	Total Yearly
Mixed Solid Waste	2,710.44	2,693.44	3,036.87	3,784.65	4,588.38	4,202.93	3,801.84	4,068.64	3,925.07	4,161.30	4,005.45	3,055.88	44,034.89
MRF Glass Residue	918.21	777.57	526.37	457.04	376.70	393.00	255.01	354.70	177.03	114.37	108.86	95.47	4,554.33
MRF Residue	455.37	384.03	328.10	295.47	384.15	464.67	189.68	181.15	158.29	187.43	283.80	270.21	3,582.35
Shingles	25.41	17.50	57.66	238.33	410.98	385.30	292.72	272.93	315.57	258.79	193.16	41.22	2,509.57
Drywall	63.98	52.63	29.63	49.91	40.32	52.51	51.87	78.42	59.16	47.06	16.16	26.04	567.69
Single Stream Bagged	0.00	0.00	0.00	0.00	0.00	0.00	1.46	0.00	0.00	0.00	0.00	0.00	1.46
Single Stream - Loose	283.25	130.40	180.27	34.69	2.72	8.75	684.95	820.03	390.64	128.69	234.38	190.54	3,089.31
Mixed Reclables	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	91.80	216.56	50.57	358.93
C & D	2.34	0.00	2.91	3.58	0.00	4.44	6.36	1.12	3.74	1.36	0.10	0.00	25.95
Medical Waste	1.22	1.24	1.26	1.27	1.30	1.24	1.70	1.30	2.22	0.00	0.00	1.22	13.97
Residual Compost Waste	61.29	29.37	0.00	67.94	20.96	43.28	30.23	42.60	38.06	37.07	52.75	53.90	477.45
Rubble/Brick/Toilets	7.85	6.98	13.32	26.71	62.86	73.07	50.88	33.10	62.78	49.84	27.64	20.37	435.40
Screening Waste	17.23	27.89	26.79	24.46	28.36	34.14	27.78	18.33	25.77	32.53	34.71	30.02	328.01
Clean Wood	12.65	5.66	15.59	17.55	25.62	19.06	15.94	8.92	13.68	9.25	17.30	14.61	175.83
Leaves	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Organic Rejected Load	7.56	4.41	0.00		10.97	6.47	0.00	7.93			4.63	4.59	46.56
Occ - Loose	0.00	0.00	0.00	0.00	0.00	0.00	3.22	2.61	0.00	0.00	0.00	0.00	5.83
Yardwaste	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.47	17.13	0.00	25.64
Mixed Papers	0.00	2.68	0.00	0.00	0.00	0.00	4.93	0.00	0.00	0.00	0.00	0.00	7.61
Clean Fill	0.00	0.00	0.00	3.45	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.73
Brush	0.00	0.00	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.24	2.50
Commingle	0.00	0.00	0.00	0.00	0.62	17.38	12.60	0.00	0.00	0.00	0.00	0.00	30.60
HDPE#2 Loose	0.00	0.00	0.00	0.00	0.00	12.58	0.00	0.00	0.00	0.00	0.00	0.00	12.58
OWP/Fine - loose	0.00	0.00	0.00	0.00	0.00	2.59	0.00	0.00	0.00	0.00	0.00	0.00	2.59
Bulky Item Program	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.16
Mixed Organics	0.00	0.00	0.00	2.08	0.00	0.20	1.63	0.00	0.00	0.00	0.00	1.62	5.53
Overs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Month	4,566.80	4,133.84	4,219.03	5,007.13	5,954.22	5,721.61	5,432.80	5,891.78	5,172.17	5,127.96	5,212.63	3,858.50	60,298.47

Table 2: 2016 Monthly Summary of Incoming Material *(continued)*

MRF Recycling /PDO Facility Incoming Material

Incoming Material	Jan Tonnes	Feb Tonnes	March Tonnes	Apr Tonnes	May Tonnes	June Tonnes	July Tonnes	Aug Tonnes	Sept Tonnes	Oct Tonnes	Nov Tonnes	Dec Tonnes	Total Yearly
Aluminum - Loose	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Brush	0.00	0.00	30.86	53.91	182.69	109.10	239.23	103.62	49.19	20.08	151.64	19.54	959.86
Clothing	0.57	0.34	0.60	0.73	1.32	0.39	0.82	1.04	0.52	0.33	0.50	0.50	7.66
Commingle	827.48	769.39	764.98	792.78	807.02	746.41	747.86	856.70	732.83	701.75	752.10	858.05	9,357.35
Electronics	14.65	9.55	19.49	25.14	21.91	18.29	12.89	28.76	13.62	17.78	19.73	19.25	221.06
Empty Oil Containers	0.17	0.34	0.30	0.21	0.62	0.45	0.56	0.22	0.71	0.50	0.26	0.27	4.61
HDPE #2	0.00	0.00	0.12	0.22	0.00	0.00	9.76	0.00	0.00	0.09	0.85	0.00	11.04
Leaves	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1,851.33	0.00	1,851.33
Mixed Papers	91.78	69.91	76.29	69.88	75.53	85.68	14.24	29.58	30.96	31.67	21.91	38.71	636.14
Mixed Plastics	0.13	0.00	0.00	1.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.66
OCC - Baled	0.00	34.43	6.33	2.69	20.34	2.22	4.26	15.80	3.23	6.35	17.11	0.00	112.76
OCC - Loose	170.98	130.67	136.78	133.16	118.85	145.99	89.51	139.34	143.30	120.56	111.87	120.26	1,561.27
ONP#6 Baled	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ONP#6 Loose	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ONP#8 Bales	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ONP#8 Loose	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OWP/Fine - loose	12.56	32.85	52.80	46.26	40.76	32.44	35.64	30.54	49.43	27.38	48.30	25.51	434.47
Plastic Film - PDO Bin	0.00	0.00	0.00	0.00	1.52	0.00	0.41	0.00	0.00	0.00	0.00	0.00	1.93
PET #1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polycoat/Tetra Pak/Cartons	0.00	0.00	9.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.74
Scrap Metal	38.07	54.17	7.50	42.91	89.05	0.00	33.23	59.72	35.63	39.76	40.10	23.88	464.02
Single Stream Bagged	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Single Stream Baled	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Single Stream Loose	3,939.67	4,020.62	2,317.79	2,013.07	2,133.26	1,727.18	250.78	84.27	549.03	782.86	855.10	779.04	19,452.67
Steel Cans - Baled	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polystyrene	0.63	0.00	0.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.15
Tires	1.94	0.00	2.06	4.94	5.24	6.70	3.71	2.91	2.68	1.85	5.14	3.97	41.14
Yardwaste	12.42	0.00	32.35	171.92	552.45	344.89	141.99	106.22	140.76	417.35	617.68	137.27	2,675.30
Total Month	5,111.05	5,122.27	3,458.51	3,359.35	4,050.56	3,219.74	1,584.89	1,458.72	1,751.89	2,168.31	4,493.62	2,026.25	37,805.16

Table 2: 2016 Monthly Summary of Incoming Material *(continued)*

Organics Compost Facility Incoming Material

Incoming Material	Jan Tonnes	Feb Tonnes	March Tonnes	Apr Tonnes	May Tonnes	June Tonnes	July Tonnes	Aug Tonnes	Sept Tonnes	Oct Tonnes	Nov Tonnes	Dec Tonnes	Total Yearly
Mixed Organics	1,612.87	1,343.20	1,716.37	1,542.62	1,695.16	1,750.34	1,452.61	1,768.83	1,779.24	1,685.92	2,209.22	1,660.07	20,216.45
Paper Fiber Sludge	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Brush	66.34	31.33	38.48	94.54	126.33	45.21	0.00	126.77	97.09	83.43	115.59	87.79	912.90
Ammendment/Mulch	0.00	0.00	141.03	115.68	16.92	79.60	211.91	0.00	0.00	0.00	19.16	0.82	585.12
Total Month	1,679.21	1,374.53	1,895.88	1,752.84	1,838.41	1,875.15	1,664.52	1,895.60	1,876.33	1,769.35	2,343.97	1,748.68	21,714.47

Notes:

All volumes in tonnes

MRF = Materials Recovery Facility

PDO = Public Drop Off

Single Stream = all recyclable products mixed together (bottles, cans, paper, cardboard, etc.)

OCC = Old Corrugated Cardboard

OWP = Office Waste Paper (also known as Fine Paper)

Overs or residual compost waste= a type of residue created during the composting process

Overall Site Total = (Transfer Station Annual Tonnage + WRIC Annual Tonnage + Compost Facility Annual Tonnage) - (Transfer Station Residue from MRF and Organics)

Facility Totals	119,818.10
Residue from MRF and Organic Plant	8,988.70
Overall Site Total	110,829.40

Incoming MHSW is sent to hazardous waste haulers for disposal or recycling. The City's Paint Plus Re-Use Program was conducted between April 19 and October 8, 2016. A monthly summary of the amounts of MHSW (separated by waste class) received at the site for the Paint Plus Re-Use Program for 2016 are tabulated below.

Material/Month	April	May	June	July	August	September	October	Total
Paints and Coatings Non-aerosol; #145 (L)	241.25	296.5	1016	692	503	243	156	3147.75
Paints and Coatings Aerosol; # 331 (kg)	9	28	176	98	146	32	46	535
Solvents # 213 (L)	3.5	23	59.5	40	28	12	6	172
Antifreeze (L)	0.25	1	23	8	4	4	0	40.25
Propane Cylinders (kg)	0	0	1	2	1	0	0	4
Cleaners/Detergents #148 (L)	13.5	6.5	118	42	23	7	3	213
Car Products #213 (L)	0	14.5	92	75	68	5	4	258.5
Non-Paint Aerosols #331 (kg)	1	2	27	13	9	6	2	60
Motor Oil (L)	13.5	9	45	24	8	8	4	111.5
Plaster/Cement/Grout (kg)	10	1	29	1	0	2	2	45
Client Count	**48**	**62**	**198**	**173**	**110**	**48**	**26**	**665**

A total of about 222,492 L and 25,244 kg of municipal and household special wastes[9] were received in 2016. In addition, 931 20-lb. propane tanks, 6,300 1-lb. propane cylinders and 9,220 (125,579 ft.) fluorescent tubes were received in 2016. All materials accepted at the MHSW depot are re-used, recycled or shipped off-site for disposal.

As shown on Table 2, the source of the bulk of the materials received was primarily mixed solid waste of domestic origin. Recyclables accepted by the MRF/PDO originated mainly from the City of Guelph (51%) with a small percentage from the United States (9%) and the remaining sources from other areas in Ontario. Materials accepted at the Transfer Station were mainly from the City of Guelph (70%), of which 73% was mixed solid waste. The Transfer Station can accept waste from anywhere in Ontario, New York and Michigan States as long as it is within the acceptable daily tonnage limit.

There were no rejected and no suspects received during 2016.

5.2 Summary of Wastes/Recyclables Processed and Outgoing

Materials that are accepted by the site are either processed (composted), diverted to be re-used or sent to the Waste Transfer Station for disposal. Section N, Condition 52(c) requires monthly reporting of processed materials from the site, which are presented on Table 3. Of the 95,156 tonnes of outgoing material, 25,522 tonnes (27%)[10] is processed on-site through the Material Recovery facility (MRF) and 5,163 tonnes (20%)[11] of finished compost was produced. No residual compost waste (overs) from the organic compost plant was generated in 2016. 53,053 tonnes of non-recyclable materials was shipped off-site from the transfer station to other destinations. In 2016, the MHSW facility received and diverted a total of about 222,492 L and 25,244 kg of municipal and household special wastes, in addition 931 20 lb. propane tanks, 6,300 1-lb. propane cylinders and 9,220 (125,579 ft.) fluorescent tubes.

9. Paints, flammables, aerosols, acids, bases, pesticides, oxidizers, batteries (alkaline, car, household), pharmaceuticals, motor oil, cooking oil, glycol, sharps, peroxide, mercury, fire extinguishers, compressed gas, oxygen (welding), expanding foam

10. Total of 36,334 tonnes outgoing from the WRIC – 3,582 tonnes residue from processing – 4,554 tonnes glass residue from processing – 2,676 tonnes mixed solid waste (baled) shipped to Twin Creeks Landfill = 25,522 tonnes.

11. 5,163 tonnes finished compost/25,522 tonnes MRF = 20%

Table 3: 2016 Monthly Summary of Outgoing Materials

Transfer Station Outgoing Materials

Outgoing Mixed Waste	Jan Tonnes	Feb Tonnes	March Tonnes	Apr Tonnes	May Tonnes	June Tonnes	July Tonnes	Aug Tonnes	Sept Tonnes	Oct Tonnes	Nov Tonnes	Dec Tonnes	Yearly Total
Mixed Solid Waste	4,523.25	4,126.90	4,078.62	4,694.80	5,501.65	5,317.63	4,483.40	4,759.27	4,380.16	4,539.07	4,540.69	3,623.99	54,569.43
Single Stream (returned to MRF)	0.00	7.68	18.37	135.18	0.00	18.38	0.00	0.00	0.00	0.00	0.00	0.00	179.61
Mixed Reclables (Single Stream)	0.00	0.00	0.00	0.00	0.00	0.00	553.96	746.67	477.92	305.99	174.49	147.67	2,406.70
C & D	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Shingles	37.10	0.00	92.08	28.95	270.06	355.23	351.01	524.70	335.25	93.09	346.93	203.53	2,637.93
Clean Wood	24.00	21.38	0.00	11.94	44.05	28.64	10.17	30.13	9.13	15.18	20.20	21.78	236.60
Drywall	74.58	23.35	68.18	42.78	22.99	55.97	83.68	98.49	45.35	69.35	42.55	0.00	627.27
Concrete, Rubble	0.00	48.41	321.88	0.00	71.62	128.60	83.25	26.88	84.71	158.28	183.66	30.23	1,137.52
Total Month	4,658.93	4,227.72	4,579.13	4,913.65	5,910.37	5,904.45	5,565.47	6,186.14	5,332.52	5,180.96	5,308.52	4,027.20	61,795.06

MRF Recycling & PDO Facility Outgoing Materials

Outgoing Mixed Waste	Jan Tonnes	Feb Tonnes	March Tonnes	Apr Tonnes	May Tonnes	June Tonnes	July Tonnes	Aug Tonnes	Sept Tonnes	Oct Tonnes	Nov Tonnes	Dec Tonnes	Yearly Total
Aluminum Baled	56.57	34.42	40.06	36.08	49.68	18.45	59.43	19.25	17.12	35.77	36.85	19.66	423.34
Brush	0.00	0.00	30.86	53.91	182.69	109.10	239.23	103.62	49.19	20.08	151.64	19.54	959.86
Clothing	0.57	0.34	0.60	0.73	1.32	0.39	0.82	1.04	0.52	0.33	0.50	0.50	7.66
Electronics	14.65	9.55	19.49	25.14	21.91	18.29	12.89	28.76	13.62	17.78	19.73	19.25	221.06
Empty Oil Containers	0.17	0.34	0.30	0.21	0.62	0.45	0.56	0.22	0.71	0.50	0.26	0.27	4.61
Glass Residue (from process)	918.21	777.57	526.37	457.04	376.70	393.00	255.01	354.70	177.03	114.37	108.86	95.47	4,554.33
HDPE#2 - BALED	43.73	117.04	55.02	71.59	49.63	53.81	33.77	0.00	56.41	18.48	38.07	36.34	573.89
Leaves	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1,851.33	0.00	1,851.33
Mixed Glass	20.46	0.00	34.47	38.06	0.00	0.00	0.00	0.00	8.67	114.03	172.84	142.95	531.48
Mixed Plastics Baled	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mixed Recyclables	0.00	0.00	0.00	0.00	0.00	0.00	323.50	0.00	0.00	0.00	0.00	0.00	323.50
Mixed Solid Waste (1)	449.42	369.30	326.49	271.30	249.59	263.83	114.95	96.83	138.48	98.03	174.95	122.37	2,675.54
Non Ferrous Metal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.17	0.00	0.00	0.00	0.00	1.17
OCC Baled	712.02	616.86	515.22	368.86	401.61	339.71	116.76	96.77	208.84	195.70	190.38	174.03	3,936.76
ONP #6 Baled	450.64	432.92	267.69	263.12	333.82	206.51	43.82	22.18	0.00	0.00	0.00	0.00	2,020.70
ONP #8 Baled	1,464.98	1,547.09	782.47	720.39	615.49	731.19	117.21	0.00	231.20	274.87	321.15	252.90	7,058.94
ONP#7 Baled	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 3: 2016 Monthly Summary of Outgoing Materials *(continued)*

OWP/Fine Paper	51.85	0.00	62.61	19.57	36.79	39.55	37.65	20.95	42.37	57.21	19.19	38.15	425.89
PET #1	244.51	228.22	208.93	182.44	169.04	200.25	186.13	161.24	131.50	149.20	120.75	122.67	2,104.88
PLASTIC FILM - BALED	0.00	0.00	0.00	0.00	0.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.90
Polycoat/Tetra Pak	0.00	23.32	19.98	18.56	0.00	0.00	20.23	0.00	0.00	19.21	0.00	0.00	101.30
Polystyrene (Styrofoam)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.45	0.00	0.00	0.40	0.37	1.22
Residue (from processing)	455.37	384.03	328.10	295.47	384.15	464.67	189.68	181.15	158.29	187.43	283.80	270.21	3,582.35
Scrap Metal	38.07	54.17	7.50	42.91	89.05	0.00	33.23	59.72	35.63	39.76	40.10	23.88	464.02
Single Stream Baled	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Single Stream Loose	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Steel Cans Baled	214.92	233.40	44.90	212.97	127.98	149.15	105.78	81.06	82.01	121.95	117.51	107.74	1,599.37
Tires	1.94	0.00	2.06	4.94	5.24	6.70	3.71	2.91	2.68	1.85	5.14	3.97	41.14
Tubs and Lids	28.34	15.31	16.92	18.90	0.00	42.36	0.00	0.00	36.68	0.00	19.29	16.14	193.94
Yard Waste	12.42	0.00	32.35	171.92	552.45	344.89	141.99	106.22	140.76	417.35	617.68	137.27	2,675.30
Total Month	5,178.84	4,843.88	3,322.39	3,274.11	3,648.66	3,382.30	2,036.35	1,338.24	1,531.71	1,883.90	4,290.42	1,603.68	36,334.48

Organic Compost Plant Outgoing Materials

Outgoing Mixed Waste	**Jan Tonnes**	**Feb Tonnes**	**March Tonnes**	**Apr Tonnes**	**May Tonnes**	**June Tonnes**	**July Tonnes**	**Aug Tonnes**	**Sept Tonnes**	**Oct Tonnes**	**Nov Tonnes**	**Dec Tonnes**	**Yearly Total**
Finished Compost	504.19	314.86	321.88	399.10	476.40	436.42	453.15	263.67	619.25	396.19	588.99	389.17	5,163.27
Overs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Screening Waste	17.23	27.89	26.79	24.46	28.36	34.14	27.78	18.33	25.77	30.79	34.71	30.02	326.27
Residual Compost Waste	61.29	29.37	0.00	67.94	20.96	43.28	30.23	42.60	38.06	37.07	52.75	53.90	477.45
Organic Rejected Load	7.56	4.41	0.00	0.00	10.97	6.47	0.00	7.93	0.00	0.00	4.63	4.59	46.56
Total Month	582.71	372.12	348.67	491.50	525.72	513.84	511.16	324.60	683.08	464.05	676.45	473.09	6,013.55

Notes: (1) - Baled Residue shipped direct from MRF

Facility Totals	104,143.09
MRF & Organic Residue to Site Transfer Station	8,986.96
Overall Site Total	95,156.13

In past years we have provided calculations on the tonnages of incoming and outgoing materials. It was noted that since 2010, there had consistently been more incoming materials compared to outgoing materials. Since the tonnage left on site was added to the tonnage in the following year, this resulted in the tonnage left on site to increase every year. As this did not appear to be representative of actual conditions on the site, the methodology used for the reconciliation of the incoming and outgoing materials was reviewed with the City. The City stated that there was recently an issue identified with the outbound scales. The weigh scale foundations were "floating" causing a misalignment. The scale service company suggested that the scale was weighing lighter on the outbound materials than the inbound materials. It was also discussed that the materials received at the organics compost facility is much heavier due to moisture retention compared to when it leaves the site in a processed, dry and degraded state. In light of this, it was decided that the materials from the compost facility would be excluded from the reconciliation calculations since there was no accurate method to estimate the of percentage moisture loss/decay to account for a smaller outbound tonnage. The compost facility became operational in 2012. As this was the case, the reconciliations were re-calculated from 2012. Tonnages will not be equal as some mass is lost through evaporation and processing.

In late 2015, the scales were serviced such that the weight accuracy was corrected. The estimated carry over from 2015 was not included in the 2016 calculations as its accuracy was suspect, as discussed above. Therefore, for 2016 we have based the incoming, outgoing and processed quantities solely on the 2016 weigh scale readings. Table 4 is reconciliation of the incoming and outgoing materials and materials processed from the site since 2012.

There is a difference of 26 tonnes (2%) between incoming and outgoing wastes/materials calculated for 2016, excluding the compost facility. This is negligible and may be attributed to a margin of error. However, it was noted that there was some excavation work done on site by the same vendor that takes away concrete and rubble waste. This material was weighed when it left site but should not have been as this was not material received as inbound material. This material, generated on-site, contributed to the larger volume of outgoing from the site.

Table 3 shows a monthly summary of the outgoing materials shipped off site during 2016 as per Section N, Condition 52(d) of the amended ECA. Of the 61,795 tonnes of non-processed outgoing materials from the Transfer Station, 52,798 tonnes (85% of the outgoing materials) was sent to the Waste Management Twin Creeks Landfill in Lambton County, 2,713 tonnes (4%) was sent to then Energy-from-Waste (EFW) facility in Detroit, Michigan and 2,688 tonnes (4%) was sent to the Try Recycling in London for disposal. Other facilities received less than 6% of the materials. About 4,649 tonnes (7.5%) of non-processed materials is marketable consisting of other recyclable materials such as shingles, clean wood, drywall, concrete and rubble.

In 2016, 25,522 tonnes of marketable processed material was transferred off the site from the WRIC (MRF/PDO) facility. 13,442 tonnes (53%) was paper-based goods such as cardboard and newsprint, 5,486 tonnes (21%) was organics, 2,679 tonnes (10%) was plastics and the remaining 3,915 tonnes (15%) was other recyclable materials such as aluminum, steel cans, glass, tires and metal. As reflected in the volumes above, the majority of the marketable materials sold were paper products.

The WRIC achieved a 100% diversion rate for yard, leaf and brush and a 48% rate[12] of diversion for the remaining materials accepted at the site in 2016.

12. Diversion rate (excluding organics) = Incoming for Transfer Station and WRF/PDO (105,309 tonnes) – Outgoing MSW from Transfer Station (54,569 tonnes)/Incoming (105,309 tonnes) x 100 = 48.2%.

Table 4: Summary of Incoming, Outgoing and Processed Quantities

	Inbound Tonnage	Outbound Tonnage	Difference Between Inbound and Outbound Tonnage	Difference not including Compost Facility Tonnage	Plus carry over from previous year not including Compost Facility Tonnage
2012					
Transfer Station	56,576	55,773	803		
MRF Recycling/PDO Facility	39,201	38,671	530		
Compost Facility	17,338	3,671	13,667		
2012 Overall Site Total	**105,915**	**90,915**	**15,000**	**1,333**	**1,333 tonnes**
2013					
Transfer Station	52,444	51,745	699		
MRF Recycling/PDO Facility	32,104	30,506	1,598		
Compost Facility	19,124	4,007	15,117		
2013 Overall Site Total	**97,414**	**80,024**	**17,390**	**2,297**	**3,630 tonnes**
2014					
Transfer Station	58,936	58,588	348		
MRF Recycling/PDO Facility	49,907	49,386	521		
Compost Facility	19,321	4,569	14,752		
2014 Overall Site Total	**116,449**	**100,829**	**15,620**	**869**	**4,499 tonnes**
2015					
Transfer Station	65,870	65,080	789		
MRF Recycling/PDO Facility	67,874	67,047	827		
Compost Facility	19,584	5,294	14,290		
2015 Overall Site Total	**136,226**	**120,319**	**15,907**	**1,617**	**6,116 tonnes**
2016					
Transfer Station	60,298	61,795	-1,497		
MRF Recycling/PDO Facility	37,805	36,334	1,471		
Compost Facility	21,714	6,014	15,701		
2016 Overall Site Total	**110,829**	**95,156**	**15,673**	**-26**	

Outgoing municipal and household hazardous waste materials were manifested to Photech Environmental, St. Catharines (the waste removal contractor for 2016) and disposed of by the companies identified below for recycling and re-use.

Waste Types	List of Intended Receivers
Paints	• Photech Environmental Solutions Inc.
Oil Filters	• Safety Kleen, Breslau, ON
Bulk Oil/Antifreeze	• Safety Kleen, Breslau, ON
Pesticides	• Clean Harbours, Thorold, ON
Pharmaceuticals	• Phase Separation Solutions
Oxidizers/Acids/Bases	• Stablex Canada Inc., Quebec
Pathological Wastes/Syringes	• Stericycle, Toronto, ON
Car Batteries	• Benmet Steel & Metal
Fluorescent Tubes/Lamps	• Aevitas
Household Batteries/Mercury	• Raw Materials Corp.
Propane Tanks	• Simcoe Energy & Technical Services
Aerosols	• Peintures Recuperees Du Quebec
Organics/Flammables	• Newalta Industrial Services Inc., ON

Destinations/buyers for dry recyclable processed materials include:

Material Type	Destinations/Major Buyers
Mixed Solid Waste	EFW Niagara, EFW Detroit, Twin Creeks Landfill (Ont), Smith Creek Landfill (Michigan)
Bagged Yard Waste	All Treat Farms
Brush	Schmidt Lumber, Waste Management (Etobicoke), Toronto
Loose Leaves	Grobark
Construction/Demolition	Budget Environmental, Greenstep
Tires	Highland Starter
PET Bottles (#1 plastics)	ReMM, Canadian Plastics, Canada Fibers
HDPE (#2 plastics)	Entropex, Canadian Plastics
Mixed Plastics(#4,5,7)	Entropex, Canadian Plastics, ReMM
Aluminum Cans	Triple M Metals, Ram Iron and Metals
Corrugated Cardboard	ReMM, Continental Grading, Canada Fibers
Newsprint	Continental Paper Grading, Canada Fibres, ReMM
Steel Cans	Triple M Metals RAM Iron and Metal
Polycoat: Tetra Pak and Milk Cartons	Continental Paper Grading
Mixed Glass	Nexcycle
Scrap Metal/White Goods	Triple M Metals, Ben- Met
Electronics	Electro Shred/Waxman Industrial
Used Clothing	Canadian Diabetes Society, Breast Cancer Fund
Shingles	Try Recycling
Clean Wood (lumber)	Budget Environmental Disposal Ltd., Greenstep Recycling
Drywall	Greenstep, New West Gypsum
Concrete/Brick/Rubble/Toilets	Martin Deter
Finished Compost	farmer, Atwood Ontario

6. Groundwater and Surface Water Monitoring Program

6.1 Groundwater Monitoring Program

Groundwater levels are measured at all monitoring locations on a quarterly basis each year. During 2016, groundwater level measurements were conducted on; April 29, June 1, September 20 and December 1. As per Condition 5 of the ECA #9496-9NFKJ9, groundwater sampling was conducted on a semi-annual basis in spring and fall in 2016; in June (dry period, late spring) and in November/December (wet period, late fall). Each of the 2016 sampling events included analyses for leachate indicator parameters, general chemistry and organics. Tables 5 and 6 below summarize the groundwater monitoring program and analytical parameters, respectively.

Table 5: Groundwater Monitoring Program

Location	April	June	September	December
13a-01	•	S	•	S
13b-01	•	S	•	S
14a-01	•	S	•	S
14b-01	•	S	•	S
15a-01	•	S	•	S
15-b-01	•	S	•	S
16a-08	•	S	•	S
16b-08	•	S	•	S
17a-08	•	S	•	S
17b-08	•	S	•	S
18a-14*	•	S	•	S

Location	April	June	September	December
18b-14	•	S	•	S
19a-08	•	S	•	S
19b-08	•	S	•	Dry
20a-08	•	S	•	S
20b-08	•	S	•	S
21-08	•	S	•	S
22a-11	•	S	•	S
22b-11	•	S	•	S
23a-12	•	S	•	S
23b-12	•	S	•	S

*Notes: • = Water Levels Only / S = Sampling and Water Levels / * = BH18-08 was replaced in 2014 therefore was re-named 18-14*

Table 6: Analytical Parameter List

Leachate Indicator Parameters	• Biological Oxygen Demand (BOD) • Chemical Oxygen Demand (COD) • Total Kjeldahl Nitrogen (TKN) • Ammonia as Nitrogen (NH3-N) • Total Phosphorus (Total P) • Total Suspended Solids (TSS) for surface water and leachate only • Total Sulphate (SO4) • Phenols	• Chloride (Cl) • Sodium (Na) • Calcium (Ca) • Boron (B) • Total Iron (Fe) • Phosphorus (P) • Zinc (Zn) • Nitrate (NO3) and Nitrite (NO2)
General Parameters	• pH • Conductivity • Alkalinity	• Magnesium (Mg) • Potassium (K)
Field Parameters	• pH • Conductivity	• Temperature
Organics	• EPA 624,625 (ATG 16+17+18 & ATG 19+20)	

The organic compound parameter list for the ATG MISA Groups are as follows:

Misa Group 16	Misa Group 19	
1,1,2,2-Tetrachloroethane	Acenaphthene	2-Methylnaphthalene
1,1,2-Trichloroethane	5-Nitroacenaphthene	Naphthalene
1,1-Dichloroethane	Acenaphthylene	Perylene
1,1-Dichloroethylene	Anthracene	Phenanthrene
1,2-Dichlorobenzene	Benzo(a)anthracene	Pyrene
1,2-Dichloroethane	Benzo(a)Pyrene	Benzyl Butyl Phthalate
1,2-Dichloropropane	Benzo(b)Fluoranthene	bis(2-ethylhexyl)Phthalate
1,3-Dichlorobenzene	Benzo(g,h,i)perylene	Di-N-butylPhthalate
1,4-Dichlorobenzene	Benzo(k)Fluoranthene	Di-N-octylPhthalate
Bromodichloromethane	Biphenyl	4-Bromophenyl phenyl Ether
Bromoform	Camphene	4-Chlorophenyl Phenyl Ether
Bromomethane	1-Chloronaphthalene	bis(2-chloroisopropyl)Ether
Carbon Tetrachloride	2-Chloronaphthalene	bis(2-Chloroethyl)Ether
Chlorobenzene	Chrysene	Diphenyl ether
Chloroform	Dibenzo(a,h)Anthracene	2,4-Dinitrotoluene
Chloromethane	Fluoranthene	2,6-Dinitrotoluene
Cis-1,3-Dichloropropylene	Fluorene	bis(2-chloroethoxy)Methane
Dibromochloromethane	Indeno(1,2,3-cd)Pyrene	Diphenylamine
1,2-Dibromoethane	Indole	N-Nitrosodiphenylamine
Methylene Chloride	1-Methylnaphthalene	N-Nitrosodi-N-propylamine
Tetrachloroethylene		
trans-1,2-Dichloroethylene		
Trans-1,3-Dichloropropylene		
Trichloroethylene		
Trichlorofluoromethane		
Vinyl chloride		
Misa Group 17	**Misa Group 20**	
Benzene	2,3,4,5-Tetrachlorophenol	2,6-Dichlorophenol
Ethylbenzene	2,3,4,6-Tetrachlorophenol	4,6-Dinitro-o-Cresol
Styrene	2,3,5,6-Tetrachlorophenol	2-Chlorophenol
Toluene	2,3,4-Trichlorophenol	4-Chloro-3-methylphenol
o-Xylene	2,3,5-Trichlorophenol	4-Nitrophenol
m-Xylene and p-Xylene	2,4,5-Trichlorophenol	m-,p-Cresol
Misa Group 18	2,4,6-Trichlorophenol	o-Cresol
Acrolein	2,4-Dimethylphenol	Pentachlorophenol
Acrylonitrile	2,4-Dinitrophenol	Phenol
	2,4-Dichlorophenol	

Groundwater monitoring was conducted at all locations in June and November/December 2016. The results of the groundwater monitoring are discussed in Sections 8.4 to 8.7.

6.2 Surface Water Monitoring Program

The surface water monitoring program for the site is outlined in the ECA in Conditions 5 (2) (parameter list) and Condition 5 (3) of ECA #9496-9NFKJ9, for the final off-site surface water station (stormwater management pond - TP1(Out)) and in the Follow-up Response to Ministry of the Environment Comments on the Surface Water Monitoring Program and Proposed Action Plan, dated December 3, 2013 (Appendix E) for the Wet/Dry property. These monitoring programs are discussed below.

As requested by the MOECC, a revised surface monitoring program was recommended for the WRIC in December 2013. A summary of the response to the MOECC, including the revised monitoring are provided in Section 8.9. On March 6, 2014, the City met with the MOECC to discuss the Public Drop off facility (PDO) application. It was agreed that sampling at the WRIC Detention Pond 1 (SW 2 and SW 3) would be discontinued. Detention Pond 2 (SW1) would only be sampled once the levels in the pond reached 0.46 m above the pond invert and that the SWM pond (TP1(out)) would continue to be sampled monthly. During 2016, monthly monitoring of surface water runoff into Detention Pond 2 (SW 1) was completed. On February 3 and March 17, the pond level was measured above the trigger and samples were collected at SW1, however, no discharge occurred. The pond was frozen/snow covered by the end of each month in January and December and the pond was dry from April to November 2016. The results of the surface water monitoring are discussed in Section 8.8.

Surface water sampling is undertaken on a monthly basis in the stormwater management pond (SWM) for the parameters (excluding organics) shown in Table 6. Organic sampling of the SWM and East pond surface water stations was conducted on August 17, 2016. During each month, sampling will be undertaken unless stagnant conditions occur (no discharge). Measurements of discharge, surface water runoff events and overall conditions of the detention ponds (e.g., dry, or stagnant water) will be documented on a weekly basis throughout each month. One surface water station in the SWM pond was monitored by the City staff in 2016; TP1 (out), located at the discharge at the north end of the pond. 2016 monthly inorganic monitoring was conducted at TP1(out) from February to November (ten events). As per condition 5 (3), TP1(out) surface water sampling is also to include at least three wet events per year (as defined by 15 mm of rain in the previous 24 hours) of which two must occur within May to September for TSS. This sampling was completed in addition to the monthly monitoring in May 2016 and included in the July 2016 monthly monitoring event. There were no wet events in June, August and September.

The existing surface water pond ("East Pond" in Figure 1) was sampled from February to November 2016 (for inorganic parameters shown on Table 6). The East Pond setting is similar to the other on-site ponds (influenced by road salting) though it is within a different catchment area. As suggested by the MOECC, surface water quality from the samples collected from the in the East Pond (designated EPTS-01) can be considered as background surface water quality as it is upstream of both facilities[13] and will be used as comparison to the on-site surface water features.

A ditch located between the stormwater management pond and the East Pond is designed to receive pond overflow and direct it in a northwesterly direction beneath Dunlop Drive.

13. Memorandum from Lynnette Latulippe (MOECC) to Bill Shields (City of Guelph), Re: Annual Monitoring Report – 2009 Guelph Wet-Dry Recycling Centre and Waste Transfer Station, dated February 7, 2011.

7. Leachate Quality

7.1 Leachate Indicators

To determine the potential leachate quality that may be generated from the site, the leachate quality from the City of Guelph closed Eastview Road Landfill was examined. Prior to closure in 2003, this landfill accepted a similar mix of waste as the Transfer Station. Groundwater monitoring has been routinely conducted on this site since 1991. Leachate quality is measured by a series of groundwater monitors in the waste and in the outwash layer beneath the waste. In general, the leachate quality is characterized by elevated concentrations of chloride, boron, phenols (critical leachate parameters), sodium, potassium, magnesium, iron, manganese, ammonia and alkalinity (leachate indicator parameters). Though monitoring continues at the site, leachate quality up to 2009 was only considered since leachate strength is expected to decrease over time with closure of the landfill. Table 7 provides a summary of the historic leachate concentrations (1997 to 2009) for the leachate monitors.

Table 7: Summary of Leachate Quality from the Waste Monitors, Eastview Landfill

Parameters		Avg.	Min.	Max.
General	• pH	7.68	7.09	8.63
	• Conductivity (μS)	14,364	3,880	21,500
	• Alkalinity (mg/L)	6,195	2,900	9,050
	• Hardness (mg/L)	2,161	1,010	2,900
Critical Indicators	• Chloride (mg/L)	1,841	101	2,660
	• Boron (mg/L)	22.8	6.22	47
	• Phenol (μg/L)	100	0.72	830
Leachate Indicators	• Calcium (mg/L)	96	33	221
	• Sodium (mg/L)	1,468	424	2,300
	• Magnesium (mg/L)	468	144	661
	• Potassium (mg/L)	794	149	1,410
	• Iron (mg/L)	11	1.1	41.4
	• Manganese (mg/L)	0.10	0.027	0.688
	• Ammonia (mg/L)	583	0.05	1,200

With regard to the site, downgradient water quality is compared to background water quality for the critical leachate indicator parameters, as identified above, to determine potential impacts from site operations.

The site operation is not expected to generate any significant quantities of leachate because all waste handling operations are conducted in an indoor environment within the transfer building. The Design and Operations plan incorporates a number of features to protect the groundwater and surface water resources. This includes features such as a completely contained waste tipping floor and collection system and operating procedures that ensure that waste is handled indoors in a closed environment and is not stored on-site for any length of time. Nevertheless, it is still appropriate to examine water quality at the site for indicators of leachate affects to confirm that all of the safeguards are functioning.

7.2 Petroleum Indicators

The site operations do not involve the use, storage or handling of significant quantities of potential contaminants, other than machine fuel/lubricants. If these are handled with normal, reasonable precaution (according to the regulations) then the risk of groundwater contamination is very low. Established procedures for spills response and contingency are in place. BTEX analysis results are examined to determine if there is any indication of hydrocarbon contamination. Downgradient organic water quality is discussed in Section 8.5.

8. Groundwater, Leachate and Surface Water

A ground and surface water monitoring program is conducted on the sites as outlined in Section 3.

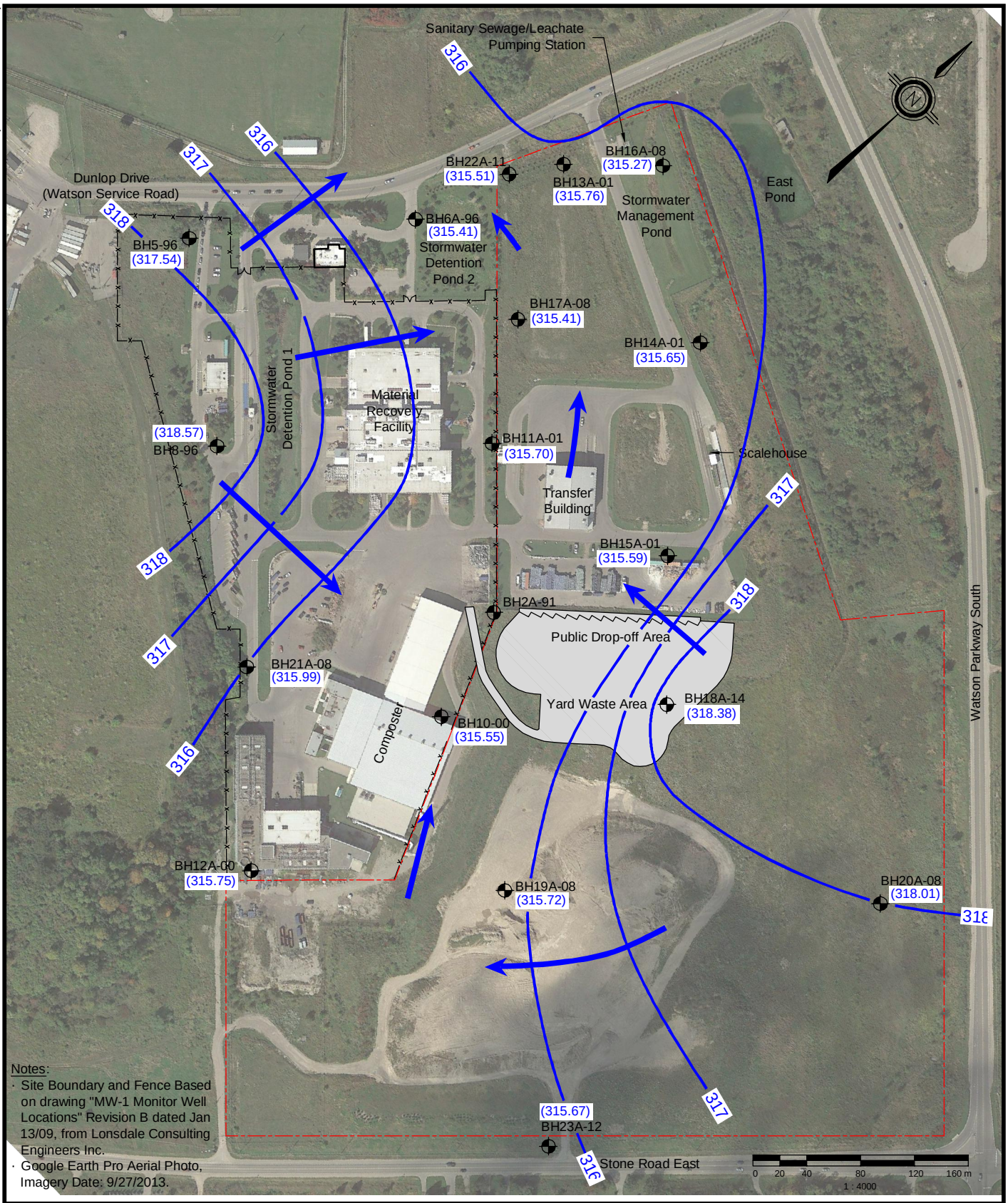
8.1 Groundwater Elevation and Flow Directions

The ECA requires collection of water levels four times per year. Groundwater levels were collected in April, June, September and December during 2016. Groundwater elevations were measured at 18 locations that included a total of 32 monitors. The monitors are outlined below with the geological unit they are measuring. Groundwater elevations are appended. Hydrographs for each location are presented in Appendix A.

Monitor	Geological Unit	Groundwater Zone
5-96	Dolostone Bedrock	Water Table/Bedrock
6a-96	Dolostone Bedrock	Bedrock
6b-96	Sandy Outwash	Water Table
7-96	Sandy Outwash	Water Table
8-96	Dolostone Bedrock	Water Table/Bedrock
9-96	Sandy Outwash	Water Table
10-00[1]	Dolostone Bedrock	Bedrock
11a-01[1]	Dolostone Bedrock	Bedrock
11b-00[1]	Gravelly Outwash	Water Table
12a-00[2]	Dolostone Bedrock	Bedrock
12b-00	Gravelly Outwash	Water Table
13a-01[3]	Dolostone Bedrock	Bedrock
13b-01[3]	Gravelly Outwash	Water Table
14a-01[3]	Dolostone Bedrock	Bedrock
14b-01[3]	Gravelly Outwash	Water Table
15a-01[3]	Dolostone Bedrock	Bedrock
15b-01[3]	Gravelly Outwash	Water Table
16a-08[3]	Dolostone Bedrock	Bedrock
16b-08[3]	Gravelly Outwash	Water Table
17a-08[3]	Dolostone Bedrock	Bedrock
17b-08[3]	Gravelly Outwash	Water Table
18a-08/18a-14[3]	Dolostone Bedrock	Bedrock
18b-08/18b-14[3]	Gravelly Outwash	Water Table
19a-08[3]	Dolostone Bedrock	Bedrock
19b-08[3]	Gravelly Outwash	Water Table
20a-08[3]	Dolostone Bedrock	Bedrock
20b-08[3]	Gravelly Outwash	Water Table
21-08	Dolostone Bedrock	Water Table/Bedrock
22a-11 [3]	Dolostone Bedrock	Bedrock
22b-11 [3]	Gravelly Outwash	Water Table
23a-12	Gravelly Outwash	Water Table
23b-12	Dolostone Bedrock	Bedrock

Notes: *(1) Locations recommended by MOECC.*
(2) Replaces 3-97.
(3) Locations in Transfer Station Area..

The bedrock groundwater flow is discussed first as the understanding of the geology controlling this flow is important to the shallow water table flow. In general, the groundwater flow is similar to previous years (Figure 2). Groundwater flow is generally from southwest to northeast (bedrock high) and northeast to southwest (from Watson Road) coming into the site from both directions. It is expected that flow would ultimately merge and be directed northerly based on the assessment of the bedrock surface topography, which suggests that the bedrock is deepening to the north. This is important as previous hydrogeological assessments in the area suggest that the bedrock low observed in this area is a former paleo river valley (incised bedrock low) that trends to the north. Therefore, it would be expected that the groundwater flow would follow this feature. The 2008 monitoring nests (bedrock and overburden) were placed to the east of the facility (BH18-08, BH19-08 and BH20-08) to confirm the geology and groundwater flow in this area. Southeast of the Transfer Station, the bedrock elevation is highest at BH20-08, sloping to the northwest towards the paleo river valley. A more detailed assessment of the geology in the area incorporating the 2008 borehole data was provided in the 2009 Annual report (AECOM, 2010), which confirms that there is a pronounced incised bedrock low that trends through the site to the north. The addition of the BH23-12 location on Stone Road, also suggest that the flow in the incised bedrock low is generally to the north.



Notes:
- Site Boundary and Fence Based on drawing "MW-1 Monitor Well Locations" Revision B dated Jan 13/09, from Lonsdale Consulting Engineers Inc.
- Google Earth Pro Aerial Photo, Imagery Date: 9/27/2013.

DO NOT SCALE THIS DOCUMENT. ALL MEASUREMENTS MUST BE OBTAINED FROM STATED DIMENSIONS.

AECOM

Transfer Station / WRIC
City of Guelph
Annual Monitoring Program
Bedrock Groundwater Flow (June 2016)

Legend
- Approximate Site Boundary
- Fence
- Monitoring Well
- (315.75) Bedrock Groundwater Elevation
- 316 Bedrock Groundwater Contour

PROJECT NUMBER **60536556**

DATE **March 2017**

FIGURE **2**

A SIZE 8.5" x 11" (215.9mm x 279.4mm)
PLOT: 3/6/2017 10:21:50 AM
BY:----
FILE NAME: 60536556-01-FIG02.DWG

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In general, the shallow groundwater flow beneath the site is similar to previous years (Figure 3) though flows have been refined and confirmed based on the groundwater elevation information from the monitors installed in 2008 and the updated geological model assessment in 2009. Shallow groundwater flow in the sandy outwash is expected to follow the bedrock topography and be similar to the bedrock groundwater flow. Overall, the shallow flow is similar, directed into the site from the bedrock high on the southwest area of the site and from along Watson Road. It is also expected that flow would ultimately merge and be directed northerly within the alignment of the incised bedrock low. The 2008 drilling also identified a bedrock high (similar to the high to the west) southeast of the site in the vicinity of 20a-08, between which the bedrock trends. The shallow water table elevation is generally similar to BH19b-08 to apparently slightly lower (BH19b-08 was 316.01 mASL, whereas BH23b-12 was 315.62 mASL in June 2016) in the southern area of the site. The slight difference is most likely related to the actual positioning in the bedrock low as the new location intercepted the bedrock at a deeper elevation than at BH19 indicating that BH19 is most likely higher up on the edge of the bedrock low. Though this is the case, the overall trend of the bedrock low is to the northwest.

In their review of the 2006 Annual Monitoring report, the MOECC commented that though water levels are collected four times per year, only one data set was used to plot the groundwater contour map. It should be noted that for our assessment of groundwater flow conditions, each set of water level data are plotted and reviewed. However, for reporting purposes, only one set of data are presented as flow contours from season to season (and from year to year) as flows have been quite similar. Should significant differences between the seasonal flow conditions be noted, they would be identified and discussed.

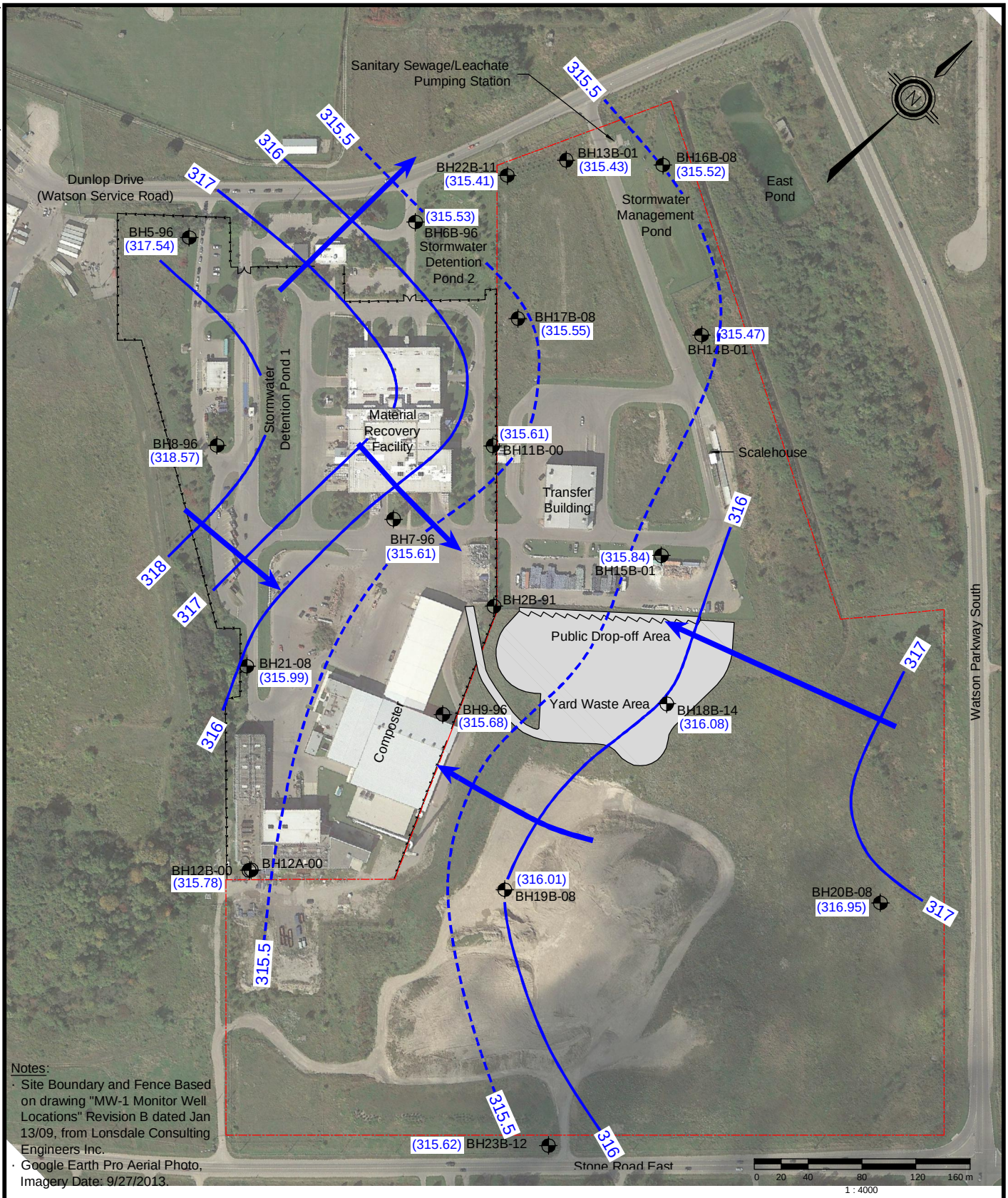
8.2 Groundwater Monitoring

8.2.1 Transfer Station Area

The original monitoring program for the site included three overburden monitors (in outwash materials) 13b-01, 14b-01 and 15b-01 and three bedrock monitors 13a-01, 14a-01 and 15a-01. The MOECC completed a review of the 2004 and 2005 Annual Monitoring reports for the Eastview Landfill and the Transfer Station. The MOECC recommended installation of additional monitoring locations to better address the geological setting with respect to the groundwater flow. Based on the MOECC review comments, six monitoring nest locations (BH16-08 to BH21-08) were completed in 2008, at the locations shown on Figures 1 to 3. These monitors consist of overburden outwash (16b-08, 17b-08, 18b-08, 19b-08, 20b-08) and bedrock monitors (16a-08, 17a-08, 18a-08, 19a-08, 20a-08, 21-08). These monitors were incorporated into the routine monitoring program in 2008. Based on the confirmation of groundwater flow at the site, the MOECC recommended that a new monitoring location be established at the northerly boundary to serve as a Guideline B7 (RUP) boundary compliance point. This location was completed in 2011 and consists of a deep bedrock and shallow overburden outwash monitor (22a-11 and 22b-11). A further location along Stone Road was completed in the summer of 2012, as recommended to the MOECC, to better assess the potential effects, if any, from the soils that had been stored on site. This location also consists of a deep bedrock and shallow overburden outwash monitor (23a-12 and 23b-12).

8.2.2 WRIC

Baseline groundwater monitoring was conducted from 1991 to 1995, prior to construction at the WRIC site (monitor locations 1a-91, 1b-91, 2a-91, 2b-91, 3-91 and 5-91). Monitoring of the groundwater at the WRIC Facility commenced in April 1996 at the remaining monitoring locations that were not destroyed during construction (Figure 1). In late 1996, replacements for the monitors that were destroyed were completed and added to the program. The present monitoring program, initiated in 1999 after MOECC approval, is twice per year (June and December).



Notes:

- Site Boundary and Fence Based on drawing "MW-1 Monitor Well Locations" Revision B dated Jan 13/09, from Lonsdale Consulting Engineers Inc.
- Google Earth Pro Aerial Photo, Imagery Date: 9/27/2013.

DO NOT SCALE THIS DOCUMENT. ALL MEASUREMENTS MUST BE OBTAINED FROM STATED DIMENSIONS.

AECOM

Transfer Station / WRIC
City of Guelph
Annual Monitoring Program
Shallow Groundwater Flow (JUNE 2016)

Legend

- Approximate Site Boundary
- Fence
- Monitoring Well
- (317.67) Shallow Groundwater Elevation
- 317 Shallow Groundwater Contour

PROJECT NUMBER **60536556**

DATE **February 2016**

FIGURE **3**

A SIZE 8.5" x 11" (215.9mm x 279.4mm)
PLOT: 3/6/2017 10:52:16 AM
BY:—
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The City commenced construction of the new Public Drop off (PDO) area in the late summer of 2014 (Figures 1 to 3). Monitoring nests BH18-08a/b (within the pad area) and BH2-91a/b (on the berm between the Wet/Dry and transfer properties) were found to be within the construction area. The MOECC was contacted to discuss the decommissioning and need for replacement of these monitoring nests. It was decided that monitoring nest 18-08 would be decommissioned and re-located just to the south of the PDO pad, between the pad and the new pond.

As for BH2-91, this location was the only one with a deep monitor in the till. Water quality has generally remained similar since about 1991 in the deep till and shallow groundwater (when sampled as it generally has very little water). A slight change (around 2011) in quality did occur in the deep monitor at the time of construction of the compost facility, which may suggest that the monitor was compromised. This was an old monitor installation (1991) and probably only had a surface seal and seal above sand pack. Although this was the case, based on the overall long term historical water quality and the difficulty in sampling the shallow well, it was recommended that this location was to be decommissioned and not replaced. The MOECC hydrogeologist, confirmed through e-mail correspondence on September 8, 2014 that he was in agreement with the re-location of monitoring nest 18 as well as the elimination of BH2a/b-91 from the current monitoring program.

Monitoring nest BH2a/b-91 and 18-08 (consisting of bedrock monitor 18a-08 and water table monitor 18b-08) were decommissioned in September 2014 as per O. Reg. 903 to accommodate expansion of the Public Drop off (PDO) pad. A new monitoring nest (18a-14 and 18b-14) was installed by the City in September 2014 with a mud-rotary drill rig and screened to the same depth/within the same formations as 18a-08 and 18b-08. These new monitors were located about 15 m northeast of the former 18-08 location, just off the PDO pad and were incorporated into the monitoring program for the site.

8.2.3 Groundwater Quality

Groundwater sampling was conducted for the site in June and November/December 2016. Groundwater quality results are appended.

8.2.3.1 Background Outwash Water Quality

Background outwash groundwater quality was historically measured at locations 14 and 15 on the adjacent eastern property. Location 15 is now considered a downgradient location due to the construction of the compost pad and PDO area to the south. Groundwater flow is directed towards the site from these areas. Monitors BH18b-14, BH19b-08 and BH20b-08, located southeast of the Transfer Station and 16b-08, located north of the Transfer Station are also representative of background outwash conditions based on the groundwater flow patterns in this area. Water quality for the indicator parameters are summarized in the table below.

Monitor		Alkalinity (ppm)	Chloride (ppm)	Sodium (ppm)	Calcium (ppm)	Magnesium (ppm)	Potassium (ppm)
14b-01	Historical Range	267 – 438	22.3 – 280	0.1 – 170	0.2 – 280	0.05 – 80	0.2 – 2.6
	2016 Average	370	270	140	185	42	2.55
16b-08	2008-2015 Range	318 – 597	10 – 260	23 – 150	89 – 170	27 – 51	1.1 – 3.1
	2016 Average	380	135	108.5	107	30	2.35
18b-08	2008-2014 Range*	260 - 424	8 - 19	6.2 - 270	29 - 65	12 - 26	0.73 – 5.5
18b-14	2015 Range	190 - 210	40 - 43	19 - 24	53 - 69	25 - 28	2.2 – 2.4
	2016 Average	220	116	134.5	28	10.5	1.3
19b-08	2008-2015 Range	289 – 700	7 – 60	110 – 480	23 – 98	10 – 31	4.5 – 12
	2016 Average	690	36	300	65	22	11
20b-08	2008-2015 Range	235 – 310	7 – 170	3.5 – 58	78 – 110	25 – 32	1.1 – 3.3
	2016 Average	310	94	31.5	115	38	1.85
23b-12	2012-2015 Range	320 - 400	110 - 270	79 - 200	96 - 380	29 - 150	2.6 – 5.4
	2016 Average	335	195	130	120	30.5	2.8

Note: Historical Ranges include all data up to and including 2015, except where specified.
**Only three historic samples were collected from monitor 18b-08: March 2008, June 2011 and May 2014*

Monitors 18b-08/14, 19b-08, 20b-08 and 23b-12 have chemistry generally similar to monitor 14b-01, located northeast of the WRIC though a few parameters at 19b-08 were notably higher than the other overburden background monitors. Monitor 19b-08 showed elevated concentrations of alkalinity, potassium and sodium. Sulphate concentrations at 19b-08, which were previously elevated prior to 2013, remained elevated in 2016 compared to the other overburden background monitors. The 2016 results from 18b-14 were generally similar to historic results from 18b-08/18b-14 with the following exceptions. The June 2016 18b-14 sample showed elevated chloride (210 mg/L) and elevated June and November COD (140 mg/L and 110 mg/L), total phosphorus (13 mg/L and 5.7 mg/L) and iron (520 mg/L and 240 mg/L) compared to historic results though the December 2015 sample was starting to show elevated COD 130 mg/L), total phosphorus (14 mg/L) and iron (320 mg/L). This monitor has now only been sampled four times (2015 and 2016).. The cause of these elevated concentrations may be related to the installation of the monitor in 2014 and the use of drilling mud during the installation, which was slowly purged throughout the end of 2014 until samples could be obtained. It is expected that continued purging should eventually clear out this drilling mud from this monitor. Alkalinity appears to be showing an increasing trend over time at 19b-08 but concentrations have recently stabilized. Since 19b-08 and 18b-14 are upgradient of the site, the elevated concentrations are not a result of site activities. Monitor 18b-14 is now located at the eastern edge of the recently completed PDO and yard waste area. Concentrations at most of the background monitors were generally similar to previous years with some parameters at a few locations slightly higher or lower than historic ranges. Since most of these monitors have a fairly limited dataset, some variability in parameter concentrations is expected.

Elevated iron at 14b-01, 16b-08, 19b-08 and 20b-08 were noted since December 2011 but decreased in 2013 with the iron concentrations at these monitors below the laboratory detection limits in December 2013. However, the 2015 iron at 14b-01, 19b-08 and 20b-08 again showed elevated concentrations (averages of 22 mg/L, 3.4 mg/L and 4.1 mg/L, respectively). At 19b-08 and 20b-08, the iron concentrations remained elevated in 2016 and 16b-08 returned to slightly elevated concentrations. In 2016, the iron concentration at 14b-01 was elevated in June (14 mg/L) then below the laboratory detection limit in December. The cause of the increase in iron concentrations is unknown. As these elevated concentrations were apparent in the background monitors, it is concluded that they are not a result of site operations.

The 2016 parameter concentrations at monitor 14b-01 were within the historic range of concentrations at this monitor for both sampling events, except for June conductivity and December potassium, which were slightly elevated compared to historic maximum concentrations. Previously elevated concentrations of magnesium, TKN, calcium and phosphorus that were noted in 2014 have returned to concentrations similar to historic concentrations in 2015 and 2016. Chloride and zinc, though lower in 2015 have returned to elevated concentrations in 2016. COD concentrations at 14b-01 were showing a decreasing trend since peaking in 2004-2003 but have been variable in recent years. The COD concentrations have fluctuated between less than 4 mg/L to 46 mg/L since 2012. Monitor 14b-01 has shown elevated sodium and chloride concentrations, most likely related to road salting along Watson Parkway. The average 2016 indicator parameter concentrations at monitor 14b-01 were generally slightly higher than the average 2015 concentrations.

Monitor 16b-08 is located near the northwest corner of the of the Transfer Station area by the stormwater management pond. Indicator parameter concentrations are within the range of concentrations for the other background overburden monitors. The 2016 parameter concentrations at monitor 16b-08 are within their historic ranges. This location appears to exhibit a seasonal increase in road salt effects (based on chloride and sodium) in the spring.

8.2.3.2 Background Bedrock Water Quality

Background bedrock groundwater quality is measured at locations 5-96 (northwest) and 8-96 (west) on the bedrock high along the western portion of the WRIC site from where groundwater flows into the immediate area of the WRIC. As well, groundwater quality in the bedrock below the site was measured at location 6a-96, 14a-01, 16a-08, 18a-08/18a-14, 19a-08 and 20a-08, as well as the upgradient monitor 23a-12. Background bedrock groundwater

quality is typically hard with more elevated concentrations of the major ions, most noticeably alkalinity and calcium. These types of concentrations are associated with dolostone, which is made up of calcium and magnesium carbonate. The average concentrations of these parameters observed in 2016, along with the historical ranges at these locations are provided below.

Also, provided in this table are the 2016 averages from the downgradient bedrock WRIC site monitors (10-00, 11a-00) and Solid Waste Transfer Station area bedrock monitors (13a-01, 15a-01, 17a-08, 22a-11).

	Monitor		Alkalinity (ppm)	Chloride (ppm)	Sodium (ppm)	Calcium (ppm)	Magnesium (ppm)	Potassium (ppm)
Background	5-96	Historical Range[1]	278 – 380	112 – 474	71.9 – 263	83.7 – 134	16 – 40	3.9 – 6
		2016 Average	285	885[2]	440[2]	91	19	3.65
	8-96	Historical Range	264 – 356	37.2 – 332	17.6 – 171	87 – 123	30 – 43.4	1.73 – 3.1
		2016 Average	295	125	72.5	91	31.5	2.3
	14a-01	Historical Range	215 – 263	4.8 – 28	9.1 – 29	63.5 – 86	22.4 – 29	1 – 2
		2016 Average	245	23.5	25.5	70.5	25	1.05
	16a-08	2008-2015 Range	230 – 251	28 – 39	2.1 – 42	76 – 88	26 – 30	1.7 – 3.6
		2016 Average	235	31	2.85	79.5	27	1.75
	18a-08/18a-14	2008-2015 Range	233 – 258	15 – 57	4 – 89	65 – 100	27 – 34	1 – 3
		2016 Average	250	17.5	4.5	76	27	1.25
	19a-08	2008-2015 Range	230 – 250	27 – 72	12 – 47	94 – 110	33 – 37	1.2 – 1.9
		2016 Average	240	68.5	30	100	34	1.55
	20a-08	2008-2015 Range	236 – 262	15 – 37	3.9 – 56	72 – 88	26 – 31	1 – 1.8
		2016 Average	250	18	4.55	83	28	1.15
	21-08	2008-2015 Range	260 – 290	4 – 54	6.9 – 34	71 – 87	23 – 32	0.8 – 1.2
		2016 Average	285	13.5	13.55	76	25	0.9
	23a-12	2012-2015 Range	230 - 250	24 – 31	11 - 15	84 - 97	28 - 34	0.95 – 1.3
		2016 Average	235	25	12	88.5	30.5	1.2
	6a-96	Historical Range	206 – 420	140 – 345	70 – 176	89 – 158	23 – 42	2 – 16.4
		2016 Average	265	225[2]	140[2]	99	25	2.6
Downgradient	10-00	Historical Range	236 – 267	17 – 44.9	7.7 – 14	79 - 95.1	27 – 32	1 – 2
		2016 Average	235	34.5	12	90.5	29.5	1.15
	11a-00	Historical Range	220 – 263	4 – 24	4.3 - 25.9	62 - 83.2	23 – 28	1 – 3
		2016 Average	235	23	6.2	70.5	26.5	1.75
	13a-01	Historical Range	240 – 272	83.9 – 111	38 – 49	90 – 112	31 – 38.8	2 – 2.9
		2016 Average	250	99.5	44	95	34	2.55
	15a-01	Historical Range	240 – 271	42 – 68	7.7 – 27	88 – 140	29 – 41	1 – 2
		2016 Average	247	113	39	113	38	1.4
	17a-08	2008-2015 Range	220 – 248	27 – 46	10 – 67	64 – 94	26 – 32	1.4 – 2.2
		2016 Average	235	39.5	14	83.5	29.5	1.6
	22a-11	2011-2015 Range	212 - 260	47 - 130	15 – 78	88 - 110	20 - 35	1.3 – 2.3
		2016 Average	235	52	17.5	92.5	32	1.45

Note: 1. Historical Ranges only include data from 1997 up to 2003 due to continued increasing chloride and sodium values after 2003.
2. Road salt impact.
Historical Ranges include all data up to and including 2015 except where specified.

Generally, the average 2016 indicator parameter concentrations fall within the historical ranges at the background locations, with the following exceptions.

The 2016 average concentrations of sodium and chloride at monitor 5-96 continue to show significant road salt impacts. The sodium and chloride concentrations at 5-96 have shown a significant increase in recent years from less than 140 mg/L and 300 mg/L pre-2003, respectively, to about 440 mg/L and 885 mg/L in 2016. The effects are found to generally be seasonal with the dry weather (June) sampling period usually showing higher sodium and chloride concentrations as compared to the wet weather sampling periods. As well, there have been historical road salt effects observed at location 6a-96 and 8-96. Sodium and chloride at monitor 5-96 are above the ODWS. Sodium and chloride are elevated (but within ODWS) at monitor 6a-96. The elevated sodium and chloride concentrations at monitors 5-96 and 6a-96 are due to road salt impacts.

Monitor 12a-00 is located at the southern corner of the WRIC property. Calcium is showing gradual decreasing concentration trend. The calcium concentrations averaged 107 mg/L from 2001 to 2007, decreasing to an average of 88 mg/L from 2008 to 2012 and are currently at an average of 81 in 2016. Magnesium concentrations have also slightly decreased from an average of 39.5 mg/L from 2001 to 2007 to current stable concentrations of about 30.5 mg/L. Potassium concentrations peaked in 2007 at 23 mg/L and have now declined to an average of 8.5 mg/L in 2016. Similarly, alkalinity peaked in 2006 at a concentration of 423 mg/L and has declined to an average of 338 mg/L between 2007 and 2009 to its 2016 average of 320 mg/L. These declines in concentration are not related to site operations since this location is upgradient.

Both the June and December 2016 sodium concentrations of 53 mg/L and 37 mg/L at 15a-01 were higher than the historic maximum concentration of 27 mg/L, which occurred in 2015. Sodium at this location has shown a subtle increasing trend from about 10 mg/L prior to 2004 to an average 2014 concentration of 24.5 mg/L, a 2015 average concentration of 27 mg/L and an average concentration of 45 mg/L in 2016. This concentration remains relatively low and is well within the ODWS. Similarly, chloride concentrations at 15a-01 have also been increasing since 2005 from an average of 49 mg/L about between 2005 and 2010, to 63 mg/L from 2011 to 2015 and a 2016 average of 113 mg/L.

Examination of the calcium and chloride concentrations over time at 17a-08 shows a subtle increasing trend though 2016 concentrations were similar to slightly lower than 2015. The December 2016 BOD concentration of 7 mg/L is higher than the previous BOD concentrations, which were less than the laboratory detection limit. An elevated iron concentration was noted in December 2013 at 2.1 mg/L. Though iron concentrations of 0.13 mg/L and 0.07 mg/L were measured during the two subsequent events, the December 2014 iron concentration was elevated above ODWS at 1.4 mg/L and continued to be elevated above ODWS in 2015 and 2016. The 2016 June and December iron concentrations were 0.94 mg/L and 1.2 mg/L, respectively.

Elevated iron concentrations were observed starting in 2011 in several monitors across the site (background and downgradient) and still persist at most locations in 2016. Further highly elevated iron at location 18 is considered related to the drilling mud as discussed earlier. As has been concluded previously these iron concentrations are not related to site operations

When the water quality from the monitors located along the eastern boundary of the WRIC (10-00, 11a-00) and in the Transfer Station area (13a-01, 14a-01, 15a-01, 16a-08, 17a-08) are compared to the historical monitors to the west, there is a difference in bedrock water quality observed. With the exception of alkalinity, the concentrations of the major ions are generally lower indicating a less mineralized water. This difference in water quality is attributed to the bedrock units they are completed in. As stated earlier, there is a bedrock high to the west of the site. This high is dominated by the dolostone units of the Guelph Formation. The bedrock topography dips steeply from this high, across the WRIC site, towards a deeply incised bedrock valley low. This valley cuts into the underlying Gasport Formation (formerly the Amabel). Monitors are installed in this formation or at the contact of this formation at the eastern boundary of the WRIC facility. Overall, water quality from this lower formation is found to be less mineralized, which is confirmed by sampling of these monitors.

Monitor 22a-11 is located downgradient in the bedrock low and constructed as a piezometer in the bedrock (total depth of 24.4 m below ground surface, 293 mASL). Since sampling all indicator parameter concentrations are generally within the range of other downgradient bedrock monitors. Chloride and sodium concentrations are slightly elevated suggesting possible road salt impacts, as observed further up-gradient.

Monitor 23a-12 is located upgradient of the site and is representative of background conditions. Indicator parameter concentrations are within the range of other background groundwater monitors.

8.3 Downgradient Groundwater Quality

8.3.1 Shallow Outwash Groundwater Quality

Monitors along the eastern property boundary of the WRIC and within the paleo-valley in this same area are downgradient of site operations based on shallow groundwater flows (Figure 3). The table below compares downgradient water quality at monitors 6b-96, 7-96, 9-96, 11b-00, 13b-01, 15b-01, 17b-08 and 22b-11 to the Ontario Drinking Water Standards (ODWS), leachate quality (from the Closed Eastview Road Landfill) and background outwash water quality from monitors BH14b-01, 16b-08, 18b-14, 19b-08 and 20b-08.

	Monitor		Critical Leachate Indicators				Other Leachate Indicators			
			Boron (mg/L)	*Phenols (µg/L)*	*Alkalinity (mg/L)*	*Chloride (mg/L)*	*Sodium (mg/L)*	*Calcium (mg/L)*	*Magnesium (mg/L)*	*Potassium (mg/L)*
Leachate		ODWS	5.0		30 – 500	250	200			
		Historical Range (1997-2009)	6.22 – 47	0.72 – 830	2,900 – 9,050	101 – 2,660	424 – 2,300	33 – 221	144 – 661	149 – 1,410
		Average (1997-2009)	22.8	100	6,195	1,841	1,468	96	468	794
Downgradient	**6b-96**	Historical Range	0.02 – 0.078	< 0.72 – 11	246 – 412	90.3 – 815	53.1 – 467	85.9 – 217	20.5 – 47	5.36 – 18
		2016 Average	0.036	< 1	310	250	149.5	107	24.5	7
	9-96	Historical Range	0.01 – 0.063	< 0.72 – 4	85 – 348	5 – 83.7	1.48 – 34	26 – 100	4.8 – 34	0.3 – 17
		2016 Average	0.033	< 1	130	9.45	18	41	11	8.4
	7-96	Historical Range	0.03 – 0.102	< 0.72 – 12	224 – 378	54.3 – 397	28.7 – 212	95.1 – 226	26 – 52.7	7.8 – 27
		2016 Average	0.038	< 1	295	160	103.5	105	26.5	8
	11b-00	Historical Range	0.04 – 1.9	< 1 – 7	185 – 330	54 – 290	26.8 – 220	44 – 110	12 – 30	1 – 2.2
		2016 Average	0.141	< 1	275	130	105	76	17	1.55
	13b-01	Historical Range	0.01 – 0.1	< 1 – 12	287 – 506	7 – 200	4.8 – 88	84.7 – 160	26 – 45	1 – 2.5
		2016 Average	0.025	< 1	360	150	69	145	29.5	2
	15b-01	Historical Range	< 0.01 – 0.08	< 1 – 10	180 – 544	4 – 320	2 – 170	73.4 – 210	18.7 – 53	0.89 – 6.8
		2016 Average	0.135	< 1	167	206	178	96	8.3	7.5
	17b-08	2008-2015 Range	0.015 – 0.026	< 1 – 1.6	300 – 357	150 – 620	110 – 330	88 – 190	24 – 48	1.6 – 3.1
		2016 Average	0.025	< 1	310	275	165	121	30.5	1.95
	22b-11	Range 2011-2015	0.014 – 0.031	< 1	230 - 340	46 - 170	13 - 93	84 - 120	19 - 32	1.3 - 2
		2016 Average	0.024	< 1	315	150	80	120	27	1.75
Background	**14b-01**	Historical Range	< 0.01 – 0.05	< 1 – 13	267 – 438	22.3 – 280	0.1 – 170	0.2 – 280	0.05 – 80	0.2 – 2.6
		2016 Average	0.026	< 1	370	270	140	185	42	2.55
	16b-08	2008-2015 Range	< 0.01 – 0.047	< 1 - < 5	318 – 597	10 – 260	23 – 150	89 – 170	27 – 51	1.1 – 3.1
		2016 Average	0.030	< 1	380	135	108.5	107	30	2.35
	18b-08	2008-2014 Range[(1)]	< 0.01 – 0.10	< 1	260 - 424	8 - 19	6.2 - 270	29 - 65	12 - 26	0.73 – 5.5
	18b-14	2014 -2015 Average	0.012 -0.029	<1	190 - 210	40 - 43	19 - 24	53 - 69	25 - 28	2.2 – 2.4
		2016 Average	0.020	<1	220	116	134.5	28	10.5	1.3
	19b-08	2008-2015 Range	0.066 – 0.27	< 1	289 – 700	7 – 60	110 – 480	23 – 98	10 – 31	4.5 – 12
		2016 Average	0.170	< 1	690	36	300	65	22	11
	20b-08	2008-2014 Range	< 0.01 – 0.018	< 1 – 8.9	235 – 310	7 – 170	3.5 – 58	78 – 110	25 – 32	1.1 – 3.3
		2016 Average	0.012	< 1	310	94	31.5	115	38	1.85

Note: Historical Ranges includes all data up to and including 2015, except where specified.
ODWS = Ontario Drinking Water Standards
(1) Only two historic samples have been collected from 18b-01; March 2008, June 2011 and May 2014.

Background monitor 18b-14 was installed in September 2014 to replace 18b-08. 18b-08 was only sampled on three occasions. 18b-14 has been sampled on four occasions. In 2016, the June conductivity, COD, total phosphorus, chloride and iron concentrations were higher than historic maximum concentrations and the December magnesium, TKN and calcium concentration is lower than historic minimum concentrations at this location. Such variations in parameter concentrations are expected due to the limited dataset and are a result of natural variability or may be due to mud used during the drilling process.

Outwash at monitors 6b-96 (northeast corner) and 7-96 (central) as well as at the historical monitor 3-97 (southwest corner), which was destroyed during the construction of the SUBBOR pilot facility and replaced with monitor 12b-00, are upgradient of the site. These locations are along the flow path that trends from the southwest to the northeast and receives groundwater inputs from the bedrock high to the west. This water quality was formerly observed to show concentrations of the major ions that are elevated above the background outwash but for the most part lower than the bedrock concentrations. In recent years, major ion concentrations have been within the range of background monitors. The December 2016 calcium concentration at 6b-96 of 84 mg/L is slightly lower than the previous minimum concentration of 85.9 mg/L. There has been a gradual decreasing trend in potassium concentrations at 7-96 since peaking at 27 mg/L in 2002 such that the average 2016 concentration is 8 mg/L. Magnesium concentrations at 7-96 have also decreased since peaking in 2003 at 52.7 mg/L to its current 2016 average concentration of 26.5 mg/L.

Monitor 6b-96 usually shows lower concentrations of chloride and sodium than observed in the background bedrock at monitor 5-96. These sodium and chloride concentrations tend to show a seasonal trend, usually highest in the early spring, suggesting they are attributed to road salting of the surrounding area. Monitor 5-96 has been showing increasing chloride concentrations over time from about 200 mg/L up to 2002 to an average of 885 mg/L in 2016, likely in response to long-term road salting in the area. Monitor 12b-00 shows lower sodium and chloride concentrations (average concentrations of 12.5 mg/L and 5.2 mg/L, respectively, in 2016) compared to 6b-96 and 7-96, likely due to the absence of road salt sources upgradient of this location.
As shown on the above table, indicator parameter concentrations observed in the background and downgradient outwash monitors on the site are considerably lower than typical leachate concentrations from the closed Eastview Road Landfill. Sodium and chloride concentrations at 11b-00 have shown a subtle increasing trend over the years' at this location, peaking in 2014 at concentrations of 220 mg/L and 290 mg/L and are now declining and stabilizing such that the average 2016 concentrations are 105 mg/L and 130 mg/L, respectively. The November 2016 alkalinity concentration of 290 mg/L is slightly higher than the historic maximum concentration at 11b-00 of 279 mg/L. 17b-08 has shown a variable chloride concentrations over time but is generally showing a downward trend with an average concentration of 382 mg/L from 2008 to 2012 to an average concentration of 275 mg/L in recent years. Other leachate indicator parameter concentrations are within background outwash ranges for the Transfer Station indicating no impacts.

At Monitor 9-96 potassium concentrations have generally been higher in recent years. The 9-96 potassium concentrations were generally less than 1 mg/L up to 2005. From 2006 to 2011, the potassium concentrations were stable, averaging 1.2 mg/L. Potassium concentrations at 9-96 started to increase from a 2012-2013 average of 4.5 to a 2014-2015 average of 10.4 mg/L and an average of 8.4 mg/L in 2016. However, alkalinity, magnesium and calcium concentrations have decreased and stabilized in recent years. Alkalinity concentrations from 1997 to 2008 averaged 242 mg/L and peaked in 2009 at a concentration of 348 mg/L. Since 2012, alkalinity concentrations have stabilized and are lower than pre-2009 concentrations, less than 150 mg/L. Magnesium and calcium concentrations at 9-96 showed similar concentration patterns as potassium. Magnesium and calcium both showed gradual concentration increases peaking in 2009 and then decreasing to concentrations lower than pre-2009 from 2012 to 2016 with both showing stable concentrations since 2012. This location is downgradient and adjacent to the compost facility. The compost facility became operational in 2012, around the same time that the above concentration changes occurred. All compost operations are fully enclosed so these changes are not due to site operations.

Though nitrate concentrations at monitor 7-96 historically have regularly exceeded the ODWS prior to 2013, they were within ODWS in recent years' with 2016 concentrations of 4.4 mg/L and 4.9 mg/L. Elevated nitrate has occurred historically, including prior to the start-up of the WRIC facility and is most likely a result of past land use historically and to current surrounding land use. There were no exceedances of ODWS for the shallow groundwater monitors in 2016 for the parameters tested, except for chloride at 6b-96, 14b-01 and 17b-08, sodium at 6b-98, 17b-08 and 19b-08 and iron (previously discussed).

At 13b-01, both sodium and chloride have shown increasing trends since 2004, peaking in 2008 and slowly declining since then though 2016 concentrations have again showed an increase for both parameters. These elevated concentrations are likely due to road salt effects as this monitor is located adjacent to the access road to the Transfer Station and Dunlop Road. Since indicator parameter concentrations at monitor 13b-01 remain within background concentrations, it has been concluded that there are no leachate impacts.

Potassium, sulphate, sodium and chloride at 15b-01 spiked in concentration in December 2015. Historic maximum concentrations for these three parameters were 63 mg/L, 110 mg/L and 270 mg/L, respectively, compared to the December 2015 concentrations of 190 mg/L, 170 mg/L and 320 mg/L. City monitoring staff noted that there was a lot of construction in the vicinity of 15-01 with a trench excavated very close to the monitors such that access to this location was difficult during this period. City staff re-sampled this location in March 2016 to determine if the December results are anomalous. The March 2016 concentrations for sulphate, sodium and chloride at 15b-01 were higher than December 2015 results and also showed concentrations of conductivity, COD, boron and nitrate higher than historic maximums. The March 2016 potassium concentration of 4 mg/L was slightly lower than the 6.8 mg/L December 2015 concentration and still elevated compared to historic concentrations. June 2016 concentrations for potassium, sulphate, boron and nitrite remained elevated with December 2016 concentrations of potassium, COD and sulphate higher than December 2015 concentrations. Phenol concentrations at 15b-01, historically generally less than the laboratory detection limit were at concentrations of 1.9 mg/L and 34 mg/L in June and December 2016. It is likely that the construction and changes in grading in the area has affected the water quality at this location. Prior to the above recent changes, Sodium and chloride had showed a noticeable increasing trend from about 2007 to 2010 peaking at an average of 108 mg/L and 195 mg/L in 2010, respectively, from average concentrations of 11 mg/L and 29 mg/L in 2007. Sodium and chloride began to decrease in 2011 from these highs though, as previously discussed, sodium and chloride concentrations peaked in March 2016 but have since declined to June and December 2016 averages of 42.5 mg/L and 49.5 mg/L. This monitor also showed a subtle increasing trend in alkalinity, peaking in 2008 at about 496 mg/L and gradually decreasing to an average concentration of 270 mg/L in 2015, further decreasing to an average concentration of 167 mg/L. The previous increases were likely related to the original construction of the paved pad immediately southeast, as discussed below. This monitor had previously been considered an upgradient background location due to its location east of the WRIC and south of the Transfer Station. However, in the mid-2000s, a large paved pad was constructed southeast of this monitor location. The pad was sloped such that surface water runoff was captured by a catch basin located near the middle of the pad and directed to the storm sewer. This pad was originally intended for storage of leaf compost but was being used to store construction and demolition material (roofing shingles, clean wood, drywall, rubble). The overall change in water quality at this location, at that time may be due to a combination of road runoff impacts from the Transfer Station access road to the northwest, a reduction of infiltration (and therefore, dilution) with the installation of the paved pad as well as the road salt from the south, as observed in the background monitors and now the more recent construction activities in the area.

Monitor 22b-11, completed in November 2011, is representative of downgradient overburden conditions based on its location along the western site boundary. Elevated sodium and chloride concentrations appear to reflect minor road salt effects due to its location immediately adjacent to Dunlop Drive. Of the indicator parameters, the June 2016 sodium and December 2016 alkalinity and calcium concentration are slightly higher than the historic maximum concentration at this location, likely due to natural variability.

We conclude from this assessment, there have been no leachate impacts to the shallow groundwater in the vicinity of the site as a result of site operations in 2016.

8.3.2 Downgradient Bedrock Groundwater Quality

The interpreted bedrock groundwater flow directions (Figure 2) indicate that monitors 6a-96, 10-00, 11a-01, 13a-01, 15a-01, 17a-08 and 22a-11 are downgradient of the active site area, within or on the edge of the paleo-valley trending through the site.

The bedrock groundwater quality was compared to Ontario Drinking Water Standards (ODWS), as applicable. Sodium and chloride exceed ODWS at background bedrock monitor 5-96 due to road salt effects. There are no other exceedances of ODWS in 2016 for the bedrock groundwater monitors for the parameters tested (except for iron, previously discussed).

As the shallow outwash water quality is not affected by site operations, no effects to the deeper bedrock groundwater would be expected nor observed.

8.4 Groundwater Organics Results

Groundwater monitors were analyzed for organics during the December 2016 monitoring event at monitoring locations 6, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 22 and 23 and monitors 5-96, 7-96, 8-96, 9-96, 10-00 and 21a-08.

Some low level detections of organics were reported across the site in 2016 included bis(2-ethylhexyl) Phthalate (DEHP), naphthalene, bromodichloromethane, chloroform, toluene, m- and p-xylene, dibromochloromethane, benzene, tetrachloroethylene and phenols. None of the VOC concentrations detected exceeded ODWS, where applicable. No other organics were detected at any of the monitors that are part of the WRIC and Transfer Station monitoring program in 2016.

Historically, there have been occasional low level detections of organics at both upgradient and downgradient monitors. Because the detection limits for organic compounds are very low, it is not unusual to have sporadic low level organic detections at sites where organic samples are frequently collected. The presence of persistent organics at one location combined with elevated indicator parameter concentrations and/or increasing trend in parameter concentrations would trigger more intense scrutiny of water quality results. This has not been the case for the organic detections at this site.

No trip or field blanks were collected with the December 2016 organic monitoring event. Blanks should be submitted along with the organic samples for QA/QC purposes.

8.5 General Groundwater Quality Discussion

Overall, the groundwater chemistry during 2016 was similar to previous years.

In 2007, nitrate and nitrite analysis was re-instated into the routine monitoring program for both the sites as per the MOECC's recommendations. Historically, nitrates were included in the monitoring program but were removed since elevated nitrate concentrations were prevalent across the site at all locations prior to development of the site. Shallow background monitors 1b-91, 6b-96 and 7-96 historically have shown elevated nitrate concentrations in the early 1990s (up to 32 mg/L at 1b-91) and late 1990s (up to 53.5 mg/L at 7-96) indicating that the elevated nitrates were present prior to the commencement of facility operations due to historical land use. Concentrations of nitrate have significantly decreased since this time and are generally found at much lower levels reflecting current surrounding land use in the area. There were no exceedances of the nitrate ODWS in 2016.

Monitors 5-96, 6b-96, 14b-01, 17b-08 and 19b-08 exceeded ODWS for sodium and/or chloride in 2016 as a result of road salt effects. 15b-08 also exceeded the chloride ODWS in March 2016, which may be related to PDO area construction and subsequent regrading activities. The June and December 2016, 15b-08 concentrations declined to concentrations similar to historic though several other parameters (sulphate, COD, boron, nitrite) were elevated. In 2016, elevated iron concentrations exceeding ODWS were detected at monitors 11b-00, 13b-01, 14b-01, 15b-01, 17a-08, 17b-08, 18a-08 and 19a-08. In the past, exceedances of the iron ODWS occurred at many of the monitoring locations during December 2011 and persisted throughout 2012, though at lower concentrations with many of the monitors with iron concentrations below the laboratory detection limits by December 2013. These

elevated iron concentrations will continue to be evaluated further in future monitoring events. There were no other exceedances of the Ontario Drinking Water Standards in 2016.

As observed in the past, sporadic low level detections of organics were observed in both upgradient and downgradient monitors across the site in 2016. Because the detection limits for organic compounds are very low, it is not unusual to have sporadic low level organic detections at sites where organic samples are frequently collected. These occasional detections do not appear to be related to site operations. The presence of persistent organics at one location combined with elevated indicator parameter concentrations and/or an increasing trend in parameter concentrations would trigger more intense scrutiny of water quality results. In previous monitoring reports, we had recommended discontinuation of the organic sampling from the groundwater monitoring program for all historical locations. In the MOE review of the 2009 Annual Monitoring report (Groundwater Review), the reviewer did not support the discontinuation of the organic groundwater sampling program since an impact assessment with respect to the requirements of Guideline B-7 had not yet been completed. Further additional monitoring is required to better assess the new location with respect to the VOC detections observed in July 2012. As recommended, organic sampling events should include a trip blank and a field blank collected with each organic monitoring event for QA/QC purposes.

In conclusion, there were no observable effects attributed to the WRIC operations on the groundwater quality beneath the site. No effects were observed at the site boundaries. Road salt effects continue to be observed at monitoring locations both upgradient of the site and on-site.

8.6 Guideline B-7 Assessment

MOE Guideline B-7 (formerly Policy 15-08 referred to as the Reasonable Use Policy) applies the reasonable use approach to groundwater quality management at waste management sites. Guideline B-7 describes acceptable levels of contaminants in the groundwater at site boundaries, based on the Ontario Drinking Water Standards (ODWS) and natural background conditions, with respect to the protection of drinking water. In addition, it is used to determine whether any remedial action is warranted. The Guideline B7 limits were calculated using the formula outlined in the MOECC's Procedure B-7-1 (MOEE 1994a and 1994b).

The basic methodology to assess groundwater quality in relation to Guideline B7 limits (reasonable use guidelines), is to compare the shallow and bedrock downgradient groundwater quality to the calculated maximum concentrations. The leachate indicator parameters used in the assessment are either health related or aesthetic parameters specified in the ODWS. Based on the MOECC reasonable use approach from Guideline B-7, the maximum concentrations (**Cm**) allowed at the site boundaries are calculated from the drinking water quality criteria (**Cr)** and background concentrations (**Cb**) based on the formula provided in Procedure B-7-1. Guideline B7 allows for some incremental impact to occur on the neighbouring property, relative to background. Input for a given chemical parameter includes the background concentration, the Ontario Drinking Water Standards (MOE, 2003), and a safety factor that was established by the MOECC based on human health and aesthetic considerations.

As part of the MOECC review on the 2009 Annual Monitoring report, it was recommended that Guideline B-7 be applied to this site as the geological model and groundwater flow have been confirmed, which is generally northeasterly. Monitor 22a-11 (bedrock) and 22b-11 (overburden) were installed at the downgradient northwestern property boundary adjacent to Dunlop Drive to be utilized for an impact assessment with respect to the requirements of Guideline B-7[14]. As recommended by the MOECC reviewer[15], the number of monitors considered for calculation of the median background concentrations was expanded to include the more recent monitors. The

14. Memorandum from Lynnette Latulippe (MOECC) to Bill Shields (City of Guelph), Re: Annual Monitoring Report – 2009 Guelph Wet-Dry Recycling Centre and Waste Transfer Station Groundwater Review, dated February 7, 2011.

15. Memorandum from Abdul Quyum (MOECC) to Kevin Noll (MOECC), Re: Annual Monitoring Report – 2012 Guelph Wet-Dry Recycling Centre and Waste Transfer Station, Guelph, Ontario, dated April 25, 2013.

median historic concentrations from background overburden monitors 12b-00, 14b-01, 16b-08, 18b-08, 19b-08, 20b-08 and 23b-12 and from background bedrock monitors 5-96, 8-86, 14a-01, 16a-08, 18a-08, 19a-08, 20a-08 and 23a-12 were used to calculate the maximum concentration levels presented in Tables 8 and 9, respectively.

$$C_m = C_b + F \times (C_{ODWS} - C_b)$$

where, C_m is the maximum concentration,

C_b is the median background concentration,

C_{ODWS} is the maximum concentration (dependant on water use),

F is a constant – 0.5 mg/L for aesthetic parameters, 0.25 mg/L for health related parameters.

Table 8: Guideline B-7 Calculated Maximum Parameter Concentrations – Overburden

Parameter	Cb	F	CODWS	Cm
Nitrate (mg/L)	0.60	0.25	10	2.95
Boron (mg/L)	0.023	0.25	5	1.27
Sodium (mg/L)	82	0.5	200	141
Chloride (mg/L)	86	0.5	250	168
Sulphate (mg/L)	48	0.5	500	274
Iron (mg/L)	0.15	0.5	0.3	0.23

Note that monitors 5-96, 8-86, 14b-01 and 19b-08 show elevated sodium and chloride concentrations due to road salt impacts, however, these conditions are representative of the background conditions of these areas.

Table 9: Guideline B-7 Calculated Maximum Parameter Concentrations – Bedrock

Parameter	Cb	F	CODWS	Cm
Nitrate (mg/L)	0.27	0.25	10	2.70
Boron (mg/L)	0.02	0.25	5	1.27
Sodium (mg/L)	27	0.5	200	114
Chloride (mg/L)	44	0.5	250	147
Sulphate (mg/L)	48	0.5	500	274
Iron (mg/L)	0.05	0.5	0.3	0.175

Maximum allowable concentrations (C_m) are compared to the 2016 groundwater quality results from location 22-11 in Table 10.

Table 10: Summary of 2016 MOECC Guideline B-7 (Reasonable Use) Calculations at the Northwest Boundary

Parameters in mg/L		Overburden			Bedrock		
		Cm	Monitor 22b-11		Cm	Monitor 22a-11	
			Jun 2016	Dec 2016		Jun 2016	Dec 2016
Health Related Parameters	Nitrate	2.95	2.78	1.8	2.70	< 0.1	0.14
	Boron	1.27	0.022	0.026	1.27	0.021	0.022
Aesthetic Parameters	Sodium	141	110	50	114	17	18
	Chloride	168	160	140	147	48	56
	Sulphate	274	27	30	274	86	78
	Iron	0.23	0.17	0.18	0.175	***0.72***	***0.72***

Bold, italicized concentrations in Table 10 exceed Guideline B-7 limits. The iron concentrations at 22a-11 exceeded Guideline B7 limits during both 2016 monitoring events. As previously discussed, iron concentrations at some of the monitor locations have been unusually high since the December 2011 monitoring event. These elevated concentrations decreased at 22a-11 during 2012 but have been variable since then. The elevated iron concentrations occurred in both upgradient and downgradient monitors and therefore, do not appear to be related to site operations. Only 11 samples have been collected from 22-11 since it was drilled in 2011 therefore, continued sampling of this location will build a larger dataset for comparison purposes.

Strictly speaking, Guideline B-7 is in place to assess groundwater impacts leaving the site for protection of downgradient users. Although, there are no downgradient well users as the surrounding area is municipally serviced, the guideline B-7 assessment is still required to address if any potential remedial efforts may be required related to the facility.

8.7 Surface Water Monitoring

8.7.1 Transfer Station Area

In 2016, monthly inorganic surface water sampling of the stormwater management pond (SWM) for the parameters shown on Table 6 occurred when water was present. The SWM pond was routinely checked during 2016. When water was present, samples were collected at the discharge at the north end of the pond (TP1 (out) on Figure 1) on a monthly basis. TP1 (out) was sampled from February to November plus a rain event sample in May 2016 (11 events).

City field staff make note of discharge conditions at the surface water stations at the time of sample collection. Below is a summary of the discharge conditions observed at TP1(out).

Month	Discharge Events	Conditions	Sampling Date
January	No Discharge	Ice covered	**January 2016 – No Sample**
February	Discharge	Clear water	**February 3, 2016**
March	Discharge	Muddy in color	**March 17, 2016**
April	Discharge	Muddy in color	**April 26, 2016**
May	Discharge	Muddy in color	**May 17, 2016**
May	Discharge	3 mm -15 mm rain event -Muddy in color	**May 27, 2016**
June	No Discharge	Cloudy	**June 28, 2016**
July	No Discharge	No rain all month – stagnant water	**July 28, 2016 – No sample**
July	Discharge	3 mm -15 mm rain event - Clear water	**July 29, 2016**
August	No Discharge	Clear water	**August 17, 2016**
September	No Discharge	Clear water with organics	**September 20, 2016**
October	No Discharge	Clear water	**October 19, 2016**
November	No Discharge	Muddy in color	**November 24, 2016**
December	No Discharge	Ice covered	**December 2016 – No Sample**

In the MOECC review comments of the 2013 annual report, the MOECC acknowledged that sampling the SWM pond when it is not flowing does not provide useful information. AECOM advised field staff to continue to monitor surface water levels monthly to note conditions but only collect samples during discharging conditions. City staff continued to collect the monthly samples at TP1(out) during 2016 though no discharge occurred during six of the sampling events.

As now required under the currently amended ECA, surface water samples are to be collected under rain event of greater than 15 mm three times per year, for TSS, of which two must be between May and September. Full samples including TSS where collected during all sampling events

The existing on-site surface water pond ("East Pond" on Figure 1) is also included in the monitoring program. Water quality from the East Pond is considered representative of background surface water quality as it does not receive any inputs from the facilities. It was recommended in the 2011 annual monitoring report that the monitoring frequency of the East Pond be increased to monthly to coincide with those occasions when samples are collected from the on-site SWM ponds. If no samples are collected from the any of the SWM pond locations, no sample from the East Pond for that month is required. East Pond surface water samples (designated EPTS-01) were collected February to November plus a rain event sample in May 2016 (11 events). The 2016 surface water results for the leachate indicator parameters are tabulated below, and the testing results are presented in Appendix C.

Surface water results were compared to Provincial Water Quality Objectives (PWQO), background surface water quality (EPTS-01) and background overburden water quality. At EPTS-01, the PWQO for zinc was exceeded during all 11 monitoring events in 2016. Zinc has consistently exceeded PWQO in the past at this location. There were no other exceedances of PWQO at EPTS 01 in 2016. All the leachate indicator parameter concentrations were within background overburden ranges.

Location	Date	Critical Leachate Indicators			Other Leachate Indicators				
		Boron (ppm)	Phenols (ppm)	Chloride (ppm)	Alkalinity (ppm)	Sodium (ppm)	Calcium (ppm)	Magnesium (ppm)	Potassium (ppm)
PWQO/		0.2	0.001	-	-	-	-	-	-
Background Overburden[(1)]		0.005 – 0.063	< 0.001 – 0.013	2 – 280	84 – 438	0.1 – 170	0.2 – 280	0.05 – 80	0.2 – 17
Background Overburden[(2)]		<0.01 – 0.71	< 0.001 - 0.157	4 – 270	204 – 700	3.5 – 480	23 – 380	10 – 150	0.73 – 12
TP1 (out)	3-Feb-16	0.022	< 0.001	240	86	180	36	4.4	2
	17-Mar-16	0.041	< 0.001	91	100	63	41	4.2	2.2
	26-Apr-16	0.029	< 0.001	68	58	53	25	2.4	1.4
	17-May-16	0.055	< 0.001	130	140	97	70	7.2	3.2
	26-May-16	0.068	0.0038	47	63	42	50	5.3	4.3
	28-Jun-16	0.068	< 0.001	41	140	40	56	4.8	2.1
	29-Jul-16	0.045	< 0.001	15	69	13	44	3.1	3.5
	17-Aug-16	0.044	0.011	22	120	16	51	4.4	7.3
	20-Sept-16	0.071	< 0.001	22	130	14	72	5.2	11
	19-Oct-16	0.075	< 0.001	26	170	21	160	12	8.2
	24-Nov-16	0.058	0.0023	29	110	24	65	6.7	7.2
	Historic Range	< 0.01 – 0.11	< 0.001 – 0.019	5 - 1300	50 - 390	5 - 820	16 - 160	0.8 - 29	1.5 - 45
EPTS-01	3-Feb-16	0.014	< 0.001	68	290	39	95	25	1.7
	17-Mar-16	0.013	< 0.001	69	270	37	81	22	1.4
	26-Apr-16	0.011	< 0.001	45	240	34	70	19	1.1
	17-May-16	0.013	< 0.001	42	240	30	74	21	1.2
	26-May-16	0.013	< 0.001	33	240	24	73	21	1.3
	28-Jun-16	0.018	< 0.001	37	260	26	75	21	1.3
	29-Jul-16	0.014	< 0.001	38	220	25	66	23	1.5
	17-Aug-16	0.016	< 0.001	38	240	24	69	21	1.4
	20-Sept-16	0.019	< 0.001	37	270	23	87	23	1.5
	19-Oct-16	0.018	< 0.001	43	280	25	80	22	1.7
	24-Nov-16	0.016	< 0.001	42	280	23	90	24	1.6
	Historic Range	<0.01 – 0.19	<0.001 – 0.0024	26 – 190	73 – 334	13 – 120	22 – 160	3.5 – 27	1 – 2

Note: (1) Range of background overburden water quality from 1997 to 2015 for monitors 2b-91, 9-96 and 14b-01.
(2) Range of background overburden water quality from 2008-2015 for monitors 12b-00, 16b-08, 18b-08, 19b-08, 20b-08 and 23b-12

For the SWM pond samples at TP1(out), the PWQO was exceeded for total phosphorus for all 11 of the 2016 events, iron for nine monitoring events, zinc for six monitoring events and phenol for three events. The PWQO for total phosphorus, iron, phenols and zinc have routinely to occasionally been exceeded at this location in the past. The elevated total phosphorus is a result of former surrounding land use and not a result of operations at the site. Elevated zinc, total phosphorus and iron concentrations appear to be related to external factors since background surface water have also exceeded PWQO for these parameters. Metals are a common contaminant from roadway runoff. Elevated phosphorus is typical in rural and urbanized areas. The 2016 concentrations are within the range of historic background overburden quality. 2016 indicator parameter concentrations are within the range of background surface water concentrations at EPTS-01, except for May phenols, February chloride and sodium and March to November potassium. Comparing the water quality at TP1(out) to EPTS-01 per sampling event, TP1(out) concentrations were generally higher than background EPTS-01 concentrations for boron and potassium during all eleven 2016 sampling events, sodium (seven events), chloride (six events), phenols (three events) and one event for calcium. Baseline water quality information collected prior to building the WRIC had historically shown elevated total phosphorus concentrations and occasional elevated phenols, sodium, magnesium and potassium concentrations. Therefore, the elevated parameter results are due to the effects of former land use and not a result of operations at the site. Elevated parameter concentrations are not attributed to the site operations as site handling and maintenance practices would deter potential surface water influences

2016 parameter concentrations at TP1(out) and EPTS-01 were within the range of historic concentrations. The SWM Pond shows slightly elevated sodium and chloride concentrations suggesting road salt influences from the adjacent access road.

Discharge occurred in February to May and during the July 29 rain event monitoring. During these events, the TSS at TP1(out) ranged from 1 mg/L to 40 mg/L. Higher TSS concentrations at TP1(out) occurred between February and May (8 mg/L to 40 mg/L) compared to the latter part of the year (1 mg/L to 9 mg/L). EPTS-01 TSS concentrations were generally lower compared to TP1(out) ranging from less than the laboratory detection limit to 7 mg/L.

Organic samples were collected from the TP1(out) and EPTS-01 surface water locations in August 2016. The background station EPTS-1 showed chloroform at concentration of 1.5 μg/L. Chloroform was previously detected at this location in June 2004 (0.9 μg/L), April and June 2007 (0.3 μg/L and 0.6 μg/L), June 2008 (1.9 μg/L), June 2009 (0.8 μg/L), June 2010 (0.6 μg/L), June 2011 (0.3 μg/L), April and June 2013 (0.14 μg/L and 0.9 μg/L), April 2014 (0.26 μg/L) and June 2015 (0.44 μg/L). There is no PWQO for chloroform. As these detections are at the background surface water station, they are not related to site operations. There were no organics detected at TP1 (out) in 2016.

8.7.2 WRIC

Monitoring of surface water at the WRIC commenced in March 1996. As required in the former C of A/ECA, this monitoring was to be on a monthly basis for a short parameter list and on a quarterly basis for the full leachate parameter list (updated in 1999), as outlined in Section 3. There were two surface water sampling stations at the site, designated as SW 1 located at the off-site discharge point in Stormwater Detention Area 2 and SW 2 located in the Stormwater Detention Area 1 (Figure 1). Surface water runoff from the site is directed to a series of on-site stormwater catch basins. Excess water from Stormwater Detention Area 1 flows to Stormwater Detention Area 2 where it would ultimately discharge via a pond outlet structure in the northwest portion of the pond to the York-Watson Stormwater Detention Area.

On March 6, 2014, the City met with the MOECC to discuss the Public Drop Off facility (PDO) application and observed the stormwater ponds on WRIC. It was agreed that sampling at the WRIC Detention Pond (SW 2 and SW 3) would be discontinued. Detention Pond 2 (SW 1) would only be sampled once the levels in the pond reached 0.46 m above the pond invert and that the SWM pond (TP1(out)) would continue to be sampled monthly though TP1 could be discontinued. These changes to the surface water monitoring were confirmed by the MOECC though e-mail on March 17, 2014. As a result, sampling was discontinued at SW 2 and SW 3 in March 2014.

Surface water monitoring of the staff gauge in Detention Pond 2 is still undertaken on a monthly basis at SW 1 only, and if water levels exceed the target of 0.46 m sampling is completed to assess the water quality in the pond should discharge be required. Detailed recordings on discharge and overall conditions (such as dry or stagnant water) are undertaken.

SW 1 was monitored monthly however, the pond was snow covered in January and December and was dry between April and November. SW1 was sampled in February and March 2016 when the water level in the detention pond was recorded above the trigger.

East Pond water quality will serve as background surface water for comparison purposes. There is no baseline surface water analysis (prior to site operations), so any impacts due to runoff from the WRIC would be difficult to determine at the discharge point SW 1, due to the potential for other sources of non-facility impacts. These sources include runoff from the surrounding lands and road systems.

Below is a discussion of the surface water monitoring at station SW 1 during 2016. Samples were collected from Detention Pond 2 (SW 1) on February 3 and March 17, 2016 only as the pond was either frozen/ice covered or dry during the remaining months of the year. The table below briefly outlines the surface water monitoring events for the past year at SW1.

Month	Discharge Events	Conditions	Sampling Date
January	No Discharge	Snow covered	**January 2016 – No Sample**
February	No Discharge	Clear water	**February 3. 2016**
March	No Discharge	Clear water	**March 17, 2016**
April	No Discharge	Dry	**April 26, 2016 – No Sample**
May	No Discharge	Dry	**May 17, 2016 – No Sample**
May	No Discharge	Rain Event - Dry	**May 27, 2016 – No Sample**
June	No Discharge	Dry	**June 28, 2016 – No Sample**
July	No Discharge	Dry	**July 28, 2016 No Sample**
July	No Discharge	Rain Event - Dry	**July 29, 2016 No Sample**
August	No Discharge	Dry	**August 17, 2016 – No Sample**
September	No Discharge	Dry	**September 20, 2016 – No Sample**
October	No Discharge	Dry	**October 19, 2016 – No Sample**
November	No Discharge	Dry	**November 24, 2016 – No Sample**
December	No Discharge	Snow covered	**December 2016 - No Sample**

A comparison of the February 2016 samples collected at SW 1 (Stormwater Detention Area 2), to the site indicator parameters, showed marginally elevated but similar sodium and chloride compared to background surface water quality at the East Pond (EPTS-01). The February 2016 SW1 sodium and chloride concentrations were 44 mg/L and 76 mg/L, respectively, compared to background concentrations at the East Pond of 39 mg/L and 68 mg/L. The March 2016 SW1 indicator parameter concentrations were similar to the East Pond. Alkalinity, magnesium, sulphate and calcium concentrations are generally much lower at SW1 compared to the East Pond. The 2016 SW 1 parameter concentrations are within the range of historic concentrations at this location. The Provincial Water Quality Objectives (PWQO) was exceeded for zinc in March 2016. Zinc has occasionally exceeded PWQO in the past at this location. The zinc PWQO is consistently exceeded at the background surface water station. Occasionally elevated parameter concentrations at SW1 are a result of road salt effected runoff from the adjacent internal roadways and/or occasional stagnant water conditions in the pond.

The MOECC surface water specialist provided comments on the 2013 annual report[16]. One of the comments was with respect to recent exceedances of the phenol PWQO at the detention pond locations. The MOECC surface water reviewer commented that since AECOM note that any water collected in the detention ponds quickly

16. Memorandum from Krista Chomicki (MOECC) to Kevin Noll (MOECC), Re: 2013 Guelph Waste Resource Centre – City of Guelph, dated April 8, 2014.

infiltrates into the groundwater, the MOECC Geoscientist should assess phenol concentrations in the subsurface. Since the number of exceedances is increasing, the source of the phenols should be evaluated, and if there is a source, monitoring and treatment are recommended. AECOM responded[17] that we would respond to comments that may be provided by the MOECC Geoscientist with regard to this item though no comments were forthcoming from the MOECC hydrogeologist with respect to this item[18]. Related to this item, in the body of the memorandum, the surface water reviewer notes that she disagrees with AECOM's interpretation that aside from some irregular occurrences of parameters above PWQOs, there does not appear to be a problem with surface water quality results resulting from the facility and uses phenols as an example where the majority of the samples in the detention ponds were above the PWQO and the number of exceedances was greater than other years. While it is true that the number of exceedances of phenols in the detention ponds was more than in previous years, at that time, they are still low. In 2016, no phenols were detected at SW1 and TP1(out) had fewer detections than previous years' with no detections in eight of the 11 sampling events. It should be noted that the operational practices of the site (indoor composting and waste handling, no on-site waste processing, etc.) deter surface water influences from site operation as acknowledged by the surface water reviewer within the body of the memorandum.

8.8 Adequacy of Program and Proposed Changes

In conclusion, there were no observable effects attributed to the WRIC on the groundwater quality beneath the site. Monitors 5 96, 6b-96, 14b-01, 17b-08 and 19b-08 exceeded ODWS for sodium and/or chloride in 2016 as a result of road salt effects.

There were detections of DEHP, naphthalene, chloroform, bromodichloromethane, total and m-, p-xylene, dibromochloromethane, toluene, benzene, tetrachloroethylene and phenol at monitors 6a-96, 6b-96, 9-96, 11b-00, 13b-01, 14b-01, 17b-08, 18b-14 and 23b-12 during 2016. However, based on the historic detections of occasional low levels of VOC throughout the site in both upgradient and downgradient monitors, the 2016 VOC detections are not considered to be a result site operations.

The MOECC recommended installation of a well nest along the downgradient property boundary to be utilized for impact assessment with respect to the requirements of Guideline B-7[19]. Monitoring nest 22-11 with a bedrock and overburden monitor was installed in November 2011 and the Guideline B-7 analysis was completed. The iron concentrations at 22a-11 in the bedrock exceeded Guideline B7 limits during both 2016 monitoring events. As previously discussed, iron concentrations at some of the monitor locations have been unusually high since the December 2011 monitoring event. These elevated concentrations decreased at 22a-11 during 2012 but have been variable since then. The elevated iron concentrations occurred in both upgradient and downgradient monitors and therefore, do not appear to be related to site operations. Only 11 samples have been collected from 22-11 since it was drilled in 2011 therefore, continued sampling of this location will build a larger dataset for comparison purposes.

In previous monitoring reports, we had recommended discontinuation of the organic sampling from the groundwater monitoring program for all historical locations. In the MOECC review of the 2009 Annual Monitoring report (Groundwater Review), the reviewer did not support the discontinuation of the organic groundwater sampling program since an impact assessment with respect to the requirements of Guideline B-7 had not yet been completed. This Guideline B-7 assessment was completed (discussed above) and found that there were no impacts at the western downgradient site boundary as a result of site operations therefore, we request removal of the organic sampling from the groundwater monitoring program. Further, increased sampling for organics (twice

17. AECOM Letter to Bill Shields (City of Guelph); Re: Response to MOE Surface Water Review Comments. 2013 Annual Report – Solid Waste Transfer Station & Wet-Dry Recycling Centre, C of A/ECA (Waste Disposal Site) No. A170128, dated May 30, 2014.

18. Memorandum from Abdul Quyum (MOECC) to Kevin Noll (MOECC), Re: Annual Monitoring Report – 2013, Guelph Wet-Dry Recycling Centre and Waste Transfer Station, Guelph Ontario, dated April 23, 2014.

19. Memorandum from Lynnette Latulippe (MOECC) to Bill Shields (City of Guelph), Re: Annual Monitoring Report – 2009 Guelph Wet-Dry Recycling Centre and Waste Transfer Station Groundwater Review, dated February 7, 2011.

per year) in 2012, 2013 and 2014, as a result of the dirt stock pile and addition of location 23-12, was completed by the City to better assess any potential contributions from the stock pile. These data indicated that sporadic hits of organics occur across the site (upgradient and downgradient), which are not related to any on-site activity and were most likely related to surrounding land use. At of the end of 2013, all contaminated soils along with the majority of the stock pile have been removed from the site. Groundwater organic sampling was completed in May in 2014. The groundwater reviewer did not comment on removal of organics from the groundwater program in his review of the 2014 annual monitoring report. We continue to recommend the discontinuation of the organic groundwater sampling program as historical data has consistently shown that low concentrations of organics not related to the site. However, until organic sampling is discontinued, future organic sampling should include a trip and field blank for QA/QC purposes.

The East Pond setting is similar to the other on-site ponds (influenced by road salting and within similar overburden soils) though it is within a different catchment area. The East Pond will continue to be used as a background surface water station for water quality from the on-site surface water features. Monthly surface water samples were collected from the East Pond in 2016 (where possible). As agreed by the MOECC, the Detention Pond 2 (SW 1) would only be sampled once the levels in the pond reached 0.46 m above the pond invert and the SWM pond (TP1(out)) continued to be sampled monthly during non-stagnant conditions (no discharge). SW 1 was monitored monthly however, the pond was dry for most of the year. If no samples are collected from the SWM pond location (TP1(out)), no sample from the East Pond for that month is required.

The 2016 surface water monitoring program shows that there have been no leachate effects to the SWM pond as a result of site operations. The 2016 SWM Pond results from TP1(out) showed most indicator parameter concentrations exceeded background surface water concentrations at EPTS-01 on one or more occasions. Parameter concentrations at TP1(out) were within historic concentrations for this location and within background overburden concentrations. Elevated concentrations are not attributed to the site as site handling and maintenance practices would deter potential surface water impacts. Elevated sodium and chloride concentrations suggest road salt influences from the adjacent access road. Surface water organic sampling in August 2016 showed a low chloroform concentration at the background surface water station, EPTS-01. There were no organics detected at TP1(out) in 2016. Historically, only low levels of a few organics have occasionally been detected in the surface water samples. As previously discussed, the site design and operations minimizes the potential for leachate generation from site activities.

As per the surface water monitoring program, SW 1 (detention pond 2) was monitored monthly however, the pond was snow covered in January and December and was dry between April and November. SW1 was sampled in February and March 2016 when the water level in the detention pond was recorded above the trigger. The water quality was found to be similar to lower than at East Pond (background). The PWQO was exceeded for zinc in March at SW1, which was also observed in the East Pond and is considered natural to the area. No discharge was required from the detention pond in 2016.

9. Public Liaison (PLC) Activities

The following is a summary of the PLC activities in 2016, as provided by the City. The City ensured that meetings were held on a quarterly basis. The City provided the PLC an opportunity to provide any questions related to the annual report. All questions were responded to in writing. The PLC remains an excellent forum for the dissemination of information related to this site. Two new members were added to the PLC in 2016 as a result of resignations.

10. WRIC Contingency Plans

The City has detailed contingency plans in place for the site prepared by the Environmental Services Department, Solid Waste Resources. The 2008 Emergency and Contingency Plan and the 2006 Contingency Plan documents (WRIC Contingency Programs, WRIC Business Continuity Plan, WRIC Emergency Plan, WRIC Fire Safety Plan) were reviewed by AECOM.

The pertinent items identified by the ECA are summarized below.

10.1 Spills

The WRIC has a Spills Handling and Reporting procedure in place. This procedure applies to all areas, employees and contractors at the WRIC. The procedure defines spills: minor, major, moderate and hazardous materials. The Spills procedure then outlines how to clean up a minor spill and who must be notified in the case of moderate or major spills.

In the event of a minor spill, the plan indicates that appropriate personal protective equipment should be worn and absorbents used to soak up the spill. Absorbed material should be transported to the Transfer Station for disposal.

The plan also covers procedures to follow in the event of a moderate or major spill. The City of Guelph Operations Department, the Environmental Protection Officer at the Wastewater Treatment Plant and the MOECC Spills Action Centre must be notified, also in the event of a major spill, the Fire Department, Police, Operations Department, or City of Guelph Emergency Operations Control Group may need to be notified. The plan indicates that all necessary steps should be taken to eliminate possible ignition sources and prevent the spill from leaving the area or entering a watercourse. The plan notes that an Employee Incident Report must be completed once the cleanup is underway. Finally, the plan provides sources of additional information and applicable legislation and references.

A Spill Contingency and Pollution Prevention Plan has also been developed for the site.

10.2 Fire or Similar Emergency

The WRIC has comprehensive plans in place in case of fire or similar emergency documented in the WRIC Fire Safety Plan and the WRIC Emergency Plan. The Fire Safety Plan includes site mapping, floor plans for each of the on-site buildings (including locations of fire alarms and extinguishers), procedures to be followed in the event of a fire/emergency, staff responsibilities and contacts in the event of a fire/emergency, procedures for fire drills, prevention and monitoring equipment maintenance.

The Emergency Plan includes many of the elements incorporated into the Fire Safety Plan plus emergency communications procedures, locations of emergency supplies, emergency equipment information and procedures related to specific emergency situations. The original Fire Safety Plan was reviewed and approved by the City Fire Department.

10.3 Composting Facilities

The Organic Waste Processing Facility has been operating since September 2011. There is a 2012 contingency plan that now includes the waste processing facility, approved in late 2011.

10.4 Power or Equipment Failure

Procedures related to power failure are discussed in the Emergency and Contingency Plan and the WRIC Emergency Plan. In the event of a minor power outage, a portable generator is available at the closed Eastview Road Landfill site. There is currently no contract for a company to supply the WRIC with a generator in the event of a major power outage. However, arrangements are in place for an outside power generation unit for the WRIC Administration Building if it is being used as an Operations Control Centre. If electricity is unavailable for more than a 24-hour period, the WRIC would be required to re-direct waste materials. Emergency procedures have also been assessed for on-site facilities should the power failure be accompanied by flood or freezing conditions.

Procedures as a result of loss of on-site facilities are addressed in the Emergency and Contingency Plan as well as the WRIC Business Continuity Plan. Recommended procedures associated with the loss of each of the facilities are documented. Ultimately, management will assess the course of action to restore the facilities and re-gain normal operations. A new generator has been installed at the Organic Waste Processing Facility.

10.5 Odour

Twice daily odour monitoring is conducted by qualified Solid Waste Resources (SWR) staff. Odour complaints from the public are investigated through the SWR Environmental Complaint Investigation Procedure in compliance with Condition 46 of the ECA. Control measures may include closing doors, cleaning up standing water and/or spills, other housekeeping measures, making changes to the processes or removal of the odour source to the landfill. If the odour persists, a portion of the operation or the entire site may be closed until the issue is resolved.

In response to the odour survey report completed by the MOECC in 2012, the City prepared an action plan to address the potential for off-site odours. In addition, supplementary measures were introduced for odour control as described previously in Section 2.3.

10.6 Aircraft Hazards/Bird Control

The Guelph Air Park is located within three km of the site. The most obvious aircraft hazard, as it relates to the operation of the WRIC, is the nuisance bird population. Daily monitoring of the number of birds occurs as part of the site inspections. A maximum number of birds on-site was determined in the bird hazard evaluation referred to in the ECA. Continual housekeeping measures, such as litter pick up around the site, at the yard waste pile and compost area, occur at the site to deter the attraction of birds and vermin. Should nuisance birds become an issue at the site, trained birds-of-prey or other mitigative measures will be considered. If necessary, the site operations may cease until the issue is resolved.

Dust, steam, smoke or any airborne vapour may pose an aircraft hazard due to decreased visibility. Operations are conducted in a manner to minimize emissions.

10.7 Un-Authorized Waste

Non-compliant materials are rejected at the scale house prior to entering the site. If un-authorized, hazardous or inappropriate waste is inadvertently accepted, the material will be loaded back on the vehicle (if it has not left the site) or the material will be placed in the appropriate bin for removal by a licensed hauler to an appropriate disposal site. The waste will be transported off-site as soon as arrangements can be made with a certified disposal company. If possible, the vehicle that brought the non-compliant materials will be charged for the disposal fee.

10.8 Groundwater/Surface Water Contamination

The site and operational procedures are designed such that there will be minimal impacts on the environment. In the event of a surface water impact, the on-site SWM detention ponds have valves that can stop off-site flow. A Spills Contingency Plan (discussed in Section 10.1) is in place to handle spills. Dry and wet waste received and handled at the site is conducted in indoor covered areas with impermeable floor surfaces and materials stored outside are covered such that impacted runoff is not generated.

Nevertheless, should water quality results suggest that there are impacts to the ground or surface water, the monitor locations/surface water stations will be re-sampled within a reasonable period of time to confirm results. As well, the area immediately adjacent and upgradient of the impacted location will be inspected for possible contaminant sources. Equipment and floor drains may also be inspected to determine if repairs are required. These repairs will be completed immediately. Should the repairs be such that normal operation is not possible, this portion of the operation will be shut down until maintenance is complete. If the contamination is a result of failure in the infrastructure that cannot be repaired under normal maintenance procedures, a remedial plan will be developed to prevent further impacts.

10.9 Quality/Fungal Contamination

If issues arise regarding air quality or fungal contamination, the appropriate qualified professional will be contracted to investigate the cause and recommend remedial measures. Remedial measures may include a change/alteration of operations or suspension of operations in the affected area(s).

All staff receive and are trained on the procedures contained within the WRIC Emergency Plan and WRIC Fire Safety Plan. The WRIC Business Continuity Plan is for use only by City Management staff due to personal information within the document. Contingency Plans are available at the WRIC for review by the Ministry.

11. Summary of Site Operational Changes and Compliance

In February of 2016, the City ceased accepting any and all recyclable material from Michigan.

As reported by the City, there were no deficiencies or items of non-compliance in 2016 however there was a fire in the Materials Recovery Facility in July. The result of the fire was that all single stream material was redirected to Buffalo N.Y. for processing until January of 2017 when all repairs to the facility and damaged equipment were completed.

There have been no changes to the Engineer's Report[20] since the last annual report. The Design and Operations Report[21] has been updated to include the new Public Drop Off. There were no changes to the WRIC Environmental Emergency Contingency Plan in 2016.

20. Engineer's Report for the City of Guelph Waste Recycling Innovation Centre prepared by Golder Associates dated July 20, 2010.

21. The Design and Operations Report for the City of Guelph Material Recovery Facility prepared by Golder Associates, dated January 12, 2010. The Design and Operations Report for the City of Guelph Waste Transfer Station prepared by Golder Associates, dated January 12, 2010. The Design and Operations Report for the City of Guelph WRIC Public Drop Off and Municipal Hazardous and Special Waste Facilities prepared by Golder Associates, dated January 12, 2010.

12. Conclusions

The site operations at the WRIC do not appear to have any negative impacts on the ground and surface water quality in the vicinity of the site.

The following conclusions are provided based on the findings of the 2016 program:

Composting Site

a) The total tonnage of organic waste received at the composting site in 2016 was 21,714 tonnes.

b) A total tonnage of 5,163 tonnes of finished compost was produced and shipped to a farmer in Atwood, Ontario, northwest of Guelph in 2016. A total of 804 tonnes of screening and residual compost waste from the composting process were shipped to the Transfer Station and then Waste Management Twin Creeks Landfill in Sarnia, Ontario or to various other locations.

c) The total tonnage of wood waste ("clean wood") and amendment/mulch material received at the site in 2016 was about 176 tonnes and 585 tonnes, respectively. Wood waste was received mostly from the City of Guelph. Amendment material was received from the Speedside Construction Ltd., Essential Waste Services, the City of Hamilton or the City of Guelph Parks and Recreation Department.

d) There were 17 odour investigations conducted by City staff in 2016. City staff were able to detect what is believed to be biofilter stack odours on five of these investigations. The City and its partners attended numerous meeting to troubleshoot the biofilter issues. As a result of these meetings, an odour system was temporarily installed for the summer of 2016 and an amendment application to the Organic Waste Processing Facility (OWPF) Air Environmental Compliance Approval was submitted for a permanent odour system and the installation of a mist eliminator that will prevent acid overspray onto the biofilter media.

e) Compost samples indicate that all compost that has been shipped off of the site has passed the conditions for a Class A compost under the CCME Guidelines and the conditions within the ECA. Temperature monitoring logs of the tunnels at the composting facility show that pasteurisation at 55 degrees C was maintained for 72 hours, as required.

f) The compost facility generally operated in 2016 without any major incidents.

g) There are issues with the operation of the biofilter that at times results in stack odours being discharged. Great efforts were expended to determine the cause(s) of the issue with the biofilter. An amendment application has been submitted to the MOECC that if approved, should address the issue. There were no other confirmed deficiencies/non-compliance or environmental/operational issues related to the compost facility in 2016 as per condition 63(8)(c) and 52(f). The facility is operating as designed.

Operations

a) The total tonnage of waste accepted by the site in 2016 was 110,829 tonnes. By the end of 2016, 95,156 tonnes were shipped off-site with 25,522 tonnes of outgoing materials from the Material Recovery facility (MRF).

b) Of the 61,795 tonnes of non-processed outgoing materials from the Transfer Station, 52,798 tonnes (85% of the outgoing materials) was sent to the Waste Management Twin Creeks Landfill in Lambton County, 2,713 tonnes (4%) was sent to then Energy-from-Waste (EFW) facility in Detroit, Michigan and 2,688 tonnes (4%) was sent to the Try Recycling in London for disposal. Other facilities received less than 6% of the materials.

About 4,649 tonnes (7.5%) of non-processed materials is marketable consisting of other recyclable materials such as shingles, clean wood, drywall, concrete and rubble.

c) In 2016, 25,522 tonnes of marketable processed material was transferred off the site from the WRIC (MRF/PDO) facility. 13,442 tonnes (53%) was paper-based goods such as cardboard and newsprint, 5,486 tonnes (21%) was organics, 2,679 tonnes (10%) was plastics and the remaining 3,915 tonnes (15%) was other recyclable materials such as aluminum, steel cans, glass, tires and metal. As reflected in the volumes above, the majority of the marketable materials sold were paper products.

d) The Emergency and Contingency Plan for the site were reviewed and the items pertinent to the ECA are summarized in this document.

e) No remedial or mitigative actions were required at the site in 2016 based on findings from the monitoring program.

Groundwater Elevations and Flows

a) Shallow groundwater flow beneath the majority of the site is in a northeasterly direction. To the west of the site, groundwater flows out of a bedrock high into the outwash beneath the site before being directed to the northeast.

b) The bedrock groundwater flow pattern is similar to the overlying shallow groundwater system. Groundwater flow is from west to east and east to west coming into the site area from both directions and ultimately to the north following the former paleo river valley (incised bedrock low) that trends to the north.

Leachate

a) Historically, WRIC Monitoring results from SW3 was used the characterize compost leachate inputs. SW3 received mostly runoff from the former compost pad. SW 3 is no longer representative of direct compost leachate and sampling of this station was discontinued in March 2014, as agreed with the MOECC. In the past SW3 (or CL-1 leachate), showed elevated concentrations of conductivity, potassium, BOD, COD, TKN, ammonia, total phosphorus, chloride, sodium and iron. SW 3 parameter concentrations were generally much lower than pre-2007 concentrations in the absence of compost runoff. This water was ultimately directed to the sanitary sewer.

Groundwater

a) Groundwater monitoring results indicate road salt effects at some up-gradient groundwater monitoring locations (5-96, 8-96, 18b-14, 19b-08, 20b-08, 23b-12). These are related to off-site winter road salting of the adjacent major roadways. Road salt effects are detected in some on-site downgradient groundwater monitors (6b-96, 7-96, 11b-00, 13b-01, 15b-01, 17b-08, 19b-08). Monitors 5 96, 6b-96, 14b-01, 17b-08 and 19b-08 exceeded ODWS for sodium and/or chloride in 2016 as a result of road salt effects. There were no apparent leachate impacts observed in the groundwater at the site boundary.

b) There were exceedances of the chloride ODWS in March 2016 at monitor 15b-08, which may be related to PDO area construction and final regrading activities. The June and December 2016, sodium and chloride concentrations at 15b-08 declined to concentrations similar to historic though several other parameters (sulphate, COD, boron, nitrite) were elevated.

c) There were no exceedances of the nitrate ODWS in 2016. Historically, elevated nitrate concentrations were prevalent across the site at all locations prior to development of the site. Nitrate concentrations have decreased, in some case significantly, over the years from the historical highs observed prior to the commencements the WRIC but are still found to be elevated. These current elevated nitrates are most likely a result of surrounding and historic land use in the area.

d) Exceedances of the iron ODWS occurred at many of the monitoring locations during the December 2011 and were also noted in 2016. The elevated iron concentrations at 18a-14 and 18b-14 may be due to the residual effects of drilling mud used during installation of these monitors. The cause of the overall increase in iron concentrations is unknown. These elevated iron concentrations will continue to be investigated further in future monitoring events. Aside from the sodium, chloride and iron exceedances discussed above, there were no other exceedances of the Ontario Drinking Water Standards in 2016 for the groundwater monitors sampled for the site monitoring programs.

e) The 2016 organic sampling showed that there were detections of DEHP, naphthalene, chloroform, bromodichloromethane, total and m-, p-xylene, dibromochloromethane, toluene, benzene, tetrachloroethylene and phenol at some of the on-site monitors. However, based on the historic detections of occasional low levels of VOC throughout the site in both upgradient and downgradient monitors, the 2014 VOC detections are not considered to be related to site operations. There are no sources of VOCs on the WRIC or Transfer station property as waste is handled within the covered buildings, truck boxes are covered when outside (preventing contact between the waste and precipitation) and no waste processing occurs on-site.

f) A Guideline B-7 assessment for the overburden and the bedrock was completed for monitoring nest 22-11, located along the western property boundary. The iron concentrations at 22a-11 exceeded Guideline B7 limits during both 2016 monitoring events. As previously discussed, iron concentrations at some of the monitor locations have been unusually high since the December 2011 monitoring event. These elevated concentrations decreased at 22a-11 during 2012 but have been variable since then. The elevated iron concentrations occurred in both upgradient and downgradient monitors and therefore, do not appear to be related to site operations.

g) No observable effects were detected in the shallow outwash water quality related to site operations. Similarly, no effects related to site operation were observed in the bedrock. Further, no effects related to site operations was observed at the downgradient site boundary.

Surface Water Monitoring

a) Of the 11 sets of samples collected in 2016 at EPTS-01 (the existing background on-site surface water pond, East Pond), the PWQO for zinc was exceeded during all of the 2016 monitoring events. Zinc has consistently exceeded PWQO in the past at this location. All the leachate indicator parameters concentrations were within background overburden ranges. Surface water organic sampling in August 2016 showed a low chloroform concentration at the background surface water station, EPTS-01. Low chloroform levels have historically occasionally been detected at this location.

b) Monthly monitoring of the stormwater management pond in the northwest corner of the site was conducted, with samples collected at the discharge at the north end of the pond (TP1 (out)) on 11 occasions in 2016. SWM pond samples exceeded the PWQO for zinc, iron, total phosphorus and phenols during three or more 2016 sampling events. The elevated total phosphorus is a result of surrounding land use and not a result of operations at the site. Elevated zinc, total phosphorus and iron concentrations appear to be related to external factors since background surface water have also exceeded PWQO for these parameters. Metals are a common contaminant from roadway runoff. Elevated phosphorus is typical in rural and urbanized areas. No organics were detected in the stormwater management pond during 2016.

c) The SW 1 (Stormwater Detention Area 2) was only sampled in February and March 2016 when the water levels in the detention pond went above the trigger level of 0.46 m. The February and March samples at the WRIC showed marginally elevated to similar indicator parameter concentrations compared to background surface water quality at the East Pond. 2016 SW 1 parameter concentrations are within the range of historic concentrations at this location. The Provincial Water Quality Objectives (PWQO) were exceeded for zinc in March. Zinc has historically routinely exceeded PWQO at this location, which is also observed at the East Pond. No discharge was required from Detention Pond 2 in 2016.

13. Recommendations

The following recommendations are provided for consideration:

a) Records pertaining to details of the incoming and outgoing waste/materials, environmental and operational problems should continue to be kept up to date for the WRIC.

b) The approved ground and surface water monitoring program should be continued for the site during 2017. The monitoring program for both the sites is outlined in Section 6.1 and 6.2 and summarized on Table 11.

c) All samples should be analyzed for the parameters listed in the table below.

Monitoring Parameter List

Leachate Indicator		
Parameters	• Biological Oxygen Demand (BOD) • Chemical Oxygen Demand (COD) • Total Kjeldahl Nitrogen (TKN) • Ammonia as Nitrogen (NH3-N) • Total Phosphorus (Total P) • Total Suspended Solids (TSS) for surface water and leachate. • Total Sulphate (SO4) • Phenols	• Nitrate (NO3) and Nitrite (NO2) • Chloride (Cl) • Sodium (Na) • Calcium (Ca) • Boron (B) • Total Iron (Fe) • Phosphorus (P) • Zinc (Zn)
General Parameters	• pH • Conductivity • Alkalinity	• Magnesium (Mg) • Potassium (K)
Organics	• EPA 624,625 (ATG 16+17+18 & ATG 19+20)	

Discontinuation of the organic groundwater sampling program is recommended as historical data, and increased data collected for the soil stock piling at the site, has consistently shown that low concentrations of organics are not related to the site. However, until the discontinuation of the organic sampling program is formalized by the MOECC, QA/QC samples should be collected.

a) The East Pond will continue to be used as a background surface water station for water quality from the on-site surface water features. To effectively compare surface water samples, monthly samples should continue to be collected on the same day. If no samples are collected from the any of the SWM pond locations, no sample from the East Pond for that month is required.

Table 11: Monitoring Program Summary

City of Guelph WRIC
Groundwater Monitoring Locations and Sampling Frequency

Formation	Monitor Locations		Sampling Frequency	Water Levels *
Sandy Silt Till	7-96		Semi Annually - Inorganics (June, December) Annually - Organics (June)	Semi Annually (June, December)
Sandy Outwash	6b-96	9-96	Semi Annually - Inorganics (June, December) Annually - Organics (June)	Semi Annually (June, December)
Gravelly Outwash	11b-00	12b-00	Semi Annually - Inorganics (June, December) Annually - Organics (June)	Semi Annually (June, December)
Dolostone Bedrock	5-96 6a-96 8-96	10-00 11a-00 12a-00	Semi Annually - Inorganics (June, December) Annually - Organics (June)	Semi Annually (June, December)

Surface Water Monitoring Stations and Sampling Frequency

Monitor Locations	Sampling Frequency	SW Level Sampling
SW1 - Downstream outflow of Detention Pond 2 (East of Admin)	Monthly - Inorganics, if pond levels exceed the target level of 0.46 m.	Monthly - Discharge

** C of A requirements for Wet-Dry is semi-annual. Recommend quarterly water levels collected to compare to Waste Transfer Station locations, which have quarterly requirements.*

City of Guelph Transfer Station
Groundwater Monitoring Locations and Sampling Frequency

Formation	Monitor Locations		Sampling Program
Gravelly Outwash	13b-01	18b-14	Semi Annually - Inorganics (June, December) Annually - Organics (June)
	14b-01	19b-08	
	15b-01	20b-08	
	16b-08	22b-11	
	17b-08	23b-12	
Dolostone Bedrock	13a-01	19a-08	Semi Annually - Inorganics (June, December) Annually - Organics (June)
	14a-01	20a-08	
	15a-01	21a-08	
	16a-08	22a-11	
	17a-08	23a-12	
	18a-14	EPTS-01	

Groundwater Levels

Formation	Monitor Locations		Sampling Program
Gravelly	13b-01	18b-14	Quarterly (June, December)
	14b-01	19b-08	
	15b-01	20b-08	
	16b-08	22b-11	
	17b-08	23b-12	
Dolostone	13a-01	18a-14	Quarterly (June, December)
	14a-01	19a-08	
	15a-01	20a-08	
	16a-08	21a-08	
	17a-08	22a-11	
	23a-12		

Surface Water Monitoring Stations and Sampling Frequency

Monitor Locations	Sampling Program
TP1 (out)	Monthly*** - Inorganics Annually*** - Organics
East Pond (EPTS-01)	Monthly*** - Inorganics Annually*** - Organics

**** After a rain event, if no rain or stagnent conditions persit No sampling required monitoring period*

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Appendix A

Groundwater Elevations and Hydrographs

Routine Groundwater Elevations at the WRIC/Waste Transfer Station

AECOM

Date	2a-91	2b-91	5-96	6a-96	6b-96	7-96	8-96	9-96	10-00	11a-00	11b-00	12a-00	12b-00	13a-01	13b-01	14a-01	14b-01
4-Apr-1991	316.00	316.02															
14-Apr-1991	315.88	315.89															
12-May-1991	315.67	315.59															
17-May-1991	315.60	315.58															
17-May-1994	316.32	316.34															
5-May-1995	315.96	316.00															
13-Apr-1996	316.22	316.20															
13-Jun-1996	316.41	316.34															
21-Aug-1996	315.81	315.75															
9-Sep-1996	315.59	315.55															
11-Dec-1996		315.62															
20-Dec-1996			319.53	315.70	315.67	315.70	318.72	315.20									
11-Feb-1997	315.31		319.48	315.77	315.78	315.92	318.95	315.96									
3-Mar-1997	315.26		320.34	316.37	316.38	316.57	319.37	316.62									
27-Mar-1997	315.58	316.27	320.68	316.13	316.13	316.24	319.42	316.24									
6-May-1997	315.38	316.08	319.39	315.86	315.86	316.02	318.72	316.04									
23-Jun-1997	315.20	315.87	318.47	315.69	315.70	315.81	318.40	315.83									
8-Aug-1997	314.86	315.50	317.62	315.39	315.41	315.49	317.85	315.45									
9-Dec-1997	314.82	315.55	318.32	315.41	315.41	315.44	317.81	315.52									
31-Mar-1998	315.62	316.28	319.90	316.08	316.15	316.22	318.94	316.26									
24-Jun-1998	315.07	315.74	318.67	315.60	315.61	315.68	318.26	315.61									
29-Sep-1998	314.47	Dry	317.34	315.03	315.08	315.15	317.59	315.11									
3-Dec-1998	314.40	Dry	318.24	315.03	315.04	315.02	317.57	315.03									
29-Jun-1999	314.91	Dry	320.03	315.51	315.55	315.54	318.33	315.46									
9-Dec-1999	315.04	315.60	318.99	315.62	315.63	315.67	318.07	315.68									
21-Jun-2000	315.69	316.40	320.17	316.21	316.21	316.34	318.89	316.36									
28-Sep-2000	314.95	315.62	318.08	315.51	315.51	315.56	318.16	315.59									
6-Dec-2000	314.52	315.43	318.29	315.32	315.32	315.34	317.98	315.35									
22-Mar-2001	316.23	316.25	320.11	316.19	316.20	316.23	318.97	316.23	316.09		316.23	316.30	316.30				
26-Apr-2001	316.19	316.19	318.53	316.02	316.04	316.17	318.59	316.20	316.07		316.15	316.26	316.26				
28-May-2001	315.91	315.91	319.57	315.80	315.83	315.90	318.57	315.92	315.83	316.06	315.90	316.03	316.07				
27-Jun-2001	315.68	315.68	318.01	315.56	315.58	315.66	318.04	315.69	315.56	315.85	315.65	315.82	315.88				
31-Jul-2001	315.39	NR	317.62	315.32	315.34	315.38	317.80	315.39	315.14	315.34	315.38	315.53	315.58				
30-Aug-2001	315.11	NR	317.87	315.09	315.10	315.10	317.76	315.11	314.87	315.11	315.11	315.26	315.31				
28-Sep-2001	315.11	NR	319.68	315.14	315.16	315.11	318.26	315.09	314.85	315.08	315.13	315.35	315.48				
19-Oct-2001	315.40	NR	320.35	315.45	315.46	315.40	318.54	315.38	315.35	315.50	315.43	315.61	315.71				
8-Nov-2001	315.66	NR	319.03	315.62	315.63	315.65	318.17	315.66	315.61	315.85	315.66			315.74	315.64	315.74	315.71
16-Nov-2001	315.56	315.71	318.31	315.63	315.65	315.55	317.90	315.71	315.59	315.82	315.69	315.78	315.80	315.89	315.76	315.86	315.83
21-Nov-2001	315.57	315.56	318.30	315.61	315.48	315.68	317.99	315.56	315.45	315.66	315.68	315.79	315.80	315.89	315.75	315.88	315.82
27-Nov-2001	315.71	315.71	318.88	315.63	315.65	315.70	318.14	315.72	315.61	315.84	315.70	315.67	315.70	315.92	315.79	315.76	315.72
4-Dec-2001	315.90	315.89	320.97	315.92	315.93	315.90	318.78	315.89	315.85	316.00	315.92	316.00	316.02	316.17	316.00	316.03	316.14
28-Jan-2002	315.85	315.84	318.94	315.77	315.79	315.83	318.63	315.85	315.72	315.98	315.83	315.97	316.00	316.07	315.93	316.04	315.99
28-Feb-2002	316.14	316.14	320.56	316.08	316.09	316.12	319.09	316.15	316.04	316.27	316.13	316.14	316.11	316.22	315.92	316.21	316.13
28-Mar-2002	316.16	316.16	319.02	316.00	316.02	316.14	318.76	316.17	315.99	316.19	316.12	316.25	316.26	316.27	315.97	316.27	316.05

Routine Groundwater Elevations at the WRIC/Waste Transfer Station

AECOM

Date	2a-91	2b-91	5-96	6a-96	6b-96	7-96	8-96	9-96	10-00	11a-00	11b-00	12a-00	12b-00	13a-01	13b-01	14a-01	14b-01
10-Apr-2002														316.27	316.00	316.26	316.05
29-Apr-2002	316.40	316.41	320.48	316.08	316.11	316.39	319.05	316.41	316.24	316.43	316.37	316.39	316.43	316.36	315.96	316.37	316.04
28-May-2002	316.18	316.18	318.46	316.03	316.05	316.16	318.70	316.20	316.05	316.07	316.33	316.25	316.25	316.35	315.96	316.35	316.03
4-Jun-2002	316.11	316.12	318.57	315.98	315.99	316.10	318.69	316.13	315.95	316.19	316.09	316.20	316.21	316.28	315.93	316.26	315.99
30-Sep-2002	315.41	315.40	318.85	315.36	315.38	315.40	318.10	315.41	315.30	315.64	315.40	315.56	315.64	315.75	315.70	315.74	315.81
3-Dec-2002	315.44	315.43	317.96	315.37	315.39	315.41	317.84	315.44	315.34	315.67	315.43	315.54	315.59	315.76	315.75	315.76	315.87
25-Apr-2003	316.10	316.11	318.90	315.92	315.94	316.09	318.49	316.13	315.85	316.04	316.07	316.20	316.21	316.03	N/A	316.05	315.39
2-Jun-2003	316.06	316.05	319.15	315.92	315.94	316.05	318.57	316.08	315.86	316.18	316.03	316.14	316.15	316.23	316.01	316.24	316.11
30-Sep-2003	315.57	315.57	319.18	315.52	315.53	315.56	318.20	315.56	315.38	315.74	315.57	N/A	N/A	315.85	315.85	315.84	315.97
1-Dec-2003	316.12	316.11	320.70	316.09	316.11	316.11	318.67	316.11	315.93	316.15	316.12	N/A	N/A	316.34	316.16	316.33	316.25
27-Apr-2004	316.38	316.38	319.88	316.20	316.23	316.42	319.10	316.39	316.14	316.45	316.34	N/A	N/A	316.52	316.19	316.51	316.27
8-Jun-2004	316.16	316.20	318.53	316.00	316.02	316.20	318.88	316.20	315.93	316.32	316.15	316.28	316.27	316.33	316.08	316.34	316.18
14-Sep-2004	N/A	N/A	318.50	315.49	315.51	315.66	318.19	315.57	315.42	315.85	315.63	315.67	315.72	315.88	315.82	315.89	315.94
30-Nov-2004	315.46	315.47	318.97	315.42	315.44	315.50	318.14	315.47	315.29	315.61	315.46	315.63	315.74	315.72	315.54	315.70	315.52
18-Apr-2005	316.33	316.35	318.85	316.14	316.16	316.36	318.83	316.37	316.08	316.32	316.29	316.44	316.44	316.40	315.85	316.38	315.82
1-Jun-2005	N/A	315.28	318.11	315.34	315.35	315.44	318.08	315.43	315.26	315.57	315.39	315.56	315.63	315.67	315.44	315.66	315.44
30-Sep-2005	315.48	315.47	320.58	315.48	315.51	315.52	318.45	315.46	315.36	315.66	315.50	315.69	315.83	315.77	315.63	315.74	315.62
28-Nov-2005	315.44	315.48	318.45	315.42	315.44	315.52	317.88	315.49	315.34	315.72	315.49	315.65	315.73	315.77	315.54	315.74	315.54
20-Apr-2006	316.12	316.12	319.06	315.96	315.98	316.14	318.87	316.13	315.93	316.23	316.08	316.23	316.24	316.27	315.77	316.26	315.75
1-Jun-2006	315.98	315.96	318.51	315.81	315.82	315.99	318.76	N/A	315.77	316.02	315.93	316.11	316.13	316.11	315.64	315.58	315.09
27-Sep-2006	315.53	315.52	319.32	315.47	315.49	315.55	318.35	315.53	315.41	315.72	315.51	315.68	315.78	315.83	315.58	315.94	315.48
4-Dec-2006	316.39	316.38	320.16	316.35	316.37	316.43	318.84	316.40	316.20	316.20	316.38	316.52	316.49	316.58	316.06	316.55	316.01
30-Mar-2007	316.28	316.28	320.23	316.17	316.25	316.32	319.22	316.30	316.15	316.40	316.26	316.44	316.44	316.52	315.90	316.49	315.87
26-Apr-2007	316.14	316.15	319.03	315.98	316.01	316.17	318.95	316.16	316.00	316.22	316.10	316.27	316.28	316.32	315.80	316.31	315.80
14-Jun-2007	315.77	315.79	318.11	315.66	315.67	315.81	318.66	315.81	315.68	315.93	315.75	315.92	315.95	316.03	315.78	316.02	315.88
27-Sep-2007	315.18	Dry	318.11	315.12	315.14	315.21	317.90	315.18	315.08	315.39	315.18	315.30	315.33	315.51	315.49	315.49	315.55
5-Dec-2007	315.36	Dry	320.31	315.36	315.37	315.40	318.65	315.35	315.26	315.58	315.37	315.57	315.72	315.69	315.65	315.68	315.70
25-Apr-2008	316.84	316.84	319.02	316.54	316.63	316.82	319.31	316.86	316.62	316.86	316.76	316.91	316.87	316.98	316.16	316.96	316.12
25-Jun-2008	316.05	316.04	320.44	316.05	316.10	316.10	318.74	315.53	315.94	316.28	316.07	316.19	316.27	316.41	315.89	316.38	315.92
18-Sep-2008	316.03	315.98	319.68	315.95	316.01	316.03	318.72	316.03	315.94	316.24	315.98	316.09	316.13	316.37	315.81	316.36	315.82
9-Dec-2008	315.83	315.78	318.91	315.75	315.77	315.82	318.47	315.80	315.76	316.04	315.78	315.89	315.96	316.22	315.70	316.19	315.70
2-Apr-2009	316.29	316.29	319.06	316.14	316.18	316.31	319.14	316.31	316.16	316.43	316.24	316.41	316.40	316.56	316.86	316.55	315.84
24-Jun-2009	315.83	315.83	318.36	315.63	315.66	315.85	318.85	315.83	315.31	315.38	315.79	315.98	316.01	315.18	315.54	315.22	315.56
10-Sep-2009	315.53	315.52	317.84	315.42	315.52	315.56	318.05	315.53	315.50	315.82	315.51	315.62	315.67	316.00	damaged	315.98	315.51
15-Dec-2009	315.45	315.48	319.73	315.44	315.49	315.50	318.25	315.51	315.40	315.76	315.48	315.63	315.75	315.91	314.55	315.86	315.57
22-Apr-2010	316.17	316.16	318.71	315.98	316.01	316.00	318.54	N/A	N/A	316.30	316.11	316.27	316.26	316.41	315.73	316.38	315.76
1-Jun-2010	315.91	315.91	317.59	315.78	315.80	315.97	318.40	N/A	N/A	316.08	315.88	315.97	316.01	316.21	315.65	315.77	315.67
1-Sep-2010	315.49	315.50	320.13	315.44	315.44	315.54	318.37	N/A	N/A	315.74	315.50	315.61	315.73	315.86	315.56	315.83	315.60
16-Dec-2010	315.62	315.61	318.17	315.53	315.55	315.66	318.00	N/A	N/A	315.85	315.59	316.50	315.77	315.98	315.53	315.95	315.53
5-Apr-2011	316.11	315.95	318.48	315.79	315.96	315.89	318.58	N/A	N/A	316.38	316.16	316.42	316.21	316.72	315.80	316.45	315.81
14-Jun-2011	316.57	316.58	318.54	316.42	316.51	316.65	319.19	N/A	N/A	316.58	316.58	316.69	316.67	316.61	315.89	316.56	315.91
16-Sep-2011	315.20		317.67	315.14	315.22	315.24	318.03	N/A	N/A	315.18	315.20	315.51	315.61	314.45	315.26	315.18	315.31
13-Dec-2011	315.93	315.93	319.36	315.84	316.02	315.95	318.24	N/A	N/A	316.07	315.90	316.09	316.22	316.17	315.77	316.14	315.80
12-Apr-2012	315.90	315.90	318.07	315.76	315.84	315.92	318.75	N/A	N/A	316.00	315.86	316.04	316.06	316.06	316.13	316.04	315.54

Routine Groundwater Elevations at the WRIC/Waste Transfer Station

AECOM

Date	2a-91	2b-91	5-96	6a-96	6b-96	7-96	8-96	9-96	10-00	11a-00	11b-00	12a-00	12b-00	13a-01	13b-01	14a-01	14b-01
18-Jun-2012	315.77	315.49	318.03	315.36	315.38	315.52	318.34	N/A	N/A	315.61	315.47	315.63	315.70	314.61	315.35	315.60	315.40
5-Jul-2012																	
7-Aug-2012	315.33	dry	318.50	315.08	315.09	315.15	318.07	315.17	314.94	315.07	315.13	315.30	315.39	315.26	315.22	315.06	315.31
27-Sep-2012	315.08	Dry	318.54	315.25	315.29	315.30	318.07	315.13	315.13	315.20	315.27	315.25	315.52	315.48	315.32	315.44	315.36
2-Nov-2012	315.53	315.53	320.85	315.80	315.85	315.76	319.04	315.57	315.41	315.72	315.75	315.76	315.87	315.98	315.69	315.75	315.68
17-Dec-2012	315.60	315.61	319.63	315.56	315.60	315.68	318.28	315.68	315.51	315.57	315.61	315.82	315.92	315.67	315.50	315.52	315.49
26-Apr-2013	316.63	316.63	319.76	316.36	316.46	316.64	319.29	316.69	316.47	316.51	316.57	316.69	316.70	316.56	315.88	316.67	315.85
17-Jun-2013	315.87	315.84	318.42	315.73	315.74	315.87	318.75	315.89	315.85	315.94	315.81	315.99	316.02	316.04	315.56	315.71	315.56
25-Sep-2013	315.71	315.72	318.86	315.63	315.64	315.72	318.59	315.74	315.69	315.75	315.67	315.85	315.91	315.81	315.54	315.80	315.55
1-Dec-2013	315.67	315.56	317.71	315.63	315.70	315.46	318.34	315.87	315.55	315.43	315.43	313.62	315.49	315.48	315.22	315.44	315.27
24-Apr-2014	315.71	315.67	318.95	316.29	316.30	316.54	319.31	316.57	316.42	316.42	316.46	316.61	316.58	316.47	315.79	316.47	315.75
1-Jun-2014	316.16	316.15	318.66	316.16	316.20	316.17	319.09	316.31	316.14	316.21	316.25	316.42	316.40	316.20	315.66	316.00	315.61
16-Sep-2014	315.79	315.62	319.14	315.80	315.87	315.88	318.64	315.92	315.82	315.81	315.84	315.96	316.00	315.84	315.59	315.84	315.61
1-Dec-2014			318.90	315.67	315.71	315.75	318.42	315.76	315.78	315.82	315.69	315.85	315.87	315.98	315.52	315.91	315.63
29-Apr-2015	removed	removed	318.53	315.89	315.67	316.07	318.84	316.11	316.05	316.11	315.93	315.78	316.03	315.71	315.24	315.64	315.27
16-Jun-2015	removed	removed	318.32	315.73	315.84	315.84	318.56	315.92	315.88	315.93	315.79	316.03	316.11	316.03	315.60	315.87	315.59
24-Sep-2015	removed	removed	317.71	315.33	315.57	315.49	319.47	315.46	315.46	315.74	315.39	315.48	315.55	315.65	315.36	315.88	315.98
1-Dec-2015	Removed	removed	317.82	315.35	315.44	315.42	317.79	315.46	315.46	315.49	315.43	315.57	315.66	315.55	315.39	315.57	315.59
29-Apr-2016	removed	removed	318.89	315.80	315.92	316.05	318.88	316.03	315.96	315.96	315.96	315.96	316.07	316.00	315.38	315.95	315.34
1-Jun-2016	removed	removed	317.54	315.41	315.53	315.61	318.57	315.68	315.55	315.70	315.61	315.75	315.78	315.76	315.43	315.65	315.47
20-Sep-2016	removed	removed	317.27	315.61	315.24	314.87	317.60	314.87	314.89	315.45	315.25	314.92	315.98	315.07	314.88	315.10	314.98
1-Dec-2016	removed	removed	318.41	315.14	315.20	315.23	317.88	315.25	315.27	315.43	315.21	315.34	315.46	315.54	315.34	315.52	315.40

Routine Groundwater Elevations at the WRIC/Waste Transfer Station

AECOM

Date	15a-01	15b-01	16a-08	16b-08	17a-08	17b-08	18a-08 /18a-14	18b-08 /18b-14	19a-08	19b-08	20a-08	20b-08	21a-08	22a-11	22b-11	23a-12	23b-12
4-Apr-1991																	
14-Apr-1991																	
12-May-1991																	
17-May-1991																	
17-May-1994																	
5-May-1995																	
13-Apr-1996																	
13-Jun-1996																	
21-Aug-1996																	
9-Sep-1996																	
11-Dec-1996																	
20-Dec-1996																	
11-Feb-1997																	
3-Mar-1997																	
27-Mar-1997																	
6-May-1997																	
23-Jun-1997																	
8-Aug-1997																	
9-Dec-1997																	
31-Mar-1998																	
24-Jun-1998																	
29-Sep-1998																	
3-Dec-1998																	
29-Jun-1999																	
9-Dec-1999																	
21-Jun-2000																	
28-Sep-2000																	
6-Dec-2000																	
22-Mar-2001																	
26-Apr-2001																	
28-May-2001																	
27-Jun-2001																	
31-Jul-2001																	
30-Aug-2001																	
28-Sep-2001																	
19-Oct-2001																	
8-Nov-2001	315.70	315.95															
16-Nov-2001	315.84	316.06															
21-Nov-2001	315.84	316.02															
27-Nov-2001	315.72	315.86															
4-Dec-2001	316.11	316.30															
28-Jan-2002	316.02	316.10															
28-Feb-2002	316.32	316.47															
28-Mar-2002	316.23	316.34															

Notes Location 18 was decommisioned and off set in September 2014 to facilitate construction of the PDO Area.

Routine Groundwater Elevations at the WRIC/Waste Transfer Station

AECOM

Date	15a-01	15b-01	16a-08	16b-08	17a-08	17b-08	18a-08 /18a-14	18b-08 /18b-14	19a-08	19b-08	20a-08	20b-08	21a-08	22a-11	22b-11	23a-12	23b-12
10-Apr-2002	316.24	316.31															
29-Apr-2002	316.33	316.35															
28-May-2002	316.30	316.34															
4-Jun-2002	316.24	316.27															
30-Sep-2002	315.69	315.75															
3-Dec-2002	315.71	315.86															
25-Apr-2003	316.01	316.31															
2-Jun-2003	316.19	316.35															
30-Sep-2003	315.80	315.99															
1-Dec-2003	316.29	316.56															
27-Apr-2004	316.48	316.56															
8-Jun-2004	316.33	316.43															
14-Sep-2004	315.83	316.13															
30-Nov-2004	315.67	315.74															
18-Apr-2005	316.36	316.34															
1-Jun-2005	315.62	315.59															
30-Sep-2005	315.70	315.66															
28-Nov-2005	315.72	315.66															
20-Apr-2006	316.23	316.17															
1-Jun-2006	315.54	316.00															
27-Sep-2006	315.77	315.72															
4-Dec-2006	316.54	316.48															
30-Mar-2007	316.48	316.37															
26-Apr-2007	316.27	316.19															
14-Jun-2007	315.96	315.99															
27-Sep-2007	315.45	315.52															
5-Dec-2007	315.65	315.72															
25-Apr-2008	316.92	316.77	316.30	316.09	316.33	316.62	317.72	317.07	316.19	316.89	318.01	316.22					
25-Jun-2008	316.35	316.12	316.00	315.95	316.18	316.02	318.17	316.21	316.31	316.03	318.01	316.23					
18-Sep-2008	316.31	316.16	316.01	315.78	316.05	315.95	317.03	316.22	316.18	316.02	318.01	316.27	316.23				
9-Dec-2008	316.16	316.00	315.88	315.69	315.83	315.79	316.98	316.21	315.95	315.98	318.01	316.25	315.96				
2-Apr-2009	316.51	316.34	316.05	315.82	316.15	316.17	317.42	317.56	316.43	316.36	318.01	316.20	316.64				
24-Jun-2009	315.28	315.86	315.40	315.55	314.82	315.67	316.79	316.21	315.62	316.03	317.59	316.14	316.17				
10-Sep-2009	315.92	315.73	315.63	315.50	315.62	315.49	316.57	316.21	315.88	315.78	317.64	316.10	315.75				
15-Dec-2009	315.83	315.76	315.61	315.56	315.54	315.46	316.59	316.20	315.80	315.53	318.01	316.22	315.70				
22-Apr-2010	316.35	316.23	315.13	315.71	316.05	316.07	317.40	316.54	316.36	316.24	318.01	316.16	316.48				
1-Jun-2010	316.15	316.10	315.77	315.65	315.88	315.84	317.00	316.22	316.11	315.98	318.01	316.15	316.15				
1-Sep-2010	315.80	315.77	315.66	315.56	315.57	315.51	317.00	316.20	315.79	315.56	318.01	316.17	315.75				
16-Dec-2010	315.92	315.81	315.64	315.51	315.69	315.58	317.02	316.22	315.87	315.81	318.01	316.14	315.73				
5-Apr-2011	316.53	316.34	315.93	315.88	316.14	316.20	317.37	316.67	316.42	316.40	318.01	316.18	316.52				
14-Jun-2011	316.63	316.63	315.96	315.81	316.25	316.40	316.99	318.05	316.73	316.66	318.01	316.16	317.91				
16-Sep-2011	315.19	315.42	315.29	315.32	315.09	315.22	316.19	316.19	315.13	315.28	317.77	316.07	315.52				
13-Dec-2011	316.17	316.22	315.90	315.77	315.93	315.96	316.06	316.55	315.15	316.03	318.01	316.31	316.12	316.64	315.95		
12-Apr-2012	316.02	315.98	315.70	315.50	315.83	315.81	317.12	316.25	316.02	315.94	318.01	316.12	316.19	315.77	315.73		

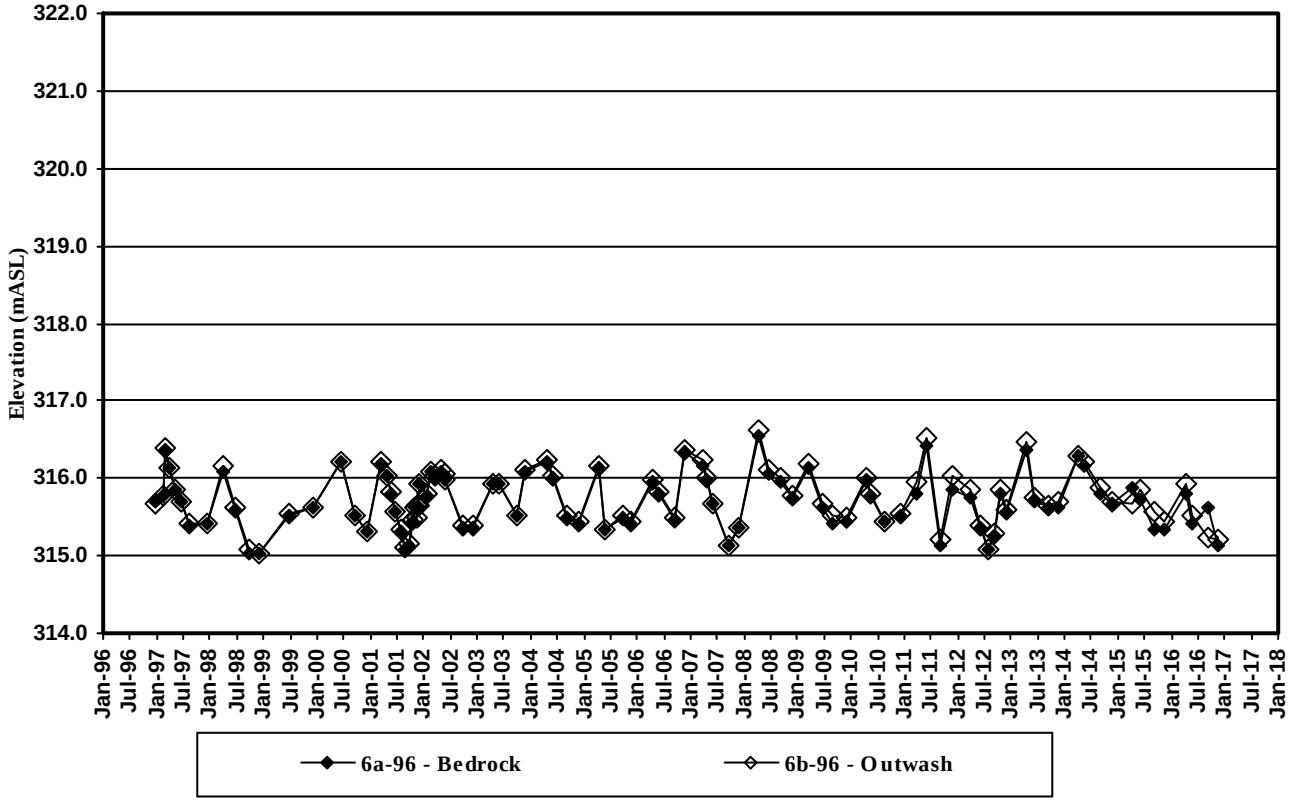
Notes Location 18 was decommisioned and off set in September 2014 to facilitate construction of the PDO Area.

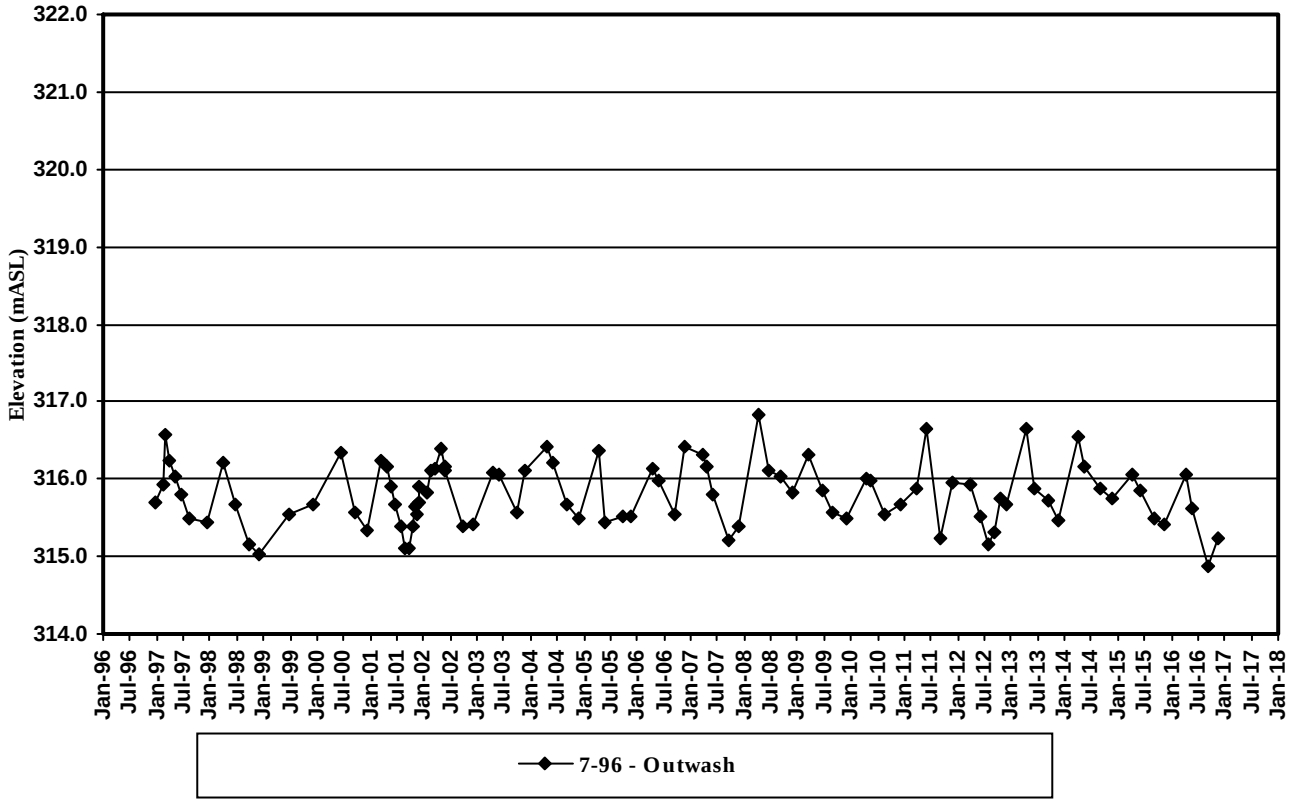
Routine Groundwater Elevations at the WRIC/Waste Transfer Station

AECOM

Date	15a-01	15b-01	16a-08	16b-08	17a-08	17b-08	18a-08 /18a-14	18b-08 /18b-14	19a-08	19b-08	20a-08	20b-08	21a-08	22a-11	22b-11	23a-12	23b-12
18-Jun-2012	315.68	315.63	315.41	315.35	315.15	315.42	316.75	<316.13	315.50	<315.16	318.01	316.08	316.27	315.29	315.39		
5-Jul-2012																315.15	315.29
7-Aug-2012	315.10	315.37	315.16	315.12	314.99	315.13	316.27	<316.13	315.02	<315.16	318.01	315.60	315.41	314.99	315.16	314.97	315.04
27-Sep-2012	315.42	315.56	315.39	315.34	315.23	315.29	316.15	316.81	315.20	315.24	318.01	315.94	315.31	315.31	315.28	NA	NA
2-Nov-2012	315.75	316.03	315.58	315.65	315.81	315.81	317.44	316.41	315.88	315.80	318.01	316.35	315.81	315.81	315.81	315.89	315.70
17-Dec-2012	315.61	315.81	315.51	315.47	315.41	315.58	317.10	316.14	315.52	315.68	318.01	316.22	315.88	315.62	315.49	315.53	315.63
26-Apr-2013	316.54	316.58	315.94	315.78	316.32	316.44	317.84	316.68	316.32	316.41	318.01	316.22	316.90	316.34	316.28	316.60	316.65
17-Jun-2013	315.99	315.95	315.49	315.66	315.69	315.77	317.18	316.19	315.91	315.88	318.01	316.17	316.17	315.81	315.76	315.99	315.85
25-Sep-2013	315.79	315.95	315.49	315.63	315.61	315.69	317.15	316.24	315.73	315.70	318.01	315.96	315.94	315.68	315.65	315.45	315.65
1-Dec-2013	315.38	315.50	315.18	315.26	315.11	315.47	316.83	<316.13	315.41	315.69	318.01	315.94	315.77	315.41	315.30	315.49	315.50
24-Apr-2014	316.43	316.50	315.90	315.71	316.05	316.42	317.90	316.97	316.47	316.57	318.01	316.20	316.78	316.27	316.19	316.45	316.54
1-Jun-2014	316.22	316.31	315.65	315.54	315.89	316.08	317.47	316.53	316.04	316.15	318.01	316.13	316.56	316.11	315.97	316.20	316.25
16-Sep-2014	315.80	316.12	315.52	315.44	315.71	315.81	317.28	316.16	315.74	315.85	318.01	316.09	316.08	315.81	315.72	315.69	315.79
1-Dec-2014	315.88	314.95	315.46	315.67	315.70	315.68	318.42	316.22	315.86	315.74	318.01	316.16	315.96	315.65	315.66	315.85	315.94
29-Apr-2015	315.38	315.79	315.43	315.18	315.48	315.51	317.51	316.05	316.05	316.06	318.01	316.13	316.19	315.71	315.89	315.97	316.05
16-Jun-2015	316.00	316.23	315.68	315.76	315.71	315.83	318.69	317.50	316.07	315.99	318.01	316.16	316.12	315.81	315.83	316.10	316.02
24-Sep-2015	316.17	316.16	315.31	315.51	315.42	315.40	318.46	315.85	315.61	315.45	318.01	316.23	315.61	315.54	315.57	316.55	315.41
1-Dec-2015	315.52	315.80	315.35	315.52	315.27	315.42	318.20	315.98	315.50	315.51	318.01	316.10	315.60	315.37	315.32	315.96	315.38
29-Apr-2016	315.91	316.11	315.28	315.51	315.83	315.92	318.52	316.39	315.80	316.10	318.01	315.57	316.36	315.81	315.78	315.85	316.03
1-Jun-2016	315.59	315.84	315.27	315.52	315.41	315.55	318.38	316.08	315.72	316.01	318.01	316.95	315.99	315.51	315.41	315.67	315.62
20-Sep-2016	315.44	315.53	314.88	315.06	314.80	314.81	317.97	315.93	315.25	315.15	317.35	315.42	315.65	314.85	314.85	314.69	314.79
1-Dec-2016	315.43	315.81	315.29	315.41	315.24	315.21	318.03	315.99	315.44	315.09	317.75	316.11	315.42	315.22	315.24	315.44	315.16

Notes Location 18 was decommisioned and off set in September 2014 to facilitate construction of the PDO Area.





AECOM

Guelph WRIC & Waste Transfer Station

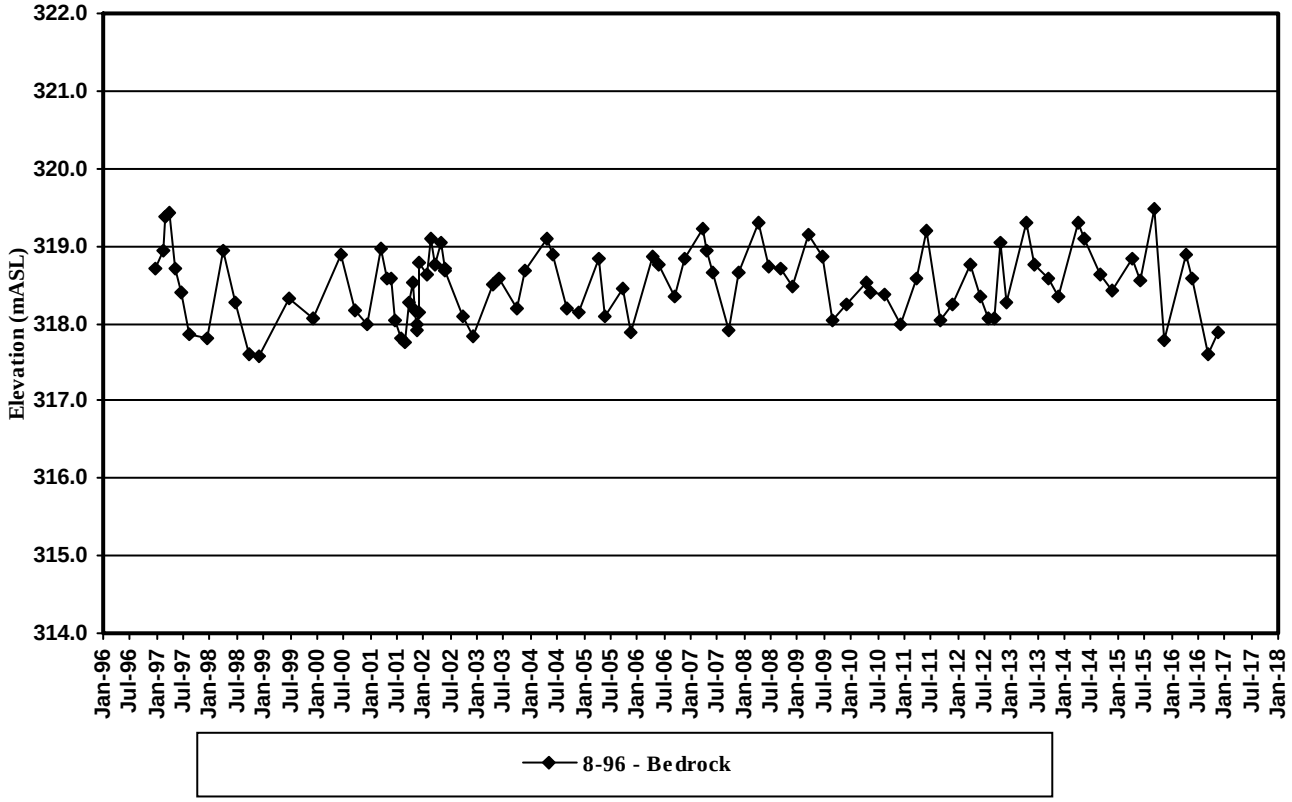
Hydrographs

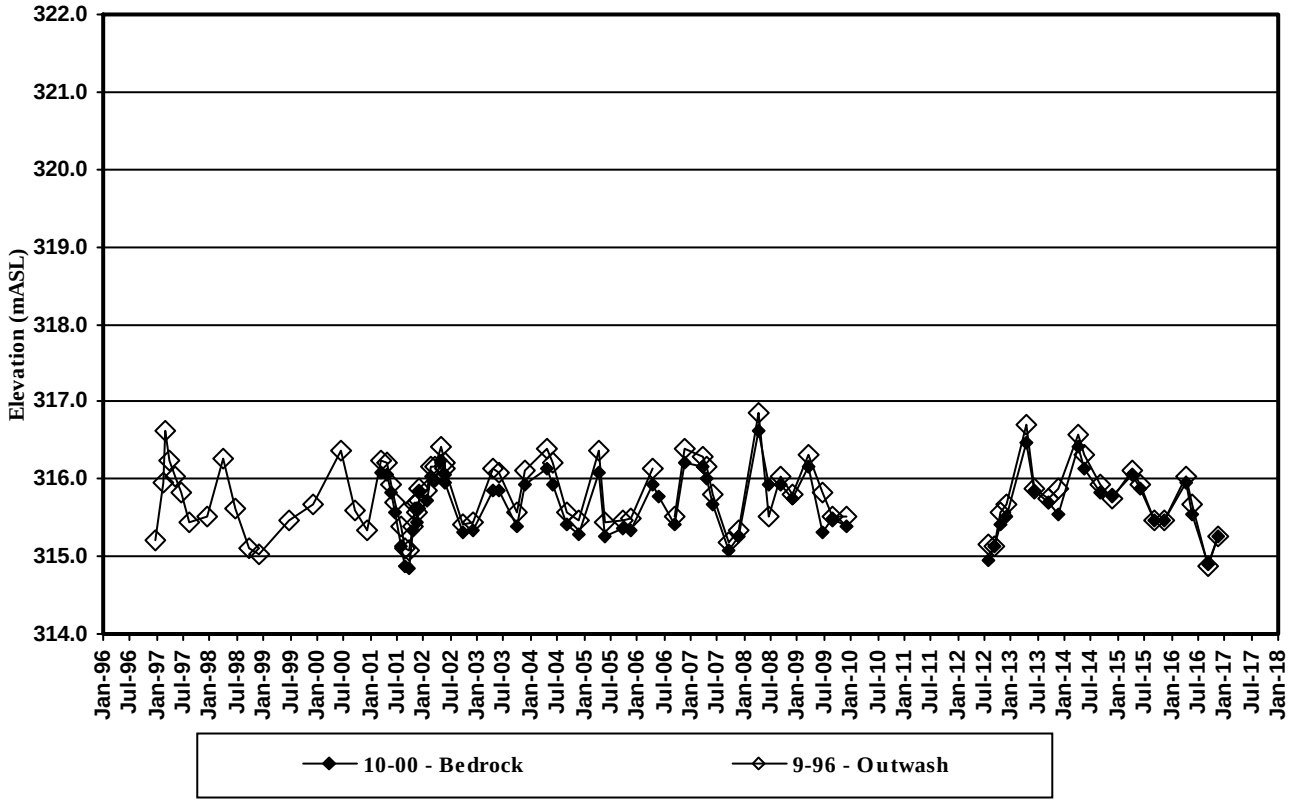
FIGURE

A - 1

60536556

9 Rpt Hydrographs





AECOM

Guelph WRIC & Waste Transfer Station

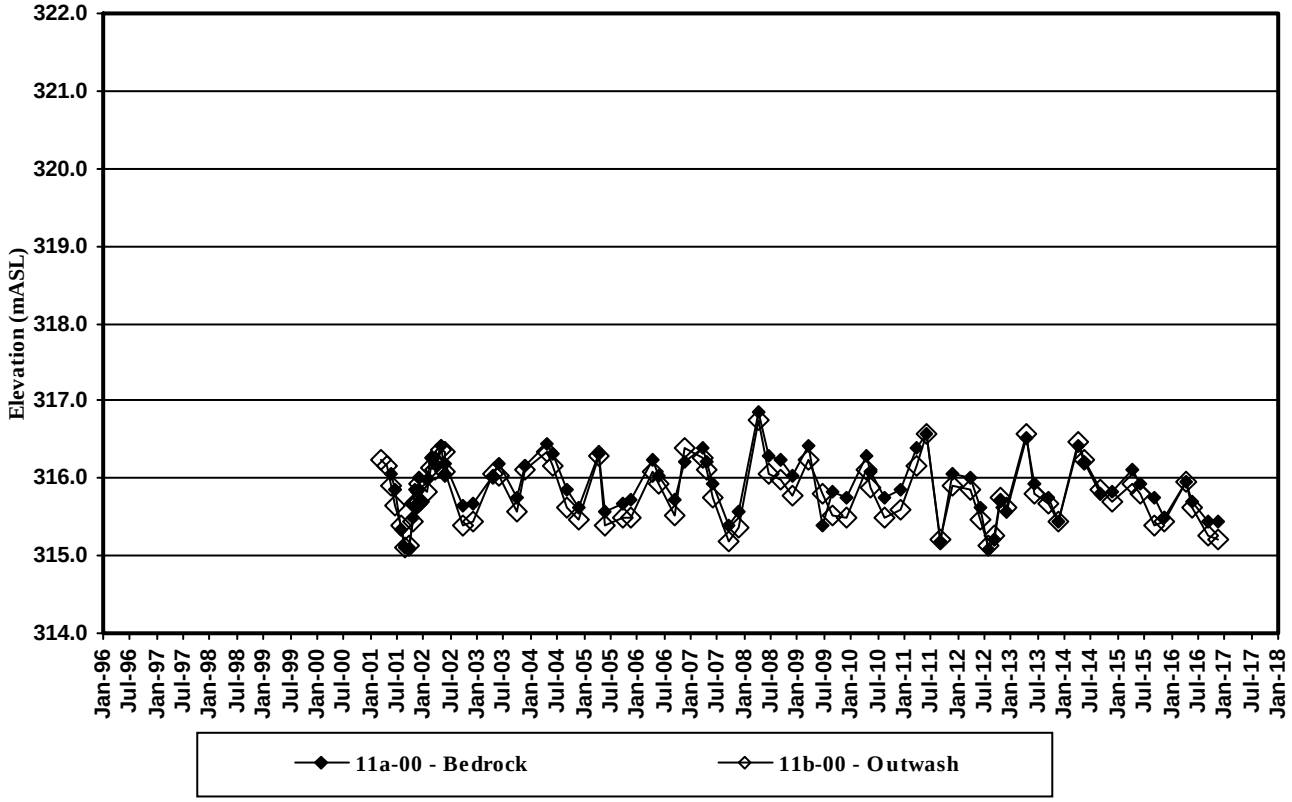
Hydrographs

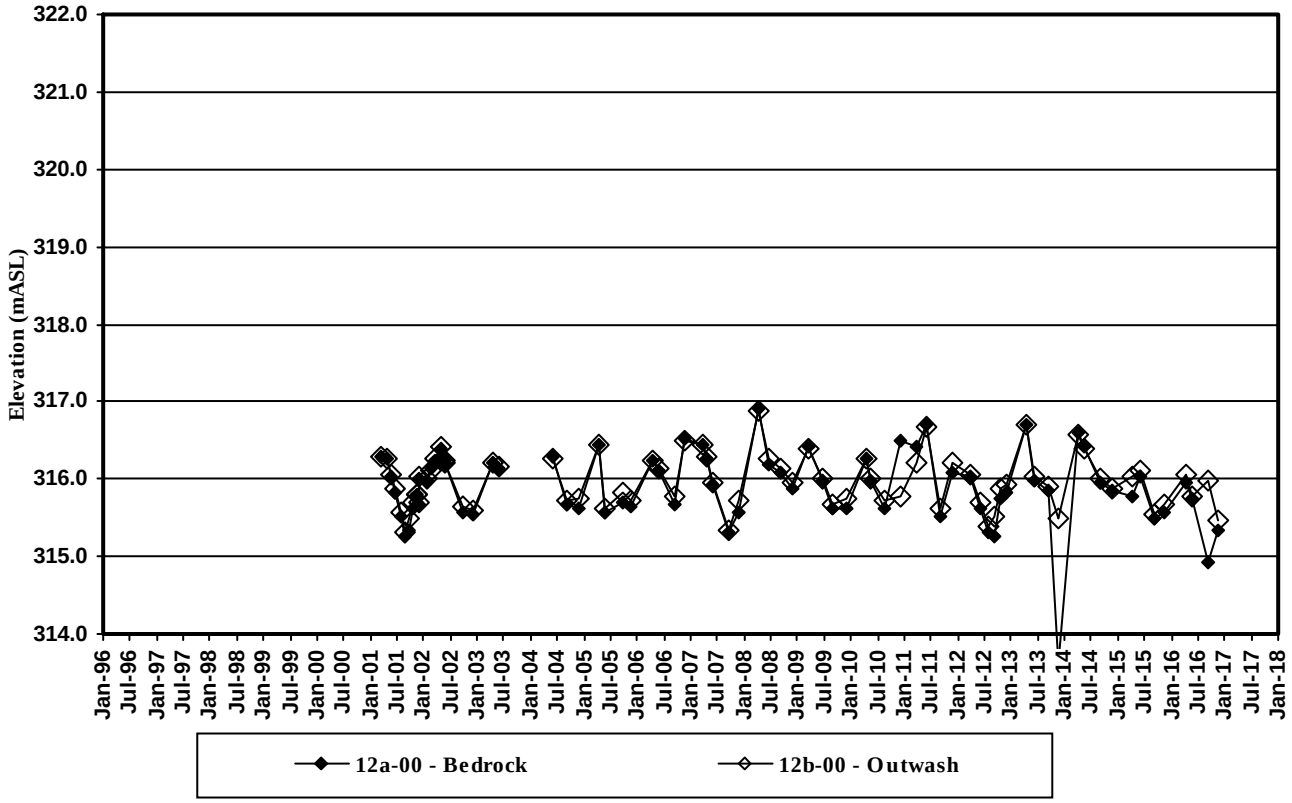
FIGURE

A - 2

60536556

9 Rpt Hydrographs





AECOM

Guelph WRIC & Waste Transfer Station

Hydrographs

FIGURE

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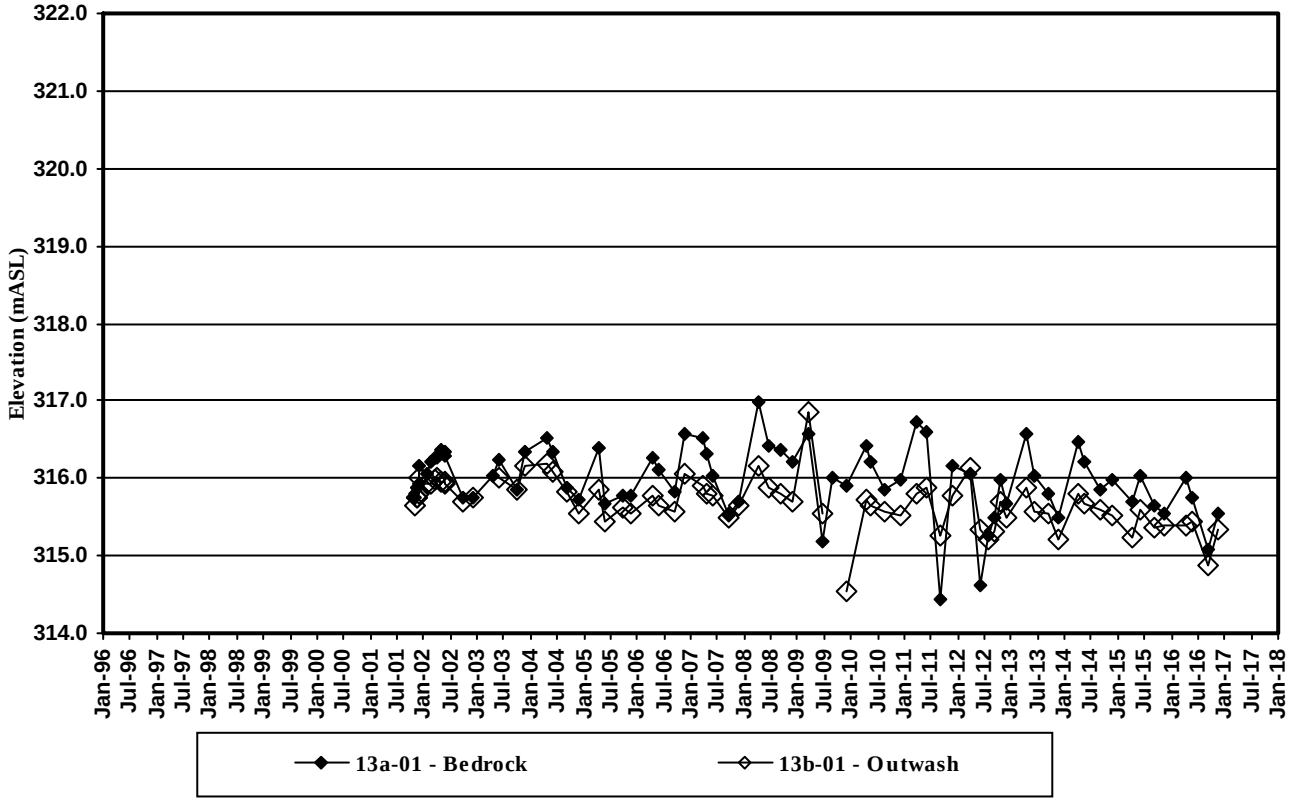
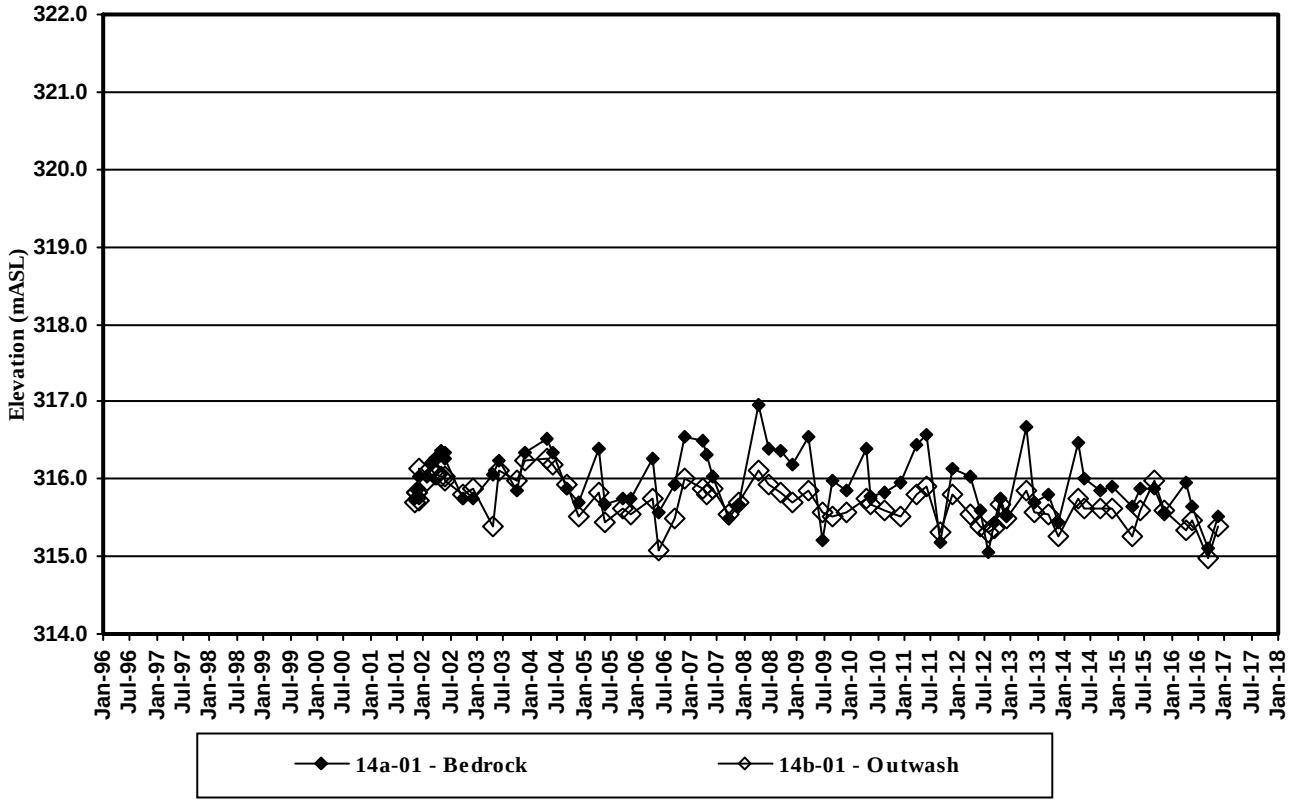
9 Rpt Hydrographs





AECOM

Guelph WRIC & Waste Transfer Station

Hydrographs

FIGURE

A - 4

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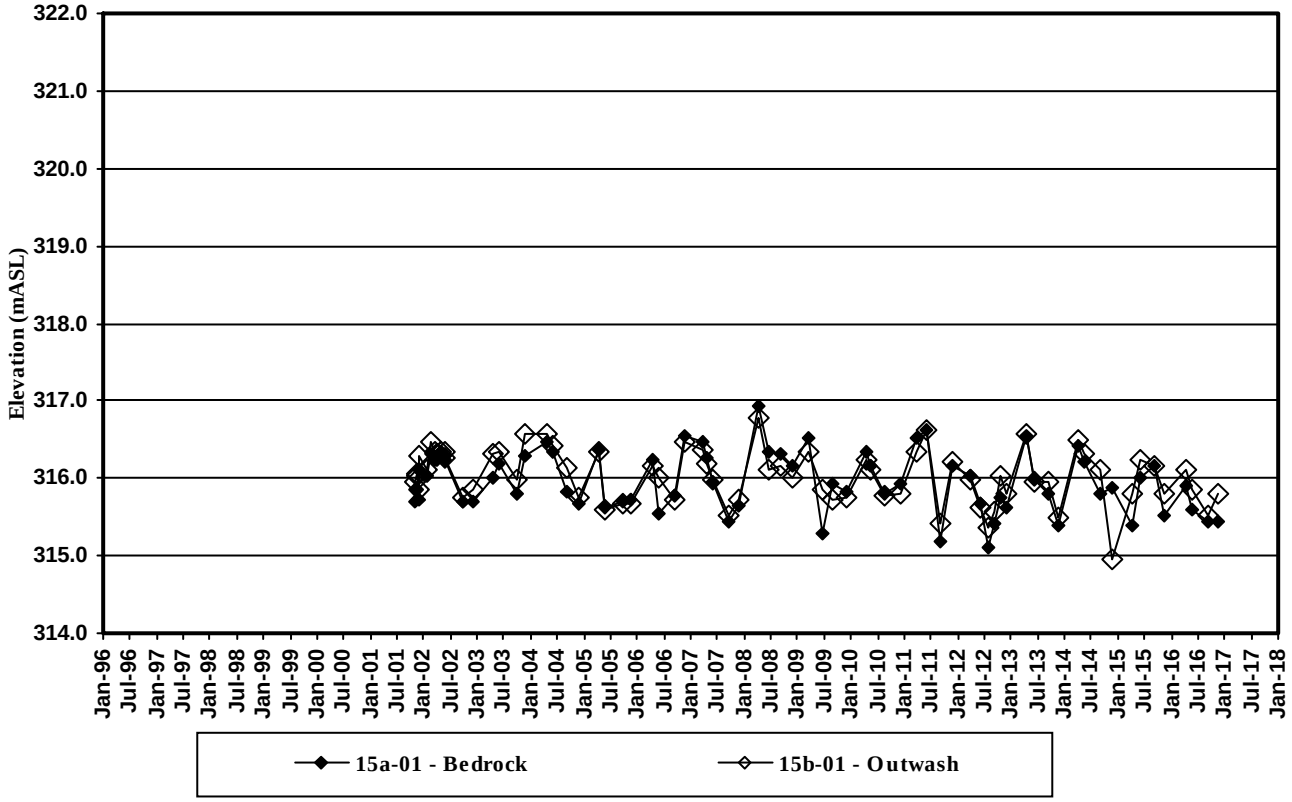
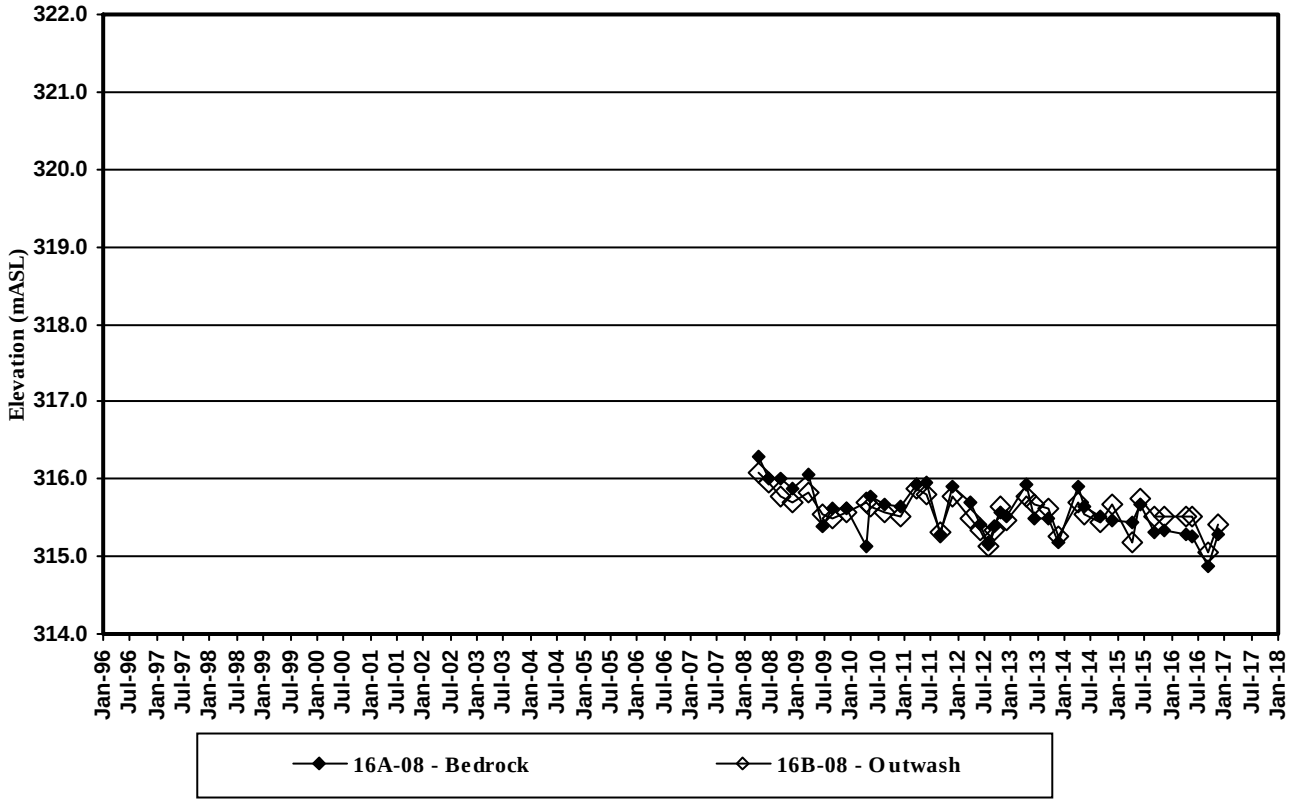
9 Rpt Hydrographs





AECOM

Guelph WRIC & Waste Transfer Station

Hydrographs

FIGURE

A - 5

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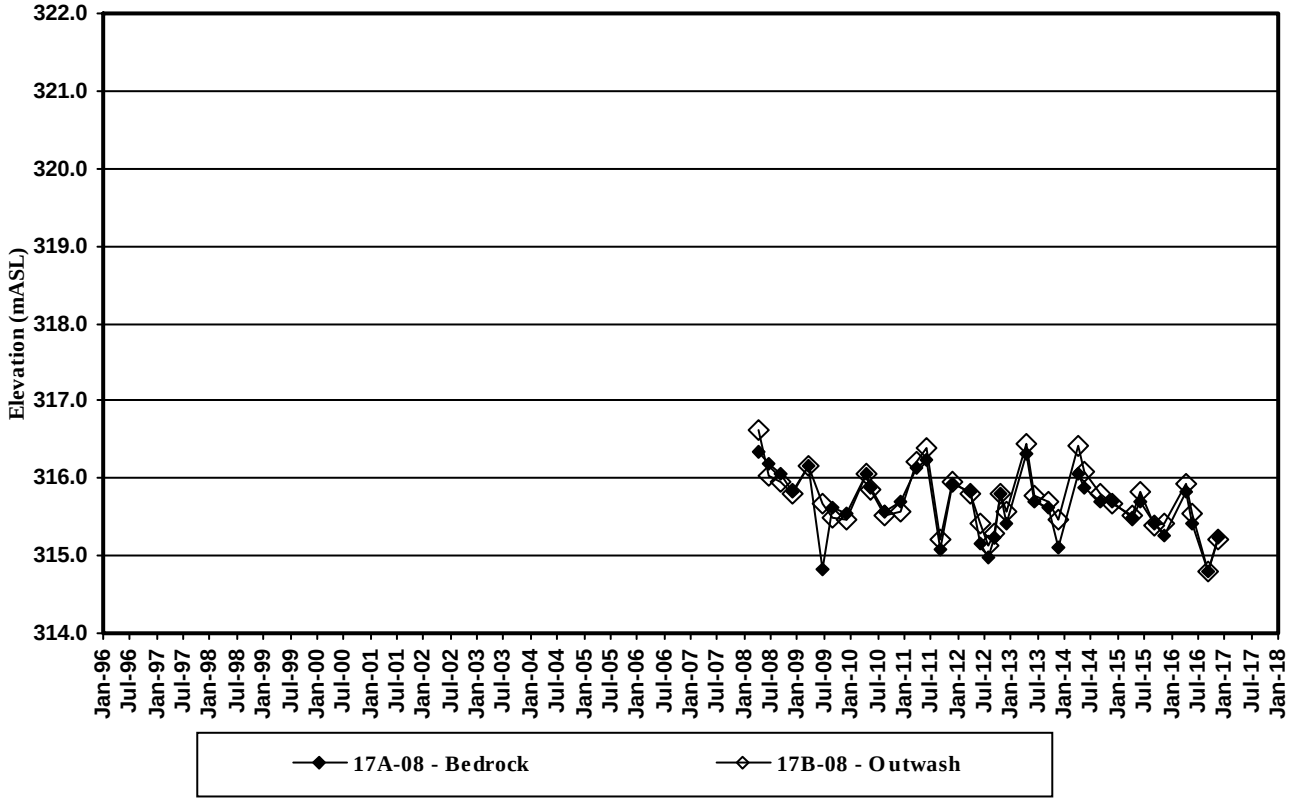
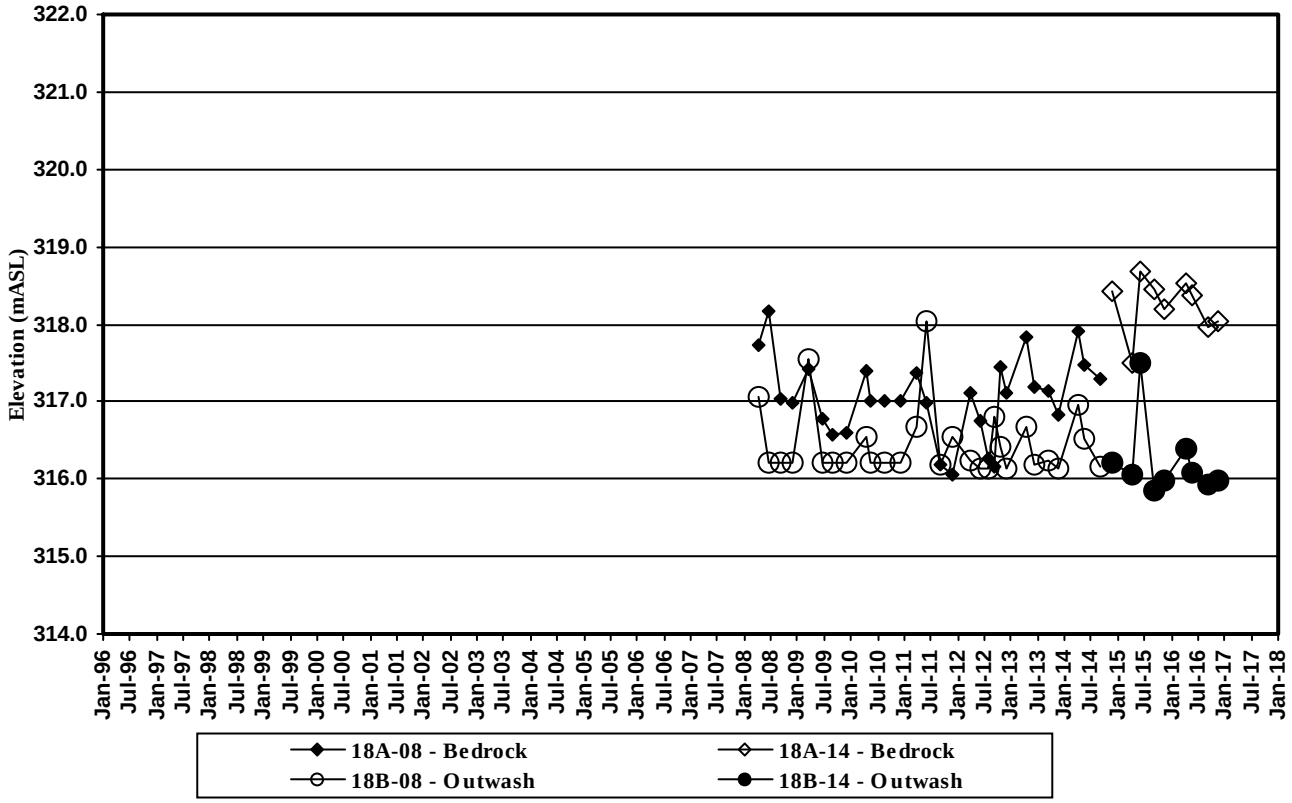
9 Rpt Hydrographs





AECOM

Guelph WRIC & Waste Transfer Station

Hydrographs

FIGURE

A - 6

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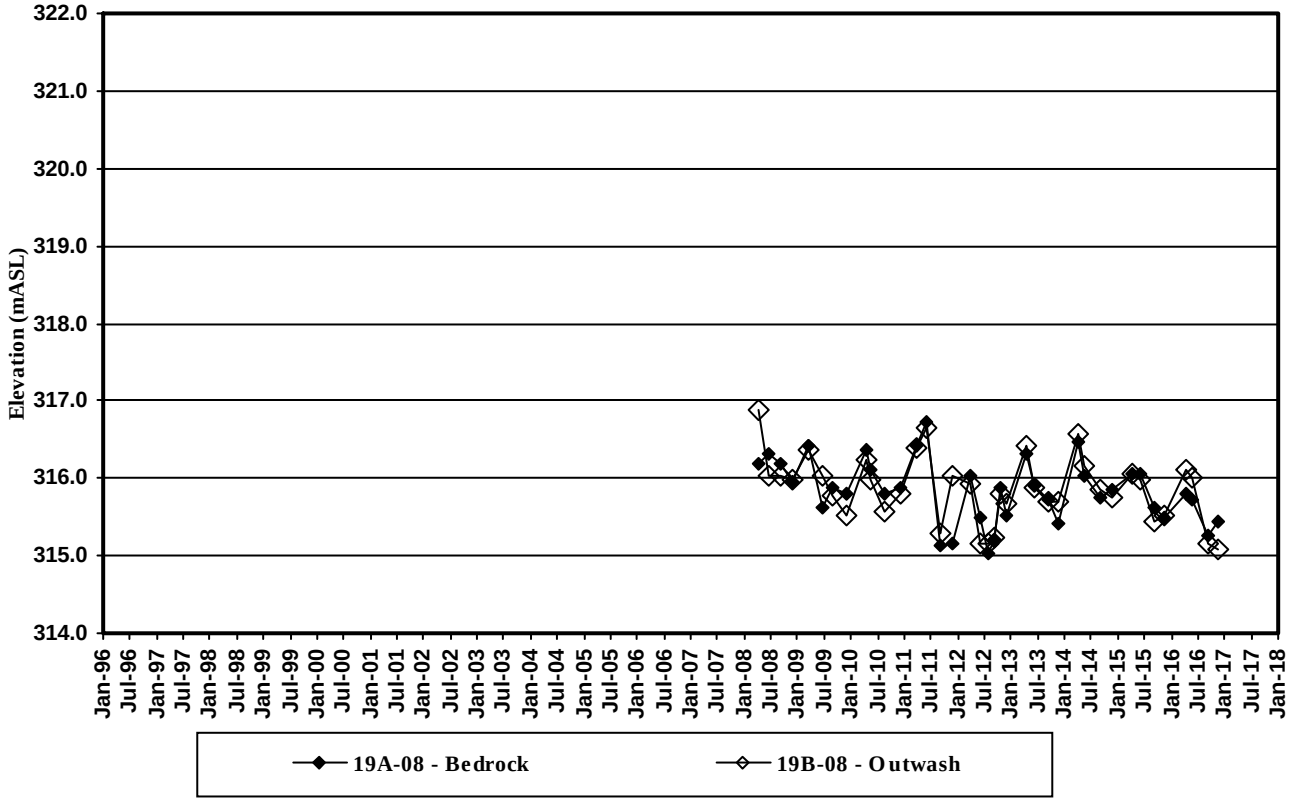
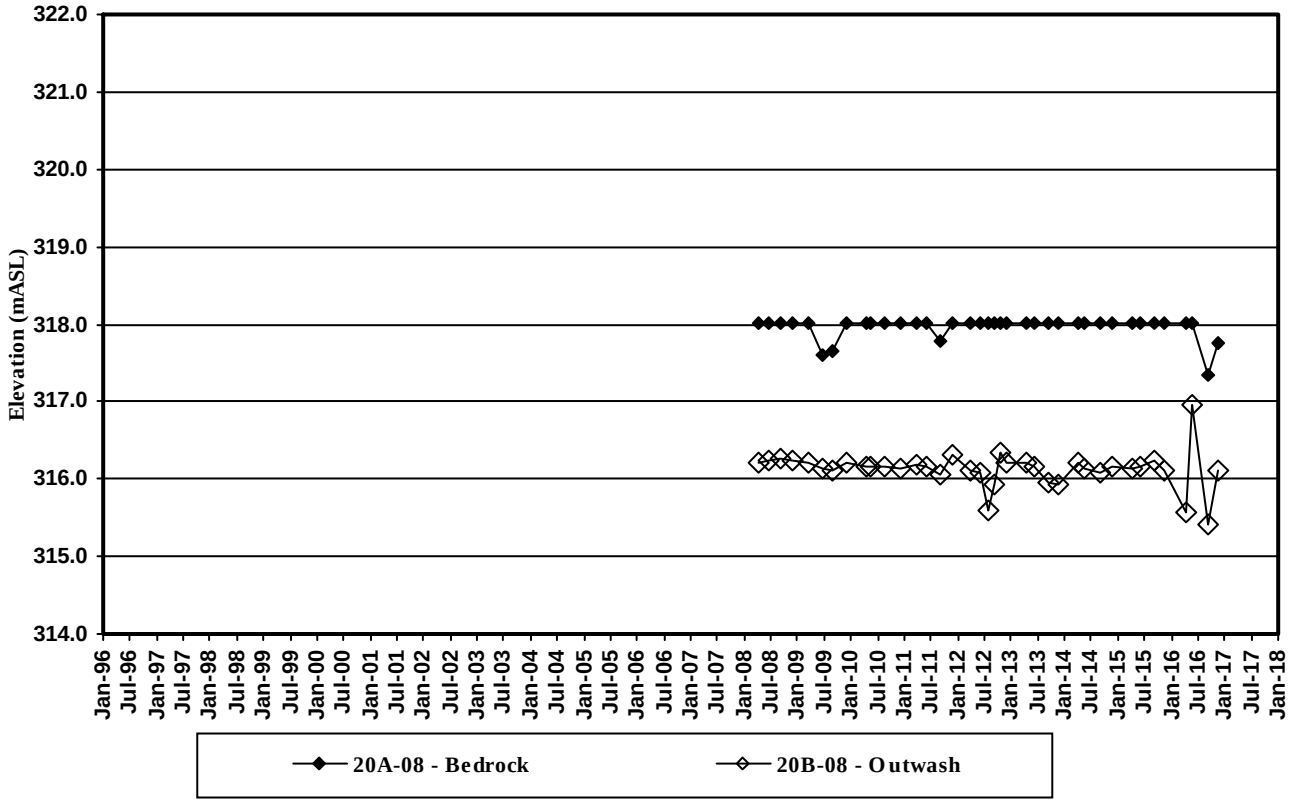
9 Rpt Hydrographs





AECOM

Guelph WRIC & Waste Transfer Station

Hydrographs

FIGURE

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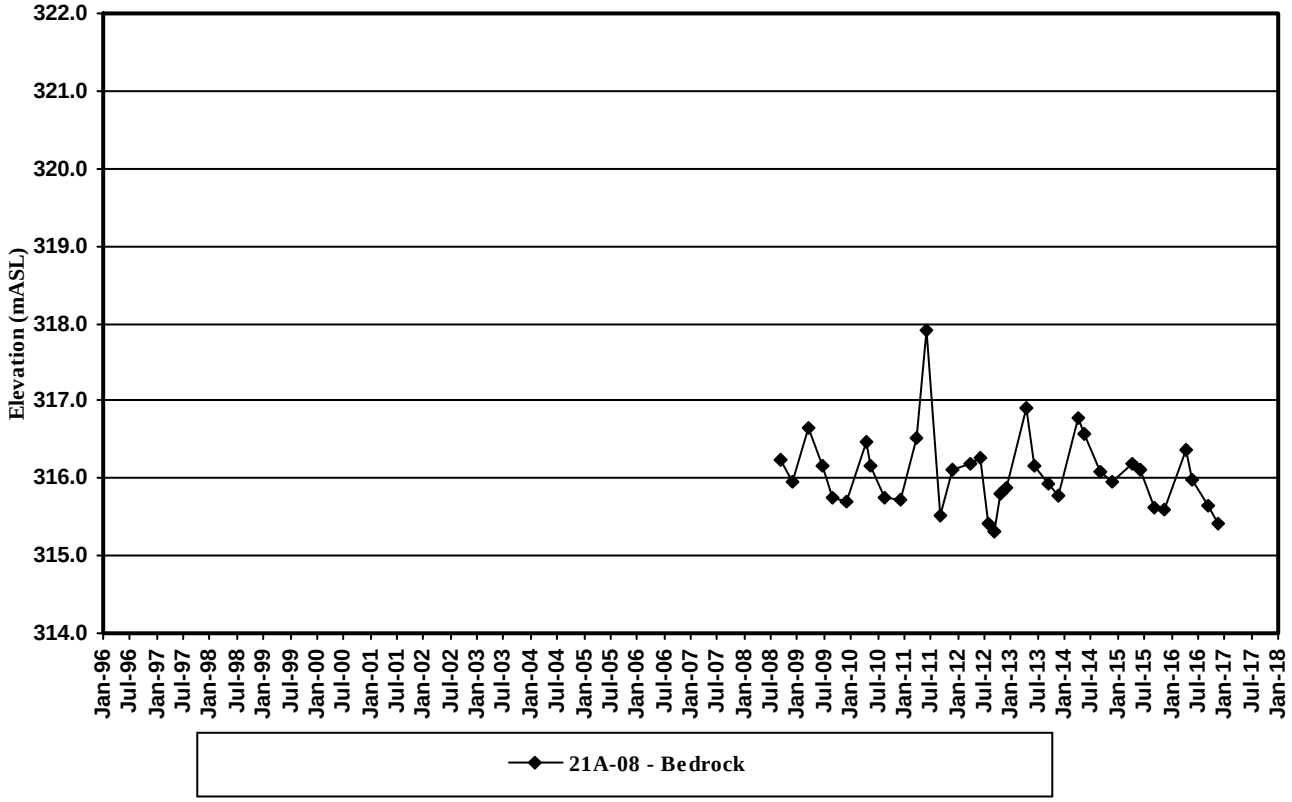
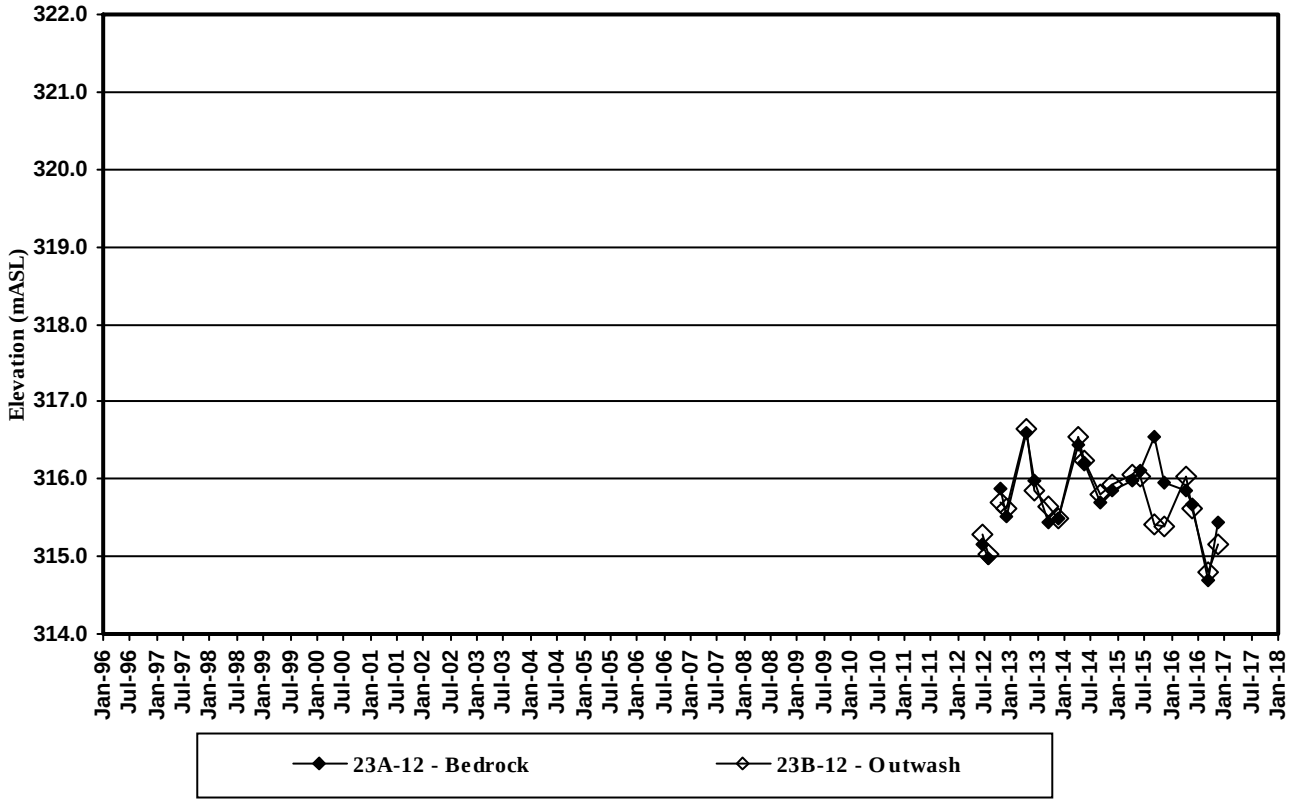
9 Rpt Hydrographs





AECOM

Guelph WRIC & Waste Transfer Station

Hydrographs

FIGURE

A - 8

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9 Rpt Hydrographs

Appendix B

Groundwater Chemistry and Time-Concentration Plots – Routine and Organics

Routine Groundwater Quality - General Analysis -Guelph WRIC & Waste Transfer Station

AECOM

	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L	NO2 mg/L	NO3 mg/L
Monitor	11/7/1991	EPL	7.2	609	297	32	8.1						25.6		10.5	2.9	96.7	<0.005	0.03	<0.09	<0.005	<0.03	17.7
1a-91	3/4/1992	EPL	7.09	647	300	31.8	7.9						26.2		9.23	3.14	94.7	0.026	0.03	1.13	0.017	<0.03	17.9
Lower Til	3/7/1992	EPL	7.63	721	234	35.5	8.1						27.3		14.1	2.72	89.1	<0.005	<0.01	<0.06	<0.005	<0.03	27.5
	5/17/1994	EPL	7.76	703	242	31.6	5.5					< 0.05	28.7		12.6	2.41	97.6	0.101	0.02	<0.06	0.024	<0.03	22.6
	5/5/1995	MDS	7.6	689	250	32.5	5.2					< 0.05	31.7		17.3	2.67	102	0.012	0.02	<0.06	<0.005	<0.03	21.3
Monitor	11/7/1991	EPL	7.3	753	280	40	15						37.4		23.9	3.5	111	0.074	0.05	<0.09	<0.005	<0.03	33.1
1b-91	3/4/1992	EPL	7.31	733	227	34.9	13.6						34.1		10.5	2.95	97.2	0.265	0.05	0.7	0.022	<0.03	32.3
Outwash	3/7/1992	EPL	7.64	740	224	34.1	14.6						33.6		20.7	3.01	97.8	0.022	0.04	<0.06	0.01	<0.03	27.2
	3/17/1994	EPL	7.74	521	225	23	11.4					< 0.05	15.6		5.45	2.01	67.7	0.064	0.03	<0.06	0.009	<0.03	8.76
	5/5/1995	MDS	7.85	398	138	16.4	7.4					< 0.05	19.7		26.9	10.9	46.1	0.033	0.03	<0.06	<0.005	<0.03	5.01

Routine Groundwater Quality - General Analysis -Guelph WRIC & Waste Transfer Station

AECOM

	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L	NO2 mg/L	NO3 mg/L
Monitor	11/7/1991	EPL	7.78	434	215	28	2.8						17.1		24.5	32	35	0.11	0.06	<0.09	<0.005	<0.03	0.98
2a-91	3/4/1992	EPL	7.61	494	229	28.7	3.6						20		21.3	34.7	36.9	0.313	0.07	1.14	0.009	0.37	1.67
Lower Til	3/7/1992	EPL	7.88	479	209	28.3	1.4						16.2		15.2	30.6	36.6	0.018	0.06	<0.06	<0.005	0.16	1.99
	5/17/1994	EPL	7.99	462	236	24.3	0.9					< 0.05	10.5		10.5	39.6	30.4	0.204	0.07	<0.06	<0.005	<0.03	0.08
	5/5/1995	MDS	8.02	437	210	20.9	1					< 0.05	11.7		8.92	45.5	28	0.054	0.07	<0.06	<0.005	<0.03	0.47
	4/13/1996	ENT	8.31	424	220	29	1.82				0.45		19.8	< 0.5	8.1	30	49.3	0.23	0.093		0.01	<0.06	<0.05
	6/13/1996	ENT	8.27	331	234	26.5	2.61				0.159		18.9	< 0.5	7.5	32	43.3	<0.01	0.11		<0.01	<0.06	0.4
	8/21/1996	ENT	7.7	454	237	26.9	2.1				0.22		19.9	1	7.5	33.3	43.9	<0.01	0.11		<0.01	<0.06	1.27
	9/18/1996	ENT	8.11	363	226	31.4	1.9				0.03		18	< 0.5	6.4	31.4	41.1	<0.01	0.146		<0.01	<0.06	1.08
	2/11/1997	WBL	7.9			23.8	1.7	< 0.34	8	0.17	0.021	< 0.011	48.4	< 0.72	119	27.1	45.6	0.796	0.057	0.048	0.028		
	3/26/1997	WBL	8.18	514	235	27.7	2.29	< 0.34	17	0.16	0.089	< 0.011	25.2	< 0.72	5.8	26.2	51	0.672	0.07	<0.028	0.021		
	6/25/1997	WBL	8.24	471	226	21.8	1.43	1.89	< 7	0.33	0.26	< 0.011	18.8	< 0.72	5.33	24	36.5	0.069	0.066	<0.028	0.016		
	10/1/1997	WBL	8.1	441	227	22.6	1.63	0.66	14	0.33	0.176	< 0.011	16.3	< 0.72	5.13	26.9	38.6	0.477	0.055	<0.028	0.017		
	12/11/1997	WBL	8.12	450	225	22.2	1.92	< 0.34	33	0.34	0.108	< 0.011	16.7	< 0.72	4.97	29.5	38.6	1.28	0.055	<0.028	0.042		0.22
	3/31/1998	WBL	8.05	455	227	21.3	1.77	1.03			0.212		16.3	< 0.72	6.47	24.2	44.8	1.14	0.055	<0.011	0.022		0.58
	6/24/1998	WBL	8.06	463	230	21.2	1.39	0.9			0.177		17	< 0.72	4.92	26.7	42	0.176	0.103	<0.006	0.01		0.8
	10/2/1998	CAN	8	500	240	25	< 1	2	< 5	0.17	< 0.1	0.08	19	< 1	4.8	31	41	0.6	0.05		0.02		0.71
	12/3/1998	CAN	7.9	490	240	23	< 1	< 2	< 5	0.2	< 0.1	0.12	17	< 2	4.9	30	36	<0.05	0.05		<0.01		0.4
	6/29/1999	Barr	8.45	440	220	24.2	2	1.5	9	0.33	0.24	0.025	15.8		5.9	28.7	38	0.39	0.05	<0.1	0.017		
	12/9/1999	Barr	8.04	454	221	23.2	1.4	0.7	14	0.46	0.23	0.009	15	< 1	< 5	32.3	34.5	0.02	0.07	<0.1	<0.005		
	6/21/2000	Philip	7.88	441	231	21.6	1.2	1	< 5	0.46	0.31	0.005	15.3	< 1	5.1	25.6	35.8	<0.03	0.042	<0.05	<0.005		
	12/7/2000	Philip	8.15	388	236	22.6	1.1	1.1	10	0.47	0.25	0.011	17.8	< 1	5.2	27.8	35.7	0.21	0.094		0.11		
	6/27/2001	Philip	7.9	456	236	23	1	1.9	< 5	0.34	0.22	0.018	22.4	< 1	4.8	29.4	38.2	0.06	0.13	<0.1	0.135		
	12/3/2001	Philip	8.19	457	241	20.3	1.6	1	< 5	0.23	0.07	0.028	18.1	< 1	4.2	30.4	33.3	0.03	0.07	<0.1	0.038		
	6/4/2002	Philip	8.44	443	266	23.4	1	0.6	8	0.66	0.13	0.016	15.2	< 1	3.6	25.7	39.6	<0.01	0.06	<0.1	0.007		
	12/3/2002	Philip	8.27	466	230	24.4	2	< 0.5	17	0.94	0.07	0.01	14.7	< 1	3.3	27.1	42.3	0.01	0.05	<0.1	<0.005		
	6/2/2003	Philip	8.14	460	220	23.7	1	< 0.5	9	0.67	0.17	< 0.001	15.7	20	4.6	25.8	40.4	<0.01	0.06		<0.005		
	12/1/2003	Philip	8.21	415	225	24.5	1.1	1	6	0.25	< 0.03	0.015	20.1	< 1	4.4	24.6	40.8	0.03	0.06	<0.1	<0.005		
	6/9/2004	Philip	8.11	459	234	22	< 1	0.7	6	0.36	0.07	0.01	20.9	1	5.2	36.8	36.6	<0.01	0.06		0.03	<0.2	0.7
	11/30/2004	Philip	8.04	452	241	23.5	1	< 0.5	5	0.23	0.03	0.005	15.5	< 1	4.3	27.5	38.4	<0.01	0.05		<0.005		
	8/3/2005	N/A																					
	11/28/2005	Maxx	8.24	433	233	25		< 2	14	0.8	0.14	< 0.02	15	< 1	4	32	4	<0.05	0.061	<0.05	0.005		
	6/1/2006	MAX	8.2	510	254	27	1.4	< 2	6	0.8	0.24	< 0.02	15	< 1	7	28	48	<0.02	0.061	<0.05	<0.005		
	12/4/2006	MAX	8.2	511	256	26	1.3	< 2	< 4	0.5	0.23	< 0.02	18	< 1	6	30	43	<0.02	0.061	<0.05	<0.005		
	3/30/2007	MAX	8.3	477	241	22	1.2	< 2	4	0.4	0.21	< 0.02	16	< 1	6	32	39	<0.02	0.063	<0.05	<0.005		
	6/14/2007	MAX	8.3	501	249	28	1.4	2	5	0.3	0.16	0.04	19	< 1	6	37	42	<0.02	0.071	<0.05	<0.005		
	12/5/2007	MAX	8.3	448	229	23	1.3	< 2	8	0.2	0.12	< 0.02	13	< 1	4	24	40	<0.02	0.05	<0.1	<0.005	<0.01	0.1
	6/25/2008	MAX	8.4	446	226	23	1.4		13	0.5	0.25	< 0.02	13	< 1	5	33	38	<0.02	0.059	<0.1	<0.005	<0.01	0.1
	12/9/2008	MAX	8.1	460	236	21	1.1	< 2	4	0.3	0.09	0.03	16	< 1	3	29	39	<0.02	0.064	<0.1	<0.005	<0.01	<0.1
	6/25/2009	MAX	8.1	486	244	27	1.4	< 2	6	0.5	0.25	< 0.02	16	< 1	4	31	44	<0.02	0.067	<0.1	<0.005	<0.01	0.8
	12/16/2009	MAX	8.2	439	227	24	1.3	< 2	4	0.4	0.2	< 0.02	10	< 1	3	22	42	<0.02	0.055	<0.1	<0.005	<0.01	<0.1
	6/29/2010	MAX	8.1	456	226	23	1.2	< 2	11	0.6	0.29	< 0.02	12	< 1	4	25	40	<0.02	0.064	<0.1	<0.005	<0.01	0.4
	12/22/2010	MAX	8.07	452	238	26	1.2	< 2	< 4	0.2	< 0.05	< 0.02	7	< 1	4	22	45	<0.02	0.05	<0.1	0.013	<0.01	0.1
	6/16/2011	MAX	8.11	493	246	26	1.4	< 2	13	0.5	0.3	< 0.02	15	< 1	3	27	47	0.02	0.057	<0.1	<0.005	0.03	0.9
	12/15/2011	MAX	8.11	552	271	28	1.4	< 2	< 4	0.9	0.09	0.17	22	< 1	4	29	52	2	0.062	<0.1	0.06	0.06	0.4
	6/18/2012	MAX	8.13	520	260	27	1.3	< 2	10	0.26	< 0.05	0.05	22	< 1	3	25	49	2.3	0.053	<0.1	0.011	<0.01	0.18
	12/17/2012	MAX	7.98	640	330	35	1.5	< 2	< 4	0.45	0.066	0.086	31	< 1	4	32	62	2.8	0.054	<0.1	0.011	<0.01	0.52
	6/18/2013	MAX	8.18	620	300	31	1.5	< 2	4.9	0.25	0.052	0.12	29	< 1	3	33	61	2.3	0.061	<0.1	0.007	<0.01	0.14
	12/5/2013	MAX	7.97	700	340	38	1.6	< 2	18	3	0.1	0.86	34	< 1	5	32	73	<0.02	0.059	<0.1	<0.005	<0.01	0.74

Routine Groundwater Quality - General Analysis -Guelph WRIC & Waste Transfer Station

AECOM

	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L	NO2 mg/L	NO3 mg/L
	5/26/2014	MAX	7.91	710	350	38	1.5	< 2	19	<2	< 0.05	0.94	36	< 1	5	30	72	27	0.053	<0.1	0.014	<0.01	0.9
	12/2/2014	Remo																					
Monitor	3/7/1992	EPL	8	499	154	26.3	0.4						28.1		18.1	3.56	63.8	<0.005	<0.01	<0.06	<0.005	<0.03	13.3
2b-91	5/17/1994	EPL	7.9	587	208	31.4	2					< 0.05	34		8.69	9.44	63.9	0.054	0.01	<0.06	<0.005	<0.03	<0.03
Outwash	5/5/1995	MDS	7.95	530	179	28.3	0.6					< 0.05	25.5		8.59	3.69	68.9	0.019	<0.01	<0.06	<0.005		17.2
	4/13/1996	ENT	7.91	425	169	26.8	0.908				0.01		30.3	< 0.5	11.6	4.1	67.9	<0.01	0.42		<0.01	<0.06	<0.05
	6/13/1996	ENT	8.34	337	177	25.1	0.8				0.016		28.2	0.1	7.5	3.9	60.3	<0.01	0.052		<0.01	<0.06	11
	8/21/1996	ENT	8.16	373	167	22.8	1.14				0.06		26.2	1	6.7	3.63	59.6	<0.01	0.05		<0.01	<0.06	11.2
	9/18/1996	ENT	7.93	377	216	22.9	0.9				< 0.01		26	< 0.5	6.5	2.9	60.2	<0.01	0.067		<0.01	<0.06	11.5
	12/11/1996	ENT	8.19	459	208	21.1	1.1				0.04		26.7	< 0.5	7.2	4.6	51	<0.01	0.017		0.01	<0.06	11.4
	3/27/1997	WBL	8.14	543	180	26.8	0.69	< 0.34	18	0.24	< 0.01	0.014	25.8	< 0.72	10.5	2.4	71.9	0.088	0.028	<0.028	0.013		
	3/31/1998	WBL	7.92	556	183	25.8	0.78	1.03			< 0.019		23.2	1.34	16.2	3.88	74.8	0.111	<0.016	0.024	0.012		15.7
	6/24/1998	Dry																					
	10/2/1998	Dry																					
	12/3/1998	Dry																					
	12/9/1999	Barr	7.77	463	166	23.9	< 1	0.9	14	0.4	0.43	0.005	27	< 1	17	3.6	53.2	<0.01	<0.01	<0.1	0.016		
	6/21/2000	Philip	7.89	401	184	24.5	0.7	< 0.5	< 5	0.23	< 0.03	< 0.002	25.5	< 1	8.1	4	58.2	<0.03	<0.005	<0.05	<0.005		
	12/7/2000	INS																					
	6/27/2001	INV																					
	12/3/2001	INV																					
	6/4/2002	Philip	8.22	362	176	21.8	< 1	1.1	15	1.01	< 0.03	0.006	19.1	< 1	5.5	1.8	52.2	<0.01	0.01	<0.1	0.015		
	12/3/2002	INS																					
	6/2/2003	Philip	8	444	182	23.1	< 1	1.4	14	0.74	< 0.03	< 0.001	15	6	4.8	2.2	54.4	<0.01	<0.01		0.019		
	12/1/2003	Philip	8.16	501	190	25	< 1	< 0.5	10	0.51	< 0.03	0.004	23	< 1	8.4	2.9	61.4	<0.01	0.01	<0.1	0.008		
	6/8/2004	Philip	7.83	550	256	31.2	< 1	< 0.5	7	0.49	< 0.03	0.002	21.3	< 1	8.4	2.1	90	0.04	0.01		0.179	<0.2	9.2
	11/30/2004	INS																					
	8/3/2005	INS																					
	11/28/2005	INS																					
	6/1/2006	INS																					
	12/4/2006	INS																					
	3/30/2007	MAX	8.1	764	362	39	0.84	< 2	5	0.3	0.06	< 0.02	15	< 1	10	2.5	78	<0.02	0.022	<0.05	<0.005		
	6/14/2007	INS																					
	12/5/2007	INS																					
	6/25/2008	MAX	8.3	494	228	26	0.79		< 4	0.3	0.05	< 0.02	10	< 1	4	2.6	64	<0.02	0.02	<0.1	0.016	<0.01	0.7
	12/9/2008	INS																					
	6/25/2009	MAX	8	514	270	27	0.78	< 2	< 4	0.3	< 0.05	< 0.02	9	< 1	3	5.2	71	<0.02	0.02	<0.1	0.023	<0.01	0.7
	12/16/2009	INS																					
	6/29/2010	MAX	8	558	286	26	0.75	< 2	7	0.2	< 0.05	< 0.02	9	< 1	3	5.2	75	<0.02	0.018	<0.1	0.022	<0.01	1.2
	12/22/2010	INS																					
	6/16/2011	MAX	7.99	530	278	27	0.7	< 2	12	0.2	< 0.05	< 0.02	8	< 1	3	3.4	78	<0.02	0.016	<0.1	0.02	<0.01	0.4
	12/15/2011	MAX	8.05	537	283	27	0.95	< 2	9	0.5	< 0.05	0.24	8	< 1	4	4.9	80	4.3	0.02	<0.1	0.04	<0.01	0.6
	6/18/2012	INSV																					
	12/17/2012	MAX	7.76	540	290	28	0.99	< 2	10	<0.1	< 0.05	0.19	6	< 1	3	3.8	87	6.7	0.011	<0.1	0.031	<0.01	0.46
	6/19/2013	MAX	7.97	460	230	20	0.65	< 2	22	0.6	< 0.05	0.28	7	< 1	2	2.4	61	12	0.017	<0.1	0.019	<0.01	0.41
	12/5/2013	MAX	7.92	500	270	26	0.94	< 2	31	2.9	< 0.05	0.34	5	< 1	2	2.4	81	<0.02	0.021	<0.1	0.026	<0.01	0.38
	5/26/2014	MAX	7.9	450	240	22	0.67	< 2	8.3	0.21	< 0.05	0.14	6	< 1	2	2.5	68	5.9	0.017	<0.1	0.03	<0.01	0.4
	12/2/2014	Remo																					

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AECOM

	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L	NO2 mg/L	NO3 mg/L
Monitor	11/7/1991	EPL	7.2	711	278	42	1						31.7		22.6	3.2	104	0.12	0.02	<0.09	0.3	<0.03	27
3-91	3/4/1992	EPL	7.49	740	308	39.9	2						33.4		15.7	3.37	96.9	0.44	0.02	0.68	0.22	<0.03	22.4
Bedrock	5/17/1994	EPL	7.92	802	327	40.2	2.7					< 0.05	34.2		32.1	13.2	98.5	0.013	0.02	<0.06	0.299	<0.03	10.1
	5/5/1995	MDS	7.47	687	300	37.2	< 0.4					< 0.05	32.5		20.8	7.75	96.5	0.018	0.01	<0.06	0.425	<0.03	9.27
	8/21/1996	ENT	7.75	950	363	45.2	13.4				1.09		39	1.5	8	44.1	116	<0.01	0.12		0.46	<0.06	14.5
	9/18/1996	ENT	7.53	720	323	39.9	7.1				0.45		30.8	< 0.5	40.1	18.1	105	0.03	0.112		0.28	<0.06	9.31
	12/11/1996	ENT	8.09	918	363	32.9	1.86				0.08		35.9	< 0.5	49	17.4	85.6	<0.01	0.06		0.74	<0.06	18.3
Monitor	12/11/1997	WBL				464	29.4		79	2.08	0.037	2.07		< 0.72		98.5	905	54.9	0.05	3.3	6.86		
3-97	3/31/1998	WBL	7.72	1270	343	30.5	6.52	1.15			< 0.019		58.6	< 0.72	165	99.3	126	0.12	0.041	0.065	0.055		3.7
Outwash	6/24/1998	WBL	7.56	939	364	27	4.98	1.17			< 0.019		27.8	< 0.72	71.6	44.9	112	0.475	0.072	<0.006	0.134		2.42
	10/2/1998	Dry																					
	12/3/1998	Dry																					
Monitor	11/7/1991	EPL	7.54	589	290	35	1.8						54.2		15.8	12	88	<0.005	0.02	<0.09	0.048	<0.03	1.8
5-91	3/7/1992	EPL	7.51	658	282	34.7	1.1						41.4		12.3	14.8	85.3	<0.005	0.01	<0.06	0.29	0.12	6.35
edrock/Outv	5/17/1994	EPL	7.64	547	282	31.9	1					< 0.05	15.6		8.68	4.67	68.5	0.084	0.01	<0.06	0.92	<0.03	0.86
	5/5/1995	MDS	7.37	1210	234	60.2	< 0.4					< 0.05	53		210	51.1	136	<0.005	0.02	<0.06	0.229	<0.03	12

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AECOM

	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L	NO2 mg/L	NO3 mg/L
Monitor	2/11/1997	WBL	7.32			34.8	4.83	< 0.34	< 7	0.24	0.021	0.012	32.7	< 0.72	6.53	54.6	125	0.013	0.041	<0.028	1.07		
5-96	3/27/1997	WBL	7.45	1390	312	35	5.16	< 0.34		0.19	0.051	< 0.011	39.5	< 0.72	219	88.8	130	0.013	0.034	<0.028	1.92		
Bedrock	6/25/1997	WBL	7.58	1460	326	33.5	5.1	< 0.34	< 7	0.35	0.044	< 0.011	41.6	< 0.72	251	100	104	0.017	0.029	<0.028	1.62		
	10/1/1997	WBL	7.26	1290	345	37.1	5.57	< 0.34	13	0.29	< 0.01	< 0.011	43.4	< 0.72	190	102	116	0.017	0.032	<0.028	1.78		
	12/11/1997	WBL	7.34	1240	358	35.9	5.85	< 0.34	25	0.24	0.018	< 0.011	43.3	< 0.72	173	96.3	115	0.016	0.023	<0.028	1.7		2.26
	3/31/1998	WBL	7.18	1180	352	30.6	5.14	< 0.34			0.058		41.5	< 0.72	142	75.3	128	0.017	0.028	<0.011	1.52		1.95
	6/24/1998	WBL	7.38	1240	346	31.4	5.27	1.32			0.062		38.6	< 0.72	172	84.2	107	0.028	0.053	<0.006	2.1		1.75
	10/2/1998	CAN	7.3	1300	370	32	5.3	3	6	0.25	< 0.1	0.03	42	< 1	160	91	100	<0.05	<0.05		1.9		0.53
	12/3/1998	CAN	7.3	1200	380	30	5.6	< 2	< 5	0.13	< 0.1	0.11	39	< 2	130	88	94	<0.05	<0.05		1.5		0.54
	6/29/1999	Barr	8.01	1216	333	34.4	6	1.3	10	0.23	0.06	0.004	41.7		236	105	105	<0.01	<0.01	<0.1	2.12		
	12/9/1999	Barr	7.32	1136	355	30.2	4.8	0.6	14	0.42	0.32	0.058	33	< 1	124	100	90.5	<0.01	0.02	<0.1	1.61		
	6/21/2000	Philip	7.27	1056	330	29.2	5	0.6	10	0.46	< 0.03	< 0.002	35.8	< 1	165	95.3	100	<0.03	0.009	<0.05	1.42		
	12/7/2000	Philip	7.52	910	360	27.2	4.5	0.7	11	0.45	0.04	< 0.002	31.5	< 1	112	71.9	83.9	<0.03	0.022		1.66		
	6/27/2001	Philip	7.55	1376	321	33.2	5	0.8	< 5	0.22	< 0.03	0.01	38	< 1	275	137	111	<0.01	0.06	<0.1	1.81		
	12/3/2001	Philip	7.68	1054	343	27.4	3.9	1	6	0.32	< 0.03	0.003	33	< 1	136	93.2	89.9	<0.01	0.05	<0.1	1.88		
	6/4/2002	Philip	8.38	1360	290	31.1	5	0.9	9	0.39	< 0.03	0.005	32.6	< 1	290	139	106	<0.01	0.02	<0.1	1.92		
	12/3/2002	Philip	7.9	1116	316	25.9	5	< 0.5	10	0.37	< 0.03	0.013	30.4	< 1	177	118	86.1	<0.01	0.02	<0.1	1.56		
	6/2/2003	Philip	7.52	2132	278	38.4	6	< 0.5	10	0.39	0.03	< 0.001	43.2	6	474	263	134	<0.01	0.02		2.35		
	12/1/2003	Philip	7.89	1345	299	24.2	4.3	0.9	10	0.36	< 0.03	< 0.002	35.8	< 1	284	178	83.7	<0.01	0.02	<0.1	1.65		
	6/8/2004	Philip	7.46	2148	275	33.2	4.6	< 0.5	13	0.48	< 0.03	0.006	47.8	< 1	631	295	130	0.06	0.02		2.43	<0.2	1
	11/30/2004	Philip	7.69	1707	321	20.8	4	< 0.5	19	0.64	0.04	0.003	41.3	< 1	425	272	79	<0.01	0.02		1.44		
	8/3/2005	Maxx	7.97	3500	283	40	7.7	< 2	27	1.2	< 0.05	< 0.02	47	< 1	952	710	160	<0.5	<0.1	<0.5	2.9		
	11/28/2005	Maxx	8.1	2780	333	25		< 2	17	0.5	< 0.05	< 0.02	49	< 1	661	53	97	<0.05	0.023	<0.05	1.6		
	6/1/2006	MAX	8	3480	302	31	5.9	< 2	15	0.6	0.07	< 0.02	41	< 1	908	590	120	<0.02	0.021	<0.05	2.1		
	12/4/2006	MAX	7.9	2190	341	19	4.6	< 2	6	0.3	0.09	< 0.02	41	< 1	470	390	73	<0.02	0.02	<0.05	1.4		
	3/30/2007	MAX	8	2610	297	22	4.6	< 2	11	0.4	0.12	< 0.02	38	< 1	630	410	97	<0.02	0.018	<0.05	1.5		
	6/14/2007	MAX	8.1	2900	284	29	5.3	< 2	12	0.3	0.1	< 0.02	40	< 1	700	490	110	<0.02	0.018	<0.05	2.2		
	12/5/2007	MAX	8.1	2460	307	23	5.4	< 2	24	0.2	0.06	< 0.02	39	< 1	580	420	94	<0.02	0.017	<0.1	1.7	0.01	0.2
	6/25/2008	MAX	8.1	3810	270	30	5.5		29	0.4	< 0.05	< 0.02	44	< 1	970	610	140	<0.02	<0.01	<0.1	2.2	<0.01	0.5
	12/9/2008	MAX	8	2530	319	16	4.2	< 2	12	0.3	< 0.05	< 0.02	39	< 1	570	390	76	<0.02	0.03	<0.1	1.5	<0.01	0.3
	6/25/2009	MAX	7.8	3030	288	27	5	< 2	12	0.3	< 0.05	< 0.02	42	< 1	740	490	110	<0.02	0.019	<0.1	2.3	0.01	0.4
	12/16/2009	MAX	7.7	2190	307	19	4.5	14	22	2	1.4	0.09	33	12	480	390	76	0.05	0.02	0.12	0.14	<0.01	0.2
	6/24/2010	MAX	7.9	2560	263	24	4.4	< 2	4	0.5	< 0.05	< 0.02	32	< 1	610	390	100	<0.02	0.019	<0.1	1.4	<0.01	0.7
	12/17/2010	MAX	7.9	1940	296	18	4	< 2	10	0.2	< 0.05	< 0.02	28	< 1	390	330	79	<0.02	0.027	<0.1	0.97	<0.01	0.4
	6/15/2011	MAX	7.82	2580	277	26	4.2	< 2	16	0.2	< 0.05	< 0.02	31	< 1	630	390	120	<0.02	0.02	<0.1	2	<0.01	0.5
	12/13/2011	MAX	7.96	1980	304	19	4	< 2	14	0.4	0.07	0.07	28	3	400	330	80	0.21	0.013	<0.1	1.1	<0.01	0.2
	6/18/2012	MAX	7.85	3100	250	27	4.2	< 2	12	0.36	< 0.05	< 0.02	31	1.3	780	420	130	0.07	0.025	<0.1	1.7	<0.01	0.19
	12/10/2012	MAX	7.71	1900	290	19	3.8	< 2	7.6	0.67	< 0.05	< 0.02	28	< 1	380	320	83	0.03	0.015	<0.1	1.6	<0.01	0.46
	6/20/2013	MAX	8.24	3900	250	26	4.1	< 2	6.1	0.26	< 0.05	< -1	38	< 1	1100	380	120	0.26	0.013	<0.1	2.1	<0.01	0.26
	12/3/2013	MAX	7.8	2400	300	19	4.1	< 2	6.4	0.31	< 0.05	< 0.02	30	< 1	590	440	88	<0.02	0.019	<0.1	1.5	<0.01	0.57
	5/23/2014	MAX	7.8	2600	280	21	3.8	< 2	6.6	0.26	< 0.05	< 0.04	34	< 1	650	440	110	<0.02	0.013	<0.1	1.8	<0.01	0.64
	12/3/2014	MAX	7.98	2800	290	23	4.3	< 2	8.4	0.14	< 0.05	< 0.02	35	< 1	680	460	100	<0.02	0.02	<0.1	1.8	<0.01	0.75
	6/22/2015	MAX	7.68	2900	290	23	4.2	< 2	22	0.18	< 0.05	0.02	36	< 1	730	460	110	0.03	0.017	<0.1	1.7	<0.01	0.53
	12/7/2015	MAX	7.84	2500	280	22	4	< 2	< 4	0.16	< 0.05	< 0.02	31	< 1	560	410	96	0.04	0.011	<0.1	1.8	<0.01	0.73
	6/23/2016	MAX																					
	6/24/2016	MAX	7.96	3900	260	21	3.7	< 2	7.8	0.13	< 0.05	< 0.02	39	< 1	1100	390	96	0.17	0.019	<0.1	1.4	<0.01	0.21
	12/5/2016	MAX	7.85	2900	310	17	3.6	< 2	10	0.13	< 0.05	< 0.02	39	< 1	670	490	86	0.06	0.018	<0.1	1.1	0.015	0.2

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AECOM

	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L	NO2 mg/L	NO3 mg/L
Monitor	2/11/1997	WBL	7.55			26.4	3.58	0.87	17	0.25	< 0.01	< 0.011	32.4	< 0.72	16.3	68.8	111	0.036	0.038	<0.028	0.037		
6a-96	3/26/1997	WBL	7.76	1430	237	35.4	4.36	< 0.34		<0.07	< 0.01	< 0.011	32.7	< 0.72	312	83.9	130	0.033	0.022	<0.028	0.051		
Bedrock	6/25/1997	WBL	7.76	1640	238	30	4.74	0.36	< 7	<0.07	< 0.01	< 0.011	33.4	< 0.72	312	136	104	0.026	0.028	<0.028	0.049		
	10/1/1997	WBL	7.26	1690	420	37.1	16.4	1.44	10	0.23	< 0.01	< 0.011	43.1	< 0.72	216	134	158	0.021	0.056	0.035	0.154		
	12/11/1997	WBL	7.63	1700	261	33	5.53	< 0.34	15	0.22	< 0.01	< 0.011	38.3	< 0.72	333	176	116	0.016	0.021	<0.028	0.03		14.8
	3/31/1998	WBL	7.56	1290	246	29.1	4.87	< 0.34			< 0.019		32.9	< 0.72	199	70	133	0.02	0.021	<0.011	0.029		16.7
	6/24/1998	WBL	7.61	1480	239	31.5	4.76	0.66			< 0.019		31	< 0.72	270	122	121	0.041	0.024	<0.006	0.049		13
	10/2/1998	CAN	7.6	1500	260	33	4.8	2	8	0.24	< 0.1	0.02	33	< 1	250	130	110	<0.05	<0.05		0.04		16
	12/3/1998	CAN	7.5	1600	250	33	5	< 2	< 5	0.11	< 0.1	0.12	30	< 2	280	120	110	<0.05	<0.05		0.07		12
	6/29/1999	Barr	8.19	1210	252	33.5	5	0.9	10	0.24	0.03	0.003	32.3		261	111	112	<0.01	<0.01	<0.1	0.043		
	12/9/1999	Barr	7.61	1344	260	31.1	4.3	0.7	11	0.14	0.02	0.006	30	< 1	208	129	101	<0.01	0.02	<0.1	0.07		
	6/21/2000	Philip	7.52	1157	292	32	4	1.2	8	0.36	< 0.03	< 0.002	33.7	< 1	202	99.8	114	<0.03	<0.005	<0.05	0.039		
	12/7/2000	Philip	7.74	1116	288	28.3	3.5	0.5	9	0.35	< 0.03	< 0.002	32.4	< 1	194	97.3	94.6	<0.03	0.014		0.034		
	6/27/2001	Philip	7.73	1165	290	31.1	3	1.7	5	0.13	< 0.03	0.004	40	< 1	192	96	110	<0.01	0.06	<0.1	0.25		
	12/3/2001	Philip	7.91	1232	286	30.7	2.7	< 0.5	< 5	0.12	< 0.03	0.005	36.4	< 1	206	104	106	<0.01	0.05	<0.1	0.099		
	6/4/2002	Philip	8.14	1051	278	30	3	0.7	6	0.44	< 0.03	0.005	33.8	< 1	158	78.9	107	<0.01	0.02	<0.1	0.033		
	12/3/2002	Philip	7.85	1143	271	29.3	4	< 0.5	8	0.41	< 0.03	0.012	33.9	< 1	179	99.2	106	<0.01	0.01	<0.1	0.039		
	6/2/2003	Philip	7.58	1191	277	32.1	3	< 0.5	7	0.4	< 0.03	< 0.001	46.8	6	171	83.1	116	<0.01	0.01		0.035		
	12/1/2003	Philip	8.09	1098	277	31.1	2	0.8	10	0.29	< 0.03	0.004	39	< 1	167	79.4	111	<0.01	0.02	<0.1	0.035		
	6/9/2004	Philip	7.77	1029	248	28.3	2.9	< 0.5	< 5	0.18	< 0.03	0.004	34.8	< 1	164	74.5	125	0.08	0.01		0.404	<0.2	16.1
	11/30/2004	Philip	7.78	1463	253	37	3	< 0.5	8	0.24	0.05	0.004	38.3	< 1	345	115	137	<0.01	0.02		0.034		
	8/3/2005	Maxx	8.02	1350	235	38	2.8	< 2	5	0.3	< 0.05	< 0.02	34	< 1	233	130	130	<0.05	0.012	0.07	0.029		
	11/28/2005	Maxx	8.08	1510	252	40		< 2	8	0.9	< 0.05	< 0.02	42	< 1	256	140	140	<0.05	0.016	<0.05	0.036		
	6/1/2006	MAX	8.1	1510	264	35	2.7	< 2	7	0.3	< 0.05	0.04	39	1	228	130	120	<0.02	0.018	<0.05	0.036		
	12/4/2006	MAX	7.9	1620	273	42	3.2	< 2	6	<0.1	0.09	0.02	56	< 1	210	140	150	<0.02	0.019	<0.05	0.042		
	3/30/2007	MAX	8.1	1530	270	34	3.1	< 2	5	0.3	0.15	< 0.02	55	< 1	180	110	130	<0.02	0.021	<0.05	<0.005		
	6/14/2007	MAX	8.2	1330	206	38	3.4	< 2	5	<0.1	0.1	< 0.02	56	< 1	190	130	130	<0.02	0.025	<0.05	0.035		
	12/5/2007	MAX	8	1610	267	38	3.3	< 2	17	0.3	< 0.05	< 0.02	46	< 1	230	140	140	<0.02	0.015	<0.1	0.037	<0.2	34
	6/25/2008	MAX	8.2	1660	257	32	3.1		< 4	0.4	0.09	< 0.02	42	< 1	280	160	120	0.04	0.021	<0.1	0.036	<0.1	26
	12/9/2008	MAX	8	1740	268	38	3.6	< 2	9	<0.1	0.09	< 0.02	54	< 1	260	150	140	<0.02	0.02	<0.1	0.042	<0.01	37
	6/25/2009	MAX	7.9	1700	273	39	4.4	< 2	5	0.1	< 0.05	< 0.02	50	< 1	240	160	150	<0.02	0.03	<0.1	0.039	<0.01	46
	12/15/2009	MAX	7.8	1520	280	33	3.9	< 2	4	0.2	< 0.05	0.04	41	< 1	220	140	120	<0.02	0.03	<0.1	0.039	<0.01	22
	6/23/2010	MAX	8	1340	277	28	3.4	< 2	< 4	0.4	< 0.05	< 0.02	37	< 1	200	130	110	<0.02	0.027	<0.1	0.029	<0.01	12
	12/20/2010	MAX	7.86	1340	279	28	2.9	< 2	5	0.2	< 0.05	< 0.02	33	< 1	210	130	110	0.06	0.021	<0.1	0.035	<0.01	6.8
	6/14/2011	MAX	7.94	1300	276	28	3	< 2	8	0.3	< 0.05	< 0.02	35	< 1	190	140	100	<0.02	0.028	<0.1	0.031	<0.01	8.4
	12/13/2011	MAX	8.01	1220	269	26	3	< 2	5	0.2	< 0.05	0.04	34	< 1	160	120	98	<0.02	0.016	<0.1	0.038	<0.01	7.5
	6/18/2012	MAX	7.91	1100	280	23	2.8	< 2	9.2	0.39	< 0.05	< 0.02	35	1.1	140	100	89	<0.02	0.021	<0.1	0.027	<0.01	5.9
	12/10/2012	MAX	7.91	1200	290	26	2.9	< 2	< 4	0.45	< 0.05	< 0.02	34	< 1	160	120	100	<0.02	0.019	<0.1	0.03	<0.01	4.9
	6/17/2013	MAX	8	1100	280	23	2.5	< 2	4	0.21	< 0.05	< 1	34	< 1	150	100	89	<0.02	0.024	<0.1	0.025	<0.01	4.8
	12/2/2013	MAX	7.84	1200	290	27	3.2	< 2	7.1	0.35	< 0.05	< 0.02	39	< 1	160	110	100	<0.02	0.024	<0.1	0.029	<0.01	5.2
	5/21/2014	MAX	7.88	1200	290	26	3.6	< 2	< 4	0.18	< 0.05	< 0.04	38	< 1	160	110	110	<0.02	0.024	<0.1	0.031	<0.01	5.31
	12/2/2014	MAX	7.93	1300	280	25	3.7	< 2	< 4	0.33	< 0.05	< 0.02	34	< 1	180	120	100	0.03	0.029	<0.1	0.029	<0.01	4.55
	6/16/2015	MAX	7.79	1400	290	28	2.9	< 2	4.5	0.55	< 0.05	0.02	35	< 1	230	140	110	0.05	0.029	<0.1	0.035	<0.01	3.7
	12/2/2015	MAX	7.86	1400	270	24	2.6	< 2	6.9	0.38	0.1	0.021	37	< 1	220	140	98	0.15	0.026	<0.1	0.03	<0.01	2.8
	6/23/2016	MAX	8.06	1300	260	24	2.5	< 2	5.3	0.16	< 0.05	< 0.02	38	< 1	200	120	98	<0.02	0.024	<0.1	0.03	<0.01	2.53
	12/1/2016	MAX				26	2.7									130	100		0.02	<0.1	0.03		
	12/2/2016	MAX	7.92	1300	270			2	< 4	<0.1	< 0.05	< 0.02	42	< 1	210			<0.02				<0.01	2.65

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AECOM

	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L	NO2 mg/L	NO3 mg/L
Monitor	2/11/1997	WBL	7.39			42.2	15.3	0.42	22	0.18	0.055	< 0.011	44.3	< 0.72	621	322	167	0.038	0.045	<0.028	0.073		
6b-96	3/26/1997	WBL	7.73	3260	260	35.2	16.3	< 0.34		0.09	< 0.01	< 0.011	44.1	< 0.72	815	467	146	0.073	0.062	<0.028	0.1		
Outwash	6/25/1997	WBL	7.58	2210	323	34.8	15	0.51	< 7	<0.07	< 0.01	< 0.011	45	< 0.72	440	198	125	0.033	0.047	<0.028	0.139		
	10/1/1997	WBL	7.65	1740	246	36.2	5.36	4.19	56	<0.07	< 0.01	< 0.011	35.8	< 0.72	341	164	128	0.019	0.02	0.035	0.041		
	12/11/1997	WBL	7.33	1200	333	30.6	13.1	0.75	17	0.17	< 0.01	< 0.011	39.7	< 0.72	128	80.5	120	0.145	0.046	<0.028	0.09		14
	3/31/1998	WBL	7.43	2770	270	28.8	12.6	< 0.34			< 0.019		50.9	< 0.72	649	289	168	0.113	0.029	<0.011	0.083		17.3
	6/24/1998	WBL	7.34	1860	308	35.5	15.4	0.48			0.047		43	< 0.72	279	159	163	0.017	0.078	<0.006	0.151		43.5
	10/2/1998	CAN	7.3	1500	410	45	15	< 2	< 5	0.34	< 0.1	< 0.02	40	< 1	150	92	160	<0.05	0.05		0.14		37
	12/3/1998	CAN	7.3	1300	390	35	12	< 2	< 5	<0.1	< 0.1	0.11	35	< 2	120	75	120	<0.05	<0.05		0.1		15
	6/29/1999	Barr	8.01	1550	327	34.3	11	1.9	11	0.29	< 0.02	0.003	44.4		338	189	125	0.01	0.03	<0.1	0.098		
	12/9/1999	Barr	7.32	1378	332	32.1	10.5	0.6	17	0.54	0.05	0.002	38	< 1	155	122	121	<0.01	0.04	<0.1	0.108		
	6/21/2000	Philip	7.36	1639	306	31	18	< 0.5	13	3.16	2.84	< 0.002	48.8	< 1	313	182	130	<0.03	0.03	<0.05	0.099		
	12/7/2000	Philip	7.48	1137	352	32.9	10.2	2.5	11	0.44	0.09	< 0.002	43.7	< 1	163	78.3	113	<0.03	0.04		0.104		
	6/27/2001	Philip	7.59	1580	339	30.2	10	1.9	< 5	0.28	< 0.03	0.005	43	< 1	265	188	114	<0.01	0.07	<0.1	0.258		
	12/3/2001	Philip	7.79	1531	379	28.6	8.9	< 0.5	11	0.42	< 0.03	0.008	56.7	< 1	252	161	116	<0.01	0.06	<0.1	0.141		
	6/4/2002	Philip	8.2	1769	317	32.7	10	0.6	12	0.59	< 0.03	0.015	46.1	< 1	390	223	129	0.01	0.04	<0.1	0.177		
	12/3/2002	Philip	7.85	974	310	25.8	9	< 0.5	14	0.77	< 0.03	0.009	34.7	< 1	97	77.2	95	<0.01	0.03	<0.1	0.063		
	6/2/2003	Philip	7.69	1538	270	25.8	7	0.7	10	0.37	0.1	< 0.001	41.9	11	350	225	101	<0.01	0.03		0.068		
	12/1/2003	Philip	7.96	1407	309	22.5	6.9	0.8	5	0.42	< 0.03	0.004	38.6	< 1	278	179	107	0.03	0.03	<0.1	0.242		
	6/9/2004	Philip	7.54	1871	314	40.4	10.2	< 0.5	8	0.3	< 0.03	0.003	65.2	< 1	412	214	217	0.21	0.04		1.31	<0.2	40.3
	11/30/2004	Philip	7.76	791	290	20.5	6	< 0.5	13	0.6	< 0.03	0.004	23.4	< 1	90.3	53.1	85.9	<0.01	0.02		0.054		
	8/3/2005	Maxx	7.86	1920	347	39	13	< 2	13	0.7	< 0.05	< 0.02	49	< 1	297	210	160	<0.05	0.045	<0.05	0.11		
	11/28/2005	Maxx	8.19	1190	348	26		< 2	11	0.2	< 0.05	< 0.02	35	< 1	120	110	110	<0.05	0.039	<0.05	0.067		
	6/1/2006	MAX	8	2060	342	35	11	< 2	8	0.5	< 0.05	0.08	44	< 1	340	250	140	<0.02	0.045	<0.05	0.088		
	12/4/2006	MAX	8.1	1420	412	24	8.6	< 2	7	0.6	0.09	< 0.02	44	< 1	170	180	99	<0.02	0.04	<0.05	0.066		
	3/30/2007	MAX	7.9	2440	356	31	9.2	8	12	0.8	0.11	< 0.02	54	< 1	460	280	120	<0.02	0.034	<0.05	<0.005		
	6/14/2007	MAX	8	1820	344	36	11	< 2	9	0.3	0.09	< 0.02	55	< 1	240	230	140	<0.02	0.05	<0.05	0.09		
	12/5/2007	MAX	8.1	1450	282	29	11	< 2	17	0.4	< 0.05	< 0.02	44	< 1	240	130	120	<0.02	0.041	<0.1	0.068	<0.01	8.3
	6/25/2008	MAX	8.1	2480	308	47	14		15	0.6	0.13	< 0.02	63	< 1	420	280	190	<0.02	0.047	<0.1	0.12	<0.1	76
	12/9/2008	MAX	8	1840	309	33	12	< 2	11	0.4	0.12	0.05	51	< 1	280	190	130	<0.02	0.034	<0.1	0.085	0.01	33
	6/25/2009	MAX	7.9	2030	320	30	11	< 2	6	0.3	< 0.05	< 0.02	46	< 1	370	280	120	<0.02	0.049	<0.1	0.08	<0.01	23
	12/15/2009	MAX	7.8	1380	307	30	11	< 2	< 4	0.6	0.19	0.03	45	< 1	170	130	120	<0.02	0.04	<0.1	0.068	<0.01	22
	6/23/2010	MAX	8	1300	302	22	8.1	< 2	< 4	0.5	< 0.05	< 0.02	36	< 1	190	140	90	<0.02	0.035	<0.1	0.064	<0.01	12
	12/20/2010	MAX	7.82	1080	283	22	8.3	< 2	6	0.3	< 0.05	< 0.02	33	< 1	130	94	96	<0.02	0.027	<0.1	0.059	<0.01	11
	6/14/2011	MAX	7.91	1650	313	22	7.7	< 2	16	0.4	< 0.05	< 0.02	36	< 1	270	240	93	<0.02	0.036	0.11	0.057	<0.01	6.1
	12/13/2011	MAX	8.01	1380	326	24	9.1	< 2	13	0.8	< 0.05	0.12	38	< 1	180	160	95	2	0.024	<0.1	0.067	<0.01	5.3
	6/18/2012	MAX	7.9	1500	350	22	7.6	< 2	10	0.38	< 0.05	0.027	39	< 1	230	190	95	0.12	0.029	<0.1	0.063	<0.01	5.6
	12/10/2012	MAX	7.84	1200	310	21	7.6	< 2	16	1.1	< 0.05	0.12	22	1.2	160	130	94	2.4	0.023	<0.1	0.06	<0.01	2.9
	6/17/2013	MAX	7.88	1900	330	26	8.7	< 2	4.6	0.81	0.4	0.044	73	< 1	330	230	110	0.1	0.036	<0.1	0.078	0.018	6.8
	12/2/2013	MAX	7.79	1400	310	23	7.4	2	22	0.86	0.15	0.026	44	< 1	220	170	110	<0.02	0.03	<0.1	0.073	0.048	5.3
	5/21/2014	MAX	7.88	2100	330	23	6.2	< 2	9.7	0.38	< 0.05	0.052	41	< 1	410	310	110	<0.02	0.027	<0.1	0.081	<0.01	7.18
	12/2/2014	MAX	7.78	1900	330	28	8.4	2	14	1.4	0.063	0.059	40	< 1	350	210	130	0.21	0.042	<0.1	0.086	0.013	5.69
	6/16/2015	MAX	7.75	1600	320	23	7	< 2	5.4	0.67	< 0.05	0.025	39	< 1	280	210	110	0.26	0.039	<0.1	0.076	<0.01	4.28
	12/2/2015	MAX	7.81	1200	290	22	7.3	< 2	8.5	0.33	< 0.05	0.048	36	< 1	140	100	93	0.18	0.035	<0.1	0.065	<0.01	3.48
	6/23/2016	MAX	7.99	2000	320	29	7.4	< 2	7.4	0.6	< 0.05	< 0.02	38	< 1	380	220	130	0.22	0.037	<0.1	0.088	<0.01	4.66
	12/1/2016	MAX				20	6.6									79	84		0.034	<0.1	0.058		
	12/2/2016	MAX	7.93	1000	300			< 2	< 4	0.15	< 0.05	< 0.02	31	< 1	120			0.12				<0.01	2.89

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AECOM

	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L	NO2 mg/L	NO3 mg/L
Monitor	2/11/1997	WBL	7.7			26.2	12.6	< 0.34	24	<0.07	< 0.01	< 0.011	35.2	2.48	132	63.5	90.1	0.053	0.048	<0.028	0.05		
7-96	3/26/1997	WBL	7.7	1180	256	32.5	14	< 0.34		<0.07	< 0.01	< 0.011	35.5	< 0.72	131	80.6	104	0.071	0.074	<0.028	0.084		
Outwash	6/25/1997	WBL	7.8	992	250	29.6	9.65	0.69	< 7	0.08	< 0.01	< 0.011	35.2	< 0.72	66.4	33.7	95.1	0.03	0.039	<0.028	0.11		
	10/1/1997	WBL	7.57	902	251	33.2	10.2	1.44	< 7	0.1	< 0.01	< 0.011	35.7	< 0.72	54.3	28.7	110	0.039	0.056	<0.028	0.082		24.6
	12/11/1997	WBL	7.52	906	248	31.8	10.1	< 0.34	< 7	0.25	< 0.01	< 0.011	36.3	< 0.72	62.1	30	105	0.168	0.055	<0.028	0.084		23
	3/31/1998	WBL	7.55	1120	224	32.4	9.06	< 0.34			< 0.019		43	< 0.72	92.4	36.8	127	0.092	0.038	<0.011	0.088		43.1
	6/24/1998	WBL	7.77	1200	226	34.9	9.49	0.78			< 0.019		41.3	< 0.72	89.8	38.8	141	0.058	0.056	<0.006	0.115		53.5
	10/2/1998	CAN	7.4	1100	280	38	11	3	10	0.27	< 0.1	< 0.02	46	< 1	74	35	130	<0.05	<0.05		0.12		41
	12/3/1998	CAN	7.5	1200	310	39	11	< 2	< 5	0.36	< 0.1	0.1	41	< 2	72	32	130	<0.05	<0.05		0.13		37
	6/29/1999	Barr	8.15	1325	248	41	12	2.2	10	0.21	< 0.02	0.003	58.4		282	110	132	<0.01	0.03	<0.1	0.122		
	12/9/1999	Barr	7.39	1478	293	45.4	14.1	0.8	13	0.2	< 0.02	< 0.002	41	< 1	231	91.1	135	<0.01	0.05	0.1	0.153		
	6/21/2000	Philip	7.44	1775	255	48.8	13.9	0.6	12	0.54	< 0.03	< 0.002	80.9	< 1	397	172	157	<0.03	0.035	<0.05	0.144		
	12/7/2000	Philip	7.5	1430	321	41	13.2	16	12	0.3	0.05	< 0.002	75.8	< 1	227	118	135	<0.03	0.102		0.297		
	6/27/2001	Philip	7.72	1768	293	44.4	13	1.7	6	0.34	< 0.03	0.006	105	< 1	307	176	144	<0.01	0.09	<0.1	0.246		
	12/3/2001	Philip	7.73	1259	365	36.2	11.8	< 0.5	7	0.41	< 0.03	0.004	48.7	< 1	162	87.8	124	<0.01	0.05	<0.1	0.151		
	6/4/2002	Philip	8.04	1863	328	46.1	20	< 0.5	11	0.77	0.42	0.006	110	< 1	378	201	146	<0.01	0.07	<0.1	0.182		
	12/3/2002	Philip	7.92	1681	350	44.9	27	< 0.5	16	1.03	1.11	0.012	70.9	< 1	244	145	152	<0.01	0.07	<0.1	0.173		
	6/2/2003	Philip	7.52	2122	298	52.7	23	< 0.5	11	0.99	0.41	0.002	131	12	380	212	167	<0.01	0.06		0.199		
	12/1/2003	Philip	8	1206	303	36.9	16.3	1.3	12	0.41	< 0.03	0.003	61.1	< 1	178	86.6	118	<0.01	0.05	<0.1	0.147		
	6/8/2004	Philip	7.48	1995	336	51.6	22	0.8	13	0.57	< 0.03	0.002	129	< 1	370	196	226	0.19	0.07		0.859	<0.2	55.4
	11/30/2004	Philip	7.71	1705	368	40.5	20	< 0.5	15	0.75	0.12	0.003	107	< 1	296	158	150	<0.01	0.07		0.202		
	8/3/2005	Maxx	7.95	1800	325	51	19	< 2	22	1.5	0.12	< 0.02	86	< 1	190	140	180	<0.05	0.086	0.067	0.23		
	11/28/2005	Maxx	8.07	2140	378	52		< 2	10	1	< 0.05	< 0.02	112	< 1	258	180	200	<0.05	0.093	<0.05	0.27		
	6/1/2006	MAX	8	1910	306	44	16	< 2	12	0.7	< 0.05	0.04	113	< 1	186	120	170	<0.02	0.099	<0.05	0.24		
	12/4/2006	MAX	7.9	1610	315	40	17	< 2	7	0.7	0.09	< 0.02	83	1	150	100	170	<0.02	0.092	<0.05	0.22		
	3/30/2007	MAX	8.1	1650	276	45	16	< 2	12	<0.1	0.08	< 0.02	65	< 1	160	100	180	<0.02	0.06	<0.05	0.23		
	6/14/2007	MAX	8	1370	278	39	15	< 2	8	0.1	0.09	< 0.02	70	< 1	140	110	140	<0.02	0.058	<0.05	0.18		
	12/5/2007	MAX	8	1310	289	36	15	< 2	20	0.5	0.06	< 0.02	57	< 1	100	72	150	<0.02	0.048	<0.1	0.2	<0.2	44
	6/25/2008	MAX	8.1	1810	284	37	14		9	0.6	0.06	< 0.02	83	< 1	240	150	140	<0.02	0.065	<0.1	0.21	<0.1	54
	12/9/2008	MAX	7.9	1470	289	35	14	< 2	8	0.6	< 0.05	< 0.02	58	< 1	170	110	130	<0.02	0.062	<0.1	0.19	0.02	41
	6/25/2009	MAX	7.8	1400	318	33	11	< 2	< 4	0.6	< 0.05	< 0.02	56	< 1	190	130	120	<0.02	0.042	<0.1	0.17	<0.01	21
	12/15/2009	MAX	7.8	1130	298	28	12	< 2	5	0.4	< 0.05	0.03	40	< 1	120	89	100	<0.02	0.052	<0.1	0.15	<0.01	15
	6/24/2010	MAX	8	1380	331	36	12	< 2	4	0.5	< 0.05	< 0.02	51	< 1	180	100	130	<0.02	0.039	<0.1	0.19	<0.01	21
	12/17/2010	MAX	7.73	1030	278	29	11	< 2	12	0.3	< 0.05	< 0.02	41	< 1	84	73	110	<0.02	0.05	<0.1	0.17	<0.01	23
	6/14/2011	MAX	7.85	1740	316	36	11	< 2	16	0.6	< 0.05	< 0.02	60	< 1	270	190	130	<0.02	0.039	<0.1	0.16	<0.01	18
	12/14/2011	MAX	8.02	1190	333	30	11	< 2	5	0.4	< 0.05	0.05	46	< 1	110	93	110	0.81	0.036	<0.1	0.22	<0.01	16
	6/18/2012	MAX	7.88	1200	310	28	9.5	< 2	15	0.66	< 0.05	0.034	44	1	120	91	100	1.7	0.034	<0.1	0.17	<0.01	12
	12/10/2012	MAX	7.88	1100	330	28	11	< 2	7.7	0.54	< 0.05	< 0.02	46	< 1	110	86	110	0.08	0.04	<0.1	0.2	<0.01	8.6
	6/19/2013	MAX	8.12	1100	300	26	8.5	< 2	4.8	0.28	< 0.05	< 0.02	41	< 1	130	80	100	0.74	0.037	<0.1	0.19	<0.01	6.8
	12/3/2013	MAX	7.73	1000	320	27	11	< 2	11	0.52	0.064	< 0.02	34	< 1	110	73	100	<0.02	0.047	<0.1	0.11	<0.01	5.3
	5/26/2014	MAX	7.74	1400	300	30	9.7	< 2	18	0.48	< 0.05	< 0.04	42	< 1	190	120	110	<0.02	0.037	<0.1	0.17	<0.01	5.87
	12/3/2014	MAX	7.88	1100	290	28	10	< 2	< 4	0.4	< 0.05	< 0.02	37	< 1	140	81	110	<0.02	0.047	<0.1	0.2	<0.01	4.93
	6/22/2015	MAX	7.76	1000	290	26	7.8	< 2	21	0.65	< 0.05	< 0.02	36	< 1	130	70	97	0.22	0.035	<0.1	0.16	<0.01	4.54
	12/7/2015	MAX	7.73	1100	300	29	9	< 2	< 4	0.4	< 0.05	0.024	35	< 1	140	78	110	0.22	0.031	<0.1	0.17	<0.01	3.88
	6/22/2016	MAX	7.98	1200	290	27	7.9	< 2	4.1	0.17	< 0.05	< 0.02	37	< 1	170	120	100	0.09	0.034	<0.1	0.14	<0.01	4.42
	11/30/2016	MAX	7.77	1200	300	26	8.2	< 2	< 4	<0.2	< 0.05	< 0.02	34	< 1	150	87	110	0.2	0.042	<0.1	0.2	<0.01	4.89

Routine Groundwater Quality - General Analysis -Guelph WRIC & Waste Transfer Station

AECOM

	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L	NO2 mg/L	NO3 mg/L
Monitor	2/11/1997	WBL	7.78			39.9	2.08	< 0.34	28	0.21	< 0.01	0.034	73.5	< 0.72	33	19.3	94.9	0.054	0.051	<0.028	0.024		
8-96	3/27/1997	WBL	7.77	864	302	36.9	1.73	< 0.34	46	0.3	< 0.01	< 0.011	53.9	< 0.72	49.8	18.8	107	0.011	0.032	<0.028	0.673		
Bedrock	6/25/1997	WBL	7.84	882	308	33.6	1.77	< 0.34	< 7	<0.07	0.018	< 0.011	60.8	< 0.72	40.9	17.6	92	0.017	0.052	<0.028	0.543		
	10/1/1997	WBL	7.45	838	321	37.1	1.9	0.51	51	0.2	< 0.01	< 0.011	66.2	< 0.72	37.2	19.3	111	0.021	0.021	<0.028	0.502		
	12/11/1997	WBL	7.61	880	297	37.7	1.99	< 0.34	< 7	0.34	< 0.01	< 0.011	75.2	< 0.72	55.4	21	105	0.063	0.025	<0.028	0.69		5.16
	3/31/1998	WBL	7.41	997	288	33.4	2.05	1.72			< 0.019		65.6	< 0.72	102	32.9	116	0.013	0.022	<0.011	0.535		3.94
	6/24/1998	WBL	7.5	890	309	32.1	1.78	0.75			< 0.019		59.6	< 0.72	58.4	30.1	107	0.057	<0.016	<0.006	0.632		5.23
	10/2/1998	CAN	7.4	890	320	38	2.2	< 2	< 5	0.3	< 0.1	< 0.02	73	< 1	57	31	110	<0.05	<0.05		0.84		4.8
	12/3/1998	CAN	7.4	910	310	36	2.2	< 2	< 5	0.48	< 0.1	0.12	72	< 2	60	28	99	<0.05	<0.05		0.83		2.6
	6/29/1999	Barr	8.23	976	282	40.1	3	1.7	12	0.19	< 0.02	0.003	68.2		146	67.7	109	<0.01	<0.01	<0.1	0.751		
	12/9/1999	Barr	7.46	1358	287	43.4	2.8	0.9	9	0.49	0.03	0.004	64	< 1	207	103	114	<0.01	0.01	<0.1	0.896		
	6/21/2000	Philip	7.43	1212	264	38.9	2.4	< 0.5	6	0.25	< 0.03	< 0.002	64.4	< 1	233	107	111	<0.03	<0.005	<0.05	0.89		
	12/7/2000	Philip	7.6	942	320	34.6	2	1.3	13	0.25	0.04	< 0.002	63.7	< 1	125	59.2	94.6	<0.03	0.059		1.01		
	6/27/2001	Philip	7.76	1019	317	36.3	2	1.6	< 5	0.27	0.03	0.037	63	< 1	139	76.1	105	0.02	0.05	<0.1	1.11		
	12/3/2001	Philip	7.66	1329	356	36	2.3	1.1	< 5	0.2	< 0.03	0.005	50	< 1	225	93.9	103	<0.01	0.05	<0.1	1.02		
	6/4/2002	Philip	8.43	1024	302	35.1	3	< 0.5	12	0.75	< 0.03	0.008	56.5	< 1	138	74.1	102	<0.01	0.01	<0.1	0.867		
	12/3/2002	Philip	7.97	1002	309	35.8	3	< 0.5	6	0.31	< 0.03	0.004	59.4	< 1	118	65.5	101	<0.01	0.01	<0.1	0.871		
	6/2/2003	Philip	7.47	1622	276	39.9	3	< 0.5	7	0.41	< 0.03	< 0.001	55.1	9	332	171	116	<0.01	0.01		1.08		
	12/1/2003	Philip	7.85	1262	285	35.6	3.1	1	9	0.4	< 0.03	0.003	53.8	< 1	254	124	104	<0.01	0.02	<0.1	1.05		
	6/8/2004	Philip	7.6	1036	292	35.3	1.8	< 0.5	6	0.2	< 0.03	0.003	58.4	< 1	159	80.6	123	0.11	0.01		1.43	<0.2	3.9
	11/30/2004	Philip	7.8	981	309	33.4	3	< 0.5	17	0.7	< 0.03	0.006	58.4	< 1	121	66.2	96.3	<0.01	<0.01		0.919		
	8/3/2005	Maxx	8.15	888	298	36	2.5	< 2	22	1.2	< 0.05	< 0.02	47	< 1	98	71	92	<0.05	0.019	0.069	0.7		
	11/28/2005	Maxx	8.05	997	320	37		< 2	6	0.6	< 0.05	< 0.02	54	< 1	99	66	110	<0.05	0.015	<0.05	1		
	6/1/2006	MAX	8.1	1040	314	32	2.3	< 2	11	0.5	< 0.05	< 0.02	50	< 1	129	67	87	<0.02	0.013	<0.05	0.94		
	12/4/2006	MAX	8.1	976	327	35	2.8	< 2	< 4	0.4	< 0.05	< 0.02	50	< 1	99	62	99	<0.02	0.014	<0.05	1.1		
	3/30/2007	MAX	8.2	1030	308	36	2.6	< 2	5	0.4	0.08	< 0.02	55	< 1	120	71	100	<0.02	0.02	<0.05	1.1		
	6/14/2007	MAX	8.1	1010	303	40	2.7	< 2	5	0.5	0.11	< 0.02	54	< 1	110	79	100	<0.02	0.015	<0.05	1.1		
	12/5/2007	MAX	8	1130	306	37	2.8	< 2	12	0.2	< 0.05	< 0.02	62	< 1	150	68	110	<0.02	0.011	<0.1	1.2	<0.01	1.9
	6/25/2008	MAX	8.1	1050	291	37	2.8		15	0.5	0.12	< 0.02	52	< 1	130	81	100	<0.02	<0.01	<0.1	1.2	<0.01	1.2
	12/9/2008	MAX	8	997	310	33	2.5	< 2	4	0.3	< 0.05	< 0.02	56	< 1	110	59	91	<0.02	0.012	<0.1	1.1	<0.01	1
	6/25/2009	MAX	7.8	943	298	32	2.3	< 2	4	0.3	< 0.05	< 0.02	54	< 1	97	61	90	<0.02	0.013	<0.1	1	<0.01	1.1
	12/16/2009	MAX	7.7	1010	312	35	2.5	< 2	8	0.3	< 0.05	0.02	46	< 1	110	62	97	<0.02	0.015	<0.1	1.1	<0.01	1.1
	6/24/2010	MAX	8	960	292	33	2.3	< 2	< 4	0.4	< 0.05	< 0.02	50	< 1	110	63	93	<0.02	0.013	<0.1	0.97	<0.01	1.1
	12/22/2010	MAX	7.73	953	304	35	2.6	< 2	< 4	0.3	< 0.05	< 0.02	43	< 1	95	64	97	<0.02	0.014	<0.1	1.1	<0.01	0.8
	6/15/2011	MAX	7.9	1030	282	33	2.5	< 2	14	0.3	< 0.05	< 0.02	56	< 1	140	79	91	<0.02	0.015	<0.1	1.1	<0.01	0.6
	12/14/2011	MAX	7.99	1000	296	32	2.7	< 2	< 4	0.3	< 0.05	0.02	38	< 1	110	73	91	<0.02	<0.01	<0.1	1.4	<0.01	0.5
	6/18/2012	MAX	7.9	960	290	31	2.2	< 2	10	0.43	< 0.05	< 0.02	44	< 1	100	62	89	0.21	<0.01	<0.1	0.76	<0.01	0.33
	12/10/2012	MAX	7.77	920	300	32	2.4	< 2	7	0.57	< 0.05	< 0.02	47	< 1	88	59	92	0.08	<0.01	<0.1	0.99	<0.01	0.44
	6/20/2013	MAX	8.37	960	290	33	2.4	< 2	5.8	0.34	< 0.05	< 0.02	44	< 1	100	66	97	0.14	0.016	<0.1	0.92	<0.01	0.28
	12/3/2013	MAX	7.74	910	300	32	2.5	< 2	6.1	0.24	< 0.05	< 0.02	38	< 1	93	60	87	<0.02	0.016	<0.1	1.1	<0.01	0.31
	5/26/2014	MAX	7.83	900	290	32	2.2	< 2	< 4	0.16	< 0.05	< 0.04	39	< 1	92	57	90	<0.02	0.013	<0.1	0.97	<0.01	0.37
	12/3/2014	MAX	7.99	900	290	30	2.4	< 2	< 4	0.19	0.051	< 0.02	39	< 1	93	59	87	<0.02	0.021	<0.1	0.94	<0.01	0.4
	6/22/2015	MAX	7.76	1100	300	33	2.3	< 2	9	0.16	< 0.05	< 0.02	39	< 1	140	76	93	0.06	0.015	<0.1	0.97	<0.01	0.35
	12/7/2015	MAX	7.87	1100	280	34	2.4	< 2	< 4	0.14	< 0.05	< 0.02	37	< 1	140	81	95	0.03	<0.01	<0.1	1	<0.01	0.39
	6/24/2016	MAX	7.86	1000	290	32	2.2	< 2	8.5	0.16	< 0.05	< 0.02	39	< 1	130	75	93	0.05	0.012	<0.1	0.9	<0.01	0.3
	12/5/2016	MAX	7.87	1000	300	31	2.4	< 2	7.6	0.12	< 0.05	< 0.02	37	< 1	120	70	89	0.1	0.016	<0.1	0.96	<0.01	0.31

Routine Groundwater Quality - General Analysis -Guelph WRIC & Waste Transfer Station

AECOM

	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L	NO2 mg/L	NO3 mg/L
Monitor	2/11/1997	WBL	7.81			16.4	0.99	0.69	7	0.19	< 0.01	< 0.011	17.6	2.23	7.17	4.37	61.6	0.124	0.021	<0.028	0.008		
9-96	3/26/1997	WBL	8.04	474	186	18.7	0.86	< 0.34	14	0.24	< 0.01	< 0.011	23.4	< 0.72	6.34	7.96	68.6	0.074	0.036	<0.028	0.027		
Outwash	6/25/1997	WBL	8.01	582	205	20.7	0.95	< 0.34	< 7	<0.07	< 0.01	< 0.011	26.7	< 0.72	6.93	7.38	71	0.031	0.031	<0.028	0.018		
	10/1/1997	WBL	7.92	490	179	21.7	0.84	1.2	13	0.1	< 0.01	< 0.011	22.4	< 0.72	9.82	1.68	74.5	0.026	0.018	0.029	0.008		11.4
	12/11/1997	WBL	7.85	488	171	21.8	0.67	< 0.34	< 7	0.22	< 0.01	< 0.011	20.4	< 0.72	13.6	1.48	70.3	0.031	<0.016	0.04	0.005		8.67
	3/31/1998	WBL	8.38	557	195	25.9	0.7	< 0.34			0.019		26.7	< 0.72	13.1	2.2	71.7	0.011	0.03	<0.011	0.005		13
	6/24/1998	WBL	7.79	536	193	21.6	0.78	1.38			< 0.019		26	< 0.72	12.5	2.83	76.2	0.027	0.047	<0.006	0.007		11.6
	10/2/1998	CAN	7.7	610	210	29	< 1	< 2	< 5	0.4	< 0.1	< 0.02	29	< 1	19	2	85	<0.05	<0.05		<0.01		14
	12/3/1998	CAN	7.6	590	230	24	< 1	< 2	< 5	0.31	< 0.1	0.17	23	< 2	11	2.5	79	<0.05	<0.05		0.01		9.9
	6/29/1999	Barr	8.31	528	220	19.6	1	1.2	10	0.21	< 0.02	0.004	24.6		23.3	8.2	79.7	<0.01	0.01	<0.1	<0.005		
	12/9/1999	Barr	7.65	649	251	20.2	< 1	< 0.5	6	0.16	0.06	0.004	17	< 1	31	14.6	93.2	0.01	0.03	<0.1	0.024		
	6/21/2000	Philip	7.71	414	234	14.7	0.8	< 0.5	5	0.28	< 0.03	< 0.002	12.2	< 1	12	8.9	77.4	<0.03	0.013	<0.05	<0.005		
	12/7/2000	Philip	7.91	408	249	15	0.3	1.1	5	0.13	0.04	< 0.002	13.7	< 1	13.5	8.7	69.3	<0.03	0.063		0.169		
	6/27/2001	Philip	7.9	570	248	18.3	< 1	1.7	< 5	0.14	< 0.03	0.004	25	< 1	20	14.2	86	<0.01	0.06	<0.1	0.208		
	12/3/2001	Philip	7.93	482	223	15.3	1.3	0.9	< 5	0.39	< 0.03	0.008	10.8	< 1	15.7	20.2	72	0.03	0.03	<0.1	0.182		
	6/4/2002	Philip	8.08	517	236	16.1	1	< 0.5	5	0.43	< 0.03	0.005	17.1	< 1	21.7	16.7	79.2	0.01	0.05	<0.1	<0.005		
	12/3/2002	Philip	8.08	595	232	20.8	1	< 0.5	5	0.3	< 0.03	0.012	15.8	< 1	33.5	10.9	84.5	<0.01	0.03	<0.1	0.011		
	6/2/2003	Philip	7.76	666	229	20.6	< 1	< 0.5	7	0.45	0.03	< 0.001	11	4	64.1	20.7	90.2	<0.01	0.04		0.011		
	12/1/2003	Philip	8.03	701	236	21.6	< 1	< 0.5	12	0.5	< 0.03	< 0.002	13.4	< 1	83.7	29.2	87	<0.01	0.03	<0.1	0.018		
	6/8/2004	Philip	7.81	591	235	20.1	< 1	0.6	6	0.28	< 0.03	0.002	28.8	< 1	39.7	18.4	89.5	<0.01	0.05		0.072	<0.2	6.4
	11/30/2004	Philip	7.78	671	274	19.9	1	< 0.5	9	0.34	< 0.03	0.003	27.8	< 1	41.2	28.6	87.9	<0.01	0.02		<0.005		
	8/3/2005	Maxx	8.08	584	259	22	1	< 2	13	0.8	< 0.05	< 0.02	24	< 1	9	11	87	<0.05	0.03	0.073	<0.005		
	11/28/2005	Maxx	8.17	714	295	18		< 2	10	0.6	< 0.05	< 0.02	21	< 1	38	34	100	<0.05	0.043	<0.05	0.006		
	6/1/2006	N/A																					
	12/4/2006	MAX	8.1	686	291	22	1.2	< 2	< 4	0.3	0.07	< 0.02	20	< 1	34	27	86	<0.02	0.036	<0.05	0.005		
	3/30/2007	MAX	8.2	691	296	22	1.1	< 2	< 4	0.4	0.06	< 0.02	27	< 1	23	15	81	<0.02	0.039	<0.05	<0.005		
	6/14/2007	MAX	8.1	703	322	30	1.3	< 2	4	0.4	0.09	< 0.02	22	< 1	17	18	100	<0.02	0.045	<0.05	<0.005		
	12/5/2007	MAX	8.1	653	305	26	1	< 2	12	0.3	< 0.05	< 0.02	27	< 1	6	6.7	97	<0.02	0.03	<0.1	<0.005	<0.01	5.3
	6/25/2008	MAX	8.3	738	246	31	1.5		6	0.6	< 0.05	< 0.02	26	< 1	23	14	95	<0.02	0.035	<0.1	0.011	<0.01	6.6
	12/9/2008	MAX	8	700	317	30	1.1	< 2	8	0.5	< 0.05	< 0.02	27	< 1	18	9.7	93	<0.02	0.032	<0.1	0.008	<0.01	5.6
	6/25/2009	MAX	7.9	690	317	29	1.3	< 2	4	0.4	< 0.05	< 0.02	22	< 1	15	13	99	<0.02	0.037	<0.1	0.005	<0.01	5
	12/16/2009	MAX	8	691	348	34	1.2	< 2	8	0.3	< 0.05	< 0.02	23	< 1	5	9.6	100	<0.02	0.037	<0.1	0.006	<0.01	3.9
	6/24/2010	N/A																					
	12/22/2010	N/A																					
	6/15/2011	N/A																					
	12/14/2011	N/A																					
	6/18/2012	NA																					
	7/19/2012	MAX	7.96	290	85	7.5	2.2	< 2	8.6	1.5	0.1	< 0.02	14	< 1	14	19	30	0.39	0.017	<0.1	<0.005	<0.01	6.2
	12/10/2012	MAX	7.48	290	100	6.9	3.9	< 2	< 4	1	< 0.05	< 0.02	19	< 1	13	17	29	0.34	0.012	<0.1	<0.005	<0.01	6.3
	6/18/2013	MAX	7.89	390	130	11	4.1	< 2	8.1	0.16	< 0.05	< 0.02	19	< 1	18	21	41	0.22	0.019	<0.1	<0.005	<0.01	8.3
	12/2/2013	MAX	8.02	450	140	13	6.8	< 2	13	0.3	< 0.05	< 0.02	33	< 1	16	21	44	<0.02	0.02	<0.1	0.034	<0.01	9.2
	5/21/2014	MAX	8.12	490	150	14	8	< 2	< 4	0.35	< 0.05	< 0.02	31	< 1	26	28	50	<0.02	0.021	<0.1	<0.005	<0.01	8.08
	12/2/2014	MAX	8.02	430	150	12	10	< 2	< 4	0.26	< 0.05	< 0.02	31	< 1	9	20	43	0.05	0.039	<0.1	<0.005	<0.01	5.28
	6/16/2015	MAX	8.28	270	84	4.8	17	< 2	8.8	<1	< 0.05	< 0.02	26	< 1	7	13	26	0.14	0.025	<0.1	<0.005	<0.01	3.85
	12/1/2015	MAX	7.96	430	150	14	6.5	< 2	11	<0.1	< 0.05	0.037	33	< 1	9.9	16	47	2.4	0.044	<0.1	0.0088	<0.01	4.56
	6/20/2016	MAX	8.23	370	130	11	8.2	< 2	< 4	0.41	< 0.05	< 0.02	29	< 1	7.9	14	41	0.29	0.037	<0.1	0.011	<0.01	4.35
	11/29/2016	MAX	8.04	390	130	11	8.6	< 2	< 4	<0.2	< 0.05	< 0.02	35	< 1	11	22	41	0.24	0.029	<0.1	0.0054	<0.01	4.2

Routine Groundwater Quality - General Analysis -Guelph WRIC & Waste Transfer Station

AECOM

	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L	NO2 mg/L	NO3 mg/L
Monitor	6/27/2001	Philip	7.84	662	259	31.5	< 1	< 0.5	< 5	0.14	0.07	0.009	103	< 1	22	9.9	93.7	0.02	0.02	<0.1	0.016		
10-00	12/3/2001	Philip	8.01	666	267	30.7	< 1	0.8	< 5	0.19	0.04	0.01	85.8	< 1	25.8	12	95.1	0.04	0.02	<0.1	0.061		
Bedrock	6/4/2002	Philip	8.23	595	239	28.2	2	< 0.5	< 5	0.19	0.04	0.013	76	< 1	21.5	9.2	84.4	0.02	0.02	<0.1	<0.005		
	12/3/2002	Philip	8	660	255	29.5	1	< 0.5	7	0.42	0.06	0.013	76.8	< 1	26.9	11.3	87.7	0.03	0.01	<0.1	<0.005		
	6/2/2003	Philip	7.78	659	242	29.1	< 1	< 0.5	< 5	0.17	0.05	< 0.001	25.2	11	44.9	10	87	0.03	0.01		<0.005		
	12/1/2003	Philip	8.09	626	236	28.2	1.1	0.8	< 5	0.21	< 0.03	0.009	78.5	< 1	27.6	10.2	85.2	0.04	0.02	<0.1	0.015		
	6/9/2004	Philip	7.78	600	238	28.2	< 1	< 0.5	< 5	0.13	0.08	0.005	82.4	< 1	27.8	9.7	91	0.07	0.02		0.13	<0.2	<0.2
	11/30/2004	Philip	7.89	626	245	27.7	2	< 0.5	< 5	0.13	0.03	0.005	77.7	< 1	28.1	10.4	83.5	0.04	0.02		<0.005		
	8/3/2005	Maxx	8.18	599	240	31	1.2	< 2	< 4	0.3	< 0.05	< 0.02	67	< 1	20	10	86	<0.05	0.011	<0.05	<0.005		
	11/28/2005	Maxx	8.07	616	251	31		< 2	5	0.2	< 0.05	< 0.02	71	< 1	23	10	90	<0.05	0.016	<0.05	<0.005		
	6/1/2006	MAX	8.1	646	254	30	1.1	< 2	< 4	1	0.09	< 0.02	77	< 1	20	9.1	88	0.03	0.014	<0.05	<0.005		
	12/4/2006	MAX	8.2	651	257	28	1	< 2	4	0.3	0.11	< 0.02	82	< 1	17	8.6	83	0.02	0.014	<0.05	<0.005		
	3/30/2007	MAX	8.2	648	249	27	1.1	< 2	< 4	0.5	0.12	< 0.02	75	< 1	19	7.7	79	0.02	0.014	<0.05	<0.005		
	6/14/2007	MAX	8.1	656	246	29	1.1	< 2	5	0.2	0.15	< 0.02	81	< 1	21	8.9	84	0.03	0.015	<0.05	<0.005		
	12/5/2007	MAX	8.2	652	239	28	1.1	< 2	11	0.2	0.07	< 0.02	81	< 1	21	8.8	86	<0.02	<0.01	<0.1	<0.005	<0.01	<0.1
	6/25/2008	MAX	8.2	654	237	28	1.1		11	0.3	0.11	< 0.02	82	< 1	23	9.5	86	<0.02	<0.01	<0.1	<0.005	<0.01	<0.1
	12/9/2008	MAX	8.1	679	238	29	1.1	< 2	< 4	0.2	0.07	< 0.02	91	< 1	27	11	85	0.03	0.018	<0.1	<0.005	<0.01	<0.1
	6/25/2009	MAX	8	631	240	29	1.1	< 2	< 4	0.3	< 0.05	< 0.02	80	< 1	17	8.8	87	0.03	0.016	<0.1	<0.005	<0.01	<0.1
	12/16/2009	MAX	8	685	239	32	1.2	< 2	< 4	0.2	0.06	0.02	84	< 1	28	14	94	0.04	0.019	<0.1	<0.005	<0.01	<0.1
	6/24/2010	N/A																					
	12/22/2010	N/A																					
	6/15/2011	N/A																					
	12/14/2011	N/A																					
	6/18/2012	NA																					
	7/19/2012	MAX	7.88	650	240	30	1.1	< 2	11	0.97	0.11	0.24	68	< 1	22	9.1	87	3.1	0.015	<0.1	<0.005	<0.01	<0.1
	12/10/2012	MAX	7.93	670	240	30	1.1	< 2	< 4	0.54	0.077	0.23	74	< 1	25	9.3	91	6.6	<0.01	<0.1	<0.005	<0.01	<0.1
	6/18/2013	MAX	8.04	710	240	29	1.2	< 2	5.1	0.24	0.054	0.03	82	< 1	32	12	95	0.81	0.017	<0.1	<0.005	<0.01	<0.1
	12/2/2013	MAX	8	690	250	31	1.1	< 2	7	0.2	0.053	0.041	80	< 1	30	11	92	0.04	0.014	<0.1	<0.005	<0.01	<0.1
	5/21/2014	MAX	8	700	240	29	1.1	< 2	< 4	0.29	< 0.05	< 0.02	81	< 1	30	10	94	0.81	0.013	<0.1	<0.005	<0.01	<0.1
	12/2/2014	MAX	7.94	740	240	30	1.2	< 2	< 4	0.19	0.094	0.03	90	< 1	37	14	92	0.63	0.025	<0.1	<0.005	<0.01	<0.1
	6/16/2015	MAX	7.86	720	240	31	1.3	< 2	< 4	0.12	0.053	0.026	92	< 1	36	14	95	0.22	0.022	<0.1	<0.005	<0.01	<0.1
	12/1/2015	MAX	7.97	710	230	31	1.2	< 2	10	0.16	< 0.05	0.087	84	< 1	32	12	91	1.8	0.019	<0.1	<0.005	<0.01	<0.1
	6/20/2016	MAX	8.05	700	240	28	1.1	< 2	6.2	0.17	0.054	0.22	83	< 1	32	11	87	4.6	0.018	<0.1	<0.005	<0.01	<0.1
	11/29/2016	MAX	8	700	230	31	1.2	< 2	8.6	0.16	0.071	0.16	89	< 1	37	13	94	4.7	0.013	<0.1	<0.005	<0.01	<0.1

Routine Groundwater Quality - General Analysis -Guelph WRIC & Waste Transfer Station

AECOM

	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L	NO2 mg/L	NO3 mg/L
Monitor	6/27/2001	Philip	8.13	528	263	25.3	2	2.9	< 5	0.28	0.13	0.03	46.8	< 1	7.1	25.9	68.7	0.34	0.1	<0.1	0.138		
11a-00	12/3/2001	Philip	7.99	512	262	24.9	2	1.2	< 5	0.32	0.12	0.007	34.9	< 1	5.1	12	83.2	0.04	0.04	<0.1	0.254		
Bedrock	6/4/2002	Philip	8.13	454	241	23.7	2	0.9	< 5	0.41	0.13	0.01	26.7	< 1	5	6	64.4	0.04	0.03	<0.1	<0.005		
	12/3/2002	Philip	8.12	500	253	24.3	3	< 0.5	< 5	0.33	0.12	0.009	25.9	< 1	4	6.1	67	<0.01	0.03	<0.1	0.011		
	6/2/2003	Philip	7.71	515	231	24.7	2	< 0.5	< 5	0.38	0.11	< 0.001	31.8	9	6.3	5.8	67.5	<0.01	0.03		<0.005		
	12/1/2003	Philip	8.02	507	233	23.6	1.6	1	9	0.52	< 0.03	0.004	35.9	< 1	7	5.6	64.8	0.02	0.04	<0.1	<0.005		
	6/8/2004	Philip	7.81	478	236	24.2	1	< 0.5	6	0.26	0.1	0.003	33.4	< 1	6.9	5.4	80.3	0.05	0.03		0.185	<0.2	<0.2
	11/30/2004	Philip	7.96	494	241	23.8	1	< 0.5	10	0.53	0.13	0.007	29.4	< 1	6.7	5.1	66	<0.01	0.02		<0.005		
	8/3/2005	Maxx	8.13	471	238	25	1.9	< 2	8	0.6	0.06	< 0.02	20	< 1	5	5.5	62	0.066	0.038	0.079	<0.005		
	11/28/2005	Maxx	8.2	470	248	26		< 2	10	0.4	0.14	< 0.02	26	< 1	7	5.2	70	<0.05	0.036	<0.05	<0.005		
	6/1/2006	MAX	8.1	520	250	26	2	< 2	< 4	0.4	0.16	< 0.02	25	< 1	8	5.2	72	<0.02	0.034	<0.05	<0.005		
	12/4/2006	MAX	8.1	532	252	25	1.8	< 2	< 4	0.3	0.12	< 0.02	38	< 1	10	5.3	70	<0.02	0.035	<0.05	<0.005		
	3/30/2007	MAX	8.3	523	244	23	1.8	< 2	< 4	0.4	0.26	< 0.02	29	< 1	11	4.3	64	<0.02	0.033	<0.05	<0.005		
	6/14/2007	MAX	8.3	539	242	27	1.8	< 2	< 4	0.4	0.24	< 0.02	32	< 1	12	5.2	77	<0.02	0.033	<0.05	0.015		
	12/5/2007	MAX	8.2	534	236	25	1.9	< 2	11	0.2	0.12	< 0.02	33	< 1	12	6	69	<0.02	0.031	<0.1	<0.005	<0.01	<0.1
	6/25/2008	MAX	8.2	534	231	27	2.3		16	0.6	0.21	< 0.02	30	< 1	15	6.5	73	<0.02	0.026	<0.1	<0.005	<0.01	<0.1
	12/9/2008	MAX	8.1	526	237	23	1.7	< 2	< 4	0.3	0.1	< 0.02	34	< 1	12	4.9	65	<0.02	0.035	<0.1	<0.005	<0.01	0.1
	6/25/2009	MAX	8	559	232	27	1.8	< 2	11	0.2	< 0.05	< 0.02	44	< 1	16	5.2	74	<0.02	0.035	<0.1	<0.005	<0.01	0.1
	12/15/2009	MAX	8	539	233	25	1.8	< 2	5	0.1	< 0.05	0.03	34	< 1	14	5.2	69	<0.02	0.038	<0.1	<0.005	<0.01	0.2
	6/28/2010	MAX	8.1	546	225	25	1.8	< 2	5	0.2	< 0.05	0.03	39	< 1	18	4.8	69	<0.02	0.036	<0.1	<0.005	<0.01	0.1
	12/22/2010	MAX	7.85	575	227	28	1.9	< 2	< 4	0.3	0.24	< 0.02	38	< 1	22	5.4	75	<0.02	0.032	<0.1	<0.005	<0.01	<0.1
	6/15/2011	MAX	7.97	568	228	27	1.8	< 2	10	0.2	0.1	< 0.02	51	< 1	24	5.3	75	0.25	0.033	<0.1	<0.005	<0.01	<0.1
	12/14/2011	MAX	8.12	588	230	27	1.8	< 2	< 4	0.3	0.1	0.03	35	< 1	24	5.4	75	0.21	0.025	<0.1	0.011	0.05	<0.1
	6/19/2012	MAX	8.09	590	230	27	1.8	< 2	8.1	0.39	0.073	0.025	39	< 1	24	5.2	74	0.56	0.031	<0.1	0.04	<0.01	<0.1
	12/11/2012	MAX	7.85	580	240	25	1.7	< 2	< 4	<0.1	0.058	< 0.02	40	< 1	22	5.2	75	0.17	0.034	<0.1	<0.005	<0.01	0.11
	6/21/2013	MAX	8.2	570	230	26	1.9	< 2	< 4	0.31	0.13	< 0.02	39	< 1	21	5.6	74	0.3	0.033	<0.1	0.01	<0.01	<0.1
	12/4/2013	MAX	7.8	580	230	26	1.7	< 2	7.9	0.34	0.12	< 0.02	37	< 1	24	5.8	71	<0.02	0.031	<0.1	<0.005	0.014	<0.1
	5/21/2014	MAX	7.98	570	230	27	1.7	< 2	< 4	0.54	< 0.05	< 0.02	38	< 1	24	5.9	75	0.04	0.034	<0.1	<0.005	<0.01	<0.1
	12/3/2014	MAX	8.05	580	230	27	1.9	< 2	< 4	0.21	0.19	< 0.02	38	1.3	24	5.9	74	0.16	0.037	<0.1	0.0065	<0.01	<0.1
	6/22/2015	MAX	7.83	580	240	26	1.8	< 2	8.3	0.13	< 0.05	0.021	38	< 1	24	5.7	71	0.19	0.033	<0.1	<0.005	0.015	<0.1
	12/2/2015	MAX	7.88	590	220	26	1.8	< 2	5.2	0.22	0.12	0.025	35	1.6	23	5.8	74	0.23	0.04	<0.1	0.0063	0.035	<0.1
	6/21/2016	MAX	8.16	570	240	26	1.7	< 2	11	0.16	< 0.05	0.022	37	< 1	24	6.2	70	0.26	0.03	<0.1	0.012	<0.01	0.11
	11/30/2016	MAX	7.97	580	230	27	1.8	< 2	5.5	0.14	< 0.05	< 0.02	33	< 1	22	6.2	71	0.28	0.036	<0.1	0.0086	0.035	<0.1

Routine Groundwater Quality - General Analysis -Guelph WRIC & Waste Transfer Station

AECOM

	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L	NO2 mg/L	NO3 mg/L
Monitor	6/27/2001	Philip	7.99	798	264	25.6	2	7.2	5	0.22	< 0.03	0.017	55	< 1	54	54.1	83.1	0.03	0.07	<0.1	0.113		
11b-00	12/3/2001	Philip	7.98	1081	266	28.4	2.2	1.4	6	0.28	< 0.03	0.023	50.4	< 1	155	92.8	100	<0.01	0.04	<0.1	0.013		
Outwash	6/4/2002	Philip	8.02	751	252	24.7	1	0.9	6	0.39	< 0.03	0.005	35	< 1	69.3	40.3	91.4	<0.01	0.09	<0.1	0.015		
	12/3/2002	Philip	8	813	250	28.2	2	< 0.5	6	0.37	< 0.03	0.022	42.2	< 1	68.9	26.8	103	<0.01	0.15	<0.1	0.063		
	6/2/2003	Philip	7.72	873	226	28.1	2	0.6	5	0.37	0.04	< 0.001	48.5	7	70.6	37.2	101	<0.01	0.41		0.029		
	12/1/2003	Philip	8.1	629	185	13.1	1.1	< 0.5	12	0.51	< 0.03	0.005	43	< 1	58.8	58.9	51.6	0.02	0.58	<0.1	0.012		
	6/8/2004	Philip	7.9	887	192	18.3	< 1	0.7	23	0.97	0.03	0.007	37.7	< 1	165	93.4	79.2	0.02	1.09		0.129	<0.2	4.7
	11/30/2004	Philip	8	781	212	15.1	1	< 0.5	7	0.26	< 0.03	0.002	29.4	< 1	118	83.2	60.6	<0.01	0.57		0.011		
	8/3/2005	Maxx	8.04	919	235	21	1.6	< 2	8	0.8	< 0.05	< 0.02	37	< 1	139	88	84	<0.05	1.2	<0.05	0.028		
	11/28/2005	Maxx	8.12	1210	235	21		< 2	< 4	0.7	< 0.05	< 0.02	37	< 1	192	150	91	<0.05	0.6	<0.05	0.02		
	6/1/2006	MAX	8.1	961	268	18	1.4	< 2	8	0.6	< 0.05	0.05	40	< 1	129	120	69	<0.02	0.8	<0.05	0.02		
	12/4/2006	MAX	8.2	899	279	14	1.2	< 2	< 4	0.5	< 0.05	< 0.02	48	< 1	92	110	53	<0.02	1.9	<0.05	0.012		
	3/30/2007	MAX	8.3	780	274	12	1	< 2	7	0.4	0.09	< 0.02	34	< 1	61	95	44	<0.02	1.5	<0.05	<0.005		
	6/14/2007	MAX	8.2	756	264	15	1.3	< 2	7	0.4	0.08	< 0.02	36	< 1	54	96	60	<0.02	1.8	<0.05	0.016		
	12/5/2007	MAX	8.2	755	259	16	1.5	< 2	12	0.3	< 0.05	5.2	27	< 1	66	77	65	<0.02	0.58	<0.1	0.013	<0.01	3.4
	6/25/2008	MAX	8.2	1100	250	19	1.4		6	0.5	0.08	< 0.02	25	< 1	180	110	81	<0.02	0.39	<0.1	0.018	<0.01	5.5
	12/9/2008	MAX	8.1	939	264	16	1.4	< 2	5	0.4	< 0.05	0.03	27	< 1	110	110	63	<0.02	0.9	<0.1	0.019	<0.01	4.4
	6/25/2009	MAX	8	1130	253	18	1.4	< 2	< 4	0.3	< 0.05	< 0.02	25	< 1	190	140	74	<0.02	0.85	<0.1	0.018	<0.01	3.8
	12/15/2009	MAX	8	890	250	17	1.5	< 2	< 4	0.2	< 0.05	0.03	19	< 1	110	89	71	<0.02	0.44	<0.1	0.016	<0.01	3.5
	6/28/2010	MAX	8	966	243	17	1.5	< 2	6	0.3	< 0.05	< 0.02	35	< 1	140	95	75	<0.02	0.24	<0.1	0.017	<0.01	3.3
	12/17/2010	MAX	7.96	966	255	18	1.5	< 2	< 4	0.2	< 0.05	< 0.02	38	< 1	130	110	75	<0.02	0.57	<0.1	0.017	<0.01	3.3
	6/14/2011	MAX	8.01	1140	224	16	1.9	< 2	17	0.5	< 0.05	< 0.02	30	< 1	190	140	73	<0.02	0.58	<0.1	0.014	<0.01	3
	12/14/2011	MAX	8.16	975	238	15	1.4	< 2	< 4	1	< 0.05	0.19	25	< 1	140	110	64	1.9	0.49	<0.1	0.02	<0.01	2.7
	6/18/2012	MAX	8.04	970	230	16	1.5	< 2	9.8	0.45	0.055	0.024	23	1	140	100	71	1.6	0.21	<0.1	0.034	<0.01	2.1
	12/11/2012	MAX	7.87	1000	250	18	1.6	< 2	< 4	0.26	< 0.05	0.045	23	< 1	140	100	84	2	0.19	<0.1	0.02	<0.01	3
	6/19/2013	MAX	7.9	1300	250	18	1.6	< 2	4.9	0.43	< 0.05	0.067	28	< 1	220	130	87	1.8	0.15	<0.1	0.022	<0.01	3
	12/4/2013	MAX	7.97	1100	330	27	1.8	< 2	10	0.48	< 0.05	0.19	23	< 1	140	150	91	<0.02	0.27	<0.1	0.11	<0.01	2.8
	5/21/2014	MAX	7.96	1600	270	23	1.8	< 2	< 4	0.29	< 0.05	< 0.02	27	< 1	290	220	100	<0.02	0.1	<0.1	0.073	<0.01	3.13
	12/3/2014	MAX	8.07	1000	270	22	1.9	< 2	< 4	0.17	< 0.05	0.03	17	< 1	140	130	85	<0.02	0.16	<0.1	0.058	<0.01	2.15
	6/22/2015	MAX	7.81	1300	230	23	1.6	< 2	8.7	0.39	< 0.05	0.061	20	< 1	240	130	94	2.7	0.27	<0.1	0.023	<0.01	1.94
	12/2/2015	MAX	8.01	1100	250	30	1.9	< 2	4	0.41	< 0.05	0.044	28	< 1	150	120	110	0.07	0.18	<0.1	0.09	<0.01	3.73
	6/21/2016	MAX	8.09	1000	260	18	1.4	< 2	5.2	0.31	< 0.05	0.09	40	< 1	140	100	79	2.4	0.2	<0.1	0.029	<0.01	2.98
	11/30/2016	MAX	7.99	1000	290	16	1.7	< 2	< 4	<0.1	< 0.05	0.029	37	< 1	120	110	73	2	0.082	<0.1	0.028	<0.01	2.84

Routine Groundwater Quality - General Analysis -Guelph WRIC & Waste Transfer Station

AECOM

	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L	NO2 mg/L	NO3 mg/L
Monitor	6/27/2001	Philip	7.5	888	390	43.6	14	1.2	7	0.92	0.45	0.006	96.2	< 1	82.8	22.6	109	<0.01	0.07	<0.1	1.44		
12a-00	12/3/2001	Philip	7.77	920	389	44.7	10.1	1.2	16	0.75	0.19	0.008	50.6	< 1	24.7	19.7	110	<0.01	0.06	<0.1	1.17		
Bedrock	6/4/2002	Philip	8.33	889	346	40.5	15	0.6	10	1.34	0.64	0.007	44.5	< 1	44.3	20.6	123	0.04	0.02	<0.1	1.51		
	12/3/2002	Philip	7.78	4365	372	41.2	15	< 0.5	24	4.22	4.23	0.012	55.7	< 1	1200	763	109	<0.1	<0.1	<1	0.958		
	6/2/2003	Philip	7.37	915	350	40.4	18	< 0.5	11	1.04	0.41	0.002	46.3	10	55.5	36.2	103	<0.01	0.02		1.17		
	12/1/2003	No A																					
	6/8/2004	Philip	7.53	845	319	37	13.9	< 0.5	10	0.89	0.47	0.009	45.5	< 1	45.3	23	106	<0.01	0.02		1.15	<0.2	22.5
	11/30/2004	Philip	7.57	823	321	37.7	13	< 0.5	13	0.67	0.13	0.002	50.5	< 1	38.5	16.4	98.4	<0.01	0.02		1		
	8/3/2005	Maxx	7.93	891	370	44	16	< 2	9	0.6	0.17	< 0.02	40	< 1	42	27	110	<0.05	0.028	0.084	1.1		
	11/28/2005	Maxx	7.88	791	331	40		< 2	54	2.5	0.16	< 0.02	54	< 1	30	20	100	<0.05	0.024	<0.05	0.97		
	6/1/2006	MAX	7.9	858	338	39	16	< 2	13	1.2	0.24	< 0.02	40	< 1	34	25	110	<0.02	0.02	<0.05	1.1		
	12/4/2006	MAX	7.8	1020	423	41	22	< 2	8	1.2	0.56	< 0.02	49	< 1	41	34	110	<0.02	0.024	<0.05	1.2		
	3/30/2007	MAX	8.1	938	376	33	23	< 2	5	1.1	0.47	< 0.02	40	< 1	35	26	110	<0.02	0.022	<0.05	1.3		
	6/14/2007	MAX	8	947	353	37	17	< 2	8	3.5	0.24	< 0.02	45	< 1	40	29	100	<0.02	0.019	<0.05	1.1		
	12/5/2007	MAX	8	796	343	34	11	< 2	12	0.4	0.1	0.03	39	< 1	34	17	94	<0.02	0.027	<0.1	0.92	<0.01	1.4
	6/25/2008	MAX	8	796	343	32	13		6	0.6	0.07	< 0.02	36	< 1	23	18	93	<0.02	0.02	<0.1	0.99	<0.01	8.9
	12/9/2008	MAX	7.9	816	343	30	12	< 2	9	0.5	0.06	< 0.02	40	< 1	27	18	96	<0.02	0.032	<0.1	0.92	0.02	5.9
	6/25/2009	MAX	7.7	707	298	30	13	< 2	4	0.5	0.05	< 0.02	38	< 1	13	15	83	<0.02	0.05	<0.1	0.81	0.01	8
	12/16/2009	MAX	7.6	742	312	37	10	< 2	10	0.3	< 0.05	< 0.02	39	< 1	31	13	93	<0.02	0.019	<0.1	0.81	0.03	1.4
	6/24/2010	MAX	7.9	699	304	30	14	< 2	7	0.6	< 0.05	< 0.02	35	< 1	11	15	86	<0.02	0.02	<0.1	0.84	0.02	5.5
	12/20/2010	MAX	7.75	658	304	32	8.7	< 2	7	0.4	< 0.05	< 0.02	34	< 1	9	6.5	87	<0.02	0.02	<0.1	0.77	0.02	1.7
	6/15/2011	MAX	7.82	603	283	26	12	< 2	12	0.3	< 0.05	< 0.02	26	< 1	5	8.4	77	<0.02	0.016	<0.1	0.74	<0.01	3
	12/15/2011	MAX	8.01	701	318	33	11	< 2	< 4	0.8	< 0.05	0.06	32	< 1	13	11	92	0.55	0.011	<0.1	0.82	<0.01	2.3
	6/18/2012	MAX	7.8	680	300	30	9.5	< 2	10	0.5	< 0.05	< 0.02	32	< 1	18	9.4	82	0.05	0.02	<0.1	0.77	<0.01	1.9
	12/10/2012	MAX	7.62	710	310	33	6.2	< 2	< 4	0.62	< 0.05	< 0.02	31	< 1	25	11	90	<0.02	0.016	<0.1	0.74	0.016	1.3
	6/18/2013	MAX	7.87	630	290	28	11	< 2	7.3	0.19	< 0.05	< 0.02	29	< 1	6	7.4	84	<0.02	0.016	<0.1	0.76	<0.01	2.2
	12/2/2013	MAX	7.77	660	320	31	12	< 2	< 4	0.27	< 0.05	< 0.02	28	< 1	8	7.4	89	<0.02	0.02	<0.1	0.78	<0.01	1.5
	5/20/2014	MAX	7.63	590	290	26	11	< 2	< 4	0.12	< 0.05	< 0.02	25	< 1	4	5.4	78	<0.02	0.016	<0.1	0.82	<0.01	1.29
	12/2/2014	MAX	7.64	670	310	30	8.7	< 2	< 4	0.15	< 0.05	< 0.02	26	< 1	14	6.8	87	<0.02	0.025	<0.1	0.71	0.019	1.04
	6/17/2015	MAX	7.69	710	310	30	9	< 2	5.8	0.24	< 0.05	< 0.02	28	< 1	28	9.7	79	0.02	0.015	<0.1	0.73	<0.01	1.33
	12/1/2015	MAX	7.75	690	300	34	6.4	< 2	8.6	0.16	< 0.05	< 0.02	33	< 1	18	7.5	86	0.09	0.02	<0.1	0.72	<0.01	0.59
	6/23/2016	MAX	7.99	630	310	28	9.6	< 2	7.6	0.29	< 0.05	< 0.02	28	< 1	4.8	5.8	80	0.04	0.017	<0.1	0.68	<0.01	1.19
	11/29/2016	MAX	7.78	740	330	33	7.4	< 2	< 4	0.15	< 0.05	< 0.02	29	< 1	34	16	82	0.13	0.016	<0.1	0.8	<0.01	0.15

Routine Groundwater Quality - General Analysis -Guelph WRIC & Waste Transfer Station

AECOM

	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L	NO2 mg/L	NO3 mg/L
Monitor	6/27/2001	Philip	7.77	760	354	27.2	4	0.9	11	0.45	0.13	0.026	48.9	< 1	40	25.2	106	0.62	0.1	<0.1	0.372		
12b-00	12/3/2001	Philip	7.83	435	204	12.8	3.5	1.2	12	0.26	< 0.03	0.042	21.3	< 1	11.7	12.3	54.8	0.02	0.07	<0.1	0.209		
Outwash	6/4/2002	Philip	8.51	1144	353	25.6	11	2.9	48	10.8	9.3	0.053	30.1	< 1	169	94.7	97	0.01	0.09	<0.1	0.352		
	12/3/2002	Philip	7.76	1187	420	37.2	5	1.2	32	1.41	0.71	0.239	35.4	< 1	135	112	110	16.7	0.05	0.3	0.006		
	6/2/2003	Philip	7.38	1108	398	33.7	3	92	88	1.33	0.57	0.004	4.5	157	117	66	118	22.7	0.11		0.017		
	12/1/2003	No A																					
	6/8/2004	Philip	7.56	710	339	24.9	4.1	2.1	29	1.94	1.46	0.151	20.1	< 1	51	33.8	118	11	0.09		0.342	<0.2	0.2
	11/30/2004	Philip	7.62	687	341	24.4	4	< 0.5	24	1.03	0.43	0.046	32.3	< 1	22.7	16.4	96.7	3.25	0.08		0.079		
	8/3/2005	Maxx	7.78	610	306	21	4.2	< 3	27	2.4	1.07	0.1	20	1	14	16	90	7.1	0.092	0.17	0.026		
	11/28/2005	Maxx	7.93	647	345	26		< 2	14	1	0.35	< 0.02	28	< 1	13	13	100	2.1	0.068	<0.05	0.32		
	6/1/2006	MAX	8.1	584	292	19	2.5	< 2	8	1	0.49	0.02	24	< 1	10	12	72	1.7	0.05	0.053	0.15		
	12/4/2006	MAX	7.9	648	328	22	3.2	< 2	5	0.8	0.43	< 0.02	26	< 1	11	14	92	0.78	0.065	<0.05	0.21		
	3/30/2007	MAX	8.1	526	257	15	2.2	< 2	8	0.7	0.39	< 0.02	18	< 1	8	10	76	1.1	0.039	<0.05	0.22		
	6/14/2007	MAX	8	685	337	22	3	< 2	16	0.6	0.44	< 0.02	30	< 1	11	13	93	4.5	0.049	<0.05	0.22		
	12/5/2007	MAX	7.9	657	305	22	2.8	< 2	11	0.3	< 0.05	0.02	27	< 1	7	8.4	95	<0.02	0.035	<0.1	0.58	<0.01	4.5
	6/25/2008	MAX	8.2	482	235	16	2.7		5	0.6	0.16	< 0.02	22	< 1	5	8.9	70	<0.02	0.067	<0.1	0.61	<0.01	0.2
	12/9/2008	MAX	7.9	707	356	25	4	< 2	9	0.5	< 0.05	< 0.02	27	< 1	6	13	100	<0.02	0.058	<0.1	0.74	<0.01	1.4
	6/25/2009	MAX	7.7	587	297	20	3	< 2	< 4	0.4	0.12	0.03	21	< 1	4	9.3	87	<0.02	0.053	<0.1	0.61	<0.01	0.4
	12/16/2009	MAX	7.5	764	383	31	4.7	< 2	5	0.5	< 0.05	< 0.02	25	< 1	4	9	120	<0.02	0.037	<0.1	0.65	<0.01	3.6
	6/24/2010	MAX	7.9	532	263	18	2.8	< 2	11	0.5	0.07	< 0.02	13	< 1	8	9.5	80	<0.02	0.051	<0.1	0.54	<0.01	<0.1
	12/17/2010	MAX	7.68	712	353	30	3.9	< 2	9	0.4	< 0.05	< 0.02	20	< 1	7	7.7	100	<0.02	0.057	<0.1	0.47	<0.01	2.1
	6/15/2011	MAX	7.84	516	260	18	2.6	< 2	14	0.3	0.09	0.02	16	< 1	5	7.1	77	<0.02	0.044	<0.1	0.35	<0.01	0.1
	12/15/2011	MAX	8.01	749	354	29	3.9	< 2	14	0.7	< 0.05	0.88	32	< 1	8	9.6	110	6.1	0.035	<0.1	0.18	<0.01	2.4
	6/18/2012	MAX	7.73	710	340	26	3.5	< 2	21	0.96	< 0.05	0.28	29	< 1	6	7.5	100	16	0.039	<0.1	0.7	<0.01	2.4
	12/10/2012	MAX	7.64	780	380	30	4.2	< 2	6.9	1.2	< 0.05	0.6	33	< 1	9	11	120	13	0.035	<0.1	0.3	<0.01	3.2
	6/18/2013	MAX	7.86	510	250	17	2.6	< 2	11	0.51	< 0.05	0.32	16	< 1	6	6.5	76	8	0.04	<0.1	0.61	<0.01	0.14
	12/2/2013	MAX	7.59	590	290	23	3.4	< 2	7.5	0.55	< 0.05	0.17	21	< 1	5	6.6	92	5.4	0.044	<0.1	0.55	<0.01	0.95
	5/20/2014	MAX	7.64	530	250	18	2.5	< 2	< 4	0.31	< 0.05	0.12	18	< 1	11	8.4	77	2.5	0.035	<0.1	0.52	<0.01	<0.1
	12/2/2014	MAX	7.57	740	320	26	3.7	< 2	6.8	0.27	< 0.05	0.098	19	< 1	30	13	100	4.1	0.045	<0.1	0.48	<0.01	1.9
	6/17/2015	MAX	7.69	670	300	24	2.8	< 2	7.6	0.3	< 0.05	0.15	26	< 1	26	13	87	4.7	0.032	<0.1	0.34	<0.01	1.01
	12/1/2015	MAX	7.57	810	350	29	3.9	< 2	11	0.2	< 0.05	0.14	23	< 1	31	26	100	4.3	0.029	<0.1	0.18	<0.01	2.56
	6/23/2016	MAX	7.68	640	310	22	4.3	< 2	5.5	0.17	< 0.05	0.085	2.1	< 1	< 1	11	84	2.4	0.032	<0.1	0.34	<0.01	1.49
	11/29/2016	MAX	7.68	710	360	26	3	< 2	< 4	0.17	< 0.05	< 0.1	36	< 1	9.4	14	110	2.9	0.046	<0.1	0.19	<0.01	0.76

Routine Groundwater Quality - General Analysis -Guelph WRIC & Waste Transfer Station

AECOM

	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L	NO2 mg/L	NO3 mg/L
Monitor	12/3/2001	Philip	7.95	913	272	38.8	2.9	0.8	< 5	0.21	0.09	0.008	105	< 1	83.9	39.9	106	0.77	0.04	<0.1	0.111		
13a-01	6/4/2002	Philip	8.08	851	259	35	2	< 0.5	< 5	0.24	0.1	0.005	107	< 1	85.5	38	97.7	0.96	0.04	<0.1	<0.005		
Bedrock	12/3/2002	Philip	7.99	902	262	35.6	2	< 0.5	< 5	0.24	0.1	0.008	104	< 1	85.3	40.3	99.8	0.81	0.03	<0.1	<0.005		
	6/2/2003	Philip	7.77	921	248	35.2	2	< 0.5	< 5	0.23	0.11	< 0.001	111	9	88.5	41	100	0.45	0.03		0.022		
	12/1/2003	Philip	8.15	853	250	34.5	2.3	< 0.5	6	0.25	< 0.03	0.004	110	< 1	97.1	39	109	0.74	0.05	<0.1	0.193		
	6/9/2004	Philip	7.81	854	254	34.3	2.1	< 0.5	< 5	0.19	0.14	0.007	119	< 1	97.1	39.7	112	0.64	0.04		0.117	<0.2	<0.2
	11/30/2004	Philip	7.96	897	254	33.9	2	< 0.5	6	0.25	0.1	0.006	115	< 1	101	40.8	98.8	0.65	0.04		<0.005		
	8/3/2005	Maxx	8.02	889	252	36	2.5	< 2	4	0.5	0.19	< 0.02	107	< 1	93	44	100	0.58	0.043	<0.05	<0.005		
	11/28/2005	Maxx	8	884	263	37		< 2	< 4	0.2	0.12	< 0.02	101	< 1	87	44	110	0.59	0.041	<0.05	<0.005		
	6/1/2006	MAX	8.1	929	266	33	2.2	< 2	5	0.5	0.17	< 0.02	106	< 1	111	40	94	0.43	0.045	<0.05	<0.005		
	12/4/2006	MAX	8	967	268	35	2.5	< 2	< 4	0.3	0.18	< 0.02	111	< 1	100	43	100	0.5	0.044	<0.05	<0.005		
	3/30/2007	MAX	8.1	958	260	32	2.4	< 2	5	0.3	0.21	< 0.02	103	< 1	94	39	90	0.5	0.042	<0.05	<0.005		
	6/14/2007	MAX	8.2	967	258	34	2.5	< 2	4	0.4	0.21	< 0.02	110	< 1	97	44	100	0.43	0.043	<0.05	<0.005		
	12/5/2007	MAX	8.1	939	251	34	2.4	< 2	8	0.2	0.17	< 0.02	103	< 1	97	42	98	0.42	0.038	<0.1	<0.005	<0.01	<0.1
	6/25/2008	MAX	8.2	967	247	37	2.6		11	0.5	0.19	< 0.02	120	< 1	100	49	100	0.3	0.043	<0.1	<0.005	<0.01	<0.1
	12/9/2008	MAX	8	965	251	34	2.5	< 2	< 4	0.3	0.14	< 0.02	124	< 1	95	45	97	0.32	0.043	<0.1	<0.005	<0.01	<0.1
	6/25/2009	MAX	7.9	969	248	34	2.6	< 2	< 4	0.2	0.13	< 0.02	120	< 1	96	44	100	0.54	0.047	<0.1	<0.005	<0.01	<0.1
	12/16/2009	MAX	7.8	955	248	35	2.7	< 2	7	0.3	0.12	0.03	110	< 1	95	45	100	0.37	0.047	<0.1	<0.005	<0.01	<0.1
	6/28/2010	MAX	7.9	953	244	32	2.5	< 2	9	0.4	0.1	0.02	120	< 1	92	40	95	0.4	0.049	<0.1	<0.005	<0.01	<0.1
	12/20/2010	MAX	7.76	952	243	34	2.6	< 2	6	0.3	0.13	< 0.02	100	< 1	95	43	100	0.2	0.048	<0.1	<0.005	<0.01	<0.1
	6/16/2011	MAX	7.95	936	241	36	2.7	< 2	13	0.2	0.14	< 0.02	120	< 1	95	44	100	0.39	0.043	<0.1	<0.005	<0.01	<0.1
	12/13/2011	MAX	8.02	980	245	37	2.7	< 2	< 4	0.2	0.08	0.04	110	< 1	93	44	100	0.44	0.043	<0.1	<0.005	<0.01	<0.1
	6/20/2012	MAX	7.86	970	250	35	2.6	< 2	8.2	0.46	0.079	0.032	110	< 1	93	44	100	0.42	0.046	<0.1	<0.005	<0.01	<0.1
	12/11/2012	MAX	7.85	960	250	31	2.6	< 2	< 4	0.47	0.15	< 0.02	110	< 1	91	40	100	0.37	0.048	<0.1	<0.005	<0.01	<0.1
	6/17/2013	MAX	7.71	960	260	32	2.3	< 2	< 4	0.72	0.16	< 0.02	110	< 1	95	42	94	0.42	0.048	<0.1	<0.005	<0.01	<0.1
	12/9/2013	MAX	7.89	980	240	35	2.5	< 2	< 4	0.24	0.15	< 1	110	< 1	97	44	100	0.35	0.041	<0.1	<0.005	<0.01	<0.1
	5/22/2014	MAX	7.86	950	240	32	2.5	< 2	< 4	0.28	0.093	< 0.04	110	< 1	97	45	110	0.31	0.045	<0.1	<0.005	<0.01	<0.1
	12/3/2014	MAX	7.99	930	250	36	2.7	< 2	< 4	0.2	0.16	< 0.02	110	< 1	99	45	100	0.3	0.053	<0.1	<0.005	<0.01	<0.1
	6/18/2015	MAX	7.93	960	240	35	2.7	< 2	4.1	0.23	0.15	< 0.02	110	< 1	99	45	100	0.45	0.048	<0.1	<0.005	<0.01	<0.1
	12/4/2015	MAX	8	960	240	35	2.6	< 2	4.9	0.14	0.14	< 0.02	100	< 1	95	45	98	0.34	0.041	<0.1	<0.005	<0.01	<0.1
	6/21/2016	MAX	8.01	960	250	34	2.4	< 2	< 4	0.21	0.11	< 0.02	100	< 1	99	43	93	0.37	0.042	<0.1	<0.005	<0.01	<0.1
	12/6/2016	MAX	7.96	970	250	34	2.7	< 2	< 4	0.21	0.11	< 0.02	100	< 1	100	45	97	0.39	0.048	<0.1	<0.005	<0.01	<0.1

Routine Groundwater Quality - General Analysis -Guelph WRIC & Waste Transfer Station

AECOM

	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L	NO2 mg/L	NO3 mg/L
Monitor	12/3/2001	Philip	7.93	655	296	29.7	2.2	1.4	< 5	0.23	< 0.03	0.223	50.4	< 1	14.9	4.8	84.7	0.01	0.02	<0.1	0.024		
13b-01	6/4/2002	Philip	8.17	576	299	30.4	2	0.7	11	0.75	< 0.03	0.006	38	< 1	7	5	88	<0.01	0.08	<0.1	0.08		
Outwash	12/3/2002	Philip	7.93	683	300	31.6	2	< 0.5	< 5	0.18	< 0.03	0.213	50.4	< 1	17.4	7.2	92.8	0.01	0.01	<0.1	0.022		
	6/2/2003	Philip	7.65	699	287	33.6	1	0.7	9	0.56	< 0.03	< 0.001	53.8	12	23.3	4.9	97.2	<0.01	0.01		0.042		
	12/1/2003	Philip	7.8	665	375	35.8	1.4	0.8	5	0.2	< 0.03	0.036	29.4	< 1	11.9	7.5	103	0.05	0.1	<0.1	0.06		
	6/9/2004	Philip	7.72	610	291	30.4	< 1	< 0.5	7	0.48	< 0.03	0.004	44.8	< 1	16.7	5.7	105	0.05	0.02		0.252	<0.2	4.6
	11/30/2004	Philip	7.71	810	369	35.4	2	< 0.5	20	0.91	< 0.03	0.002	29.8	< 1	51.8	19.9	110	<0.01	0.04		0.055		
	8/3/2005	Maxx	7.98	800	345	38	2	< 2	19	1.1	< 0.05	< 0.02	25	< 1	55	12	110	0.15	0.014	<0.05	0.061		
	11/28/2005	Maxx	8.06	846	506	45		< 2	7	0.5	< 0.05	< 0.02	17	< 1	11	14	140	<0.05	0.063	<0.05	0.09		
	6/1/2006	MAX	8	1090	403	41	1.7	< 2	12	0.7	< 0.05	< 0.02	21	< 1	132	30	120	<0.02	0.019	<0.05	0.072		
	12/4/2006	MAX	7.9	1070	471	41	2	< 2	< 4	0.4	0.08	< 0.02	26	< 1	65	32	140	<0.02	0.035	<0.05	0.089		
	3/30/2007	MAX	8.1	977	419	38	1.9	< 2	< 4	0.4	0.08	< 0.02	22	< 1	65	40	130	<0.02	0.032	<0.05	0.072		
	6/14/2007	MAX	8.1	971	383	35	2	< 2	5	0.4	0.09	< 0.02	24	< 1	79	38	130	<0.02	0.029	<0.05	0.07		
	12/5/2007	MAX	8	1260	363	36	2	< 2	14	0.2	< 0.05	< 0.02	49	< 1	160	88	120	<0.02	0.021	<0.1	0.07	<0.01	3.3
	6/25/2008	MAX	8.1	1340	309	45	2.4		4	0.5	< 0.05	< 0.02	29	< 1	200	49	160	<0.02	0.017	<0.1	0.093	<0.01	6
	12/9/2008	MAX	8	1180	348	28	2.5	< 2	< 4	0.3	< 0.05	< 0.02	35	< 1	160	83	120	<0.02	0.033	<0.1	0.07	<0.01	2.6
	6/25/2009	MAX	7.7	1190	355	31	2.2	< 2	< 4	0.3	< 0.05	< 0.02	24	< 1	160	78	130	<0.02	0.029	<0.1	0.092	0.02	4.1
	12/16/2009	MAX	7.9	1030	338	29	2.4	< 2	9	0.5	0.29	0.03	28	< 1	120	73	110	2.5	0.028	<0.1	0.018	<0.01	2.7
	6/28/2010	MAX	7.9	1050	402	30	2	< 2	7	0.3	< 0.05	0.02	28	< 1	83	50	130	<0.02	0.031	<0.1	0.095	0.02	2.4
	12/20/2010	MAX	7.71	1120	357	31	2.2	< 2	< 4	0.2	< 0.05	< 0.02	36	< 1	130	59	140	<0.02	0.026	<0.1	0.089	<0.01	2.1
	6/16/2011	MAX	7.76	1040	423	30	2	< 2	11	0.3	< 0.05	< 0.02	24	< 1	77	50	140	<0.02	0.026	<0.1	0.12	0.03	2.2
	12/13/2011	MAX	7.86	987	407	30	2.1	< 2	14	1.1	< 0.05	0.32	21	< 1	62	39	130	20	0.027	<0.1	0.13	<0.01	2
	6/20/2012	MAX	7.69	1100	440	30	2.1	< 2	13	0.53	< 0.05	0.043	28	< 1	68	44	140	1.4	0.029	<0.1	0.12	0.017	2.3
	12/11/2012	MAX	7.74	1000	410	28	2.1	< 2	< 4	1.4	< 0.05	< 0.04	33	< 1	66	37	140	1.2	0.029	<0.1	0.11	0.011	3
	6/17/2013	MAX	7.78	1100	420	30	1.8	< 2	30	1.4	0.096	0.35	30	< 1	89	38	140	11	0.032	<0.1	0.15	0.1	3.5
	12/9/2013	MAX	7.69	1100	440	27	2	< 2	< 4	0.31	< 0.05	0.027	24	< 1	83	49	140	<0.02	0.025	<0.1	0.13	0.034	2.4
	5/22/2014	MAX	7.68	1100	440	28	1.9	< 2	< 4	0.47	< 0.05	< 0.04	31	< 1	66	52	150	<0.02	0.029	<0.1	0.23	0.019	2.82
	12/3/2014	MAX	7.88	1100	410	28	2.1	< 2	< 4	0.22	< 0.05	< 0.02	22	< 1	95	53	150	<0.02	0.036	<0.1	0.2	0.029	2.08
	6/18/2015	MAX	7.95	870	410	26	1.8	< 2	< 4	0.23	< 0.05	< 0.02	20	< 1	38	35	130	0.19	0.027	<0.1	0.13	0.024	1.14
	12/4/2015	MAX	7.81	1100	340	28	1.9	< 2	4.3	0.11	< 0.05	< 0.02	41	< 1	110	40	140	0.26	0.02	<0.1	0.076	<0.01	0.48
	6/21/2016	MAX	7.88	1100	380	30	1.7	< 2	11	0.22	< 0.05	< 0.02	25	< 1	120	28	150	0.11	0.022	<0.1	0.14	0.037	2.62
	12/6/2016	MAX	7.77	1400	340	29	2.3	8	11	<0.1	< 0.05	0.1	47	< 1	180	110	140	2	0.027	<0.1	0.12	<0.01	1.4

Routine Groundwater Quality - General Analysis -Guelph WRIC & Waste Transfer Station

AECOM

	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L	NO2 mg/L	NO3 mg/L
Monitor	12/4/2001	Philip	7.95	674	263	27.9	< 1	2	10	0.23	< 0.03	0.011	64.8	< 1	26.6	27.4	84	0.25	0.04	<0.1	0.128		
14a-01	6/4/2002	Philip	8.44	556	240	22.4	2	1.4	8	0.5	< 0.03	0.006	56.1	< 1	10.7	24.9	63.5	<0.01	0.04	<0.1	0.007		
Bedrock	12/3/2002	Philip	8.01	519	240	23.7	< 1	< 0.5	< 5	0.25	< 0.03	0.006	38.8	< 1	4.8	11.5	65.3	<0.01	0.01	<0.1	0.007		
	6/2/2003	Philip	7.82	489	215	23.3	1	1.1	15	0.13	0.03	< 0.001	49.7	29	7	20	64.6	0.13	0.02		0.006		
	12/1/2003	Philip	8.18	542	232	23.7	< 1	0.7	7	0.24	< 0.03	0.003	53.1	< 1	12	18.2	72.9	0.05	0.03	<0.1	0.083		
	6/9/2004	Philip	8.04	527	234	25.7	< 1	< 0.5	19	0.86	0.03	0.004	61.2	< 1	14.2	19.6	69.3	0.01	0.02		<0.005	<0.2	<0.2
	11/30/2004	Philip	7.92	527	236	24.4	1	< 0.5	< 5	0.06	< 0.03	< 0.002	48.6	< 1	12.8	9.1	68.1	0.03	<0.01		<0.005		
	8/3/2005	Maxx	8.22	533	234	26	1.1	< 2	15	1.1	< 0.05	< 0.02	51	< 1	11	19	67	<0.05	0.031	0.069	<0.005		
	11/28/2005	Maxx	8.18	529	242	29		< 2	9	0.4	< 0.05	< 0.02	42	< 1	15	14	78	0.16	0.018	<0.05	<0.005		
	6/1/2006	MAX	8.2	605	253	28	1.1	< 2	9	0.4	< 0.05	< 0.02	52	< 1	15	16	77	0.14	0.022	<0.05	<0.005		
	12/4/2006	MAX	8.2	597	253	26	1	< 2	< 4	0.2	0.08	< 0.02	61	< 1	13	14	74	0.11	0.017	<0.05	<0.005		
	3/30/2007	MAX	8.2	599	249	24	0.99	< 2	< 4	0.2	0.06	< 0.02	61	< 1	13	13	72	<0.02	0.018	<0.05	<0.005		
	6/14/2007	MAX	8.1	601	243	29	1.1	< 2	< 4	0.2	0.1	< 0.02	63	< 1	14	12	80	<0.02	0.015	<0.05	0.01		
	12/5/2007	MAX	8.2	603	241	27	1.2	< 2	12	0.1	< 0.05	< 0.02	62	< 1	12	16	77	<0.02	0.013	<0.1	<0.005	<0.01	<0.1
	6/25/2008	MAX	8.2	590	236	29	1.1		7	0.3	< 0.05	< 0.02	58	< 1	15	11	80	<0.02	<0.01	<0.1	<0.005	<0.01	<0.1
	12/9/2008	MAX	8	606	239	26	1.1	< 2	< 4	0.2	< 0.05	0.04	67	< 1	17	14	72	<0.02	0.016	<0.1	<0.005	<0.01	<0.1
	6/25/2009	MAX	8	635	237	29	1.2	< 2	< 4	0.2	< 0.05	< 0.02	71	< 1	21	16	86	0.06	0.022	<0.1	<0.005	<0.01	<0.1
	12/16/2009	MAX	7.9	629	242	29	1.2	< 2	< 4	0.1	< 0.05	< 0.02	64	< 1	20	17	79	0.03	0.017	<0.1	<0.005	<0.01	<0.1
	6/29/2010	MAX	8.1	599	231	26	0.98	< 2	6	0.2	< 0.05	0.02	64	< 1	19	10	75	<0.02	0.016	<0.1	<0.005	<0.01	<0.1
	12/20/2010	MAX	7.92	672	252	27	1.2	< 2	< 4	0.2	< 0.05	< 0.02	65	< 1	23	19	77	<0.02	0.017	<0.1	<0.005	<0.01	<0.1
	6/15/2011	MAX	7.96	666	239	28	1.2	< 2	14	0.1	< 0.05	< 0.02	73	< 1	28	16	83	0.11	0.023	<0.1	<0.005	<0.01	<0.1
	12/14/2011	MAX	8.13	652	240	28	1.2	< 2	< 4	0.2	< 0.05	< 0.02	65	< 1	23	17	81	0.14	0.015	<0.1	0.014	<0.01	<0.1
	6/19/2012	MAX	8.06	620	240	27	1.1	< 2	7.6	0.15	< 0.05	0.022	57	< 1	20	14	76	0.09	0.019	<0.1	0.018	<0.01	<0.1
	12/17/2012	MAX	7.72	620	240	28	1.1	< 2	7	0.31	< 0.05	< 0.02	62	< 1	20	18	81	0.16	0.012	<0.1	0.0061	<0.01	<0.1
	6/18/2013	MAX	8.05	620	240	25	1.3	< 2	< 4	0.22	< 0.05	0.025	63	< 1	20	29	74	0.29	0.024	<0.1	<0.005	<0.01	<0.1
	12/4/2013	MAX	7.94	650	250	27	1.2	< 2	11	0.31	< 0.05	0.041	63	< 1	24	22	76	0.02	0.023	<0.1	0.008	<0.01	<0.1
	5/26/2014	MAX	8.02	630	240	25	1	< 2	< 4	0.27	< 0.05	< 0.02	62	< 1	22	18	80		0.019		<0.005	<0.01	<0.1
	12/4/2014	MAX	7.96	620	230	26	1.2	< 2	4.5	<0.1	< 0.05	< 0.02	56	< 1	21	15	78	0.02	0.019	<0.1	<0.005	<0.01	<0.1
	6/22/2015	MAX	7.79	640	250	26	1.2	< 2	9	<0.1	< 0.05	0.022	63	< 1	23	21	75	1.3	0.024	<0.1	<0.005	<0.01	<0.1
	12/30/2015	MAX	7.8	640	240	29	1.2	< 2	< 4	<0.1	< 0.05	< 0.02	63	< 1	23	25	80	1.3	0.024	<0.1	0.006	<0.01	<0.1
	6/21/2016	MAX																					
	6/22/2016	MAX	8.2	640	240	26	1.1	< 2	4.2	<0.1	< 0.05	0.027	67	< 1	24	26	71	0.74	0.025	<0.1	0.008	<0.01	0.16
	12/5/2016	MAX	7.88	650	250	24	1	< 2	< 4	0.13	< 0.05	< 0.02	60	< 1	23	25	70	0.51	0.025	<0.1	0.012	<0.01	<0.1

Routine Groundwater Quality - General Analysis -Guelph WRIC & Waste Transfer Station

AECOM

	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L	NO2 mg/L	NO3 mg/L
Monitor	12/4/2001	Philip	7.94	716	336	30.3	< 1	1.3	12	0.3	< 0.03	0.009	62.9	< 1	22.3	8.2	114	0.15	0.05	<0.1	0.269		
14b-01	6/4/2002	Philip	8.41	776	279	30.2	2	1	21	0.34	0.06	1.11	89.4	< 1	58.4	20.9	100	<0.01	0.02	<0.1	0.195		
Outwash	12/3/2002	Philip	8.07	680	277	29.7	2	0.7	12	0.68	< 0.03	0.005	58.1	< 1	24.1	7.7	95.4	0.01	<0.01	<0.1	0.081		
	6/2/2003	Philip	7.59	845	270	26.2	2	0.8	18	0.62	0.04	< 0.001	33.7	13	85.8	32.7	104	0.37	0.02		0.121		
	12/1/2003	Philip	7.84	895	342	30.1	< 1	< 0.5	27	0.9	0.22	0.005	29.6	< 1	101	40.4	112	0.73	0.02	<0.1	0.245		
	6/9/2004	Philip	7.55	771	327	27.9	1.2	< 0.5	20	0.7	0.14	0.002	39.2	2	70.6	33.8	129	0.8	0.01		0.505	<0.2	<0.2
	11/30/2004	Philip	7.65	878	364	31.3	< 1	< 0.5	34	1.37	0.15	0.004	30.6	< 1	91.4	34.2	123	1.22	0.02		0.369		
	8/3/2005	Maxx	7.93	818	267	29	2.3	< 2	20	1.3	0.06	< 0.02	83	< 1	73	31	110	0.91	0.013	0.059	0.11		
	11/28/2005	Maxx	8.09	1070	305	38		6	12	0.6	0.09	< 0.02	77	< 1	143	49	140	1.3	0.02	<0.05	0.12		
	6/1/2006	MAX	8	1100	361	36	2	< 2	11	0.5	0.06	0.03	59	< 1	129	60	120	0.29	0.021	<0.05	0.26		
	12/4/2006	MAX	8	1120	438	37	2	< 2	9	0.9	0.09	< 0.02	64	< 1	92	67	130	0.15	0.025	<0.05	0.33		
	3/30/2007	MAX	8.1	901	347	32	1.7	< 2	15	0.3	0.07	< 0.02	46	< 1	67	49	110	0.03	0.023	<0.05	0.42		
	6/14/2007	MAX	8.1	909	295	36	2	< 2	8	0.2	0.09	< 0.02	87	< 1	75	39	110	0.13	0.026	<0.05	0.18		
	12/5/2007	MAX	8.1	1040	294	35	1.9	< 2	13	0.3	< 0.05	< 0.02	88	< 1	120	42	120	<0.02	0.012	<0.1	0.35	<0.01	<0.1
	6/25/2008	MAX	8	1270	326	35	2.6		6	0.3	< 0.05	< 0.02	84	< 1	180	100	120	<0.02	0.016	<0.1	0.4	<0.01	0.4
	12/9/2008	MAX	8	1310	423	33	2.2	< 2	4	0.3	< 0.05	< 0.02	58	< 1	150	110	120	0.02	0.022	<0.1	0.41	<0.01	0.1
	6/25/2009	MAX	7.8	1670	357	33	2.6	< 2	< 4	0.2	< 0.05	0.02	52	< 1	280	170	130	<0.02	0.025	<0.1	0.87	<0.01	0.2
	12/15/2009	MAX	7.7	1670	398	32	2.2	< 2	4	0.3	< 0.05	0.03	42	< 1	260	170	130	<0.02	0.016	<0.1	0.7	<0.01	<0.1
	6/29/2010	MAX	8	1230	365	27	2.3	< 2	9	0.4	< 0.05	< 0.02	47	< 1	150	120	110	<0.02	0.027	<0.1	0.79	<0.01	0.3
	12/20/2010	MAX	7.76	1240	420	< 0.05	< 0.2	< 2	7	0.3	< 0.05	< 0.02	38	< 1	130	< 0.1	< 0.2	<0.02	<0.01	<0.1	<0.005	<0.01	4
	6/14/2011	MAX	7.74	1170	370	30	2.2	< 2	8	0.4	< 0.05	< 0.02	35	< 1	130	94	120	<0.02	0.022	<0.1	1.4	<0.01	3.5
	12/14/2011	MAX	8.05	977	386	24	1.9	< 2	15	3	< 0.05	1	32	< 1	63	88	93	61	0.018	<0.1	0.72	<0.01	1.2
	6/19/2012	MAX	7.82	1200	340	32	2.3	< 2	9.7	0.84	< 0.05	0.65	37	< 1	150	82	130	39	0.02	<0.1	1.4	<0.01	<0.1
	12/17/2012	MAX	7.48	1100	410	30	2	< 2	46	2.9	0.073	1.5	35	< 1	92	91	130	27	0.015	<0.1	0.94	<0.01	0.4
	6/18/2013	MAX	7.81	1600	380	40	2.6	< 2	< 4	0.33	< 0.05	0.089	43	< 1	250	120	180	3.2	0.022	<0.1	1.7	<0.01	1.6
	12/4/2013	MAX	7.68	1100	430	37	1.9	< 2	8.1	0.84	< 0.05	0.11	29	< 1	81	78	140	<0.02	0.025	0.11	1.2	<0.01	0.95
	5/26/2014	MAX	7.56	1600	320	36	1.9	< 2	36	11	< 0.05	1.1	36	< 1	270	120	160	34	0.018	<0.1	1.1	<0.01	2.67
	12/4/2014	MAX	7.77	1000	420	80	2.5	< 2	10	0.71	< 0.05	0.43	22	< 1	73	83	280	<0.02	0.037	0.45	2	<0.01	0.37
	6/22/2015	MAX	7.64	1300	340	32	2	< 2	37	1.2	< 0.05	1.1	37	< 1	180	86	150	34	0.023	<0.1	0.98	<0.01	1.48
	12/30/2015	MAX	7.58	1000	380	27	1.5	< 2	5.9	0.31	< 0.05	0.26	33	< 1	86	71	120	10	0.019	<0.1	0.52	<0.01	0.6
	6/22/2016	MAX	7.81	1800	380	38	2.2	< 2	8.4	<0.1	< 0.05	0.31	63	< 1	280	150	170	14	0.024	<0.1	1.1	<0.01	0.92
	12/5/2016	MAX	7.77	1700	360	46	2.9	< 2	14	0.11	< 0.05	0.094	65	< 1	260	130	200	<0.02	0.028	0.14	1.3	<0.01	<0.1

Routine Groundwater Quality - General Analysis -Guelph WRIC & Waste Transfer Station

AECOM

	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L	NO2 mg/L	NO3 mg/L
Monitor	12/4/2001	Philip	7.95	754	259	35.1	< 1	0.6	< 5	0.16	< 0.03	0.006	92.4	< 1	48.3	7.7	104	0.27	<0.01	<0.1	<0.005		
15a-01	6/4/2002	Philip	8.13	718	254	34.9	1	< 0.5	< 5	0.15	< 0.03	0.086	94.1	< 1	52.8	8.3	103	0.4	<0.01	<0.1	<0.005		
Bedrock	12/3/2002	Philip	8.06	794	260	35.7	2	< 0.5	8	0.49	0.03	0.011	92.3	< 1	57.6	10.6	106	0.47	<0.01	<0.1	<0.005		
	6/2/2003	Philip	7.87	789	246	36	1	< 0.5	6	0.15	< 0.03	< 0.001	99	15	56.2	12.2	107	0.5	<0.01		<0.005		
	12/1/2003	Philip	8.17	754	245	32.5	< 1	< 0.5	7	0.19	< 0.03	0.007	101	< 1	60.7	11.5	103	0.5	<0.01	<0.1	0.072		
	6/9/2004	Philip	7.85	734	258	34.9	< 1	< 0.5	6	0.16	< 0.03	0.004	105	< 1	62.4	13	129	0.55	0.01		0.335	<0.2	<0.2
	11/30/2004	Philip	7.97	754	257	33.7	1	< 0.5	< 5	0.16	< 0.03	0.005	105	< 1	61.5	13.7	101	0.52	<0.01		<0.005		
	8/3/2005	Maxx	8.14	737	254	35	1.1	< 2	5	0.4	< 0.05	< 0.02	91	< 1	49	15	100	0.55	<0.01	<0.05	<0.005		
	11/28/2005	Maxx	8.22	736	262	37		< 2	6	0.4	< 0.05	< 0.02	88	< 1	47	16	110	0.58	<0.01	<0.05	<0.005		
	6/1/2006	MAX	8.1	790	268	33	1	< 2	10	0.4	< 0.05	< 0.02	74	1	59	15	92	0.46	0.011	<0.05	<0.005		
	12/4/2006	MAX	8	811	271	35	1.1	< 2	< 4	0.3	0.18	< 0.02	79	< 1	55	17	100	0.55	0.011	<0.05	<0.005		
	3/30/2007	MAX	8.1	808	263	29	1	< 2	< 4	0.3	0.1	< 0.02	92	< 1	54	15	88	0.56	0.01	<0.05	<0.005		
	6/14/2007	MAX	8.1	799	258	36	1.3	< 2	< 4	0.4	0.11	< 0.02	95	< 1	51	18	110	0.4	0.011	<0.05	<0.005		
	12/5/2007	MAX	8.2	799	255	35	1.2	< 2	13	0.2	0.09	< 0.02	100	< 1	51	19	110	0.47	0.012	<0.1	<0.005	<0.01	<0.1
	6/25/2008	MAX	8.3	783	249	33	1.4		10	0.4	< 0.05	< 0.02	104	< 1	45	19	100	0.07	<0.01	<0.1	0.042	<0.01	<0.1
	12/9/2008	MAX	8	786	252	32	1.2	< 2	< 4	0.3	0.07	< 0.02	116	< 1	42	19	96	0.45	0.013	<0.1	<0.005	<0.01	<0.1
	6/25/2009	MAX	8	783	249	34	1.2	< 2	4	0.2	< 0.05	< 0.02	110	< 1	43	20	96	0.57	0.034	<0.1	<0.005	<0.01	<0.1
	12/16/2009	MAX	8	802	251	32	1.2	2	< 4	0.2	< 0.05	< 0.02	110	< 1	48	19	100	0.62	0.015	<0.1	<0.005	<0.01	<0.1
	6/28/2010	MAX	8.1	818	245	34	1.2	< 2	6	0.3	< 0.05	0.02	110	< 1	47	19	100	0.64	0.021	<0.1	<0.005	<0.01	<0.1
	12/22/2010	MAX	7.85	844	251	37	1.3	< 2	< 4	0.2	< 0.05	< 0.02	110	< 1	56	21	110	0.64	0.016	<0.1	<0.005	<0.01	<0.1
	6/14/2011	MAX	7.92	824	243	35	1.3	< 2	7	0.3	< 0.05	0.02	100	< 1	56	19	110	0.71	0.017	<0.1	<0.005	<0.01	<0.1
	12/15/2011	MAX	8.02	857	247	39	1.4	< 2	< 4	0.2	0.05	< 0.02	100	< 1	61	24	120	0.19	0.012	<0.1	<0.005	<0.01	<0.1
	6/18/2012	MAX	7.94	860	250	34	1.2	< 2	12	0.2	< 0.05	< 0.02	98	< 1	62	21	100	0.78	0.013	<0.1	<0.005	<0.01	<0.1
	12/11/2012	MAX	7.87	860	250	34	1.3	< 2	< 4	0.59	0.057	< 0.02	110	< 1	63	22	110	0.66	0.02	<0.1	<0.005	<0.01	<0.1
	6/19/2013	MAX	8.17	860	260	30	1.2	< 2	9.9	0.17	0.064	< 0.02	110	< 1	63	20	98	0.74	0.025	<0.1	<0.005	<0.01	<0.1
	12/3/2013	MAX	7.83	850	250	31	1.1	< 2	< 4	0.28	< 0.05	< 0.02	94	< 1	67	21	92	0.74	0.025	<0.1	0.006	<0.01	<0.1
	5/21/2014	MAX	7.9	870	250	34	1.3	< 2	< 4	<0.1	< 0.05	< 0.02	110	< 1	66	24	110	0.73	0.018	<0.1	<0.005	<0.01	<0.1
	12/4/2014	MAX	7.94	840	250	41	1.7	< 2	< 4	0.15	0.082	0.13	96	< 1	68	25	140	0.75	0.028	0.17	0.077	<0.01	<0.1
	6/19/2015	MAX	8.02	840	260	36	1.4	< 2	< 4	0.14	< 0.05	< 0.02	100	< 1	68	27	110	1	0.022	<0.1	<0.005	<0.01	<0.1
	12/8/2015	MAX	7.93	870	240	36	1.3	< 2	< 4	0.14	< 0.05	0.025	110	< 1	66	27	110	1.2	0.014	<0.1	<0.005	<0.01	<0.1
	3/11/2016	MAX	7.94	880	250	36	1.4	< 2	< 4	<0.1	< 0.05	< 0.02	110	< 1	69	27	110	1	0.024	<0.1	<0.005	<0.01	<0.1
	6/22/2016	MAX	7.98	1300	240	44	1.5	< 2	5.8	0.17	< 0.05	0.021	100	< 1	170	53	130	1.2	0.017	<0.1	0.01	<0.01	<0.1
	6/23/2016	MAX																					
	12/1/2016	MAX	7.96	970	250	35	1.3	< 2	< 4	0.27	< 0.05	0.023	96	< 1	99	37	100	0.9	0.019	<0.1	<0.005	<0.01	<0.1

Routine Groundwater Quality - General Analysis -Guelph WRIC & Waste Transfer Station

AECOM

	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L	NO2 mg/L	NO3 mg/L
Monitor	12/4/2001	Philip	8.16	646	252	27	< 1	4.4	13	0.27	< 0.03	0.014	26.2	< 1	24.4	6.2	77.7	<0.01	0.08	<0.1	0.143		
15b-01	6/4/2002	Philip	8.1	475	215	21.1	1	0.9	11	0.79	< 0.03	0.008	13.8	< 1	6.9	2	73.4	<0.01	<0.01	<0.1	0.007		
Outwash	12/3/2002	Philip	7.95	723	200	29.4	2	0.9	12	0.75	< 0.03	0.012	14.3	< 1	9.1	2	103	<0.01	0.01	<0.1	0.009		
	6/2/2003	Philip	7.95	534	214	22.4	< 1	1.4	12	0.66	< 0.03	0.002	37.1	10	5.2	5	77.2	<0.01	0.01		0.009		
	12/1/2003	Philip	8.08	661	291	27.5	1.1	< 0.5	25	0.74	< 0.03	0.003	40.5	< 1	7.9	10.7	95	<0.01	0.04	<0.1	0.01		
	6/9/2004	Philip	7.94	478	204	18.7	< 1	< 0.5	11	0.45	< 0.03	0.002	24.2	< 1	24.8	4	74	0.01	<0.01		0.047	<0.2	4.1
	11/30/2004	Philip	7.99	558	240	21.8	< 1	< 0.5	12	0.58	< 0.03	0.002	22.4	< 1	27.9	3.3	83	<0.01	0.01		0.008		
	8/3/2005	Maxx	8.06	668	335	30	0.98	< 2	18	1.4	< 0.05	< 0.02	16	< 1	10	4.6	120	0.097	<0.01	<0.05	0.03		
	11/28/2005	Maxx	7.97	1150	533	53		< 2	9	0.8	< 0.05	< 0.02	26	< 1	56	10	190	<0.05	0.039	<0.05	0.045		
	6/1/2006	MAX	8	853	462	32	0.97	< 2	11	0.7	< 0.05	0.02	15	< 1	8	12	120	<0.02	0.025	<0.05	0.026		
	12/4/2006	MAX	7.8	949	490	36	1.2	< 2	7	0.4	< 0.05	< 0.02	24	< 1	4	16	150	0.29	0.045	<0.05	0.034		
	3/30/2007	MAX	8.1	955	484	38	0.92	< 2	< 4	0.4	0.09	< 0.02	28	< 1	13	9.2	150	<0.02	0.026	<0.05	0.008		
	6/14/2007	MAX	8.1	996	478	38	1	< 2	7	0.3	0.1	< 0.02	25	< 1	35	8.7	160	<0.02	0.023	<0.05	0.041		
	12/5/2007	MAX	8	1130	481	42	1.3	< 2	17	0.4	< 0.05	< 0.02	28	< 1	38	15	180	<0.02	0.042	<0.1	0.049	<0.1	15
	6/25/2008	MAX	8.1	1330	449	31	1.3		4	0.4	< 0.05	< 0.02	23	< 1	130	94	150	<0.02	0.016	<0.1	0.036	<0.1	13
	12/9/2008	MAX	8	1100	544	25	1.2	< 2	6	0.4	< 0.05	< 0.02	18	< 1	21	90	120	<0.02	0.038	<0.1	0.037	<0.01	8.6
	6/25/2009	MAX	7.7	1160	423	37	1.1	< 2	6	0.4	< 0.05	< 0.02	27	< 1	110	45	170	<0.02	0.023	<0.1	0.043	<0.01	5.7
	12/16/2009	MAX	7.8	1070	540	24	1.2	< 2	< 4	0.3	< 0.05	< 0.02	16	< 1	15	98	120	<0.02	0.034	<0.1	0.039	<0.01	10
	6/25/2010	MAX	7.8	1720	393	43	1.4	< 2	8	0.4	< 0.05	0.02	25	< 1	270	85	210	<0.02	0.026	<0.1	0.053	<0.01	9.7
	12/17/2010	MAX	7.6	1380	521	30	1.4	< 2	6	0.3	< 0.05	< 0.02	17	< 1	120	130	150	<0.02	0.041	<0.1	0.045	<0.01	4.6
	6/14/2011	MAX	7.73	1150	402	26	1.1	< 2	13	0.4	< 0.05	< 0.02	23	< 1	110	93	130	<0.02	0.024	0.11	0.032	<0.01	5.8
	12/15/2011	MAX	7.84	1130	465	30	1.4	< 2	19	1.2	< 0.05	1.2	36	< 1	49	110	140	6.7	0.023	<0.1	0.055	<0.01	8.8
	6/18/2012	MAX	7.68	1200	440	33	1	< 2	15	1	< 0.05	0.34	38	< 1	74	57	150	25	0.014	<0.1	0.052	<0.01	13
	12/11/2012	MAX	7.66	1000	410	32	1.1	< 2	< 4	0.22	0.11	< 0.1	63	< 1	36	38	170	<0.02	0.025	<0.1	0.23	<0.01	8.5
	6/19/2013	MAX	7.5	1100	340	26	0.89	< 2	4.1	0.35	0.061	0.12	63	< 1	78	40	140	6.5	0.017	<0.1	0.036	<0.01	7.8
	12/3/2013	MAX	7.52	910	410	32	1.1	< 2	< 4	1.3	< 0.05	0.075	34	< 1	30	26	140	<0.02	0.024	<0.1	0.039	<0.01	3.5
	5/21/2014	MAX	7.7	880	360	39	1.4	< 2	< 4	0.1	< 0.05	0.049	32	< 1	35	21	150	<0.02	0.017	<0.1	0.24	<0.01	4.65
	12/4/2014	MAX	7.8	940	390	37	1.5	< 2	< 4	0.18	< 0.05	0.074	46	< 1	39	24	170	<0.02	0.034	<0.1	0.24	<0.01	5.23
	6/19/2015	MAX	7.89	820	360	28	0.91	< 2	< 4	<0.5	< 0.05	0.073	61	< 1	18	22	130	3.6	0.023	<0.1	0.037	<0.01	5.85
	12/8/2015	MAX	7.77	1800	180	23	6.8	< 2	19	0.41	< 0.05	0.096	190	< 1	320	170	170	2.4	0.078	<0.1	0.035	<0.01	<0.1
	3/11/2016	MAX	7.93	2500	130	6.1	4	< 2	36	0.46	0.057	0.12	270	< 1	520	450	72	4.3	0.18	<0.1	0.01	0.022	0.8
	6/22/2016	MAX	8.06	600	180	5.9	3.6	< 2	41	0.56	0.22	0.14	86	1.9	24	49	75	4.4	0.13	<0.1	0.018	0.137	1.16
	6/23/2016	MAX																					
	12/1/2016	MAX	7.56	1000	190	13	15		220	1.3	< 0.05	0.19	220	34	75	36	140	2.2	0.094	<0.1	0.088	0.025	<0.1

Routine Groundwater Quality - General Analysis -Guelph WRIC & Waste Transfer Station

AECOM

	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L	NO2 mg/L	NO3 mg/L
Monitor	3/26/2008	MAX	8	691	251	29	3.6	< 2	4	0.4	0.16	< 0.02	70	< 1	36	42	76	<0.02	0.039	<0.1	0.053	0.02	<0.1
16A-08	6/25/2008	MAX	8.3	596	238	28	2.7		7	0.5	0.19	< 0.02	46	< 1	28	6.2	82	<0.02	0.022	<0.1	0.04	<0.01	<0.1
Bedrock	12/9/2008	MAX	8.1	605	239	26	2	< 2	< 4	0.3	0.06	< 0.02	39	< 1	29	2.5	77	<0.02	0.025	<0.1	0.039	<0.01	<0.1
	6/25/2009	MAX	8	645	239	29	2	< 2	< 4	0.3	0.05	< 0.02	47	< 1	39	4	88	<0.02	0.029	<0.1	0.043	<0.01	<0.1
	12/16/2009	MAX	8.1	636	240	29	2	< 2	7	0.2	0.07	0.03	42	< 1	36	3.6	87	<0.02	0.027	<0.1	0.043	<0.01	<0.1
	6/28/2010	MAX	7.9	634	236	27	1.8	< 2	4	0.2	< 0.05	0.02	53	< 1	31	2.1	83	<0.02	0.029	<0.1	0.035	<0.01	<0.1
	12/20/2010	MAX	7.94	630	236	29	1.9	< 2	< 4	0.2	0.05	< 0.02	41	< 1	33	2.2	88	0.04	0.027	<0.1	0.025	0.01	<0.1
	6/16/2011	MAX	7.99	620	232	29	2	< 2	18	0.4	0.06	< 0.02	58	< 1	34	2.2	88	0.06	0.025	<0.1	0.021	<0.01	<0.1
	12/13/2011	MAX	8.08	653	239	30	2	< 2	< 4	0.3	< 0.05	< 0.02	43	< 1	35	3.5	87	0.63	0.021	<0.1	0.037	<0.01	<0.1
	6/20/2012	MAX	8.03	640	230	27	1.9	< 2	10	0.19	< 0.05	0.033	39	< 1	33	2.7	84	0.48	0.025	<0.1	0.032	<0.01	<0.1
	12/12/2012	MAX	8.02	620	250	27	1.8	< 2	< 4	0.27	0.091	< 0.02	43	< 1	32	2.5	86	0.3	0.027	<0.1	0.029	<0.01	<0.1
	6/17/2013	MAX	8.07	620	230	27	1.7	< 2	< 4	0.26	0.064	< 0.02	40	< 1	31	2.3	79	0.37	0.028	<0.1	0.026	<0.01	<0.1
	12/9/2013	MAX	8.02	630	240	27	1.8	< 2	< 4	0.23	0.052	< 0.02	37	< 1	32	2.2	83	0.38	0.022	<0.1	0.023	<0.01	<0.1
	5/26/2014	MAX	7.9	620	230	28	1.8	< 2	< 4	<0.1	< 0.05	< 0.04	43	< 1	32	2.2	86	0.19	0.028	<0.1	0.031	<0.01	<0.1
	12/3/2014	MAX	8.03	620	240	29	2	< 2	< 4	0.12	0.084	< 0.02	40	< 1	32	2.1	87	0.07	0.032	<0.1	0.028	<0.01	<0.1
	6/18/2015	MAX	8.11	600	230	28	1.9	< 2	< 4	0.15	0.1	< 0.02	44	< 1	32	3.7	84	0.15	0.034	<0.1	0.028	<0.01	<0.1
	12/4/2015	MAX	8.06	630	230	29	1.9	< 2	4.6	0.13	< 0.05	< 0.02	39	< 1	32	2.3	85	0.18	0.022	<0.1	0.021	0.01	<0.1
	6/21/2016	MAX	8.14	600	230	27	1.7	< 2	4.5	0.12	< 0.05	< 0.02	42	< 1	31	3.4	77	0.24	0.028	<0.1	0.039	<0.01	<0.1
	12/5/2016	MAX	7.93	610	240	27	1.8	< 2	< 4	0.11	< 0.05	< 0.02	36	< 1	31	2.3	82	0.23	0.03	<0.1	0.032	0.019	<0.1
Monitor	3/26/2008	MAX	8	1130	477	42	1.5	< 2	15	0.9	0.09	< 0.02	105	< 1	38	60	130	<0.02	0.027	<0.1	0.16	0.12	3.3
16B-08	6/25/2008	MAX	8.2	1170	318	43	2.4		14	0.3	< 0.05	< 0.02	68	< 1	160	42	130	<0.02	<0.01	<0.1	1.1	<0.01	<0.1
Outwash	12/9/2008	MAX	7.8	1290	597	51	2.1	< 2	17	0.8	< 0.05	< 0.02	50	< 1	53	39	170	<0.02	0.028	<0.1	0.72	<0.01	2.9
	6/25/2009	MAX	7.8	1640	382	46	3.1	< 2	9	0.4	< 0.05	< 0.02	58	< 1	260	150	150	<0.02	0.022	<0.1	1.8	<0.01	<0.1
	12/15/2009	MAX	7.6	1350	555	48	2.1	< 2	19	0.5	< 0.05	0.03	48	< 1	96	71	160	0.03	0.033	<0.1	1.1	<0.01	<0.1
	6/23/2010	MAX	7.9	1470	373	41	2.8	< 2	9	0.4	< 0.05	0.02	79	< 1	210	120	130	<0.02	0.022	<0.1	1.3	<0.01	<0.1
	12/20/2010	MAX	7.55	1240	586	49	1.6	< 2	22	0.8	< 0.05	< 0.02	49	< 1	39	46	170	<0.02	0.029	<0.1	0.75	0.03	1.8
	6/16/2011	MAX	7.78	1340	383	37	2.6	< 2	20	0.4	< 0.05	< 0.02	63	< 1	170	130	120	0.09	0.021	<0.1	1.3	0.02	0.9
	12/13/2011	MAX	7.73	1190	518	50	1.3	< 2	17	1.1	< 0.05	0.13	71	< 1	23	38	160	1.3	0.033	<0.1	0.49	0.03	10
	6/20/2012	MAX	7.78	1200	360	27	2.1	< 2	14	0.45	< 0.05	< 0.02	38	< 1	120	120	89	0.18	0.021	<0.1	0.55	<0.01	<0.1
	12/12/2012	MAX	7.75	1100	560	45	1.1	< 2	16	0.74	< 0.05	< 0.02	55	< 5	10	23	170	0.14	0.034	<0.1	0.53	0.013	5
	6/17/2013	MAX	7.89	1200	370	30	2.1	< 2	7.3	0.35	< 0.05	< 0.02	41	< 1	130	110	97	0.1	0.021	<0.1	0.92	<0.01	<0.1
	12/9/2013	MAX	7.58	1200	570	47	1.5	< 2	6.6	0.78	< 0.05	< 0.02	43	< 1	38	43	160	<0.02	0.031	<0.1	0.72	<0.01	0.49
	5/26/2014	MAX	7.69	1200	360	29	2.3	< 2	7.1	0.2	< 0.05	< 0.02	35	< 1	140	120	99	0.1	0.025	<0.1	1	<0.01	<0.1
	12/3/2014	MAX	7.68	1100	570	47	1.3	< 2	17	0.64	0.053	< 0.02	39	< 1	13	25	160	<0.02	0.047	<0.1	0.62	<0.01	2.61
	6/18/2015	MAX	7.84	1300	430	35	2.5	< 2	9.7	0.23	< 0.05	< 0.02	39	< 1	150	120	120	0.07	0.032	<0.1	1.1	<0.01	<0.1
	12/4/2015	MAX	7.48	1100	530	45	1.6	< 2	17	0.4	< 0.05	< 0.02	36	< 1	33	38	150	0.08	0.032	<0.1	0.7	<0.01	<0.1
	6/21/2016	MAX	7.96	1200	360	27	2.2	< 2	14	0.22	< 0.05	< 0.02	45	< 1	130	120	94	0.15	0.026	<0.1	0.91	<0.01	<0.1
	12/5/2016	MAX	7.58	1300	400	33	2.5	< 2	9.4	0.27	< 0.05	< 0.02	57	< 1	140	97	120	0.11	0.034	<0.1	1.1	<0.01	<0.1

Routine Groundwater Quality - General Analysis -Guelph WRIC & Waste Transfer Station

AECOM

	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L	NO2 mg/L	NO3 mg/L
Monitor	3/26/2008	MAX	8.2	721	248	28	2.1	< 2	7	0.6	0.21	< 0.02	96	< 1	29	67	64	<0.02	0.039	<0.1	0.007	<0.01	0.3
17A-08	6/25/2008	MAX	8.3	643	233	30	2.2		< 4	0.5	0.29	< 0.02	63	< 1	36	16	80	0.05	0.022	<0.1	<0.005	<0.01	<0.1
Bedrock	12/9/2008	MAX	8.1	609	237	26	1.4	< 2	< 4	0.4	0.1	< 0.02	51	< 1	27	15	69	0.02	0.028	<0.1	<0.005	<0.01	<0.1
	6/25/2009	MAX	8	608	230	28	1.6	< 2	< 4	0.4	0.18	< 0.02	51	< 1	29	10	77	0.13	0.028	<0.1	<0.005	<0.01	<0.1
	12/16/2009	MAX	7.9	615	232	29	1.6	< 2	4	0.2	0.08	< 0.02	48	< 1	30	11	79	0.1	0.027	<0.1	<0.005	<0.01	0.2
	6/23/2010	MAX	8.1	645	229	30	1.6	< 2	< 4	0.5	0.13	< 0.02	59	< 1	34	12	79	0.11	0.027	<0.1	<0.005	<0.01	<0.1
	12/20/2010	MAX	7.92	650	228	29	1.6	< 2	5	0.3	0.19	< 0.02	51	< 1	36	11	81	0.03	0.027	<0.1	<0.005	0.04	<0.1
	6/16/2011	MAX	8.02	647	225	29	1.6	< 2	11	0.3	0.17	< 0.02	57	< 1	38	12	83	0.05	0.024	<0.1	<0.005	<0.01	<0.1
	12/15/2011	MAX	8.21	682	229	29	1.6	< 2	< 4	1	0.08	0.05	56	< 1	39	12	83	0.65	0.025	<0.1	0.014	0.05	0.1
	6/20/2012	MAX	8.04	680	230	30	1.6	< 2	10	0.37	0.073	0.03	55	< 1	38	12	84	0.86	0.027	<0.1	<0.005	<0.01	<0.1
	12/10/2012	MAX	7.85	680	230	28	1.6	< 2	< 4	0.41	0.12	< 0.02	66	< 1	39	12	85	0.8	0.029	<0.1	<0.005	<0.01	<0.1
	6/17/2013	MAX	8.06	690	230	29	1.5	< 2	< 4	0.41	0.14	0.075	61	< 1	41	13	78	2.1	0.026	<0.1	<0.005	<0.01	<0.1
	12/4/2013	MAX	7.84	710	240	32	1.9	< 2	6.1	0.46	0.12	0.08	62	< 1	45	14	87	0.13	0.028	<0.1	0.024	0.042	0.12
	5/22/2014	MAX	8.05	700	230	32	1.9	< 2	< 4	0.74	0.13	0.1	67	< 1	45	14	94	0.07	0.03	<0.1	0.022	0.021	<0.1
	12/2/2014	MAX	7.96	710	230	30	1.7	< 2	< 4	0.3	0.18	0.047	63	< 1	45	13	85	1.4	0.033	<0.1	0.0066	0.013	<0.1
	6/17/2015	MAX	7.97	710	230	31	1.6	< 2	< 4	0.2	0.093	0.032	68	< 1	45	14	85	0.91	0.026	<0.1	0.0052	0.044	<0.1
	12/3/2015	MAX	7.7	730	220	30	1.6	< 2	< 4	0.21	0.07	0.022	69	< 1	46	14	90	0.62	0.029	<0.1	<0.005	0.011	<0.1
	6/21/2016	MAX	8.22	710	230	30	1.7	< 2	< 4	0.21	0.08	0.03	64	< 1	42	14	85	0.94	0.03	<0.1	0.024	0.012	<0.1
	12/6/2016	MAX	7.94	690	240	29	1.5	7	< 4	0.11	< 0.05	0.032	60	< 1	37	14	82	1.2	0.03	<0.1	0.0096	0.011	<0.1
Monitor	3/26/2008	MAX	8	2080	357	41	2.4	< 2	5	0.4	< 0.05	< 0.02	75	< 1	400	240	150	<0.02	0.025	<0.1	0.25	0.02	3.6
17B-08	6/25/2008	MAX	8.3	2380	313	46	2.8		11	0.3	< 0.05	< 0.02	68	< 1	500	290	160	<0.02	0.015	<0.1	0.29	<0.01	4.2
Outwash	12/9/2008	MAX	8	1580	319	32	2.5	< 2	4	0.3	< 0.05	< 0.02	56	< 1	260	170	110	<0.02	0.018	<0.1	0.14	<0.01	5.1
	6/25/2009	MAX	7.8	2730	304	48	3.1	< 2	8	0.2	< 0.05	< 0.02	66	< 1	620	330	190	<0.02	0.018	<0.1	0.33	<0.01	4.9
	12/16/2009	MAX	7.7	1730	321	36	2.3	< 2	6	0.2	< 0.05	0.04	39	< 1	300	180	140	<0.02	0.021	<0.1	0.16	<0.01	4.5
	6/23/2010	MAX	8	1850	304	34	2.8	< 2	6	0.4	< 0.05	0.02	74	< 1	330	180	140	<0.02	0.022	<0.1	0.081	<0.01	4
	12/20/2010	MAX	7.82	1640	320	29	2.2	< 2	4	0.2	< 0.05	< 0.02	45	< 1	270	170	120	<0.02	0.023	<0.1	0.13	<0.01	5
	6/16/2011	MAX	7.77	2020	321	34	2.4	< 2	12	0.2	< 0.05	< 0.02	64	< 1	410	250	130	<0.02	0.019	<0.1	0.25	<0.01	4.1
	12/15/2011	MAX	8.07	1510	325	28	2.1	< 2	10	0.9	< 0.05	0.34	38	< 1	230	160	110	12	0.021	<0.1	0.15	<0.01	3.5
	6/20/2012	MAX	7.8	2100	330	35	2.3	< 2	11	0.55	< 0.05	0.062	41	< 1	400	230	140	2.7	0.022	<0.1	0.26	<0.01	4.4
	12/10/2012	MAX	7.7	2400	330	36	2.9	< 2	< 4	0.19	< 0.05	< 0.04	59	< 1	480	260	170	1.2	0.026	<0.1	0.22	<0.01	3
	6/17/2013	MAX	7.91	1900	330	31	1.9	< 2	< 4	0.5	< 0.05	< 0.02	47	< 1	350	220	120	1.3	0.02	<0.1	0.24	<0.01	2.7
	12/4/2013	MAX	7.82	1600	330	27	2	< 2	6.5	0.43	< 0.05	0.032	40	< 1	270	200	100	<0.02	0.02	<0.1	0.24	<0.01	3.1
	5/22/2014	MAX	7.85	1400	320	27	1.8	< 2	< 4	0.2	< 0.05	< 0.02	38	< 1	220	170	100	<0.02	0.022	<0.1	0.24	<0.01	2.78
	12/2/2014	MAX	7.92	1400	320	27	1.9	< 2	4.6	0.17	0.056	0.025	36	< 1	220	160	100	1.1	0.026	<0.1	0.19	<0.01	2.55
	6/17/2015	MAX	7.81	1800	300	33	1.9	< 2	4.4	0.33	< 0.05	0.022	37	1.6	350	190	120	<0.02	0.017	<0.1	0.27	<0.01	0.34
	12/3/2015	MAX	7.93	1200	310	24	1.6	< 2	< 4	0.19	< 0.05	0.038	35	< 1	150	110	88	1.6	0.021	<0.1	0.14	<0.01	1.7
	6/21/2016	MAX	8.05	2100	310	39	2.3	< 2	7.2	0.25	< 0.05	0.021	47	< 1	430	230	150	0.71	0.025	<0.1	0.29	<0.01	2.84
	12/6/2016	MAX	7.95	1100	310	22	1.6	7	< 4	<0.1	< 0.05	0.027	56	< 1	120	99	91	1.2	0.025	<0.1	0.11	<0.01	1.46

Routine Groundwater Quality - General Analysis -Guelph WRIC & Waste Transfer Station

AECOM

	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L	NO2 mg/L	NO3 mg/L
Monitor	3/26/2008	MAX	8.1	803	258	27	1.5	< 2	23	0.9	0.09	< 0.02	130	< 1	18	89	65	88	0.029	<0.1	0.022	0.12	5.7
18A-08	6/25/2008	MAX	8.3	632	243	28	3		12	0.3	< 0.05	< 0.02	36	< 1	19	20	81	<0.02	<0.01	<0.1	0.25	<0.01	7.3
Bedrock	12/9/2008	MAX	8.1	613	247	27	1.1	< 2	< 4	0.5	0.16	< 0.02	35	< 1	16	6.1	76	<0.02	<0.01	<0.1	0.12	<0.01	6.7
	6/25/2009	MAX	7.9	605	242	29	1.2	< 2	< 4	0.2	< 0.05	< 0.02	34	< 1	16	5	85	<0.02	0.012	<0.1	0.32	<0.01	6.9
	12/15/2009	MAX	7.9	628	246	28	1.3	< 2	< 4	0.2	< 0.05	0.04	36	< 1	16	4.5	82	<0.02	0.01	<0.1	0.35	<0.01	8
	6/30/2010	MAX	8	625	241	29	1.2	< 2	18	0.3	< 0.05	0.03	38	< 1	18	4.6	82	<0.02	0.01	<0.1	0.33	0.02	6.5
	12/22/2010	MAX	7.85	628	241	31	1.2	< 2	< 4	<0.1	< 0.05	< 0.02	37	< 1	18	4.6	88	<0.02	<0.01	<0.1	0.36	<0.01	6.8
	6/16/2011	MAX	7.81	840	233	34	1.5	< 2	13	0.2	< 0.05	< 0.02	130	< 1	57	24	100	0.21	0.024	<0.1	0.009	<0.01	<0.1
	12/16/2011	MAX	7.91	621	251	27	1.2	< 2	32	2	0.33	1	36	2	16	4	78	20	<0.01	<0.1	0.22	0.02	5.3
	6/22/2012	MAX	7.82	610	240	28	1.3	< 2	55	2.8	< 0.05	0.17	38	< 1	16	4.1	82	3.3	<0.01	<0.1	0.36	0.038	4.8
	12/17/2012	MAX	7.59	610	250	30	1.2	< 2	< 4	<0.1	< 0.05	0.082	38	< 1	16	4.5	91	2	<0.01	<0.1	0.41	<0.01	5.1
	6/20/2013	MAX	8.32	610	240	28	1.2	< 2	22	1.1	0.079	1.4	39	< 1	16	4.2	87	33	<0.01	<0.1	0.36	0.035	4.7
	12/9/2013	MAX	7.81	620	240	28	1.1	< 2	6.1	0.66	0.17	0.11	37	< 1	16	4.3	81	0.05	<0.01	<0.1	0.37	<0.01	5
	5/27/2014	MAX	7.74	600	240	27	1	< 2	< 4	0.28	< 0.05	0.083	40	< 1	16	4.4	82	2.7	<0.01	<0.1	0.36	<0.01	4.86
Monitor	12/5/2014	N/A																					
18A-14	6/16/2015	MAX	7.93	620	250	27	1.8	< 2	29	0.75	< 0.05	0.38	45	< 1	18	9.1	84	12	0.014	<0.1	0.16	<0.01	4.68
Bedrock	12/8/2015	MAX	7.83	610	240	29	1.6	< 2	14	<1	< 0.05	0.39	35	< 1	17	4.7	84	13	<0.01	<0.1	0.26	0.026	4.42
	6/21/2016	MAX																					
	6/22/2016	MAX				28	1.3									4.5	77		0.011	<0.1	0.3		
	6/23/2016	MAX	8.05	610	250			< 2	6.7	<0.2	< 0.05	0.14	36	< 1	17			4.2				<0.01	5.03
	12/1/2016	MAX	7.93	620	250	26	1.2	< 2	< 4	<0.2	< 0.05	0.14	36	< 1	18	4.5	75	2.9	0.011	<0.1	0.35	<0.01	4.93
Monitor	3/26/2008	MAX	8.2	1020	284	12	2.1	< 2	53	1	0.12	0.02	223	< 1	8	270	29	150	0.07	<0.1	0.021	0.05	1.6
18B-08	6/25/2008	INS																					
Outwash	12/9/2008	INS																					
	6/25/2009	INS																					
	12/15/2009	INS																					
	6/30/2010	INS																					
	12/22/2010	INS																					
	6/16/2011	MAX	8.03	1080	424	18	5.5	< 2	14	0.4	< 0.05	0.03	120	< 1	19	190	60	<0.02	0.1	<0.1	<0.005	<0.01	4.4
	12/16/2011	INS																					
	6/22/2012	Dry																					
	12/17/2012	INS																					
	6/20/2013	INSV																					
	12/9/2013	Dry																					
	5/27/2014	MAX	7.97	520	260	26	0.73	< 2	18	2.1	< 0.05	0.43	10	< 1	9	6.2	65	10	<0.01	<0.1	0.018	<0.01	0.32
Monitor	12/5/2014	N/A																					
18B-14	6/16/2015	MAX	8.17	540	190	25	2.4	< 2	8.1	<1	< 0.05	0.94	19	< 1	40	24	53	37	0.029	<0.1	0.0074	<0.01	1.09
Outwash	12/8/2015	MAX	7.99	610	210	28	2.2	< 2	130	0.68	< 0.05	14	21	< 1	43	19	69	320	0.012	<0.1	0.0067	<0.01	4.2
	6/22/2016	MAX				15	1.5									180	39		<0.01	<0.1	0.014		
	6/23/2016	MAX	8.23	1200	210			< 2	140	<0.1	< 0.05	13	20	< 1	210			520				0.03	0.16
	12/1/2016	MAX	8.26	520	230	6	1.1	< 2	110	0.26	0.11	5.7	14	< 1	22	89	17	240	0.03	<0.1	0.0072	0.024	0.22

Routine Groundwater Quality - General Analysis -Guelph WRIC & Waste Transfer Station

AECOM

	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L	NO2 mg/L	NO3 mg/L
Monitor	3/26/2008	MAX	8.1	844	245	37	1.4	< 2	13	0.3	0.1	0.03	143	< 1	45	47	94	0.02	0.03	<0.1	<0.005	0.02	<0.1
19A-08	6/25/2008	MAX	8.2	841	240	37	1.3		4	0.3	0.05	< 0.02	134	< 1	50	33	100	0.04	0.022	<0.1	<0.005	<0.01	<0.1
Bedrock	12/9/2008	MAX	8.1	811	242	33	1.2	< 2	< 4	0.2	< 0.05	< 0.02	129	< 1	46	19	96	0.17	0.022	<0.1	<0.005	<0.01	<0.1
	6/25/2009	MAX	7.9	768	236	35	1.2	< 2	2	0.2	< 0.05	< 0.02	140	< 1	27	12	100	0.17	0.026	<0.1	<0.005	<0.01	<0.1
	12/15/2009	MAX	7.9	834	244	35	1.4	< 2	5	0.2	< 0.05	0.02	120	< 1	48	21	100	0.21	0.029	<0.1	<0.005	<0.01	<0.1
	6/30/2010	MAX	7.8	788	234	33	1.2	< 2	6	0.2	< 0.05	0.03	130	< 1	37	16	100	0.2	0.023	<0.1	<0.005	<0.01	<0.1
	12/22/2010	MAX	7.87	825	236	36	1.3	< 2	< 4	0.1	< 0.05	< 0.02	120	< 1	43	21	110	0.21	0.027	<0.1	<0.005	<0.01	<0.1
	6/15/2011	MAX	7.95	838	235	35	1.4	< 2	17	0.2	< 0.05	< 0.02	130	< 1	60	25	100	0.24	0.033	<0.1	<0.005	<0.01	<0.1
	12/16/2011	MAX	7.95	898	246	34	1.5	< 2	38	0.8	0.09	0.7	120	< 1	70	29	100	29	0.031	<0.1	0.067	<0.01	<0.1
	6/22/2012	MAX	7.87	880	240	35	1.4	< 2	< 4	0.49	< 0.05	0.055	110	< 1	65	28	110	2.4	0.028	<0.1	<0.005	<0.01	<0.1
	12/17/2012	MAX	7.74	890	250	35	1.5	< 2	8.5	0.61	0.074	0.031	120	< 1	68	32	110	0.53	0.025	<0.1	0.012	<0.01	<0.1
	6/20/2013	MAX	8.13	860	240	34	1.5	< 2	< 4	0.18	0.071	< 0.02	120	< 1	63	27	110	0.77	0.036	<0.1	<0.005	<0.01	<0.1
	12/9/2013	MAX	8.02	900	240	35	1.5	< 2	< 4	0.22	0.07	< 0.02	110	< 1	72	32	110	0.27	0.026	<0.1	<0.005	<0.01	<0.1
	5/27/2014	MAX	7.91	890	240	34	1.4	< 2	< 4	0.2	< 0.05	< 0.04	120	< 1	70	31	100	0.28	0.032	<0.1	<0.005	<0.01	<0.1
	12/4/2014	MAX	7.82	840	240	36	1.9	< 2	< 4	<0.1	0.1	0.054	110	< 1	72	31	110	0.26	0.035	<0.1	0.016	<0.01	<0.1
	6/18/2015	MAX	7.98	860	250	35	1.6	< 2	9.6	0.16	0.16	0.13	110	< 1	68	31	100	4.7	0.036	<0.1	<0.005	0.014	<0.1
	12/2/2015	MAX	7.94	880	230	35	1.5	< 2	5	0.12	< 0.05	0.024	120	< 1	66	30	100	0.63	0.032	<0.1	<0.005	<0.01	<0.1
	6/20/2016	MAX	8.09	890	250	34	1.6	< 2	< 4	0.2	0.055	< 0.02	110	< 1	69	30	100	0.5	0.035	<0.1	0.015	<0.01	<0.1
	11/28/2016	MAX	7.95	840	230	34	1.5	< 2	13	0.16	0.071	0.12	120	< 1	68	30	100	2.5	0.027	<0.1	0.0051	<0.01	<0.1
Monitor	3/26/2008	MAX	8.1	1560	289	14	4.5	< 2	51	1.7	0.53	0.03	454	< 1	38	350	35	130	0.14	<0.1	0.02	<0.1	1
19B-08	6/25/2008	MAX	8.3	2070	314	10	7.8		38	1.8	1	< 0.02	576	< 1	60	480	23	<0.02	0.2	<0.1	<0.005	0.26	2.5
Outwash	12/9/2008	MAX	8.2	2290	485	13	8.6	< 2	13	1.1	0.44	< 0.02	596	< 1	56	470	36	<0.02	0.27	<0.1	<0.005	0.06	8.8
	6/25/2009	MAX	8.2	2010	499	10	8.1	< 2	9	1.1	0.54	< 0.02	420	< 1	40	470	28	<0.02	0.23	<0.1	<0.005	0.12	10
	12/15/2009	INS																					
	6/30/2010	INS																					
	12/22/2010	INS																					
	6/15/2011	MAX	8.07	1220	485	15	6.4	< 2	16	0.4	< 0.05	0.03	150	< 1	16	250	44	1.7	0.15	<0.1	0.005	<0.01	5.4
	12/16/2011	MAX	7.93	1670	666	25	7.3	< 2	25	0.8	< 0.05	0.57	180	< 1	18	160	85	15	0.1	<0.1	0.006	<0.01	5.6
	6/22/2012	Dry																					
	12/17/2012	MAX	7.72	1300	620	18	11	< 2	17	0.75	< 0.05	0.69	77	< 1	7	260	57	11	0.14	<0.1	0.007	<0.01	2.8
	6/20/2013	INSV																					
	12/9/2013	MAX	8.02	1400	650	14	10	< 2	< 4	0.3	< 0.05	0.14	77	< 1	16	220	45	0.02	0.14	<0.1	<0.005	<0.01	3.8
	5/27/2014	MAX	7.71	1100	470	31	6.7	< 2	5.8	1.1	< 0.05	0.43	63	< 1	29	110	98	5.9	0.066	<0.1	0.023	<0.01	5.78
	12/4/2014	MAX	7.87	1600	700	26	12	< 2	5.4	0.38	< 0.05	0.15	98	< 1	26	300	75	<0.02	0.17	0.14	0.026	0.01	4.94
	6/18/2015	MAX	8.03	1500	620	22	11	< 2	< 4	0.27	0.16	0.09	110	< 1	42	250	71	2.6	0.13	<0.1	0.026	0.017	4.61
	12/2/2015	MAX	7.23	1700	690	19	11	< 2	15	0.13	< 0.05	0.13	150	< 1	41	330	59	4.2	0.17	<0.1	0.014	<0.01	3.85
	6/20/2016	MAX	8.09	1600	690	22	11	< 2	14	0.32	< 0.05	0.058	150	< 1	36	300	65	1	0.17	<0.1	0.014	<0.01	3.16
	11/28/2016	INSV																					

Routine Groundwater Quality - General Analysis -Guelph WRIC & Waste Transfer Station

AECOM

	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L	NO2 mg/L	NO3 mg/L
Monitor	3/26/2008	MAX	8.1	732	262	30	1.8	< 2	15	0.8	0.07	< 0.02	107	< 1	19	56	72	53	0.025	<0.1	0.012	0.13	2
20A-08	6/25/2008	MAX	8.3	597	242	28	1.2		11	0.4	< 0.05	< 0.02	53	< 1	16	4.9	83	<0.02	<0.01	<0.1	0.032	0.07	2.5
Bedrock	12/9/2008	MAX	8.1	633	251	26	1.1	< 2	4	0.3	< 0.05	< 0.02	55	< 1	17	9.2	84	<0.02	0.02	<0.1	0.068	0.05	4.1
	6/25/2009	MAX	7.9	602	242	28	1.2	< 2	< 4	0.3	< 0.05	< 0.02	49	< 1	16	5.9	83	<0.02	0.011	<0.1	0.089	0.09	2.4
	12/15/2009	MAX	7.9	622	247	29	1.3	< 2	< 4	0.2	< 0.05	0.03	47	< 1	16	4.9	84	<0.02	0.012	<0.1	0.11	0.04	3.8
	6/29/2010	MAX	8	794	236	27	1.2	< 2	10	0.4	< 0.05	< 0.02	130	< 1	37	5.3	80	0.19	<0.01	<0.1	0.096	<0.01	<0.1
	12/22/2010	MAX	7.79	630	242	31	1.2	< 2	< 4	0.4	< 0.05	< 0.02	50	< 1	18	4.7	88	<0.02	<0.01	<0.1	0.12	0.06	2.9
	6/15/2011	MAX	7.94	604	239	26	1	< 2	15	0.2	< 0.05	< 0.02	48	< 1	17	4.9	80	<0.02	<0.01	<0.1	0.11	0.08	3.1
	12/16/2011	MAX	8.04	629	244	27	1.2	< 2	51	1	< 0.05	1	49	< 1	18	5.4	81	15	<0.01	<0.1	0.074	0.02	3.1
	6/22/2012	MAX	7.95	620	240	27	1.2	< 2	9.7	0.67	< 0.05	0.21	43	< 1	17	4	82	4.1	<0.01	<0.1	0.14	<0.01	3.4
	12/17/2012	MAX	7.63	620	250	30	1.3	< 2	< 4	0.17	< 0.05	< 0.02	48	< 1	17	4.5	87	2.6	<0.01	<0.1	0.13	0.012	3.3
	6/20/2013	MAX	8.38	610	240	28	1.1	< 2	6.2	0.24	< 0.05	< 0.02	44	< 1	15	3.9	86	0.81	<0.01	<0.1	0.13	0.029	2.5
	12/9/2013	MAX	7.92	630	250	26	1	< 2	< 4	0.32	< 0.05	0.029	43	< 1	17	5.7	78	0.33	<0.01	<0.1	0.11	0.038	3.6
	5/27/2014	MAX	7.87	610	240	28	1.1	< 2	< 4	0.22	< 0.05	< 0.02	45	< 1	17	3.9	84	<0.02	<0.01	<0.1	0.16	0.045	2.81
	12/4/2014	MAX	7.89	620	240	29	1.2	< 2	< 4	<0.1	< 0.05	< 0.02	44	< 1	17	4.2	85	<0.02	<0.01	<0.1	0.13	0.03	3.11
	6/18/2015	MAX	8.03	600	250	29	1.2	< 2	< 4	0.27	< 0.05	< 0.02	43	< 1	17	4.1	85	0.41	0.01	<0.1	0.12	0.036	3.09
	12/2/2015	MAX	7.42	630	240	29	1.3	< 2	4.4	<0.1	< 0.05	< 0.02	46	< 1	19	4.7	84	1.7	0.013	<0.1	0.13	0.012	3.49
	6/20/2016	MAX	8.1	610	250	28	1.1	< 2	23	0.32	< 0.05	0.13	42	< 1	16	4.3	82	3.6	<0.01	<0.1	0.13	<0.01	2.63
	11/28/2016	MAX	7.95	620	250	28	1.2	< 2	9.2	0.16	< 0.05	0.033	41	< 1	20	4.8	84	0.25	<0.01	<0.1	0.13	<0.01	3.45
Monitor	3/26/2008	MAX	8	572	244	30	1.2	< 2	10	0.5	< 0.05	< 0.02	52	< 1	11	3.5	82	73	<0.01	<0.1	0.09	<0.01	1.2
20B-08	6/25/2008	MAX	8.2	933	235	26	3.3		20	0.6	< 0.05	< 0.02	78	< 1	110	57	99	<0.02	0.013	<0.1	0.63	<0.01	<0.1
Outwash	12/9/2008	MAX	8	694	266	25	1.3	< 2	7	0.3	< 0.05	< 0.02	73	< 1	25	16	84	<0.02	0.018	<0.1	0.16	<0.01	<0.1
	6/25/2009	MAX	7.7	822	254	26	1.9	< 2	10	0.3	< 0.05	< 0.02	49	< 1	88	45	95	<0.02	0.014	<0.1	0.37	<0.01	<0.1
	12/15/2009	MAX	7.9	628	271	27	1.5	< 2	< 4	0.2	< 0.05	< 0.02	56	< 1	8	9.6	85	<0.02	0.012	<0.1	0.18	<0.01	<0.1
	6/29/2010	MAX	7.8	1080	256	29	1.9	< 2	14	0.4	< 0.05	0.02	44	< 1	170	58	110	<0.02	0.013	<0.1	0.64	<0.01	<0.1
	12/22/2010	MAX	7.87	631	272	31	1.5	< 2	< 4	0.2	< 0.05	< 0.02	49	< 1	12	5.9	93	<0.02	<0.01	<0.1	0.14	<0.01	0.3
	6/15/2011	MAX	7.9	614	296	28	1.3	< 2	13	0.3	< 0.05	< 0.02	29	< 1	7	3.6	89	<0.02	0.016	<0.1	0.13	<0.01	<0.1
	12/16/2011	MAX	7.94	590	272	25	1.1	< 2	14	0.8	< 0.05	0.27	32	< 1	10	4.3	78	7.1	<0.01	<0.1	0.098	<0.01	<0.1
	6/22/2012	MAX	7.8	790	270	27	1.8	3	93	1.3	0.19	0.4	44	8.9	67	30	93	7.7	<0.01	<0.1	0.28	<0.01	<0.1
	12/17/2012	MAX	7.65	670	280	32	1.5	< 2	13	0.3	< 0.05	0.072	44	< 1	24	11	97	2.5	<0.01	<0.1	0.11	<0.01	0.14
	6/20/2013	MAX	8.25	910	260	28	1.5	< 2	16	0.5	< 0.05	0.089	49	< 1	100	50	100	3.1	0.013	<0.1	0.43	<0.01	<0.1
	12/9/2013	MAX	7.88	790	280	28	1.4	< 2	< 4	0.34	< 0.05	0.021	43	< 1	59	23	91	<0.02	<0.01	<0.1	0.23	<0.01	<0.1
	5/27/2014	MAX	7.82	700	290	31	1.4	< 2	7.5	0.28	< 0.05	< 0.02	44	< 1	29	8.8	95	1.2	0.01	<0.1	0.1	<0.01	<0.1
	12/4/2014	MAX	7.86	700	310	32	1.6	< 2	5.8	0.2	< 0.05	0.032	36	< 1	25	11	100	0.04	0.013	<0.1	0.16	<0.01	<0.1
	6/18/2015	MAX	7.89	730	300	31	1.7	< 2	9.7	0.12	< 0.05	0.097	49	< 1	30	13	97	3.7	0.014	<0.1	0.083	<0.01	0.1
	12/2/2015	MAX	7.46	740	280	32	1.6	< 2	25	0.16	< 0.05	0.13	52	< 1	33	11	97	4.5	0.012	<0.1	0.092	<0.01	<0.1
	6/20/2016	MAX	7.89	980	310	41	1.9	< 2	15	0.21	< 0.05	0.069	72	< 1	90	21	120	3	0.013	<0.1	0.18	<0.01	0.59
	11/28/2016	MAX	7.86	970	310	35	1.8	< 2	8.8	0.16	< 0.05	0.057	69	< 1	98	42	110	2.5	<0.01	<0.1	0.19	<0.01	<0.1

Routine Groundwater Quality - General Analysis -Guelph WRIC & Waste Transfer Station

AECOM

	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L	NO2 mg/L	NO3 mg/L
Monitor	6/25/2008	N/A																					
21A-08	6/25/2008	MAX																					
Bedrock	6/25/2008	MAX																					
	6/25/2008	N/A																					
	12/9/2008	MAX	8.1	820	284	32	1.2	< 2	8	0.5	< 0.05	< 0.02	49	< 1	54	34	86	<0.02	0.013	<0.1	0.22	0.02	6.2
	6/25/2009	MAX	7.8	583	261	26	0.89	< 2	6	0.3	< 0.05	< 0.02	30	< 1	5	13	78	<0.02	0.015	<0.1	0.26	<0.01	4.8
	12/15/2009	MAX	7.8	776	277	29	1.1	< 2	4	0.3	< 0.05	0.02	39	< 1	47	33	86	0.05	0.018	<0.1	0.32	<0.01	6.3
	6/25/2010	MAX	8	589	262	25	0.87	< 2	4	0.4	< 0.05	< 0.02	26	< 1	8	13	75	<0.02	0.012	<0.1	0.29	<0.01	4.3
	12/22/2010	MAX	7.79	660	278	29	1.1	< 2	< 4	0.3	< 0.05	< 0.02	32	< 1	18	19	87	<0.02	0.01	<0.1	0.29	<0.01	5.1
	6/14/2011	MAX	7.85	557	263	26	0.86	< 2	15	0.5	< 0.05	< 0.02	21	< 1	4	7.5	79	<0.02	0.02	<0.1	0.36	<0.01	3.1
	12/14/2011	MAX	8.07	619	278	26	1	< 2	15	2	< 0.05	0.14	27	< 1	10	14	79	0.83	<0.01	<0.1	0.31	<0.01	3.5
	6/18/2012	MAX	7.93	570	260	24	0.88	< 2	12	0.26	< 0.05	< 0.02	24	< 1	6	9.8	73	0.44	<0.01	<0.1	0.31	<0.01	2.9
	12/10/2012	MAX	7.81	650	290	28	1.1	< 2	< 4	0.34	< 0.05	< 0.02	28	< 1	19	18	84	0.07	0.011	<0.1	0.36	<0.01	3.1
	6/19/2013	MAX	8.23	560	270	23	0.8	< 2	6.1	0.41	< 0.05	0.032	19	< 1	4	6.9	71	0.97	0.014	<0.1	0.31	<0.01	1.9
	12/3/2013	MAX	7.76	570	280	27	1.1	< 2	5.5	0.54	0.25	0.039	20	14	6	10	80	<0.02	0.016	<0.1	0.27	<0.01	2.1
	5/20/2014	MAX	7.85	580	280	25	0.82	< 2	5.6	0.15	< 0.05	< 0.02	23	< 1	8	8.9	80	0.29	0.012	<0.1	0.35	<0.01	2.32
	12/3/2014	MAX	7.94	630	280	27	1	< 2	< 4	0.34	< 0.05	< 0.02	21	< 1	22	20	80	<0.02	0.017	<0.1	0.38	<0.01	1.88
	6/22/2015	MAX	7.74	580	280	25	0.96	< 2	7.1	0.35	< 0.05	< 0.02	20	< 1	12	11	77	0.42	0.015	<0.1	0.34	<0.01	1.57
	12/7/2015	MAX	7.86	620	280	28	1	< 2	< 4	0.25	< 0.05	< 0.02	24	< 1	16	16	81	0.11	<0.01	<0.1	0.35	<0.01	1.77
	6/22/2016	MAX	8.02	550	280	25	0.84	< 2	< 4	<0.1	< 0.05	< 0.02	15	< 1	5	8.1	73	0.09	0.017	<0.1	0.32	<0.01	1.16
	12/5/2016	MAX	7.84	640	290	25	0.96	< 2	9.1	<0.1	< 0.05	< 0.02	22	< 1	22	19	79	0.06	0.018	<0.1	0.35	<0.01	1.59
Monitor	12/19/2011	MAX	7.88	769	212	35	1.6	< 2	< 4	0.9	< 0.05	0.14	89	< 1	56	16	110	1.3	0.015	0.16	0.015	<0.01	<0.1
22A-11	6/19/2012	MAX	7.96	990	260	20	1.5	< 2	10	<0.1	0.1	< 0.02	25	< 1	130	78	94	0.19	0.024	<0.1	0.015	<0.01	4
Bedrock	12/11/2012	MAX	7.82	780	240	31	1.4	< 2	< 4	0.11	< 0.05	0.029	93	< 1	49	16	100	0.89	0.023	<0.1	<0.005	<0.01	<0.1
	6/17/2013	MAX	8.22	780	230	31	1.3	< 2	< 4	0.26	0.062	0.055	88	< 1	49	16	88	1.2	0.02	<0.1	0.006	<0.01	<0.1
	12/4/2013	MAX	7.86	770	240	33	2.3	< 2	7.1	0.35	0.14	0.11	85	< 1	55	17	93	1.2	0.025	0.18	0.01	0.023	0.12
	5/21/2014	MAX	7.95	760	230	32	1.6	< 2	< 4	0.35	0.058	0.21	88	< 1	48	15	99	0.28	0.022	0.22	0.025	0.033	<0.1
	12/2/2014	MAX	7.97	770	240	32	1.5	< 2	< 4	0.25	0.15	0.32	85	< 1	47	15	97	2.1	0.025	<0.1	<0.005	0.021	<0.1
	6/16/2015	MAX	8.01	760	240	33	1.5	< 2	5.1	0.12	< 0.05	0.081	87	< 1	49	16	99	0.7	0.023	<0.1	<0.005	0.01	<0.1
	12/3/2015	MAX	7.66	780	230	32	1.5	< 2	< 4	0.14	< 0.05	0.035	86	< 1	50	17	90	0.72	0.022	<0.1	0.0052	<0.01	<0.1
	6/21/2016	MAX	8.12	770	230	32	1.4	2	7.2	0.14	< 0.05	0.06	86	< 1	48	17	92	0.72	0.021	<0.1	<0.005	0.014	<0.1
	12/6/2016	MAX	8.01	790	240	32	1.5	6	< 4	0.11	0.06	0.061	78	< 1	56	18	93	0.72	0.022	<0.1	<0.005	<0.01	0.14
Monitor	12/19/2011	MAX	7.83	817	299	24	1.6	< 2	< 4	0.3	< 0.05	0.03	25	< 1	57	43	110	0.21	0.014	<0.1	0.021	<0.01	3.7
22B-11	6/19/2012	MAX	7.97	770	230	32	1.3	< 2	9.8	0.43	< 0.05	0.04	83	< 1	46	13	96	1.4	0.019	<0.1	<0.005	<0.01	<0.1
Outwash	12/11/2012	MAX	7.82	870	340	22	1.5	< 2	< 4	0.46	< 0.05	< 0.02	26	< 1	59	48	110	0.28	0.024	<0.1	0.012	<0.01	3.5
	6/17/2013	MAX	7.89	1100	240	22	1.7	< 2	< 4	0.69	< 0.05	< 0.02	28	< 1	150	93	100	0.23	0.028	<0.1	0.013	<0.01	3.9
	12/4/2013	MAX	7.85	910	300	19	1.6	< 2	7.5	0.44	< 0.05	< 0.02	23	< 1	98	83	84	<0.02	0.025	<0.1	0.021	<0.01	3
	5/21/2014	MAX	7.83	1100	270	22	1.8	< 2	21	0.5	< 0.05	< 0.02	28	< 1	140	84	100	<0.02	0.022	<0.1	0.017	0.014	4.13
	12/2/2014	MAX	7.9	950	340	22	1.9	< 2	< 4	0.21	0.082	< 0.02	21	< 1	96	70	110	0.05	0.031	<0.1	0.015	0.02	2.94
	6/16/2015	MAX	7.95	1200	280	26	2	< 2	< 4	0.66	< 0.05	< 0.02	20	< 1	170	93	120	0.05	0.026	<0.1	0.018	<0.01	3.93
	12/3/2015	MAX	7.64	870	280	23	1.5	< 2	< 4	0.12	< 0.05	< 0.02	45	< 1	75	41	100	0.2	0.024	<0.1	0.014	<0.01	0.32
	6/21/2016	MAX	8.05	1100	280	22	1.6	< 2	5.4	0.22	< 0.05	0.022	27	< 1	160	110	100	0.17	0.022	<0.1	0.016	<0.01	2.78
	12/6/2016	MAX	7.81	1200	350	32	1.9	< 2	< 4	<0.1	< 0.05	< 0.02	30	< 1	140	50	140	0.18	0.026	<0.1	0.023	<0.01	1.8

Routine Groundwater Quality - General Analysis -Guelph WRIC & Waste Transfer Station

AECOM

	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L	NO2 mg/L	NO3 mg/L
Monitor	7/5/2012	MAX	7.8	700	230	28	0.95	< 2	4.8	<0.1	< 0.05	< 0.02	100	< 1	24	11	85	0.49	0.026	<0.1	<0.005	<0.01	<0.1
23A-12	12/17/2012	MAX	7.71	720	250			< 2	< 4	0.29	< 0.05	< 0.02	95	< 1	30			0.13				<0.01	<0.1
Bedrock	12/18/2012	MAX	7.68	720	250	34	1.3	< 2	< 4	0.3	0.063	0.035	93	< 1	30	15	97	0.13	0.014	<0.1	<0.005	<0.01	<0.1
	6/18/2013	MAX	7.99	710	230	32	1.2	< 2	< 4	0.23	0.052	< 0.02	100	< 1	25	12	96	0.15	0.024	<0.1	<0.005	<0.01	<0.1
	12/5/2013	MAX	7.86	720	240	34	1.3	< 2	9.4	0.28	< 0.05	< 0.02	90	< 1	30	14	96	0.12	0.024	<0.1	<0.005	<0.01	<0.1
	5/22/2014	MAX	7.91	710	240	31	1.2	< 2	< 4	0.39	< 0.05	< 0.02	92		31	14	93	0.13	0.024	<0.1	0.012	<0.01	<0.1
	12/4/2014	MAX	7.9	700	230	33	1.3	< 2	< 4	<0.1	0.066	< 0.02	96	< 1	24	12	95	0.14	0.024	<0.1	<0.005	<0.01	<0.1
	6/17/2015	MAX	7.89	700	230	30	1.2	< 2	< 4	0.1	< 0.05	< 0.02	110	< 1	25	12	84	0.17	0.02	<0.1	<0.005	<0.01	<0.1
	12/4/2015	MAX	7.95	710	230	32	1.2	< 2	< 4	<0.1	< 0.05	< 0.02	100	< 1	24	12	90	0.14	0.019	<0.1	<0.005	<0.01	<0.1
	6/20/2016	MAX	8.21	710	240	31	1.2	< 2	< 4	0.11	< 0.05	< 0.02	93	< 1	26	13	90	0.36	0.024	<0.1	<0.005	<0.01	<0.1
	11/28/2016	MAX	7.94	680	230	30	1.2	< 2	< 4	0.12	< 0.05	< 0.02	100	< 1	24	11	87	0.24	0.017	<0.1	<0.005	<0.01	<0.1
Monitor	7/5/2012	MAX	7.83	1200	320	35	4.6	< 2	74	<1	0.075	5.6	35	< 1	150	79	96	120	0.094	<0.1	0.039	0.054	3.7
23B-12	7/19/2012	MAX	7.75	1400	330	40	5	< 2	12	0.75	0.088	0.6	29	< 1	190	120	120	27	0.061	<0.1	0.18	0.011	3.5
Outwash	12/18/2012	MAX	7.65	1300	380	35	4.2	< 2	23	<0.5	0.074	1.2	36	< 1	140	120	130	26	0.59	<0.1	0.22	<0.01	4.8
	6/18/2013	MAX	7.91	1100	320	29	3	< 2	< 4	0.4	< 0.05	0.23	26	< 1	150	83	120	9.9	0.49	<0.1	0.16	<0.01	3.3
	12/5/2013	MAX	7.71	1100	400	33	3.4	< 2	12	1.7	< 0.05	0.41	28	< 1	110	98	130	0.03	0.39	<0.1	0.2	<0.01	3.4
	5/22/2014	MAX	7.72	1200	360	78	2.6	< 2	< 4	0.55	< 0.05	0.24	34	< 1	140	84	240	<0.02	0.71	0.23	0.88	<0.01	3.31
	12/4/2014	MAX	7.82	1400	380	150	5.4	< 2	5	<0.5	< 0.05	0.48	33	< 1	180	140	380	<0.02	0.19	0.52	1.6	0.02	4.59
	6/17/2015	MAX	7.74	1400	320	31	2.7	< 2	4.3	0.75	< 0.05	0.33	29	< 1	210	120	110	15	0.46	<0.1	0.25	<0.01	4.68
	12/4/2015	MAX	7.74	1700	360	34	3.6	< 2	17	0.96	< 0.05	0.51	34	< 1	270	200	130	19	0.12	<0.1	0.35	0.02	4.17
	6/20/2016	MAX	8.05	1300	340	30	2.7	< 2	< 4	0.77	< 0.05	0.28	31	< 1	170	120	120	15	0.39	<0.1	0.26	<0.01	3.42
	11/28/2016	MAX	7.79	1400	330	31	2.9	< 2	< 4	0.17	< 0.05	0.35	37	< 1	220	140	120	16	0.038	<0.1	0.37	<0.01	3.64

ORGANIC ANALYSIS (ATG MISA Groups 19 - 20) - Guelph WRIC/Waste Transfer Station - 2016

AECOM

Parameter	5-96 05-Dec-2016	6a-96 01-Dec-2016	6b-96 01-Dec-2016	7-96 30-Nov-2016
MISA Group 19				
Acenaphthene:	< 0.2	< 0.2	< 0.2	< 0.2
5-Nitroacenaphthene:	< 1	< 1	< 1	< 1
Acenaphthylene:	< 0.2	< 0.2	< 0.2	< 0.2
Anthracene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(a)anthracene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(a)Pyrene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(b)Fluoranthene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(g,h,i)perylene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(k)Fluoranthene:	< 0.2	< 0.2	< 0.2	< 0.2
Biphenyl:	< 0.5	< 0.5	< 0.5	< 0.5
Camphene:	< 1	< 1	< 1	< 1
1-Chloronaphthalene:	< 1	< 1	< 1	< 1
2-Chloronaphthalene:	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene:	< 0.2	< 0.2	< 0.2	< 0.2
Dibenzo(a,h)Anthracene:	< 0.2	< 0.2	< 0.2	< 0.2
Fluoranthene:	< 0.2	< 0.2	< 0.2	< 0.2
Fluorene:	< 0.2	< 0.2	< 0.2	< 0.2
Indeno(1,2,3-cd)Pyrene:	< 0.2	< 0.2	< 0.2	< 0.2
Indole:	< 1	< 1	< 1	< 1
1-Methylnaphthalene:	< 0.2	< 0.2	< 0.2	< 0.2
2-Methylnaphthalene:	< 0.2	< 0.2	< 0.2	< 0.2
Naphthalene:	< 0.2	< 0.2	< 0.2	< 0.2
Perylene:	< 0.2	< 0.2	< 0.2	< 0.2
Phenanthrene:	< 0.2	< 0.2	< 0.2	< 0.2
Pyrene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzyl Butyl Phthalate:	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-ethylhexyl)Phthalate	< 2	< 2	< 2	< 2
Di-N-butylPhthalate:	< 2	< 2	< 2	< 2
Di-N-octylPhthalate:	< 0.8	< 0.8	< 0.8	< 0.8
4-Bromophenyl phenyl Ethe	< 0.3	< 0.3	< 0.3	< 0.3
4-Chlorophenyl Phenyl Eth	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-chloroisopropyl)Ether	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-Chloroethyl)Ether:	< 0.5	< 0.5	< 0.5	< 0.5
Diphenyl ether:	< 0.3	< 0.3	< 0.3	< 0.3
2,4-Dinitrotoluene:	< 0.5	< 0.5	< 0.5	< 0.5
2,6-Dinitrotoluene:	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-chloroethoxy)Methan	< 0.5	< 0.5	< 0.5	< 0.5
Nitrosodiphenylamine /Diphenylamine:	< 1	< 1	< 1	< 1
N-Nitrosodi-N-propylamine:	< 0.5	< 0.5	< 0.5	< 0.5
MISA Group 20				
2,3,4,5-Tetrachlorophenol	< 0.4	< 0.4	< 0.4	< 0.4
2,3,4,6-Tetrachlorophenol	< 0.5	< 0.5	< 0.5	< 0.5
2,3,5,6-Tetrachlorophenol	< 0.5	< 0.5	< 0.5	< 0.5
2,3,4-Trichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,3,5-Trichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4,5-Trichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4,6-Trichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4-Dinitrophenol:	< 2.5	< 2	< 2	< 2
2,4-Dimethylphenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4-Dichlorophenol:	< 0.3	< 0.3	< 0.3	< 0.3
2,6-Dichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
4,6-Dinitro-o-Cresol:				
2-Chlorophenol:	< 0.3	< 0.3	< 0.3	< 0.3
4-Chloro-3-methylphenol	< 0.5	< 0.5	< 0.5	< 0.5
4-Nitrophenol:	< 1.4	< 1.4	< 1.4	< 1.4
o-Cresol:	< 0.5	< 0.5	< 0.5	< 0.5
m-,p-Cresol:	< 0.5	< 0.5	< 0.5	< 0.5
Pentachlorophenol:	< 1	< 1	< 1	< 1
Phenol:	< 0.5	< 0.5	< 0.5	< 0.5

ORGANIC ANALYSIS (ATG MISA Groups 19 - 20) - Guelph WRIC/Waste Transfer Station - 2016

AECOM

Parameter	8-96 05-Dec-2016	9-96 29-Nov-2016	10-00 29-Nov-2016	11a-00 30-Nov-2016
MISA Group 19				
Acenaphthene:	< 0.2	< 0.2	< 0.2	< 0.2
5-Nitroacenaphthene:	< 1	< 1	< 1	< 1
Acenaphthylene:	< 0.2	< 0.2	< 0.2	< 0.2
Anthracene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(a)anthracene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(a)Pyrene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(b)Fluoranthene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(g,h,i)perylene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(k)Fluoranthene:	< 0.2	< 0.2	< 0.2	< 0.2
Biphenyl:	< 0.5	< 0.5	< 0.5	< 0.5
Camphene:	< 1	< 1	< 1	< 1
1-Chloronaphthalene:	< 1	< 1	< 1	< 1
2-Chloronaphthalene:	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene:	< 0.2	< 0.2	< 0.2	< 0.2
Dibenzo(a,h)Anthracene:	< 0.2	< 0.2	< 0.2	< 0.2
Fluoranthene:	< 0.2	< 0.2	< 0.2	< 0.2
Fluorene:	< 0.2	< 0.2	< 0.2	< 0.2
Indeno(1,2,3-cd)Pyrene:	< 0.2	< 0.2	< 0.2	< 0.2
Indole:	< 1	< 1	< 1	< 1
1-Methylnaphthalene:	< 0.2	< 0.2	< 0.2	< 0.2
2-Methylnaphthalene:	< 0.2	< 0.2	< 0.2	< 0.2
Naphthalene:	< 0.2	< 0.2	< 0.2	< 0.2
Perylene:	< 0.2	< 0.2	< 0.2	< 0.2
Phenanthrene:	< 0.2	< 0.2	< 0.2	< 0.2
Pyrene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzyl Butyl Phthalate:	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-ethylhexyl)Phthalate	2.4	< 2	< 2	< 2
Di-N-butylPhthalate:	< 2	< 2	< 2	< 2
Di-N-octylPhthalate:	< 0.8	< 0.8	< 0.8	< 0.8
4-Bromophenyl phenyl Ethe	< 0.3	< 0.3	< 0.3	< 0.3
4-Chlorophenyl Phenyl Eth	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-chloroisopropyl)Ether	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-Chloroethyl)Ether:	< 0.5	< 0.5	< 0.5	< 0.5
Diphenyl ether:	< 0.3	< 0.3	< 0.3	< 0.3
2,4-Dinitrotoluene:	< 0.5	< 0.5	< 0.5	< 0.5
2,6-Dinitrotoluene:	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-chloroethoxy)Methan	< 0.5	< 0.5	< 0.5	< 0.5
Nitrosodiphenylamine /Diphenylamine:	< 1	< 1	< 1	< 1
N-Nitrosodi-N-propylamine:	< 0.5	< 0.5	< 0.5	< 0.5
MISA Group 20				
2,3,4,5-Tetrachlorophenol	< 0.4	< 0.4	< 0.4	< 0.4
2,3,4,6-Tetrachlorophenol	< 0.5	< 0.5	< 0.5	< 0.5
2,3,5,6-Tetrachlorophenol	< 0.5	< 0.5	< 0.5	< 0.5
2,3,4-Trichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,3,5-Trichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4,5-Trichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4,6-Trichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4-Dinitrophenol:	< 2.5	< 2	< 2	< 2
2,4-Dimethylphenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4-Dichlorophenol:	< 0.3	< 0.3	< 0.3	< 0.3
2,6-Dichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
4,6-Dinitro-o-Cresol:				
2-Chlorophenol:	< 0.3	< 0.3	< 0.3	< 0.3
4-Chloro-3-methylphenol	< 0.5	< 0.5	< 0.5	< 0.5
4-Nitrophenol:	< 1.4	< 1.4	< 1.4	< 1.4
o-Cresol:	< 0.5	< 0.5	< 0.5	< 0.5
m-,p-Cresol:	< 0.5	< 0.5	< 0.5	< 0.5
Pentachlorophenol:	< 1	< 1	< 1	< 1
Phenol:	< 0.5	< 0.5	< 0.5	< 0.5

ORGANIC ANALYSIS (ATG MISA Groups 19 - 20) - Guelph WRIC/Waste Transfer Station - 2016

AECOM

Parameter	11b-00 30-Nov-2016	12a-00 29-Nov-2016	12b-00 29-Nov-2016	13a-01 06-Dec-2016
MISA Group 19				
Acenaphthene:	< 0.2	< 0.2	< 0.2	< 0.2
5-Nitroacenaphthene:	< 1	< 1	< 1	< 1
Acenaphthylene:	< 0.2	< 0.2	< 0.2	< 0.2
Anthracene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(a)anthracene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(a)Pyrene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(b)Fluoranthene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(g,h,i)perylene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(k)Fluoranthene:	< 0.2	< 0.2	< 0.2	< 0.2
Biphenyl:	< 0.5	< 0.5	< 0.5	< 0.5
Camphene:	< 1	< 1	< 1	< 1
1-Chloronaphthalene:	< 1	< 1	< 1	< 1
2-Chloronaphthalene:	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene:	< 0.2	< 0.2	< 0.2	< 0.2
Dibenzo(a,h)Anthracene:	< 0.2	< 0.2	< 0.2	< 0.2
Fluoranthene:	< 0.2	< 0.2	< 0.2	< 0.2
Fluorene:	< 0.2	< 0.2	< 0.2	< 0.2
Indeno(1,2,3-cd)Pyrene:	< 0.2	< 0.2	< 0.2	< 0.2
Indole:	< 1	< 1	< 1	< 1
1-Methylnaphthalene:	< 0.2	< 0.2	< 0.2	< 0.2
2-Methylnaphthalene:	< 0.2	< 0.2	< 0.2	< 0.2
Naphthalene:	< 0.2	< 0.2	< 0.2	< 0.2
Perylene:	< 0.2	< 0.2	< 0.2	< 0.2
Phenanthrene:	< 0.2	< 0.2	< 0.2	< 0.2
Pyrene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzyl Butyl Phthalate:	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-ethylhexyl)Phthalate	< 2	< 2	< 2	< 2
Di-N-butylPhthalate:	< 2	< 2	< 2	< 2
Di-N-octylPhthalate:	< 0.8	< 0.8	< 0.8	< 0.8
4-Bromophenyl phenyl Ethe	< 0.3	< 0.3	< 0.3	< 0.3
4-Chlorophenyl Phenyl Eth	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-chloroisopropyl)Ether	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-Chloroethyl)Ether:	< 0.5	< 0.5	< 0.5	< 0.5
Diphenyl ether:	< 0.3	< 0.3	< 0.3	< 0.3
2,4-Dinitrotoluene:	< 0.5	< 0.5	< 0.5	< 0.5
2,6-Dinitrotoluene:	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-chloroethoxy)Methan	< 0.5	< 0.5	< 0.5	< 0.5
Nitrosodiphenylamine /Diphenylamine:	< 1	< 1	< 1	< 1
N-Nitrosodi-N-propylamine:	< 0.5	< 0.5	< 0.5	< 0.5
MISA Group 20				
2,3,4,5-Tetrachlorophenol	< 0.4	< 0.4	< 0.4	< 0.4
2,3,4,6-Tetrachlorophenol	< 0.5	< 0.5	< 0.5	< 0.5
2,3,5,6-Tetrachlorophenol	< 0.5	< 0.5	< 0.5	< 0.5
2,3,4-Trichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,3,5-Trichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4,5-Trichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4,6-Trichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4-Dinitrophenol:	< 2	< 2	< 2	< 2
2,4-Dimethylphenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4-Dichlorophenol:	< 0.3	< 0.3	< 0.3	< 0.3
2,6-Dichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
4,6-Dinitro-o-Cresol:				
2-Chlorophenol:	< 0.3	< 0.3	< 0.3	< 0.3
4-Chloro-3-methylphenol	< 0.5	< 0.5	< 0.5	< 0.5
4-Nitrophenol:	< 1.4	< 1.4	< 1.4	< 1.4
o-Cresol:	< 0.5	< 0.5	< 0.5	< 0.5
m-,p-Cresol:	< 0.5	< 0.5	< 0.5	< 0.5
Pentachlorophenol:	< 1	< 1	< 1	< 1
Phenol:	< 0.5	< 0.5	< 0.5	< 0.5

ORGANIC ANALYSIS (ATG MISA Groups 19 - 20) - Guelph WRIC/Waste Transfer Station - 2016

AECOM

Parameter	13b-01 06-Dec-2016	14a-01 05-Dec-2016	14b-01 05-Dec-2016	15a-01 01-Dec-2016
MISA Group 19				
Acenaphthene:	< 0.2	< 0.2	< 0.2	< 0.2
5-Nitroacenaphthene:	< 1	< 1	< 1	< 1
Acenaphthylene:	< 0.2	< 0.2	< 0.2	< 0.2
Anthracene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(a)anthracene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(a)Pyrene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(b)Fluoranthene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(g,h,i)perylene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(k)Fluoranthene:	< 0.2	< 0.2	< 0.2	< 0.2
Biphenyl:	< 0.5	< 0.5	< 0.5	< 0.5
Camphene:	< 1	< 1	< 1	< 1
1-Chloronaphthalene:	< 1	< 1	< 1	< 1
2-Chloronaphthalene:	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene:	< 0.2	< 0.2	< 0.2	< 0.2
Dibenzo(a,h)Anthracene:	< 0.2	< 0.2	< 0.2	< 0.2
Fluoranthene:	< 0.2	< 0.2	< 0.2	< 0.2
Fluorene:	< 0.2	< 0.2	< 0.2	< 0.2
Indeno(1,2,3-cd)Pyrene:	< 0.2	< 0.2	< 0.2	< 0.2
Indole:	< 1	< 1	< 1	< 1
1-Methylnaphthalene:	< 0.2	< 0.2	< 0.2	< 0.2
2-Methylnaphthalene:	< 0.2	< 0.2	< 0.2	< 0.2
Naphthalene:	0.35	< 0.2	< 0.2	< 0.2
Perylene:	< 0.2	< 0.2	< 0.2	< 0.2
Phenanthrene:	< 0.2	< 0.2	< 0.2	< 0.2
Pyrene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzyl Butyl Phthalate:	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-ethylhexyl)Phthalate	< 2	< 2	< 2	< 2
Di-N-butylPhthalate:	< 2	< 2	< 2	< 2
Di-N-octylPhthalate:	< 0.8	< 0.8	< 0.8	< 0.8
4-Bromophenyl phenyl Ethe	< 0.3	< 0.3	< 0.3	< 0.3
4-Chlorophenyl Phenyl Eth	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-chloroisopropyl)Ether	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-Chloroethyl)Ether:	< 0.5	< 0.5	< 0.5	< 0.5
Diphenyl ether:	< 0.3	< 0.3	< 0.3	< 0.3
2,4-Dinitrotoluene:	< 0.5	< 0.5	< 0.5	< 0.5
2,6-Dinitrotoluene:	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-chloroethoxy)Methan	< 0.5	< 0.5	< 0.5	< 0.5
Nitrosodiphenylamine /Diphenylamine:	< 1	< 1	< 1	< 1
N-Nitrosodi-N-propylamine:	< 0.5	< 0.5	< 0.5	< 0.5
MISA Group 20				
2,3,4,5-Tetrachlorophenol	< 0.4	< 0.4	< 0.4	< 0.4
2,3,4,6-Tetrachlorophenol	< 0.5	< 0.5	< 0.5	< 0.5
2,3,5,6-Tetrachlorophenol	< 0.5	< 0.5	< 0.5	< 0.5
2,3,4-Trichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,3,5-Trichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4,5-Trichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4,6-Trichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4-Dinitrophenol:	< 2	< 2.5	< 2.5	< 2
2,4-Dimethylphenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4-Dichlorophenol:	< 0.3	< 0.3	< 0.3	< 0.3
2,6-Dichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
4,6-Dinitro-o-Cresol:				
2-Chlorophenol:	< 0.3	< 0.3	< 0.3	< 0.3
4-Chloro-3-methylphenol	< 0.5	< 0.5	< 0.5	< 0.5
4-Nitrophenol:	< 1.4	< 1.4	< 1.4	< 1.4
o-Cresol:	< 0.5	< 0.5	< 0.5	< 0.5
m-,p-Cresol:	< 0.5	< 0.5	< 0.5	< 0.5
Pentachlorophenol:	< 1	< 1	< 1	< 1
Phenol:	< 0.5	< 0.5	< 0.5	< 0.5

ORGANIC ANALYSIS (ATG MISA Groups 19 - 20) - Guelph WRIC/Waste Transfer Station - 2016

AECOM

Parameter	15b-01 01-Dec-2016	16A-08 05-Dec-2016	16B-08 05-Dec-2016	17A-08 06-Dec-2016
MISA Group 19				
Acenaphthene:	< 0.8	< 0.2	< 0.2	< 0.2
5-Nitroacenaphthene:	< 4	< 1	< 1	< 1
Acenaphthylene:	< 0.8	< 0.2	< 0.2	< 0.2
Anthracene:	< 0.8	< 0.2	< 0.2	< 0.2
Benzo(a)anthracene:	< 0.8	< 0.2	< 0.2	< 0.2
Benzo(a)Pyrene:	< 0.8	< 0.2	< 0.2	< 0.2
Benzo(b)Fluoranthene:	< 0.8	< 0.2	< 0.2	< 0.2
Benzo(g,h,i)perylene:	< 0.8	< 0.2	< 0.2	< 0.2
Benzo(k)Fluoranthene:	< 0.8	< 0.2	< 0.2	< 0.2
Biphenyl:	< 2	< 0.5	< 0.5	< 0.5
Camphene:	< 4	< 1	< 1	< 1
1-Chloronaphthalene:	< 4	< 1	< 1	< 1
2-Chloronaphthalene:	< 2	< 0.5	< 0.5	< 0.5
Chrysene:	< 0.8	< 0.2	< 0.2	< 0.2
Dibenzo(a,h)Anthracene:	< 0.8	< 0.2	< 0.2	< 0.2
Fluoranthene:	< 0.8	< 0.2	< 0.2	< 0.2
Fluorene:	< 0.8	< 0.2	< 0.2	< 0.2
Indeno(1,2,3-cd)Pyrene:	< 0.8	< 0.2	< 0.2	< 0.2
Indole:	< 4	< 1	< 1	< 1
1-Methylnaphthalene:	< 0.8	< 0.2	< 0.2	< 0.2
2-Methylnaphthalene:	< 0.8	< 0.2	< 0.2	< 0.2
Naphthalene:	< 0.8	< 0.2	< 0.2	< 0.2
Perylene:	< 0.8	< 0.2	< 0.2	< 0.2
Phenanthrene:	< 0.8	< 0.2	< 0.2	< 0.2
Pyrene:	< 0.8	< 0.2	< 0.2	< 0.2
Benzyl Butyl Phthalate:	< 2	< 0.5	< 0.5	< 0.5
bis(2-ethylhexyl)Phthalate	< 8	< 2	< 2	< 2
Di-N-butylPhthalate:	< 8	< 2	< 2	< 2
Di-N-octylPhthalate:	< 3.2	< 0.8	< 0.8	< 0.8
4-Bromophenyl phenyl Ethe	< 1.2	< 0.3	< 0.3	< 0.3
4-Chlorophenyl Phenyl Eth	< 2	< 0.5	< 0.5	< 0.5
bis(2-chloroisopropyl)Ether	< 2	< 0.5	< 0.5	< 0.5
bis(2-Chloroethyl)Ether:	< 2	< 0.5	< 0.5	< 0.5
Diphenyl ether:	< 1.2	< 0.3	< 0.3	< 0.3
2,4-Dinitrotoluene:	< 2	< 0.5	< 0.5	< 0.5
2,6-Dinitrotoluene:	< 2	< 0.5	< 0.5	< 0.5
bis(2-chloroethoxy)Methan	< 2	< 0.5	< 0.5	< 0.5
Nitrosodiphenylamine /Diphenylamine:	< 4	< 1	< 1	< 1
N-Nitrosodi-N-propylamine:	< 2	< 0.5	< 0.5	< 0.5
MISA Group 20				
2,3,4,5-Tetrachlorophenol	< 1.6	< 0.4	< 0.4	< 0.4
2,3,4,6-Tetrachlorophenol	< 2	< 0.5	< 0.5	< 0.5
2,3,5,6-Tetrachlorophenol	< 2	< 0.5	< 0.5	< 0.5
2,3,4-Trichlorophenol:	< 2	< 0.5	< 0.5	< 0.5
2,3,5-Trichlorophenol:	< 2	< 0.5	< 0.5	< 0.5
2,4,5-Trichlorophenol:	< 2	< 0.5	< 0.5	< 0.5
2,4,6-Trichlorophenol:	< 2	< 0.5	< 0.5	< 0.5
2,4-Dinitrophenol:	< 8	< 2.5	< 2.5	< 2
2,4-Dimethylphenol:	< 2	< 0.5	< 0.5	< 0.5
2,4-Dichlorophenol:	< 1.2	< 0.3	< 0.3	< 0.3
2,6-Dichlorophenol:	< 2	< 0.5	< 0.5	< 0.5
4,6-Dinitro-o-Cresol:				
2-Chlorophenol:	< 1.2	< 0.3	< 0.3	< 0.3
4-Chloro-3-methylphenol	< 2	< 0.5	< 0.5	< 0.5
4-Nitrophenol:	< 5.6	< 1.4	< 1.4	< 1.4
o-Cresol:	< 2	< 0.5	< 0.5	< 0.5
m-,p-Cresol:	< 2	< 0.5	< 0.5	< 0.5
Pentachlorophenol:	< 4	< 1	< 1	< 1
Phenol:	< 2	< 0.5	< 0.5	< 0.5

ORGANIC ANALYSIS (ATG MISA Groups 19 - 20) - Guelph WRIC/Waste Transfer Station - 2016

AECOM

Parameter	17B-08 06-Dec-2016	18A-14 01-Dec-2016	18B-14 01-Dec-2016	19A-08 28-Nov-2016
MISA Group 19				
Acenaphthene:	< 0.2	< 0.2	< 0.2	< 0.2
5-Nitroacenaphthene:	< 1	< 1	< 1	< 1
Acenaphthylene:	< 0.2	< 0.2	< 0.2	< 0.2
Anthracene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(a)anthracene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(a)Pyrene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(b)Fluoranthene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(g,h,i)perylene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(k)Fluoranthene:	< 0.2	< 0.2	< 0.2	< 0.2
Biphenyl:	< 0.5	< 0.5	< 0.5	< 0.5
Camphene:	< 1	< 1	< 1	< 1
1-Chloronaphthalene:	< 1	< 1	< 1	< 1
2-Chloronaphthalene:	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene:	< 0.2	< 0.2	< 0.2	< 0.2
Dibenzo(a,h)Anthracene:	< 0.2	< 0.2	< 0.2	< 0.2
Fluoranthene:	< 0.2	< 0.2	< 0.2	< 0.2
Fluorene:	< 0.2	< 0.2	< 0.2	< 0.2
Indeno(1,2,3-cd)Pyrene:	< 0.2	< 0.2	< 0.2	< 0.2
Indole:	< 1	< 1	< 1	< 1
1-Methylnaphthalene:	< 0.2	< 0.2	< 0.2	< 0.2
2-Methylnaphthalene:	< 0.2	< 0.2	< 0.2	< 0.2
Naphthalene:	< 0.2	< 0.2	< 0.2	< 0.2
Perylene:	< 0.2	< 0.2	< 0.2	< 0.2
Phenanthrene:	< 0.2	< 0.2	< 0.2	< 0.2
Pyrene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzyl Butyl Phthalate:	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-ethylhexyl)Phthalate	< 2	< 2	2.9	< 2
Di-N-butylPhthalate:	< 2	< 2	< 2	< 2
Di-N-octylPhthalate:	< 0.8	< 0.8	< 0.8	< 0.8
4-Bromophenyl phenyl Ethe	< 0.3	< 0.3	< 0.3	< 0.3
4-Chlorophenyl Phenyl Eth	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-chloroisopropyl)Ether	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-Chloroethyl)Ether:	< 0.5	< 0.5	< 0.5	< 0.5
Diphenyl ether:	< 0.3	< 0.3	< 0.3	< 0.3
2,4-Dinitrotoluene:	< 0.5	< 0.5	< 0.5	< 0.5
2,6-Dinitrotoluene:	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-chloroethoxy)Methan	< 0.5	< 0.5	< 0.5	< 0.5
Nitrosodiphenylamine /Diphenylamine:	< 1	< 1	< 1	< 1
N-Nitrosodi-N-propylamine:	< 0.5	< 0.5	< 0.5	< 0.5
MISA Group 20				
2,3,4,5-Tetrachlorophenol	< 0.4	< 0.4	< 0.4	< 0.4
2,3,4,6-Tetrachlorophenol	< 0.5	< 0.5	< 0.5	< 0.5
2,3,5,6-Tetrachlorophenol	< 0.5	< 0.5	< 0.5	< 0.5
2,3,4-Trichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,3,5-Trichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4,5-Trichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4,6-Trichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4-Dinitrophenol:	< 2	< 2	< 2	< 2
2,4-Dimethylphenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4-Dichlorophenol:	< 0.3	< 0.3	< 0.3	< 0.3
2,6-Dichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
4,6-Dinitro-o-Cresol:				
2-Chlorophenol:	< 0.3	< 0.3	< 0.3	< 0.3
4-Chloro-3-methylphenol	< 0.5	< 0.5	< 0.5	< 0.5
4-Nitrophenol:	< 1.4	< 1.4	< 1.4	< 1.4
o-Cresol:	< 0.5	< 0.5	< 0.5	< 0.5
m-,p-Cresol:	< 0.5	< 0.5	< 0.5	< 0.5
Pentachlorophenol:	< 1	< 1	< 1	< 1
Phenol:	< 0.5	< 0.5	< 0.5	< 0.5

ORGANIC ANALYSIS (ATG MISA Groups 19 - 20) - Guelph WRIC/Waste Transfer Station - 2016

AECOM

Parameter	20A-08 28-Nov-2016	20B-08 28-Nov-2016	21A-08 05-Dec-2016	22A-11 06-Dec-2016
MISA Group 19				
Acenaphthene:	< 0.2	< 0.2	< 0.2	< 0.2
5-Nitroacenaphthene:	< 1	< 1	< 1	< 1
Acenaphthylene:	< 0.2	< 0.2	< 0.2	< 0.2
Anthracene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(a)anthracene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(a)Pyrene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(b)Fluoranthene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(g,h,i)perylene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(k)Fluoranthene:	< 0.2	< 0.2	< 0.2	< 0.2
Biphenyl:	< 0.5	< 0.5	< 0.5	< 0.5
Camphene:	< 1	< 1	< 1	< 1
1-Chloronaphthalene:	< 1	< 1	< 1	< 1
2-Chloronaphthalene:	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene:	< 0.2	< 0.2	< 0.2	< 0.2
Dibenzo(a,h)Anthracene:	< 0.2	< 0.2	< 0.2	< 0.2
Fluoranthene:	< 0.2	< 0.2	< 0.2	< 0.2
Fluorene:	< 0.2	< 0.2	< 0.2	< 0.2
Indeno(1,2,3-cd)Pyrene:	< 0.2	< 0.2	< 0.2	< 0.2
Indole:	< 1	< 1	< 1	< 1
1-Methylnaphthalene:	< 0.2	< 0.2	< 0.2	< 0.2
2-Methylnaphthalene:	< 0.2	< 0.2	< 0.2	< 0.2
Naphthalene:	< 0.2	< 0.2	< 0.2	< 0.2
Perylene:	< 0.2	< 0.2	< 0.2	< 0.2
Phenanthrene:	< 0.2	< 0.2	< 0.2	< 0.2
Pyrene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzyl Butyl Phthalate:	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-ethylhexyl)Phthalate	< 2	< 2	< 2	< 2
Di-N-butylPhthalate:	< 2	< 2	< 2	< 2
Di-N-octylPhthalate:	< 0.8	< 0.8	< 0.8	< 0.8
4-Bromophenyl phenyl Ethe	< 0.3	< 0.3	< 0.3	< 0.3
4-Chlorophenyl Phenyl Eth	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-chloroisopropyl)Ether	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-Chloroethyl)Ether:	< 0.5	< 0.5	< 0.5	< 0.5
Diphenyl ether:	< 0.3	< 0.3	< 0.3	< 0.3
2,4-Dinitrotoluene:	< 0.5	< 0.5	< 0.5	< 0.5
2,6-Dinitrotoluene:	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-chloroethoxy)Methan	< 0.5	< 0.5	< 0.5	< 0.5
Nitrosodiphenylamine /Diphenylamine:	< 1	< 1	< 1	< 1
N-Nitrosodi-N-propylamine:	< 0.5	< 0.5	< 0.5	< 0.5
MISA Group 20				
2,3,4,5-Tetrachlorophenol	< 0.4	< 0.4	< 0.4	< 0.4
2,3,4,6-Tetrachlorophenol	< 0.5	< 0.5	< 0.5	< 0.5
2,3,5,6-Tetrachlorophenol	< 0.5	< 0.5	< 0.5	< 0.5
2,3,4-Trichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,3,5-Trichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4,5-Trichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4,6-Trichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4-Dinitrophenol:	< 2	< 2	< 2.5	< 2
2,4-Dimethylphenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4-Dichlorophenol:	< 0.3	< 0.3	< 0.3	< 0.3
2,6-Dichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
4,6-Dinitro-o-Cresol:				
2-Chlorophenol:	< 0.3	< 0.3	< 0.3	< 0.3
4-Chloro-3-methylphenol	< 0.5	< 0.5	< 0.5	< 0.5
4-Nitrophenol:	< 1.4	< 1.4	< 1.4	< 1.4
o-Cresol:	< 0.5	< 0.5	< 0.5	< 0.5
m-,p-Cresol:	< 0.5	< 0.5	< 0.5	< 0.5
Pentachlorophenol:	< 1	< 1	< 1	< 1
Phenol:	< 0.5	< 0.5	< 0.5	< 0.5

ORGANIC ANALYSIS (ATG MISA Groups 19 - 20) - Guelph WRIC/Waste Transfer Station - 2016

AECOM

Parameter	22B-11 06-Dec-2016	23A-12 28-Nov-2016	23B-12 28-Nov-2016
MISA Group 19			
Acenaphthene:	< 0.2	< 0.2	< 0.2
5-Nitroacenaphthene:	< 1	< 1	< 1
Acenaphthylene:	< 0.2	< 0.2	< 0.2
Anthracene:	< 0.2	< 0.2	< 0.2
Benzo(a)anthracene:	< 0.2	< 0.2	< 0.2
Benzo(a)Pyrene:	< 0.2	< 0.2	< 0.2
Benzo(b)Fluoranthene:	< 0.2	< 0.2	< 0.2
Benzo(g,h,i)perylene:	< 0.2	< 0.2	< 0.2
Benzo(k)Fluoranthene:	< 0.2	< 0.2	< 0.2
Biphenyl:	< 0.5	< 0.5	< 0.5
Camphene:	< 1	< 1	< 1
1-Chloronaphthalene:	< 1	< 1	< 1
2-Chloronaphthalene:	< 0.5	< 0.5	< 0.5
Chrysene:	< 0.2	< 0.2	< 0.2
Dibenzo(a,h)Anthracene:	< 0.2	< 0.2	< 0.2
Fluoranthene:	< 0.2	< 0.2	< 0.2
Fluorene:	< 0.2	< 0.2	< 0.2
Indeno(1,2,3-cd)Pyrene:	< 0.2	< 0.2	< 0.2
Indole:	< 1	< 1	< 1
1-Methylnaphthalene:	< 0.2	< 0.2	< 0.2
2-Methylnaphthalene:	< 0.2	< 0.2	< 0.2
Naphthalene:	< 0.2	< 0.2	< 0.2
Perylene:	< 0.2	< 0.2	< 0.2
Phenanthrene:	< 0.2	< 0.2	< 0.2
Pyrene:	< 0.2	< 0.2	< 0.2
Benzyl Butyl Phthalate:	< 0.5	< 0.5	< 0.5
bis(2-ethylhexyl)Phthalate	< 2	< 2	< 2
Di-N-butylPhthalate:	< 2	< 2	< 2
Di-N-octylPhthalate:	< 0.8	< 0.8	< 0.8
4-Bromophenyl phenyl Ethe	< 0.3	< 0.3	< 0.3
4-Chlorophenyl Phenyl Eth	< 0.5	< 0.5	< 0.5
bis(2-chloroisopropyl)Ether	< 0.5	< 0.5	< 0.5
bis(2-Chloroethyl)Ether:	< 0.5	< 0.5	< 0.5
Diphenyl ether:	< 0.3	< 0.3	< 0.3
2,4-Dinitrotoluene:	< 0.5	< 0.5	< 0.5
2,6-Dinitrotoluene:	< 0.5	< 0.5	< 0.5
bis(2-chloroethoxy)Methan	< 0.5	< 0.5	< 0.5
Nitrosodiphenylamine /Diphenylamine:	< 1	< 1	< 1
N-Nitrosodi-N-propylamine:	< 0.5	< 0.5	< 0.5
MISA Group 20			
2,3,4,5-Tetrachlorophenol	< 0.4	< 0.4	< 0.4
2,3,4,6-Tetrachlorophenol	< 0.5	< 0.5	< 0.5
2,3,5,6-Tetrachlorophenol	< 0.5	< 0.5	< 0.5
2,3,4-Trichlorophenol:	< 0.5	< 0.5	< 0.5
2,3,5-Trichlorophenol:	< 0.5	< 0.5	< 0.5
2,4,5-Trichlorophenol:	< 0.5	< 0.5	< 0.5
2,4,6-Trichlorophenol:	< 0.5	< 0.5	< 0.5
2,4-Dinitrophenol:	< 2	< 2	< 2
2,4-Dimethylphenol:	< 0.5	< 0.5	< 0.5
2,4-Dichlorophenol:	< 0.3	< 0.3	< 0.3
2,6-Dichlorophenol:	< 0.5	< 0.5	< 0.5
4,6-Dinitro-o-Cresol:			
2-Chlorophenol:	< 0.3	< 0.3	< 0.3
4-Chloro-3-methylphenol	< 0.5	< 0.5	< 0.5
4-Nitrophenol:	< 1.4	< 1.4	< 1.4
o-Cresol:	< 0.5	< 0.5	< 0.5
m-,p-Cresol:	< 0.5	< 0.5	< 0.5
Pentachlorophenol:	< 1	< 1	< 1
Phenol:	< 0.5	< 0.5	< 0.5

ORGANIC ANALYSIS - ATG MISA Groups 16, 17 and 18 - Guelph WRIC/Waste Transfer Station - 2016

AECOM

Parameter	5-96 05-Dec-2016	6a-96 01-Dec-2016	6b-96 01-Dec-2016	7-96 30-Nov-2016
MISA Group 16				
1,1,1,2-Tetrachloroethane:	< 0.2	< 0.2	< 0.2	< 0.2
1,1,1-Trichloroethane:	< 0.1	< 0.1	< 0.1	< 0.1
1,1,2,2-Tetrachloroethane:	< 0.2	< 0.2	< 0.2	< 0.2
1,1,2-Trichloroethane:	< 0.2	< 0.2	< 0.2	< 0.2
1,1-Dichloroethane:	< 0.1	< 0.1	< 0.1	< 0.1
1,1-Dichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
1,2-Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dibromoethane:*	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichloroethane:	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichloropropane:	< 0.1	< 0.1	< 0.1	< 0.1
1,3-Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2
1,4-Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2
Bromodichloromethane:	< 0.1	0.41	< 0.1	< 0.1
Bromoform:	< 0.2	< 0.2	< 0.2	< 0.2
Bromomethane:	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride:	< 0.1	< 0.1	< 0.1	< 0.1
Chlorobenzene:	< 0.1	< 0.1	< 0.1	< 0.1
Chloroform:	< 0.1	1.5	0.18	< 0.1
Chloromethane:	< 0.5	< 0.5	< 0.5	< 0.5
Cis-1,2-Dichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
Cis-1,3-Dichloropropylene:	< 0.2	< 0.2	< 0.2	< 0.2
Dibromochloromethane:	< 0.2	< 0.2	< 0.2	< 0.2
Methylene Chloride:	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
trans-1,2-Dichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
Trans-1,3-Dichloropropylene:	< 0.2	< 0.2	< 0.2	< 0.2
Trichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
Trichlorofluoromethane:	< 0.2	< 0.2	< 0.2	< 0.2
Vinyl chloride:	< 0.2	< 0.2	< 0.2	< 0.2
MISA Group 17				
Benzene:	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene:	< 0.1	< 0.1	< 0.1	< 0.1
Styrene:	< 0.2	< 0.2	< 0.2	< 0.2
Toluene:	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene:	< 0.1	< 0.1	< 0.1	< 0.1
m-Xylene and p-Xylene:	< 0.1	< 0.1	< 0.1	< 0.1
MISA Group 18				
Acrolein:	< 10	< 10	< 10	< 10
Acrylonitrile:	< 5	< 5	< 5	< 5

ORGANIC ANALYSIS - ATG MISA Groups 16, 17 and 18 - Guelph WRIC/Waste Transfer Station - 2016

AECOM

Parameter	8-96 05-Dec-2016	9-96 29-Nov-2016	10-00 29-Nov-2016	11a-00 30-Nov-2016
MISA Group 16				
1,1,1,2-Tetrachloroethane:	< 0.2	< 0.2	< 0.2	< 0.2
1,1,1-Trichloroethane:	< 0.1	< 0.1	< 0.1	< 0.1
1,1,2,2-Tetrachloroethane:	< 0.2	< 0.2	< 0.2	< 0.2
1,1,2-Trichloroethane:	< 0.2	< 0.2	< 0.2	< 0.2
1,1-Dichloroethane:	< 0.1	< 0.1	< 0.1	< 0.1
1,1-Dichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
1,2-Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dibromoethane:*	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichloroethane:	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichloropropane:	< 0.1	< 0.1	< 0.1	< 0.1
1,3-Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2
1,4-Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2
Bromodichloromethane:	< 0.1	< 0.1	< 0.1	< 0.1
Bromoform:	< 0.2	< 0.2	< 0.2	< 0.2
Bromomethane:	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride:	< 0.1	< 0.1	< 0.1	< 0.1
Chlorobenzene:	< 0.1	< 0.1	< 0.1	< 0.1
Chloroform:	< 0.1	< 0.1	< 0.1	< 0.1
Chloromethane:	< 0.5	< 0.5	< 0.5	< 0.5
Cis-1,2-Dichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
Cis-1,3-Dichloropropylene:	< 0.2	< 0.2	< 0.2	< 0.2
Dibromochloromethane:	< 0.2	< 0.2	< 0.2	< 0.2
Methylene Chloride:	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
trans-1,2-Dichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
Trans-1,3-Dichloropropylene:	< 0.2	< 0.2	< 0.2	< 0.2
Trichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
Trichlorofluoromethane:	< 0.2	< 0.2	< 0.2	< 0.2
Vinyl chloride:	< 0.2	< 0.2	< 0.2	< 0.2
MISA Group 17				
Benzene:	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene:	< 0.1	< 0.1	< 0.1	< 0.1
Styrene:	< 0.2	< 0.2	< 0.2	< 0.2
Toluene:	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene:	< 0.1	< 0.1	< 0.1	< 0.1
m-Xylene and p-Xylene:	< 0.1	< 0.1	< 0.1	< 0.1
MISA Group 18				
Acrolein:	< 10	< 10	< 10	< 10
Acrylonitrile:	< 5	< 5	< 5	< 5

ORGANIC ANALYSIS - ATG MISA Groups 16, 17 and 18 - Guelph WRIC/Waste Transfer Station - 2016

AECOM

Parameter	11b-00 30-Nov-2016	12a-00 29-Nov-2016	12b-00 29-Nov-2016	13a-01 06-Dec-2016
MISA Group 16				
1,1,1,2-Tetrachloroethane:	< 0.2	< 0.2	< 0.2	< 0.2
1,1,1-Trichloroethane:	< 0.1	< 0.1	< 0.1	< 0.1
1,1,2,2-Tetrachloroethane:	< 0.2	< 0.2	< 0.2	< 0.2
1,1,2-Trichloroethane:	< 0.2	< 0.2	< 0.2	< 0.2
1,1-Dichloroethane:	< 0.1	< 0.1	< 0.1	< 0.1
1,1-Dichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
1,2-Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dibromoethane:*	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichloroethane:	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichloropropane:	< 0.1	< 0.1	< 0.1	< 0.1
1,3-Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2
1,4-Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2
Bromodichloromethane:	0.85	< 0.1	< 0.1	< 0.1
Bromoform:	< 0.2	< 0.2	< 0.2	< 0.2
Bromomethane:	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride:	< 0.1	< 0.1	< 0.1	< 0.1
Chlorobenzene:	< 0.1	< 0.1	< 0.1	< 0.1
Chloroform:	1.8	< 0.1	< 0.1	< 0.1
Chloromethane:	< 0.5	< 0.5	< 0.5	< 0.5
Cis-1,2-Dichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
Cis-1,3-Dichloropropylene:	< 0.2	< 0.2	< 0.2	< 0.2
Dibromochloromethane:	0.29	< 0.2	< 0.2	< 0.2
Methylene Chloride:	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
trans-1,2-Dichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
Trans-1,3-Dichloropropylene:	< 0.2	< 0.2	< 0.2	< 0.2
Trichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
Trichlorofluoromethane:	< 0.2	< 0.2	< 0.2	< 0.2
Vinyl chloride:	< 0.2	< 0.2	< 0.2	< 0.2
MISA Group 17				
Benzene:	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene:	< 0.1	< 0.1	< 0.1	< 0.1
Styrene:	< 0.2	< 0.2	< 0.2	< 0.2
Toluene:	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene:	< 0.1	< 0.1	< 0.1	< 0.1
m-Xylene and p-Xylene:	< 0.1	< 0.1	< 0.1	< 0.1
MISA Group 18				
Acrolein:	< 10	< 10	< 10	< 10
Acrylonitrile:	< 5	< 5	< 5	< 5

ORGANIC ANALYSIS - ATG MISA Groups 16, 17 and 18 - Guelph WRIC/Waste Transfer Station - 2016

AECOM

Parameter	13b-01 06-Dec-2016	14a-01 05-Dec-2016	14b-01 05-Dec-2016	15a-01 01-Dec-2016
MISA Group 16				
1,1,1,2-Tetrachloroethane:	< 0.2	< 0.2	< 0.2	< 0.2
1,1,1-Trichloroethane:	< 0.1	< 0.1	< 0.1	< 0.1
1,1,2,2-Tetrachloroethane:	< 0.2	< 0.2	< 0.2	< 0.2
1,1,2-Trichloroethane:	< 0.2	< 0.2	< 0.2	< 0.2
1,1-Dichloroethane:	< 0.1	< 0.1	< 0.1	< 0.1
1,1-Dichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
1,2-Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dibromoethane:*	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichloroethane:	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichloropropane:	< 0.1	< 0.1	< 0.1	< 0.1
1,3-Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2
1,4-Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2
Bromodichloromethane:	< 0.1	< 0.1	< 0.1	< 0.1
Bromoform:	< 0.2	< 0.2	< 0.2	< 0.2
Bromomethane:	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride:	< 0.1	< 0.1	< 0.1	< 0.1
Chlorobenzene:	< 0.1	< 0.1	< 0.1	< 0.1
Chloroform:	< 0.1	< 0.1	2.4	< 0.1
Chloromethane:	< 0.5	< 0.5	< 0.5	< 0.5
Cis-1,2-Dichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
Cis-1,3-Dichloropropylene:	< 0.2	< 0.2	< 0.2	< 0.2
Dibromochloromethane:	< 0.2	< 0.2	< 0.2	< 0.2
Methylene Chloride:	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
trans-1,2-Dichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
Trans-1,3-Dichloropropylene:	< 0.2	< 0.2	< 0.2	< 0.2
Trichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
Trichlorofluoromethane:	< 0.2	< 0.2	< 0.2	< 0.2
Vinyl chloride:	< 0.2	< 0.2	< 0.2	< 0.2
MISA Group 17				
Benzene:	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene:	< 0.1	< 0.1	< 0.1	< 0.1
Styrene:	< 0.2	< 0.2	< 0.2	< 0.2
Toluene:	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene:	< 0.1	< 0.1	< 0.1	< 0.1
m-Xylene and p-Xylene:	< 0.1	< 0.1	< 0.1	< 0.1
MISA Group 18				
Acrolein:	< 10	< 10	< 10	< 10
Acrylonitrile:	< 5	< 5	< 5	< 5

ORGANIC ANALYSIS - ATG MISA Groups 16, 17 and 18 - Guelph WRIC/Waste Transfer Station - 2016

AECOM

Parameter	15b-01 01-Dec-2016	16A-08 05-Dec-2016	16B-08 05-Dec-2016	17A-08 06-Dec-2016
MISA Group 16				
1,1,1,2-Tetrachloroethane:	< 1	< 0.2	< 0.2	< 0.2
1,1,1-Trichloroethane:	< 0.5	< 0.1	< 0.1	< 0.1
1,1,2,2-Tetrachloroethane:	< 1	< 0.2	< 0.2	< 0.2
1,1,2-Trichloroethane:	< 1	< 0.2	< 0.2	< 0.2
1,1-Dichloroethane:	< 0.5	< 0.1	< 0.1	< 0.1
1,1-Dichloroethylene:	< 0.5	< 0.1	< 0.1	< 0.1
1,2-Dichlorobenzene:	< 1	< 0.2	< 0.2	< 0.2
1,2-Dibromoethane:*	< 1	< 0.2	< 0.2	< 0.2
1,2-Dichloroethane:	< 1	< 0.2	< 0.2	< 0.2
1,2-Dichloropropane:	< 0.5	< 0.1	< 0.1	< 0.1
1,3-Dichlorobenzene:	< 1	< 0.2	< 0.2	< 0.2
1,4-Dichlorobenzene:	< 1	< 0.2	< 0.2	< 0.2
Bromodichloromethane:	< 0.5	< 0.1	< 0.1	< 0.1
Bromoform:	< 1	< 0.2	< 0.2	< 0.2
Bromomethane:	< 2.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride:	< 0.5	< 0.1	< 0.1	< 0.1
Chlorobenzene:	< 0.5	< 0.1	< 0.1	< 0.1
Chloroform:	< 0.5	< 0.1	< 0.1	< 0.1
Chloromethane:	< 2.5	< 0.5	< 0.5	< 0.5
Cis-1,2-Dichloroethylene:	< 0.5	< 0.1	< 0.1	< 0.1
Cis-1,3-Dichloropropylene:	< 1	< 0.2	< 0.2	< 0.2
Dibromochloromethane:	< 1	< 0.2	< 0.2	< 0.2
Methylene Chloride:	< 2.5	< 0.5	< 0.5	< 0.5
Tetrachloroethylene:	< 0.5	< 0.1	< 0.1	< 0.1
trans-1,2-Dichloroethylene:	< 0.5	< 0.1	< 0.1	< 0.1
Trans-1,3-Dichloropropylene:	< 1	< 0.2	< 0.2	< 0.2
Trichloroethylene:	< 0.5	< 0.1	< 0.1	< 0.1
Trichlorofluoromethane:	< 1	< 0.2	< 0.2	< 0.2
Vinyl chloride:	< 1	< 0.2	< 0.2	< 0.2
MISA Group 17				
Benzene:	< 0.5	< 0.1	< 0.1	< 0.1
Ethylbenzene:	< 0.5	< 0.1	< 0.1	< 0.1
Styrene:	< 1	< 0.2	< 0.2	< 0.2
Toluene:	< 1	< 0.2	< 0.2	< 0.2
o-Xylene:	< 0.5	< 0.1	< 0.1	< 0.1
m-Xylene and p-Xylene:	< 0.5	< 0.1	< 0.1	< 0.1
MISA Group 18				
Acrolein:	< 50	< 10	< 10	< 10
Acrylonitrile:	< 25	< 5	< 5	< 5

ORGANIC ANALYSIS - ATG MISA Groups 16, 17 and 18 - Guelph WRIC/Waste Transfer Station - 2016

AECOM

Parameter	17B-08 06-Dec-2016	18A-14 01-Dec-2016	18B-14 01-Dec-2016	19A-08 28-Nov-2016
MISA Group 16				
1,1,1,2-Tetrachloroethane:	< 0.2	< 0.2	< 0.2	< 0.2
1,1,1-Trichloroethane:	< 0.1	< 0.1	< 0.1	< 0.1
1,1,2,2-Tetrachloroethane:	< 0.2	< 0.2	< 0.2	< 0.2
1,1,2-Trichloroethane:	< 0.2	< 0.2	< 0.2	< 0.2
1,1-Dichloroethane:	< 0.1	< 0.1	< 0.1	< 0.1
1,1-Dichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
1,2-Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dibromoethane:*	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichloroethane:	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichloropropane:	< 0.1	< 0.1	< 0.1	< 0.1
1,3-Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2
1,4-Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2
Bromodichloromethane:	0.23	< 0.1	< 0.1	< 0.1
Bromoform:	< 0.2	< 0.2	< 0.2	< 0.2
Bromomethane:	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride:	< 0.1	< 0.1	< 0.1	< 0.1
Chlorobenzene:	< 0.1	< 0.1	< 0.1	< 0.1
Chloroform:	1.2	< 0.1	< 0.1	< 0.1
Chloromethane:	< 0.5	< 0.5	< 0.5	< 0.5
Cis-1,2-Dichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
Cis-1,3-Dichloropropylene:	< 0.2	< 0.2	< 0.2	< 0.2
Dibromochloromethane:	< 0.2	< 0.2	< 0.2	< 0.2
Methylene Chloride:	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
trans-1,2-Dichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
Trans-1,3-Dichloropropylene:	< 0.2	< 0.2	< 0.2	< 0.2
Trichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
Trichlorofluoromethane:	< 0.2	< 0.2	< 0.2	< 0.2
Vinyl chloride:	< 0.2	< 0.2	< 0.2	< 0.2
MISA Group 17				
Benzene:	< 0.1	< 0.1	0.11	< 0.1
Ethylbenzene:	< 0.1	< 0.1	< 0.1	< 0.1
Styrene:	< 0.2	< 0.2	< 0.2	< 0.2
Toluene:	< 0.2	< 0.2	0.27	< 0.2
o-Xylene:	< 0.1	< 0.1	< 0.1	< 0.1
m-Xylene and p-Xylene:	< 0.1	< 0.1	0.14	< 0.1
MISA Group 18				
Acrolein:	< 10	< 10	< 10	< 10
Acrylonitrile:	< 5	< 5	< 5	< 5

ORGANIC ANALYSIS - ATG MISA Groups 16, 17 and 18 - Guelph WRIC/Waste Transfer Station - 2016

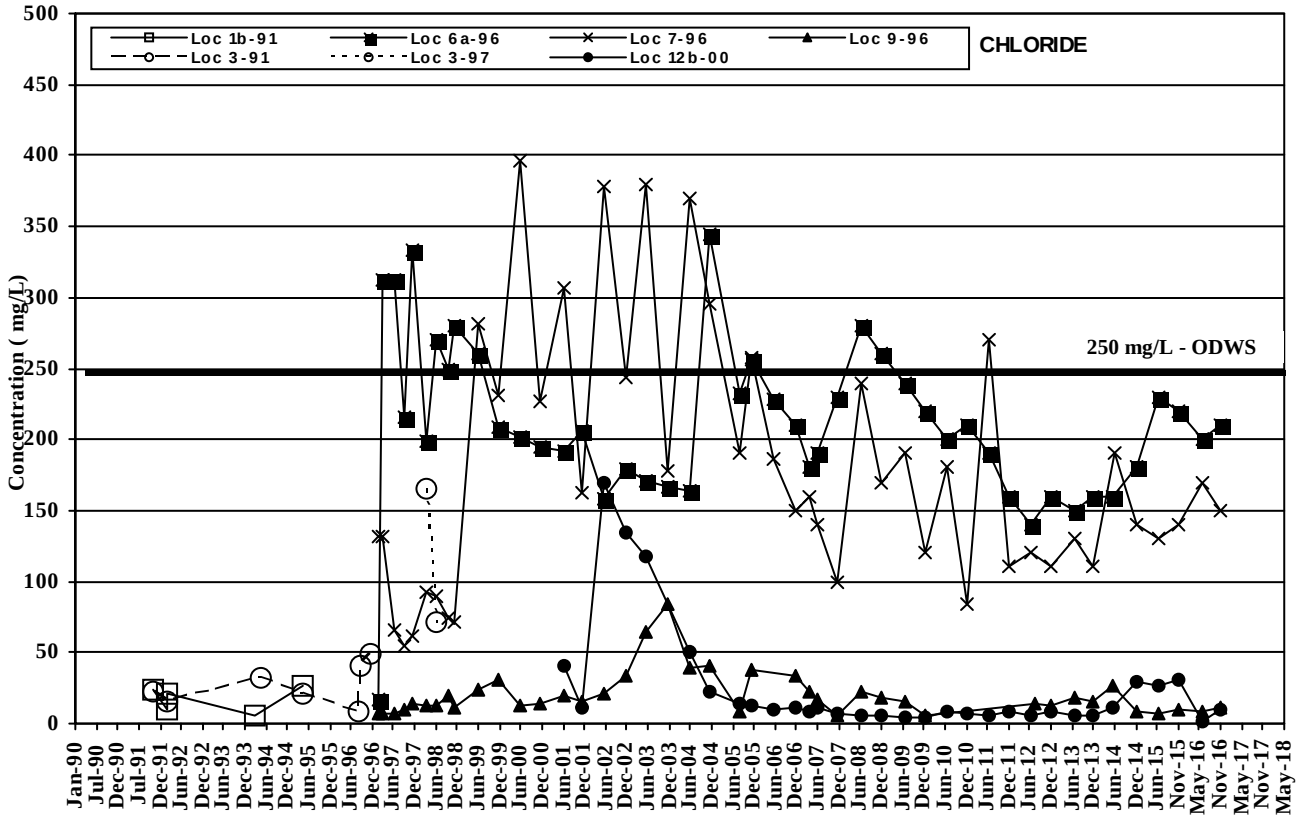
AECOM

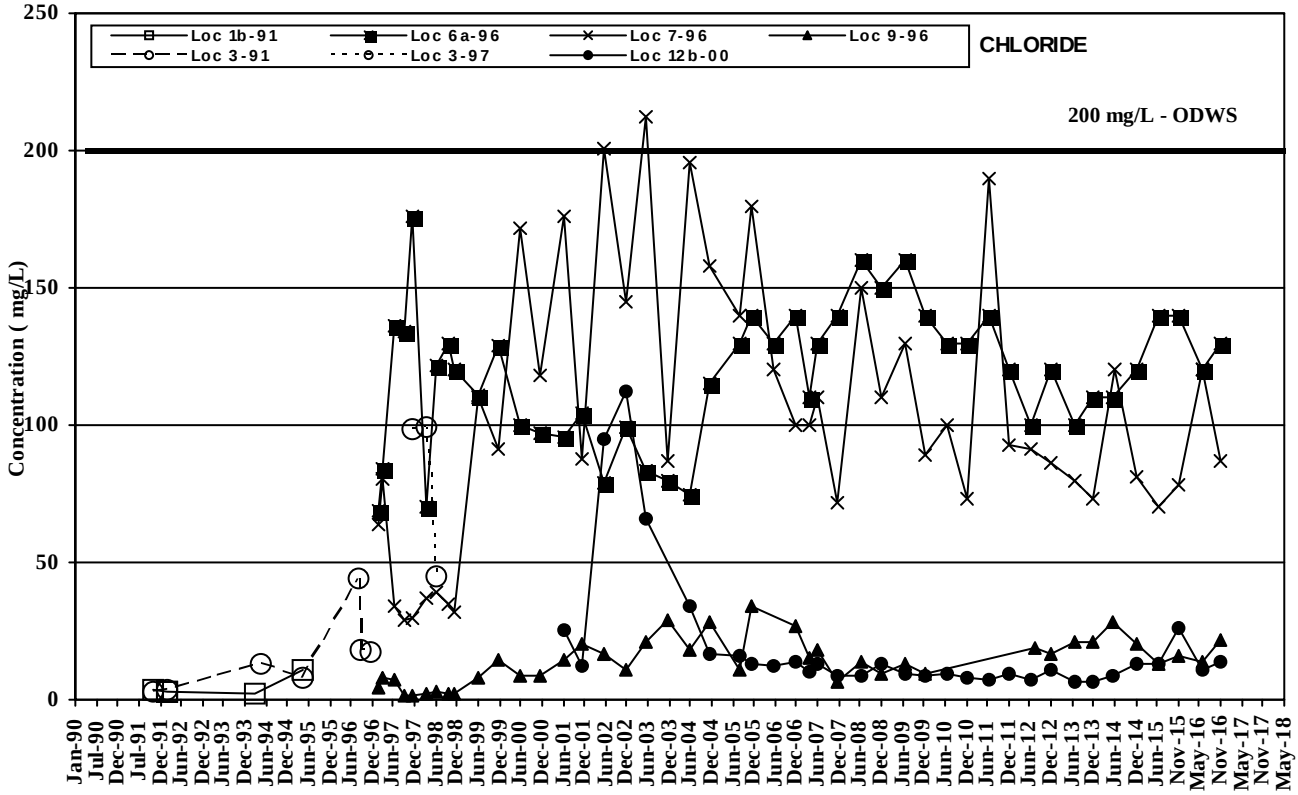
Parameter	20A-08 28-Nov-2016	20B-08 28-Nov-2016	21A-08 05-Dec-2016	22A-11 06-Dec-2016
MISA Group 16				
1,1,1,2-Tetrachloroethane:	< 0.2	< 0.2	< 0.2	< 0.2
1,1,1-Trichloroethane:	< 0.1	< 0.1	< 0.1	< 0.1
1,1,2,2-Tetrachloroethane:	< 0.2	< 0.2	< 0.2	< 0.2
1,1,2-Trichloroethane:	< 0.2	< 0.2	< 0.2	< 0.2
1,1-Dichloroethane:	< 0.1	< 0.1	< 0.1	< 0.1
1,1-Dichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
1,2-Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dibromoethane:*	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichloroethane:	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichloropropane:	< 0.1	< 0.1	< 0.1	< 0.1
1,3-Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2
1,4-Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2
Bromodichloromethane:	< 0.1	< 0.1	< 0.1	< 0.1
Bromoform:	< 0.2	< 0.2	< 0.2	< 0.2
Bromomethane:	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride:	< 0.1	< 0.1	< 0.1	< 0.1
Chlorobenzene:	< 0.1	< 0.1	< 0.1	< 0.1
Chloroform:	< 0.1	< 0.1	< 0.1	< 0.1
Chloromethane:	< 0.5	< 0.5	< 0.5	< 0.5
Cis-1,2-Dichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
Cis-1,3-Dichloropropylene:	< 0.2	< 0.2	< 0.2	< 0.2
Dibromochloromethane:	< 0.2	< 0.2	< 0.2	< 0.2
Methylene Chloride:	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
trans-1,2-Dichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
Trans-1,3-Dichloropropylene:	< 0.2	< 0.2	< 0.2	< 0.2
Trichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
Trichlorofluoromethane:	< 0.2	< 0.2	< 0.2	< 0.2
Vinyl chloride:	< 0.2	< 0.2	< 0.2	< 0.2
MISA Group 17				
Benzene:	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene:	< 0.1	< 0.1	< 0.1	< 0.1
Styrene:	< 0.2	< 0.2	< 0.2	< 0.2
Toluene:	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene:	< 0.1	< 0.1	< 0.1	< 0.1
m-Xylene and p-Xylene:	< 0.1	< 0.1	< 0.1	< 0.1
MISA Group 18				
Acrolein:	< 10	< 10	< 10	< 10
Acrylonitrile:	< 5	< 5	< 5	< 5

ORGANIC ANALYSIS - ATG MISA Groups 16, 17 and 18 - Guelph WRIC/Waste Transfer Station - 2016

AECOM

Parameter	22B-11 06-Dec-2016	23A-12 28-Nov-2016	23B-12 28-Nov-2016
MISA Group 16			
1,1,1,2-Tetrachloroethane:	< 0.2	< 0.2	< 0.2
1,1,1-Trichloroethane:	< 0.1	< 0.1	< 0.1
1,1,2,2-Tetrachloroethane:	< 0.2	< 0.2	< 0.2
1,1,2-Trichloroethane:	< 0.2	< 0.2	< 0.2
1,1-Dichloroethane:	< 0.1	< 0.1	< 0.1
1,1-Dichloroethylene:	< 0.1	< 0.1	< 0.1
1,2-Dichlorobenzene:	< 0.2	< 0.2	< 0.2
1,2-Dibromoethane:*	< 0.2	< 0.2	< 0.2
1,2-Dichloroethane:	< 0.2	< 0.2	< 0.2
1,2-Dichloropropane:	< 0.1	< 0.1	< 0.1
1,3-Dichlorobenzene:	< 0.2	< 0.2	< 0.2
1,4-Dichlorobenzene:	< 0.2	< 0.2	< 0.2
Bromodichloromethane:	< 0.1	< 0.1	< 0.1
Bromoform:	< 0.2	< 0.2	< 0.2
Bromomethane:	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride:	< 0.1	< 0.1	< 0.1
Chlorobenzene:	< 0.1	< 0.1	< 0.1
Chloroform:	< 0.1	< 0.1	0.13
Chloromethane:	< 0.5	< 0.5	< 0.5
Cis-1,2-Dichloroethylene:	< 0.1	< 0.1	< 0.1
Cis-1,3-Dichloropropylene:	< 0.2	< 0.2	< 0.2
Dibromochloromethane:	< 0.2	< 0.2	< 0.2
Methylene Chloride:	< 0.5	< 0.5	< 0.5
Tetrachloroethylene:	< 0.1	< 0.1	0.1
trans-1,2-Dichloroethylene:	< 0.1	< 0.1	< 0.1
Trans-1,3-Dichloropropylene:	< 0.2	< 0.2	< 0.2
Trichloroethylene:	< 0.1	< 0.1	< 0.1
Trichlorofluoromethane:	< 0.2	< 0.2	< 0.2
Vinyl chloride:	< 0.2	< 0.2	< 0.2
MISA Group 17			
Benzene:	< 0.1	< 0.1	< 0.1
Ethylbenzene:	< 0.1	< 0.1	< 0.1
Styrene:	< 0.2	< 0.2	< 0.2
Toluene:	< 0.2	< 0.2	< 0.2
o-Xylene:	< 0.1	< 0.1	< 0.1
m-Xylene and p-Xylene:	< 0.1	< 0.1	< 0.1
MISA Group 18			
Acrolein:	< 10	< 10	< 10
Acrylonitrile:	< 5	< 5	< 5





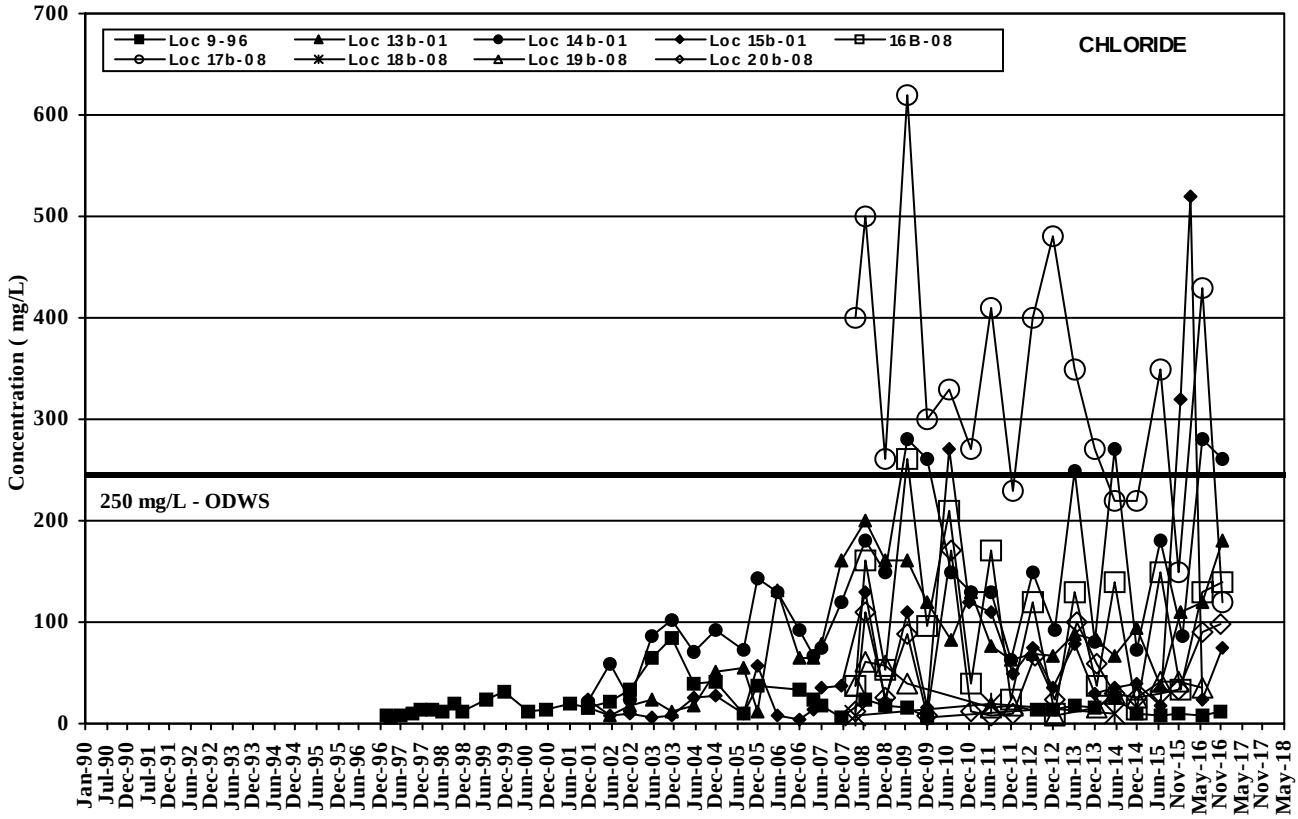
AECOM

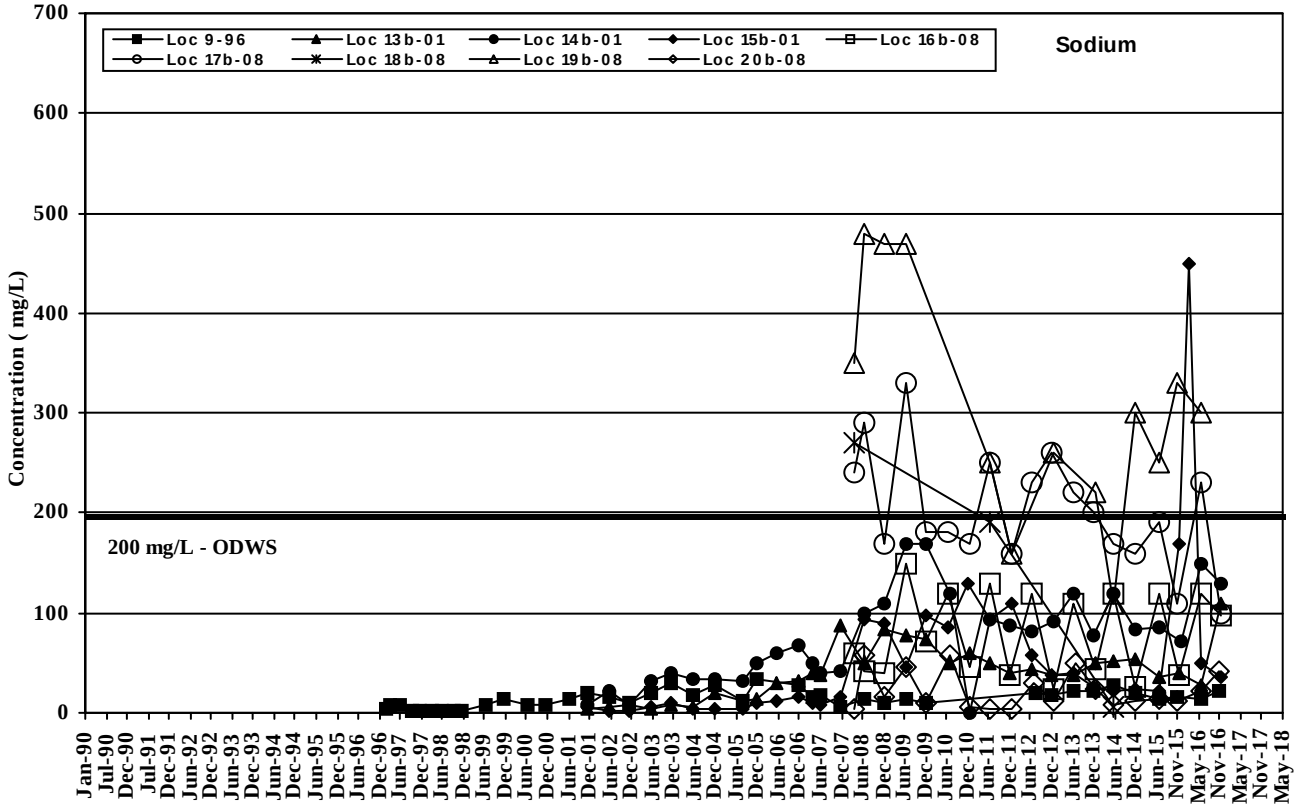
Guelph WRIC & Waste Transfer Station

Ground Water Chemistry Trends
Overburden Locations on Wet/Dry Facility

FIGURE
B1

60536556
12 Cl-NA Location WestOB





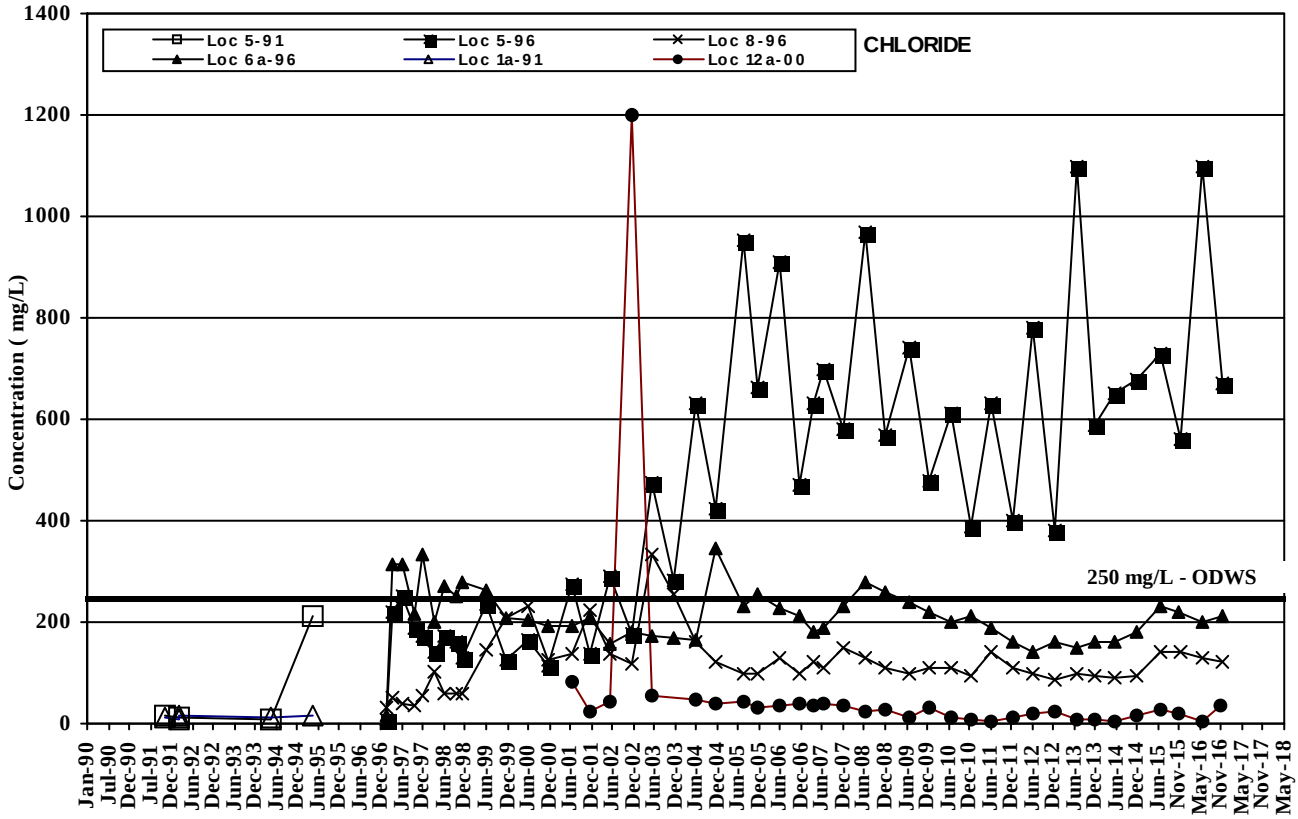
AECOM

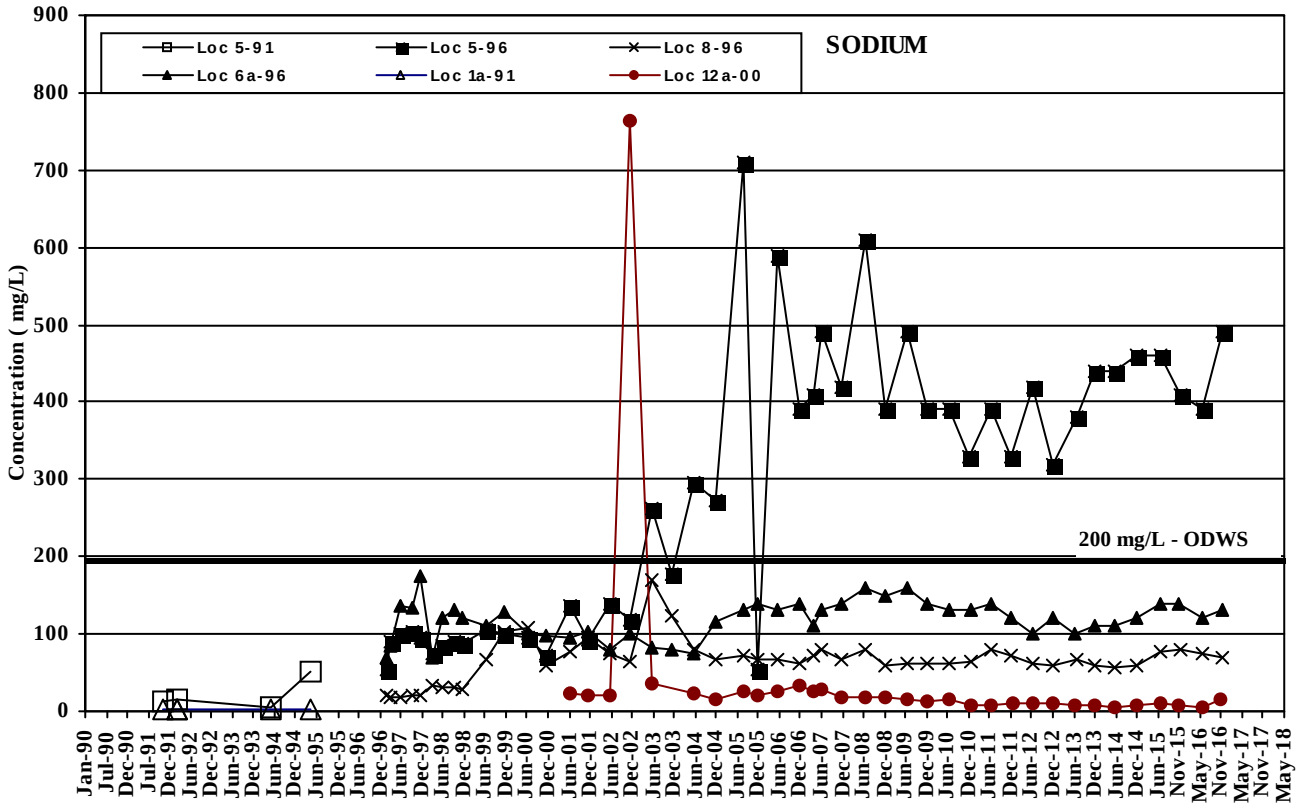
Guelph WRIC & Waste Transfer Station

Ground Water Chemistry Trends
Overburden Locations East of Wet/Dry or Transfer Station Property

FIGURE
B2

60536556
12 Cl-NA Location EastOB





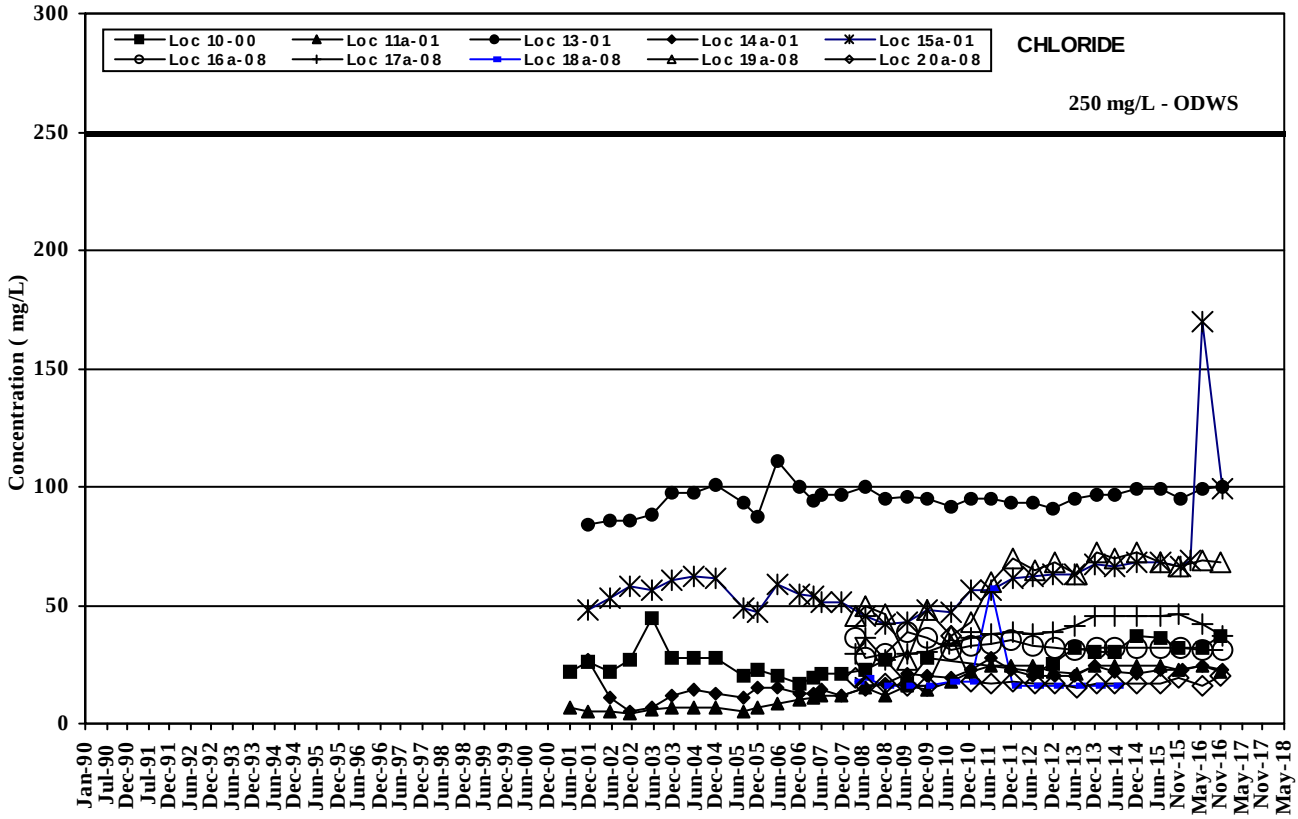
AECOM

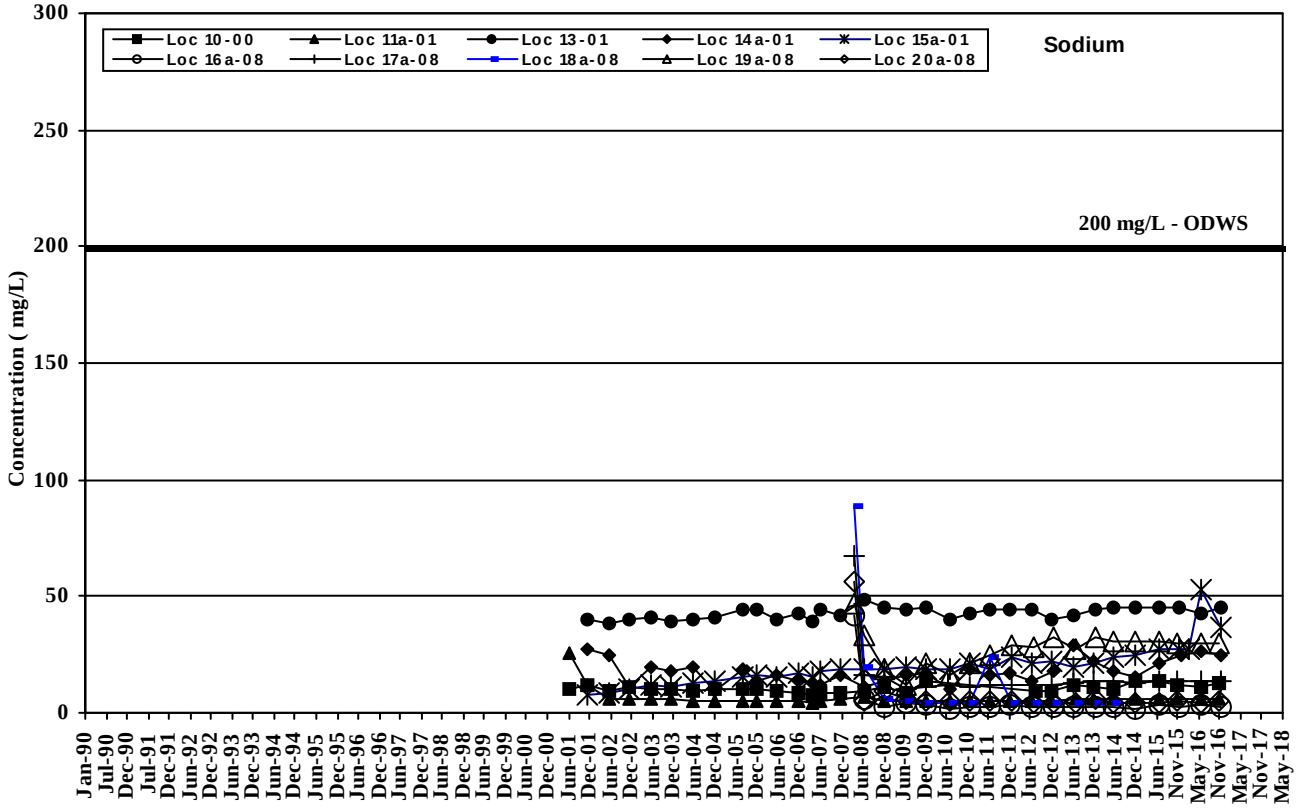
Guelph WRIC & Waste Transfer Station

Ground Water Chemistry Trends
Bedrock Locations West or on Wet/Dry Facility

FIGURE
B3

60536556
12 Cl-NA Location WestBed





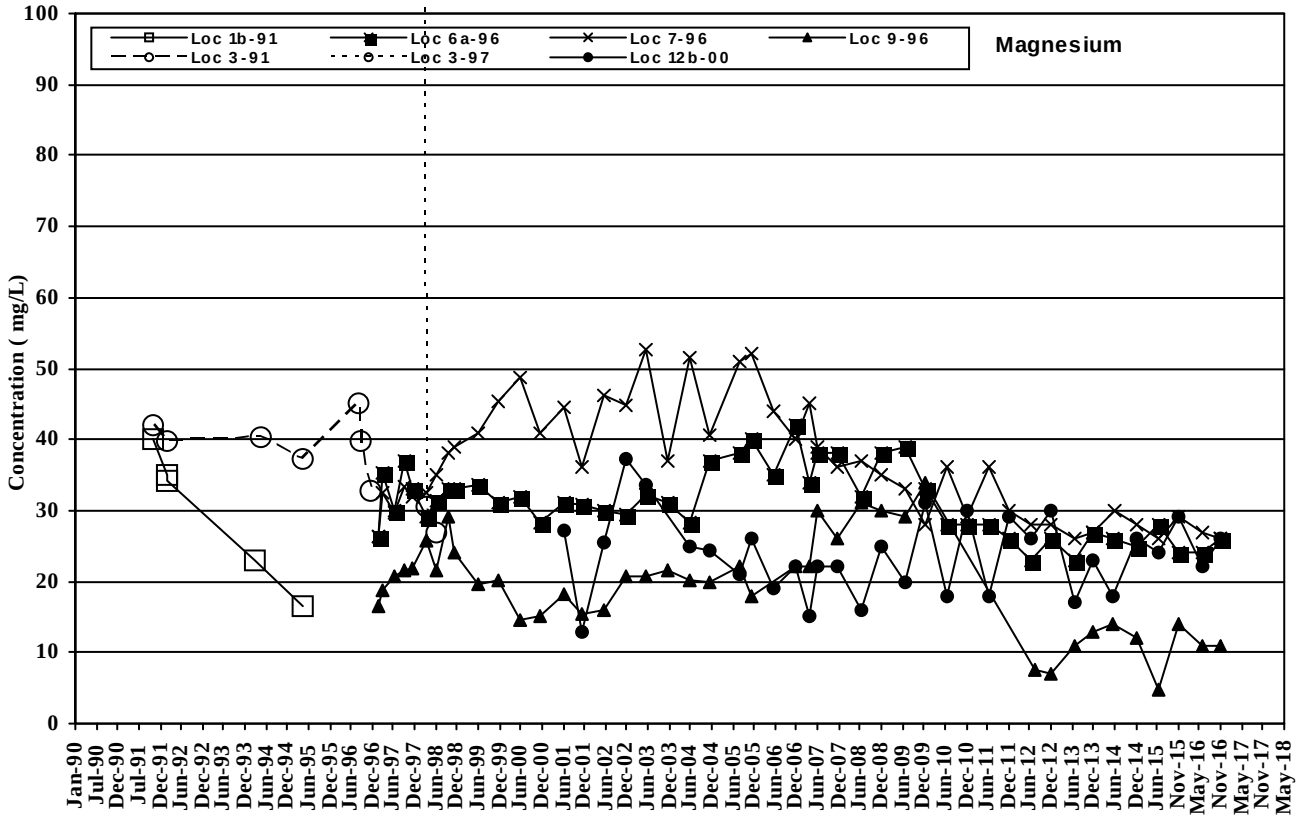
AECOM

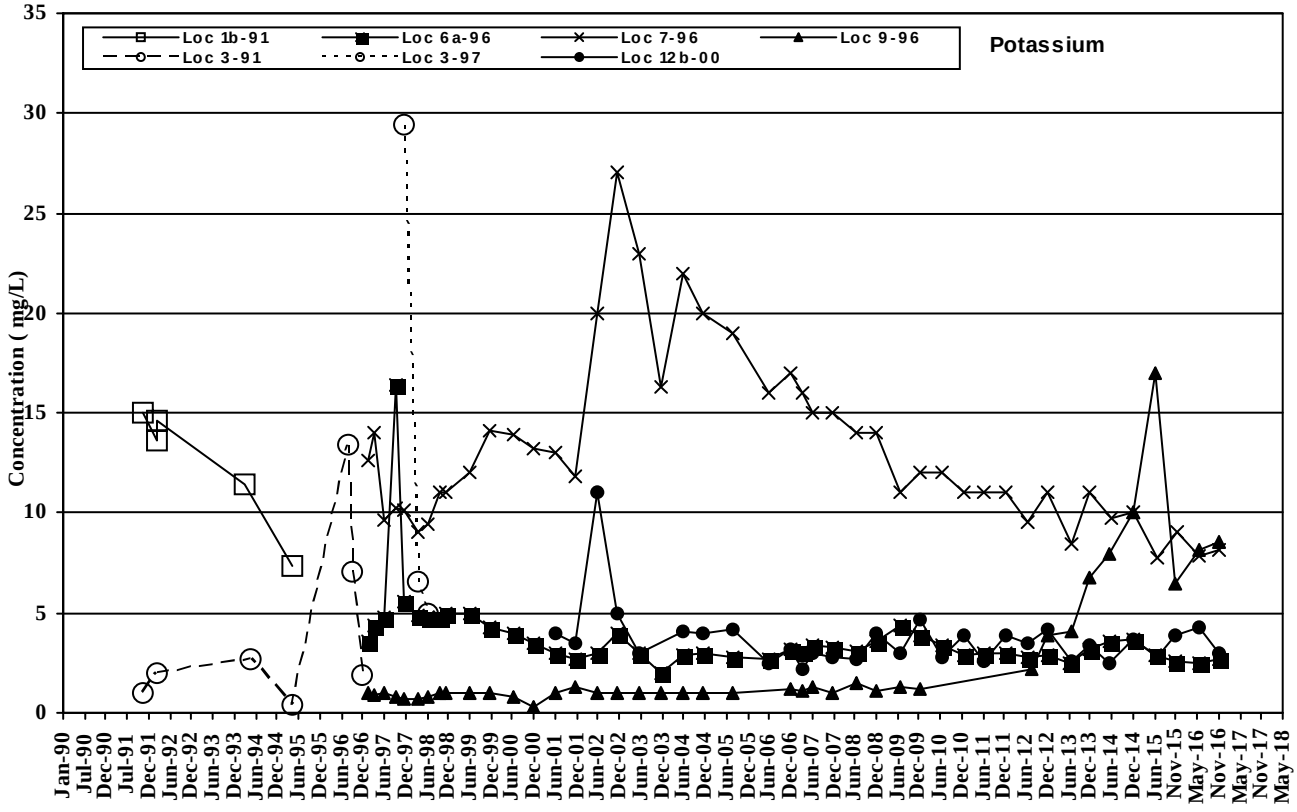
Guelph WRIC & Waste Transfer Station

Ground Water Chemistry Trends
Bedrock Locations East of Wet/Dry or on Transfer Station Property

FIGURE
B4

60536556
12 Cl-NA Location EastBed





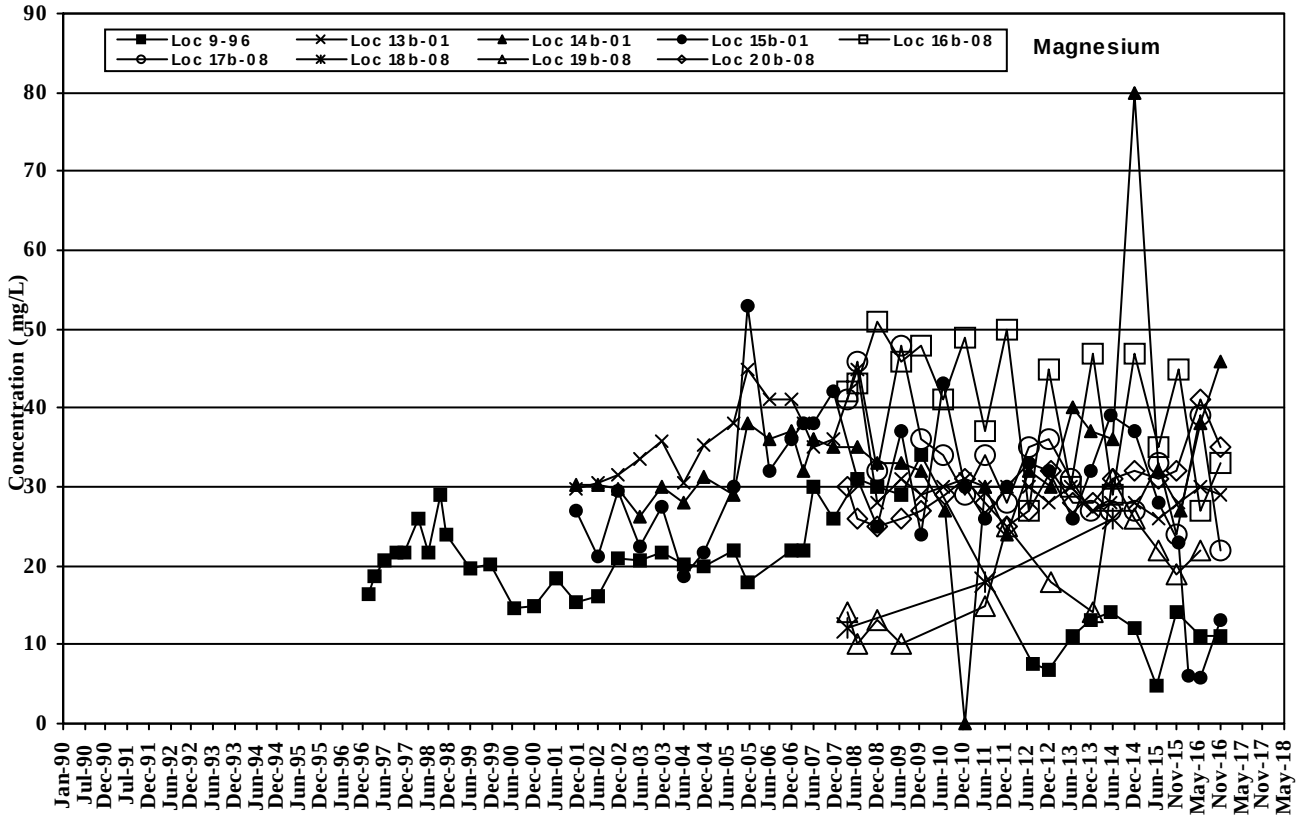
AECOM

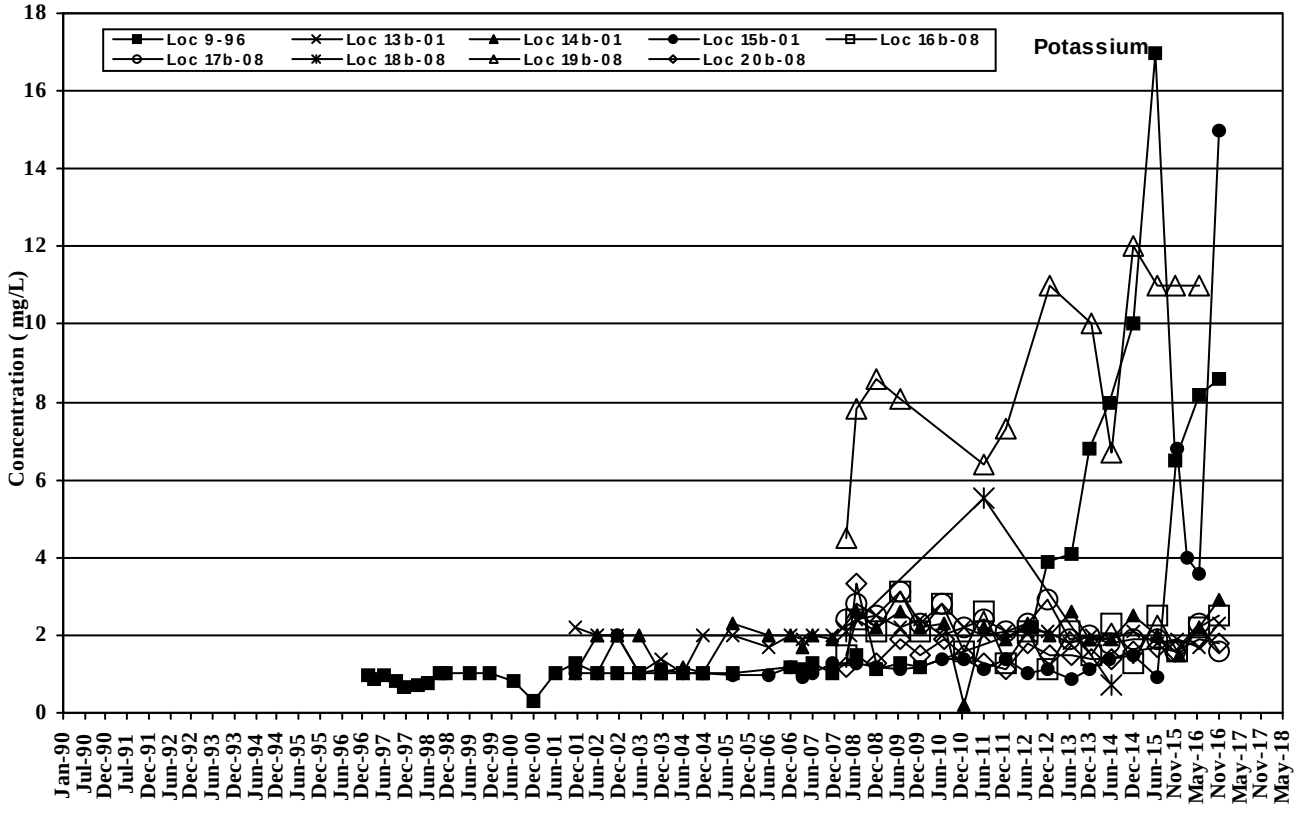
Guelph WRIC & Waste Transfer Station

Ground Water Chemistry Trends
Overburden Locations on Wet/Dry Facility

FIGURE
B5

60536556
12 Mg-K Location WestOB





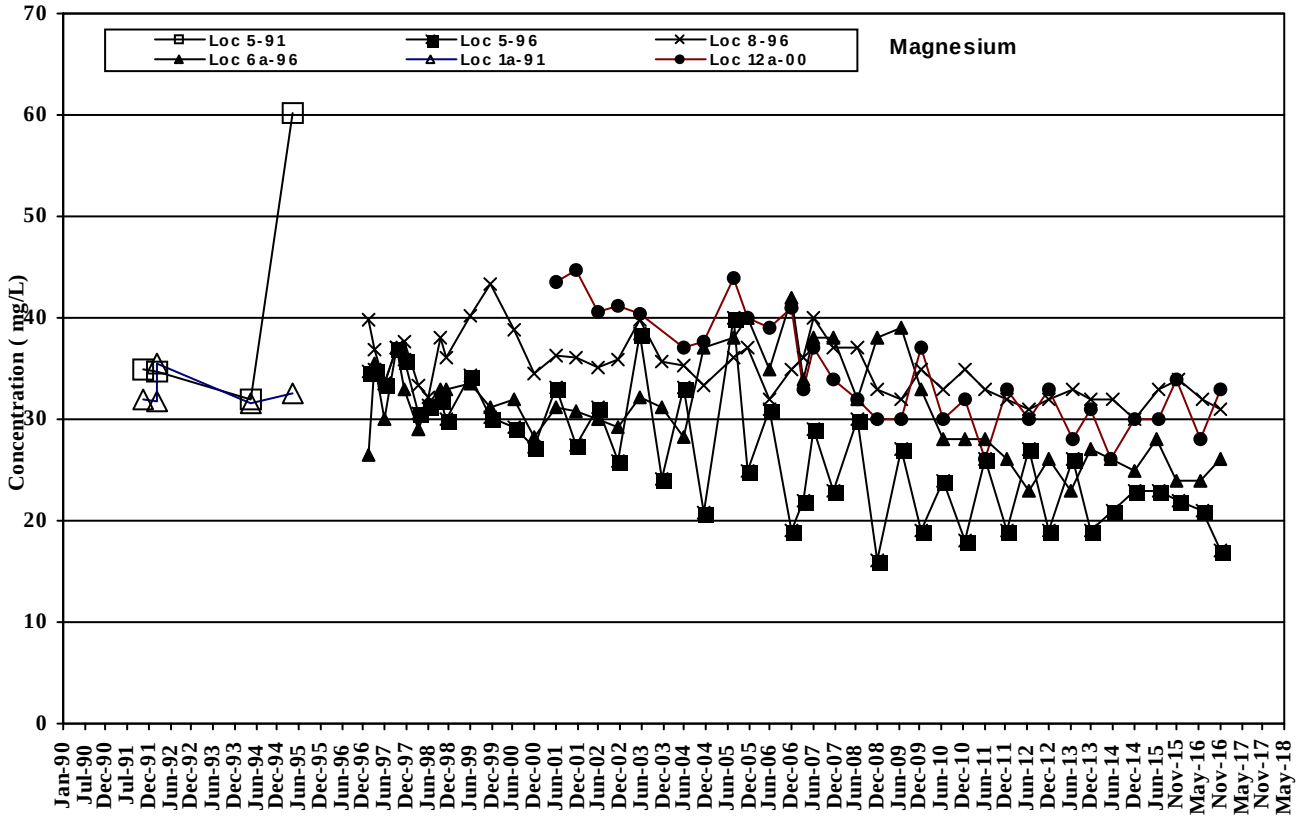
AECOM

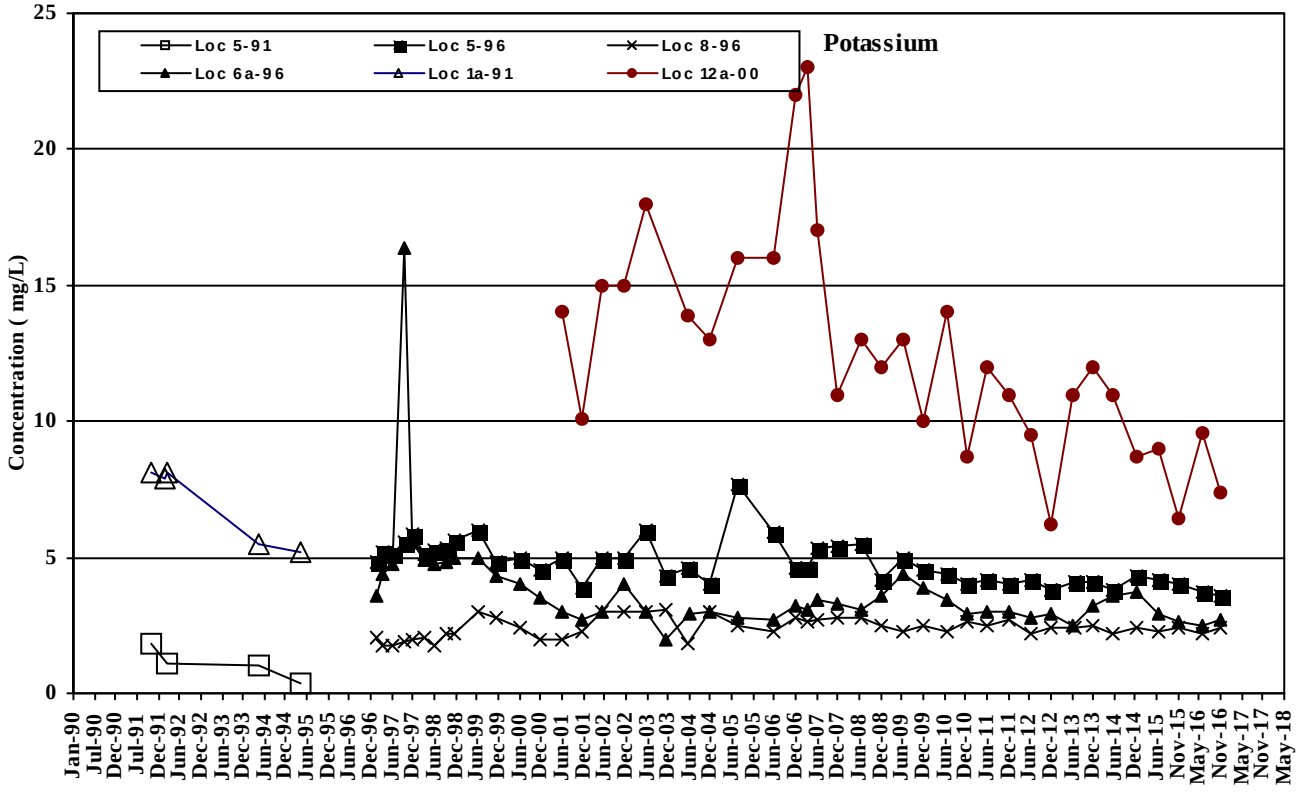
Guelph WRIC & Waste Transfer Station

Ground Water Chemistry Trends
Overburden Locations East of Wet/Dry or Transfer Station Property

FIGURE
B6

60536556
12 Mg-K Location EastOB





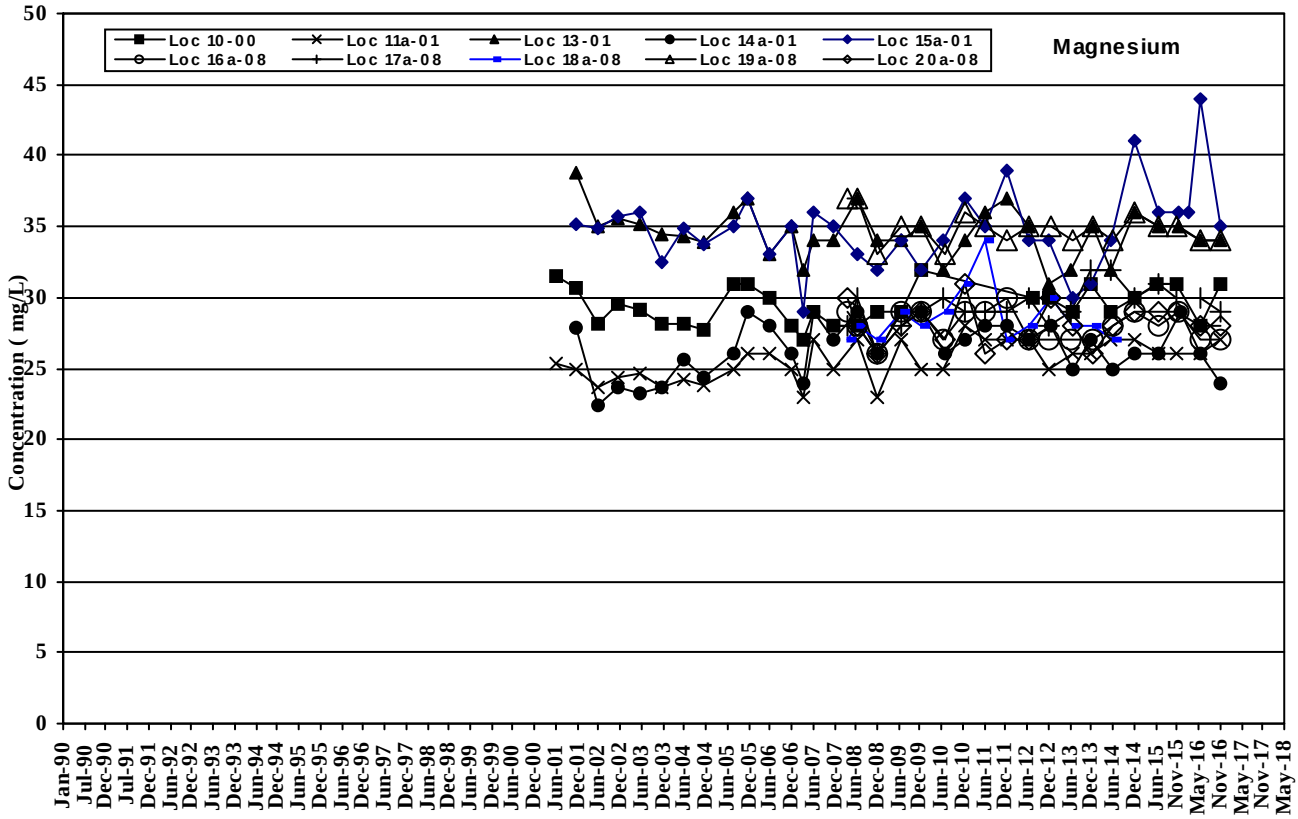
AECOM

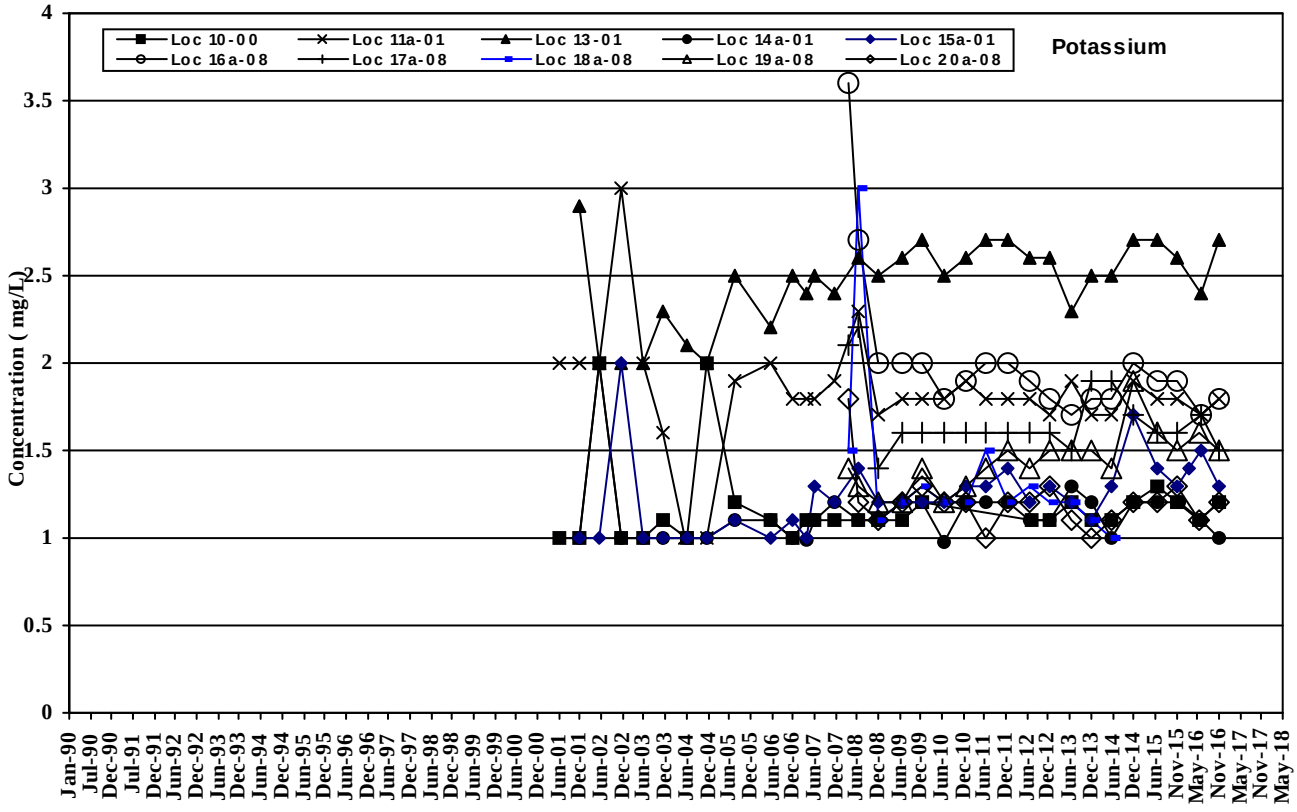
Guelph WRIC & Waste Transfer Station

Ground Water Chemistry Trends
Bedrock Locations West or on Wet/Dry Facility

FIGURE
B7

60536556
12 Mg-K Location WestBed





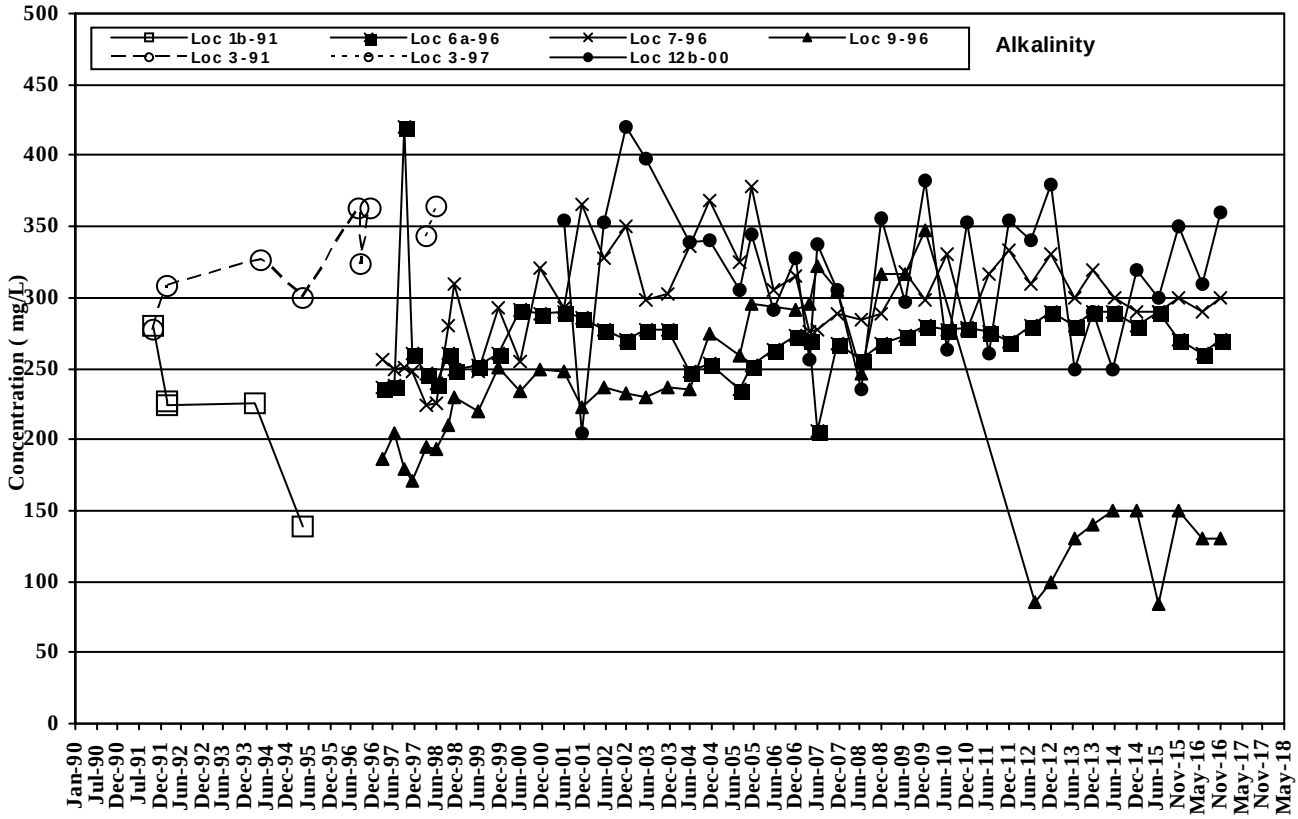
AECOM

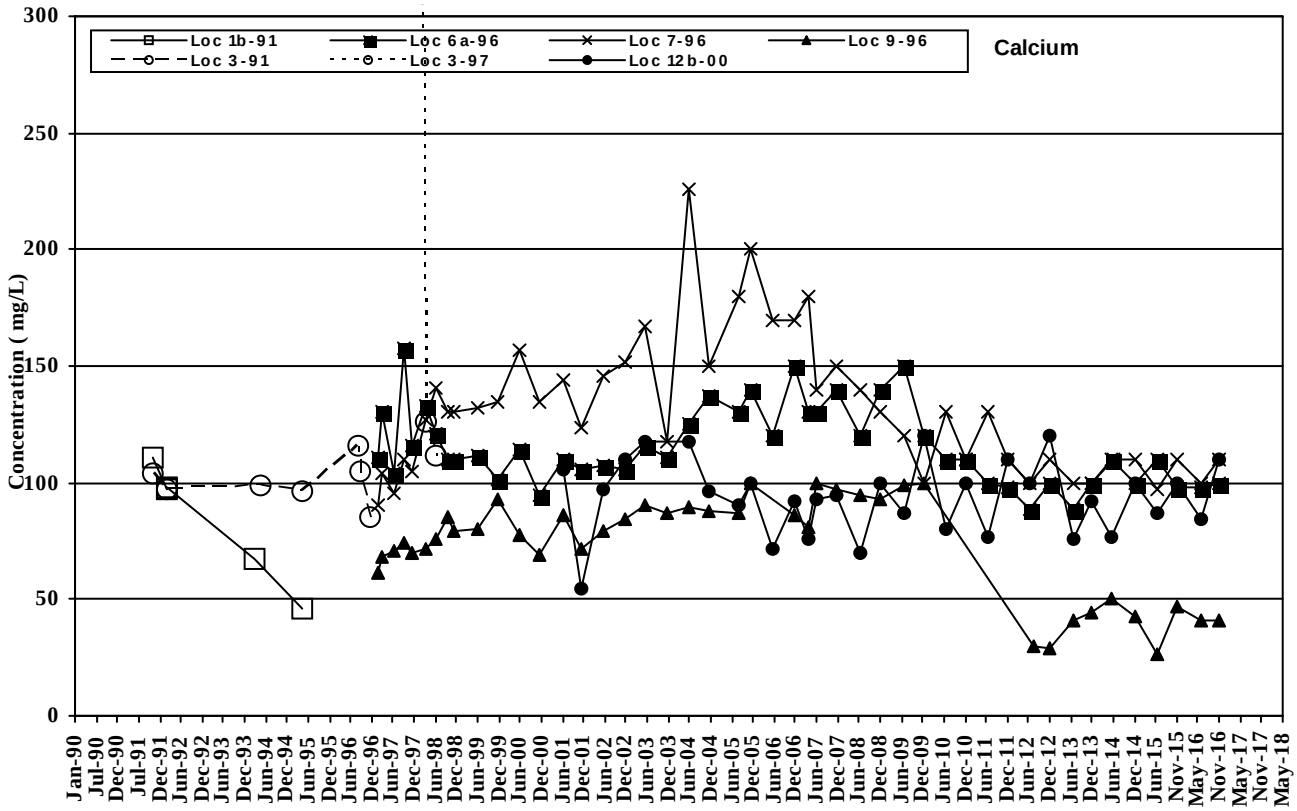
Guelph WRIC & Waste Transfer Station

Ground Water Chemistry Trends
Bedrock Locations East of Wet/Dry or on Transfer Station Property

FIGURE
B8

60536556
12 Mg-K Location EastBed





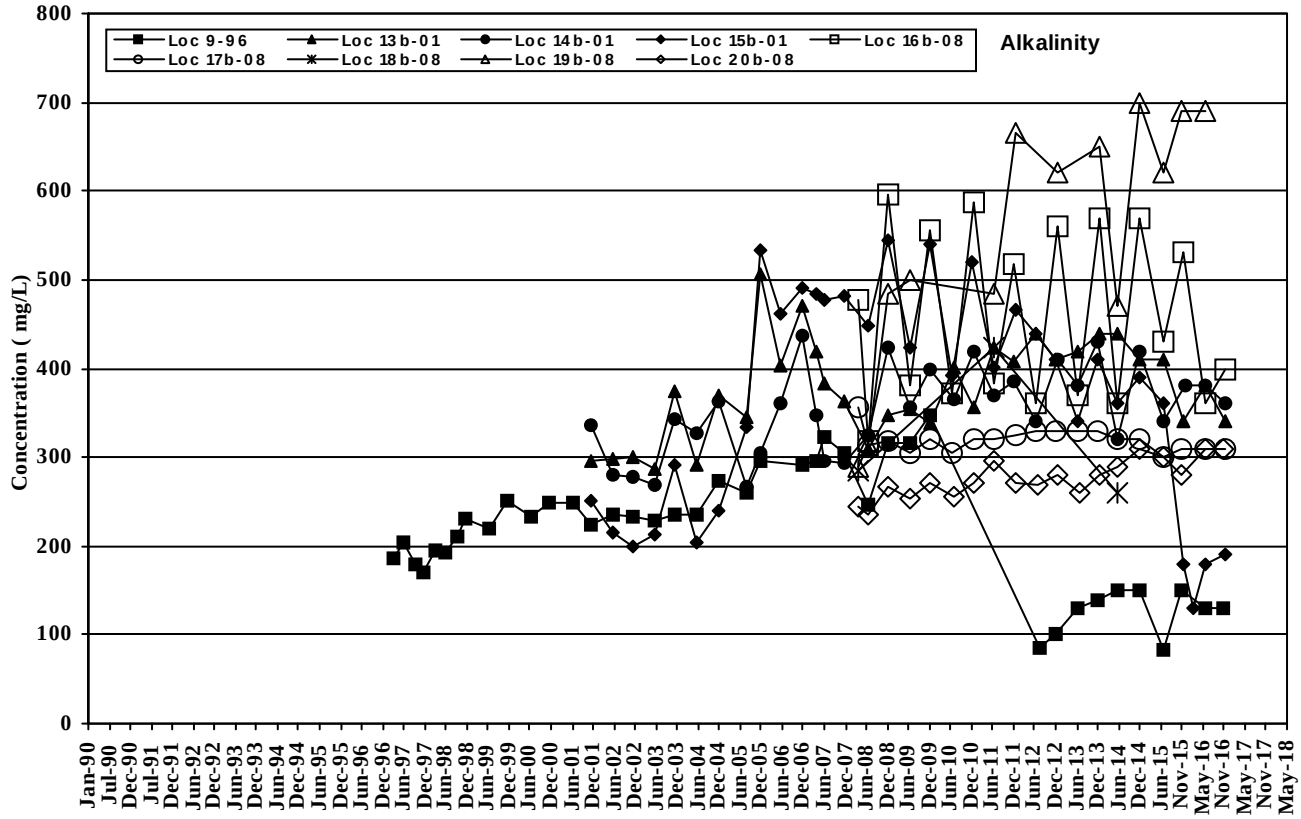
AECOM

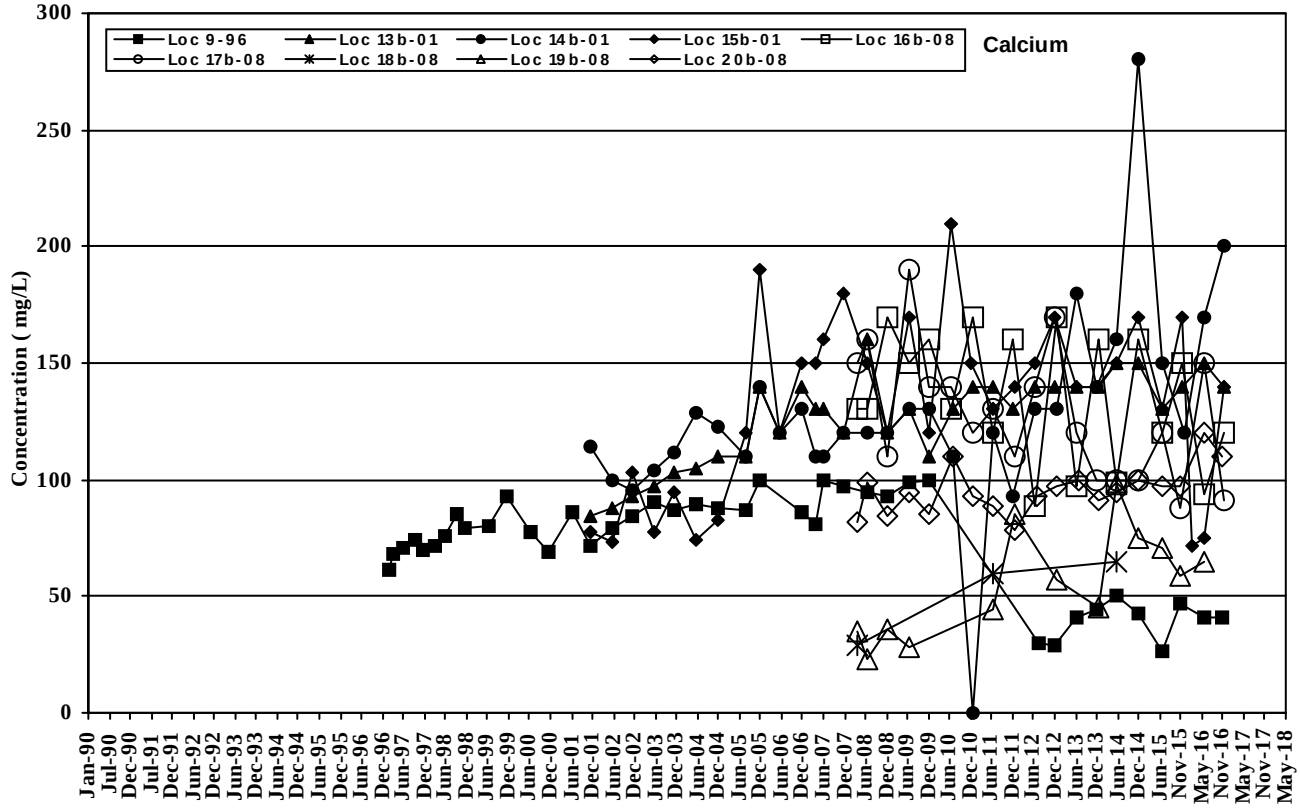
Guelph WRIC & Waste Transfer Station

Ground Water Chemistry Trends
Overburden Locations on Wet/Dry Facility

FIGURE
B9

60536556
12 Alk-Ca Location WestOB





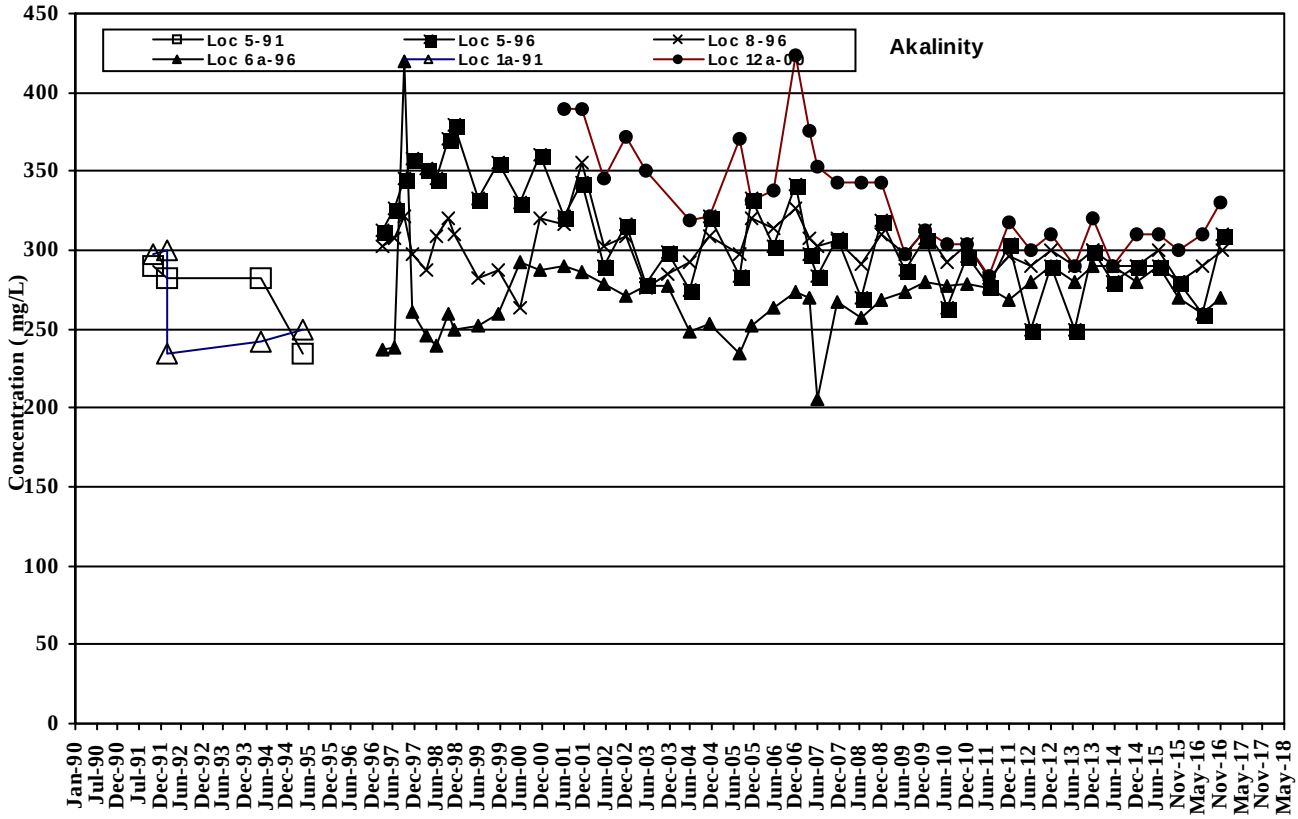
AECOM

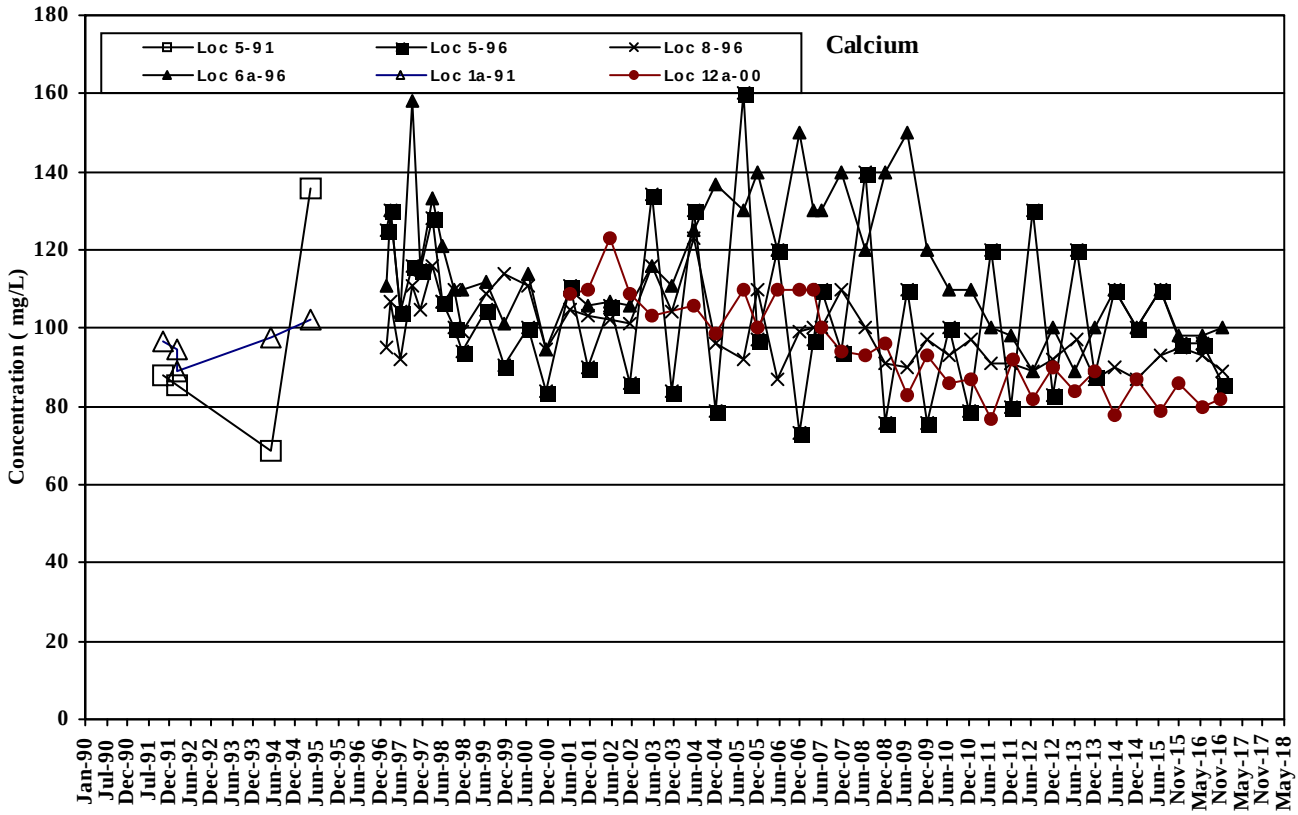
Guelph WRIC & Waste Transfer Station

Ground Water Chemistry Trends
Overburden Locations East of Wet/Dry or Transfer Station Property

FIGURE
B10

60536556
12 Alk-Ca Location EastOB





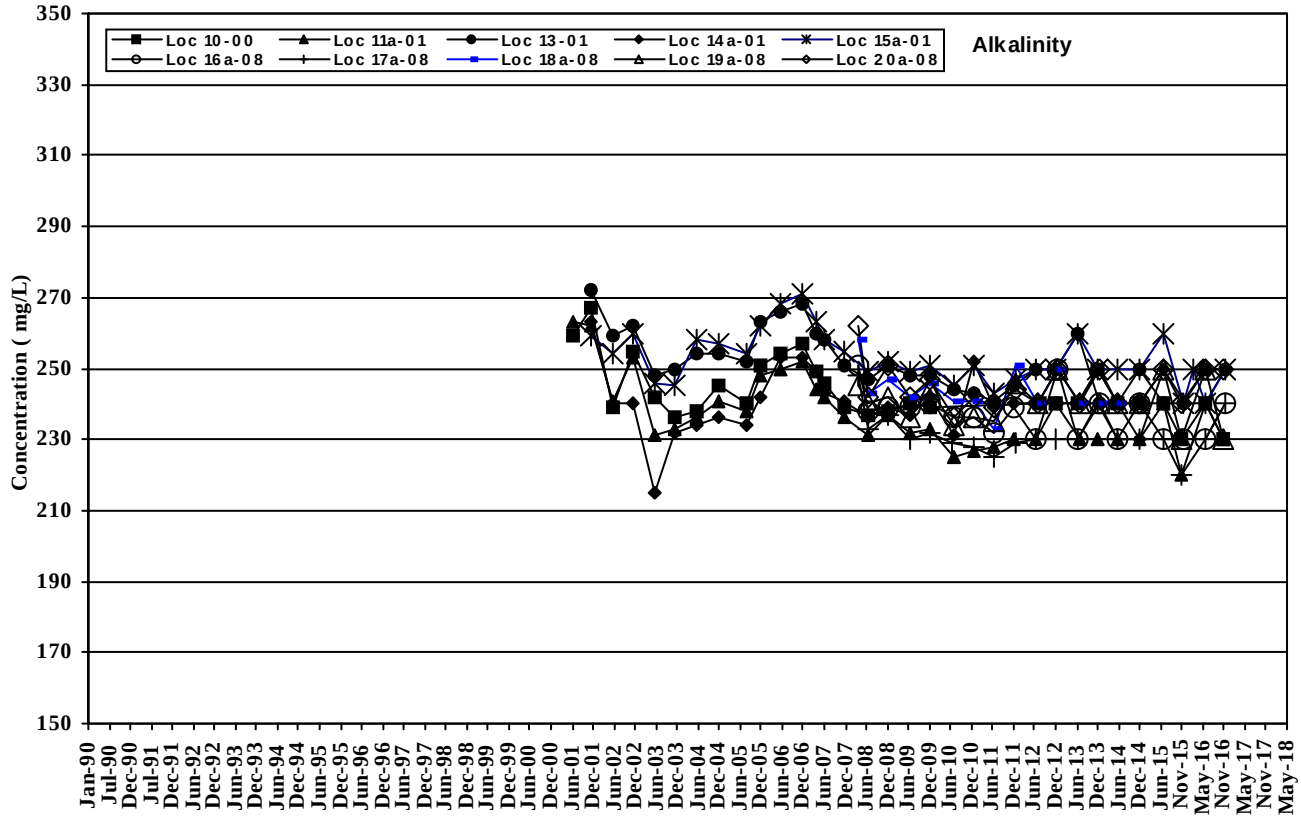
AECOM

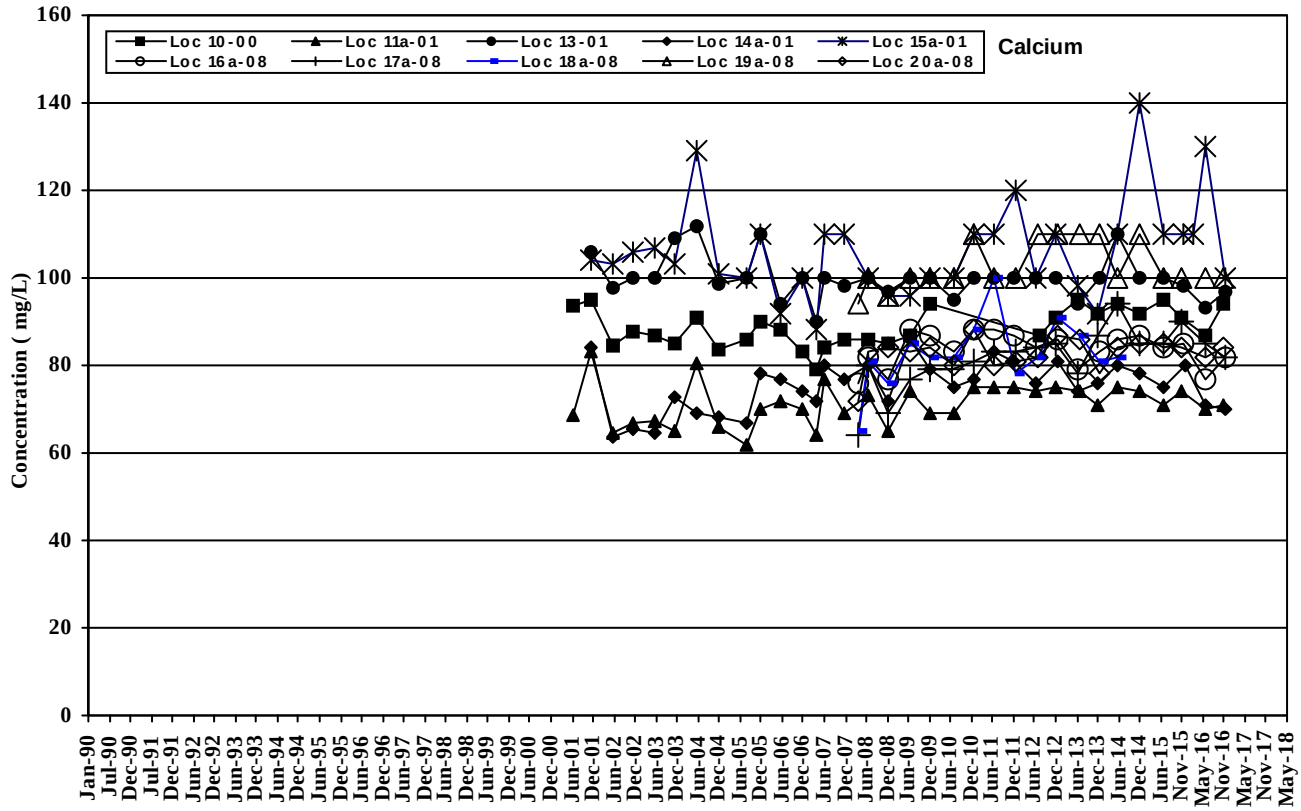
Guelph WRIC & Waste Transfer Station

Ground Water Chemistry Trends
Bedrock Locations West or on Wet/Dry Facility

FIGURE
B11

60536556
12 Alk-Ca Location WestBed





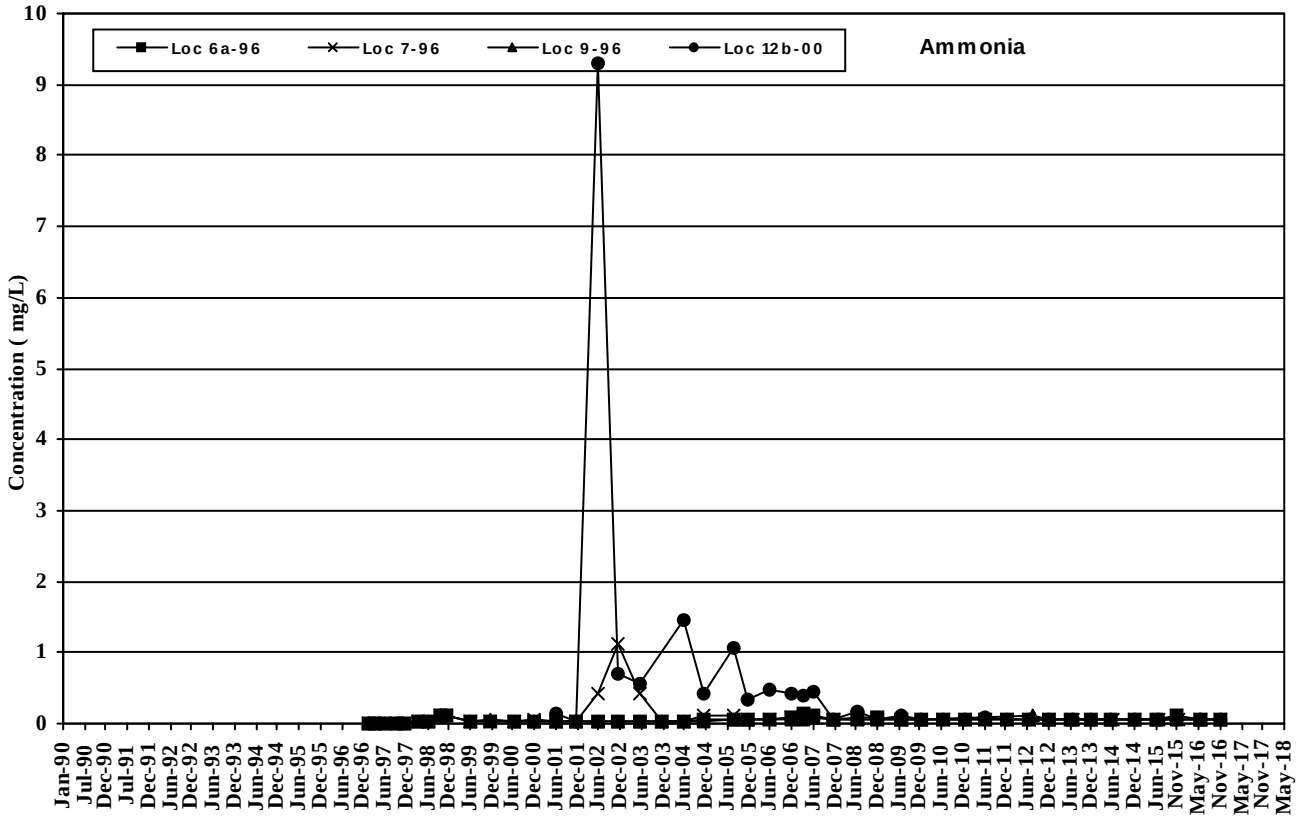
AECOM

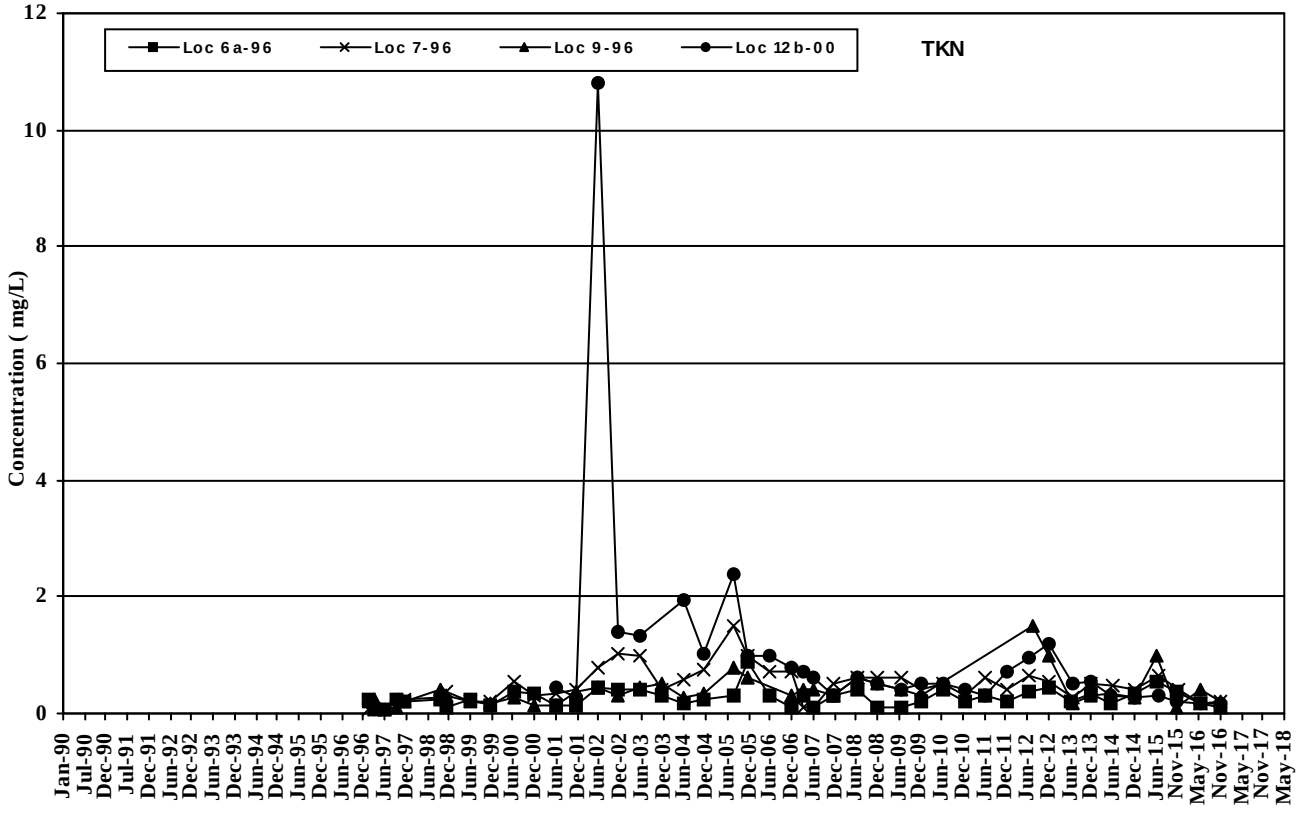
Guelph WRIC & Waste Transfer Station

Ground Water Chemistry Trends
Bedrock Locations East of Wet/Dry or on Transfer Station Property

FIGURE
B12

60536556
12 Alk-Ca Location EastBed





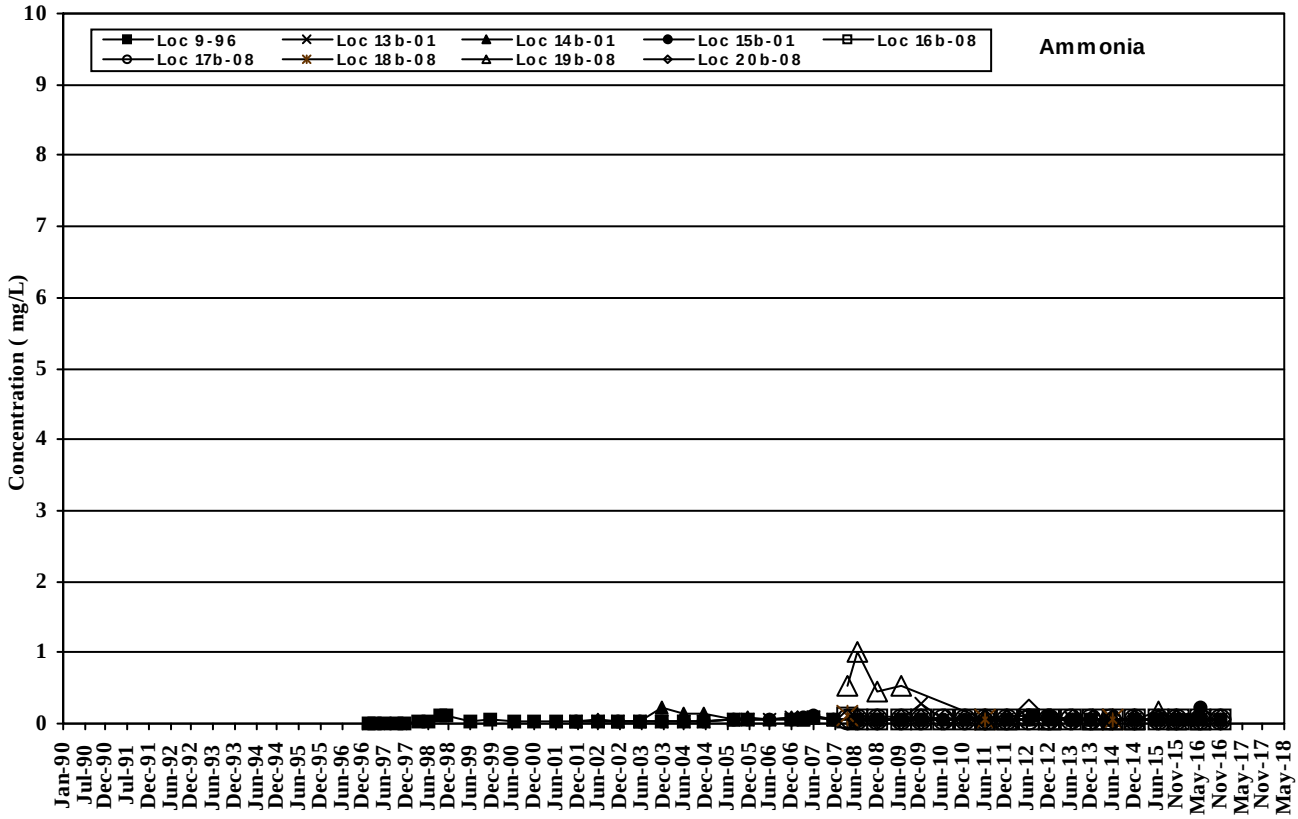
AECOM

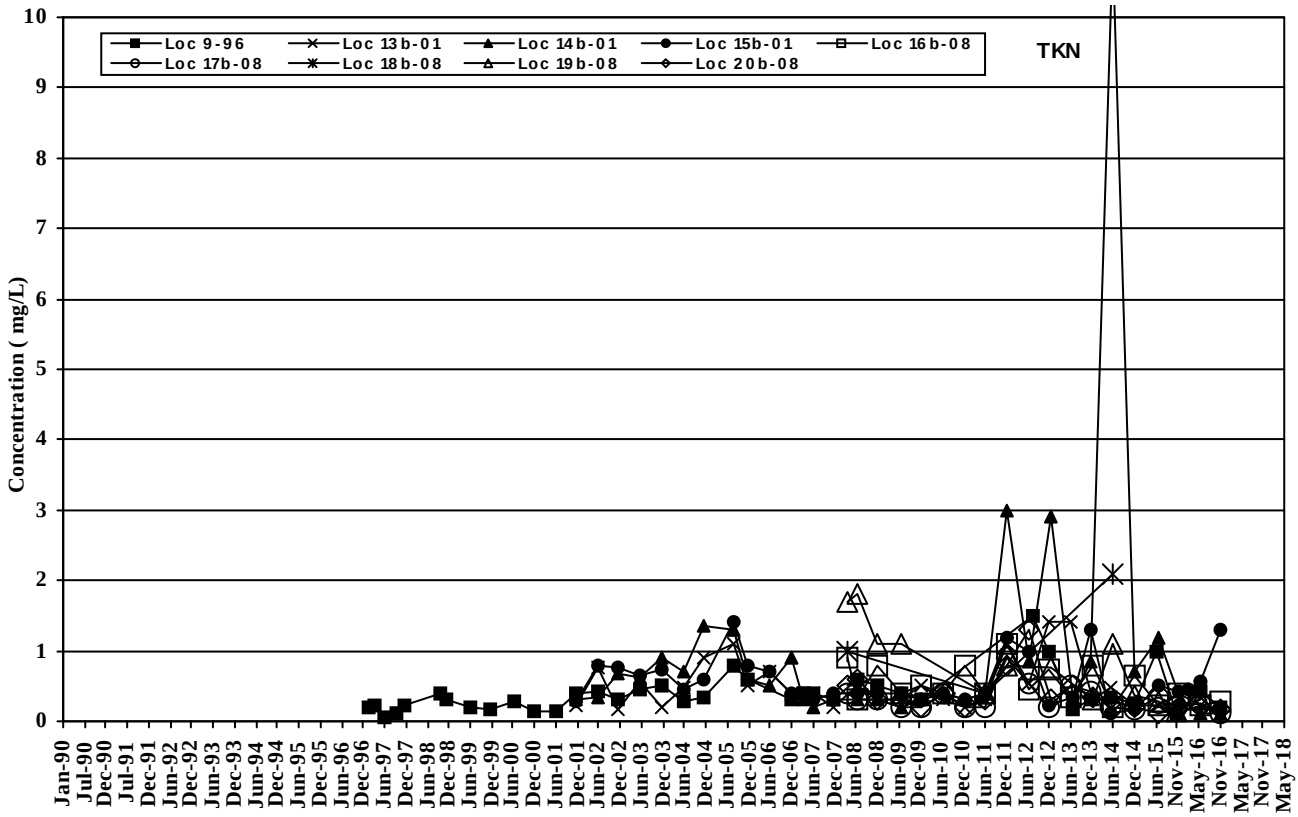
Guelph WRIC & Waste Transfer Station

Ground Water Chemistry Trends
Overburden Locations on Wet/Dry Facility

FIGURE
B13

60536556
12 NH3-TKN Location WestOB





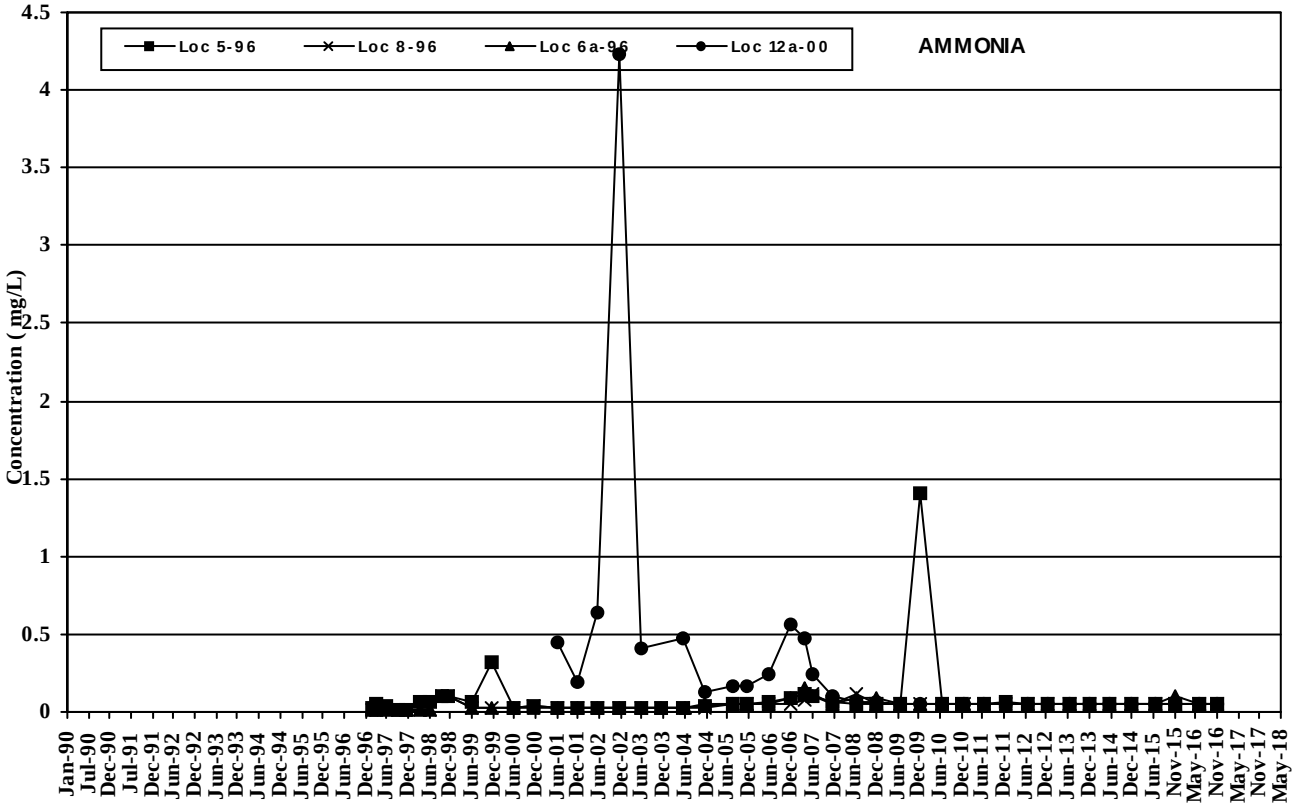
AECOM

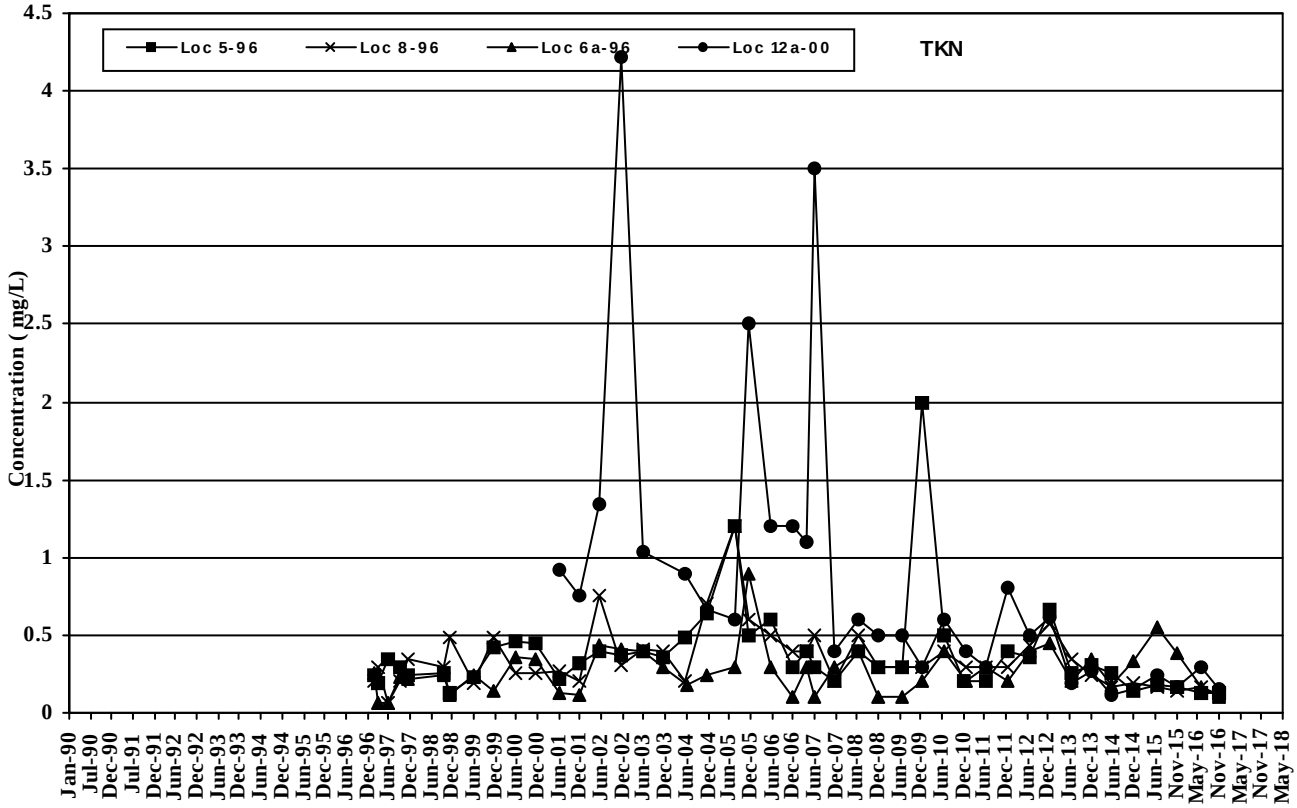
Guelph WRIC & Waste Transfer Station

Ground Water Chemistry Trends
Overburden Locations East of Wet/Dry or Transfer Station Property

FIGURE
B14

60536556
12 NH3-TKN Location EasttOB





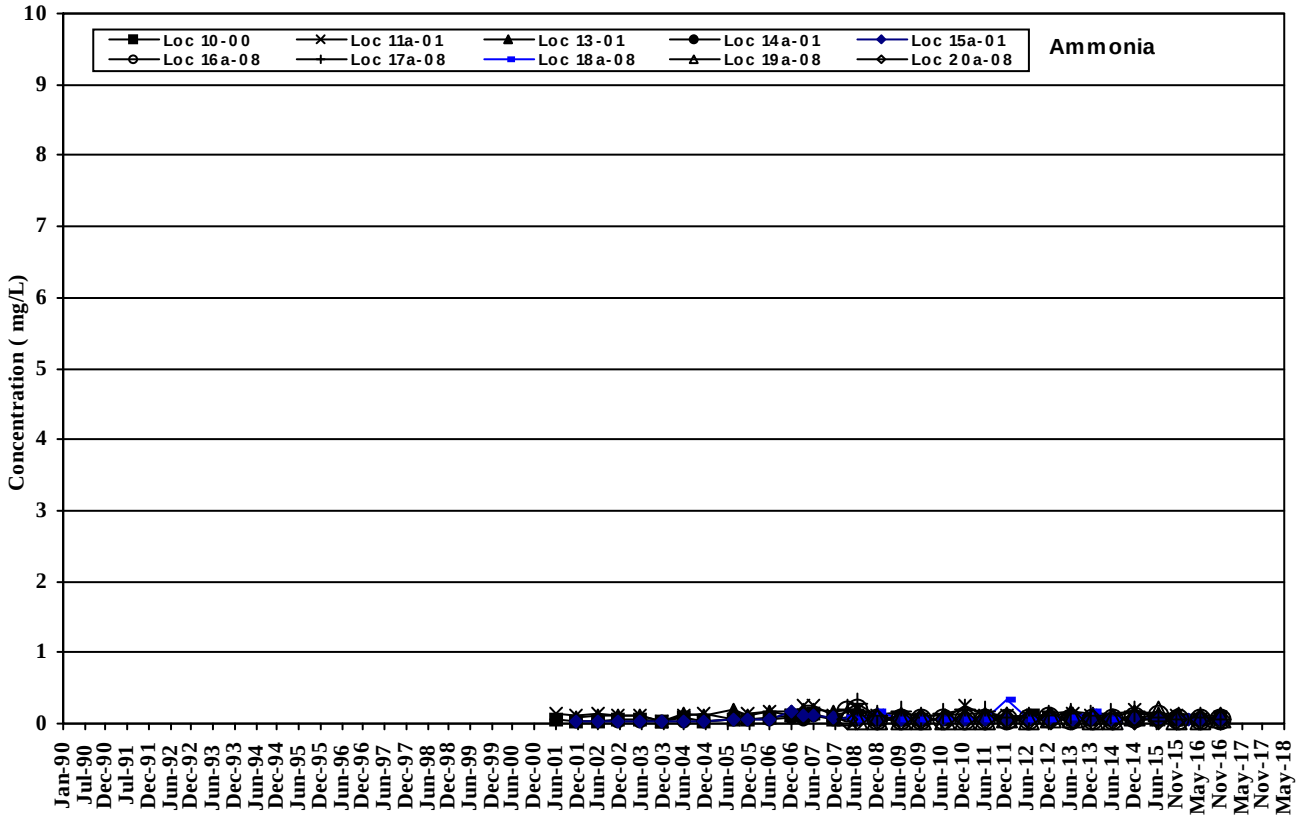
AECOM

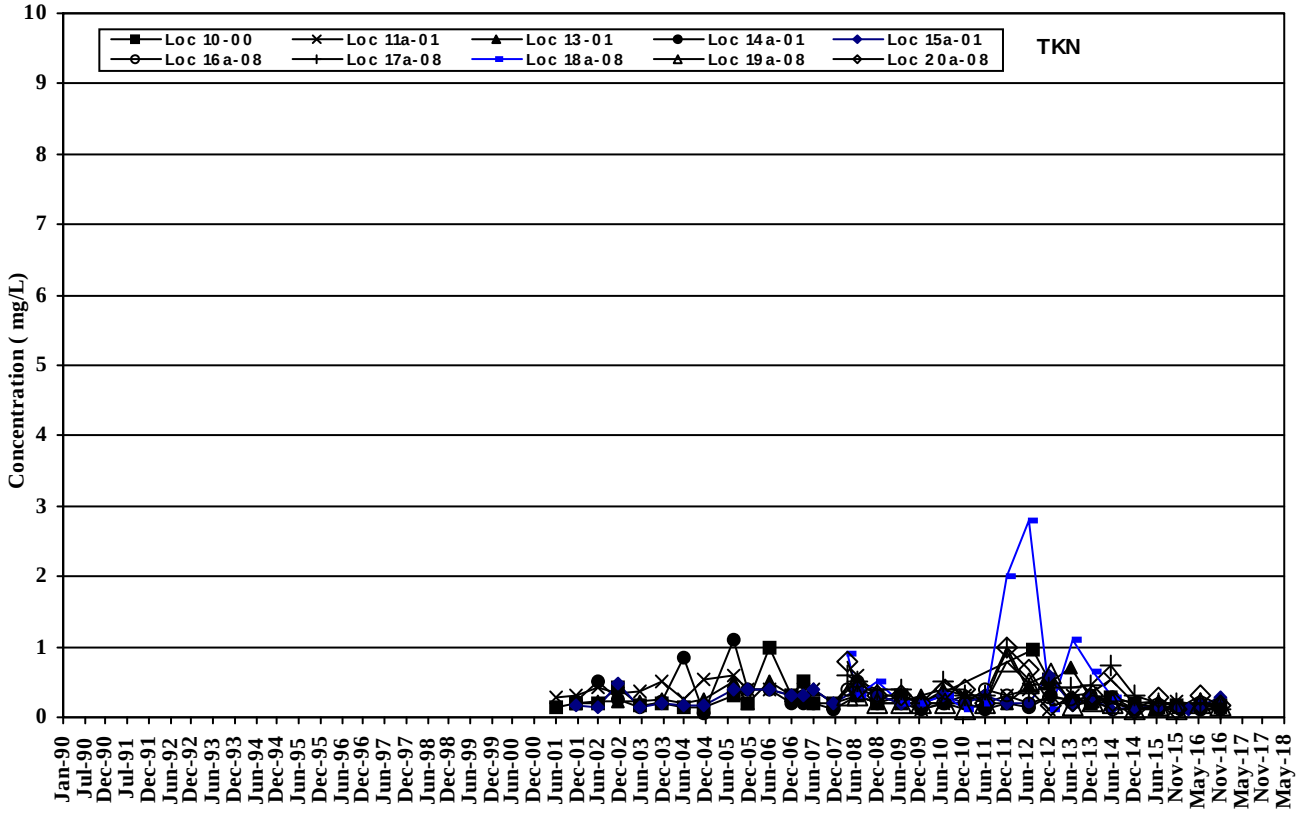
Guelph WRIC & Waste Transfer Station

Ground Water Chemistry Trends
Bedrock Locations West or on Wet/Dry Facility

FIGURE
B15

60536556
12 NH3-TKN Location WestBed





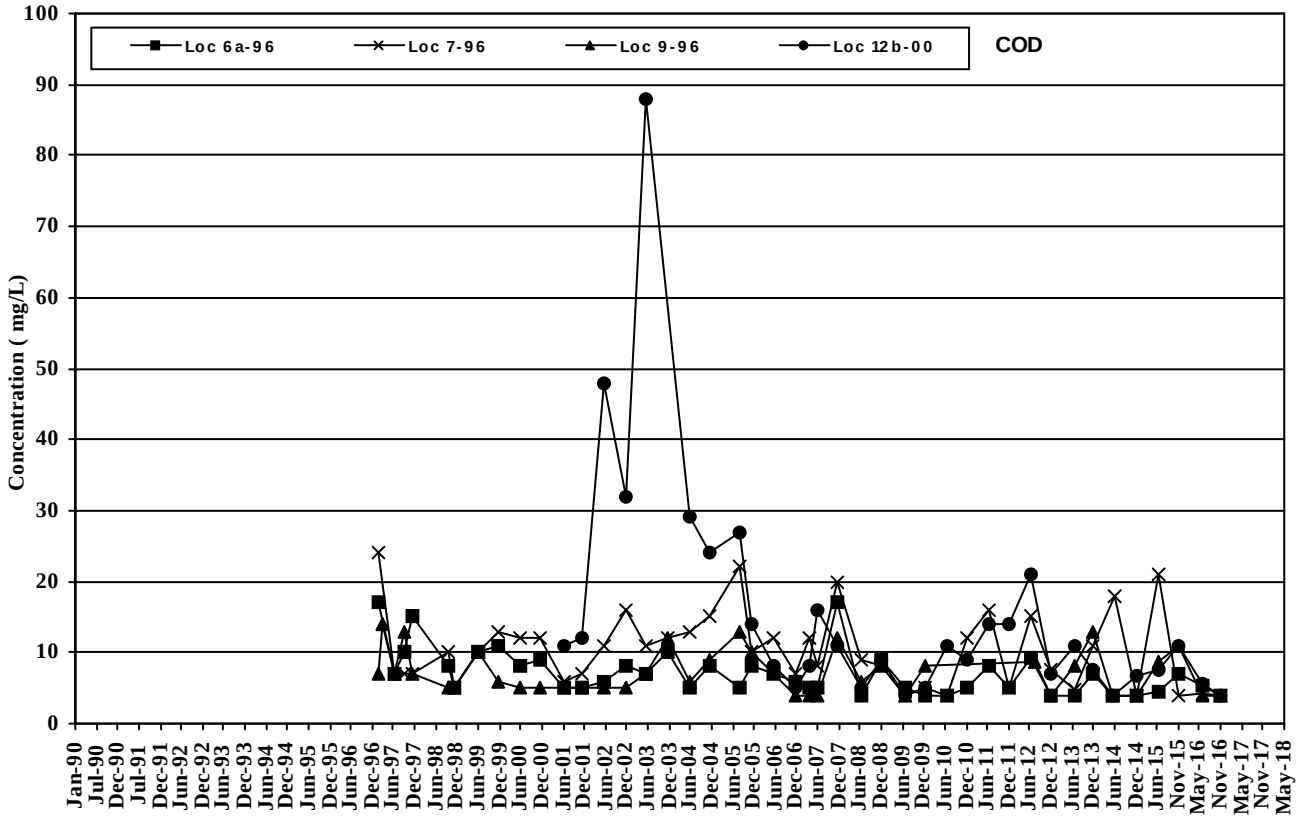
AECOM

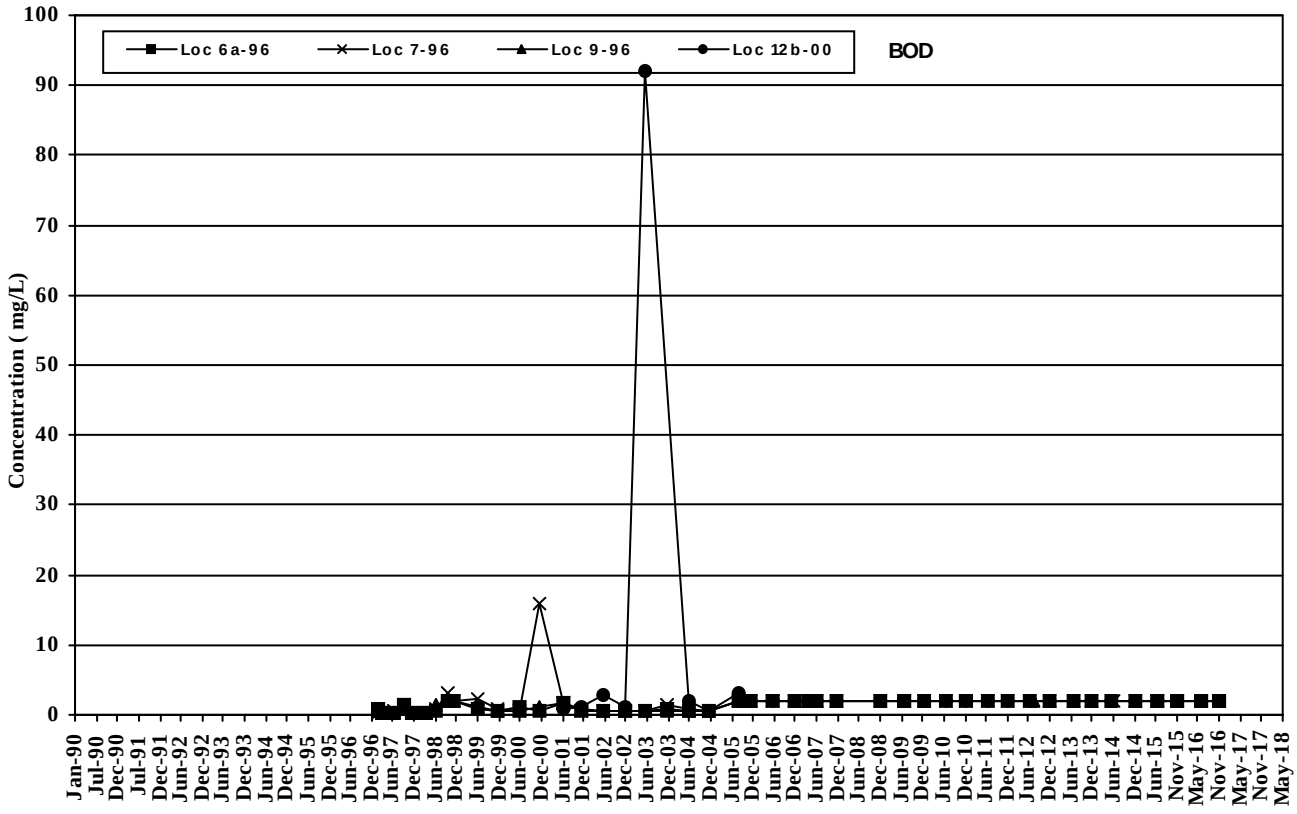
Guelph WRIC & Waste Transfer Station

Ground Water Chemistry Trends
Bedrock Locations East of Wet/Dry or on Transfer Station Property

FIGURE
B16

60536556
12 NH3-TKN Location EasttBed





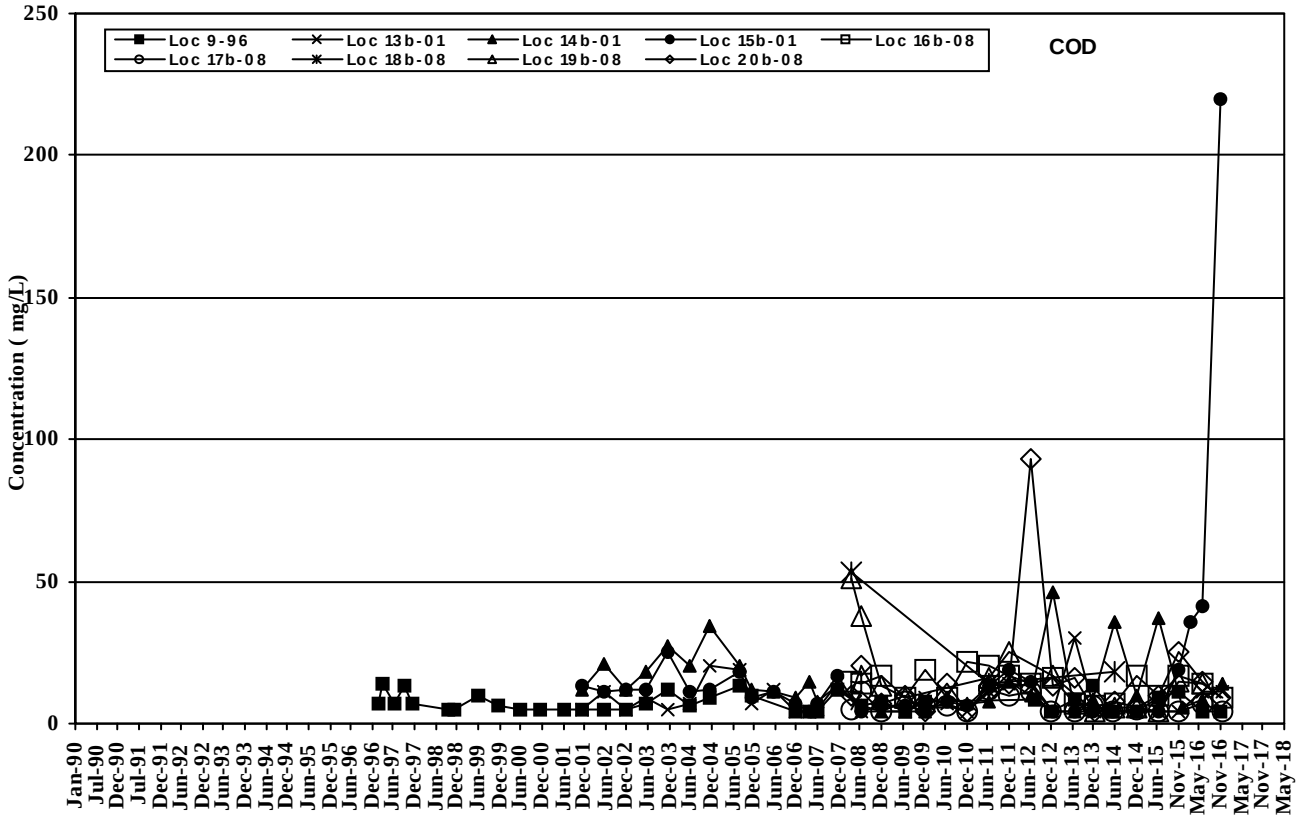
AECOM

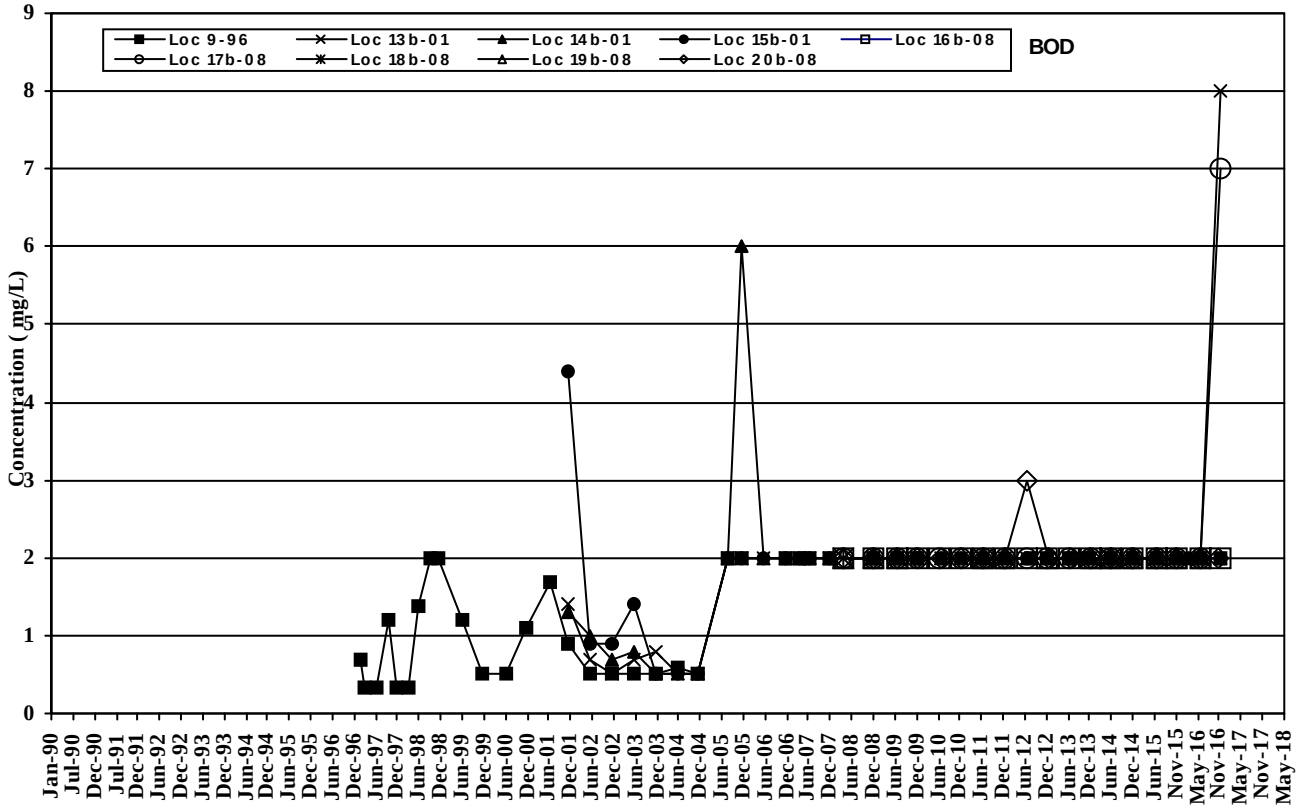
Guelph WRIC & Waste Transfer Station

Ground Water Chemistry Trends
Overburden Locations on Wet/Dry Facility

FIGURE
B17

60536556
12 COD-BOD Location WestOB





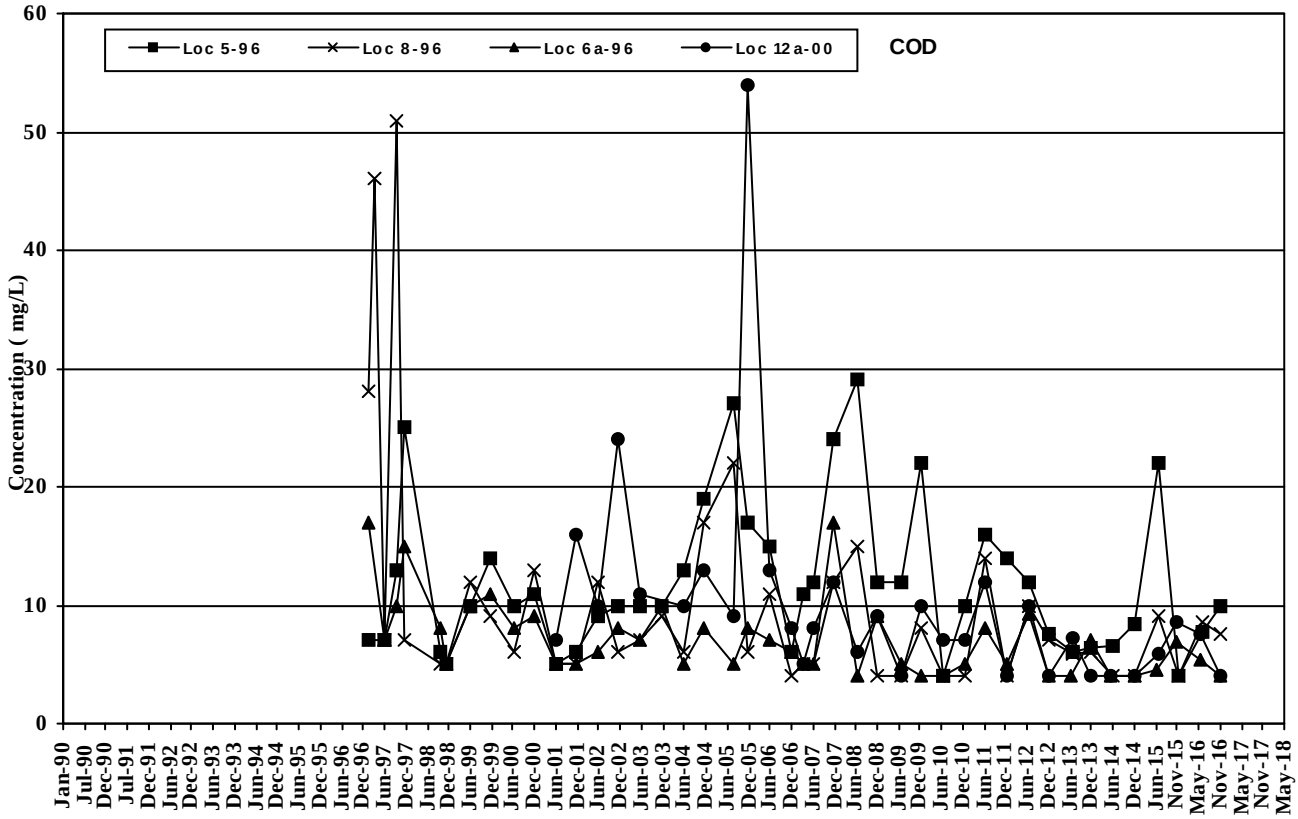
AECOM

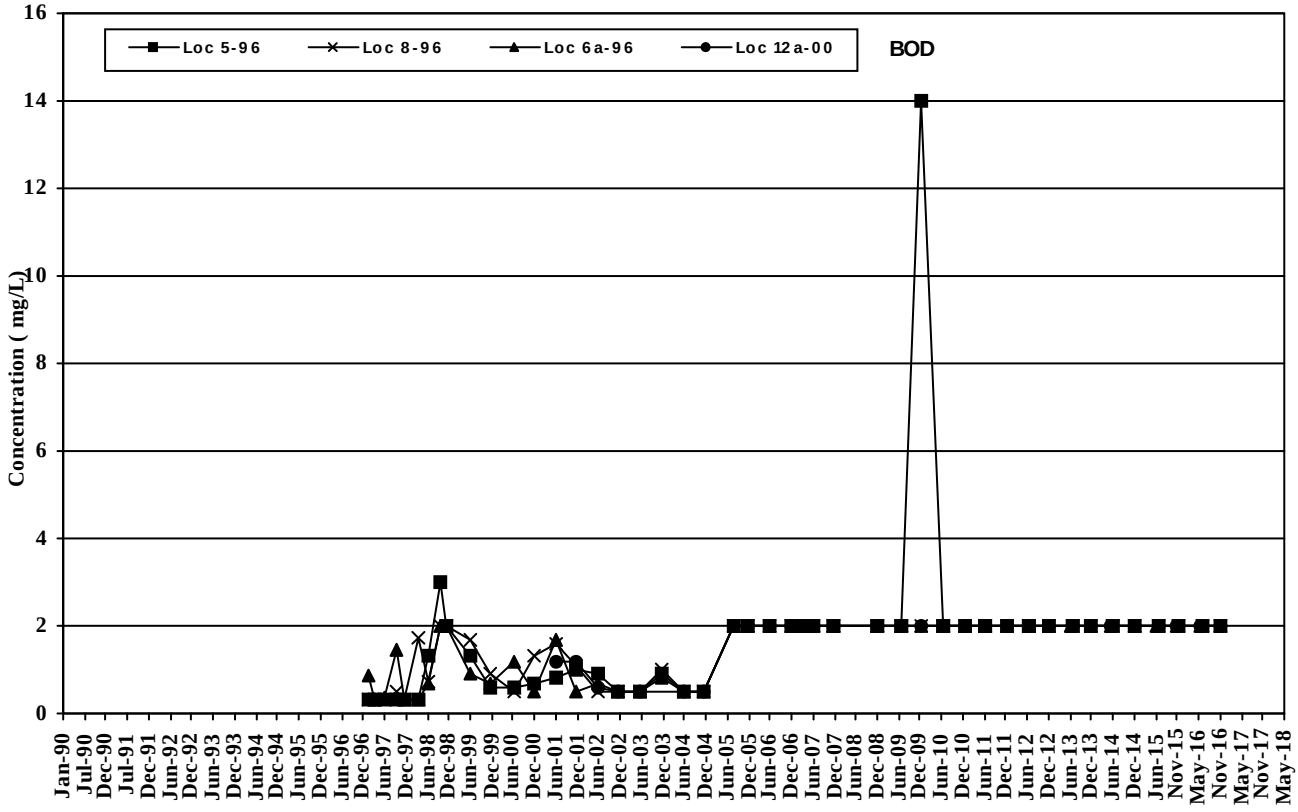
Guelph WRIC & Waste Transfer Station

Ground Water Chemistry Trends
Overburden Locations East of Wet/Dry or Transfer Station Property

FIGURE
B18

60536556
12 COD-BOD Location EastOB





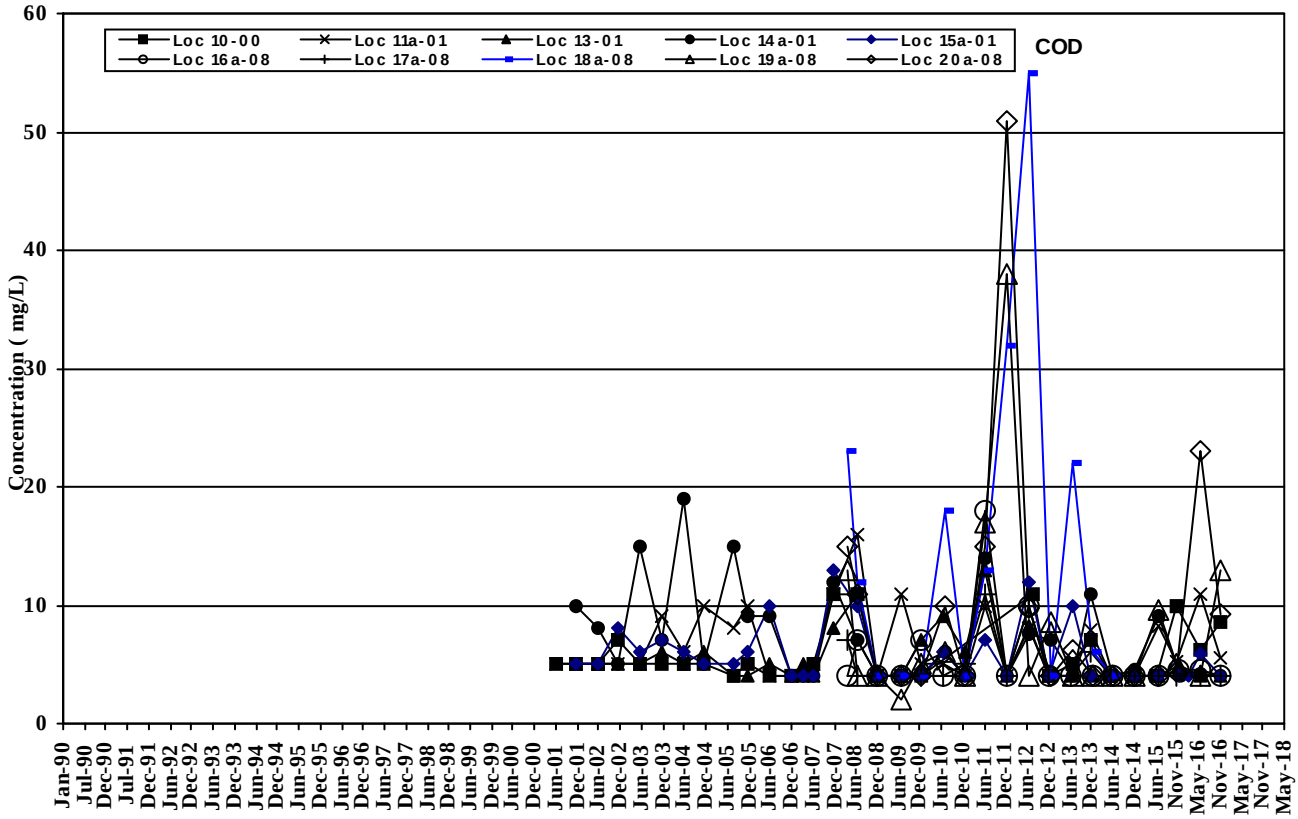
AECOM

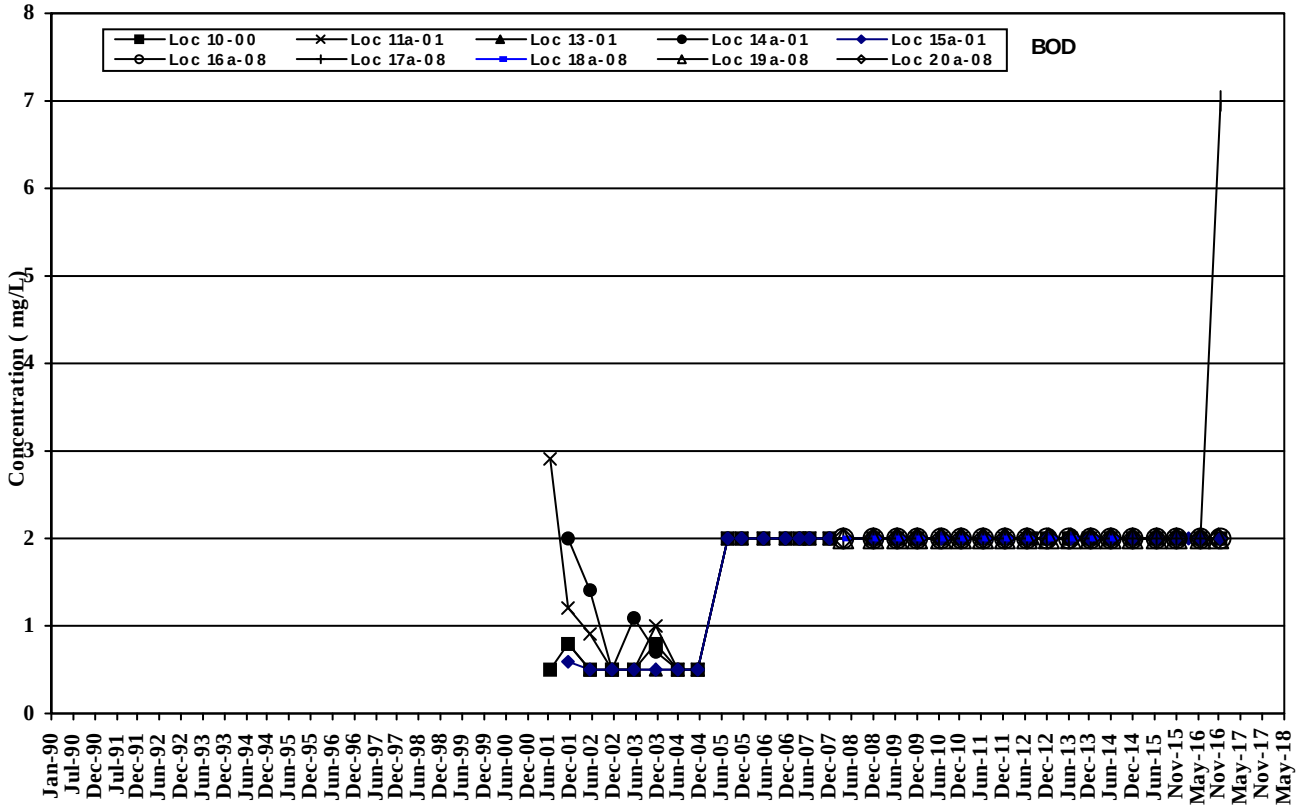
Guelph WRIC & Waste Transfer Station

Ground Water Chemistry Trends
Bedrock Locations West or on Wet/Dry Facility

FIGURE
B19

60536556
12 COD-BOD Location WestBed





AECOM

Guelph WRIC & Waste Transfer Station

Ground Water Chemistry Trends
Bedrock Locations East of Wet/Dry or on Transfer Station Property

FIGURE
B20

60536556
12 COD-BOD Location EastBed

Appendix C

Surface Water Chemistry – Routine and Organics

Routine Surface Water Quality - General Analysis -Guelph WRIC & Waste Transfer Station

AECOM

Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	TSS mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
SW 1		6.5 - 8.5									0.03			1.0				0.30	0.20		0.02
4/13/1996	ENT	7.6	310	60						392		123		< 0.5	59.4				0.02		
5/29/1996	ENT	7.8			4.74	5.32	< 10	22	1	0.04	0.22	21	14.1	7	42.2	29.8	32.4	0.51	0.06	0.2	0.08
7/3/1996	ENT						13		2.4	0.19	0.08	73		1							
8/22/1996	ENT	7.82			0.46	13.1	< 10	< 10	0.56	0.27	0.23	10	7.4	< 0.5	19.7	20.5	38.6	0.25	0.3	0.18	<0.0004
9/18/1996	ENT						< 10		2	0.13	0.07	6		< 0.5							
10/16/1996	ENT						< 10		2	0.13	0.01	1		< 1							
11/20/1996	ENT						< 10		3	0.08	0.15	7		15							
12/11/1996	ENT	7.94			6.84	9.6	< 10	93	1.34	0.08	0.18	4	12.6	1	272	155	41.7	0.59	0.02	0.15	0.02
4/8/1997	WBL	8.64	2840	118	8.09	18.3	9.24	170	2.73	< 0.01	0.206	19	18	< 0.72	732	434	49.7	1.05	<0.016	<0.028	0.034
5/6/1997	WBL	8.29	1450	81	4.47	9.81	5.7	134	1.37	0.067	0.174	39	13.2	1.15	423	236	27.3	1.73	0.023	0.16	0.071
6/26/1997	WBL	9.23	826	111	3.86	11.1	4.11	57	1.35	< 0.01	0.124	5	14.3	< 0.72	164	114	26.3	0.743	0.062	0.128	0.017
7/31/1997	WBL	9.53	1460	123	4.79	13.1	2.82	88	3.51	0.119	0.234	4	15	0.99	394	245	24.2	0.873	0.054	0.234	0.015
9/11/1997	WBL	8.73	527	94.1	4.47	12.3	2.17	71	1.48	0.017	0.072	< 6	14.7	< 0.72	89.6	76	25.4	0.56	0.095	0.099	0.02
11/26/1997	WBL	7.6	960				3.12		1.72	0.084	0.139	542		< 0.72							
12/9/1997	WBL	7.79	970	132	7.02	12.5	1.94	59	1.6	0.014	0.095	3	13.9	< 0.72	198	140	45.7	0.381	0.023	0.081	0.014
1/8/1998	WBL	7.65	545				6.3		1	0.2	0.31	357		7							
2/28/1998	Froze																				
3/31/1998	WBL	8.32	1480	121	3.48	6.75	2.53		1.52	0.023	0.107	5	12.7	< 0.72	443	250	35.5	0.542	0.051	0.107	0.007
4/30/1998	Dry																				
5/12/1998	WBL	7.55	1420				8.52		4.02	0.795	0.3	840		0.72							
6/24/1998	WBL	9.52	597	112	4.14	9.73	5.58		2.73	0.058	0.245	< 2	10.9	< 0.72	109	72.8	27.7	0.644	0.064	0.245	0.02
7/31/1998	Dry																				
8/31/1998	Dry																				
9/30/1998	Dry																				
10/31/1998	Dry																				
11/30/1998	Dry																				
12/31/1998	Dry																				
1/31/1999	Froze																				
2/28/1999	Froze																				
3/31/1999	Barr	8.01	1624	142	7.49	13	6.7	68	3.6	0.37	0.27	21	33	< 2	441	298	52.7	0.5	0.05	0.4	0.026
4/30/1999	Dry																				
5/31/1999	Dry																				
6/29/1999	Barr	7.91	307	77	2.9	9	6.4	51	1.72	0.84	0.057	12	15		41.9	34.3	20.6	0.12		0.4	0.019
7/31/1999	Dry																				
8/31/1999	Dry																				
9/30/1999	Dry																				
10/31/1999	Dry																				
11/30/1999	Dry																				
12/14/1999	Barr	8.01	716	168	16.7	18	19.4	49	2.77	1.05	0.11	40	46.9	< 1	57.4	42.5	65.5	0.01	0.04	0.2	0.018
1/30/2000	Froze																				
2/28/2000	Froze																				
3/31/2000	Philip	7.37	2380	123	10.2	15	9.1	87	3.31	0.07	0.224	17	21	< 1	634	370	59.7	0.62	0.03		0.031
4/27/2000	Philip	7.13	2595	140	29.8	43	16.5	117	115	104	0.423	23	35.8	1	123	85.7	146	0.36	0.06	0.5	0.041
5/23/2000	Philip	7.46	1930	142	25.9	53	3.2	137	66.3	68.2	0.47	13	35.3	< 1	96.5	70.2	120	0.42	0.09	0.6	0.073
6/30/2000	Philip	7.33	88	241	3.7	10	27	60	1.92	0.19	0.286	5	6.6	< 1	23.6	19	24.9	0.36		0.4	0.031

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SW 1		6.5 - 8.5									0.03			1.0				0.30	0.20		0.02
7/30/2000	Dry																				
8/29/2000	Dry																				
9/28/2000	Philip	7.81	374	97	4.32	12.4	12.8	57	2.5	0.08	0.194	128	15.5	< 1	51.8	40.1	30.5	0.16	0.029	0.23	0.035
10/30/2000	Dry																				
11/28/2000	Philip	7.63	778	90	7.41	16.8	6	57	2.54	0.08	0.5	29	24.4	< 1	193	109	73.7	0.96	0.022	0.7	0.112
12/7/2000	Froze																				
1/31/2001	Froze																				
2/28/2001	Froze																				
3/31/2001	Froze																				
4/24/2001	Philip	7.9	747	175	6.13	11	2.2	65	3.16	0.17	0.12	6	9.8	2	140	122	34.4	0.83		0.4	0.024
5/28/2001	Philip	7.29	333	119	3.93	9	8.3	77	2.4	0.11	0.288	10	13.2	< 1	39.4	46	49.4	0.58	0.03	0.4	0.048
6/30/2001	Dry																				
7/25/2001	Philip	7.3	322	105	4.82	15	8.1	143	5.3	0.3	0.765	21	21.7	< 1	30.3	29.7	56.9	0.96	0.06	1	0.103
8/31/2001	Dry																				
9/27/2001	Philip	7.5	383	128	5.48	15	3	57	1.64	0.07	0.318	2	19	< 1	33.8	31.7	30.5	0.09	0.03	0.3	0.019
10/18/2001	Philip	7.84	304	125	4.94	9	3.4	50	2.94	< 0.03	0.294	7	4.3	< 1	19.3	24.8	31.7	0.91	0.04	0.4	0.042
11/30/2001	Philip	7.48	104	39	1.72	4	1.3	24	0.87	0.03	0.3	11	1.5	< 1	4.5	6.8	9.38	0.54	<0.01	0.2	0.031
12/4/2001	Philip	7.57	153	61	3.04	6.3	3.1	26	0.68	< 0.03	0.128	1	2.7	< 1	6.5	8.8	19.2	0.31	0.01	0.4	0.043
1/31/2002	Froze																				
2/28/2002	Froze																				
3/29/2002	Froze																				
4/29/2002	Philip	7.52	398	77	2.9	5	5.6	58	1.88	0.06	0.456	11	7.3	< 1	69.3	57.4	30.8	0.57	0.02	0.5	0.361
5/31/2002	Dry																				
6/5/2002	Philip	7.8	228	55	2.46	4	5.2	75	2.19	0.14	0.438	16	5.6	< 1	28.9	26.4	18.1	0.87	0.02	0.6	0.099
7/31/2002	Dry																				
8/30/2002	Dry																				
9/27/2002	Dry																				
10/31/2002	Dry																				
11/29/2002	Dry																				
12/20/2002	Dry																				
1/31/2003	Froze																				
2/28/2003	Froze																				
3/29/2003	Froze																				
4/30/2003	Dry																				
5/31/2003	Dry																				
6/5/2003	Philip	6.99	240	68	2.89	4	6.1	51	6	0.16	0.934	118	6.1	< 1	26.1						
7/31/2003	N/A																				
8/30/2003	N/A																				
9/27/2003	Dry																				
10/31/2003	Dry																				
11/29/2003	Dry																				
12/1/2003	Philip	7.21	256	52	3.16	4	4.2	24	0.63	< 0.03	0.146	12	6	< 1	49.7	28.9	18.8	0.54	<0.01	0.3	0.07
1/31/2006	Dry																				
2/28/2006	Dry																				
3/9/2006	MAX	7.5	245	25	2.2	2	4	22	1.3	0.29	0.17	24	5	2	53	37	8.9	1.8	<0.02	0.2	0.09

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SW 1		6.5 - 8.5									0.03			1.0				0.30	0.20		0.02
4/30/2006	Dry																				
5/16/2006	MAX	7.6	346	126	4.8	7.6	3	43	1.6	0.16	0.21	3	4	< 1	36	43	31	0.43	0.018		0.023
6/30/2006	Dry																				
7/31/2006	Dry																				
8/31/2006	Dry																				
9/13/2006	N/A																				
10/31/2006	Dry																				
11/30/2006	Dry																				
12/31/2006	Dry																				
1/31/2007	Snow																				
2/28/2007	Snow																				
3/14/2007	MAX	7.3	238	22	2.4	5.3	3	25	1.3	0.53	0.26	4	7	< 1	49	33	8.7	0.16	<0.01		0.021
3/29/2007	MAX	7.8	686	101	6.7	4.4	3	31	1.5	0.08	0.19	10	13	1	140	120	34	0.93	0.021		0.043
4/30/2007	Dry																				
5/31/2007	Dry																				
6/30/2007	Dry																				
7/31/2007	Dry																				
8/31/2007	Dry																				
9/28/2007	Dry																				
10/31/2007	Dry																				
11/21/2007	MAX	7.9	239	69	4.4	8	3	33	1.3	0.09	0.41	8	10	< 1	24	24	15	0.56	0.011		0.035
12/31/2007	Snow																				
1/8/2008	MAX	7.5	731	83	5.7	5.4	2	31	1.4	0.06	0.22	3	13	< 1	170	160	35	1.5	0.022		0.09
2/28/2008	Snow																				
3/31/2008	Snow																				
4/10/2008	MAX	8.3	2260	225	20	9.5	< 2	22	0.9	< 0.05	0.06	2	29	< 1	520	350	100	0.2	0.02		0.03
5/31/2008	Dry																				
6/24/2008	MAX	7.6	121	39	2.3	2.6	5	33	2.5	0.9	0.28	24	4	< 1	9	11	11	0.99	0.011		0.067
7/24/2008	MAX	7.6	98	47	2.1	2.6	5	22	0.6	< 0.05	0.19	5	< 1	< 1	3	2.7	14	0.2	0.01		0.023
8/11/2008	MAX	7.3	157	61	2.2	2.2	3	19	0.8	0.15	0.19	4	2	< 1	10	11	16	0.2	0.02		0.017
9/28/2008	Dry																				
10/31/2008	Dry																				
11/30/2008	Dry																				
12/31/2008	Snow																				
1/30/2009	Snow																				
2/12/2009	MAX	7.3	374	36	1.7	2.4	< 2	14	0.6	< 0.05	0.19	7	7	< 1	85	60	12	0.5	<0.01		0.035
3/11/2009	MAX	6.4	253	47	1.7	2.6	3	19	0.7	< 0.05	0.13	< 10	9	< 1	43	36	12	0.3	<0.01		0.028
4/28/2009	MAX	7	374	80	2.7	2.2	< 2	33	0.1	< 0.05	0.11	10	6	1	58	50	23	0.4	0.02		0.04
5/27/2009	MAX	7.4	472	88	4	7.6	7	67	3.1	0.63	1.3	9	20	< 1	74	80	22	0.3	0.03		0.032
6/30/2009	Dry																				
7/31/2009	Dry																				
8/31/2009	Dry																				
9/30/2009	Dry																				
10/30/2009	Dry																				
11/30/2009	Dry																				

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Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	TSS mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
SW 1		6.5 - 8.5									0.03			1.0				0.30	0.20		0.02
12/30/2009	Dry																				
1/29/2010	Snow																				
2/26/2010	Snow																				
3/18/2010	MAX	7.7	268	91	4	3.2	3	23	0.8	< 0.05	0.13	2	5	< 1	27	21	28	<0.1	<0.01		0.015
4/30/2010	Dry																				
5/31/2010	Dry																				
6/30/2010	Dry																				
7/30/2010	Dry																				
8/31/2010	Dry																				
9/30/2010	Dry																				
10/29/2010	Dry																				
12/2/2010	MAX	7.68	187	82	3.9	2.4	< 2	31	0.9	< 0.05	0.29	49	2	1	7	7	23	0.2	<0.01		0.025
12/31/2010	Dry																				
1/28/2011	Froze																				
2/28/2011	Froze																				
3/31/2011	Snow/																				
4/8/2011	MAX	7.93	1060	178	9.3	2.6	< 2	32	0.8	< 0.05	0.07	2	4	< 1	200	140	63	<0.1	<0.01		0.013
6/3/2011	MAX	8.1	463	209	9.1	2.3	< 2	44	1.2	0.13	0.15	7	< 1	< 1	22	26	71	0.8	0.02		0.012
6/22/2011	MAX	7.8	593	270	9.8	1.3	6	53	2.1	< 0.05	0.38	30	< 1	< 1	30	33	88	2.8	0.02		0.007
7/29/2011	Dry																				
8/31/2011	Dry																				
9/30/2011	Dry																				
10/20/2011	MAX	7.54	67	29	1.7	2.1	< 2	10	0.4	< 0.05	0.25	3	< 1	4	3	2.9	7.5	0.1	<0.01		0.01
11/29/2011	MAX	7.19	70	29	1.6	2.6	< 2	10	0.3	< 0.05	0.18	6	< 1	< 1	3	2.4	8.5	0.2	<0.01		0.016
12/15/2011	MAX	7.77	200	67	4.7	3.4	< 2	26	0.8	0.33	0.26	4	6	2	16	10	25	0.13	<0.01		0.014
1/31/2012	Dry																				
2/29/2012	Dry																				
3/29/2012	Dry																				
4/30/2012	Dry																				
5/31/2012	Dry																				
6/29/2012	Dry																				
7/31/2012	Dry																				
8/31/2012	Dry																				
9/28/2012	Dry																				
10/31/2012	Dry																				
11/30/2012	Dry																				
12/21/2012	Dry																				
1/30/2013	MAX	6.7	990	23	1.9	3.8	3	25	1.4	0.23	0.2	7	12		230	150	9.4	0.23	<0.01		0.023
2/28/2013	Dry																				
3/29/2013	Dry																				
4/18/2013	MAX	7.73	1500	74	7.6	5.3	< 2	37	0.9	0.12	0.021	2	8	3.3	390	280	51	<0.1	<0.01		0.023
5/31/2013	Dry																				
6/28/2013	Dry																				
7/31/2013	Dry																				
8/7/2013	MAX	6.51	540	100	8.6	66	170	360	7.5	0.76	5.5	49	17	2.6	63	15	42	0.61	0.033		0.1

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SW 1		6.5 - 8.5									0.03			1.0				0.30	0.20		0.02
9/30/2013	Dry																				
10/31/2013	MAX	7.27	110	44	2.3	2.3	< 2	21	0.55	< 0.05	0.18	2	4	1.9	3	3.6	15	0.22	0.012		0.022
11/29/2013	Dry																				
12/31/2013	Dry																				
1/14/2014	MAX	7.49	2200	69	10	2.6	7	42	1.7	0.07	0.11	110	20	< 1	570	410	74	1	0.01		0.07
1/31/2014	Ice C																				
2/28/2014	Snow																				
3/28/2014	Ice C																				
4/30/2014	Belo																				
5/30/2014	Dry																				
6/30/2014	Dry																				
7/31/2014	Dry																				
8/29/2014	Dry																				
9/30/2014	Dry																				
10/31/2014	Dry																				
11/28/2014	Belo																				
12/31/2014	Dry																				
1/31/2015	Snow																				
2/28/2015	Snow																				
3/28/2015	Snow																				
4/10/2015	MAX	7.96	700	260	24	1.4	< 2	< 4	0.29	0.077	< 0.02	< 1	12	< 1	59	32	85	<0.1	0.015		0.098
5/30/2015	Dry																				
6/30/2015	Dry																				
7/31/2015	Dry																				
8/29/2015	Dry																				
9/30/2015	Dry																				
10/31/2015	Dry																				
11/28/2015	Dry																				
12/31/2015	Dry																				
1/29/2016	Snow																				
2/3/2016	MAX	6.95	370	66	4	1.8	< 2	14	0.42	< 0.05	0.1	10	2.4	< 1	76	44	23	0.13	<0.01		0.013
3/17/2016	MAX	7.53	290	79	3.7	1.5	2	23	0.31	< 0.05	0.062	11	8.4	< 1	37	30	24	0.6	0.01		0.041
4/26/2016	Belo																				
5/17/2016	Dry																				
5/26/2016	Dry																				
6/28/2016	Dry																				
7/29/2016	Dry																				
8/17/2016	Dry																				
9/20/2016	Dry																				
10/19/2016	Dry																				
11/24/2016	Dry																				
12/30/2016	Snow																				

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Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	TSS mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
EPTS-01		6.5 - 8.5									0.03			1.0				0.30	0.20		0.02
6/9/2004	N/A																				
6/9/2004	Philip	8	583	236	20.8	1	1.3	7	0.27	0.07	0.003		19.4	1	52.3	24.9	93.5	0.09	0.02		0.427
6/9/2004	Philip	8	583	236	20.8	< 1	1.3	7	0.27	0.07	0.003		19.4	< 1	52.3	24.9	93.5	0.09	0.02		0.427
6/9/2004	N/A					<								<							
11/30/2004	Philip	8.11	665	244	22.4	2	< 0.5	8	0.18	< 0.03	0.003		21.3	< 1	60.3	23.6	83.4	<0.01	0.01		0.082
8/3/2005	N/A																				
11/28/2005	Maxx	8.18	620	231	24		< 2	< 4	0.4	0.1	< 0.02		18	< 1	51	26	84	<0.05	0.015	<0.05	0.077
6/1/2006	N/A																				
12/4/2006	MAX																				
3/30/2007	MAX	8.3	621	242	24	1.3	< 2	4	0.6	0.11	< 0.02		14	< 1	44	24	82	<0.02	0.015	<0.05	0.099
6/14/2007	MAX	8.3	592	243	22	1.3	< 2	10	0.9	0.13	< 0.02		16	< 1	35	18	76	<0.02	0.014	<0.05	0.17
8/16/2007	MAX	8.2	558	235	24	1.5	< 2	12	0.6	0.19	< 0.02		16	< 1	27	15	75	<0.02	0.014	<0.05	0.045
12/5/2007	MAX	8.2	650	232	27	1.7	< 2	6	0.4	0.18	< 0.02		26	< 1	51	22	96	0.06	0.016	<0.1	0.1
5/2/2008	MAX	8.3	610	213	19	1.1	< 2	< 4	0.6	0.05	0.02		17	< 1	51	30	68	<0.02	<0.01	<0.1	0.068
6/25/2008	MAX	8.1	593	217	20	1.3		11	0.7	0.12	< 0.02		15	< 1	45	26		<0.02	<0.01	<0.1	0.052
9/11/2008	MAX	8.2	574	228	20	1.4	< 2	11	0.6	< 0.05	< 0.02		16	< 1		21	75	<0.02	0.013	<0.1	0.067
12/9/2008	MAX	8	787	262	20	1.6	< 2	< 4	0.3	< 0.05	< 0.02		19	< 1	80	47	80	<0.02	0.017	<0.1	0.13
5/1/2009	MAX	7.8	582	231	21	1.3	< 2	< 4	0.5	< 0.05	< 0.02		13	< 1	44	22	75	<0.02	0.013	<0.1	0.065
6/25/2009	MAX	8.1	557	228	21	1.4	< 2	< 4	0.5	< 0.05	< 0.02		12	< 1	31	18	73	<0.02	0.017	<0.1	0.056
8/31/2009	MAX	7.8	1420	334	20	1.7	< 2	140	1.5	0.13	0.12		110	< 1	190	120	160	1	0.19	0.11	0.013
12/15/2009	MAX	7.8	451	169	20	1.2	< 2	9	0.4	0.06	0.02		11	< 1	26	13	70	<0.02	0.011	<0.1	0.15
6/24/2010	MAX	8	618	235	21	1.3	< 2	< 4	0.6	0.07	0.02		15	1	40	24	73	<0.06	0.012	<0.1	0.053
12/17/2010	MAX	7.98	725	266	24	1.5	< 2	8	0.3	< 0.05	< 0.02		16	< 1	54	28	88	<0.02	0.023	<0.1	0.096
6/15/2011	MAX	8.07	617	238	19	1.6	< 2	17	0.5	< 0.05	< 0.02		12	< 1	45	35	70	<0.02	0.02	<0.1	0.073
12/19/2011	MAX	7.99	770	256	27	1.8	< 2	5	0.4	< 0.05	0.03		30	2	64	45	96	0.04	<0.01	<0.1	0.29
1/31/2012	NA																				
2/29/2012	NA																				
3/29/2012	NA																				
4/17/2012	MAX	8.08	670	250	23	1.4	< 2	13	0.55	< 0.05	0.025	1	14	< 1	45	31	86	<0.1	0.016		0.08
5/31/2012	NA																				
6/22/2012	MAX	8.05	620	230	21	1.3	< 2	13	0.64	< 0.05	< 0.02	3	14	< 1	38	22	74	<0.1	0.016		0.055
7/26/2012	MAX	8.19	590	230	22	1.4	3	12	0.66	0.1	< 0.02	1	14	< 1	34	18	73	<0.1	0.015		0.039
8/31/2012	NA																				
9/20/2012	MAX	8.02	690	250	25	1.5	< 2	9.5	0.75	0.12	< 0.02	1	15	< 1	47	29	84	<0.1	0.017		0.057
10/24/2012	MAX	8.09	700	250	24	1.6	< 2	15	0.5	0.2	< 0.02	2	16	< 1	49	30	87	<0.1	0.018		0.085
11/30/2012	NA																				
12/18/2012	MAX	7.88	740	270	25	1.7	< 2	7.6	0.3	0.062	< 0.02	2	18	< 1	58	37	94	<0.1	<0.01		0.11
1/30/2013	MAX	7.91	620	220	20	1.4	< 2	9.1	0.54	< 0.05	< 0.02	2	16	< 1	44	32	76	<0.1	0.012		0.2
2/28/2013	NA																				
3/29/2013	NA																				
4/18/2013	MAX	8.1	650	210	19	1.2	< 2	18	0.64	< 0.05	< 0.02	< 1	13	< 1	64	50	73	<0.1	0.011		0.072
5/28/2013	MAX	8.16	580	220	22	1.4	< 2	8.9	0.42	0.12	< 0.02	2	13	< 1	35	26	79	<0.1	<0.01		0.06
6/21/2013	MAX	8.43	600	230	20	1.4	< 2	8.5	0.58	< 0.05	< 0.02		14	< 1	35	25	74	<0.02	0.013	<0.1	0.051
6/27/2013	MAX	8.03	630	240	22	1.4	< 2	10	0.43	0.11	< 0.02	3	13	< 1	39	27	78	<0.1	0.016		0.066
7/25/2013	MAX	8.17	600	240	21	1.5	< 2	6.3	0.39	0.067	< 0.02	2	12	< 1	32	23	77	<0.1	0.017		0.059

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Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	TSS mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
EPTS-01		6.5 - 8.5									0.03			1.0				0.30	0.20		0.02
8/7/2013	MAX	8.2	560	220	20	1.5	< 2	5.7	0.52	0.074	< 0.02	1	12	< 1	30	20	75	<0.1	0.017		0.058
9/24/2013	MAX	8.15	640	260	20	1.5	< 2	10	0.93	0.12	< 0.02	2	14	< 1	37	23	74	<0.1	0.021		0.067
10/31/2013	MAX	8.13	620	260	20	1.4	< 2	< 4	0.27	< 0.05	< 0.02	< 1	12	< 1	32	19	79	<0.1	0.015		0.083
11/19/2013	MAX	8.05	650	270	23	1.7	< 2	8	0.5	0.086	< 0.02	< 1	13	< 1	34	23	85	<0.1	0.02		0.086
12/5/2013	MAX	7.87	660	270	22	1.5	< 2	< 4	0.32	0.1	< 0.02	< 1	14	< 1	36	21	80	<0.1	0.012		0.099
1/14/2014	MAX	7.98	720	250	24	1.7	< 2	4.6	0.24	< 0.05	< 0.02	< 1	14	< 1	61	37	93	<0.1	0.015		0.11
2/20/2014	MAX	8.03	680	260	24	1.6	< 2	< 4	0.46	0.13	< 0.04	2	14	< 1	41	32	91	<0.1	0.017		0.1
3/27/2014	MAX	8.17	695	250	25	1.5	< 2	6.2	0.43	< 0.05	< 0.04	< 1	12	< 1	58	25	92	<0.1	0.021		0.091
4/23/2014	MAX	7.93	710	240	22	1.4	< 2	< 4	0.4	< 0.05	< 0.04	< 1	11	< 1	71	39	84	<0.1	<0.01		0.1
5/27/2014	MAX	7.92	660	250	21	1.3	< 2	< 4	0.53	< 0.05	< 0.02	1	11	< 1	45	27	78	<0.1	0.013		0.068
6/25/2014	MAX	8.14	610	250	22	1.4	< 2	< 4	0.63	0.06	< 0.02	2	12	< 1	37	25	80	<0.1	0.021		0.069
7/29/2014	MAX	8.05	620	250	21	1.4	< 2	9.1	0.68	0.13	< 0.02	10	12	< 1	38	22	76	<0.1	0.015		0.061
8/21/2014	MAX	8.11	650	260	26	1.6	< 2	7.2	0.75	< 0.05	< 0.02	1	13	< 1	41	29	92	<0.1	0.013		0.072
9/23/2014	MAX	8.08	700	260	23	1.6	< 2	< 4	0.64	0.055	0.021	< 1	13	< 1	44	30	83	<0.1	0.017		0.063
10/23/2014	MAX	8.06	670	270	23	1.6	< 2	7.6	0.39	0.075	0.024	< 1	12	< 1	36	23	90	<0.1	0.025		0.077
11/26/2014	MAX	8.12	700	280	25	1.8	< 2	< 4	0.48	0.14	< 0.02	1	13	< 1	43	28	95	<0.1	0.018		0.1
12/18/2014	MAX	8.08	680	270	25	1.7	< 2	< 4	0.21	< 0.05	< 0.02	< 1	13	< 1	36	22	93	<0.1	0.018		0.094
1/21/2015	MAX	7.96	990	290	23	1.5	< 2	< 4	0.24	< 0.05	< 0.02	< 1	17	< 1	120	43	95	<0.1	0.017		0.12
2/28/2015	Snow																				
3/17/2015	MAX	7.94	680	270	24	1.7	< 2	9.3	0.72	0.17	0.028	2	14	< 1	46	27	94	<0.1	0.019		0.093
4/10/2015	MAX	7.19	470	73	3.5	1.6	< 2	24	0.72	0.067	0.072	10	7	2.4	92	68	22	0.45	0.01		0.029
5/20/2015	MAX	7.93	700	260	24	1.3	< 2	9.1	0.66	0.094	< 0.02	2	12	< 1	59	32	86	<0.1	0.015		0.067
6/30/2015	MAX	8.03	710	270	23	1.2	< 2	< 4	< 1	0.073	< 0.02	3	13	< 1	59	34	79	<0.1	0.018		0.063
7/14/2015	MAX	8	660	250	21	1.2	< 2	6.3	0.48	< 0.05	< 0.02	2	13	< 1	49	30	75	<0.1	0.016		0.051
8/27/2015	MAX	8.08	710	270	24	1.4	< 2	< 4	0.35	0.051	< 0.02	2	14	< 1	48	31	83	<0.1	0.025		0.068
9/4/2015	MAX	7.97	680	260	22	1.5	< 2	17	0.76	0.053	0.024	15	14	< 1	48	28	75	<0.1	0.019		0.067
10/22/2015	MAX	8.19	690	270	24	1.5	< 2	5.2	0.52	0.064	< 0.02	2	14	< 1	43	25	85	<0.1	0.016		0.071
11/25/2015	MAX	8	750	270	25	1.7	< 2	6	0.56	0.051	< 0.02	3	15	< 1	60	35	93	<0.1	0.016		0.096
12/15/2015	MAX	7.87	780	270	25	1.8	< 2	8.4	0.52	0.14	0.024	9	15	< 1	66	34	95	<0.1	0.014		0.15
1/29/2016	Snow																				
2/3/2016	MAX	7.77	790	290	25	1.7	< 2	5	0.37	0.065	< 0.02	< 1	15	< 1	68	39	95	<0.1	0.014		0.11
3/17/2016	MAX	7.99	780	270	22	1.4	< 2	10	0.21	< 0.05	< 0.02	< 1	16	< 1	69	37	81	<0.1	0.013		0.096
4/26/2016	MAX	8.11	640	240	19	1.1	< 2	7	< 0.1	0.076	< 0.02	< 1	12	< 1	45	34	70	<0.1	0.011		0.077
5/17/2016	MAX	8.09	630	240	21	1.2	< 2	5.8	0.25	< 0.05	< 0.02	1	13	< 1	42	30	74	<0.1	0.013		0.061
5/26/2016	MAX	8.15	580	240	21	1.3	< 2	12	0.16	0.093	< 0.02	3	11	< 1	33	24	73	<0.1	0.013		0.069
6/28/2016	MAX	8.02	640	260	21	1.3	< 2	11	0.4	< 0.05	< 0.02	2	13	< 1	37	26	75	<0.1	0.018		0.053
7/29/2016	MAX	8.26	570	220	23	1.5	2	21	0.21	< 0.05	< 0.02	7	13	< 1	38	25	66	<0.1	0.014		0.041
8/17/2016	MAX	8.08	610	240	21	1.4	< 2	16	0.44	< 0.05	0.007	2	14	< 1	38	24	69	<0.1	0.016		0.038
9/20/2016	MAX	8.17	640	270	23	1.5	< 2	9.6	0.32	< 0.05	< 0.02	1	14	< 1	37	23	87	<0.1	0.019		0.05
10/19/2016	MAX	8.11	680	280	22	1.7	< 2	11	0.65	0.081	0.021	2	15	< 1	43	25	80	<0.1	0.018		0.06
11/24/2016	MAX	8.27	690	280	24	1.6	< 2	< 4	0.23	0.058	< 0.02	7	16	< 1	42	23	90	<0.1	0.016		0.069
12/30/2016	Snow																				

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Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	TSS mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
TP1-Out		6.5 - 8.5									0.03			1.0				0.30	0.20		0.02
1/31/2006	Dry																				
2/28/2006	Dry																				
3/9/2006	MAX	7.6	1390	69	3.9	6	10	52	2.4	0.66	0.29	25	27	1	332	220	37	0.92	<0.02	0.4	0.07
4/30/2006	Dry																				
5/16/2006	MAX	7.8	222	85	3.4	2.7	< 2	31	1.2	0.07	0.13	3	6	< 1	15	23	23	0.47	0.018		0.019
6/30/2006	Dry																				
7/31/2006	Dry																				
8/31/2006	Dry																				
9/13/2006	MAX	7.6	135	50	2.2	3.8	4	17	0.9	0.06	0.28	1	8	< 1	5	5.4	16	<0.05	0.032		0.021
10/31/2006	Dry																				
11/30/2006	Dry																				
12/31/2006	Dry																				
1/31/2007	Snow																				
2/28/2007	Snow																				
3/14/2007	MAX	7.6	972	70	4	5.7	4	28	1.7	0.66	0.3	3	11	< 1	220	180	26	0.2	0.018		0.028
3/29/2007	MAX	8.2	951	170	9.8	5.8	4	38	2.1	< 0.05	0.12	4	23	2	180	170	61	0.48	0.052		0.021
4/30/2007	Dry																				
5/31/2007	Dry																				
6/30/2007	Dry																				
7/31/2007	Dry																				
8/31/2007	Dry																				
9/12/2007	MAX	7.7	659	107	0.8	45	14	140	3	0.13	0.75	15	48	4	100	53	48	7.2	0.1		0.023
10/2/2007	MAX	7.9	695	229	9.6	24	7	120	4	0.19	0.26	10	24	2	73	47	72	0.96	0.08		0.022
11/21/2007	MAX	7.8	191	55	3.1	4.1	5	5	1	0.1	0.22	19	15	< 1	14	15	22	0.77	0.022		0.045
12/31/2007	Snow																				
1/8/2008	MAX	7.7	867	107	4	2.9	2	22	1.5	< 0.05	0.12	9	24	< 1	190	150	32	0.43	0.013		0.037
2/28/2008	Snow																				
3/31/2008	Snow																				
4/10/2008	MAX	8.2	535	126	4.3	2.3	< 2	36	1.1	< 0.05	0.14	3	6	1	84	76	32	0.7	0.02		0.011
5/22/2008	MAX	8.1	584	155	5.9	2.5	3	41	1.5	< 0.05	0.12	17	14	< 1	80	80	41	0.7	0.04		0.008
6/24/2008	MAX	7.8	245	87	2.9	1.7	4	37	1.5	0.24	0.23	6	4	1	19	20	22	0.69	0.028		0.019
7/24/2008	MAX	8	333	128	4.8	5.8	4	43	1.3	0.11	0.15	5	< 1	< 1	27	24	35	1.2	0.03		0.006
8/11/2008	MAX	7.5	323	118	4.7	2.1	2	24	0.6	0.4	0.059	3	2	< 1	24	24	32	0.5	0.02		0.007
9/17/2008	MAX	7.9	427	165	7.1	5.2	< 2	26	1.2	< 0.05	0.091	4	8	< 1	33	40	54	0.5	0.03		0.014
10/16/2008	MAX	7.9	389	130	3.9	4.7	< 2	63	1.1	0.28	0.11	< 1	34	2	23	23	52	<0.1	0.04		0.007
11/26/2008	MAX	8.1	4740	243	16	4.2	< 2	36	0.8	0.06	0.056	2	34	< 1	1300	820	160	0.2	0.03		0.055
12/31/2008	Snow																				
1/30/2009	Snow																				
2/12/2009	MAX	7.6	772	86	5.2	2.2	< 2	21	0.7	< 0.05	0.11	11	9	< 1	180	110	33	1	<0.01		0.046
3/11/2009	MAX	6.7	526	95	4.5	2.9	3	27	1	< 0.05	0.13	10	13	< 1	99	78	29	1	0.01		0.045
4/28/2009	MAX	6.7	404	64	3	1.8	8	53	1.6	0.24	0.25	32	21	2	72	57	22	1.5	0.02		0.062
5/27/2009	MAX	7	282	52	2.9	4.6	13	71	2.6	0.35	0.5	48	33	4	32	34	21	1.6	0.06		0.08
6/17/2009	MAX	7	462	133	4.2	6.2	6	53	1.6	0.25	0.13	4	42	< 1	37	42	47	0.6	0.11		0.011
7/23/2009	MAX	7.1	214	62	3.3	3.4	6	68	2.7	< 0.05	0.5	32	19	< 1	11	16	24	1.2	0.05		0.076
8/28/2009	Dry																				

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Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	TSS mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
TP1-Out		6.5 - 8.5									0.03			1.0				0.30	0.20		0.02
9/29/2009	MAX	7.3	228	78	2.7	3.2	3	28	1	0.05	0.19	6	20	< 1	14	15	26	0.1	0.02		0.015
10/29/2009	MAX	7.8	586	161	6.7	7.7	< 2	35	1.1	0.08	0.14	8	28	< 1	65	48	59	0.3	0.03		0.034
11/19/2009	MAX	8	627	190	7.7	7.4	< 2	27	1	0.14	0.11	1	18	< 1	70	55	69	0.2	0.03		0.014
12/9/2009	MAX	7.9	531	167	6.9	4	< 2	21	0.8	0.11	0.06	2	14	< 1	55	48	53	0.2	0.01		0.009
1/29/2010	Snow																				
2/26/2010	Snow																				
3/18/2010	MAX	7.9	723	224	12	6.4	4	34	1.8	0.15	0.16	7	5	< 1	92	73	64	0.8	0.01		0.019
4/7/2010	MAX	7.7	599	140	6.5	5.1	6	58	1.8	< 0.05	0.29	9	32	< 1	88	72	53	1.4	0.03		0.02
5/31/2010	Dry																				
6/22/2010	N/A																				
7/30/2010	MAX	7.8	365	135	4.6	3.1	3	42	1.5	0.57	0.17	9	20	< 1	20	19	48	0.7	0.04		0.007
8/31/2010	MAX	8.2	379	140	4.1	4.5	3	25	1	0.08	0.13	< 1	20	< 1	21	23	52	<0.1	0.04		<0.005
9/30/2010	MAX	7.9	443	146	6.4	6.8	< 2	45	1.4	0.19	0.18	< 10	14	< 1	38	32	47	0.5	0.02		0.008
11/5/2010	MAX	8.17	569	188	8.1	5.9	< 2	41	1.6	0.43	0.15	7	15	< 1	51	51	63	0.7	0.02		0.031
12/2/2010	MAX	8	544	177	7.9	3	< 2	22	0.6	< 0.05	0.05	3	16	< 1	49	57	50	0.4	0.01		0.019
12/31/2010	Froze																				
1/28/2011	Froze																				
2/28/2011	Froze																				
3/31/2011	Snow/																				
4/8/2011	MAX	7.97	996	195	10	3.6	< 2	33	1.1	< 0.05	0.1	5	21	< 1	190	130	67	0.4	0.02		0.016
6/3/2011	MAX	7.65	1030	390	29	7.4	< 2	26	1.7	0.52	0.2	9	36	3	66	63	140	1.4	0.04		0.071
6/22/2011	MAX	8.06	343	150	5.5	1.5	< 2	39	1.4	0.23	0.13	< 10	< 1	< 1	16	21	45	0.6	0.03		<0.005
7/29/2011	Dry																				
8/25/2011	MAX	7.48	394	98	5.3	14	3	49	2.3	0.09	0.3	5	40	< 1	33	22	41	<0.1	0.03		0.015
9/27/2011	MAX	7.96	316	109	5.9	6.9	< 2	42	1.5	0.15	0.24	2	27	7	15	14	39	0.2	0.04		0.013
10/20/2011	MAX	7.95	225	87	3.6	1.9	< 2	17	0.5	< 0.05	0.09	6	8	3	13	14	26	0.2	<0.01		0.013
11/29/2011	MAX	7.37	137	50	2.5	1.7	5	35	0.9	< 0.05	0.25	28	10	3	5	7.4	19	1	<0.01		0.059
12/15/2011	MAX	7.78	423	70	2.4	1.6	3	25	0.6	< 0.05	0.14	5	10	3	75	56	28	0.33	0.014		0.067
1/31/2012	Dry																				
2/29/2012	Dry																				
3/29/2012	MAX	8	920	170	8.8	3.7	2	41	0.91	0.085	0.15	6	6	< 1	170	130	60	1.1	0.02		0.013
4/17/2012	MAX	8.1	970	180	8	4.2	< 2	40	1.9	0.09	0.1	5	7	< 1	170	130	65	1.2	0.018		0.0082
5/31/2012	Dry																				
6/22/2012	MAX	8.04	400	140	4.5	3.8	< 2	43	1	0.16	0.11	4	16	< 1	26	32	48	0.67	0.057		0.0086
7/26/2012	MAX	8.26	410	140	3.3	5.4	2	27	1.4	0.14	0.079	2	17	< 1	28	36	46	<0.1	0.052		0.0089
8/31/2012	Dry																				
9/20/2012	MAX	7.67	400	140	6.7	3	< 2	35	1.1	< 0.05	0.075	2	11	3.1	32	26	47	0.29	0.024		<0.005
10/24/2012	MAX	7.68	490	180	9	2.8	< 2	30	0.64	0.15	0.035	4	12	< 1	38	36	58	0.23	0.019		0.0083
11/30/2012	Dry																				
12/18/2012	MAX	7.23	740	160	6.9	2	3	21	0.94	< 0.05	0.043	3	23	< 1	120	87	54	<0.1	0.011		0.025
1/30/2013	MAX	7.05	1600	61	4.8	2.6	7	57	1.8	0.13	0.28	58	17	< 1	400	300	34	1.7	0.013		0.11
2/28/2013	Dry																				
3/29/2013	Dry																				
4/18/2013	MAX	7.85	1100	94	4.5	1.8	3	31	0.87	0.055	0.056	5	16	2.3	240	190	36	0.49	0.024		0.015
5/28/2013	MAX	8.26	1000	150	6	3.9	4	59	2.7	0.1	0.82	49	19	< 1	180	150	57	8.5	0.019		0.015

Routine Surface Water Quality - General Analysis -Guelph WRIC & Waste Transfer Station

AECOM

Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	TSS mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
TP1-Out		6.5 - 8.5									0.03			1.0				0.30	0.20		0.02
6/27/2013	MAX	8.02	370	120	4	1.9	< 2	20	0.71	0.093	< 0.02	2	10	< 1	30	31	42	0.31	0.032		<0.005
7/25/2013	MAX	7.96	230	82	3.4	3	< 2	18	0.82	0.17	0.075	1	11	< 1	14	12	33	0.26	0.037		<0.005
8/7/2013	MAX	7.68	470	140	7.2	12	14	55	1.9	0.055	0.39	11	< 1	1	58	32	46	1.2	0.028		0.011
9/24/2013	MAX	7.95	510	180	8.8	3.1	< 2	32	1.2	0.094	0.077	2	9	< 1	43	35	54	0.16	0.024		0.007
10/31/2013	MAX	7.32	150	52	2.2	2.4	3	17	0.72	< 0.05	0.19	5	8	2.3	10	8.8	17	0.26	0.017		0.025
11/19/2013	MAX	7.82	440	160	8.9	3.9	< 2	25	0.67	< 0.05	0.038	2	15	< 1	30	28	52	0.12	0.022		0.011
12/5/2013	MAX	7.81	380	130	6.5	2.9	< 2	15	0.71	0.28	0.049	2	18	2.7	30	25	44	0.66	0.012		0.01
1/14/2014	MAX	7.78	1400	120	8.6	2.8	< 2	15	1.1	< 0.05	0.022	9	14	< 1	310	230	59	0.33	<0.01		0.015
2/28/2014	Snow																				
3/28/2014	Snow																				
4/23/2014	MAX	7.93	1500	230	15	3.8	< 2	29	0.94	< 0.05	< 0.02	2	5	< 1	300	170	99	0.39	0.012		0.0054
5/27/2014	MAX	7.99	770	160	7.9	2.2	4	33	1.5	0.14	0.076	6	19	2	130	95	54	0.83	0.043		<0.005
6/25/2014	MAX	7.46	260	56	3.3	9.1	5	47	1.6	0.28	0.71	8	24	1.9	30	25	19	0.22	0.052		0.015
7/29/2014	MAX	7.77	270	88	4	2.8	2	30	1.2	0.071	0.089	3	7	< 1	25	22	26	0.12	0.022		0.014
8/21/2014	MAX	7.73	210	72	3.3	2.5	2	26	0.57	0.088	0.091	1	17	1.1	13	11	25	0.14	0.028		0.012
9/23/2014	MAX	7.88	370	120	6.4	2.1	< 2	27	0.63	0.066	0.05	1	6	2.1	33	27	40	0.16	0.022		0.0074
10/23/2014	MAX	7.9	570	180	8	3.9	< 2	31	0.72	0.067	0.072	3	17	1.8	61	45	61	0.39	0.036		0.0058
11/26/2014	MAX	8.05	870	200	10	2.9	< 2	25	0.89	< 0.05	0.074	15	10	4.5	140	100	61	0.71	0.015		0.024
12/18/2014	MAX	7.92	570	170	8.9	2.7	< 2	24	0.73	< 0.05	0.052	4	< 1	3.5	74	58	57	0.55	0.013		0.008
1/31/2015	Ice C																				
2/28/2015	Ice C																				
3/17/2015	MAX	7.67	890	96	4.4	3.3	3	26	0.73	0.06	0.062	5	8	6.5	200	130	32	0.27	0.014		0.016
4/10/2015	MAX	7.76	1000	180	11	3.1	< 2	20	0.88	< 0.05	0.07	3	8	1.6	180	120	67	0.28	0.019		0.0085
5/20/2015	MAX	8.16	1200	210	13	5	< 2	30	0.92	< 0.05	0.033	3	2	< 1	260	160	72	0.29	0.018		<0.005
6/30/2015	MAX	7.8	660	200	7.6	1.8	7	34	1.1	0.089	0.073	3	1	< 1	88	68	52	0.26	0.026		0.0061
7/14/2015	MAX	7.72	420	130	5.3	2.2	< 2	23	0.86	0.1	0.056	1	25	< 1	39	34	39	0.25	0.032		<0.005
8/27/2015	MAX	7.96	480	150	6.2	3.4	4	23	0.87	0.2	0.072	2	12	< 1	45	40	49	0.49	0.034		<0.005
9/4/2015	MAX	8	470	150	5.5	3.6	< 2	26	0.82	0.094	0.058	< 1	12	< 1	45	37	47	0.37	0.033		<0.005
10/22/2015	MAX	8.06	310	100	5.4	3.9	< 2	21	0.45	< 0.05	0.048	1	26	< 1	19	15	37	0.16	0.028		0.0052
11/25/2015	MAX	7.73	650	160	8.9	9.1	< 2	34	0.61	< 0.05	0.15	3	42	< 1	76	52	64	0.27	0.026		0.012
12/15/2015	MAX	7.53	930	140	10	8.1	8	66	1.4	< 0.05	0.25	35	120	19	120	83	87	2.1	0.096		0.072
1/29/2016	Snow																				
2/3/2016	MAX	7.24	1100	86	4.4	2	< 2	25	0.32	< 0.05	0.09	11	28	< 1	240	180	36	0.75	0.022		0.046
3/17/2016	MAX	7.69	590	100	4.2	2.2	2	33	0.41	< 0.05	0.11	29	37	< 1	91	63	41	2	0.041		0.075
4/26/2016	MAX	7.73	420	58	2.4	1.4	< 2	22	0.37	< 0.05	0.093	18	28	< 1	68	53	25	0.98	0.029		0.042
5/17/2016	MAX	7.79	870	140	7.2	3.2	3	51	0.89	< 0.05	0.16	8	83	< 1	130	97	70	1.6	0.055		0.013
5/26/2016	MAX	7.27	470	63	5.3	4.3	8	100	1.6	0.67	0.24	40	69	3.8	47	42	50	2	0.068		0.1
6/28/2016	MAX	8.23	510	140	4.8	2.1	< 2	34	0.6	< 0.05	0.039	2	40	< 1	41	40	56	0.15	0.058		<0.005
7/29/2016	MAX	7.77	320	69	3.1	3.5	3	29	0.7	0.067	0.11	1	61	< 1	15	13	44	0.29	0.045		0.0055
8/17/2016	MAX	7.35	370	120	4.4	7.3	18	100	1.3	< 0.05	0.71	9	32	11	22	16	51	1.5	0.044		0.009
9/20/2016	MAX	7.96	450	130	5.2	11	< 2	34	0.87	0.16	0.11	8	60	< 1	22	14	72	0.63	0.071		<0.005
10/19/2016	MAX	8.03	970	170	12	8.2	< 2	37	1	< 0.05	0.052	1	320	< 1	26	21	160	0.49	0.075		0.0055
11/24/2016	MAX	7.81	540	110	6.7	7.2	12	75	0.79	< 0.05	0.14	8	60	2.3	29	24	65	0.55	0.058		0.037
12/30/2016	Snow																				

Surface Water ORGANIC ANALYSIS - ATG MISA Groups 16, 17 and 18 -Guelph WRIC/Waste Transfer Station - 2016

AECOM

Parameter	EPTS-01 17-Aug-2016	TP1-Out 17-Aug-2016
MISA Group 16		
1,1,1,2-Tetrachloroethane:	< 0.2	< 1
1,1,1-Trichloroethane:	< 0.1	< 0.5
1,1,2,2-Tetrachloroethane:	< 0.2	< 1
1,1,2-Trichloroethane:	< 0.2	< 1
1,1-Dichloroethane:	< 0.1	< 0.5
1,1-Dichloroethylene:	< 0.1	< 0.5
1,2-Dichlorobenzene:	< 0.2	< 1
1,2-Dibromoethane:*	< 0.2	< 1
1,2-Dichloroethane:	< 0.2	< 1
1,2-Dichloropropane:	< 0.1	< 0.5
1,3-Dichlorobenzene:	< 0.2	< 1
1,4-Dichlorobenzene:	< 0.5	< 2.5
Bromodichloromethane:	< 0.1	< 0.5
Bromoform:	< 0.2	< 1
Bromomethane:	< 0.5	< 2.5
Carbon Tetrachloride:	< 0.1	< 0.5
Chlorobenzene:	< 0.1	< 0.5
Chloroform:	1.5	< 0.5
Chloromethane:		
Cis-1,2-Dichloroethylene:	< 0.1	< 0.5
Cis-1,3-Dichloropropylene:	< 0.2	< 1
Dibromochloromethane:	< 0.2	< 1
Methylene Chloride:	< 0.5	< 2.5
Tetrachloroethylene:	< 0.1	< 0.5
trans-1,2-Dichloroethylene:	< 0.1	< 0.5
Trans-1,3-Dichloropropylene:	< 0.2	< 1
Trichloroethylene:	< 0.1	< 0.5
Trichlorofluoromethane:	< 0.2	< 1
Vinyl chloride:	< 0.2	< 1
MISA Group 17		
Benzene:	< 0.1	< 0.5
Ethylbenzene:	< 0.1	< 0.5
Styrene:	< 0.2	< 1
Toluene:	< 0.2	< 1
o-Xylene:	< 0.1	< 0.5
m-Xylene and p-Xylene:	< 0.1	< 0.5
MISA Group 18		
Acrolein:		
Acrylonitrile:	< 0.2	< 1

Appendix D

2016 Laboratory Reports
(CD in report pocket)

Maxxam
A Bureau Veritas Group Company

Your Project #: WET/DRY GROUNDWATER
Site Location: JUNE GW
Your C.O.C. #: C#566537-01-01

Attention:Amy Spence

City of Guelph
Soild Waste RIC (Wet/Dry)
110 Dunlop Drive
Guelph, ON
CANADA N1H 6H8

Report Date: 2016/06/29
Report #: R4046584
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6C7796
Received: 2016/06/21, 16:35

Sample Matrix: Water
Samples Received: 10

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Alkalinity	10	N/A	2016/06/24	CAM SOP-00448	SM 22 2320 B m
Biochemical Oxygen Demand (BOD)	10	N/A	2016/06/28	CAM SOP-00427	SM 22 5210B m
Chloride by Automated Colourimetry	9	N/A	2016/06/24	CAM SOP-00463	EPA 325.2 m
Chloride by Automated Colourimetry	1	N/A	2016/06/27	CAM SOP-00463	EPA 325.2 m
Chemical Oxygen Demand	10	N/A	2016/06/27	CAM SOP-00416	SM 22 5220 D m
Conductivity	10	N/A	2016/06/24	CAM SOP-00414	SM 22 2510 m
Dissolved Metals by ICPMS	1	N/A	2016/06/27	CAM SOP-00447	EPA 6020A m
Dissolved Metals by ICPMS	9	N/A	2016/06/28	CAM SOP-00447	EPA 6020A m
Total Metals Analysis by ICP	10	2016/06/27	2016/06/27	CAM SOP-00408	EPA 6010C m
Total Ammonia-N	10	N/A	2016/06/29	CAM SOP-00441	EPA GS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (1)	9	N/A	2016/06/24	CAM SOP-00440	SM 22 4500-NO3I/NO2B
Nitrate (NO3) and Nitrite (NO2) in Water (1)	1	N/A	2016/06/28	CAM SOP-00440	SM 22 4500-NO3I/NO2B
pH	10	N/A	2016/06/24	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	10	N/A	2016/06/24	CAM SOP-00444	OMOE E3179 m
Sulphate by Automated Colourimetry	9	N/A	2016/06/24	CAM SOP-00464	EPA 375.4 m
Sulphate by Automated Colourimetry	1	N/A	2016/06/27	CAM SOP-00464	EPA 375.4 m
Total Kjeldahl Nitrogen in Water	10	2016/06/24	2016/06/24	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	10	2016/06/24	2016/06/27	CAM SOP-00407	SM 22 4500 P B H m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Your Project #: WET/DRY GROUNDWATER
Site Location: JUNE GW
Your C.O.C. #: C#566537-01-01

Attention:Amy Spence

City of Guelph
Soild Waste RIC (Wet/Dry)
110 Dunlop Drive
Guelph, ON
CANADA N1H 6H8

Report Date: 2016/06/29
Report #: R4046584
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6C7796
Received: 2016/06/21, 16:35

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
James Aspin, Senior Project Manager
Email: JAspin@maxxam.ca
Phone# (905)817-5771

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B6C7796
Report Date: 2016/06/29

City of Guelph
Client Project #: WET/DRY GROUNDWATER
Site Location: JUNE GW

RESULTS OF ANALYSES OF WATER

Maxxam ID		COQ508	COQ508	COQ509		
Sampling Date		2016/06/20	2016/06/20	2016/06/20		
COC Number		C#566537-01-01	C#566537-01-01	C#566537-01-01		
	UNITS	**19A**	**19A Lab-Dup**	**19B**	**RDL**	**QC Batch**
Inorganics						
Total Ammonia-N	mg/L	0.055		0.080	0.050	4554127
Total BOD	mg/L	ND	ND	ND	2.0	4552005
Total Chemical Oxygen Demand (COD)	mg/L	ND		ND	4.0	4555311
Conductivity	umho/cm	890		710	1.0	4552494
Total Kjeldahl Nitrogen (TKN)	mg/L	0.20		0.21	0.10	4554016
pH	pH	8.09		8.22		4552493
Phenols-4AAP	mg/L	ND		ND	0.0010	4552655
Total Phosphorus	mg/L	ND		0.030	0.020	4553969
Dissolved Sulphate (SO4)	mg/L	110		64	1.0	4552480
Alkalinity (Total as CaCO3)	mg/L	250		230	1.0	4552486
Dissolved Chloride (Cl)	mg/L	69		42	1.0	4552476
Nitrite (N)	mg/L	ND		0.012	0.010	4553585
Nitrate (N)	mg/L	ND		ND	0.10	4553585
Nitrate + Nitrite (N)	mg/L	ND		ND	0.10	4553585

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B6C7796
Report Date: 2016/06/29

City of Guelph
Client Project #: WET/DRY GROUNDWATER
Site Location: JUNE GW

RESULTS OF ANALYSES OF WATER

Maxxam ID		COQ510		COQ511		
Sampling Date		2016/06/20		2016/06/20		
COC Number		C#566537-01-01		C#566537-01-01		
	UNITS	**20A**	**QC Batch**	**20B**	**RDL**	**QC Batch**
Inorganics						
Total Ammonia-N	mg/L	ND	4555208	ND	0.050	4554127
Total BOD	mg/L	ND	4552005	ND	2.0	4552005
Total Chemical Oxygen Demand (COD)	mg/L	23	4555311	15	4.0	4555311
Conductivity	umho/cm	610	4552494	980	1.0	4553602
Total Kjeldahl Nitrogen (TKN)	mg/L	0.32	4554016	0.21	0.10	4554016
pH	pH	8.10	4552493	7.89		4553601
Phenols-4AAP	mg/L	ND	4552655	ND	0.0010	4552655
Total Phosphorus	mg/L	0.13	4553969	0.069	0.040	4553969
Dissolved Sulphate (SO4)	mg/L	42	4552480	72	1.0	4552480
Alkalinity (Total as CaCO3)	mg/L	250	4552486	310	1.0	4553599
Dissolved Chloride (Cl)	mg/L	16	4552476	90	1.0	4552476
Nitrite (N)	mg/L	ND	4553590	ND	0.010	4552361
Nitrate (N)	mg/L	2.63	4553590	0.59	0.10	4552361
Nitrate + Nitrite (N)	mg/L	2.63	4553590	0.59	0.10	4552361

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B6C7796
Report Date: 2016/06/29

City of Guelph
Client Project #: WET/DRY GROUNDWATER
Site Location: JUNE GW

RESULTS OF ANALYSES OF WATER

Maxxam ID		COQ512			COQ513		
Sampling Date		2016/06/20			2016/06/20		
COC Number		C#566537-01-01			C#566537-01-01		
	UNITS	**23A**	**RDL**	**QC Batch**	**23B**	**RDL**	**QC Batch**
Inorganics							
Total Ammonia-N	mg/L	ND	0.050	4554127	ND	0.050	4554127
Total BOD	mg/L	ND	2.0	4552005	ND	2.0	4552005
Total Chemical Oxygen Demand (COD)	mg/L	ND	4.0	4555311	ND	4.0	4555311
Conductivity	umho/cm	710	1.0	4552494	1300	1.0	4552494
Total Kjeldahl Nitrogen (TKN)	mg/L	0.11	0.10	4554016	0.77	0.10	4554016
pH	pH	8.21		4552493	8.05		4552493
Phenols-4AAP	mg/L	ND	0.0010	4552655	ND	0.0010	4552655
Total Phosphorus	mg/L	ND	0.020	4553969	0.28	0.10	4553969
Dissolved Sulphate (SO4)	mg/L	93	1.0	4552480	31	1.0	4555093
Alkalinity (Total as CaCO3)	mg/L	240	1.0	4552486	340	1.0	4552486
Dissolved Chloride (Cl)	mg/L	26	1.0	4552476	170	2.0	4555091
Nitrite (N)	mg/L	ND	0.010	4553585	ND	0.010	4553585
Nitrate (N)	mg/L	ND	0.10	4553585	3.42	0.10	4553585
Nitrate + Nitrite (N)	mg/L	ND	0.10	4553585	3.42	0.10	4553585

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B6C7796
Report Date: 2016/06/29

City of Guelph
Client Project #: WET/DRY GROUNDWATER
Site Location: JUNE GW

RESULTS OF ANALYSES OF WATER

Maxxam ID		COQ514	COQ514			COQ515		
Sampling Date		2016/06/20	2016/06/20			2016/06/20		
COC Number		C#566537-01-01	C#566537-01-01			C#566537-01-01		
	UNITS	**9**	**9 Lab-Dup**	**RDL**	**QC Batch**	**10**	**RDL**	**QC Batch**
Inorganics								
Total Ammonia-N	mg/L	ND		0.050	4554127	0.054	0.050	4554127
Total BOD	mg/L	ND		2.0	4552005	ND	2.0	4552005
Total Chemical Oxygen Demand (COD)	mg/L	ND		4.0	4555311	6.2	4.0	4555311
Conductivity	umho/cm	370		1.0	4552494	700	1.0	4553602
Total Kjeldahl Nitrogen (TKN)	mg/L	0.41		0.20	4554016	0.17	0.10	4554016
pH	pH	8.23			4552493	8.05		4553601
Phenols-4AAP	mg/L	ND		0.0010	4552655	ND	0.0010	4552655
Total Phosphorus	mg/L	ND	ND	0.020	4553969	0.22	0.040	4553969
Dissolved Sulphate (SO4)	mg/L	29		1.0	4552480	83	1.0	4552480
Alkalinity (Total as CaCO3)	mg/L	130		1.0	4552486	240	1.0	4553599
Dissolved Chloride (Cl)	mg/L	7.9		1.0	4552476	32	1.0	4552476
Nitrite (N)	mg/L	ND		0.010	4553585	ND	0.010	4552361
Nitrate (N)	mg/L	4.35		0.10	4553585	ND	0.10	4552361
Nitrate + Nitrite (N)	mg/L	4.35		0.10	4553585	ND	0.10	4552361

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B6C7796
Report Date: 2016/06/29

City of Guelph
Client Project #: WET/DRY GROUNDWATER
Site Location: JUNE GW

RESULTS OF ANALYSES OF WATER

Maxxam ID		COQ516	COQ516			COQ517		
Sampling Date		2016/06/21	2016/06/21			2016/06/21		
COC Number		C#566537-01-01	C#566537-01-01			C#566537-01-01		
	UNITS	**17A**	**17A Lab-Dup**	**RDL**	**QC Batch**	**17B**	**RDL**	**QC Batch**
Inorganics								
Total Ammonia-N	mg/L	ND		0.050	4554127	ND	0.050	4554127
Total BOD	mg/L	ND		2.0	4552005	ND	2.0	4552005
Total Chemical Oxygen Demand (COD)	mg/L	7.2	7.8	4.0	4555311	14	4.0	4555311
Conductivity	umho/cm	2100		1.0	4552494	1600	1.0	4552494
Total Kjeldahl Nitrogen (TKN)	mg/L	0.25		0.10	4554016	0.32	0.10	4554016
pH	pH	8.05			4552493	8.09		4552493
Phenols-4AAP	mg/L	ND		0.0010	4552655	ND	0.0010	4552655
Total Phosphorus	mg/L	0.021		0.020	4553969	0.058	0.020	4553969
Dissolved Sulphate (SO4)	mg/L	47		1.0	4553031	150	1.0	4552480
Alkalinity (Total as CaCO3)	mg/L	310		1.0	4552486	690	1.0	4552486
Dissolved Chloride (Cl)	mg/L	430		5.0	4553027	36	1.0	4552476
Nitrite (N)	mg/L	ND		0.010	4553984	ND	0.010	4553585
Nitrate (N)	mg/L	2.84		0.10	4553984	3.16	0.10	4553585
Nitrate + Nitrite (N)	mg/L	2.84		0.10	4553984	3.16	0.10	4553585

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B6C7796
Report Date: 2016/06/29

City of Guelph
Client Project #: WET/DRY GROUNDWATER
Site Location: JUNE GW

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		COQ508	COQ509	COQ509	COQ510	COQ511		
Sampling Date		2016/06/20	2016/06/20	2016/06/20	2016/06/20	2016/06/20		
COC Number		C#566537-01-01	C#566537-01-01	C#566537-01-01	C#566537-01-01	C#566537-01-01		
	UNITS	**19A**	**19B**	**19B Lab-Dup**	**20A**	**20B**	**RDL**	**QC Batch**
Metals								
Total Iron (Fe)	mg/L	0.50	0.94	0.95	3.6	3.0	0.02	4556303
Dissolved Boron (B)	ug/L	35	30		ND	13	10	4554043
Dissolved Calcium (Ca)	ug/L	100000	85000		82000	120000	200	4554043
Dissolved Magnesium (Mg)	ug/L	34000	30000		28000	41000	50	4554043
Dissolved Phosphorus (P)	ug/L	ND	ND		ND	ND	100	4554043
Dissolved Potassium (K)	ug/L	1600	1700		1100	1900	200	4554043
Dissolved Sodium (Na)	ug/L	30000	14000		4300	21000	100	4554043
Dissolved Zinc (Zn)	ug/L	15	24		130	180	5.0	4554043

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

Maxxam ID		COQ512	COQ513	COQ514		COQ515		
Sampling Date		2016/06/20	2016/06/20	2016/06/20		2016/06/20		
COC Number		C#566537-01-01	C#566537-01-01	C#566537-01-01		C#566537-01-01		
	UNITS	**23A**	**23B**	**9**	**QC Batch**	**10**	**RDL**	**QC Batch**
Metals								
Total Iron (Fe)	mg/L	0.36	15	0.29	4556303	4.6	0.02	4556303
Dissolved Boron (B)	ug/L	24	390	37	4554043	18	10	4554440
Dissolved Calcium (Ca)	ug/L	90000	120000	41000	4554043	87000	200	4554440
Dissolved Magnesium (Mg)	ug/L	31000	30000	11000	4554043	28000	50	4554440
Dissolved Phosphorus (P)	ug/L	ND	ND	ND	4554043	ND	100	4554440
Dissolved Potassium (K)	ug/L	1200	2700	8200	4554043	1100	200	4554440
Dissolved Sodium (Na)	ug/L	13000	120000	14000	4554043	11000	100	4554440
Dissolved Zinc (Zn)	ug/L	ND	260	11	4554043	ND	5.0	4554440

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B6C7796
Report Date: 2016/06/29

City of Guelph
Client Project #: WET/DRY GROUNDWATER
Site Location: JUNE GW

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		COQ515		COQ516	COQ517		
Sampling Date		2016/06/20		2016/06/21	2016/06/21		
COC Number		C#566537-01-01		C#566537-01-01	C#566537-01-01		
	UNITS	**10 Lab-Dup**	**QC Batch**	**17A**	**17B**	**RDL**	**QC Batch**
Metals							
Total Iron (Fe)	mg/L		4556303	0.71	1.0	0.02	4556303
Dissolved Boron (B)	ug/L	17	4554440	25	170	10	4554043
Dissolved Calcium (Ca)	ug/L	89000	4554440	150000	65000	200	4554043
Dissolved Magnesium (Mg)	ug/L	29000	4554440	39000	22000	50	4554043
Dissolved Phosphorus (P)	ug/L	ND	4554440	ND	ND	100	4554043
Dissolved Potassium (K)	ug/L	1100	4554440	2300	11000	200	4554043
Dissolved Sodium (Na)	ug/L	11000	4554440	230000	300000	100	4554043
Dissolved Zinc (Zn)	ug/L	ND	4554440	290	14	5.0	4554043

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B6C7796
Report Date: 2016/06/29

City of Guelph
Client Project #: WET/DRY GROUNDWATER
Site Location: JUNE GW

GENERAL COMMENTS

Sample(s) received above Maxxam's outlined receiving temperature of 10 Celsius.

Results relate only to the items tested.

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Maxxam Job #: B6C7796
Report Date: 2016/06/29

QUALITY ASSURANCE REPORT

City of Guelph
Client Project #: WET/DRY GROUNDWATER
Site Location: JUNE GW

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4552005	Total BOD	2016/06/28					ND, RDL=2.0	mg/L	NC	25	97	80 - 120
4552361	Nitrate (N)	2016/06/24	93	80 - 120	98	80 - 120	ND, RDL=0.10	mg/L	NC	25		
4552361	Nitrite (N)	2016/06/24	101	80 - 120	101	80 - 120	ND, RDL=0.010	mg/L	NC	25		
4552476	Dissolved Chloride (Cl)	2016/06/24	NC	80 - 120	102	80 - 120	ND, RDL=1.0	mg/L	0.54	20		
4552480	Dissolved Sulphate (SO4)	2016/06/24	NC	75 - 125	103	80 - 120	ND, RDL=1.0	mg/L	0.50	20		
4552486	Alkalinity (Total as CaCO3)	2016/06/24			98	85 - 115	ND, RDL=1.0	mg/L	0.61	25		
4552493	pH	2016/06/24			102	98 - 103			0.27	N/A		
4552494	Conductivity	2016/06/24			102	85 - 115	ND, RDL=1.0	umho/cm	0	25		
4552655	Phenols-4AAP	2016/06/24	98	80 - 120	102	85 - 115	ND, RDL=0.0010	mg/L	NC	20		
4553027	Dissolved Chloride (Cl)	2016/06/24	92	80 - 120	102	80 - 120	ND, RDL=1.0	mg/L	NC	20		
4553031	Dissolved Sulphate (SO4)	2016/06/24	109	75 - 125	104	80 - 120	ND, RDL=1.0	mg/L	1.6	20		
4553585	Nitrate (N)	2016/06/24	109	80 - 120	95	80 - 120	ND, RDL=0.10	mg/L	NC	25		
4553585	Nitrite (N)	2016/06/24	0 (1)	80 - 120	101	80 - 120	ND, RDL=0.010	mg/L	NC	25		
4553590	Nitrate (N)	2016/06/24	93	80 - 120	97	80 - 120	ND, RDL=0.10	mg/L	NC	25		
4553590	Nitrite (N)	2016/06/24	100	80 - 120	101	80 - 120	ND, RDL=0.010	mg/L	NC	25		
4553599	Alkalinity (Total as CaCO3)	2016/06/24			97	85 - 115	ND, RDL=1.0	mg/L	0.40	25		
4553601	pH	2016/06/24			102	98 - 103			0.62	N/A		
4553602	Conductivity	2016/06/24			100	85 - 115	ND, RDL=1.0	umho/cm	0.46	25		
4553969	Total Phosphorus	2016/06/27	101	80 - 120	101	80 - 120	ND, RDL=0.020	mg/L	NC	20	101	80 - 120
4553984	Nitrate (N)	2016/06/28	97	80 - 120	99	80 - 120	ND, RDL=0.10	mg/L	NC	25		
4553984	Nitrite (N)	2016/06/28	97	80 - 120	109	80 - 120	ND, RDL=0.010	mg/L				
4554016	Total Kjeldahl Nitrogen (TKN)	2016/06/24	104	80 - 120	104	80 - 120	ND, RDL=0.10	mg/L	NC	20	102	80 - 120
4554043	Dissolved Boron (B)	2016/06/28	97	80 - 120	100	80 - 120	ND, RDL=10	ug/L				
4554043	Dissolved Calcium (Ca)	2016/06/28	NC	80 - 120	103	80 - 120	ND, RDL=200	ug/L				
4554043	Dissolved Magnesium (Mg)	2016/06/28	NC	80 - 120	105	80 - 120	ND, RDL=50	ug/L				

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Maxxam Job #: B6C7796
Report Date: 2016/06/29

QUALITY ASSURANCE REPORT(CONT'D)

City of Guelph
Client Project #: WET/DRY GROUNDWATER
Site Location: JUNE GW

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4554043	Dissolved Phosphorus (P)	2016/06/28	111	80 - 120	111	80 - 120	ND, RDL=100	ug/L				
4554043	Dissolved Potassium (K)	2016/06/28	106	80 - 120	109	80 - 120	ND, RDL=200	ug/L				
4554043	Dissolved Sodium (Na)	2016/06/28	NC	80 - 120	106	80 - 120	ND, RDL=100	ug/L				
4554043	Dissolved Zinc (Zn)	2016/06/28	94	80 - 120	98	80 - 120	ND, RDL=5.0	ug/L				
4554127	Total Ammonia-N	2016/06/29	93	80 - 120	101	85 - 115	ND, RDL=0.050	mg/L	0.83	20		
4554440	Dissolved Boron (B)	2016/06/27	98	80 - 120	98	80 - 120	ND, RDL=10	ug/L	NC	20		
4554440	Dissolved Calcium (Ca)	2016/06/27	NC	80 - 120	95	80 - 120	ND, RDL=200	ug/L	2.0	20		
4554440	Dissolved Magnesium (Mg)	2016/06/27	NC	80 - 120	94	80 - 120	ND, RDL=50	ug/L	5.1	20		
4554440	Dissolved Phosphorus (P)	2016/06/27	96	80 - 120	93	80 - 120	ND, RDL=100	ug/L	NC	20		
4554440	Dissolved Potassium (K)	2016/06/27	96	80 - 120	97	80 - 120	ND, RDL=200	ug/L	4.5	20		
4554440	Dissolved Sodium (Na)	2016/06/27	95	80 - 120	97	80 - 120	ND, RDL=100	ug/L	6.9	20		
4554440	Dissolved Zinc (Zn)	2016/06/27	98	80 - 120	97	80 - 120	ND, RDL=5.0	ug/L	NC	20		
4555091	Dissolved Chloride (Cl)	2016/06/27	NC	80 - 120	103	80 - 120	ND, RDL=1.0	mg/L	2.0	20		
4555093	Dissolved Sulphate (SO4)	2016/06/27	110	75 - 125	99	80 - 120	ND, RDL=1.0	mg/L	NC	20		
4555208	Total Ammonia-N	2016/06/29	91	80 - 120	102	85 - 115	ND, RDL=0.050	mg/L	0.34	20		
4555311	Total Chemical Oxygen Demand (COD)	2016/06/27	108	75 - 125	101	75 - 125	ND, RDL=4.0	mg/L	NC	25		
4556303	Total Iron (Fe)	2016/06/27	NC	80 - 120	96	80 - 120	ND, RDL=0.02	mg/L	0.84	25		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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Maxxam Job #: B6C7796
Report Date: 2016/06/29

City of Guelph
Client Project #: WET/DRY GROUNDWATER
Site Location: JUNE GW

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Cristina Carriere

Cristina Carriere, Scientific Services

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Your Project #: Wet/Dry Ground Water
Site Location: JUNE GW
Your C.O.C. #: 566537-04-01

Attention:Amy Spence

City of Guelph
Soild Waste RIC (Wet/Dry)
110 Dunlop Drive
Guelph, ON
CANADA N1H 6H8

Report Date: 2016/06/29
Report #: R4046593
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6C9030
Received: 2016/06/22, 16:10

Sample Matrix: Water
Samples Received: 10

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Alkalinity	10	N/A	2016/06/25	CAM SOP-00448	SM 22 2320 B m
Biochemical Oxygen Demand (BOD)	10	N/A	2016/06/29	CAM SOP-00427	SM 22 5210B m
Chloride by Automated Colourimetry	3	N/A	2016/06/24	CAM SOP-00463	EPA 325.2 m
Chloride by Automated Colourimetry	7	N/A	2016/06/27	CAM SOP-00463	EPA 325.2 m
Chemical Oxygen Demand	10	N/A	2016/06/27	CAM SOP-00416	SM 22 5220 D m
Conductivity	10	N/A	2016/06/25	CAM SOP-00414	SM 22 2510 m
Dissolved Metals by ICPMS	10	N/A	2016/06/27	CAM SOP-00447	EPA 6020A m
Total Metals Analysis by ICP	10	2016/06/28	2016/06/28	CAM SOP-00408	EPA 6010C m
Total Ammonia-N	10	N/A	2016/06/24	CAM SOP-00441	EPA GS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (1)	8	N/A	2016/06/27	CAM SOP-00440	SM 22 4500-NO3I/NO2B
Nitrate (NO3) and Nitrite (NO2) in Water (1)	2	N/A	2016/06/28	CAM SOP-00440	SM 22 4500-NO3I/NO2B
pH	10	N/A	2016/06/25	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	10	N/A	2016/06/24	CAM SOP-00444	OMOE E3179 m
Sulphate by Automated Colourimetry	3	N/A	2016/06/24	CAM SOP-00464	EPA 375.4 m
Sulphate by Automated Colourimetry	7	N/A	2016/06/27	CAM SOP-00464	EPA 375.4 m
Total Kjeldahl Nitrogen in Water	10	2016/06/24	2016/06/24	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	10	2016/06/27	2016/06/27	CAM SOP-00407	SM 22 4500 P B H m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
James Aspin, Senior Project Manager
Email: JAspin@maxxam.ca
Phone# (905)817-5771

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Maxxam Job #: B6C9030
Report Date: 2016/06/29

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: JUNE GW

RESULTS OF ANALYSES OF WATER

Maxxam ID		COV674			COV675		
Sampling Date		2016/06/21			2016/06/21		
COC Number		566537-04-01			566537-04-01		
	UNITS	**22A**	**RDL**	**QC Batch**	**22B**	**RDL**	**QC Batch**
Inorganics							
Total Ammonia-N	mg/L	ND	0.050	4553548	ND	0.050	4553548
Total BOD	mg/L	2.0	2.0	4553807	ND	2.0	4553807
Total Chemical Oxygen Demand (COD)	mg/L	7.2	4.0	4553537	5.4	4.0	4553537
Conductivity	umho/cm	770	1.0	4554057	1100	1.0	4554057
Total Kjeldahl Nitrogen (TKN)	mg/L	0.14	0.10	4553729	0.22	0.10	4553729
pH	pH	8.12		4554059	8.05		4554059
Phenols-4AAP	mg/L	ND	0.0010	4552655	ND	0.0010	4552655
Total Phosphorus	mg/L	0.060	0.020	4556217	0.022	0.020	4556217
Dissolved Sulphate (SO4)	mg/L	86	1.0	4553716	27	1.0	4555093
Alkalinity (Total as CaCO3)	mg/L	230	1.0	4554050	280	1.0	4554050
Dissolved Chloride (Cl)	mg/L	48	1.0	4553714	160	2.0	4555091
Nitrite (N)	mg/L	0.014	0.010	4553980	ND	0.010	4553980
Nitrate (N)	mg/L	ND	0.10	4553980	2.78	0.10	4553980
Nitrate + Nitrite (N)	mg/L	ND	0.10	4553980	2.78	0.10	4553980

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B6C9030
Report Date: 2016/06/29

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: JUNE GW

RESULTS OF ANALYSES OF WATER

Maxxam ID		COV676		COV677	COV677		
Sampling Date		2016/06/21		2016/06/21	2016/06/21		
COC Number		566537-04-01		566537-04-01	566537-04-01		
	UNITS	**25A**	**QC Batch**	**11A**	**11A Lab-Dup**	**RDL**	**QC Batch**
Inorganics							
Total Ammonia-N	mg/L	ND	4553548	ND		0.050	4553548
Total BOD	mg/L	3.0	4553807	ND	ND	2.0	4553807
Total Chemical Oxygen Demand (COD)	mg/L	7.6	4553537	11		4.0	4553537
Conductivity	umho/cm	780	4554057	570		1.0	4554057
Total Kjeldahl Nitrogen (TKN)	mg/L	0.16	4553729	0.16		0.10	4553729
pH	pH	8.10	4554059	8.16			4554059
Phenols-4AAP	mg/L	ND	4552848	ND		0.0010	4552848
Total Phosphorus	mg/L	0.049	4556217	0.022		0.020	4556217
Dissolved Sulphate (SO4)	mg/L	84	4555093	37		1.0	4555093
Alkalinity (Total as CaCO3)	mg/L	230	4554050	240		1.0	4554050
Dissolved Chloride (Cl)	mg/L	58	4555091	24		1.0	4555091
Nitrite (N)	mg/L	0.018	4553984	ND		0.010	4553980
Nitrate (N)	mg/L	ND	4553984	0.11		0.10	4553980
Nitrate + Nitrite (N)	mg/L	0.11	4553984	0.11		0.10	4553980

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B6C9030
Report Date: 2016/06/29

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: JUNE GW

RESULTS OF ANALYSES OF WATER

Maxxam ID		COV678	COV678			COV679		
Sampling Date		2016/06/21	2016/06/21			2016/06/21		
COC Number		566537-04-01	566537-04-01			566537-04-01		
	UNITS	**11B**	**11B Lab-Dup**	**RDL**	**QC Batch**	**16A**	**RDL**	**QC Batch**
Inorganics								
Total Ammonia-N	mg/L	ND		0.050	4553548	ND	0.050	4553548
Total BOD	mg/L	ND		2.0	4553807	ND	2.0	4553807
Total Chemical Oxygen Demand (COD)	mg/L	5.2	5.4	4.0	4553537	14	4.0	4553537
Conductivity	umho/cm	1000		1.0	4554057	1200	1.0	4554057
Total Kjeldahl Nitrogen (TKN)	mg/L	0.31		0.10	4553729	0.22	0.20	4553729
pH	pH	8.09			4554059	7.96		4554059
Phenols-4AAP	mg/L	ND		0.0010	4552848	ND	0.0010	4552848
Total Phosphorus	mg/L	0.090		0.040	4556217	ND	0.020	4556217
Dissolved Sulphate (SO4)	mg/L	40		1.0	4553716	45	1.0	4555093
Alkalinity (Total as CaCO3)	mg/L	260		1.0	4554050	360	1.0	4554050
Dissolved Chloride (Cl)	mg/L	140		1.0	4553714	130	2.0	4555091
Nitrite (N)	mg/L	ND		0.010	4553883	ND	0.010	4553980
Nitrate (N)	mg/L	2.98		0.10	4553883	ND	0.10	4553980
Nitrate + Nitrite (N)	mg/L	2.98		0.10	4553883	ND	0.10	4553980

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B6C9030
Report Date: 2016/06/29

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: JUNE GW

RESULTS OF ANALYSES OF WATER

Maxxam ID		COV680	COV680		COV681		COV682		
Sampling Date		2016/06/21	2016/06/21		2016/06/21		2016/06/21		
COC Number		566537-04-01	566537-04-01		566537-04-01		566537-04-01		
	UNITS	**16B**	**16B Lab-Dup**	**QC Batch**	**13A**	**QC Batch**	**13B**	**RDL**	**QC Batch**
Inorganics									
Total Ammonia-N	mg/L	ND		4553548	0.11	4553548	ND	0.050	4553548
Total BOD	mg/L	ND		4553807	ND	4553807	ND	2.0	4553807
Total Chemical Oxygen Demand (COD)	mg/L	4.5		4553537	ND	4553537	11	4.0	4553537
Conductivity	umho/cm	600		4554057	960	4554057	1100	1.0	4554057
Total Kjeldahl Nitrogen (TKN)	mg/L	0.12		4553729	0.21	4553729	0.22	0.10	4553729
pH	pH	8.14		4554059	8.01	4554059	7.88		4554059
Phenols-4AAP	mg/L	ND		4552655	ND	4552848	ND	0.0010	4552655
Total Phosphorus	mg/L	ND	ND	4556217	ND	4556217	ND	0.020	4556217
Dissolved Sulphate (SO4)	mg/L	42	42	4553716	100	4555093	25	1.0	4555093
Alkalinity (Total as CaCO3)	mg/L	230		4554050	250	4554050	380	1.0	4554050
Dissolved Chloride (Cl)	mg/L	31	31	4553714	99	4555091	120	1.0	4555091
Nitrite (N)	mg/L	ND		4553883	ND	4553980	0.037	0.010	4553984
Nitrate (N)	mg/L	ND		4553883	ND	4553980	2.62	0.10	4553984
Nitrate + Nitrite (N)	mg/L	ND		4553883	ND	4553980	2.65	0.10	4553984

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B6C9030
Report Date: 2016/06/29

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: JUNE GW

RESULTS OF ANALYSES OF WATER

Maxxam ID		COV682		COV683		
Sampling Date		2016/06/21		2016/06/22		
COC Number		566537-04-01		566537-04-01		
	UNITS	**13B Lab-Dup**	**QC Batch**	**14A**	**RDL**	**QC Batch**
Inorganics						
Total Ammonia-N	mg/L		4553548	ND	0.050	4553548
Total BOD	mg/L		4553807	ND	2.0	4553807
Total Chemical Oxygen Demand (COD)	mg/L		4553537	4.2	4.0	4553537
Conductivity	umho/cm		4554057	640	1.0	4554057
Total Kjeldahl Nitrogen (TKN)	mg/L	0.35	4553729	ND	0.10	4553729
pH	pH		4554059	8.20		4554059
Phenols-4AAP	mg/L		4552655	ND	0.0010	4552655
Total Phosphorus	mg/L		4556217	0.027	0.020	4556217
Dissolved Sulphate (SO4)	mg/L		4555093	67	1.0	4555093
Alkalinity (Total as CaCO3)	mg/L		4554050	240	1.0	4554050
Dissolved Chloride (Cl)	mg/L		4555091	24	1.0	4555091
Nitrite (N)	mg/L		4553984	ND	0.010	4553980
Nitrate (N)	mg/L		4553984	0.16	0.10	4553980
Nitrate + Nitrite (N)	mg/L		4553984	0.16	0.10	4553980

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B6C9030
Report Date: 2016/06/29

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: JUNE GW

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		COV674	COV675	COV676	COV677	COV678	COV679		
Sampling Date		2016/06/21	2016/06/21	2016/06/21	2016/06/21	2016/06/21	2016/06/21		
COC Number		566537-04-01	566537-04-01	566537-04-01	566537-04-01	566537-04-01	566537-04-01		
	UNITS	**22A**	**22B**	**25A**	**11A**	**11B**	**16A**	**RDL**	**QC Batch**
Metals									
Total Iron (Fe)	mg/L	0.72	0.17	0.66	0.26	2.4	0.15	0.02	4557344
Dissolved Boron (B)	ug/L	21	22	20	30	200	26	10	4555169
Dissolved Calcium (Ca)	ug/L	92000	100000	92000	70000	79000	94000	200	4555169
Dissolved Magnesium (Mg)	ug/L	32000	22000	31000	26000	18000	27000	50	4555169
Dissolved Phosphorus (P)	ug/L	ND	ND	ND	ND	ND	ND	100	4555169
Dissolved Potassium (K)	ug/L	1400	1600	1400	1700	1400	2200	200	4555169
Dissolved Sodium (Na)	ug/L	17000	110000	18000	6200	100000	120000	100	4555169
Dissolved Zinc (Zn)	ug/L	ND	16	6.9	12	29	910	5.0	4555169

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

Maxxam ID		COV680		COV681		COV682	COV683		
Sampling Date		2016/06/21		2016/06/21		2016/06/21	2016/06/22		
COC Number		566537-04-01		566537-04-01		566537-04-01	566537-04-01		
	UNITS	**16B**	**RDL**	**13A**	**RDL**	**13B**	**14A**	**RDL**	**QC Batch**
Metals									
Total Iron (Fe)	mg/L	0.24	0.02	0.37	0.02	0.11	0.74	0.02	4557344
Dissolved Boron (B)	ug/L	28	10	42	10	22	25	10	4555169
Dissolved Calcium (Ca)	ug/L	77000	200	93000	400	150000	71000	200	4555169
Dissolved Magnesium (Mg)	ug/L	27000	50	34000	50	30000	26000	50	4555169
Dissolved Phosphorus (P)	ug/L	ND	100	ND	100	ND	ND	100	4555169
Dissolved Potassium (K)	ug/L	1700	200	2400	200	1700	1100	200	4555169
Dissolved Sodium (Na)	ug/L	3400	100	43000	100	28000	26000	100	4555169
Dissolved Zinc (Zn)	ug/L	39	5.0	ND	5.0	140	8.0	5.0	4555169

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B6C9030
Report Date: 2016/06/29

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: JUNE GW

GENERAL COMMENTS

Results relate only to the items tested.

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Maxxam Job #: B6C9030
Report Date: 2016/06/29

QUALITY ASSURANCE REPORT

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: JUNE GW

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4552655	Phenols-4AAP	2016/06/24	98	80 - 120	102	85 - 115	ND, RDL=0.0010	mg/L	NC	20		
4552848	Phenols-4AAP	2016/06/24	94	80 - 120	100	85 - 115	ND, RDL=0.0010	mg/L	7.5	20		
4553537	Total Chemical Oxygen Demand (COD)	2016/06/27	104	75 - 125	98	75 - 125	ND, RDL=4.0	mg/L	NC	25		
4553548	Total Ammonia-N	2016/06/24	100	80 - 120	101	85 - 115	ND, RDL=0.050	mg/L	NC	20		
4553714	Dissolved Chloride (Cl)	2016/06/24	NC	80 - 120	105	80 - 120	ND, RDL=1.0	mg/L	0.30	20		
4553716	Dissolved Sulphate (SO4)	2016/06/24	NC	75 - 125	103	80 - 120	ND, RDL=1.0	mg/L	1.8	20		
4553729	Total Kjeldahl Nitrogen (TKN)	2016/06/24	110	80 - 120	106	80 - 120	ND, RDL=0.10	mg/L	NC	20	105	80 - 120
4553807	Total BOD	2016/06/29					ND, RDL=2.0	mg/L	NC	25	92	80 - 120
4553883	Nitrate (N)	2016/06/27	NC	80 - 120	103	80 - 120	ND, RDL=0.10	mg/L	0.11	25		
4553883	Nitrite (N)	2016/06/27	96	80 - 120	100	80 - 120	ND, RDL=0.010	mg/L	1.0	25		
4553980	Nitrate (N)	2016/06/27	98	80 - 120	102	80 - 120	ND, RDL=0.10	mg/L	NC	25		
4553980	Nitrite (N)	2016/06/27	95	80 - 120	99	80 - 120	ND, RDL=0.010	mg/L	NC	25		
4553984	Nitrate (N)	2016/06/28	97	80 - 120	99	80 - 120	ND, RDL=0.10	mg/L	NC	25		
4553984	Nitrite (N)	2016/06/28	97	80 - 120	109	80 - 120	ND, RDL=0.010	mg/L				
4554050	Alkalinity (Total as CaCO3)	2016/06/25			96	85 - 115	ND, RDL=1.0	mg/L	0.75	25		
4554057	Conductivity	2016/06/25			99	85 - 115	ND, RDL=1.0	umho/cm	0	25		
4554059	pH	2016/06/25			102	98 - 103			0.26	N/A		
4555091	Dissolved Chloride (Cl)	2016/06/27	NC	80 - 120	103	80 - 120	ND, RDL=1.0	mg/L	2.0	20		
4555093	Dissolved Sulphate (SO4)	2016/06/27	110	75 - 125	99	80 - 120	ND, RDL=1.0	mg/L	NC	20		
4555169	Dissolved Boron (B)	2016/06/27	95	80 - 120	95	80 - 120	ND, RDL=10	ug/L				
4555169	Dissolved Calcium (Ca)	2016/06/27	NC	80 - 120	107	80 - 120	ND, RDL=200	ug/L				
4555169	Dissolved Magnesium (Mg)	2016/06/27	96	80 - 120	103	80 - 120	ND, RDL=50	ug/L				
4555169	Dissolved Phosphorus (P)	2016/06/27	98	80 - 120	100	80 - 120	ND, RDL=100	ug/L				
4555169	Dissolved Potassium (K)	2016/06/27	97	80 - 120	101	80 - 120	ND, RDL=200	ug/L				
4555169	Dissolved Sodium (Na)	2016/06/27	97	80 - 120	101	80 - 120	ND, RDL=100	ug/L				
4555169	Dissolved Zinc (Zn)	2016/06/27	95	80 - 120	96	80 - 120	ND, RDL=5.0	ug/L	NC	20		

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Maxxam Job #: B6C9030
Report Date: 2016/06/29

QUALITY ASSURANCE REPORT(CONT'D)

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: JUNE GW

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4556217	Total Phosphorus	2016/06/27	101	80 - 120	102	80 - 120	ND, RDL=0.020	mg/L	NC	20	102	80 - 120
4557344	Total Iron (Fe)	2016/06/28	98	80 - 120	98	80 - 120	ND, RDL=0.02	mg/L	4.3	25		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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Maxxam Job #: B6C9030
Report Date: 2016/06/29

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: JUNE GW

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Cristina Carriere

Cristina Carriere, Scientific Services

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Maxxam
A Bureau Veritas Group Company

Your P.O. #: 720.8121.3516
Your Project #: Wet/Dry Ground Water
Site Location: JUNE GW
Your C.O.C. #: 566537-02-01

Attention:Amy Spence

City of Guelph
Soild Waste RIC (Wet/Dry)
110 Dunlop Drive
Guelph, ON
CANADA N1H 6H8

Report Date: 2016/06/30
Report #: R4048035
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6C9942
Received: 2016/06/23, 16:10

Sample Matrix: Water
Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Alkalinity	7	N/A	2016/06/25	CAM SOP-00448	SM 22 2320 B m
Biochemical Oxygen Demand (BOD)	7	N/A	2016/06/30	CAM SOP-00427	SM 22 5210B m
Chloride by Automated Colourimetry	7	N/A	2016/06/27	CAM SOP-00463	EPA 325.2 m
Chemical Oxygen Demand	6	N/A	2016/06/27	CAM SOP-00416	SM 22 5220 D m
Chemical Oxygen Demand	1	N/A	2016/06/28	CAM SOP-00416	SM 22 5220 D m
Conductivity	7	N/A	2016/06/25	CAM SOP-00414	SM 22 2510 m
Dissolved Metals by ICPMS	2	N/A	2016/06/27	CAM SOP-00447	EPA 6020A m
Dissolved Metals by ICPMS	5	N/A	2016/06/28	CAM SOP-00447	EPA 6020A m
Total Metals Analysis by ICP	7	2016/06/28	2016/06/28	CAM SOP-00408	EPA 6010C m
Total Ammonia-N	7	N/A	2016/06/29	CAM SOP-00441	EPA GS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (1)	7	N/A	2016/06/28	CAM SOP-00440	SM 22 4500-NO3I/NO2B
pH	7	N/A	2016/06/25	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	7	N/A	2016/06/27	CAM SOP-00444	OMOE E3179 m
Sulphate by Automated Colourimetry	7	N/A	2016/06/27	CAM SOP-00464	EPA 375.4 m
Total Kjeldahl Nitrogen in Water	6	2016/06/25	2016/06/27	CAM SOP-00938	OMOE E3516 m
Total Kjeldahl Nitrogen in Water	1	2016/06/27	2016/06/27	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	7	2016/06/27	2016/06/27	CAM SOP-00407	SM 22 4500 P B H m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
James Aspin, Senior Project Manager
Email: JAspin@maxxam.ca
Phone# (905)817-5771

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Maxxam Job #: B6C9942
Report Date: 2016/06/30

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: JUNE GW
Your P.O. #: 720.8121.3516

RESULTS OF ANALYSES OF WATER

Maxxam ID		CPA948	CPA948			CPA949	CPA949		
Sampling Date		2016/06/22	2016/06/22			2016/06/22	2016/06/22		
COC Number		566537-02-01	566537-02-01			566537-02-01	566537-02-01		
	UNITS	**7**	**7 Lab-Dup**	**RDL**	**QC Batch**	**21A**	**21A Lab-Dup**	**RDL**	**QC Batch**
Inorganics									
Total Ammonia-N	mg/L	ND	ND	0.050	4555422	ND		0.050	4555422
Total BOD	mg/L	ND		2.0	4555051	ND		2.0	4555051
Total Chemical Oxygen Demand (COD)	mg/L	4.1		4.0	4555441	ND	ND	4.0	4555441
Conductivity	umho/cm	1200		1.0	4554057	550		1.0	4554057
Total Kjeldahl Nitrogen (TKN)	mg/L	0.17		0.10	4555425	ND		0.10	4555425
pH	pH	7.98			4554059	8.02			4554059
Phenols-4AAP	mg/L	ND		0.0010	4554091	ND		0.0010	4554091
Total Phosphorus	mg/L	ND		0.020	4556352	ND	ND	0.020	4556352
Dissolved Sulphate (SO4)	mg/L	37		1.0	4555089	15		1.0	4555089
Alkalinity (Total as CaCO3)	mg/L	290		1.0	4554050	280		1.0	4554050
Dissolved Chloride (Cl)	mg/L	170		2.0	4555086	5.0		1.0	4555086
Nitrite (N)	mg/L	ND		0.010	4555125	ND		0.010	4555124
Nitrate (N)	mg/L	4.42		0.10	4555125	1.16		0.10	4555124
Nitrate + Nitrite (N)	mg/L	4.42		0.10	4555125	1.16		0.10	4555124

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B6C9942
Report Date: 2016/06/30

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: JUNE GW
Your P.O. #: 720.8121.3516

RESULTS OF ANALYSES OF WATER

Maxxam ID		CPA950			CPA951		
Sampling Date		2016/06/22			2016/06/22		
COC Number		566537-02-01			566537-02-01		
	UNITS	**14B**	**RDL**	**QC Batch**	**15A**	**RDL**	**QC Batch**
Inorganics							
Total Ammonia-N	mg/L	ND	0.050	4555422	ND	0.050	4555422
Total BOD	mg/L	ND	2.0	4555051	ND	2.0	4555051
Total Chemical Oxygen Demand (COD)	mg/L	8.4	4.0	4555441	5.8	4.0	4555441
Conductivity	umho/cm	1800	1.0	4554057	1300	1.0	4554057
Total Kjeldahl Nitrogen (TKN)	mg/L	ND	0.10	4555425	0.17	0.10	4555925
pH	pH	7.81		4554059	7.98		4554059
Phenols-4AAP	mg/L	ND	0.0010	4554091	ND	0.0010	4554091
Total Phosphorus	mg/L	0.31	0.020	4556352	0.021	0.020	4556352
Dissolved Sulphate (SO4)	mg/L	63	1.0	4555089	100	1.0	4555089
Alkalinity (Total as CaCO3)	mg/L	380	1.0	4554050	240	1.0	4554050
Dissolved Chloride (Cl)	mg/L	280	3.0	4555086	170	2.0	4555086
Nitrite (N)	mg/L	ND	0.010	4555124	ND	0.010	4555124
Nitrate (N)	mg/L	0.92	0.10	4555124	ND	0.10	4555124
Nitrate + Nitrite (N)	mg/L	0.92	0.10	4555124	ND	0.10	4555124

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B6C9942
Report Date: 2016/06/30

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: JUNE GW
Your P.O. #: 720.8121.3516

RESULTS OF ANALYSES OF WATER

Maxxam ID		CPA952			CPA953		
Sampling Date		2016/06/22			2016/06/23		
COC Number		566537-02-01			566537-02-01		
	UNITS	**15B**	**RDL**	**QC Batch**	**18A**	**RDL**	**QC Batch**
Inorganics							
Total Ammonia-N	mg/L	0.22	0.050	4555422	ND	0.050	4555422
Total BOD	mg/L	ND	2.0	4555051	ND	2.0	4555051
Total Chemical Oxygen Demand (COD)	mg/L	41	4.0	4555441	6.7	4.0	4555441
Conductivity	umho/cm	600	1.0	4554057	610	1.0	4554592
Total Kjeldahl Nitrogen (TKN)	mg/L	0.56	0.10	4555425	ND (1)	0.20	4555425
pH	pH	8.06		4554059	8.05		4554599
Phenols-4AAP	mg/L	0.0019	0.0010	4554091	ND	0.0010	4554091
Total Phosphorus	mg/L	0.14	0.020	4556352	0.14	0.020	4556352
Dissolved Sulphate (SO4)	mg/L	86	1.0	4555089	36	1.0	4555089
Alkalinity (Total as CaCO3)	mg/L	180	1.0	4554050	250	1.0	4554580
Dissolved Chloride (Cl)	mg/L	24	1.0	4555086	17	1.0	4555086
Nitrite (N)	mg/L	0.137	0.010	4555124	ND	0.010	4555124
Nitrate (N)	mg/L	1.16	0.10	4555124	5.03	0.10	4555124
Nitrate + Nitrite (N)	mg/L	1.29	0.10	4555124	5.03	0.10	4555124

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected
(1) TKN: Due to high concentrations of NO3NO2, sample required dilution. Detection limits were adjusted accordingly.

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Maxxam Job #: B6C9942
Report Date: 2016/06/30

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: JUNE GW
Your P.O. #: 720.8121.3516

RESULTS OF ANALYSES OF WATER

Maxxam ID		CPA954		
Sampling Date		2016/06/23		
COC Number		566537-02-01		
	UNITS	**18B**	**RDL**	**QC Batch**
Inorganics				
Total Ammonia-N	mg/L	ND	0.050	4555422
Total BOD	mg/L	ND	2.0	4555051
Total Chemical Oxygen Demand (COD)	mg/L	140	4.0	4556168
Conductivity	umho/cm	1200	1.0	4554592
Total Kjeldahl Nitrogen (TKN)	mg/L	ND	0.10	4555425
pH	pH	8.23		4554599
Phenols-4AAP	mg/L	ND	0.0010	4554091
Total Phosphorus	mg/L	13	0.10	4556352
Dissolved Sulphate (SO4)	mg/L	20	1.0	4555089
Alkalinity (Total as CaCO3)	mg/L	210	1.0	4554580
Dissolved Chloride (Cl)	mg/L	210	3.0	4555086
Nitrite (N)	mg/L	0.030	0.010	4555124
Nitrate (N)	mg/L	0.16	0.10	4555124
Nitrate + Nitrite (N)	mg/L	0.19	0.10	4555124

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B6C9942
Report Date: 2016/06/30

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: JUNE GW
Your P.O. #: 720.8121.3516

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		CPA948	CPA949		CPA950	CPA951	CPA951		
Sampling Date		2016/06/22	2016/06/22		2016/06/22	2016/06/22	2016/06/22		
COC Number		566537-02-01	566537-02-01		566537-02-01	566537-02-01	566537-02-01		
	UNITS	**7**	**21A**	**QC Batch**	**14B**	**15A**	**15A Lab-Dup**	**RDL**	**QC Batch**
Metals									
Total Iron (Fe)	mg/L	0.09	0.09	4557999	14	1.2	1.1	0.02	4557999
Dissolved Boron (B)	ug/L	34	17	4555405	24	17		10	4555207
Dissolved Calcium (Ca)	ug/L	100000	73000	4555405	170000	130000		200	4555207
Dissolved Magnesium (Mg)	ug/L	27000	25000	4555405	38000	44000		50	4555207
Dissolved Phosphorus (P)	ug/L	ND	ND	4555405	ND	ND		100	4555207
Dissolved Potassium (K)	ug/L	7900	840	4555405	2200	1500		200	4555207
Dissolved Sodium (Na)	ug/L	120000	8100	4555405	150000	53000		100	4555207
Dissolved Zinc (Zn)	ug/L	140	320	4555405	1100	10		5.0	4555207

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

Maxxam ID		CPA952	CPA953		CPA954		
Sampling Date		2016/06/22	2016/06/23		2016/06/23		
COC Number		566537-02-01	566537-02-01		566537-02-01		
	UNITS	**15B**	**18A**	**RDL**	**18B**	**RDL**	**QC Batch**
Metals							
Total Iron (Fe)	mg/L	4.4	4.2	0.02	520	0.2	4557999
Dissolved Boron (B)	ug/L	130	11	10	ND	10	4555405
Dissolved Calcium (Ca)	ug/L	75000	77000	200	39000	200	4555405
Dissolved Magnesium (Mg)	ug/L	5900	28000	50	15000	50	4555405
Dissolved Phosphorus (P)	ug/L	ND	ND	100	ND	100	4555405
Dissolved Potassium (K)	ug/L	3600	1300	200	1500	200	4555405
Dissolved Sodium (Na)	ug/L	49000	4500	100	180000	100	4555405
Dissolved Zinc (Zn)	ug/L	18	300	5.0	14	5.0	4555405

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B6C9942
Report Date: 2016/06/30

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: JUNE GW
Your P.O. #: 720.8121.3516

GENERAL COMMENTS

Sample CPA954-01 : Metals: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

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Maxxam Job #: B6C9942
Report Date: 2016/06/30

QUALITY ASSURANCE REPORT

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: JUNE GW
Your P.O. #: 720.8121.3516

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4554050	Alkalinity (Total as CaCO3)	2016/06/25			96	85 - 115	ND, RDL=1.0	mg/L	0.75	25		
4554057	Conductivity	2016/06/25			99	85 - 115	ND, RDL=1.0	umho/cm	0	25		
4554059	pH	2016/06/25			102	98 - 103			0.26	N/A		
4554091	Phenols-4AAP	2016/06/27	99	80 - 120	96	85 - 115	ND, RDL=0.0010	mg/L	NC	20		
4554580	Alkalinity (Total as CaCO3)	2016/06/25			98	85 - 115	ND, RDL=1.0	mg/L	5.2	25		
4554592	Conductivity	2016/06/25			101	85 - 115	ND, RDL=1.0	umho/cm	1.7	25		
4554599	pH	2016/06/25			102	98 - 103			0.56	N/A		
4555051	Total BOD	2016/06/30					ND, RDL=2.0	mg/L	NC	25	92	80 - 120
4555086	Dissolved Chloride (Cl)	2016/06/27	107	80 - 120	104	80 - 120	ND, RDL=1.0	mg/L	NC	20		
4555089	Dissolved Sulphate (SO4)	2016/06/27	112	75 - 125	99	80 - 120	ND, RDL=1.0	mg/L	2.7	20		
4555124	Nitrate (N)	2016/06/28	94	80 - 120	98	80 - 120	ND, RDL=0.10	mg/L	NC	25		
4555124	Nitrite (N)	2016/06/28	96	80 - 120	108	80 - 120	ND, RDL=0.010	mg/L	NC	25		
4555125	Nitrate (N)	2016/06/28	89	80 - 120	98	80 - 120	ND, RDL=0.10	mg/L	0.63	25		
4555125	Nitrite (N)	2016/06/28	95	80 - 120	109	80 - 120	ND, RDL=0.010	mg/L	NC	25		
4555207	Dissolved Boron (B)	2016/06/27	NC	80 - 120	101	80 - 120	ND, RDL=10	ug/L				
4555207	Dissolved Calcium (Ca)	2016/06/27	NC	80 - 120	103	80 - 120	ND, RDL=200	ug/L				
4555207	Dissolved Magnesium (Mg)	2016/06/27	NC	80 - 120	106	80 - 120	ND, RDL=50	ug/L				
4555207	Dissolved Phosphorus (P)	2016/06/27	107	80 - 120	102	80 - 120	ND, RDL=100	ug/L				
4555207	Dissolved Potassium (K)	2016/06/27	101	80 - 120	103	80 - 120	ND, RDL=200	ug/L				
4555207	Dissolved Sodium (Na)	2016/06/27	NC	80 - 120	109	80 - 120	ND, RDL=100	ug/L				
4555207	Dissolved Zinc (Zn)	2016/06/27	101	80 - 120	99	80 - 120	ND, RDL=5.0	ug/L				
4555405	Dissolved Boron (B)	2016/06/28	103	80 - 120	100	80 - 120	ND, RDL=10	ug/L	NC	20		
4555405	Dissolved Calcium (Ca)	2016/06/28	NC	80 - 120	101	80 - 120	ND, RDL=200	ug/L				
4555405	Dissolved Magnesium (Mg)	2016/06/28	NC	80 - 120	106	80 - 120	ND, RDL=50	ug/L				
4555405	Dissolved Phosphorus (P)	2016/06/28	109	80 - 120	107	80 - 120	ND, RDL=100	ug/L				
4555405	Dissolved Potassium (K)	2016/06/28	NC	80 - 120	100	80 - 120	ND, RDL=200	ug/L				
4555405	Dissolved Sodium (Na)	2016/06/28	NC	80 - 120	105	80 - 120	150, RDL=100	ug/L	4.4	20		

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Maxxam Job #: B6C9942
Report Date: 2016/06/30

QUALITY ASSURANCE REPORT(CONT'D)

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: JUNE GW
Your P.O. #: 720.8121.3516

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4555405	Dissolved Zinc (Zn)	2016/06/28	103	80 - 120	100	80 - 120	ND, RDL=5.0	ug/L	NC	20		
4555422	Total Ammonia-N	2016/06/29	95	80 - 120	102	85 - 115	ND, RDL=0.050	mg/L	NC	20		
4555425	Total Kjeldahl Nitrogen (TKN)	2016/06/27	101	80 - 120	103	80 - 120	ND, RDL=0.10	mg/L	NC	20	101	80 - 120
4555441	Total Chemical Oxygen Demand (COD)	2016/06/27	99	75 - 125	98	75 - 125	ND, RDL=4.0	mg/L	NC	25		
4555925	Total Kjeldahl Nitrogen (TKN)	2016/06/27	107	80 - 120	103	80 - 120	ND, RDL=0.10	mg/L	1.1	20	104	80 - 120
4556168	Total Chemical Oxygen Demand (COD)	2016/06/28	NC	75 - 125	104	75 - 125	ND, RDL=4.0	mg/L	2.1	25		
4556352	Total Phosphorus	2016/06/27	103	80 - 120	102	80 - 120	ND, RDL=0.020	mg/L	NC	20	102	80 - 120
4557999	Total Iron (Fe)	2016/06/28	NC	80 - 120	99	80 - 120	ND, RDL=0.02	mg/L	2.4	25		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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Maxxam Job #: B6C9942
Report Date: 2016/06/30

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: JUNE GW
Your P.O. #: 720.8121.3516

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Cristina Carriere

Cristina Carriere, Scientific Services

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Maxxam
A Bureau Veritas Group Company

Your P.O. #: 720.8121.3516
Your Project #: Wet/Dry Ground Water
Site Location: JUNE GW
Your C.O.C. #: 566537-03-01

Attention:Amy Spence

City of Guelph
Soild Waste RIC (Wet/Dry)
110 Dunlop Drive
Guelph, ON
CANADA N1H 6H8

Report Date: 2016/07/05
Report #: R4053274
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6D1165
Received: 2016/06/24, 16:00

Sample Matrix: Water
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Alkalinity	4	N/A	2016/06/26	CAM SOP-00448	SM 22 2320 B m
Alkalinity	2	N/A	2016/06/27	CAM SOP-00448	SM 22 2320 B m
Biochemical Oxygen Demand (BOD)	6	N/A	2016/07/02	CAM SOP-00427	SM 22 5210B m
Chloride by Automated Colourimetry	6	N/A	2016/06/29	CAM SOP-00463	EPA 325.2 m
Chemical Oxygen Demand	6	N/A	2016/06/30	CAM SOP-00416	SM 22 5220 D m
Conductivity	4	N/A	2016/06/26	CAM SOP-00414	SM 22 2510 m
Conductivity	2	N/A	2016/06/27	CAM SOP-00414	SM 22 2510 m
Dissolved Metals by ICPMS	5	N/A	2016/07/04	CAM SOP-00447	EPA 6020A m
Dissolved Metals by ICPMS	1	N/A	2016/07/05	CAM SOP-00447	EPA 6020A m
Total Metals Analysis by ICP	6	2016/06/30	2016/06/30	CAM SOP-00408	EPA 6010C m
Total Ammonia-N	2	N/A	2016/06/29	CAM SOP-00441	EPA GS I-2522-90 m
Total Ammonia-N	4	N/A	2016/07/05	CAM SOP-00441	EPA GS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (1)	6	N/A	2016/06/30	CAM SOP-00440	SM 22 4500-NO3I/NO2B
pH	4	N/A	2016/06/26	CAM SOP-00413	SM 4500H+ B m
pH	2	N/A	2016/06/27	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	6	N/A	2016/06/29	CAM SOP-00444	OMOE E3179 m
Sulphate by Automated Colourimetry	6	N/A	2016/06/29	CAM SOP-00464	EPA 375.4 m
Total Kjeldahl Nitrogen in Water	2	2016/06/29	2016/06/29	CAM SOP-00938	OMOE E3516 m
Total Kjeldahl Nitrogen in Water	4	2016/06/29	2016/06/30	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	6	2016/06/29	2016/06/29	CAM SOP-00407	SM 22 4500 P B H m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

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Your P.O. #: 720.8121.3516
Your Project #: Wet/Dry Ground Water
Site Location: JUNE GW
Your C.O.C. #: 566537-03-01

Attention:Amy Spence

City of Guelph
Soild Waste RIC (Wet/Dry)
110 Dunlop Drive
Guelph, ON
CANADA N1H 6H8

Report Date: 2016/07/05
Report #: R4053274
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6D1165
Received: 2016/06/24, 16:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
James Aspin, Senior Project Manager
Email: JAspin@maxxam.ca
Phone# (905)817-5771

==========

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Maxxam Job #: B6D1165
Report Date: 2016/07/05

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: JUNE GW
Your P.O. #: 720.8121.3516

RESULTS OF ANALYSES OF WATER

Maxxam ID		CPG618	CPG618		CPG619	CPG619		
Sampling Date		2016/06/23	2016/06/23		2016/06/23	2016/06/23		
COC Number		566537-03-01	566537-03-01		566537-03-01	566537-03-01		
	UNITS	**6A**	**6A Lab-Dup**	**RDL**	**6B**	**6B Lab-Dup**	**RDL**	**QC Batch**
Inorganics								
Total Ammonia-N	mg/L	ND		0.050	ND		0.050	4559777
Total BOD	mg/L	ND	ND	2.0	ND		2.0	4556581
Total Chemical Oxygen Demand (COD)	mg/L	5.3		4.0	7.4		4.0	4559941
Conductivity	umho/cm	1300		1.0	2000		1.0	4555389
Total Kjeldahl Nitrogen (TKN)	mg/L	0.16		0.10	0.60		0.20	4559750
pH	pH	8.06			7.99			4555393
Phenols-4AAP	mg/L	ND		0.0010	ND		0.0010	4555247
Total Phosphorus	mg/L	ND		0.020	ND	ND	0.020	4559473
Dissolved Sulphate (SO4)	mg/L	38		1.0	38		1.0	4558083
Alkalinity (Total as CaCO3)	mg/L	260		1.0	320		1.0	4555388
Dissolved Chloride (Cl)	mg/L	200		2.0	380		4.0	4558079
Nitrite (N)	mg/L	ND		0.010	ND		0.010	4557662
Nitrate (N)	mg/L	2.53		0.10	4.66		0.10	4557662
Nitrate + Nitrite (N)	mg/L	2.53		0.10	4.66		0.10	4557662

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B6D1165
Report Date: 2016/07/05

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: JUNE GW
Your P.O. #: 720.8121.3516

RESULTS OF ANALYSES OF WATER

Maxxam ID		CPG620			CPG621		
Sampling Date		2016/06/23			2016/06/23		
COC Number		566537-03-01			566537-03-01		
	UNITS	**12A**	**RDL**	**QC Batch**	**12B**	**RDL**	**QC Batch**
Inorganics							
Total Ammonia-N	mg/L	ND	0.050	4558319	ND	0.050	4559777
Total BOD	mg/L	ND	2.0	4556581	ND	2.0	4556581
Total Chemical Oxygen Demand (COD)	mg/L	7.6	4.0	4559941	5.5	4.0	4559941
Conductivity	umho/cm	630	1.0	4555389	640	1.0	4556201
Total Kjeldahl Nitrogen (TKN)	mg/L	0.29	0.10	4559769	0.17	0.10	4559750
pH	pH	7.99		4555393	7.68		4556200
Phenols-4AAP	mg/L	ND	0.0010	4555247	ND	0.0010	4555247
Total Phosphorus	mg/L	ND	0.020	4559473	0.085	0.040	4559473
Dissolved Sulphate (SO4)	mg/L	28	1.0	4558083	2.1	1.0	4558083
Alkalinity (Total as CaCO3)	mg/L	310	1.0	4555388	310	1.0	4556193
Dissolved Chloride (Cl)	mg/L	4.8	1.0	4558079	ND	1.0	4558079
Nitrite (N)	mg/L	ND	0.010	4558094	ND	0.010	4557662
Nitrate (N)	mg/L	1.19	0.10	4558094	1.49	0.10	4557662
Nitrate + Nitrite (N)	mg/L	1.19	0.10	4558094	1.49	0.10	4557662

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B6D1165
Report Date: 2016/07/05

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: JUNE GW
Your P.O. #: 720.8121.3516

RESULTS OF ANALYSES OF WATER

Maxxam ID		CPG622			CPG623		
Sampling Date		2016/06/24			2016/06/24		
COC Number		566537-03-01			566537-03-01		
	UNITS	**5**	**RDL**	**QC Batch**	**8**	**RDL**	**QC Batch**
Inorganics							
Total Ammonia-N	mg/L	ND	0.050	4559777	ND	0.050	4558319
Total BOD	mg/L	ND	2.0	4556581	ND	2.0	4556581
Total Chemical Oxygen Demand (COD)	mg/L	7.8	4.0	4559941	8.5	4.0	4559941
Conductivity	umho/cm	3900	1.0	4555389	1000	1.0	4556201
Total Kjeldahl Nitrogen (TKN)	mg/L	0.13	0.10	4559750	0.16	0.10	4559769
pH	pH	7.96		4555393	7.86		4556200
Phenols-4AAP	mg/L	ND	0.0010	4555247	ND	0.0010	4555247
Total Phosphorus	mg/L	ND	0.020	4559473	ND	0.020	4559473
Dissolved Sulphate (SO4)	mg/L	39	1.0	4558083	39	1.0	4558083
Alkalinity (Total as CaCO3)	mg/L	260	1.0	4555388	290	1.0	4556193
Dissolved Chloride (Cl)	mg/L	1100	15	4558079	130	1.0	4558079
Nitrite (N)	mg/L	ND	0.010	4557662	ND	0.010	4557662
Nitrate (N)	mg/L	0.21	0.10	4557662	0.30	0.10	4557662
Nitrate + Nitrite (N)	mg/L	0.21	0.10	4557662	0.30	0.10	4557662

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B6D1165
Report Date: 2016/07/05

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: JUNE GW
Your P.O. #: 720.8121.3516

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		CPG618	CPG618	CPG619	CPG620	CPG621		
Sampling Date		2016/06/23	2016/06/23	2016/06/23	2016/06/23	2016/06/23		
COC Number		566537-03-01	566537-03-01	566537-03-01	566537-03-01	566537-03-01		
	UNITS	**6A**	**6A Lab-Dup**	**6B**	**12A**	**12B**	**RDL**	**QC Batch**
Metals								
Total Iron (Fe)	mg/L	ND		0.22	0.04	2.4	0.02	4560834
Dissolved Boron (B)	ug/L	24	24	37	17	32	10	4557992
Dissolved Calcium (Ca)	ug/L	98000	99000	130000	80000	84000	200	4557992
Dissolved Magnesium (Mg)	ug/L	24000	24000	29000	28000	22000	50	4557992
Dissolved Phosphorus (P)	ug/L	ND	ND	ND	ND	ND	100	4557992
Dissolved Potassium (K)	ug/L	2500	2500	7400	9600	4300	200	4557992
Dissolved Sodium (Na)	ug/L	120000	120000	220000	5800	11000	100	4557992
Dissolved Zinc (Zn)	ug/L	30	30	88	680	340	5.0	4557992

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

Maxxam ID		CPG622		CPG623		
Sampling Date		2016/06/24		2016/06/24		
COC Number		566537-03-01		566537-03-01		
	UNITS	**5**	**QC Batch**	**8**	**RDL**	**QC Batch**
Metals						
Total Iron (Fe)	mg/L	0.17	4560834	0.05	0.02	4560834
Dissolved Boron (B)	ug/L	19	4564188	12	10	4557992
Dissolved Calcium (Ca)	ug/L	96000	4564188	93000	200	4557992
Dissolved Magnesium (Mg)	ug/L	21000	4564188	32000	50	4557992
Dissolved Phosphorus (P)	ug/L	ND	4564188	ND	100	4557992
Dissolved Potassium (K)	ug/L	3700	4564188	2200	200	4557992
Dissolved Sodium (Na)	ug/L	390000	4564188	75000	100	4557992
Dissolved Zinc (Zn)	ug/L	1400	4564188	900	5.0	4557992

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B6D1165
Report Date: 2016/07/05

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: JUNE GW
Your P.O. #: 720.8121.3516

GENERAL COMMENTS

Results relate only to the items tested.

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Maxxam Job #: B6D1165
Report Date: 2016/07/05

QUALITY ASSURANCE REPORT

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: JUNE GW
Your P.O. #: 720.8121.3516

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4555247	Phenols-4AAP	2016/06/29	99	80 - 120	95	85 - 115	ND, RDL=0.0010	mg/L	NC	20		
4555388	Alkalinity (Total as CaCO3)	2016/06/26			96	85 - 115	ND, RDL=1.0	mg/L	0.41	25		
4555389	Conductivity	2016/06/26			101	85 - 115	ND, RDL=1.0	umho/cm	0.41	25		
4555393	pH	2016/06/26			101	98 - 103			0.21	N/A		
4556193	Alkalinity (Total as CaCO3)	2016/06/27			97	85 - 115	ND, RDL=1.0	mg/L	0.26	25		
4556200	pH	2016/06/27			102	98 - 103			0.25	N/A		
4556201	Conductivity	2016/06/27			100	85 - 115	ND, RDL=1.0	umho/cm	0.26	25		
4556581	Total BOD	2016/07/02					ND, RDL=2.0	mg/L	NC	25	109	80 - 120
4557662	Nitrate (N)	2016/06/30	101	80 - 120	102	80 - 120	ND, RDL=0.10	mg/L	NC	25		
4557662	Nitrite (N)	2016/06/30	104	80 - 120	103	80 - 120	ND, RDL=0.010	mg/L				
4557992	Dissolved Boron (B)	2016/07/04	103	80 - 120	97	80 - 120	ND, RDL=10	ug/L	NC	20		
4557992	Dissolved Calcium (Ca)	2016/07/04	NC	80 - 120	101	80 - 120	ND, RDL=200	ug/L	0.33	20		
4557992	Dissolved Magnesium (Mg)	2016/07/04	NC	80 - 120	97	80 - 120	ND, RDL=50	ug/L	1.1	20		
4557992	Dissolved Phosphorus (P)	2016/07/04	108	80 - 120	100	80 - 120	ND, RDL=100	ug/L	NC	20		
4557992	Dissolved Potassium (K)	2016/07/04	105	80 - 120	99	80 - 120	ND, RDL=200	ug/L	0.47	20		
4557992	Dissolved Sodium (Na)	2016/07/04	NC	80 - 120	99	80 - 120	ND, RDL=100	ug/L	1.1	20		
4557992	Dissolved Zinc (Zn)	2016/07/04	107	80 - 120	101	80 - 120	ND, RDL=5.0	ug/L	0.098	20		
4558079	Dissolved Chloride (Cl)	2016/06/29	NC	80 - 120	100	80 - 120	ND, RDL=1.0	mg/L	1.4	20		
4558083	Dissolved Sulphate (SO4)	2016/06/29	NC	75 - 125	103	80 - 120	ND, RDL=1.0	mg/L	1.6	20		
4558094	Nitrate (N)	2016/06/30	100	80 - 120	103	80 - 120	ND, RDL=0.10	mg/L	NC	25		
4558094	Nitrite (N)	2016/06/30	101	80 - 120	101	80 - 120	ND, RDL=0.010	mg/L	NC	25		
4558319	Total Ammonia-N	2016/06/29	NC	80 - 120	102	85 - 115	ND, RDL=0.050	mg/L	2.1	20		
4559473	Total Phosphorus	2016/06/29	101	80 - 120	101	80 - 120	ND, RDL=0.020	mg/L	NC	20	99	80 - 120
4559750	Total Kjeldahl Nitrogen (TKN)	2016/06/29	104	80 - 120	103	80 - 120	ND, RDL=0.10	mg/L	NC	20	101	80 - 120
4559769	Total Kjeldahl Nitrogen (TKN)	2016/06/30	102	80 - 120	107	80 - 120	ND, RDL=0.10	mg/L	NC	20	107	80 - 120

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Maxxam Job #: B6D1165
Report Date: 2016/07/05

QUALITY ASSURANCE REPORT(CONT'D)

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: JUNE GW
Your P.O. #: 720.8121.3516

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4559777	Total Ammonia-N	2016/07/05	97	80 - 120	101	85 - 115	ND, RDL=0.050	mg/L	NC	20		
4559941	Total Chemical Oxygen Demand (COD)	2016/06/30	NC	75 - 125	101	75 - 125	ND, RDL=4.0	mg/L	2.3	25		
4560834	Total Iron (Fe)	2016/06/30	96	80 - 120	96	80 - 120	ND, RDL=0.02	mg/L	NC	25		
4564188	Dissolved Boron (B)	2016/07/05	107	80 - 120	102	80 - 120	ND, RDL=10	ug/L				
4564188	Dissolved Calcium (Ca)	2016/07/05	NC	80 - 120	94	80 - 120	ND, RDL=200	ug/L	0.90	20		
4564188	Dissolved Magnesium (Mg)	2016/07/05	NC	80 - 120	97	80 - 120	ND, RDL=50	ug/L	3.1	20		
4564188	Dissolved Phosphorus (P)	2016/07/05	111	80 - 120	103	80 - 120	ND, RDL=100	ug/L				
4564188	Dissolved Potassium (K)	2016/07/05	101	80 - 120	98	80 - 120	ND, RDL=200	ug/L				
4564188	Dissolved Sodium (Na)	2016/07/05	NC	80 - 120	95	80 - 120	ND, RDL=100	ug/L				
4564188	Dissolved Zinc (Zn)	2016/07/05	100	80 - 120	98	80 - 120	ND, RDL=5.0	ug/L				

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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Maxxam Job #: B6D1165
Report Date: 2016/07/05

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: JUNE GW
Your P.O. #: 720.8121.3516

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Brad Newman, Scientific Specialist

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Maxxam
A Bureau Veritas Group Company

Your P.O. #: 720.8121.3516
Your Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your C.O.C. #: 587870-01-01

Attention:Andrew Shouldice

City of Guelph
Eastview Landfill
186 Eastview Road
Guelph, ON
CANADA N1E 1Z6

Report Date: 2016/12/08
Report #: R4279564
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6Q1256
Received: 2016/11/30, 15:31

Sample Matrix: Water
Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
ABN Compounds in Water by GC/MS	7	2016/12/02	2016/12/05	CAM SOP-00301	EPA 8270 m
Alkalinity	7	N/A	2016/12/02	CAM SOP-00448	SM 22 2320 B m
Biochemical Oxygen Demand (BOD)	7	2016/12/02	2016/12/07	CAM SOP-00427	SM 22 5210B m
Chloride by Automated Colourimetry	7	N/A	2016/12/05	CAM SOP-00463	EPA 325.2 m
Chemical Oxygen Demand	7	N/A	2016/12/05	CAM SOP-00416	SM 22 5220 D m
Conductivity	7	N/A	2016/12/02	CAM SOP-00414	SM 22 2510 m
Dissolved Metals by ICPMS	7	N/A	2016/12/06	CAM SOP-00447	EPA 6020B m
Total Metals Analysis by ICP	7	2016/12/02	2016/12/02	CAM SOP-00408	EPA 6010C m
Total Ammonia-N	7	N/A	2016/12/08	CAM SOP-00441	EPA GS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (1)	7	N/A	2016/12/05	CAM SOP-00440	SM 22 4500-NO3I/NO2B
pH	7	N/A	2016/12/02	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	2	N/A	2016/12/05	CAM SOP-00444	OMOE E3179 m
Phenols (4AAP)	5	N/A	2016/12/06	CAM SOP-00444	OMOE E3179 m
Sulphate by Automated Colourimetry	7	N/A	2016/12/05	CAM SOP-00464	EPA 375.4 m
Total Kjeldahl Nitrogen in Water	6	2016/12/05	2016/12/05	CAM SOP-00938	OMOE E3516 m
Total Kjeldahl Nitrogen in Water	1	2016/12/05	2016/12/07	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	7	2016/12/04	2016/12/06	CAM SOP-00407	SM 22 4500 P B H m
Volatile Organic Compounds in Water	4	N/A	2016/12/02	CAM SOP-00226	EPA 8260C m
Volatile Organic Compounds in Water	3	N/A	2016/12/05	CAM SOP-00226	EPA 8260C m
Non-Routine Volatile Organic Compounds	7	N/A	2016/12/05	CAM SOP-00226	EPA 8260 m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed

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Your P.O. #: 720.8121.3516
Your Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your C.O.C. #: 587870-01-01

Attention:Andrew Shouldice

City of Guelph
Eastview Landfill
186 Eastview Road
Guelph, ON
CANADA N1E 1Z6

Report Date: 2016/12/08
Report #: R4279564
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6Q1256
Received: 2016/11/30, 15:31

or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
James Aspin, Senior Project Manager
Email: JAspin@maxxam.ca
Phone# (905)817-5771

==========

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Maxxam Job #: B6Q1256
Report Date: 2016/12/08

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

RESULTS OF ANALYSES OF WATER

Maxxam ID		DNY824	DNY824		DNY825	DNY825		
Sampling Date		2016/11/28	2016/11/28		2016/11/28	2016/11/28		
COC Number		587870-01-01	587870-01-01		587870-01-01	587870-01-01		
	UNITS	**19 A**	**19 A Lab-Dup**	**RDL**	**20 A**	**20 A Lab-Dup**	**RDL**	**QC Batch**
Inorganics								
Total Ammonia-N	mg/L	0.071		0.050	ND		0.050	4778625
Total BOD	mg/L	ND		2.0	ND		2.0	4775899
Total Chemical Oxygen Demand (COD)	mg/L	13		4.0	9.2	5.5	4.0	4776212
Conductivity	umho/cm	840		1.0	620		1.0	4774937
Total Kjeldahl Nitrogen (TKN)	mg/L	0.16		0.10	0.16		0.10	4778122
pH	pH	7.95			7.95			4774941
Phenols-4AAP	mg/L	ND		0.0010	ND		0.0010	4779990
Total Phosphorus	mg/L	0.12		0.10	0.033		0.020	4778037
Dissolved Sulphate (SO4)	mg/L	120	120	1.0	41		1.0	4776910
Alkalinity (Total as CaCO3)	mg/L	230		1.0	250		1.0	4774935
Dissolved Chloride (Cl)	mg/L	68	68	1.0	20		1.0	4776876
Nitrite (N)	mg/L	ND	ND	0.010	ND		0.010	4776662
Nitrate (N)	mg/L	ND	ND	0.10	3.45		0.10	4776662
Nitrate + Nitrite (N)	mg/L	ND	ND	0.10	3.45		0.10	4776662

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B6Q1256
Report Date: 2016/12/08

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

RESULTS OF ANALYSES OF WATER

Maxxam ID		DNY826			DNY827	DNY827		
Sampling Date		2016/11/28			2016/11/28	2016/11/28		
COC Number		587870-01-01			587870-01-01	587870-01-01		
	UNITS	**20 B**	**RDL**	**QC Batch**	**23 A**	**23 A Lab-Dup**	**RDL**	**QC Batch**
Inorganics								
Total Ammonia-N	mg/L	ND	0.050	4778625	ND	ND	0.050	4778625
Total BOD	mg/L	ND	2.0	4775899	ND		2.0	4775899
Total Chemical Oxygen Demand (COD)	mg/L	8.8	4.0	4776212	ND		4.0	4776212
Conductivity	umho/cm	970	1.0	4774937	680		1.0	4774937
Total Kjeldahl Nitrogen (TKN)	mg/L	0.16	0.10	4778122	0.12		0.10	4778122
pH	pH	7.86		4774941	7.94			4774941
Phenols-4AAP	mg/L	ND	0.0010	4778273	ND		0.0010	4779990
Total Phosphorus	mg/L	0.057	0.040	4778037	ND	0.031	0.020	4778037
Dissolved Sulphate (SO4)	mg/L	69	1.0	4776910	100		1.0	4776910
Alkalinity (Total as CaCO3)	mg/L	310	1.0	4774935	230		1.0	4774935
Dissolved Chloride (Cl)	mg/L	98	1.0	4776876	24		1.0	4776876
Nitrite (N)	mg/L	ND	0.010	4776662	ND		0.010	4776662
Nitrate (N)	mg/L	ND	0.10	4776662	ND		0.10	4776662
Nitrate + Nitrite (N)	mg/L	ND	0.10	4776662	ND		0.10	4776662

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B6Q1256
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City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

RESULTS OF ANALYSES OF WATER

Maxxam ID		DNY828			DNY829	DNY829		
Sampling Date		2016/11/28			2016/11/29	2016/11/29		
COC Number		587870-01-01			587870-01-01	587870-01-01		
	UNITS	**23 B**	**RDL**	**QC Batch**	**12 A**	**12 A Lab-Dup**	**RDL**	**QC Batch**
Inorganics								
Total Ammonia-N	mg/L	ND	0.050	4778625	ND		0.050	4778625
Total BOD	mg/L	ND	2.0	4775899	ND		2.0	4775899
Total Chemical Oxygen Demand (COD)	mg/L	ND	4.0	4776212	ND		4.0	4776212
Conductivity	umho/cm	1400	1.0	4774937	740		1.0	4774937
Total Kjeldahl Nitrogen (TKN)	mg/L	0.17	0.10	4778364	0.15	0.18	0.10	4778122
pH	pH	7.79		4774941	7.78			4774941
Phenols-4AAP	mg/L	ND	0.0010	4778273	ND		0.0010	4779990
Total Phosphorus	mg/L	0.35	0.10	4778037	ND		0.020	4778037
Dissolved Sulphate (SO4)	mg/L	37	1.0	4776910	29		1.0	4776910
Alkalinity (Total as CaCO3)	mg/L	330	1.0	4774935	330		1.0	4774935
Dissolved Chloride (Cl)	mg/L	220	2.0	4776876	34		1.0	4776876
Nitrite (N)	mg/L	ND	0.010	4776662	ND		0.010	4776662
Nitrate (N)	mg/L	3.64	0.10	4776662	0.15		0.10	4776662
Nitrate + Nitrite (N)	mg/L	3.64	0.10	4776662	0.15		0.10	4776662

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B6Q1256
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City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

RESULTS OF ANALYSES OF WATER

Maxxam ID		DNY830		
Sampling Date		2016/11/29		
COC Number		587870-01-01		
	UNITS	**12 B**	**RDL**	**QC Batch**
Inorganics				
Total Ammonia-N	mg/L	ND	0.050	4778625
Total BOD	mg/L	ND	2.0	4775899
Total Chemical Oxygen Demand (COD)	mg/L	ND	4.0	4776212
Conductivity	umho/cm	710	1.0	4774937
Total Kjeldahl Nitrogen (TKN)	mg/L	0.17	0.10	4778122
pH	pH	7.68		4774941
Phenols-4AAP	mg/L	ND	0.0010	4779990
Total Phosphorus	mg/L	ND (1)	0.10	4778037
Dissolved Sulphate (SO4)	mg/L	36	1.0	4776411
Alkalinity (Total as CaCO3)	mg/L	360	1.0	4774935
Dissolved Chloride (Cl)	mg/L	9.4	1.0	4776392
Nitrite (N)	mg/L	ND	0.010	4776662
Nitrate (N)	mg/L	0.76	0.10	4776662
Nitrate + Nitrite (N)	mg/L	0.76	0.10	4776662

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected
(1) Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

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Maxxam Job #: B6Q1256
Report Date: 2016/12/08

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		DNY824	DNY825	DNY826	DNY827	DNY828	DNY829		
Sampling Date		2016/11/28	2016/11/28	2016/11/28	2016/11/28	2016/11/28	2016/11/29		
COC Number		587870-01-01	587870-01-01	587870-01-01	587870-01-01	587870-01-01	587870-01-01		
	UNITS	**19 A**	**20 A**	**20 B**	**23 A**	**23 B**	**12 A**	**RDL**	**QC Batch**
Metals									
Total Iron (Fe)	mg/L	2.5	0.25	2.5	0.24	16	0.13	0.02	4776170
Dissolved Boron (B)	ug/L	27	ND	ND	17	38	16	10	4778867
Dissolved Calcium (Ca)	ug/L	100000	84000	110000	87000	120000	82000	200	4778867
Dissolved Magnesium (Mg)	ug/L	34000	28000	35000	30000	31000	33000	50	4778867
Dissolved Phosphorus (P)	ug/L	ND	ND	ND	ND	ND	ND	100	4778867
Dissolved Potassium (K)	ug/L	1500	1200	1800	1200	2900	7400	200	4778867
Dissolved Sodium (Na)	ug/L	30000	4800	42000	11000	140000	16000	100	4778867
Dissolved Zinc (Zn)	ug/L	5.1	130	190	ND	370	800	5.0	4778867

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

Maxxam ID		DNY830		
Sampling Date		2016/11/29		
COC Number		587870-01-01		
	UNITS	**12 B**	**RDL**	**QC Batch**
Metals				
Total Iron (Fe)	mg/L	2.9	0.02	4776170
Dissolved Boron (B)	ug/L	46	10	4778867
Dissolved Calcium (Ca)	ug/L	110000	200	4778867
Dissolved Magnesium (Mg)	ug/L	26000	50	4778867
Dissolved Phosphorus (P)	ug/L	ND	100	4778867
Dissolved Potassium (K)	ug/L	3000	200	4778867
Dissolved Sodium (Na)	ug/L	14000	100	4778867
Dissolved Zinc (Zn)	ug/L	190	5.0	4778867

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Maxxam Job #: B6Q1256
Report Date: 2016/12/08

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		DNY824	DNY824	DNY825	DNY826	DNY827		
Sampling Date		2016/11/28	2016/11/28	2016/11/28	2016/11/28	2016/11/28		
COC Number		587870-01-01	587870-01-01	587870-01-01	587870-01-01	587870-01-01		
	UNITS	**19 A**	**19 A Lab-Dup**	**20 A**	**20 B**	**23 A**	**RDL**	**QC Batch**
Semivolatile Organics								
Acenaphthene	ug/L	ND	ND	ND	ND	ND	0.20	4776647
Acenaphthylene	ug/L	ND	ND	ND	ND	ND	0.20	4776647
Anthracene	ug/L	ND	ND	ND	ND	ND	0.20	4776647
Benzo(a)anthracene	ug/L	ND	ND	ND	ND	ND	0.20	4776647
Benzo(a)pyrene	ug/L	ND	ND	ND	ND	ND	0.20	4776647
Benzo(b/j)fluoranthene	ug/L	ND	ND	ND	ND	ND	0.20	4776647
Benzo(g,h,i)perylene	ug/L	ND	ND	ND	ND	ND	0.20	4776647
Benzo(k)fluoranthene	ug/L	ND	ND	ND	ND	ND	0.20	4776647
1-Chloronaphthalene	ug/L	ND	ND	ND	ND	ND	1.0	4776647
2-Chloronaphthalene	ug/L	ND	ND	ND	ND	ND	0.50	4776647
Chrysene	ug/L	ND	ND	ND	ND	ND	0.20	4776647
Dibenz(a,h)anthracene	ug/L	ND	ND	ND	ND	ND	0.20	4776647
Fluoranthene	ug/L	ND	ND	ND	ND	ND	0.20	4776647
Fluorene	ug/L	ND	ND	ND	ND	ND	0.20	4776647
Indeno(1,2,3-cd)pyrene	ug/L	ND	ND	ND	ND	ND	0.20	4776647
1-Methylnaphthalene	ug/L	ND	ND	ND	ND	ND	0.20	4776647
2-Methylnaphthalene	ug/L	ND	ND	ND	ND	ND	0.20	4776647
Naphthalene	ug/L	ND	ND	ND	ND	ND	0.20	4776647
5-Nitroacenaphthene	ug/L	ND	ND	ND	ND	ND	1.0	4776647
Perylene	ug/L	ND	ND	ND	ND	ND	0.20	4776647
Phenanthrene	ug/L	ND	ND	ND	ND	ND	0.20	4776647
Pyrene	ug/L	ND	ND	ND	ND	ND	0.20	4776647
2-Chlorophenol	ug/L	ND	ND	ND	ND	ND	0.30	4776647
4-Chloro-3-Methylphenol	ug/L	ND	ND	ND	ND	ND	0.50	4776647
m/p-Cresol	ug/L	ND	ND	ND	ND	ND	0.50	4776647
o-Cresol	ug/L	ND	ND	ND	ND	ND	0.50	4776647
2,4-Dichlorophenol	ug/L	ND	ND	ND	ND	ND	0.30	4776647
2,6-Dichlorophenol	ug/L	ND	ND	ND	ND	ND	0.50	4776647
2,4-Dimethylphenol	ug/L	ND	ND	ND	ND	ND	0.50	4776647
2,4-Dinitrophenol	ug/L	ND	ND	ND	ND	ND	2.0	4776647
4,6-Dinitro-2-methylphenol	ug/L	ND	ND	ND	ND	ND	2.0	4776647

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B6Q1256
Report Date: 2016/12/08

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		DNY824	DNY824	DNY825	DNY826	DNY827		
Sampling Date		2016/11/28	2016/11/28	2016/11/28	2016/11/28	2016/11/28		
COC Number		587870-01-01	587870-01-01	587870-01-01	587870-01-01	587870-01-01		
	UNITS	**19 A**	**19 A Lab-Dup**	**20 A**	**20 B**	**23 A**	**RDL**	**QC Batch**
4-Nitrophenol	ug/L	ND	ND	ND	ND	ND	1.4	4776647
Pentachlorophenol	ug/L	ND	ND	ND	ND	ND	1.0	4776647
Phenol	ug/L	ND	ND	ND	ND	ND	0.50	4776647
2,3,4,5-Tetrachlorophenol	ug/L	ND	ND	ND	ND	ND	0.40	4776647
2,3,4,6-Tetrachlorophenol	ug/L	ND	ND	ND	ND	ND	0.50	4776647
2,3,5,6-Tetrachlorophenol	ug/L	ND	ND	ND	ND	ND	0.50	4776647
2,3,4-Trichlorophenol	ug/L	ND	ND	ND	ND	ND	0.50	4776647
2,3,5-Trichlorophenol	ug/L	ND	ND	ND	ND	ND	0.50	4776647
2,4,5-Trichlorophenol	ug/L	ND	ND	ND	ND	ND	0.50	4776647
2,4,6-Trichlorophenol	ug/L	ND	ND	ND	ND	ND	0.50	4776647
Benzyl butyl phthalate	ug/L	ND	ND	ND	ND	ND	0.50	4776647
Biphenyl	ug/L	ND	ND	ND	ND	ND	0.50	4776647
Bis(2-chloroethyl)ether	ug/L	ND	ND	ND	ND	ND	0.50	4776647
Bis(2-chloroethoxy)methane	ug/L	ND	ND	ND	ND	ND	0.50	4776647
Bis(2-chloroisopropyl)ether	ug/L	ND	ND	ND	ND	ND	0.50	4776647
Bis(2-ethylhexyl)phthalate	ug/L	ND	ND	ND	ND	ND	2.0	4776647
4-Bromophenyl phenyl ether	ug/L	ND	ND	ND	ND	ND	0.30	4776647
Camphene	ug/L	ND	ND	ND	ND	ND	1.0	4776647
4-Chlorophenyl phenyl ether	ug/L	ND	ND	ND	ND	ND	0.50	4776647
Di-N-butyl phthalate	ug/L	ND	ND	ND	ND	ND	2.0	4776647
Di-N-octyl phthalate	ug/L	ND	ND	ND	ND	ND	0.80	4776647
2,4-Dinitrotoluene	ug/L	ND	ND	ND	ND	ND	0.50	4776647
2,6-Dinitrotoluene	ug/L	ND	ND	ND	ND	ND	0.50	4776647
Diphenyl Ether	ug/L	ND	ND	ND	ND	ND	0.30	4776647
Indole	ug/L	ND	ND	ND	ND	ND	1.0	4776647
Nitrosodiphenylamine/Diphenylamine	ug/L	ND	ND	ND	ND	ND	1.0	4776647
N-Nitroso-di-n-propylamine	ug/L	ND	ND	ND	ND	ND	0.50	4776647
Surrogate Recovery (%)								
2,4,6-Tribromophenol	%	28	45	57	37	66		4776647
2-Fluorobiphenyl	%	94	93	82	82	76		4776647
2-Fluorophenol	%	16	24	33	19	38		4776647
D14-Terphenyl	%	100	113	109	107	107		4776647

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Maxxam Job #: B6Q1256
Report Date: 2016/12/08

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		DNY824	DNY824	DNY825	DNY826	DNY827		
Sampling Date		2016/11/28	2016/11/28	2016/11/28	2016/11/28	2016/11/28		
COC Number		587870-01-01	587870-01-01	587870-01-01	587870-01-01	587870-01-01		
	UNITS	**19 A**	**19 A Lab-Dup**	**20 A**	**20 B**	**23 A**	**RDL**	**QC Batch**
D5-Nitrobenzene	%	85	86	77	75	73		4776647
D5-Phenol	%	23	26	27	19	27		4776647

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Maxxam Job #: B6Q1256
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Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		DNY828	DNY829	DNY830		
Sampling Date		2016/11/28	2016/11/29	2016/11/29		
COC Number		587870-01-01	587870-01-01	587870-01-01		
	UNITS	**23 B**	**12 A**	**12 B**	**RDL**	**QC Batch**
Semivolatile Organics						
Acenaphthene	ug/L	ND	ND	ND	0.20	4776647
Acenaphthylene	ug/L	ND	ND	ND	0.20	4776647
Anthracene	ug/L	ND	ND	ND	0.20	4776647
Benzo(a)anthracene	ug/L	ND	ND	ND	0.20	4776647
Benzo(a)pyrene	ug/L	ND	ND	ND	0.20	4776647
Benzo(b/j)fluoranthene	ug/L	ND	ND	ND	0.20	4776647
Benzo(g,h,i)perylene	ug/L	ND	ND	ND	0.20	4776647
Benzo(k)fluoranthene	ug/L	ND	ND	ND	0.20	4776647
1-Chloronaphthalene	ug/L	ND	ND	ND	1.0	4776647
2-Chloronaphthalene	ug/L	ND	ND	ND	0.50	4776647
Chrysene	ug/L	ND	ND	ND	0.20	4776647
Dibenz(a,h)anthracene	ug/L	ND	ND	ND	0.20	4776647
Fluoranthene	ug/L	ND	ND	ND	0.20	4776647
Fluorene	ug/L	ND	ND	ND	0.20	4776647
Indeno(1,2,3-cd)pyrene	ug/L	ND	ND	ND	0.20	4776647
1-Methylnaphthalene	ug/L	ND	ND	ND	0.20	4776647
2-Methylnaphthalene	ug/L	ND	ND	ND	0.20	4776647
Naphthalene	ug/L	ND	ND	ND	0.20	4776647
5-Nitroacenaphthene	ug/L	ND	ND	ND	1.0	4776647
Perylene	ug/L	ND	ND	ND	0.20	4776647
Phenanthrene	ug/L	ND	ND	ND	0.20	4776647
Pyrene	ug/L	ND	ND	ND	0.20	4776647
2-Chlorophenol	ug/L	ND	ND	ND	0.30	4776647
4-Chloro-3-Methylphenol	ug/L	ND	ND	ND	0.50	4776647
m/p-Cresol	ug/L	ND	ND	ND	0.50	4776647
o-Cresol	ug/L	ND	ND	ND	0.50	4776647
2,4-Dichlorophenol	ug/L	ND	ND	ND	0.30	4776647
2,6-Dichlorophenol	ug/L	ND	ND	ND	0.50	4776647
2,4-Dimethylphenol	ug/L	ND	ND	ND	0.50	4776647
2,4-Dinitrophenol	ug/L	ND	ND	ND	2.0	4776647
4,6-Dinitro-2-methylphenol	ug/L	ND	ND	ND	2.0	4776647
4-Nitrophenol	ug/L	ND	ND	ND	1.4	4776647

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Maxxam Job #: B6Q1256
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City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		DNY828	DNY829	DNY830		
Sampling Date		2016/11/28	2016/11/29	2016/11/29		
COC Number		587870-01-01	587870-01-01	587870-01-01		
	UNITS	**23 B**	**12 A**	**12 B**	**RDL**	**QC Batch**
Pentachlorophenol	ug/L	ND	ND	ND	1.0	4776647
Phenol	ug/L	ND	ND	ND	0.50	4776647
2,3,4,5-Tetrachlorophenol	ug/L	ND	ND	ND	0.40	4776647
2,3,4,6-Tetrachlorophenol	ug/L	ND	ND	ND	0.50	4776647
2,3,5,6-Tetrachlorophenol	ug/L	ND	ND	ND	0.50	4776647
2,3,4-Trichlorophenol	ug/L	ND	ND	ND	0.50	4776647
2,3,5-Trichlorophenol	ug/L	ND	ND	ND	0.50	4776647
2,4,5-Trichlorophenol	ug/L	ND	ND	ND	0.50	4776647
2,4,6-Trichlorophenol	ug/L	ND	ND	ND	0.50	4776647
Benzyl butyl phthalate	ug/L	ND	ND	ND	0.50	4776647
Biphenyl	ug/L	ND	ND	ND	0.50	4776647
Bis(2-chloroethyl)ether	ug/L	ND	ND	ND	0.50	4776647
Bis(2-chloroethoxy)methane	ug/L	ND	ND	ND	0.50	4776647
Bis(2-chloroisopropyl)ether	ug/L	ND	ND	ND	0.50	4776647
Bis(2-ethylhexyl)phthalate	ug/L	ND	ND	ND	2.0	4776647
4-Bromophenyl phenyl ether	ug/L	ND	ND	ND	0.30	4776647
Camphene	ug/L	ND	ND	ND	1.0	4776647
4-Chlorophenyl phenyl ether	ug/L	ND	ND	ND	0.50	4776647
Di-N-butyl phthalate	ug/L	ND	ND	ND	2.0	4776647
Di-N-octyl phthalate	ug/L	ND	ND	ND	0.80	4776647
2,4-Dinitrotoluene	ug/L	ND	ND	ND	0.50	4776647
2,6-Dinitrotoluene	ug/L	ND	ND	ND	0.50	4776647
Diphenyl Ether	ug/L	ND	ND	ND	0.30	4776647
Indole	ug/L	ND	ND	ND	1.0	4776647
Nitrosodiphenylamine/Diphenylamine	ug/L	ND	ND	ND	1.0	4776647
N-Nitroso-di-n-propylamine	ug/L	ND	ND	ND	0.50	4776647
Surrogate Recovery (%)						
2,4,6-Tribromophenol	%	14	23	59		4776647
2-Fluorobiphenyl	%	85	80	81		4776647
2-Fluorophenol	%	7.3 (1)	16	27		4776647
D14-Terphenyl	%	104	119	108		4776647

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected
(1) Surrogate recovery was below the lower control limit. This may represent a low bias in some results.

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Maxxam Job #: B6Q1256
Report Date: 2016/12/08

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		DNY828	DNY829	DNY830		
Sampling Date		2016/11/28	2016/11/29	2016/11/29		
COC Number		587870-01-01	587870-01-01	587870-01-01		
	UNITS	**23 B**	**12 A**	**12 B**	**RDL**	**QC Batch**
D5-Nitrobenzene	%	76	71	72		4776647
D5-Phenol	%	17	18	21		4776647

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B6Q1256
Report Date: 2016/12/08

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		DNY824	DNY825	DNY825	DNY826		DNY827		
Sampling Date		2016/11/28	2016/11/28	2016/11/28	2016/11/28		2016/11/28		
COC Number		587870-01-01	587870-01-01	587870-01-01	587870-01-01		587870-01-01		
	UNITS	**19 A**	**20 A**	**20 A Lab-Dup**	**20 B**	**QC Batch**	**23 A**	**RDL**	**QC Batch**
Volatile Organics									
Acetone (2-Propanone)	ug/L	ND	ND	ND	ND	4775597	ND	10	4774441
Benzene	ug/L	ND	ND	ND	ND	4775597	ND	0.10	4774441
Bromodichloromethane	ug/L	ND	ND	ND	ND	4775597	ND	0.10	4774441
Acrolein	ug/L	ND	ND	ND	ND	4775601	ND	10	4774445
Bromoform	ug/L	ND	ND	ND	ND	4775597	ND	0.20	4774441
Bromomethane	ug/L	ND	ND	ND	ND	4775597	ND	0.50	4774441
Carbon Tetrachloride	ug/L	ND	ND	ND	ND	4775597	ND	0.10	4774441
Chlorobenzene	ug/L	ND	ND	ND	ND	4775597	ND	0.10	4774441
Chloroform	ug/L	ND	ND	ND	ND	4775597	ND	0.10	4774441
Acrylonitrile	ug/L	ND	ND	ND	ND	4775601	ND	5.0	4774445
Chloromethane	ug/L	ND	ND	ND	ND	4775597	ND	0.50	4774441
Dibromochloromethane	ug/L	ND	ND	ND	ND	4775597	ND	0.20	4774441
1,2-Dichlorobenzene	ug/L	ND	ND	ND	ND	4775597	ND	0.20	4774441
1,3-Dichlorobenzene	ug/L	ND	ND	ND	ND	4775597	ND	0.20	4774441
1,4-Dichlorobenzene	ug/L	ND	ND	ND	ND	4775597	ND	0.20	4774441
1,1-Dichloroethane	ug/L	ND	ND	ND	ND	4775597	ND	0.10	4774441
1,2-Dichloroethane	ug/L	ND	ND	ND	ND	4775597	ND	0.20	4774441
1,1-Dichloroethylene	ug/L	ND	ND	ND	ND	4775597	ND	0.10	4774441
cis-1,2-Dichloroethylene	ug/L	ND	ND	ND	ND	4775597	ND	0.10	4774441
trans-1,2-Dichloroethylene	ug/L	ND	ND	ND	ND	4775597	ND	0.10	4774441
1,2-Dichloropropane	ug/L	ND	ND	ND	ND	4775597	ND	0.10	4774441
cis-1,3-Dichloropropene	ug/L	ND	ND	ND	ND	4775597	ND	0.20	4774441
trans-1,3-Dichloropropene	ug/L	ND	ND	ND	ND	4775597	ND	0.20	4774441
Ethylbenzene	ug/L	ND	ND	ND	ND	4775597	ND	0.10	4774441
Ethylene Dibromide	ug/L	ND	ND	ND	ND	4775597	ND	0.20	4774441
Methylene Chloride(Dichloromethane)	ug/L	ND	ND	ND	ND	4775597	ND	0.50	4774441
Methyl Ethyl Ketone (2-Butanone)	ug/L	ND	ND	ND	ND	4775597	ND	5.0	4774441
Methyl Isobutyl Ketone	ug/L	ND	ND	ND	ND	4775597	ND	5.0	4774441
Methyl t-butyl ether (MTBE)	ug/L	ND	ND	ND	ND	4775597	ND	0.20	4774441
Styrene	ug/L	ND	ND	ND	ND	4775597	ND	0.20	4774441
1,1,1,2-Tetrachloroethane	ug/L	ND	ND	ND	ND	4775597	ND	0.20	4774441

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B6Q1256
Report Date: 2016/12/08

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		DNY824	DNY825	DNY825	DNY826		DNY827		
Sampling Date		2016/11/28	2016/11/28	2016/11/28	2016/11/28		2016/11/28		
COC Number		587870-01-01	587870-01-01	587870-01-01	587870-01-01		587870-01-01		
	UNITS	**19 A**	**20 A**	**20 A Lab-Dup**	**20 B**	**QC Batch**	**23 A**	**RDL**	**QC Batch**
1,1,2,2-Tetrachloroethane	ug/L	ND	ND	ND	ND	4775597	ND	0.20	4774441
Tetrachloroethylene	ug/L	ND	ND	ND	ND	4775597	ND	0.10	4774441
Toluene	ug/L	ND	ND	ND	ND	4775597	ND	0.20	4774441
1,1,1-Trichloroethane	ug/L	ND	ND	ND	ND	4775597	ND	0.10	4774441
1,1,2-Trichloroethane	ug/L	ND	ND	ND	ND	4775597	ND	0.20	4774441
Trichloroethylene	ug/L	ND	ND	ND	ND	4775597	ND	0.10	4774441
Trichlorofluoromethane (FREON 11)	ug/L	ND	ND	ND	ND	4775597	ND	0.20	4774441
Vinyl Chloride	ug/L	ND	ND	ND	ND	4775597	ND	0.20	4774441
p+m-Xylene	ug/L	ND	ND	ND	ND	4775597	ND	0.10	4774441
o-Xylene	ug/L	ND	ND	ND	ND	4775597	ND	0.10	4774441
Total Xylenes	ug/L	ND	ND	ND	ND	4775597	ND	0.10	4774441
Surrogate Recovery (%)									
4-Bromofluorobenzene	%	94	93	91	92	4775597	95		4774441
D4-1,2-Dichloroethane	%	109	109	108	107	4775597	105		4774441
D8-Toluene	%	97	96	95	95	4775597	101		4774441

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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City of Guelph
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Site Location: FALL GW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		DNY828	DNY828	DNY829	DNY830		
Sampling Date		2016/11/28	2016/11/28	2016/11/29	2016/11/29		
COC Number		587870-01-01	587870-01-01	587870-01-01	587870-01-01		
	UNITS	**23 B**	**23 B Lab-Dup**	**12 A**	**12 B**	**RDL**	**QC Batch**
Volatile Organics							
Acetone (2-Propanone)	ug/L	ND	ND	ND	ND	10	4774441
Benzene	ug/L	ND	ND	ND	ND	0.10	4774441
Bromodichloromethane	ug/L	ND	ND	ND	ND	0.10	4774441
Acrolein	ug/L	ND	ND	ND	ND	10	4774445
Bromoform	ug/L	ND	ND	ND	ND	0.20	4774441
Bromomethane	ug/L	ND	ND	ND	ND	0.50	4774441
Carbon Tetrachloride	ug/L	ND	ND	ND	ND	0.10	4774441
Chlorobenzene	ug/L	ND	ND	ND	ND	0.10	4774441
Chloroform	ug/L	0.13	0.13	ND	ND	0.10	4774441
Acrylonitrile	ug/L	ND	ND	ND	ND	5.0	4774445
Chloromethane	ug/L	ND	ND	ND	ND	0.50	4774441
Dibromochloromethane	ug/L	ND	ND	ND	ND	0.20	4774441
1,2-Dichlorobenzene	ug/L	ND	ND	ND	ND	0.20	4774441
1,3-Dichlorobenzene	ug/L	ND	ND	ND	ND	0.20	4774441
1,4-Dichlorobenzene	ug/L	ND	ND	ND	ND	0.20	4774441
1,1-Dichloroethane	ug/L	ND	ND	ND	ND	0.10	4774441
1,2-Dichloroethane	ug/L	ND	ND	ND	ND	0.20	4774441
1,1-Dichloroethylene	ug/L	ND	ND	ND	ND	0.10	4774441
cis-1,2-Dichloroethylene	ug/L	ND	ND	ND	ND	0.10	4774441
trans-1,2-Dichloroethylene	ug/L	ND	ND	ND	ND	0.10	4774441
1,2-Dichloropropane	ug/L	ND	ND	ND	ND	0.10	4774441
cis-1,3-Dichloropropene	ug/L	ND	ND	ND	ND	0.20	4774441
trans-1,3-Dichloropropene	ug/L	ND	ND	ND	ND	0.20	4774441
Ethylbenzene	ug/L	ND	ND	ND	ND	0.10	4774441
Ethylene Dibromide	ug/L	ND	ND	ND	ND	0.20	4774441
Methylene Chloride(Dichloromethane)	ug/L	ND	ND	ND	ND	0.50	4774441
Methyl Ethyl Ketone (2-Butanone)	ug/L	ND	ND	ND	ND	5.0	4774441
Methyl Isobutyl Ketone	ug/L	ND	ND	ND	ND	5.0	4774441
Methyl t-butyl ether (MTBE)	ug/L	ND	ND	ND	ND	0.20	4774441
Styrene	ug/L	ND	ND	ND	ND	0.20	4774441
1,1,1,2-Tetrachloroethane	ug/L	ND	ND	ND	ND	0.20	4774441

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B6Q1256
Report Date: 2016/12/08

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		DNY828	DNY828	DNY829	DNY830		
Sampling Date		2016/11/28	2016/11/28	2016/11/29	2016/11/29		
COC Number		587870-01-01	587870-01-01	587870-01-01	587870-01-01		
	UNITS	**23 B**	**23 B Lab-Dup**	**12 A**	**12 B**	**RDL**	**QC Batch**
1,1,2,2-Tetrachloroethane	ug/L	ND	ND	ND	ND	0.20	4774441
Tetrachloroethylene	ug/L	0.10	ND	ND	ND	0.10	4774441
Toluene	ug/L	ND	ND	ND	ND	0.20	4774441
1,1,1-Trichloroethane	ug/L	ND	ND	ND	ND	0.10	4774441
1,1,2-Trichloroethane	ug/L	ND	ND	ND	ND	0.20	4774441
Trichloroethylene	ug/L	ND	ND	ND	ND	0.10	4774441
Trichlorofluoromethane (FREON 11)	ug/L	ND	ND	ND	ND	0.20	4774441
Vinyl Chloride	ug/L	ND	ND	ND	ND	0.20	4774441
p+m-Xylene	ug/L	ND	ND	ND	ND	0.10	4774441
o-Xylene	ug/L	ND	ND	ND	ND	0.10	4774441
Total Xylenes	ug/L	ND	ND	ND	ND	0.10	4774441
Surrogate Recovery (%)							
4-Bromofluorobenzene	%	101	100	101	100		4774441
D4-1,2-Dichloroethane	%	109	110	108	109		4774441
D8-Toluene	%	97	95	97	96		4774441

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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City of Guelph
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GENERAL COMMENTS

Results relate only to the items tested.

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Maxxam Job #: B6Q1256
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QUALITY ASSURANCE REPORT

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4774441	4-Bromofluorobenzene	2016/12/02	103	70 - 130	104	70 - 130	99	%				
4774441	D4-1,2-Dichloroethane	2016/12/02	100	70 - 130	102	70 - 130	103	%				
4774441	D8-Toluene	2016/12/02	100	70 - 130	100	70 - 130	98	%				
4775597	4-Bromofluorobenzene	2016/12/05	100	70 - 130	101	70 - 130	93	%				
4775597	D4-1,2-Dichloroethane	2016/12/05	101	70 - 130	98	70 - 130	104	%				
4775597	D8-Toluene	2016/12/05	101	70 - 130	101	70 - 130	98	%				
4776647	2,4,6-Tribromophenol	2016/12/05	99	10 - 130	88	10 - 130	66	%				
4776647	2-Fluorobiphenyl	2016/12/05	70	30 - 130	84	30 - 130	82	%				
4776647	2-Fluorophenol	2016/12/05	37	10 - 130	51	10 - 130	47	%				
4776647	D14-Terphenyl	2016/12/05	104	30 - 130	102	30 - 130	89	%				
4776647	D5-Nitrobenzene	2016/12/05	66	30 - 130	85	30 - 130	77	%				
4776647	D5-Phenol	2016/12/05	26	10 - 130	35	10 - 130	30	%				
4774441	1,1,1,2-Tetrachloroethane	2016/12/02	88	70 - 130	100	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4774441	1,1,1-Trichloroethane	2016/12/02	91	70 - 130	101	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4774441	1,1,2,2-Tetrachloroethane	2016/12/02	86	70 - 130	100	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4774441	1,1,2-Trichloroethane	2016/12/02	83	70 - 130	95	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4774441	1,1-Dichloroethane	2016/12/02	99	70 - 130	105	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4774441	1,1-Dichloroethylene	2016/12/02	116	70 - 130	120	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4774441	1,2-Dichlorobenzene	2016/12/02	86	70 - 130	95	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4774441	1,2-Dichloroethane	2016/12/02	89	70 - 130	100	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4774441	1,2-Dichloropropane	2016/12/02	85	70 - 130	95	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4774441	1,3-Dichlorobenzene	2016/12/02	89	70 - 130	96	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4774441	1,4-Dichlorobenzene	2016/12/02	92	70 - 130	101	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4774441	Acetone (2-Propanone)	2016/12/02	107	60 - 140	115	60 - 140	ND, RDL=10	ug/L	NC	30		
4774441	Benzene	2016/12/02	87	70 - 130	98	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4774441	Bromodichloromethane	2016/12/02	89	70 - 130	100	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4774441	Bromoform	2016/12/02	88	70 - 130	101	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4774441	Bromomethane	2016/12/02	67	60 - 140	83	60 - 140	ND, RDL=0.50	ug/L	NC	30		
4774441	Carbon Tetrachloride	2016/12/02	95	70 - 130	107	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4774441	Chlorobenzene	2016/12/02	91	70 - 130	100	70 - 130	ND, RDL=0.10	ug/L	NC	30		

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Maxxam Job #: B6Q1256
Report Date: 2016/12/08

QUALITY ASSURANCE REPORT(CONT'D)

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4774441	Chloroform	2016/12/02	88	70 - 130	98	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4774441	Chloromethane	2016/12/02	69	60 - 140	76	60 - 140	ND, RDL=0.50	ug/L	NC	30		
4774441	cis-1,2-Dichloroethylene	2016/12/02	94	70 - 130	103	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4774441	cis-1,3-Dichloropropene	2016/12/02	92	70 - 130	103	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4774441	Dibromochloromethane	2016/12/02	89	70 - 130	102	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4774441	Ethylbenzene	2016/12/02	93	70 - 130	103	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4774441	Ethylene Dibromide	2016/12/02	85	70 - 130	96	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4774441	Methyl Ethyl Ketone (2-Butanone)	2016/12/02	79	60 - 140	94	60 - 140	ND, RDL=5.0	ug/L	NC	30		
4774441	Methyl Isobutyl Ketone	2016/12/02	82	70 - 130	97	70 - 130	ND, RDL=5.0	ug/L	NC	30		
4774441	Methyl t-butyl ether (MTBE)	2016/12/02	113	70 - 130	112	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4774441	Methylene Chloride(Dichloromethane)	2016/12/02	116	70 - 130	104	70 - 130	ND, RDL=0.50	ug/L	NC	30		
4774441	o-Xylene	2016/12/02	93	70 - 130	102	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4774441	p+m-Xylene	2016/12/02	92	70 - 130	102	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4774441	Styrene	2016/12/02	97	70 - 130	105	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4774441	Tetrachloroethylene	2016/12/02	90	70 - 130	101	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4774441	Toluene	2016/12/02	89	70 - 130	97	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4774441	Total Xylenes	2016/12/02					ND, RDL=0.10	ug/L	NC	30		
4774441	trans-1,2-Dichloroethylene	2016/12/02	118	70 - 130	109	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4774441	trans-1,3-Dichloropropene	2016/12/02	90	70 - 130	100	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4774441	Trichloroethylene	2016/12/02	93	70 - 130	101	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4774441	Trichlorofluoromethane (FREON 11)	2016/12/02	100	70 - 130	111	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4774441	Vinyl Chloride	2016/12/02	88	70 - 130	96	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4774445	Acrolein	2016/12/05	84	60 - 140	98	60 - 140	ND, RDL=10	ug/L	NC	30		
4774445	Acrylonitrile	2016/12/05	131	60 - 140	119	60 - 140	ND, RDL=5.0	ug/L	NC	30		
4774935	Alkalinity (Total as CaCO3)	2016/12/02			96	85 - 115	ND, RDL=1.0	mg/L	2.0	20		
4774937	Conductivity	2016/12/02			100	85 - 115	ND, RDL=1.0	umho/cm	0.084	25		
4774941	pH	2016/12/02			101	98 - 103			1.1	N/A		
4775597	1,1,1,2-Tetrachloroethane	2016/12/05	113	70 - 130	108	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	1,1,1-Trichloroethane	2016/12/05	110	70 - 130	101	70 - 130	ND, RDL=0.10	ug/L	NC	30		

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Maxxam Job #: B6Q1256
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QUALITY ASSURANCE REPORT(CONT'D)

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4775597	1,1,2,2-Tetrachloroethane	2016/12/05	116	70 - 130	111	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	1,1,2-Trichloroethane	2016/12/05	114	70 - 130	109	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	1,1-Dichloroethane	2016/12/05	111	70 - 130	101	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	1,1-Dichloroethylene	2016/12/05	113	70 - 130	105	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	1,2-Dichlorobenzene	2016/12/05	106	70 - 130	106	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	1,2-Dichloroethane	2016/12/05	111	70 - 130	103	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	1,2-Dichloropropane	2016/12/05	113	70 - 130	104	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	1,3-Dichlorobenzene	2016/12/05	105	70 - 130	108	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	1,4-Dichlorobenzene	2016/12/05	105	70 - 130	109	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	Acetone (2-Propanone)	2016/12/05	101	60 - 140	97	60 - 140	ND, RDL=10	ug/L	NC	30		
4775597	Benzene	2016/12/05	112	70 - 130	104	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	Bromodichloromethane	2016/12/05	115	70 - 130	106	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	Bromoform	2016/12/05	115	70 - 130	115	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	Bromomethane	2016/12/05	60 (1)	60 - 140	71	60 - 140	ND, RDL=0.50	ug/L	NC	30		
4775597	Carbon Tetrachloride	2016/12/05	111	70 - 130	104	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	Chlorobenzene	2016/12/05	113	70 - 130	108	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	Chloroform	2016/12/05	110	70 - 130	101	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	Chloromethane	2016/12/05	93	60 - 140	85	60 - 140	ND, RDL=0.50	ug/L	NC	30		
4775597	cis-1,2-Dichloroethylene	2016/12/05	118	70 - 130	110	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	cis-1,3-Dichloropropene	2016/12/05	113	70 - 130	110	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	Dibromochloromethane	2016/12/05	112	70 - 130	111	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	Ethylbenzene	2016/12/05	113	70 - 130	109	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	Ethylene Dibromide	2016/12/05	114	70 - 130	110	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	Methyl Ethyl Ketone (2-Butanone)	2016/12/05	115	60 - 140	109	60 - 140	ND, RDL=5.0	ug/L	NC	30		
4775597	Methyl Isobutyl Ketone	2016/12/05	121	70 - 130	118	70 - 130	ND, RDL=5.0	ug/L	NC	30		
4775597	Methyl t-butyl ether (MTBE)	2016/12/05	119	70 - 130	113	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	Methylene Chloride(Dichloromethane)	2016/12/05	107	70 - 130	100	70 - 130	ND, RDL=0.50	ug/L	NC	30		
4775597	o-Xylene	2016/12/05	113	70 - 130	111	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	p+m-Xylene	2016/12/05	109	70 - 130	108	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	Styrene	2016/12/05	111	70 - 130	114	70 - 130	ND, RDL=0.20	ug/L	NC	30		

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QUALITY ASSURANCE REPORT(CONT'D)

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4775597	Tetrachloroethylene	2016/12/05	106	70 - 130	102	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	Toluene	2016/12/05	111	70 - 130	103	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	Total Xylenes	2016/12/05					ND, RDL=0.10	ug/L	NC	30		
4775597	trans-1,2-Dichloroethylene	2016/12/05	111	70 - 130	104	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	trans-1,3-Dichloropropene	2016/12/05	110	70 - 130	111	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	Trichloroethylene	2016/12/05	108	70 - 130	101	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	Trichlorofluoromethane (FREON 11)	2016/12/05	110	70 - 130	102	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	Vinyl Chloride	2016/12/05	111	70 - 130	102	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775601	Acrolein	2016/12/05	104	60 - 140	103	60 - 140	ND, RDL=10	ug/L	NC	30		
4775601	Acrylonitrile	2016/12/05	108	60 - 140	102	60 - 140	ND, RDL=5.0	ug/L	NC	30		
4775899	Total BOD	2016/12/07					ND, RDL=2.0	mg/L	NC	25	102	80 - 120
4776170	Total Iron (Fe)	2016/12/02	98	80 - 120	107	80 - 120	ND, RDL=0.02	mg/L				
4776212	Total Chemical Oxygen Demand (COD)	2016/12/05	107	75 - 125	101	75 - 125	ND, RDL=4.0	mg/L	NC	25		
4776392	Dissolved Chloride (Cl)	2016/12/05	NC	80 - 120	104	80 - 120	ND, RDL=1.0	mg/L	0.16	20		
4776411	Dissolved Sulphate (SO4)	2016/12/05	NC	75 - 125	107	80 - 120	ND, RDL=1.0	mg/L	1.1	20		
4776647	1-Chloronaphthalene	2016/12/05	57	30 - 130	73	30 - 130	ND, RDL=1.0	ug/L	NC	40		
4776647	1-Methylnaphthalene	2016/12/05	65	30 - 130	83	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	2,3,4,5-Tetrachlorophenol	2016/12/05	96	10 - 130	94	10 - 130	ND, RDL=0.40	ug/L	NC	40		
4776647	2,3,4,6-Tetrachlorophenol	2016/12/05	95	10 - 130	92	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	2,3,4-Trichlorophenol	2016/12/05	85	10 - 130	89	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	2,3,5,6-Tetrachlorophenol	2016/12/05	90	10 - 130	80	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	2,3,5-Trichlorophenol	2016/12/05	95	10 - 130	102	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	2,4,5-Trichlorophenol	2016/12/05	87	10 - 130	91	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	2,4,6-Trichlorophenol	2016/12/05	83	10 - 130	89	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	2,4-Dichlorophenol	2016/12/05	54	10 - 130	71	10 - 130	ND, RDL=0.30	ug/L	NC	40		
4776647	2,4-Dimethylphenol	2016/12/05	63	10 - 130	16	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	2,4-Dinitrophenol	2016/12/05	86	10 - 130	61	10 - 130	ND, RDL=2.0	ug/L	NC	40		
4776647	2,4-Dinitrotoluene	2016/12/05	98	30 - 130	101	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	2,6-Dichlorophenol	2016/12/05	67	10 - 130	81	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	2,6-Dinitrotoluene	2016/12/05	83	30 - 130	93	30 - 130	ND, RDL=0.50	ug/L	NC	40		

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QUALITY ASSURANCE REPORT(CONT'D)

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4776647	2-Chloronaphthalene	2016/12/05	71	30 - 130	84	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	2-Chlorophenol	2016/12/05	55	10 - 130	73	10 - 130	ND, RDL=0.30	ug/L	NC	40		
4776647	2-Methylnaphthalene	2016/12/05	62	30 - 130	79	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	4,6-Dinitro-2-methylphenol	2016/12/05	112	10 - 130	100	10 - 130	ND, RDL=2.0	ug/L	NC	40		
4776647	4-Bromophenyl phenyl ether	2016/12/05	85	30 - 130	89	30 - 130	ND, RDL=0.30	ug/L	NC	40		
4776647	4-Chloro-3-Methylphenol	2016/12/05	74	10 - 130	80	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	4-Chlorophenyl phenyl ether	2016/12/05	80	30 - 130	86	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	4-Nitrophenol	2016/12/05	42	10 - 130	44	10 - 130	ND, RDL=1.4	ug/L	NC	40		
4776647	5-Nitroacenaphthene	2016/12/05	103	30 - 130	102	30 - 130	ND, RDL=1.0	ug/L	NC	40		
4776647	Acenaphthene	2016/12/05	77	30 - 130	91	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Acenaphthylene	2016/12/05	68	30 - 130	82	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Anthracene	2016/12/05	95	30 - 130	94	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Benzo(a)anthracene	2016/12/05	99	30 - 130	96	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Benzo(a)pyrene	2016/12/05	101	30 - 130	98	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Benzo(b/j)fluoranthene	2016/12/05	100	30 - 130	98	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Benzo(g,h,i)perylene	2016/12/05	81	30 - 130	77	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Benzo(k)fluoranthene	2016/12/05	111	30 - 130	112	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Benzyl butyl phthalate	2016/12/05	106	30 - 130	104	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	Biphenyl	2016/12/05	65	30 - 130	79	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	Bis(2-chloroethoxy)methane	2016/12/05	60	30 - 130	81	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	Bis(2-chloroethyl)ether	2016/12/05	63	30 - 130	83	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	Bis(2-chloroisopropyl)ether	2016/12/05	60	30 - 130	84	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	Bis(2-ethylhexyl)phthalate	2016/12/05	102	30 - 130	103	30 - 130	ND, RDL=2.0	ug/L	NC	40		
4776647	Camphene	2016/12/05	38	30 - 130	48	30 - 130	ND, RDL=1.0	ug/L	NC	40		
4776647	Chrysene	2016/12/05	101	30 - 130	98	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Dibenz(a,h)anthracene	2016/12/05	85	30 - 130	81	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Di-N-butyl phthalate	2016/12/05	111	30 - 130	110	30 - 130	ND, RDL=2.0	ug/L	NC	40		
4776647	Di-N-octyl phthalate	2016/12/05	121	30 - 130	121	30 - 130	ND, RDL=0.80	ug/L	NC	40		
4776647	Diphenyl Ether	2016/12/05	66	30 - 130	82	30 - 130	ND, RDL=0.30	ug/L	NC	40		
4776647	Fluoranthene	2016/12/05	101	30 - 130	97	30 - 130	ND, RDL=0.20	ug/L	NC	40		

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QUALITY ASSURANCE REPORT(CONT'D)

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4776647	Fluorene	2016/12/05	83	30 - 130	90	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Indeno(1,2,3-cd)pyrene	2016/12/05	79	30 - 130	75	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Indole	2016/12/05	32	30 - 130	39	30 - 130	ND, RDL=1.0	ug/L	NC	40		
4776647	m/p-Cresol	2016/12/05	52	10 - 130	57	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	Naphthalene	2016/12/05	63	30 - 130	81	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Nitrosodiphenylamine/Diphenylamine	2016/12/05	102	30 - 130	96	30 - 130	ND, RDL=1.0	ug/L	NC	40		
4776647	N-Nitroso-di-n-propylamine	2016/12/05	72	30 - 130	91	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	o-Cresol	2016/12/05	52	10 - 130	52	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	Pentachlorophenol	2016/12/05	93	10 - 130	77	10 - 130	ND, RDL=1.0	ug/L	NC	40		
4776647	Perylene	2016/12/05	97	30 - 130	94	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Phenanthrene	2016/12/05	91	30 - 130	90	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Phenol	2016/12/05	22	10 - 130	30	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	Pyrene	2016/12/05	107	30 - 130	104	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776662	Nitrate (N)	2016/12/05	101	80 - 120	94	80 - 120	ND, RDL=0.10	mg/L	NC	20		
4776662	Nitrite (N)	2016/12/05	101	80 - 120	97	80 - 120	ND, RDL=0.010	mg/L	NC	20		
4776876	Dissolved Chloride (Cl)	2016/12/05	NC	80 - 120	105	80 - 120	ND, RDL=1.0	mg/L	0.084	20		
4776910	Dissolved Sulphate (SO4)	2016/12/05	NC	75 - 125	107	80 - 120	ND, RDL=1.0	mg/L	0.73	20		
4778037	Total Phosphorus	2016/12/06	82	N/A	94	N/A	ND, RDL=0.020	mg/L	NC	20	98	80 - 120
4778122	Total Kjeldahl Nitrogen (TKN)	2016/12/05	103	80 - 120	101	80 - 120	ND, RDL=0.10	mg/L	NC	20	108	80 - 120
4778273	Phenols-4AAP	2016/12/05	98	80 - 120	97	85 - 115	ND, RDL=0.0010	mg/L	NC	20		
4778364	Total Kjeldahl Nitrogen (TKN)	2016/12/06	NC	80 - 120	101	80 - 120	ND, RDL=0.10	mg/L	NC	20	96	80 - 120
4778625	Total Ammonia-N	2016/12/08	95	80 - 120	98	85 - 115	ND, RDL=0.050	mg/L	NC	20		
4778867	Dissolved Boron (B)	2016/12/06	101	80 - 120	102	80 - 120	ND, RDL=10	ug/L				
4778867	Dissolved Calcium (Ca)	2016/12/06	NC	80 - 120	99	80 - 120	ND, RDL=200	ug/L				
4778867	Dissolved Magnesium (Mg)	2016/12/06	NC	80 - 120	102	80 - 120	ND, RDL=50	ug/L				
4778867	Dissolved Phosphorus (P)	2016/12/06	108	80 - 120	107	80 - 120	ND, RDL=100	ug/L				
4778867	Dissolved Potassium (K)	2016/12/06	102	80 - 120	101	80 - 120	ND, RDL=200	ug/L				

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City of Guelph
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Site Location: FALL GW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4778867	Dissolved Sodium (Na)	2016/12/06	98	80 - 120	103	80 - 120	ND, RDL=100	ug/L				
4778867	Dissolved Zinc (Zn)	2016/12/06	103	80 - 120	103	80 - 120	ND, RDL=5.0	ug/L				
4779990	Phenols-4AAP	2016/12/06	100	80 - 120	101	85 - 115	ND, RDL=0.0010	mg/L	NC	20		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) The recovery was below the lower control limit. This may represent a low bias in some results for this specific analyte.

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Maxxam Job #: B6Q1256
Report Date: 2016/12/08

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Cristina Carriere

Cristina Carriere, Scientific Services

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Maxxam
A Bureau Veritas Group Company

Your P.O. #: 720.8121.3516
Your Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your C.O.C. #: 587870-02-01

Attention:Andrew Shouldice

City of Guelph
Eastview Landfill
186 Eastview Road
Guelph, ON
CANADA N1E 1Z6

Report Date: 2016/12/08
Report #: R4279562
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6Q1379
Received: 2016/11/30, 15:31

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
ABN Compounds in Water by GC/MS	3	2016/12/02	2016/12/05	CAM SOP-00301	EPA 8270 m
Alkalinity	3	N/A	2016/12/02	CAM SOP-00448	SM 22 2320 B m
Biochemical Oxygen Demand (BOD)	3	2016/12/02	2016/12/07	CAM SOP-00427	SM 22 5210B m
Chloride by Automated Colourimetry	3	N/A	2016/12/05	CAM SOP-00463	EPA 325.2 m
Chemical Oxygen Demand	2	N/A	2016/12/05	CAM SOP-00416	SM 22 5220 D m
Chemical Oxygen Demand	1	N/A	2016/12/06	CAM SOP-00416	SM 22 5220 D m
Conductivity	3	N/A	2016/12/02	CAM SOP-00414	SM 22 2510 m
Dissolved Metals by ICPMS	3	N/A	2016/12/06	CAM SOP-00447	EPA 6020B m
Total Metals Analysis by ICP	3	2016/12/05	2016/12/05	CAM SOP-00408	EPA 6010C m
Total Ammonia-N	1	N/A	2016/12/06	CAM SOP-00441	EPA GS I-2522-90 m
Total Ammonia-N	2	N/A	2016/12/08	CAM SOP-00441	EPA GS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (1)	3	N/A	2016/12/05	CAM SOP-00440	SM 22 4500-NO3I/NO2B
pH	3	N/A	2016/12/02	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	1	N/A	2016/12/05	CAM SOP-00444	OMOE E3179 m
Phenols (4AAP)	2	N/A	2016/12/06	CAM SOP-00444	OMOE E3179 m
Sulphate by Automated Colourimetry	3	N/A	2016/12/05	CAM SOP-00464	EPA 375.4 m
Total Kjeldahl Nitrogen in Water	1	2016/12/02	2016/12/05	CAM SOP-00938	OMOE E3516 m
Total Kjeldahl Nitrogen in Water	2	2016/12/02	2016/12/06	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	3	2016/12/04	2016/12/06	CAM SOP-00407	SM 22 4500 P B H m
Volatile Organic Compounds in Water	3	N/A	2016/12/02	CAM SOP-00226	EPA 8260C m
Non-Routine Volatile Organic Compounds	3	N/A	2016/12/05	CAM SOP-00226	EPA 8260 m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

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Your P.O. #: 720.8121.3516
Your Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your C.O.C. #: 587870-02-01

Attention:Andrew Shouldice

City of Guelph
Eastview Landfill
186 Eastview Road
Guelph, ON
CANADA N1E 1Z6

Report Date: 2016/12/08
Report #: R4279562
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6Q1379
Received: 2016/11/30, 15:31

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
James Aspin, Senior Project Manager
Email: JAspin@maxxam.ca
Phone# (905)817-5771

==========

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Maxxam Job #: B6Q1379
Report Date: 2016/12/08

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

RESULTS OF ANALYSES OF WATER

Maxxam ID		DNZ516	DNZ516			DNZ517	DNZ517		
Sampling Date		2016/11/29	2016/11/29			2016/11/29	2016/11/29		
COC Number		587870-02-01	587870-02-01			587870-02-01	587870-02-01		
	UNITS	**9**	**9 Lab-Dup**	**RDL**	**QC Batch**	**10**	**10 Lab-Dup**	**RDL**	**QC Batch**
Inorganics									
Total Ammonia-N	mg/L	ND		0.050	4778625	0.071		0.050	4776041
Total BOD	mg/L	ND		2.0	4775901	ND		2.0	4775901
Total Chemical Oxygen Demand (COD)	mg/L	ND		4.0	4776212	8.6	7.3	4.0	4778662
Conductivity	umho/cm	390		1.0	4774937	700		1.0	4774937
Total Kjeldahl Nitrogen (TKN)	mg/L	ND (1)		0.20	4775883	0.16		0.10	4776033
pH	pH	8.04			4774941	8.00			4774941
Phenols-4AAP	mg/L	ND	ND	0.0010	4779990	ND		0.0010	4778273
Total Phosphorus	mg/L	ND		0.020	4778033	0.16		0.040	4778037
Dissolved Sulphate (SO4)	mg/L	35		1.0	4776411	89		1.0	4776411
Alkalinity (Total as CaCO3)	mg/L	130		1.0	4774935	230		1.0	4774935
Dissolved Chloride (Cl)	mg/L	11		1.0	4776392	37		1.0	4776392
Nitrite (N)	mg/L	ND		0.010	4776662	ND		0.010	4776662
Nitrate (N)	mg/L	4.20		0.10	4776662	ND		0.10	4776662
Nitrate + Nitrite (N)	mg/L	4.20		0.10	4776662	ND		0.10	4776662

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected
(1) Due to high concentrations of NO3NO2, sample required dilution. Detection limits were adjusted accordingly.

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Maxxam Job #: B6Q1379
Report Date: 2016/12/08

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

RESULTS OF ANALYSES OF WATER

Maxxam ID		DNZ518		
Sampling Date		2016/11/29		
COC Number		587870-02-01		
	UNITS	**25**	**RDL**	**QC Batch**
Inorganics				
Total Ammonia-N	mg/L	0.051	0.050	4778625
Total BOD	mg/L	ND	2.0	4775901
Total Chemical Oxygen Demand (COD)	mg/L	ND	4.0	4776212
Conductivity	umho/cm	690	1.0	4774937
Total Kjeldahl Nitrogen (TKN)	mg/L	0.15	0.10	4775883
pH	pH	8.02		4774941
Phenols-4AAP	mg/L	ND	0.0010	4779990
Total Phosphorus	mg/L	0.18	0.10	4778033
Dissolved Sulphate (SO4)	mg/L	87	1.0	4776411
Alkalinity (Total as CaCO3)	mg/L	230	1.0	4774935
Dissolved Chloride (Cl)	mg/L	35	1.0	4776392
Nitrite (N)	mg/L	ND	0.010	4776662
Nitrate (N)	mg/L	ND	0.10	4776662
Nitrate + Nitrite (N)	mg/L	ND	0.10	4776662

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B6Q1379
Report Date: 2016/12/08

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		DNZ516	DNZ516	DNZ517	DNZ518		
Sampling Date		2016/11/29	2016/11/29	2016/11/29	2016/11/29		
COC Number		587870-02-01	587870-02-01	587870-02-01	587870-02-01		
	UNITS	**9**	**9 Lab-Dup**	**10**	**25**	**RDL**	**QC Batch**
Metals							
Total Iron (Fe)	mg/L	0.24	0.25	4.7	4.1	0.02	4778761
Dissolved Boron (B)	ug/L	29		13	14	10	4778867
Dissolved Calcium (Ca)	ug/L	41000		94000	93000	200	4778867
Dissolved Magnesium (Mg)	ug/L	11000		31000	31000	50	4778867
Dissolved Phosphorus (P)	ug/L	ND		ND	ND	100	4778867
Dissolved Potassium (K)	ug/L	8600		1200	1300	200	4778867
Dissolved Sodium (Na)	ug/L	22000		13000	13000	100	4778867
Dissolved Zinc (Zn)	ug/L	5.4		ND	ND	5.0	4778867

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B6Q1379
Report Date: 2016/12/08

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		DNZ516	DNZ517	DNZ518		
Sampling Date		2016/11/29	2016/11/29	2016/11/29		
COC Number		587870-02-01	587870-02-01	587870-02-01		
	UNITS	**9**	**10**	**25**	**RDL**	**QC Batch**
Semivolatile Organics						
Acenaphthene	ug/L	ND	ND	ND	0.20	4776647
Acenaphthylene	ug/L	ND	ND	ND	0.20	4776647
Anthracene	ug/L	ND	ND	ND	0.20	4776647
Benzo(a)anthracene	ug/L	ND	ND	ND	0.20	4776647
Benzo(a)pyrene	ug/L	ND	ND	ND	0.20	4776647
Benzo(b/j)fluoranthene	ug/L	ND	ND	ND	0.20	4776647
Benzo(g,h,i)perylene	ug/L	ND	ND	ND	0.20	4776647
Benzo(k)fluoranthene	ug/L	ND	ND	ND	0.20	4776647
1-Chloronaphthalene	ug/L	ND	ND	ND	1.0	4776647
2-Chloronaphthalene	ug/L	ND	ND	ND	0.50	4776647
Chrysene	ug/L	ND	ND	ND	0.20	4776647
Dibenz(a,h)anthracene	ug/L	ND	ND	ND	0.20	4776647
Fluoranthene	ug/L	ND	ND	ND	0.20	4776647
Fluorene	ug/L	ND	ND	ND	0.20	4776647
Indeno(1,2,3-cd)pyrene	ug/L	ND	ND	ND	0.20	4776647
1-Methylnaphthalene	ug/L	ND	ND	ND	0.20	4776647
2-Methylnaphthalene	ug/L	ND	ND	ND	0.20	4776647
Naphthalene	ug/L	ND	ND	ND	0.20	4776647
5-Nitroacenaphthene	ug/L	ND	ND	ND	1.0	4776647
Perylene	ug/L	ND	ND	ND	0.20	4776647
Phenanthrene	ug/L	ND	ND	ND	0.20	4776647
Pyrene	ug/L	ND	ND	ND	0.20	4776647
2-Chlorophenol	ug/L	ND	ND	ND	0.30	4776647
4-Chloro-3-Methylphenol	ug/L	ND	ND	ND	0.50	4776647
m/p-Cresol	ug/L	ND	ND	ND	0.50	4776647
o-Cresol	ug/L	ND	ND	ND	0.50	4776647
2,4-Dichlorophenol	ug/L	ND	ND	ND	0.30	4776647
2,6-Dichlorophenol	ug/L	ND	ND	ND	0.50	4776647
2,4-Dimethylphenol	ug/L	ND	ND	ND	0.50	4776647
2,4-Dinitrophenol	ug/L	ND	ND	ND	2.0	4776647
4,6-Dinitro-2-methylphenol	ug/L	ND	ND	ND	2.0	4776647
4-Nitrophenol	ug/L	ND	ND	ND	1.4	4776647
Pentachlorophenol	ug/L	ND	ND	ND	1.0	4776647

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B6Q1379
Report Date: 2016/12/08

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		DNZ516	DNZ517	DNZ518		
Sampling Date		2016/11/29	2016/11/29	2016/11/29		
COC Number		587870-02-01	587870-02-01	587870-02-01		
	UNITS	**9**	**10**	**25**	**RDL**	**QC Batch**
Phenol	ug/L	ND	ND	ND	0.50	4776647
2,3,4,5-Tetrachlorophenol	ug/L	ND	ND	ND	0.40	4776647
2,3,4,6-Tetrachlorophenol	ug/L	ND	ND	ND	0.50	4776647
2,3,5,6-Tetrachlorophenol	ug/L	ND	ND	ND	0.50	4776647
2,3,4-Trichlorophenol	ug/L	ND	ND	ND	0.50	4776647
2,3,5-Trichlorophenol	ug/L	ND	ND	ND	0.50	4776647
2,4,5-Trichlorophenol	ug/L	ND	ND	ND	0.50	4776647
2,4,6-Trichlorophenol	ug/L	ND	ND	ND	0.50	4776647
Benzyl butyl phthalate	ug/L	ND	ND	ND	0.50	4776647
Biphenyl	ug/L	ND	ND	ND	0.50	4776647
Bis(2-chloroethyl)ether	ug/L	ND	ND	ND	0.50	4776647
Bis(2-chloroethoxy)methane	ug/L	ND	ND	ND	0.50	4776647
Bis(2-chloroisopropyl)ether	ug/L	ND	ND	ND	0.50	4776647
Bis(2-ethylhexyl)phthalate	ug/L	ND	ND	ND	2.0	4776647
4-Bromophenyl phenyl ether	ug/L	ND	ND	ND	0.30	4776647
Camphene	ug/L	ND	ND	ND	1.0	4776647
4-Chlorophenyl phenyl ether	ug/L	ND	ND	ND	0.50	4776647
Di-N-butyl phthalate	ug/L	ND	ND	ND	2.0	4776647
Di-N-octyl phthalate	ug/L	ND	ND	ND	0.80	4776647
2,4-Dinitrotoluene	ug/L	ND	ND	ND	0.50	4776647
2,6-Dinitrotoluene	ug/L	ND	ND	ND	0.50	4776647
Diphenyl Ether	ug/L	ND	ND	ND	0.30	4776647
Indole	ug/L	ND	ND	ND	1.0	4776647
Nitrosodiphenylamine/Diphenylamine	ug/L	ND	ND	ND	1.0	4776647
N-Nitroso-di-n-propylamine	ug/L	ND	ND	ND	0.50	4776647
Surrogate Recovery (%)						
2,4,6-Tribromophenol	%	81	40	35		4776647
2-Fluorobiphenyl	%	87	81	84		4776647
2-Fluorophenol	%	47	26	25		4776647
D14-Terphenyl	%	128	124	131 (1)		4776647
D5-Nitrobenzene	%	79	76	77		4776647
D5-Phenol	%	32	25	25		4776647

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected
(1) Surrogate recovery was above the upper control limit. This may represent a high bias in some results.

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Maxxam Job #: B6Q1379
Report Date: 2016/12/08

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		DNZ516	DNZ517	DNZ518		
Sampling Date		2016/11/29	2016/11/29	2016/11/29		
COC Number		587870-02-01	587870-02-01	587870-02-01		
	UNITS	**9**	**10**	**25**	**RDL**	**QC Batch**
Volatile Organics						
Acetone (2-Propanone)	ug/L	ND	ND	ND	10	4774441
Benzene	ug/L	ND	ND	ND	0.10	4774441
Bromodichloromethane	ug/L	ND	ND	ND	0.10	4774441
Acrolein	ug/L	ND	ND	ND	10	4774445
Bromoform	ug/L	ND	ND	ND	0.20	4774441
Bromomethane	ug/L	ND	ND	ND	0.50	4774441
Carbon Tetrachloride	ug/L	ND	ND	ND	0.10	4774441
Chlorobenzene	ug/L	ND	ND	ND	0.10	4774441
Chloroform	ug/L	ND	ND	ND	0.10	4774441
Acrylonitrile	ug/L	ND	ND	ND	5.0	4774445
Chloromethane	ug/L	ND	ND	ND	0.50	4774441
Dibromochloromethane	ug/L	ND	ND	ND	0.20	4774441
1,2-Dichlorobenzene	ug/L	ND	ND	ND	0.20	4774441
1,3-Dichlorobenzene	ug/L	ND	ND	ND	0.20	4774441
1,4-Dichlorobenzene	ug/L	ND	ND	ND	0.20	4774441
1,1-Dichloroethane	ug/L	ND	ND	ND	0.10	4774441
1,2-Dichloroethane	ug/L	ND	ND	ND	0.20	4774441
1,1-Dichloroethylene	ug/L	ND	ND	ND	0.10	4774441
cis-1,2-Dichloroethylene	ug/L	ND	ND	ND	0.10	4774441
trans-1,2-Dichloroethylene	ug/L	ND	ND	ND	0.10	4774441
1,2-Dichloropropane	ug/L	ND	ND	ND	0.10	4774441
cis-1,3-Dichloropropene	ug/L	ND	ND	ND	0.20	4774441
trans-1,3-Dichloropropene	ug/L	ND	ND	ND	0.20	4774441
Ethylbenzene	ug/L	ND	ND	ND	0.10	4774441
Ethylene Dibromide	ug/L	ND	ND	ND	0.20	4774441
Methylene Chloride(Dichloromethane)	ug/L	ND	ND	ND	0.50	4774441
Methyl Ethyl Ketone (2-Butanone)	ug/L	ND	ND	ND	5.0	4774441
Methyl Isobutyl Ketone	ug/L	ND	ND	ND	5.0	4774441
Methyl t-butyl ether (MTBE)	ug/L	ND	ND	ND	0.20	4774441
Styrene	ug/L	ND	ND	ND	0.20	4774441
1,1,1,2-Tetrachloroethane	ug/L	ND	ND	ND	0.20	4774441
1,1,2,2-Tetrachloroethane	ug/L	ND	ND	ND	0.20	4774441
Tetrachloroethylene	ug/L	ND	ND	ND	0.10	4774441

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B6Q1379
Report Date: 2016/12/08

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		DNZ516	DNZ517	DNZ518		
Sampling Date		2016/11/29	2016/11/29	2016/11/29		
COC Number		587870-02-01	587870-02-01	587870-02-01		
	UNITS	**9**	**10**	**25**	**RDL**	**QC Batch**
Toluene	ug/L	ND	ND	ND	0.20	4774441
1,1,1-Trichloroethane	ug/L	ND	ND	ND	0.10	4774441
1,1,2-Trichloroethane	ug/L	ND	ND	ND	0.20	4774441
Trichloroethylene	ug/L	ND	ND	ND	0.10	4774441
Trichlorofluoromethane (FREON 11)	ug/L	ND	ND	ND	0.20	4774441
Vinyl Chloride	ug/L	ND	ND	ND	0.20	4774441
p+m-Xylene	ug/L	ND	ND	ND	0.10	4774441
o-Xylene	ug/L	ND	ND	ND	0.10	4774441
Total Xylenes	ug/L	ND	ND	ND	0.10	4774441
Surrogate Recovery (%)						
4-Bromofluorobenzene	%	100	100	100		4774441
D4-1,2-Dichloroethane	%	107	108	109		4774441
D8-Toluene	%	95	96	95		4774441

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B6Q1379
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City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

GENERAL COMMENTS

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4774441	4-Bromofluorobenzene	2016/12/02	103	70 - 130	104	70 - 130	99	%				
4774441	D4-1,2-Dichloroethane	2016/12/02	100	70 - 130	102	70 - 130	103	%				
4774441	D8-Toluene	2016/12/02	100	70 - 130	100	70 - 130	98	%				
4776647	2,4,6-Tribromophenol	2016/12/05	99	10 - 130	88	10 - 130	66	%				
4776647	2-Fluorobiphenyl	2016/12/05	70	30 - 130	84	30 - 130	82	%				
4776647	2-Fluorophenol	2016/12/05	37	10 - 130	51	10 - 130	47	%				
4776647	D14-Terphenyl	2016/12/05	104	30 - 130	102	30 - 130	89	%				
4776647	D5-Nitrobenzene	2016/12/05	66	30 - 130	85	30 - 130	77	%				
4776647	D5-Phenol	2016/12/05	26	10 - 130	35	10 - 130	30	%				
4774441	1,1,1,2-Tetrachloroethane	2016/12/02	88	70 - 130	100	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4774441	1,1,1-Trichloroethane	2016/12/02	91	70 - 130	101	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4774441	1,1,2,2-Tetrachloroethane	2016/12/02	86	70 - 130	100	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4774441	1,1,2-Trichloroethane	2016/12/02	83	70 - 130	95	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4774441	1,1-Dichloroethane	2016/12/02	99	70 - 130	105	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4774441	1,1-Dichloroethylene	2016/12/02	116	70 - 130	120	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4774441	1,2-Dichlorobenzene	2016/12/02	86	70 - 130	95	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4774441	1,2-Dichloroethane	2016/12/02	89	70 - 130	100	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4774441	1,2-Dichloropropane	2016/12/02	85	70 - 130	95	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4774441	1,3-Dichlorobenzene	2016/12/02	89	70 - 130	96	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4774441	1,4-Dichlorobenzene	2016/12/02	92	70 - 130	101	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4774441	Acetone (2-Propanone)	2016/12/02	107	60 - 140	115	60 - 140	ND, RDL=10	ug/L	NC	30		
4774441	Benzene	2016/12/02	87	70 - 130	98	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4774441	Bromodichloromethane	2016/12/02	89	70 - 130	100	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4774441	Bromoform	2016/12/02	88	70 - 130	101	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4774441	Bromomethane	2016/12/02	67	60 - 140	83	60 - 140	ND, RDL=0.50	ug/L	NC	30		
4774441	Carbon Tetrachloride	2016/12/02	95	70 - 130	107	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4774441	Chlorobenzene	2016/12/02	91	70 - 130	100	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4774441	Chloroform	2016/12/02	88	70 - 130	98	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4774441	Chloromethane	2016/12/02	69	60 - 140	76	60 - 140	ND, RDL=0.50	ug/L	NC	30		
4774441	cis-1,2-Dichloroethylene	2016/12/02	94	70 - 130	103	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4774441	cis-1,3-Dichloropropene	2016/12/02	92	70 - 130	103	70 - 130	ND, RDL=0.20	ug/L	NC	30		

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QUALITY ASSURANCE REPORT(CONT'D)

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4774441	Dibromochloromethane	2016/12/02	89	70 - 130	102	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4774441	Ethylbenzene	2016/12/02	93	70 - 130	103	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4774441	Ethylene Dibromide	2016/12/02	85	70 - 130	96	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4774441	Methyl Ethyl Ketone (2-Butanone)	2016/12/02	79	60 - 140	94	60 - 140	ND, RDL=5.0	ug/L	NC	30		
4774441	Methyl Isobutyl Ketone	2016/12/02	82	70 - 130	97	70 - 130	ND, RDL=5.0	ug/L	NC	30		
4774441	Methyl t-butyl ether (MTBE)	2016/12/02	113	70 - 130	112	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4774441	Methylene Chloride(Dichloromethane)	2016/12/02	116	70 - 130	104	70 - 130	ND, RDL=0.50	ug/L	NC	30		
4774441	o-Xylene	2016/12/02	93	70 - 130	102	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4774441	p+m-Xylene	2016/12/02	92	70 - 130	102	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4774441	Styrene	2016/12/02	97	70 - 130	105	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4774441	Tetrachloroethylene	2016/12/02	90	70 - 130	101	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4774441	Toluene	2016/12/02	89	70 - 130	97	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4774441	Total Xylenes	2016/12/02					ND, RDL=0.10	ug/L	NC	30		
4774441	trans-1,2-Dichloroethylene	2016/12/02	118	70 - 130	109	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4774441	trans-1,3-Dichloropropene	2016/12/02	90	70 - 130	100	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4774441	Trichloroethylene	2016/12/02	93	70 - 130	101	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4774441	Trichlorofluoromethane (FREON 11)	2016/12/02	100	70 - 130	111	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4774441	Vinyl Chloride	2016/12/02	88	70 - 130	96	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4774445	Acrolein	2016/12/05	84	60 - 140	98	60 - 140	ND, RDL=10	ug/L	NC	30		
4774445	Acrylonitrile	2016/12/05	131	60 - 140	119	60 - 140	ND, RDL=5.0	ug/L	NC	30		
4774935	Alkalinity (Total as CaCO3)	2016/12/02			96	85 - 115	ND, RDL=1.0	mg/L	2.0	20		
4774937	Conductivity	2016/12/02			100	85 - 115	ND, RDL=1.0	umho/cm	0.084	25		
4774941	pH	2016/12/02			101	98 - 103			1.1	N/A		
4775883	Total Kjeldahl Nitrogen (TKN)	2016/12/05	94	80 - 120	101	80 - 120	ND, RDL=0.10	mg/L	9.9	20	99	80 - 120
4775901	Total BOD	2016/12/07					ND, RDL=2.0	mg/L	NC	25	103	80 - 120
4776033	Total Kjeldahl Nitrogen (TKN)	2016/12/06	98	80 - 120	99	80 - 120	ND, RDL=0.10	mg/L	NC (1)	20	98	80 - 120
4776041	Total Ammonia-N	2016/12/06	97	80 - 120	100	85 - 115	ND, RDL=0.050	mg/L	NC	20		
4776212	Total Chemical Oxygen Demand (COD)	2016/12/05	107	75 - 125	101	75 - 125	ND, RDL=4.0	mg/L	NC	25		
4776392	Dissolved Chloride (Cl)	2016/12/05	NC	80 - 120	104	80 - 120	ND, RDL=1.0	mg/L	0.16	20		

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QUALITY ASSURANCE REPORT(CONT'D)

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4776411	Dissolved Sulphate (SO4)	2016/12/05	NC	75 - 125	107	80 - 120	ND, RDL=1.0	mg/L	1.1	20		
4776647	1-Chloronaphthalene	2016/12/05	57	30 - 130	73	30 - 130	ND, RDL=1.0	ug/L	NC	40		
4776647	1-Methylnaphthalene	2016/12/05	65	30 - 130	83	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	2,3,4,5-Tetrachlorophenol	2016/12/05	96	10 - 130	94	10 - 130	ND, RDL=0.40	ug/L	NC	40		
4776647	2,3,4,6-Tetrachlorophenol	2016/12/05	95	10 - 130	92	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	2,3,4-Trichlorophenol	2016/12/05	85	10 - 130	89	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	2,3,5,6-Tetrachlorophenol	2016/12/05	90	10 - 130	80	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	2,3,5-Trichlorophenol	2016/12/05	95	10 - 130	102	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	2,4,5-Trichlorophenol	2016/12/05	87	10 - 130	91	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	2,4,6-Trichlorophenol	2016/12/05	83	10 - 130	89	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	2,4-Dichlorophenol	2016/12/05	54	10 - 130	71	10 - 130	ND, RDL=0.30	ug/L	NC	40		
4776647	2,4-Dimethylphenol	2016/12/05	63	10 - 130	16	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	2,4-Dinitrophenol	2016/12/05	86	10 - 130	61	10 - 130	ND, RDL=2.0	ug/L	NC	40		
4776647	2,4-Dinitrotoluene	2016/12/05	98	30 - 130	101	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	2,6-Dichlorophenol	2016/12/05	67	10 - 130	81	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	2,6-Dinitrotoluene	2016/12/05	83	30 - 130	93	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	2-Chloronaphthalene	2016/12/05	71	30 - 130	84	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	2-Chlorophenol	2016/12/05	55	10 - 130	73	10 - 130	ND, RDL=0.30	ug/L	NC	40		
4776647	2-Methylnaphthalene	2016/12/05	62	30 - 130	79	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	4,6-Dinitro-2-methylphenol	2016/12/05	112	10 - 130	100	10 - 130	ND, RDL=2.0	ug/L	NC	40		
4776647	4-Bromophenyl phenyl ether	2016/12/05	85	30 - 130	89	30 - 130	ND, RDL=0.30	ug/L	NC	40		
4776647	4-Chloro-3-Methylphenol	2016/12/05	74	10 - 130	80	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	4-Chlorophenyl phenyl ether	2016/12/05	80	30 - 130	86	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	4-Nitrophenol	2016/12/05	42	10 - 130	44	10 - 130	ND, RDL=1.4	ug/L	NC	40		
4776647	5-Nitroacenaphthene	2016/12/05	103	30 - 130	102	30 - 130	ND, RDL=1.0	ug/L	NC	40		
4776647	Acenaphthene	2016/12/05	77	30 - 130	91	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Acenaphthylene	2016/12/05	68	30 - 130	82	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Anthracene	2016/12/05	95	30 - 130	94	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Benzo(a)anthracene	2016/12/05	99	30 - 130	96	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Benzo(a)pyrene	2016/12/05	101	30 - 130	98	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Benzo(b/j)fluoranthene	2016/12/05	100	30 - 130	98	30 - 130	ND, RDL=0.20	ug/L	NC	40		

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QUALITY ASSURANCE REPORT(CONT'D)

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4776647	Benzo(g,h,i)perylene	2016/12/05	81	30 - 130	77	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Benzo(k)fluoranthene	2016/12/05	111	30 - 130	112	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Benzyl butyl phthalate	2016/12/05	106	30 - 130	104	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	Biphenyl	2016/12/05	65	30 - 130	79	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	Bis(2-chloroethoxy)methane	2016/12/05	60	30 - 130	81	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	Bis(2-chloroethyl)ether	2016/12/05	63	30 - 130	83	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	Bis(2-chloroisopropyl)ether	2016/12/05	60	30 - 130	84	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	Bis(2-ethylhexyl)phthalate	2016/12/05	102	30 - 130	103	30 - 130	ND, RDL=2.0	ug/L	NC	40		
4776647	Camphene	2016/12/05	38	30 - 130	48	30 - 130	ND, RDL=1.0	ug/L	NC	40		
4776647	Chrysene	2016/12/05	101	30 - 130	98	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Dibenz(a,h)anthracene	2016/12/05	85	30 - 130	81	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Di-N-butyl phthalate	2016/12/05	111	30 - 130	110	30 - 130	ND, RDL=2.0	ug/L	NC	40		
4776647	Di-N-octyl phthalate	2016/12/05	121	30 - 130	121	30 - 130	ND, RDL=0.80	ug/L	NC	40		
4776647	Diphenyl Ether	2016/12/05	66	30 - 130	82	30 - 130	ND, RDL=0.30	ug/L	NC	40		
4776647	Fluoranthene	2016/12/05	101	30 - 130	97	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Fluorene	2016/12/05	83	30 - 130	90	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Indeno(1,2,3-cd)pyrene	2016/12/05	79	30 - 130	75	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Indole	2016/12/05	32	30 - 130	39	30 - 130	ND, RDL=1.0	ug/L	NC	40		
4776647	m/p-Cresol	2016/12/05	52	10 - 130	57	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	Naphthalene	2016/12/05	63	30 - 130	81	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Nitrosodiphenylamine/Diphenylamine	2016/12/05	102	30 - 130	96	30 - 130	ND, RDL=1.0	ug/L	NC	40		
4776647	N-Nitroso-di-n-propylamine	2016/12/05	72	30 - 130	91	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	o-Cresol	2016/12/05	52	10 - 130	52	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	Pentachlorophenol	2016/12/05	93	10 - 130	77	10 - 130	ND, RDL=1.0	ug/L	NC	40		
4776647	Perylene	2016/12/05	97	30 - 130	94	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Phenanthrene	2016/12/05	91	30 - 130	90	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Phenol	2016/12/05	22	10 - 130	30	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	Pyrene	2016/12/05	107	30 - 130	104	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776662	Nitrate (N)	2016/12/05	101	80 - 120	94	80 - 120	ND, RDL=0.10	mg/L	NC	20		
4776662	Nitrite (N)	2016/12/05	101	80 - 120	97	80 - 120	ND, RDL=0.010	mg/L	NC	20		

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QUALITY ASSURANCE REPORT(CONT'D)

City of Guelph
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			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4778033	Total Phosphorus	2016/12/06	95	80 - 120	94	80 - 120	ND, RDL=0.020	mg/L	2.7	20	96	80 - 120
4778037	Total Phosphorus	2016/12/06	82	N/A	94	N/A	ND, RDL=0.020	mg/L	NC	20	98	80 - 120
4778273	Phenols-4AAP	2016/12/05	98	80 - 120	97	85 - 115	ND, RDL=0.0010	mg/L	NC	20		
4778625	Total Ammonia-N	2016/12/08	95	80 - 120	98	85 - 115	ND, RDL=0.050	mg/L	NC	20		
4778662	Total Chemical Oxygen Demand (COD)	2016/12/06	105	75 - 125	103	75 - 125	ND, RDL=4.0	mg/L	NC	25		
4778761	Total Iron (Fe)	2016/12/05	109	80 - 120	102	80 - 120	ND, RDL=0.02	mg/L	4.9	25		
4778867	Dissolved Boron (B)	2016/12/06	101	80 - 120	102	80 - 120	ND, RDL=10	ug/L				
4778867	Dissolved Calcium (Ca)	2016/12/06	NC	80 - 120	99	80 - 120	ND, RDL=200	ug/L				
4778867	Dissolved Magnesium (Mg)	2016/12/06	NC	80 - 120	102	80 - 120	ND, RDL=50	ug/L				
4778867	Dissolved Phosphorus (P)	2016/12/06	108	80 - 120	107	80 - 120	ND, RDL=100	ug/L				
4778867	Dissolved Potassium (K)	2016/12/06	102	80 - 120	101	80 - 120	ND, RDL=200	ug/L				
4778867	Dissolved Sodium (Na)	2016/12/06	98	80 - 120	103	80 - 120	ND, RDL=100	ug/L				
4778867	Dissolved Zinc (Zn)	2016/12/06	103	80 - 120	103	80 - 120	ND, RDL=5.0	ug/L				
4779990	Phenols-4AAP	2016/12/06	100	80 - 120	101	85 - 115	ND, RDL=0.0010	mg/L	NC	20		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) Due to high concentrations of NO3NO2, sample required dilution. Detection limits were adjusted accordingly.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B6Q1379
Report Date: 2016/12/08

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Cristina Carriere

Cristina Carriere, Scientific Services

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Maxxam
A Bureau Veritas Group Company

Your P.O. #: 720.8121.3516
Your Project #: Wet/Dry Ground Water
Site Location: FALL GOV
Your C.O.C. #: 587870-03-01

Attention:Amy Spence

City of Guelph
Soild Waste RIC (Wet/Dry)
110 Dunlop Drive
Guelph, ON
CANADA N1H 6H8

Report Date: 2016/12/09
Report #: R4280990
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6Q2448
Received: 2016/12/01, 15:53

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
ABN Compounds in Water by GC/MS	3	2016/12/02	2016/12/05	CAM SOP-00301	EPA 8270 m
Alkalinity	3	N/A	2016/12/04	CAM SOP-00448	SM 22 2320 B m
Biochemical Oxygen Demand (BOD)	3	2016/12/03	2016/12/08	CAM SOP-00427	SM 22 5210B m
Chloride by Automated Colourimetry	3	N/A	2016/12/05	CAM SOP-00463	EPA 325.2 m
Chemical Oxygen Demand	3	N/A	2016/12/07	CAM SOP-00416	SM 22 5220 D m
Conductivity	3	N/A	2016/12/04	CAM SOP-00414	SM 22 2510 m
Dissolved Metals by ICPMS	3	N/A	2016/12/07	CAM SOP-00447	EPA 6020B m
Total Metals Analysis by ICP	3	2016/12/07	2016/12/07	CAM SOP-00408	EPA 6010C m
Total Ammonia-N	3	N/A	2016/12/08	CAM SOP-00441	EPA GS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (1)	3	N/A	2016/12/07	CAM SOP-00440	SM 22 4500-NO3I/NO2B
pH	3	N/A	2016/12/04	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	3	N/A	2016/12/06	CAM SOP-00444	OMOE E3179 m
Sulphate by Automated Colourimetry	3	N/A	2016/12/05	CAM SOP-00464	EPA 375.4 m
Total Kjeldahl Nitrogen in Water	2	2016/12/05	2016/12/07	CAM SOP-00938	OMOE E3516 m
Total Kjeldahl Nitrogen in Water	1	2016/12/05	2016/12/08	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	2	2016/12/05	2016/12/06	CAM SOP-00407	SM 22 4500 P B H m
Total Phosphorus (Colourimetric)	1	2016/12/06	2016/12/06	CAM SOP-00407	SM 22 4500 P B H m
Volatile Organic Compounds in Water	3	N/A	2016/12/06	CAM SOP-00226	EPA 8260C m
Non-Routine Volatile Organic Compounds	3	N/A	2016/12/05	CAM SOP-00226	EPA 8260 m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report.

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Your P.O. #: 720.8121.3516
Your Project #: Wet/Dry Ground Water
Site Location: FALL GOV
Your C.O.C. #: 587870-03-01

Attention:Amy Spence

City of Guelph
Soild Waste RIC (Wet/Dry)
110 Dunlop Drive
Guelph, ON
CANADA N1H 6H8

Report Date: 2016/12/09
Report #: R4280990
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6Q2448
Received: 2016/12/01, 15:53

Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
James Aspin, Senior Project Manager
Email: JAspin@maxxam.ca
Phone# (905)817-5771

==========

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Maxxam Job #: B6Q2448
Report Date: 2016/12/09

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GOV
Your P.O. #: 720.8121.3516
Sampler Initials: AS

RESULTS OF ANALYSES OF WATER

Maxxam ID		DOE314	DOE314		DOE315		
Sampling Date		2016/11/30	2016/11/30		2016/11/30		
COC Number		587870-03-01	587870-03-01		587870-03-01		
	UNITS	**11A**	**11A Lab-Dup**	**QC Batch**	**11B**	**RDL**	**QC Batch**
Inorganics							
Total Ammonia-N	mg/L	ND		4778620	ND	0.050	4778620
Total BOD	mg/L	ND		4777495	ND	2.0	4777495
Total Chemical Oxygen Demand (COD)	mg/L	5.5		4778890	ND	4.0	4778890
Conductivity	umho/cm	580	570	4776883	1000	1.0	4776883
Total Kjeldahl Nitrogen (TKN)	mg/L	0.14		4778666	ND	0.10	4778666
pH	pH	7.97	7.98	4776884	7.99		4776884
Phenols-4AAP	mg/L	ND		4778650	ND	0.0010	4778650
Total Phosphorus	mg/L	ND		4779148	0.029	0.020	4779148
Dissolved Sulphate (SO4)	mg/L	33	33	4777226	37	1.0	4777226
Alkalinity (Total as CaCO3)	mg/L	230	230	4776877	290	1.0	4776877
Dissolved Chloride (Cl)	mg/L	22	22	4777220	120	1.0	4777220
Nitrite (N)	mg/L	0.035		4777876	ND	0.010	4777886
Nitrate (N)	mg/L	ND		4777876	2.84	0.10	4777886
Nitrate + Nitrite (N)	mg/L	ND		4777876	2.84	0.10	4777886

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B6Q2448
Report Date: 2016/12/09

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GOV
Your P.O. #: 720.8121.3516
Sampler Initials: AS

RESULTS OF ANALYSES OF WATER

Maxxam ID		DOE316		
Sampling Date		2016/11/30		
COC Number		587870-03-01		
	UNITS	**7**	**RDL**	**QC Batch**
Inorganics				
Total Ammonia-N	mg/L	ND	0.050	4778620
Total BOD	mg/L	ND	2.0	4777495
Total Chemical Oxygen Demand (COD)	mg/L	ND	4.0	4778890
Conductivity	umho/cm	1200	1.0	4776883
Total Kjeldahl Nitrogen (TKN)	mg/L	ND (1)	0.20	4778666
pH	pH	7.77		4776884
Phenols-4AAP	mg/L	ND	0.0010	4778650
Total Phosphorus	mg/L	ND	0.020	4780063
Dissolved Sulphate (SO4)	mg/L	34	1.0	4777226
Alkalinity (Total as CaCO3)	mg/L	300	1.0	4776877
Dissolved Chloride (Cl)	mg/L	150	2.0	4777220
Nitrite (N)	mg/L	ND	0.010	4777876
Nitrate (N)	mg/L	4.89	0.10	4777876
Nitrate + Nitrite (N)	mg/L	4.89	0.10	4777876

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected
(1) Due to high concentrations of NO3NO2, sample required dilution. Detection limits were adjusted accordingly.

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Maxxam Job #: B6Q2448
Report Date: 2016/12/09

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GOV
Your P.O. #: 720.8121.3516
Sampler Initials: AS

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		DOE314		DOE315	DOE316	DOE316		
Sampling Date		2016/11/30		2016/11/30	2016/11/30	2016/11/30		
COC Number		587870-03-01		587870-03-01	587870-03-01	587870-03-01		
	UNITS	**11A**	**QC Batch**	**11B**	**7**	**7 Lab-Dup**	**RDL**	**QC Batch**
Metals								
Total Iron (Fe)	mg/L	0.28	4781782	2.0	0.20	0.21	0.02	4781782
Dissolved Boron (B)	ug/L	36	4781051	82	42		10	4776867
Dissolved Calcium (Ca)	ug/L	71000	4781051	73000	110000		200	4776867
Dissolved Magnesium (Mg)	ug/L	27000	4781051	16000	26000		50	4776867
Dissolved Phosphorus (P)	ug/L	ND	4781051	ND	ND		100	4776867
Dissolved Potassium (K)	ug/L	1800	4781051	1700	8200		200	4776867
Dissolved Sodium (Na)	ug/L	6200	4781051	110000	87000		100	4776867
Dissolved Zinc (Zn)	ug/L	8.6	4781051	28	200		5.0	4776867

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B6Q2448
Report Date: 2016/12/09

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GOV
Your P.O. #: 720.8121.3516
Sampler Initials: AS

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		DOE314	DOE315	DOE316		
Sampling Date		2016/11/30	2016/11/30	2016/11/30		
COC Number		587870-03-01	587870-03-01	587870-03-01		
	UNITS	**11A**	**11B**	**7**	**RDL**	**QC Batch**
Semivolatile Organics						
Acenaphthene	ug/L	ND	ND	ND	0.20	4776647
Acenaphthylene	ug/L	ND	ND	ND	0.20	4776647
Anthracene	ug/L	ND	ND	ND	0.20	4776647
Benzo(a)anthracene	ug/L	ND	ND	ND	0.20	4776647
Benzo(a)pyrene	ug/L	ND	ND	ND	0.20	4776647
Benzo(b/j)fluoranthene	ug/L	ND	ND	ND	0.20	4776647
Benzo(g,h,i)perylene	ug/L	ND	ND	ND	0.20	4776647
Benzo(k)fluoranthene	ug/L	ND	ND	ND	0.20	4776647
1-Chloronaphthalene	ug/L	ND	ND	ND	1.0	4776647
2-Chloronaphthalene	ug/L	ND	ND	ND	0.50	4776647
Chrysene	ug/L	ND	ND	ND	0.20	4776647
Dibenz(a,h)anthracene	ug/L	ND	ND	ND	0.20	4776647
Fluoranthene	ug/L	ND	ND	ND	0.20	4776647
Fluorene	ug/L	ND	ND	ND	0.20	4776647
Indeno(1,2,3-cd)pyrene	ug/L	ND	ND	ND	0.20	4776647
1-Methylnaphthalene	ug/L	ND	ND	ND	0.20	4776647
2-Methylnaphthalene	ug/L	ND	ND	ND	0.20	4776647
Naphthalene	ug/L	ND	ND	ND	0.20	4776647
5-Nitroacenaphthene	ug/L	ND	ND	ND	1.0	4776647
Perylene	ug/L	ND	ND	ND	0.20	4776647
Phenanthrene	ug/L	ND	ND	ND	0.20	4776647
Pyrene	ug/L	ND	ND	ND	0.20	4776647
2-Chlorophenol	ug/L	ND	ND	ND	0.30	4776647
4-Chloro-3-Methylphenol	ug/L	ND	ND	ND	0.50	4776647
m/p-Cresol	ug/L	ND	ND	ND	0.50	4776647
o-Cresol	ug/L	ND	ND	ND	0.50	4776647
2,4-Dichlorophenol	ug/L	ND	ND	ND	0.30	4776647
2,6-Dichlorophenol	ug/L	ND	ND	ND	0.50	4776647
2,4-Dimethylphenol	ug/L	ND	ND	ND	0.50	4776647
2,4-Dinitrophenol	ug/L	ND	ND	ND	2.0	4776647
4,6-Dinitro-2-methylphenol	ug/L	ND	ND	ND	2.0	4776647
4-Nitrophenol	ug/L	ND	ND	ND	1.4	4776647
Pentachlorophenol	ug/L	ND	ND	ND	1.0	4776647

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B6Q2448
Report Date: 2016/12/09

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GOV
Your P.O. #: 720.8121.3516
Sampler Initials: AS

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		DOE314	DOE315	DOE316		
Sampling Date		2016/11/30	2016/11/30	2016/11/30		
COC Number		587870-03-01	587870-03-01	587870-03-01		
	UNITS	**11A**	**11B**	**7**	**RDL**	**QC Batch**
Phenol	ug/L	ND	ND	ND	0.50	4776647
2,3,4,5-Tetrachlorophenol	ug/L	ND	ND	ND	0.40	4776647
2,3,4,6-Tetrachlorophenol	ug/L	ND	ND	ND	0.50	4776647
2,3,5,6-Tetrachlorophenol	ug/L	ND	ND	ND	0.50	4776647
2,3,4-Trichlorophenol	ug/L	ND	ND	ND	0.50	4776647
2,3,5-Trichlorophenol	ug/L	ND	ND	ND	0.50	4776647
2,4,5-Trichlorophenol	ug/L	ND	ND	ND	0.50	4776647
2,4,6-Trichlorophenol	ug/L	ND	ND	ND	0.50	4776647
Benzyl butyl phthalate	ug/L	ND	ND	ND	0.50	4776647
Biphenyl	ug/L	ND	ND	ND	0.50	4776647
Bis(2-chloroethyl)ether	ug/L	ND	ND	ND	0.50	4776647
Bis(2-chloroethoxy)methane	ug/L	ND	ND	ND	0.50	4776647
Bis(2-chloroisopropyl)ether	ug/L	ND	ND	ND	0.50	4776647
Bis(2-ethylhexyl)phthalate	ug/L	ND	ND	ND	2.0	4776647
4-Bromophenyl phenyl ether	ug/L	ND	ND	ND	0.30	4776647
Camphene	ug/L	ND	ND	ND	1.0	4776647
4-Chlorophenyl phenyl ether	ug/L	ND	ND	ND	0.50	4776647
Di-N-butyl phthalate	ug/L	ND	ND	ND	2.0	4776647
Di-N-octyl phthalate	ug/L	ND	ND	ND	0.80	4776647
2,4-Dinitrotoluene	ug/L	ND	ND	ND	0.50	4776647
2,6-Dinitrotoluene	ug/L	ND	ND	ND	0.50	4776647
Diphenyl Ether	ug/L	ND	ND	ND	0.30	4776647
Indole	ug/L	ND	ND	ND	1.0	4776647
Nitrosodiphenylamine/Diphenylamine	ug/L	ND	ND	ND	1.0	4776647
N-Nitroso-di-n-propylamine	ug/L	ND	ND	ND	0.50	4776647
Surrogate Recovery (%)						
2,4,6-Tribromophenol	%	26	35	64		4776647
2-Fluorobiphenyl	%	79	81	85		4776647
2-Fluorophenol	%	18	21	37		4776647
D14-Terphenyl	%	129	137 (1)	131 (1)		4776647
D5-Nitrobenzene	%	71	72	79		4776647
D5-Phenol	%	22	22	28		4776647

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected
(1) Surrogate recovery was above the upper control limit. This may represent a high bias in some results.

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Maxxam Job #: B6Q2448
Report Date: 2016/12/09

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GOV
Your P.O. #: 720.8121.3516
Sampler Initials: AS

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		DOE314	DOE315	DOE316		
Sampling Date		2016/11/30	2016/11/30	2016/11/30		
COC Number		587870-03-01	587870-03-01	587870-03-01		
	UNITS	**11A**	**11B**	**7**	**RDL**	**QC Batch**
Volatile Organics						
Acetone (2-Propanone)	ug/L	ND	ND	ND	10	4775597
Benzene	ug/L	ND	ND	ND	0.10	4775597
Bromodichloromethane	ug/L	ND	0.85	ND	0.10	4775597
Acrolein	ug/L	ND	ND	ND	10	4775601
Bromoform	ug/L	ND	ND	ND	0.20	4775597
Bromomethane	ug/L	ND	ND	ND	0.50	4775597
Carbon Tetrachloride	ug/L	ND	ND	ND	0.10	4775597
Chlorobenzene	ug/L	ND	ND	ND	0.10	4775597
Chloroform	ug/L	ND	1.8	ND	0.10	4775597
Acrylonitrile	ug/L	ND	ND	ND	5.0	4775601
Chloromethane	ug/L	ND	ND	ND	0.50	4775597
Dibromochloromethane	ug/L	ND	0.29	ND	0.20	4775597
1,2-Dichlorobenzene	ug/L	ND	ND	ND	0.20	4775597
1,3-Dichlorobenzene	ug/L	ND	ND	ND	0.20	4775597
1,4-Dichlorobenzene	ug/L	ND	ND	ND	0.20	4775597
1,1-Dichloroethane	ug/L	ND	ND	ND	0.10	4775597
1,2-Dichloroethane	ug/L	ND	ND	ND	0.20	4775597
1,1-Dichloroethylene	ug/L	ND	ND	ND	0.10	4775597
cis-1,2-Dichloroethylene	ug/L	ND	ND	ND	0.10	4775597
trans-1,2-Dichloroethylene	ug/L	ND	ND	ND	0.10	4775597
1,2-Dichloropropane	ug/L	ND	ND	ND	0.10	4775597
cis-1,3-Dichloropropene	ug/L	ND	ND	ND	0.20	4775597
trans-1,3-Dichloropropene	ug/L	ND	ND	ND	0.20	4775597
Ethylbenzene	ug/L	ND	ND	ND	0.10	4775597
Ethylene Dibromide	ug/L	ND	ND	ND	0.20	4775597
Methylene Chloride(Dichloromethane)	ug/L	ND	ND	ND	0.50	4775597
Methyl Ethyl Ketone (2-Butanone)	ug/L	ND	ND	ND	5.0	4775597
Methyl Isobutyl Ketone	ug/L	ND	ND	ND	5.0	4775597
Methyl t-butyl ether (MTBE)	ug/L	ND	ND	ND	0.20	4775597
Styrene	ug/L	ND	ND	ND	0.20	4775597
1,1,1,2-Tetrachloroethane	ug/L	ND	ND	ND	0.20	4775597
1,1,2,2-Tetrachloroethane	ug/L	ND	ND	ND	0.20	4775597
Tetrachloroethylene	ug/L	ND	ND	ND	0.10	4775597

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B6Q2448
Report Date: 2016/12/09

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GOV
Your P.O. #: 720.8121.3516
Sampler Initials: AS

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		DOE314	DOE315	DOE316		
Sampling Date		2016/11/30	2016/11/30	2016/11/30		
COC Number		587870-03-01	587870-03-01	587870-03-01		
	UNITS	**11A**	**11B**	**7**	**RDL**	**QC Batch**
Toluene	ug/L	ND	ND	ND	0.20	4775597
1,1,1-Trichloroethane	ug/L	ND	ND	ND	0.10	4775597
1,1,2-Trichloroethane	ug/L	ND	ND	ND	0.20	4775597
Trichloroethylene	ug/L	ND	ND	ND	0.10	4775597
Trichlorofluoromethane (FREON 11)	ug/L	ND	ND	ND	0.20	4775597
Vinyl Chloride	ug/L	ND	ND	ND	0.20	4775597
p+m-Xylene	ug/L	ND	ND	ND	0.10	4775597
o-Xylene	ug/L	ND	ND	ND	0.10	4775597
Total Xylenes	ug/L	ND	ND	ND	0.10	4775597
Surrogate Recovery (%)						
4-Bromofluorobenzene	%	91	92	90		4775597
D4-1,2-Dichloroethane	%	111	110	112		4775597
D8-Toluene	%	97	97	95		4775597

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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City of Guelph
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GENERAL COMMENTS

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

City of Guelph
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			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4775597	4-Bromofluorobenzene	2016/12/05	100	70 - 130	101	70 - 130	93	%				
4775597	D4-1,2-Dichloroethane	2016/12/05	101	70 - 130	98	70 - 130	104	%				
4775597	D8-Toluene	2016/12/05	101	70 - 130	101	70 - 130	98	%				
4776647	2,4,6-Tribromophenol	2016/12/05	99	10 - 130	88	10 - 130	66	%				
4776647	2-Fluorobiphenyl	2016/12/05	70	30 - 130	84	30 - 130	82	%				
4776647	2-Fluorophenol	2016/12/05	37	10 - 130	51	10 - 130	47	%				
4776647	D14-Terphenyl	2016/12/05	104	30 - 130	102	30 - 130	89	%				
4776647	D5-Nitrobenzene	2016/12/05	66	30 - 130	85	30 - 130	77	%				
4776647	D5-Phenol	2016/12/05	26	10 - 130	35	10 - 130	30	%				
4775597	1,1,1,2-Tetrachloroethane	2016/12/05	113	70 - 130	108	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	1,1,1-Trichloroethane	2016/12/05	110	70 - 130	101	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	1,1,2,2-Tetrachloroethane	2016/12/05	116	70 - 130	111	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	1,1,2-Trichloroethane	2016/12/05	114	70 - 130	109	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	1,1-Dichloroethane	2016/12/05	111	70 - 130	101	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	1,1-Dichloroethylene	2016/12/05	113	70 - 130	105	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	1,2-Dichlorobenzene	2016/12/05	106	70 - 130	106	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	1,2-Dichloroethane	2016/12/05	111	70 - 130	103	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	1,2-Dichloropropane	2016/12/05	113	70 - 130	104	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	1,3-Dichlorobenzene	2016/12/05	105	70 - 130	108	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	1,4-Dichlorobenzene	2016/12/05	105	70 - 130	109	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	Acetone (2-Propanone)	2016/12/05	101	60 - 140	97	60 - 140	ND, RDL=10	ug/L	NC	30		
4775597	Benzene	2016/12/05	112	70 - 130	104	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	Bromodichloromethane	2016/12/05	115	70 - 130	106	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	Bromoform	2016/12/05	115	70 - 130	115	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	Bromomethane	2016/12/05	60 (1)	60 - 140	71	60 - 140	ND, RDL=0.50	ug/L	NC	30		
4775597	Carbon Tetrachloride	2016/12/05	111	70 - 130	104	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	Chlorobenzene	2016/12/05	113	70 - 130	108	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	Chloroform	2016/12/05	110	70 - 130	101	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	Chloromethane	2016/12/05	93	60 - 140	85	60 - 140	ND, RDL=0.50	ug/L	NC	30		
4775597	cis-1,2-Dichloroethylene	2016/12/05	118	70 - 130	110	70 - 130	ND, RDL=0.10	ug/L	NC	30		

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QUALITY ASSURANCE REPORT(CONT'D)

City of Guelph
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			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4775597	cis-1,3-Dichloropropene	2016/12/05	113	70 - 130	110	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	Dibromochloromethane	2016/12/05	112	70 - 130	111	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	Ethylbenzene	2016/12/05	113	70 - 130	109	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	Ethylene Dibromide	2016/12/05	114	70 - 130	110	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	Methyl Ethyl Ketone (2-Butanone)	2016/12/05	115	60 - 140	109	60 - 140	ND, RDL=5.0	ug/L	NC	30		
4775597	Methyl Isobutyl Ketone	2016/12/05	121	70 - 130	118	70 - 130	ND, RDL=5.0	ug/L	NC	30		
4775597	Methyl t-butyl ether (MTBE)	2016/12/05	119	70 - 130	113	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	Methylene Chloride(Dichloromethane)	2016/12/05	107	70 - 130	100	70 - 130	ND, RDL=0.50	ug/L	NC	30		
4775597	o-Xylene	2016/12/05	113	70 - 130	111	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	p+m-Xylene	2016/12/05	109	70 - 130	108	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	Styrene	2016/12/05	111	70 - 130	114	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	Tetrachloroethylene	2016/12/05	106	70 - 130	102	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	Toluene	2016/12/05	111	70 - 130	103	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	Total Xylenes	2016/12/05					ND, RDL=0.10	ug/L	NC	30		
4775597	trans-1,2-Dichloroethylene	2016/12/05	111	70 - 130	104	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	trans-1,3-Dichloropropene	2016/12/05	110	70 - 130	111	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	Trichloroethylene	2016/12/05	108	70 - 130	101	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	Trichlorofluoromethane (FREON 11)	2016/12/05	110	70 - 130	102	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	Vinyl Chloride	2016/12/05	111	70 - 130	102	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775601	Acrolein	2016/12/05	104	60 - 140	103	60 - 140	ND, RDL=10	ug/L	NC	30		
4775601	Acrylonitrile	2016/12/05	108	60 - 140	102	60 - 140	ND, RDL=5.0	ug/L	NC	30		
4776647	1-Chloronaphthalene	2016/12/05	57	30 - 130	73	30 - 130	ND, RDL=1.0	ug/L	NC	40		
4776647	1-Methylnaphthalene	2016/12/05	65	30 - 130	83	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	2,3,4,5-Tetrachlorophenol	2016/12/05	96	10 - 130	94	10 - 130	ND, RDL=0.40	ug/L	NC	40		
4776647	2,3,4,6-Tetrachlorophenol	2016/12/05	95	10 - 130	92	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	2,3,4-Trichlorophenol	2016/12/05	85	10 - 130	89	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	2,3,5,6-Tetrachlorophenol	2016/12/05	90	10 - 130	80	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	2,3,5-Trichlorophenol	2016/12/05	95	10 - 130	102	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	2,4,5-Trichlorophenol	2016/12/05	87	10 - 130	91	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	2,4,6-Trichlorophenol	2016/12/05	83	10 - 130	89	10 - 130	ND, RDL=0.50	ug/L	NC	40		

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Sampler Initials: AS

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4776647	2,4-Dichlorophenol	2016/12/05	54	10 - 130	71	10 - 130	ND, RDL=0.30	ug/L	NC	40		
4776647	2,4-Dimethylphenol	2016/12/05	63	10 - 130	16	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	2,4-Dinitrophenol	2016/12/05	86	10 - 130	61	10 - 130	ND, RDL=2.0	ug/L	NC	40		
4776647	2,4-Dinitrotoluene	2016/12/05	98	30 - 130	101	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	2,6-Dichlorophenol	2016/12/05	67	10 - 130	81	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	2,6-Dinitrotoluene	2016/12/05	83	30 - 130	93	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	2-Chloronaphthalene	2016/12/05	71	30 - 130	84	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	2-Chlorophenol	2016/12/05	55	10 - 130	73	10 - 130	ND, RDL=0.30	ug/L	NC	40		
4776647	2-Methylnaphthalene	2016/12/05	62	30 - 130	79	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	4,6-Dinitro-2-methylphenol	2016/12/05	112	10 - 130	100	10 - 130	ND, RDL=2.0	ug/L	NC	40		
4776647	4-Bromophenyl phenyl ether	2016/12/05	85	30 - 130	89	30 - 130	ND, RDL=0.30	ug/L	NC	40		
4776647	4-Chloro-3-Methylphenol	2016/12/05	74	10 - 130	80	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	4-Chlorophenyl phenyl ether	2016/12/05	80	30 - 130	86	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	4-Nitrophenol	2016/12/05	42	10 - 130	44	10 - 130	ND, RDL=1.4	ug/L	NC	40		
4776647	5-Nitroacenaphthene	2016/12/05	103	30 - 130	102	30 - 130	ND, RDL=1.0	ug/L	NC	40		
4776647	Acenaphthene	2016/12/05	77	30 - 130	91	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Acenaphthylene	2016/12/05	68	30 - 130	82	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Anthracene	2016/12/05	95	30 - 130	94	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Benzo(a)anthracene	2016/12/05	99	30 - 130	96	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Benzo(a)pyrene	2016/12/05	101	30 - 130	98	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Benzo(b/j)fluoranthene	2016/12/05	100	30 - 130	98	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Benzo(g,h,i)perylene	2016/12/05	81	30 - 130	77	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Benzo(k)fluoranthene	2016/12/05	111	30 - 130	112	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Benzyl butyl phthalate	2016/12/05	106	30 - 130	104	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	Biphenyl	2016/12/05	65	30 - 130	79	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	Bis(2-chloroethoxy)methane	2016/12/05	60	30 - 130	81	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	Bis(2-chloroethyl)ether	2016/12/05	63	30 - 130	83	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	Bis(2-chloroisopropyl)ether	2016/12/05	60	30 - 130	84	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	Bis(2-ethylhexyl)phthalate	2016/12/05	102	30 - 130	103	30 - 130	ND, RDL=2.0	ug/L	NC	40		
4776647	Camphene	2016/12/05	38	30 - 130	48	30 - 130	ND, RDL=1.0	ug/L	NC	40		

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City of Guelph
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			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4776647	Chrysene	2016/12/05	101	30 - 130	98	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Dibenz(a,h)anthracene	2016/12/05	85	30 - 130	81	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Di-N-butyl phthalate	2016/12/05	111	30 - 130	110	30 - 130	ND, RDL=2.0	ug/L	NC	40		
4776647	Di-N-octyl phthalate	2016/12/05	121	30 - 130	121	30 - 130	ND, RDL=0.80	ug/L	NC	40		
4776647	Diphenyl Ether	2016/12/05	66	30 - 130	82	30 - 130	ND, RDL=0.30	ug/L	NC	40		
4776647	Fluoranthene	2016/12/05	101	30 - 130	97	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Fluorene	2016/12/05	83	30 - 130	90	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Indeno(1,2,3-cd)pyrene	2016/12/05	79	30 - 130	75	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Indole	2016/12/05	32	30 - 130	39	30 - 130	ND, RDL=1.0	ug/L	NC	40		
4776647	m/p-Cresol	2016/12/05	52	10 - 130	57	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	Naphthalene	2016/12/05	63	30 - 130	81	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Nitrosodiphenylamine/Diphenylamine	2016/12/05	102	30 - 130	96	30 - 130	ND, RDL=1.0	ug/L	NC	40		
4776647	N-Nitroso-di-n-propylamine	2016/12/05	72	30 - 130	91	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	o-Cresol	2016/12/05	52	10 - 130	52	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	Pentachlorophenol	2016/12/05	93	10 - 130	77	10 - 130	ND, RDL=1.0	ug/L	NC	40		
4776647	Perylene	2016/12/05	97	30 - 130	94	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Phenanthrene	2016/12/05	91	30 - 130	90	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776647	Phenol	2016/12/05	22	10 - 130	30	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4776647	Pyrene	2016/12/05	107	30 - 130	104	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4776867	Dissolved Boron (B)	2016/12/07	98	80 - 120	98	80 - 120	ND, RDL=10	ug/L				
4776867	Dissolved Calcium (Ca)	2016/12/07	NC	80 - 120	94	80 - 120	ND, RDL=200	ug/L				
4776867	Dissolved Magnesium (Mg)	2016/12/07	NC	80 - 120	98	80 - 120	ND, RDL=50	ug/L				
4776867	Dissolved Phosphorus (P)	2016/12/07	103	80 - 120	102	80 - 120	ND, RDL=100	ug/L				
4776867	Dissolved Potassium (K)	2016/12/07	97	80 - 120	97	80 - 120	ND, RDL=200	ug/L				
4776867	Dissolved Sodium (Na)	2016/12/07	NC	80 - 120	97	80 - 120	ND, RDL=100	ug/L				
4776867	Dissolved Zinc (Zn)	2016/12/07	95	80 - 120	96	80 - 120	ND, RDL=5.0	ug/L				
4776877	Alkalinity (Total as CaCO3)	2016/12/04			95	85 - 115	ND, RDL=1.0	mg/L	0.48	20		
4776883	Conductivity	2016/12/04			101	85 - 115	ND, RDL=1.0	umho/cm	0.52	25		
4776884	pH	2016/12/04			101	98 - 103			0.13	N/A		

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			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4777220	Dissolved Chloride (Cl)	2016/12/05	NC	80 - 120	104	80 - 120	ND, RDL=1.0	mg/L	0.56	20		
4777226	Dissolved Sulphate (SO4)	2016/12/05	NC	75 - 125	106	80 - 120	ND, RDL=1.0	mg/L	0.59	20		
4777495	Total BOD	2016/12/08					ND, RDL=2.0	mg/L	NC	25	90	80 - 120
4777876	Nitrate (N)	2016/12/07	109	80 - 120	101	80 - 120	ND, RDL=0.10	mg/L	NC	20		
4777876	Nitrite (N)	2016/12/07	105	80 - 120	102	80 - 120	ND, RDL=0.010	mg/L				
4777886	Nitrate (N)	2016/12/07	97	80 - 120	101	80 - 120	ND, RDL=0.10	mg/L	0.30	20		
4777886	Nitrite (N)	2016/12/07	100	80 - 120	102	80 - 120	ND, RDL=0.010	mg/L	NC	20		
4778620	Total Ammonia-N	2016/12/08	93	80 - 120	99	85 - 115	ND, RDL=0.050	mg/L	NC	20		
4778650	Phenols-4AAP	2016/12/06	99	80 - 120	99	85 - 115	ND, RDL=0.0010	mg/L	NC	20		
4778666	Total Kjeldahl Nitrogen (TKN)	2016/12/07	93	80 - 120	95	80 - 120	ND, RDL=0.10	mg/L	4.2	20	98	80 - 120
4778890	Total Chemical Oxygen Demand (COD)	2016/12/07	109	75 - 125	100	75 - 125	ND, RDL=4.0	mg/L	NC	25		
4779148	Total Phosphorus	2016/12/06	93	80 - 120	94	80 - 120	ND, RDL=0.020	mg/L	NC	20	94	80 - 120
4780063	Total Phosphorus	2016/12/06	96	80 - 120	96	80 - 120	ND, RDL=0.020	mg/L	0.053	20	98	80 - 120
4781051	Dissolved Boron (B)	2016/12/07	99	80 - 120	103	80 - 120	ND, RDL=10	ug/L	0.98	20		
4781051	Dissolved Calcium (Ca)	2016/12/07	NC	80 - 120	97	80 - 120	ND, RDL=200	ug/L				
4781051	Dissolved Magnesium (Mg)	2016/12/07	NC	80 - 120	100	80 - 120	ND, RDL=50	ug/L				
4781051	Dissolved Phosphorus (P)	2016/12/07	102	80 - 120	105	80 - 120	ND, RDL=100	ug/L				
4781051	Dissolved Potassium (K)	2016/12/07	97	80 - 120	104	80 - 120	ND, RDL=200	ug/L				
4781051	Dissolved Sodium (Na)	2016/12/07	NC	80 - 120	100	80 - 120	ND, RDL=100	ug/L	0.11	20		
4781051	Dissolved Zinc (Zn)	2016/12/07	96	80 - 120	99	80 - 120	ND, RDL=5.0	ug/L	NC	20		

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Maxxam Job #: B6Q2448
Report Date: 2016/12/09

QUALITY ASSURANCE REPORT(CONT'D)

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GOV
Your P.O. #: 720.8121.3516
Sampler Initials: AS

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4781782	Total Iron (Fe)	2016/12/07	97	80 - 120	101	80 - 120	ND, RDL=0.02	mg/L	1.9	25		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) The recovery was below the lower control limit. This may represent a low bias in some results for this specific analyte.

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Maxxam Job #: B6Q2448
Report Date: 2016/12/09

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GOV
Your P.O. #: 720.8121.3516
Sampler Initials: AS

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Cristina Carriere

Cristina Carriere, Scientific Services

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Maxxam
A Bureau Veritas Group Company

Your P.O. #: 720.8121.3516
Your Project #: Wet/Dry Ground Water
Site Location: FALL SW
Your C.O.C. #: 587870-04-01

Attention:Amy Spence

City of Guelph
Soild Waste RIC (Wet/Dry)
110 Dunlop Drive
Guelph, ON
CANADA N1H 6H8

Report Date: 2016/12/09
Report #: R4281404
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6Q3664
Received: 2016/12/02, 15:18

Sample Matrix: Water
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
ABN Compounds in Water by GC/MS	6	2016/12/06	2016/12/07	CAM SOP-00301	EPA 8270 m
Alkalinity	6	N/A	2016/12/05	CAM SOP-00448	SM 22 2320 B m
Biochemical Oxygen Demand (BOD)	6	2016/12/04	2016/12/09	CAM SOP-00427	SM 22 5210B m
Chloride by Automated Colourimetry	6	N/A	2016/12/06	CAM SOP-00463	EPA 325.2 m
Chemical Oxygen Demand	6	N/A	2016/12/07	CAM SOP-00416	SM 22 5220 D m
Conductivity	6	N/A	2016/12/05	CAM SOP-00414	SM 22 2510 m
Dissolved Metals by ICPMS	6	N/A	2016/12/07	CAM SOP-00447	EPA 6020B m
Total Metals Analysis by ICP	6	2016/12/08	2016/12/08	CAM SOP-00408	EPA 6010C m
Total Ammonia-N	6	N/A	2016/12/09	CAM SOP-00441	EPA GS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (1)	6	N/A	2016/12/06	CAM SOP-00440	SM 22 4500-NO3I/NO2B
pH	6	N/A	2016/12/05	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	2	N/A	2016/12/06	CAM SOP-00444	OMOE E3179 m
Phenols (4AAP)	4	N/A	2016/12/07	CAM SOP-00444	OMOE E3179 m
Sulphate by Automated Colourimetry	6	N/A	2016/12/06	CAM SOP-00464	EPA 375.4 m
Total Kjeldahl Nitrogen in Water	5	2016/12/05	2016/12/07	CAM SOP-00938	OMOE E3516 m
Total Kjeldahl Nitrogen in Water	1	2016/12/05	2016/12/08	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	6	2016/12/06	2016/12/07	CAM SOP-00407	SM 22 4500 P B H m
Volatile Organic Compounds in Water	6	N/A	2016/12/05	CAM SOP-00226	EPA 8260C m
Non-Routine Volatile Organic Compounds	6	N/A	2016/12/05	CAM SOP-00226	EPA 8260 m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report.

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Your P.O. #: 720.8121.3516
Your Project #: Wet/Dry Ground Water
Site Location: FALL SW
Your C.O.C. #: 587870-04-01

Attention:Amy Spence

City of Guelph
Soild Waste RIC (Wet/Dry)
110 Dunlop Drive
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CANADA N1H 6H8

Report Date: 2016/12/09
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CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6Q3664
Received: 2016/12/02, 15:18

Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
James Aspin, Senior Project Manager
Email: JAspin@maxxam.ca
Phone# (905)817-5771

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B6Q3664
Report Date: 2016/12/09

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL SW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

RESULTS OF ANALYSES OF WATER

Maxxam ID		DOJ937			DOJ938		
Sampling Date		2016/12/01			2016/12/01		
COC Number		587870-04-01			587870-04-01		
	UNITS	**18 A**	**RDL**	**QC Batch**	**18 B**	**RDL**	**QC Batch**
Inorganics							
Total Ammonia-N	mg/L	ND	0.050	4778715	0.11	0.050	4778715
Total BOD	mg/L	ND	2.0	4777895	ND	2.0	4777895
Total Chemical Oxygen Demand (COD)	mg/L	ND	4.0	4778669	110	4.0	4778669
Conductivity	umho/cm	620	1.0	4777857	520	1.0	4777857
Total Kjeldahl Nitrogen (TKN)	mg/L	ND (1)	0.20	4778683	0.26	0.10	4778683
pH	pH	7.93		4777858	8.26		4777858
Phenols-4AAP	mg/L	ND	0.0010	4778650	ND	0.0010	4781774
Total Phosphorus	mg/L	0.14	0.10	4781004	5.7	0.20	4781004
Dissolved Sulphate (SO4)	mg/L	36	1.0	4779633	14	1.0	4779633
Alkalinity (Total as CaCO3)	mg/L	250	1.0	4777856	230	1.0	4777856
Dissolved Chloride (Cl)	mg/L	18	1.0	4779632	22	1.0	4779632
Nitrite (N)	mg/L	ND	0.010	4777743	0.024	0.010	4777743
Nitrate (N)	mg/L	4.93	0.10	4777743	0.22	0.10	4777743
Nitrate + Nitrite (N)	mg/L	4.93	0.10	4777743	0.25	0.10	4777743

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected
(1) Due to high concentrations of NO3NO2, sample required dilution. Detection limits were adjusted accordingly.

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Maxxam Job #: B6Q3664
Report Date: 2016/12/09

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL SW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

RESULTS OF ANALYSES OF WATER

Maxxam ID		DOJ939	DOJ939			DOJ940		
Sampling Date		2016/12/01	2016/12/01			2016/12/01		
COC Number		587870-04-01	587870-04-01			587870-04-01		
	UNITS	**15 A**	**15 A Lab-Dup**	**RDL**	**QC Batch**	**15 B**	**RDL**	**QC Batch**
Inorganics								
Total Ammonia-N	mg/L	ND	ND	0.050	4778715	ND	0.050	4778715
Total BOD	mg/L	ND		2.0	4777895	>40	2.0	4777895
Total Chemical Oxygen Demand (COD)	mg/L	ND	ND	4.0	4778669	220	8.0	4778669
Conductivity	umho/cm	970		1.0	4777857	1000	1.0	4777857
Total Kjeldahl Nitrogen (TKN)	mg/L	0.27		0.10	4778683	1.3	0.10	4778683
pH	pH	7.96			4777858	7.56		4777858
Phenols-4AAP	mg/L	ND		0.0010	4781774	0.034	0.0050	4781774
Total Phosphorus	mg/L	0.023		0.020	4780474	0.19	0.10	4781004
Dissolved Sulphate (SO4)	mg/L	96		1.0	4779633	220	1.0	4779633
Alkalinity (Total as CaCO3)	mg/L	250		1.0	4777856	190	1.0	4777856
Dissolved Chloride (Cl)	mg/L	99		1.0	4779632	75	1.0	4779632
Nitrite (N)	mg/L	ND		0.010	4777743	0.025	0.010	4777743
Nitrate (N)	mg/L	ND		0.10	4777743	ND	0.10	4777743
Nitrate + Nitrite (N)	mg/L	ND		0.10	4777743	ND	0.10	4777743

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B6Q3664
Report Date: 2016/12/09

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL SW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

RESULTS OF ANALYSES OF WATER

Maxxam ID		DOJ941	DOJ941			DOJ942		
Sampling Date		2016/12/02	2016/12/02			2016/12/02		
COC Number		587870-04-01	587870-04-01			587870-04-01		
	UNITS	**6 A**	**6 A Lab-Dup**	**RDL**	**QC Batch**	**6 B**	**RDL**	**QC Batch**
Inorganics								
Total Ammonia-N	mg/L	ND		0.050	4778715	ND	0.050	4778715
Total BOD	mg/L	2.0		2.0	4777895	ND	2.0	4777895
Total Chemical Oxygen Demand (COD)	mg/L	ND		4.0	4778669	ND	4.0	4778669
Conductivity	umho/cm	1300		1.0	4777857	1000	1.0	4777857
Total Kjeldahl Nitrogen (TKN)	mg/L	ND	0.12	0.10	4778683	0.15	0.10	4778683
pH	pH	7.92			4777858	7.93		4777858
Phenols-4AAP	mg/L	ND		0.0010	4779990	ND	0.0010	4781774
Total Phosphorus	mg/L	ND		0.020	4780474	ND	0.020	4780474
Dissolved Sulphate (SO4)	mg/L	42		1.0	4779633	31	1.0	4779633
Alkalinity (Total as CaCO3)	mg/L	270		1.0	4777856	300	1.0	4777856
Dissolved Chloride (Cl)	mg/L	210		2.0	4779632	120	1.0	4779632
Nitrite (N)	mg/L	ND		0.010	4777743	ND	0.010	4777743
Nitrate (N)	mg/L	2.65		0.10	4777743	2.89	0.10	4777743
Nitrate + Nitrite (N)	mg/L	2.65		0.10	4777743	2.89	0.10	4777743

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B6Q3664
Report Date: 2016/12/09

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL SW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		DOJ937		DOJ938		DOJ939	DOJ940	DOJ941		
Sampling Date		2016/12/01		2016/12/01		2016/12/01	2016/12/01	2016/12/02		
COC Number		587870-04-01		587870-04-01		587870-04-01	587870-04-01	587870-04-01		
	UNITS	**18 A**	**RDL**	**18 B**	**RDL**	**15 A**	**15 B**	**6 A**	**RDL**	**QC Batch**
Metals										
Total Iron (Fe)	mg/L	2.9	0.02	240	0.2	0.90	2.2	ND	0.02	4784322
Dissolved Boron (B)	ug/L	11	10	30	10	19	94	20	10	4781943
Dissolved Calcium (Ca)	ug/L	75000	200	17000	200	100000	140000	100000	200	4781943
Dissolved Magnesium (Mg)	ug/L	26000	50	6000	50	35000	13000	26000	50	4781943
Dissolved Phosphorus (P)	ug/L	ND	100	ND	100	ND	ND	ND	100	4781943
Dissolved Potassium (K)	ug/L	1200	200	1100	200	1300	15000	2700	200	4781943
Dissolved Sodium (Na)	ug/L	4500	100	89000	100	37000	36000	130000	100	4781943
Dissolved Zinc (Zn)	ug/L	350	5.0	7.2	5.0	ND	88	30	5.0	4781943

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

Maxxam ID		DOJ942		
Sampling Date		2016/12/02		
COC Number		587870-04-01		
	UNITS	**6 B**	**RDL**	**QC Batch**
Metals				
Total Iron (Fe)	mg/L	0.12	0.02	4784322
Dissolved Boron (B)	ug/L	34	10	4781943
Dissolved Calcium (Ca)	ug/L	84000	200	4781943
Dissolved Magnesium (Mg)	ug/L	20000	50	4781943
Dissolved Phosphorus (P)	ug/L	ND	100	4781943
Dissolved Potassium (K)	ug/L	6600	200	4781943
Dissolved Sodium (Na)	ug/L	79000	100	4781943
Dissolved Zinc (Zn)	ug/L	58	5.0	4781943

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B6Q3664
Report Date: 2016/12/09

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL SW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		DOJ937	DOJ937	DOJ938	DOJ939		DOJ940		
Sampling Date		2016/12/01	2016/12/01	2016/12/01	2016/12/01		2016/12/01		
COC Number		587870-04-01	587870-04-01	587870-04-01	587870-04-01		587870-04-01		
	UNITS	**18 A**	**18 A Lab-Dup**	**18 B**	**15 A**	**RDL**	**15 B**	**RDL**	**QC Batch**
Semivolatile Organics									
Acenaphthene	ug/L	ND	ND	ND	ND	0.20	ND	0.80	4781038
Acenaphthylene	ug/L	ND	ND	ND	ND	0.20	ND	0.80	4781038
Anthracene	ug/L	ND	ND	ND	ND	0.20	ND	0.80	4781038
Benzo(a)anthracene	ug/L	ND	ND	ND	ND	0.20	ND	0.80	4781038
Benzo(a)pyrene	ug/L	ND	ND	ND	ND	0.20	ND	0.80	4781038
Benzo(b/j)fluoranthene	ug/L	ND	ND	ND	ND	0.20	ND	0.80	4781038
Benzo(g,h,i)perylene	ug/L	ND	ND	ND	ND	0.20	ND	0.80	4781038
Benzo(k)fluoranthene	ug/L	ND	ND	ND	ND	0.20	ND	0.80	4781038
1-Chloronaphthalene	ug/L	ND	ND	ND	ND	1.0	ND	4.0	4781038
2-Chloronaphthalene	ug/L	ND	ND	ND	ND	0.50	ND	2.0	4781038
Chrysene	ug/L	ND	ND	ND	ND	0.20	ND	0.80	4781038
Dibenz(a,h)anthracene	ug/L	ND	ND	ND	ND	0.20	ND	0.80	4781038
Fluoranthene	ug/L	ND	ND	ND	ND	0.20	ND	0.80	4781038
Fluorene	ug/L	ND	ND	ND	ND	0.20	ND	0.80	4781038
Indeno(1,2,3-cd)pyrene	ug/L	ND	ND	ND	ND	0.20	ND	0.80	4781038
1-Methylnaphthalene	ug/L	ND	ND	ND	ND	0.20	ND	0.80	4781038
2-Methylnaphthalene	ug/L	ND	ND	ND	ND	0.20	ND	0.80	4781038
Naphthalene	ug/L	ND	ND	ND	ND	0.20	ND	0.80	4781038
5-Nitroacenaphthene	ug/L	ND	ND	ND	ND	1.0	ND	4.0	4781038
Perylene	ug/L	ND	ND	ND	ND	0.20	ND	0.80	4781038
Phenanthrene	ug/L	ND	ND	ND	ND	0.20	ND	0.80	4781038
Pyrene	ug/L	ND	ND	ND	ND	0.20	ND	0.80	4781038
2-Chlorophenol	ug/L	ND	ND	ND	ND	0.30	ND	1.2	4781038
4-Chloro-3-Methylphenol	ug/L	ND	ND	ND	ND	0.50	ND	2.0	4781038
m/p-Cresol	ug/L	ND	ND	ND	ND	0.50	ND	2.0	4781038
o-Cresol	ug/L	ND	ND	ND	ND	0.50	ND	2.0	4781038
2,4-Dichlorophenol	ug/L	ND	ND	ND	ND	0.30	ND	1.2	4781038
2,6-Dichlorophenol	ug/L	ND	ND	ND	ND	0.50	ND	2.0	4781038
2,4-Dimethylphenol	ug/L	ND	ND	ND	ND	0.50	ND	2.0	4781038
2,4-Dinitrophenol	ug/L	ND	ND	ND	ND	2.0	ND	8.0	4781038
4,6-Dinitro-2-methylphenol	ug/L	ND	ND	ND	ND	2.0	ND	8.0	4781038

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B6Q3664
Report Date: 2016/12/09

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL SW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		DOJ937	DOJ937	DOJ938	DOJ939		DOJ940		
Sampling Date		2016/12/01	2016/12/01	2016/12/01	2016/12/01		2016/12/01		
COC Number		587870-04-01	587870-04-01	587870-04-01	587870-04-01		587870-04-01		
	UNITS	**18 A**	**18 A Lab-Dup**	**18 B**	**15 A**	**RDL**	**15 B**	**RDL**	**QC Batch**
4-Nitrophenol	ug/L	ND	ND	ND	ND	1.4	ND	5.6	4781038
Pentachlorophenol	ug/L	ND	ND	ND	ND	1.0	ND	4.0	4781038
Phenol	ug/L	ND	ND	ND	ND	0.50	ND	2.0	4781038
2,3,4,5-Tetrachlorophenol	ug/L	ND	ND	ND	ND	0.40	ND	1.6	4781038
2,3,4,6-Tetrachlorophenol	ug/L	ND	ND	ND	ND	0.50	ND	2.0	4781038
2,3,5,6-Tetrachlorophenol	ug/L	ND	ND	ND	ND	0.50	ND	2.0	4781038
2,3,4-Trichlorophenol	ug/L	ND	ND	ND	ND	0.50	ND	2.0	4781038
2,3,5-Trichlorophenol	ug/L	ND	ND	ND	ND	0.50	ND	2.0	4781038
2,4,5-Trichlorophenol	ug/L	ND	ND	ND	ND	0.50	ND	2.0	4781038
2,4,6-Trichlorophenol	ug/L	ND	ND	ND	ND	0.50	ND	2.0	4781038
Benzyl butyl phthalate	ug/L	ND	ND	ND	ND	0.50	ND	2.0	4781038
Biphenyl	ug/L	ND	ND	ND	ND	0.50	ND	2.0	4781038
Bis(2-chloroethyl)ether	ug/L	ND	ND	ND	ND	0.50	ND	2.0	4781038
Bis(2-chloroethoxy)methane	ug/L	ND	ND	ND	ND	0.50	ND	2.0	4781038
Bis(2-chloroisopropyl)ether	ug/L	ND	ND	ND	ND	0.50	ND	2.0	4781038
Bis(2-ethylhexyl)phthalate	ug/L	ND	ND	2.9	ND	2.0	ND	8.0	4781038
4-Bromophenyl phenyl ether	ug/L	ND	ND	ND	ND	0.30	ND	1.2	4781038
Camphene	ug/L	ND	ND	ND	ND	1.0	ND	4.0	4781038
4-Chlorophenyl phenyl ether	ug/L	ND	ND	ND	ND	0.50	ND	2.0	4781038
Di-N-butyl phthalate	ug/L	ND	ND	ND	ND	2.0	ND	8.0	4781038
Di-N-octyl phthalate	ug/L	ND	ND	ND	ND	0.80	ND	3.2	4781038
2,4-Dinitrotoluene	ug/L	ND	ND	ND	ND	0.50	ND	2.0	4781038
2,6-Dinitrotoluene	ug/L	ND	ND	ND	ND	0.50	ND	2.0	4781038
Diphenyl Ether	ug/L	ND	ND	ND	ND	0.30	ND	1.2	4781038
Indole	ug/L	ND	ND	ND	ND	1.0	ND	4.0	4781038
Nitrosodiphenylamine/Diphenylamine	ug/L	ND	ND	ND	ND	1.0	ND	4.0	4781038
N-Nitroso-di-n-propylamine	ug/L	ND	ND	ND	ND	0.50	ND	2.0	4781038
Surrogate Recovery (%)									
2,4,6-Tribromophenol	%	18	24	22	34		91		4781038
2-Fluorobiphenyl	%	46	44	68	78		51		4781038
2-Fluorophenol	%	4.1 (1)	6.8 (1)	4.9 (1)	15		26		4781038

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected
(1) Surrogate recovery was below the lower control limit. This may represent a low bias in some results.

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Maxxam Job #: B6Q3664
Report Date: 2016/12/09

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL SW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		DOJ937	DOJ937	DOJ938	DOJ939		DOJ940		
Sampling Date		2016/12/01	2016/12/01	2016/12/01	2016/12/01		2016/12/01		
COC Number		587870-04-01	587870-04-01	587870-04-01	587870-04-01		587870-04-01		
	UNITS	**18 A**	**18 A Lab-Dup**	**18 B**	**15 A**	**RDL**	**15 B**	**RDL**	**QC Batch**
D14-Terphenyl	%	94	93	92	97		97		4781038
D5-Nitrobenzene	%	40	37	52	75		43		4781038
D5-Phenol	%	8.6 (1)	10	11	19		20		4781038

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
(1) Surrogate recovery was below the lower control limit. This may represent a low bias in some results.

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City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL SW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		DOJ941	DOJ942		
Sampling Date		2016/12/02	2016/12/02		
COC Number		587870-04-01	587870-04-01		
	UNITS	**6 A**	**6 B**	**RDL**	**QC Batch**
Semivolatile Organics					
Acenaphthene	ug/L	ND	ND	0.20	4781038
Acenaphthylene	ug/L	ND	ND	0.20	4781038
Anthracene	ug/L	ND	ND	0.20	4781038
Benzo(a)anthracene	ug/L	ND	ND	0.20	4781038
Benzo(a)pyrene	ug/L	ND	ND	0.20	4781038
Benzo(b/j)fluoranthene	ug/L	ND	ND	0.20	4781038
Benzo(g,h,i)perylene	ug/L	ND	ND	0.20	4781038
Benzo(k)fluoranthene	ug/L	ND	ND	0.20	4781038
1-Chloronaphthalene	ug/L	ND	ND	1.0	4781038
2-Chloronaphthalene	ug/L	ND	ND	0.50	4781038
Chrysene	ug/L	ND	ND	0.20	4781038
Dibenz(a,h)anthracene	ug/L	ND	ND	0.20	4781038
Fluoranthene	ug/L	ND	ND	0.20	4781038
Fluorene	ug/L	ND	ND	0.20	4781038
Indeno(1,2,3-cd)pyrene	ug/L	ND	ND	0.20	4781038
1-Methylnaphthalene	ug/L	ND	ND	0.20	4781038
2-Methylnaphthalene	ug/L	ND	ND	0.20	4781038
Naphthalene	ug/L	ND	ND	0.20	4781038
5-Nitroacenaphthene	ug/L	ND	ND	1.0	4781038
Perylene	ug/L	ND	ND	0.20	4781038
Phenanthrene	ug/L	ND	ND	0.20	4781038
Pyrene	ug/L	ND	ND	0.20	4781038
2-Chlorophenol	ug/L	ND	ND	0.30	4781038
4-Chloro-3-Methylphenol	ug/L	ND	ND	0.50	4781038
m/p-Cresol	ug/L	ND	ND	0.50	4781038
o-Cresol	ug/L	ND	ND	0.50	4781038
2,4-Dichlorophenol	ug/L	ND	ND	0.30	4781038
2,6-Dichlorophenol	ug/L	ND	ND	0.50	4781038
2,4-Dimethylphenol	ug/L	ND	ND	0.50	4781038
2,4-Dinitrophenol	ug/L	ND	ND	2.0	4781038
4,6-Dinitro-2-methylphenol	ug/L	ND	ND	2.0	4781038
4-Nitrophenol	ug/L	ND	ND	1.4	4781038

RDL = Reportable Detection Limit
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ND = Not detected

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Maxxam Job #: B6Q3664
Report Date: 2016/12/09

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL SW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		DOJ941	DOJ942		
Sampling Date		2016/12/02	2016/12/02		
COC Number		587870-04-01	587870-04-01		
	UNITS	**6 A**	**6 B**	**RDL**	**QC Batch**
Pentachlorophenol	ug/L	ND	ND	1.0	4781038
Phenol	ug/L	ND	ND	0.50	4781038
2,3,4,5-Tetrachlorophenol	ug/L	ND	ND	0.40	4781038
2,3,4,6-Tetrachlorophenol	ug/L	ND	ND	0.50	4781038
2,3,5,6-Tetrachlorophenol	ug/L	ND	ND	0.50	4781038
2,3,4-Trichlorophenol	ug/L	ND	ND	0.50	4781038
2,3,5-Trichlorophenol	ug/L	ND	ND	0.50	4781038
2,4,5-Trichlorophenol	ug/L	ND	ND	0.50	4781038
2,4,6-Trichlorophenol	ug/L	ND	ND	0.50	4781038
Benzyl butyl phthalate	ug/L	ND	ND	0.50	4781038
Biphenyl	ug/L	ND	ND	0.50	4781038
Bis(2-chloroethyl)ether	ug/L	ND	ND	0.50	4781038
Bis(2-chloroethoxy)methane	ug/L	ND	ND	0.50	4781038
Bis(2-chloroisopropyl)ether	ug/L	ND	ND	0.50	4781038
Bis(2-ethylhexyl)phthalate	ug/L	ND	ND	2.0	4781038
4-Bromophenyl phenyl ether	ug/L	ND	ND	0.30	4781038
Camphene	ug/L	ND	ND	1.0	4781038
4-Chlorophenyl phenyl ether	ug/L	ND	ND	0.50	4781038
Di-N-butyl phthalate	ug/L	ND	ND	2.0	4781038
Di-N-octyl phthalate	ug/L	ND	ND	0.80	4781038
2,4-Dinitrotoluene	ug/L	ND	ND	0.50	4781038
2,6-Dinitrotoluene	ug/L	ND	ND	0.50	4781038
Diphenyl Ether	ug/L	ND	ND	0.30	4781038
Indole	ug/L	ND	ND	1.0	4781038
Nitrosodiphenylamine/Diphenylamine	ug/L	ND	ND	1.0	4781038
N-Nitroso-di-n-propylamine	ug/L	ND	ND	0.50	4781038
Surrogate Recovery (%)					
2,4,6-Tribromophenol	%	34	22		4781038
2-Fluorobiphenyl	%	71	75		4781038
2-Fluorophenol	%	13	9.0 (1)		4781038
D14-Terphenyl	%	97	100		4781038

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected
(1) Surrogate recovery was below the lower control limit. This may represent a low bias in some results.

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Maxxam Job #: B6Q3664
Report Date: 2016/12/09

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL SW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		DOJ941	DOJ942		
Sampling Date		2016/12/02	2016/12/02		
COC Number		587870-04-01	587870-04-01		
	UNITS	**6 A**	**6 B**	**RDL**	**QC Batch**
D5-Nitrobenzene	%	69	73		4781038
D5-Phenol	%	18	17		4781038

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL SW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		DOJ937	DOJ938	DOJ939		DOJ940		DOJ941		
Sampling Date		2016/12/01	2016/12/01	2016/12/01		2016/12/01		2016/12/02		
COC Number		587870-04-01	587870-04-01	587870-04-01		587870-04-01		587870-04-01		
	UNITS	**18 A**	**18 B**	**15 A**	**RDL**	**15 B**	**RDL**	**6 A**	**RDL**	**QC Batch**
Volatile Organics										
Acetone (2-Propanone)	ug/L	ND	ND	ND	10	ND	50	ND	10	4775597
Benzene	ug/L	ND	0.11	ND	0.10	ND	0.50	ND	0.10	4775597
Bromodichloromethane	ug/L	ND	ND	ND	0.10	ND	0.50	0.41	0.10	4775597
Acrolein	ug/L	ND	ND	ND	10	ND	50	ND	10	4775601
Bromoform	ug/L	ND	ND	ND	0.20	ND	1.0	ND	0.20	4775597
Bromomethane	ug/L	ND	ND	ND	0.50	ND	2.5	ND	0.50	4775597
Carbon Tetrachloride	ug/L	ND	ND	ND	0.10	ND	0.50	ND	0.10	4775597
Chlorobenzene	ug/L	ND	ND	ND	0.10	ND	0.50	ND	0.10	4775597
Chloroform	ug/L	ND	ND	ND	0.10	ND	0.50	1.5	0.10	4775597
Acrylonitrile	ug/L	ND	ND	ND	5.0	ND	25	ND	5.0	4775601
Chloromethane	ug/L	ND	ND	ND	0.50	ND	2.5	ND	0.50	4775597
Dibromochloromethane	ug/L	ND	ND	ND	0.20	ND	1.0	ND	0.20	4775597
1,2-Dichlorobenzene	ug/L	ND	ND	ND	0.20	ND	1.0	ND	0.20	4775597
1,3-Dichlorobenzene	ug/L	ND	ND	ND	0.20	ND	1.0	ND	0.20	4775597
1,4-Dichlorobenzene	ug/L	ND	ND	ND	0.20	ND	1.0	ND	0.20	4775597
1,1-Dichloroethane	ug/L	ND	ND	ND	0.10	ND	0.50	ND	0.10	4775597
1,2-Dichloroethane	ug/L	ND	ND	ND	0.20	ND	1.0	ND	0.20	4775597
1,1-Dichloroethylene	ug/L	ND	ND	ND	0.10	ND	0.50	ND	0.10	4775597
cis-1,2-Dichloroethylene	ug/L	ND	ND	ND	0.10	ND	0.50	ND	0.10	4775597
trans-1,2-Dichloroethylene	ug/L	ND	ND	ND	0.10	ND	0.50	ND	0.10	4775597
1,2-Dichloropropane	ug/L	ND	ND	ND	0.10	ND	0.50	ND	0.10	4775597
cis-1,3-Dichloropropene	ug/L	ND	ND	ND	0.20	ND	1.0	ND	0.20	4775597
trans-1,3-Dichloropropene	ug/L	ND	ND	ND	0.20	ND	1.0	ND	0.20	4775597
Ethylbenzene	ug/L	ND	ND	ND	0.10	ND	0.50	ND	0.10	4775597
Ethylene Dibromide	ug/L	ND	ND	ND	0.20	ND	1.0	ND	0.20	4775597
Methylene Chloride(Dichloromethane)	ug/L	ND	ND	ND	0.50	ND	2.5	ND	0.50	4775597
Methyl Ethyl Ketone (2-Butanone)	ug/L	ND	ND	ND	5.0	ND	25	ND	5.0	4775597
Methyl Isobutyl Ketone	ug/L	ND	ND	ND	5.0	ND	25	ND	5.0	4775597
Methyl t-butyl ether (MTBE)	ug/L	ND	ND	ND	0.20	ND	1.0	ND	0.20	4775597
Styrene	ug/L	ND	ND	ND	0.20	ND	1.0	ND	0.20	4775597
1,1,1,2-Tetrachloroethane	ug/L	ND	ND	ND	0.20	ND	1.0	ND	0.20	4775597
1,1,2,2-Tetrachloroethane	ug/L	ND	ND	ND	0.20	ND	1.0	ND	0.20	4775597
Tetrachloroethylene	ug/L	ND	ND	ND	0.10	ND	0.50	ND	0.10	4775597

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B6Q3664
Report Date: 2016/12/09

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL SW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		DOJ937	DOJ938	DOJ939		DOJ940		DOJ941		
Sampling Date		2016/12/01	2016/12/01	2016/12/01		2016/12/01		2016/12/02		
COC Number		587870-04-01	587870-04-01	587870-04-01		587870-04-01		587870-04-01		
	UNITS	**18 A**	**18 B**	**15 A**	**RDL**	**15 B**	**RDL**	**6 A**	**RDL**	**QC Batch**
Toluene	ug/L	ND	0.27	ND	0.20	ND	1.0	ND	0.20	4775597
1,1,1-Trichloroethane	ug/L	ND	ND	ND	0.10	ND	0.50	ND	0.10	4775597
1,1,2-Trichloroethane	ug/L	ND	ND	ND	0.20	ND	1.0	ND	0.20	4775597
Trichloroethylene	ug/L	ND	ND	ND	0.10	ND	0.50	ND	0.10	4775597
Trichlorofluoromethane (FREON 11)	ug/L	ND	ND	ND	0.20	ND	1.0	ND	0.20	4775597
Vinyl Chloride	ug/L	ND	ND	ND	0.20	ND	1.0	ND	0.20	4775597
p+m-Xylene	ug/L	ND	0.14	ND	0.10	ND	0.50	ND	0.10	4775597
o-Xylene	ug/L	ND	ND	ND	0.10	ND	0.50	ND	0.10	4775597
Total Xylenes	ug/L	ND	0.14	ND	0.10	ND	0.50	ND	0.10	4775597
Surrogate Recovery (%)										
4-Bromofluorobenzene	%	93	93	90		92		91		4775597
D4-1,2-Dichloroethane	%	107	106	108		108		109		4775597
D8-Toluene	%	96	98	97		97		95		4775597

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		DOJ942		
Sampling Date		2016/12/02		
COC Number		587870-04-01		
	UNITS	**6 B**	**RDL**	**QC Batch**
Volatile Organics				
Acetone (2-Propanone)	ug/L	ND	10	4775597
Benzene	ug/L	ND	0.10	4775597
Bromodichloromethane	ug/L	ND	0.10	4775597
Acrolein	ug/L	ND	10	4775601
Bromoform	ug/L	ND	0.20	4775597
Bromomethane	ug/L	ND	0.50	4775597
Carbon Tetrachloride	ug/L	ND	0.10	4775597
Chlorobenzene	ug/L	ND	0.10	4775597
Chloroform	ug/L	0.18	0.10	4775597
Acrylonitrile	ug/L	ND	5.0	4775601
Chloromethane	ug/L	ND	0.50	4775597
Dibromochloromethane	ug/L	ND	0.20	4775597
1,2-Dichlorobenzene	ug/L	ND	0.20	4775597
1,3-Dichlorobenzene	ug/L	ND	0.20	4775597
1,4-Dichlorobenzene	ug/L	ND	0.20	4775597
1,1-Dichloroethane	ug/L	ND	0.10	4775597
1,2-Dichloroethane	ug/L	ND	0.20	4775597
1,1-Dichloroethylene	ug/L	ND	0.10	4775597
cis-1,2-Dichloroethylene	ug/L	ND	0.10	4775597
trans-1,2-Dichloroethylene	ug/L	ND	0.10	4775597
1,2-Dichloropropane	ug/L	ND	0.10	4775597
cis-1,3-Dichloropropene	ug/L	ND	0.20	4775597
trans-1,3-Dichloropropene	ug/L	ND	0.20	4775597
Ethylbenzene	ug/L	ND	0.10	4775597
Ethylene Dibromide	ug/L	ND	0.20	4775597
Methylene Chloride(Dichloromethane)	ug/L	ND	0.50	4775597
Methyl Ethyl Ketone (2-Butanone)	ug/L	ND	5.0	4775597
Methyl Isobutyl Ketone	ug/L	ND	5.0	4775597
Methyl t-butyl ether (MTBE)	ug/L	ND	0.20	4775597
Styrene	ug/L	ND	0.20	4775597
1,1,1,2-Tetrachloroethane	ug/L	ND	0.20	4775597
1,1,2,2-Tetrachloroethane	ug/L	ND	0.20	4775597
Tetrachloroethylene	ug/L	ND	0.10	4775597

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL SW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		DOJ942		
Sampling Date		2016/12/02		
COC Number		587870-04-01		
	UNITS	**6 B**	**RDL**	**QC Batch**
Toluene	ug/L	ND	0.20	4775597
1,1,1-Trichloroethane	ug/L	ND	0.10	4775597
1,1,2-Trichloroethane	ug/L	ND	0.20	4775597
Trichloroethylene	ug/L	ND	0.10	4775597
Trichlorofluoromethane (FREON 11)	ug/L	ND	0.20	4775597
Vinyl Chloride	ug/L	ND	0.20	4775597
p+m-Xylene	ug/L	ND	0.10	4775597
o-Xylene	ug/L	ND	0.10	4775597
Total Xylenes	ug/L	ND	0.10	4775597
Surrogate Recovery (%)				
4-Bromofluorobenzene	%	89		4775597
D4-1,2-Dichloroethane	%	110		4775597
D8-Toluene	%	96		4775597

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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GENERAL COMMENTS

Sample DOJ938 [18 B] : Metals: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample DOJ940 [15 B] : VOC Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

ABN analysis: Due to the nature of the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

BOD Analysis: reported >40 mg/L on the highest dilution factor, the sample dilutions weren't sufficient enough to obtain a valid result. Results should be used with discretion.

Sample DOJ941 [6 A] : COD < BOD: Both values fall within the method uncertainty for duplicates and are likely equivalent.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL SW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4775597	4-Bromofluorobenzene	2016/12/05	100	70 - 130	101	70 - 130	93	%				
4775597	D4-1,2-Dichloroethane	2016/12/05	101	70 - 130	98	70 - 130	104	%				
4775597	D8-Toluene	2016/12/05	101	70 - 130	101	70 - 130	98	%				
4781038	2,4,6-Tribromophenol	2016/12/07	91	10 - 130	93	10 - 130	10	%				
4781038	2-Fluorobiphenyl	2016/12/07	55	30 - 130	70	30 - 130	70	%				
4781038	2-Fluorophenol	2016/12/07	35	10 - 130	53	10 - 130	4.0 (5)					
4781038	D14-Terphenyl	2016/12/07	103	30 - 130	102	30 - 130	100	%				
4781038	D5-Nitrobenzene	2016/12/07	57	30 - 130	85	30 - 130	70	%				
4781038	D5-Phenol	2016/12/07	26	10 - 130	35	10 - 130	12	%				
4775597	1,1,1,2-Tetrachloroethane	2016/12/05	113	70 - 130	108	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	1,1,1-Trichloroethane	2016/12/05	110	70 - 130	101	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	1,1,2,2-Tetrachloroethane	2016/12/05	116	70 - 130	111	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	1,1,2-Trichloroethane	2016/12/05	114	70 - 130	109	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	1,1-Dichloroethane	2016/12/05	111	70 - 130	101	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	1,1-Dichloroethylene	2016/12/05	113	70 - 130	105	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	1,2-Dichlorobenzene	2016/12/05	106	70 - 130	106	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	1,2-Dichloroethane	2016/12/05	111	70 - 130	103	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	1,2-Dichloropropane	2016/12/05	113	70 - 130	104	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	1,3-Dichlorobenzene	2016/12/05	105	70 - 130	108	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	1,4-Dichlorobenzene	2016/12/05	105	70 - 130	109	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	Acetone (2-Propanone)	2016/12/05	101	60 - 140	97	60 - 140	ND, RDL=10	ug/L	NC	30		
4775597	Benzene	2016/12/05	112	70 - 130	104	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	Bromodichloromethane	2016/12/05	115	70 - 130	106	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	Bromoform	2016/12/05	115	70 - 130	115	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	Bromomethane	2016/12/05	60 (1)	60 - 140	71	60 - 140	ND, RDL=0.50	ug/L	NC	30		
4775597	Carbon Tetrachloride	2016/12/05	111	70 - 130	104	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	Chlorobenzene	2016/12/05	113	70 - 130	108	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	Chloroform	2016/12/05	110	70 - 130	101	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	Chloromethane	2016/12/05	93	60 - 140	85	60 - 140	ND, RDL=0.50	ug/L	NC	30		
4775597	cis-1,2-Dichloroethylene	2016/12/05	118	70 - 130	110	70 - 130	ND, RDL=0.10	ug/L	NC	30		

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QUALITY ASSURANCE REPORT(CONT'D)

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL SW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4775597	cis-1,3-Dichloropropene	2016/12/05	113	70 - 130	110	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	Dibromochloromethane	2016/12/05	112	70 - 130	111	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	Ethylbenzene	2016/12/05	113	70 - 130	109	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	Ethylene Dibromide	2016/12/05	114	70 - 130	110	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	Methyl Ethyl Ketone (2-Butanone)	2016/12/05	115	60 - 140	109	60 - 140	ND, RDL=5.0	ug/L	NC	30		
4775597	Methyl Isobutyl Ketone	2016/12/05	121	70 - 130	118	70 - 130	ND, RDL=5.0	ug/L	NC	30		
4775597	Methyl t-butyl ether (MTBE)	2016/12/05	119	70 - 130	113	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	Methylene Chloride(Dichloromethane)	2016/12/05	107	70 - 130	100	70 - 130	ND, RDL=0.50	ug/L	NC	30		
4775597	o-Xylene	2016/12/05	113	70 - 130	111	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	p+m-Xylene	2016/12/05	109	70 - 130	108	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	Styrene	2016/12/05	111	70 - 130	114	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	Tetrachloroethylene	2016/12/05	106	70 - 130	102	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	Toluene	2016/12/05	111	70 - 130	103	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	Total Xylenes	2016/12/05					ND, RDL=0.10	ug/L	NC	30		
4775597	trans-1,2-Dichloroethylene	2016/12/05	111	70 - 130	104	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	trans-1,3-Dichloropropene	2016/12/05	110	70 - 130	111	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	Trichloroethylene	2016/12/05	108	70 - 130	101	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4775597	Trichlorofluoromethane (FREON 11)	2016/12/05	110	70 - 130	102	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775597	Vinyl Chloride	2016/12/05	111	70 - 130	102	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4775601	Acrolein	2016/12/05	104	60 - 140	103	60 - 140	ND, RDL=10	ug/L	NC	30		
4775601	Acrylonitrile	2016/12/05	108	60 - 140	102	60 - 140	ND, RDL=5.0	ug/L	NC	30		
4777743	Nitrate (N)	2016/12/06	112	80 - 120	99	80 - 120	ND, RDL=0.10	mg/L	NC	20		
4777743	Nitrite (N)	2016/12/06	68 (2)	80 - 120	104	80 - 120	ND, RDL=0.010	mg/L	NC	20		
4777856	Alkalinity (Total as CaCO3)	2016/12/05			95	85 - 115	ND, RDL=1.0	mg/L	0.56	20		
4777857	Conductivity	2016/12/05			100	85 - 115	ND, RDL=1.0	umho/cm	0	25		
4777858	pH	2016/12/05			102	98 - 103			0.41	N/A		
4777895	Total BOD	2016/12/09					ND, RDL=2.0	mg/L	NC	25	111 (3)	80 - 120
4778650	Phenols-4AAP	2016/12/06	99	80 - 120	99	85 - 115	ND, RDL=0.0010	mg/L	NC	20		

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Maxxam Job #: B6Q3664
Report Date: 2016/12/09

QUALITY ASSURANCE REPORT(CONT'D)

City of Guelph
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Your P.O. #: 720.8121.3516
Sampler Initials: AS

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4778669	Total Chemical Oxygen Demand (COD)	2016/12/07	98	75 - 125	100	75 - 125	ND, RDL=4.0	mg/L	NC	25		
4778683	Total Kjeldahl Nitrogen (TKN)	2016/12/07	111	80 - 120	101	80 - 120	0.11, RDL=0.10	mg/L	NC	20	114	80 - 120
4778715	Total Ammonia-N	2016/12/09	98	80 - 120	99	85 - 115	ND, RDL=0.050	mg/L	NC	20		
4779632	Dissolved Chloride (Cl)	2016/12/06	103	80 - 120	103	80 - 120	ND, RDL=1.0	mg/L	0.77	20		
4779633	Dissolved Sulphate (SO4)	2016/12/06	NC	75 - 125	98	80 - 120	ND, RDL=1.0	mg/L	0.57	20		
4779990	Phenols-4AAP	2016/12/06	100	80 - 120	101	85 - 115	ND, RDL=0.0010	mg/L	NC	20		
4780474	Total Phosphorus	2016/12/07	102	80 - 120	103	80 - 120	ND, RDL=0.020	mg/L	NC	20	103	80 - 120
4781004	Total Phosphorus	2016/12/07	102	80 - 120	103	80 - 120	ND, RDL=0.020	mg/L	NC	20	102	80 - 120
4781038	1-Chloronaphthalene	2016/12/07	53	30 - 130	70	30 - 130	ND, RDL=1.0	ug/L	NC	40		
4781038	1-Methylnaphthalene	2016/12/07	55	30 - 130	78	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4781038	2,3,4,5-Tetrachlorophenol	2016/12/07	101	10 - 130	95	10 - 130	ND, RDL=0.40	ug/L	NC	40		
4781038	2,3,4,6-Tetrachlorophenol	2016/12/07	92	10 - 130	94	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4781038	2,3,4-Trichlorophenol	2016/12/07	85	10 - 130	92	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4781038	2,3,5,6-Tetrachlorophenol	2016/12/07	76	10 - 130	70	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4781038	2,3,5-Trichlorophenol	2016/12/07	97	10 - 130	103	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4781038	2,4,5-Trichlorophenol	2016/12/07	88	10 - 130	94	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4781038	2,4,6-Trichlorophenol	2016/12/07	79	10 - 130	93	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4781038	2,4-Dichlorophenol	2016/12/07	52	10 - 130	70	10 - 130	ND, RDL=0.30	ug/L	NC	40		
4781038	2,4-Dimethylphenol	2016/12/07	16	10 - 130	35	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4781038	2,4-Dinitrophenol	2016/12/07	107	10 - 130	105	10 - 130	ND, RDL=2.0	ug/L	NC	40		
4781038	2,4-Dinitrotoluene	2016/12/07	102	30 - 130	100	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4781038	2,6-Dichlorophenol	2016/12/07	61	10 - 130	85	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4781038	2,6-Dinitrotoluene	2016/12/07	89	30 - 130	94	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4781038	2-Chloronaphthalene	2016/12/07	61	30 - 130	82	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4781038	2-Chlorophenol	2016/12/07	52	10 - 130	76	10 - 130	ND, RDL=0.30	ug/L	NC	40		
4781038	2-Methylnaphthalene	2016/12/07	52	30 - 130	74	30 - 130	ND, RDL=0.20	ug/L	NC	40		

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QUALITY ASSURANCE REPORT(CONT'D)

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL SW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4781038	4,6-Dinitro-2-methylphenol	2016/12/07	114	10 - 130	115	10 - 130	ND, RDL=2.0	ug/L	NC	40		
4781038	4-Bromophenyl phenyl ether	2016/12/07	84	30 - 130	91	30 - 130	ND, RDL=0.30	ug/L	NC	40		
4781038	4-Chloro-3-Methylphenol	2016/12/07	75	10 - 130	85	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4781038	4-Chlorophenyl phenyl ether	2016/12/07	76	30 - 130	87	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4781038	4-Nitrophenol	2016/12/07	52	10 - 130	52	10 - 130	ND, RDL=1.4	ug/L	NC	40		
4781038	5-Nitroacenaphthene	2016/12/07	103	30 - 130	100	30 - 130	ND, RDL=1.0	ug/L	NC	40		
4781038	Acenaphthene	2016/12/07	69	30 - 130	87	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4781038	Acenaphthylene	2016/12/07	61	30 - 130	73	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4781038	Anthracene	2016/12/07	92	30 - 130	93	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4781038	Benzo(a)anthracene	2016/12/07	100	30 - 130	99	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4781038	Benzo(a)pyrene	2016/12/07	102	30 - 130	100	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4781038	Benzo(b/j)fluoranthene	2016/12/07	101	30 - 130	98	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4781038	Benzo(g,h,i)perylene	2016/12/07	98	30 - 130	96	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4781038	Benzo(k)fluoranthene	2016/12/07	103	30 - 130	111	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4781038	Benzyl butyl phthalate	2016/12/07	108	30 - 130	108	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4781038	Biphenyl	2016/12/07	56	30 - 130	75	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4781038	Bis(2-chloroethoxy)methane	2016/12/07	56	30 - 130	81	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4781038	Bis(2-chloroethyl)ether	2016/12/07	56	30 - 130	85	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4781038	Bis(2-chloroisopropyl)ether	2016/12/07	55	30 - 130	82	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4781038	Bis(2-ethylhexyl)phthalate	2016/12/07	107	30 - 130	105	30 - 130	ND, RDL=2.0	ug/L	NC	40		
4781038	Camphene	2016/12/07	25 (4)	30 - 130	37	30 - 130	ND, RDL=1.0	ug/L	NC	40		
4781038	Chrysene	2016/12/07	102	30 - 130	100	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4781038	Dibenz(a,h)anthracene	2016/12/07	99	30 - 130	97	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4781038	Di-N-butyl phthalate	2016/12/07	110	30 - 130	111	30 - 130	ND, RDL=2.0	ug/L	NC	40		
4781038	Di-N-octyl phthalate	2016/12/07	118	30 - 130	116	30 - 130	ND, RDL=0.80	ug/L	NC	40		
4781038	Diphenyl Ether	2016/12/07	58	30 - 130	78	30 - 130	ND, RDL=0.30	ug/L	NC	40		
4781038	Fluoranthene	2016/12/07	100	30 - 130	98	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4781038	Fluorene	2016/12/07	79	30 - 130	89	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4781038	Indeno(1,2,3-cd)pyrene	2016/12/07	95	30 - 130	91	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4781038	Indole	2016/12/07	12 (2)	30 - 130	24 (1)	30 - 130	ND, RDL=1.0	ug/L	NC	40		

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QUALITY ASSURANCE REPORT(CONT'D)

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			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4781038	m/p-Cresol	2016/12/07	46	10 - 130	64	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4781038	Naphthalene	2016/12/07	52	30 - 130	78	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4781038	Nitrosodiphenylamine/Diphenylamine	2016/12/07	94	30 - 130	91	30 - 130	ND, RDL=1.0	ug/L	NC	40		
4781038	N-Nitroso-di-n-propylamine	2016/12/07	65	30 - 130	88	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4781038	o-Cresol	2016/12/07	38	10 - 130	61	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4781038	Pentachlorophenol	2016/12/07	73	10 - 130	64	10 - 130	ND, RDL=1.0	ug/L	NC	40		
4781038	Perylene	2016/12/07	95	30 - 130	95	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4781038	Phenanthrene	2016/12/07	89	30 - 130	90	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4781038	Phenol	2016/12/07	23	10 - 130	40	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4781038	Pyrene	2016/12/07	106	30 - 130	104	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4781774	Phenols-4AAP	2016/12/07	101	80 - 120	103	85 - 115	ND, RDL=0.0010	mg/L	NC	20		
4781943	Dissolved Boron (B)	2016/12/07	93	80 - 120	100	80 - 120	ND, RDL=10	ug/L	NC	20		
4781943	Dissolved Calcium (Ca)	2016/12/07	NC	80 - 120	96	80 - 120	280, RDL=200	ug/L				
4781943	Dissolved Magnesium (Mg)	2016/12/07	NC	80 - 120	97	80 - 120	57, RDL=50	ug/L				
4781943	Dissolved Phosphorus (P)	2016/12/07	100	80 - 120	103	80 - 120	ND, RDL=100	ug/L				
4781943	Dissolved Potassium (K)	2016/12/07	93	80 - 120	98	80 - 120	ND, RDL=200	ug/L				
4781943	Dissolved Sodium (Na)	2016/12/07	NC	80 - 120	99	80 - 120	100, RDL=100	ug/L	2.1	20		
4781943	Dissolved Zinc (Zn)	2016/12/07	94	80 - 120	101	80 - 120	ND, RDL=5.0	ug/L	NC	20		

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			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4784322	Total Iron (Fe)	2016/12/08	91	80 - 120	96	80 - 120	ND, RDL=0.02	mg/L	NC	25		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) The recovery was below the lower control limit. This may represent a low bias in some results for this specific analyte.

(2) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

(3) BOD analysis: Blank failed required QC criteria. Sample results have been blank corrected.

(4) The recovery was below the lower control limit. This may represent a low bias in some results for flagged analytes.

(5) Surrogate recovery was below the lower control limit. This may represent a low bias in some results.

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Site Location: FALL SW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Cristina Carriere

Cristina Carriere, Scientific Services

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Maxxam
A Bureau Veritas Group Company

Your P.O. #: 720.8121.3516
Your Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your C.O.C. #: C#484840-05-01

Attention:Amy Spence

City of Guelph
Soild Waste RIC (Wet/Dry)
110 Dunlop Drive
Guelph, ON
CANADA N1H 6H8

Report Date: 2016/12/15
Report #: R4288086
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6Q5847
Received: 2016/12/06, 16:04

Sample Matrix: Water
Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
ABN Compounds in Water by GC/MS	2	2016/12/08	2016/12/09	CAM SOP-00301	EPA 8270 m
ABN Compounds in Water by GC/MS	5	2016/12/08	2016/12/10	CAM SOP-00301	EPA 8270 m
Alkalinity	1	N/A	2016/12/08	CAM SOP-00448	SM 22 2320 B m
Alkalinity	5	N/A	2016/12/10	CAM SOP-00448	SM 22 2320 B m
Alkalinity	1	N/A	2016/12/14	CAM SOP-00448	SM 22 2320 B m
Biochemical Oxygen Demand (BOD)	7	2016/12/08	2016/12/13	CAM SOP-00427	SM 22 5210B m
Chloride by Automated Colourimetry	6	N/A	2016/12/09	CAM SOP-00463	EPA 325.2 m
Chloride by Automated Colourimetry	1	N/A	2016/12/14	CAM SOP-00463	EPA 325.2 m
Chemical Oxygen Demand	7	N/A	2016/12/09	CAM SOP-00416	SM 22 5220 D m
Conductivity	1	N/A	2016/12/08	CAM SOP-00414	SM 22 2510 m
Conductivity	6	N/A	2016/12/10	CAM SOP-00414	SM 22 2510 m
Dissolved Metals by ICPMS	6	N/A	2016/12/12	CAM SOP-00447	EPA 6020B m
Dissolved Metals by ICPMS	1	N/A	2016/12/14	CAM SOP-00447	EPA 6020B m
Total Metals Analysis by ICP	7	2016/12/09	2016/12/09	CAM SOP-00408	EPA 6010C m
Total Ammonia-N	7	N/A	2016/12/14	CAM SOP-00441	EPA GS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (1)	7	N/A	2016/12/12	CAM SOP-00440	SM 22 4500-NO3I/NO2B
pH	1	N/A	2016/12/08	CAM SOP-00413	SM 4500H+ B m
pH	6	N/A	2016/12/10	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	7	N/A	2016/12/08	CAM SOP-00444	OMOE E3179 m
Sulphate by Automated Colourimetry	6	N/A	2016/12/09	CAM SOP-00464	EPA 375.4 m
Sulphate by Automated Colourimetry	1	N/A	2016/12/14	CAM SOP-00464	EPA 375.4 m
Total Kjeldahl Nitrogen in Water	7	2016/12/09	2016/12/12	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	7	2016/12/09	2016/12/09	CAM SOP-00407	SM 22 4500 P B H m
Volatile Organic Compounds in Water	7	N/A	2016/12/08	CAM SOP-00226	EPA 8260C m
Non-Routine Volatile Organic Compounds	7	N/A	2016/12/08	CAM SOP-00226	EPA 8260 m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

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Your P.O. #: 720.8121.3516
Your Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your C.O.C. #: C#484840-05-01

Attention:Amy Spence

City of Guelph
Soild Waste RIC (Wet/Dry)
110 Dunlop Drive
Guelph, ON
CANADA N1H 6H8

Report Date: 2016/12/15
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CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6Q5847
Received: 2016/12/06, 16:04

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
James Aspin, Senior Project Manager
Email: JAspin@maxxam.ca
Phone# (905)817-5771
==========
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Maxxam Job #: B6Q5847
Report Date: 2016/12/15

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

RESULTS OF ANALYSES OF WATER

Maxxam ID		DOU440	DOU440		DOU441	DOU441		
Sampling Date		2016/12/05	2016/12/05		2016/12/05	2016/12/05		
COC Number		C#484840-05-01	C#484840-05-01		C#484840-05-01	C#484840-05-01		
	UNITS	**16A**	**16A Lab-Dup**	**RDL**	**16B**	**16B Lab-Dup**	**RDL**	**QC Batch**
Inorganics								
Total Ammonia-N	mg/L	ND		0.050	ND		0.050	4784449
Total BOD	mg/L	ND	ND	2.0	ND		2.0	4784025
Total Chemical Oxygen Demand (COD)	mg/L	9.4		4.0	ND		4.0	4784137
Conductivity	umho/cm	1300		1.0	610	620	1.0	4785106
Total Kjeldahl Nitrogen (TKN)	mg/L	0.27		0.10	0.11		0.10	4785958
pH	pH	7.58			7.93	7.98		4786516
Phenols-4AAP	mg/L	ND		0.0010	ND		0.0010	4784069
Total Phosphorus	mg/L	ND		0.020	ND		0.020	4785748
Dissolved Sulphate (SO4)	mg/L	57		1.0	36		1.0	4785222
Alkalinity (Total as CaCO3)	mg/L	400		1.0	240	240	1.0	4785099
Dissolved Chloride (Cl)	mg/L	140		2.0	31		1.0	4785198
Nitrite (N)	mg/L	ND	ND	0.010	0.019		0.010	4784442
Nitrate (N)	mg/L	ND	ND	0.10	ND		0.10	4784442
Nitrate + Nitrite (N)	mg/L	ND	ND	0.10	ND		0.10	4784442

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B6Q5847
Report Date: 2016/12/15

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

RESULTS OF ANALYSES OF WATER

Maxxam ID		DOU442	DOU442		DOU443		
Sampling Date		2016/12/05	2016/12/05		2016/12/05		
COC Number		C#484840-05-01	C#484840-05-01		C#484840-05-01		
	UNITS	**21A**	**21A Lab-Dup**	**RDL**	**5**	**RDL**	**QC Batch**
Inorganics							
Total Ammonia-N	mg/L	ND		0.050	ND	0.050	4784449
Total BOD	mg/L	ND		2.0	ND	2.0	4784025
Total Chemical Oxygen Demand (COD)	mg/L	9.1		4.0	10	4.0	4784137
Conductivity	umho/cm	640		1.0	2900	1.0	4785106
Total Kjeldahl Nitrogen (TKN)	mg/L	ND	ND	0.10	0.13	0.10	4785958
pH	pH	7.84			7.85		4786516
Phenols-4AAP	mg/L	ND		0.0010	ND	0.0010	4784069
Total Phosphorus	mg/L	ND		0.020	ND	0.020	4785748
Dissolved Sulphate (SO4)	mg/L	22		1.0	39	1.0	4785222
Alkalinity (Total as CaCO3)	mg/L	290		1.0	310	1.0	4785099
Dissolved Chloride (Cl)	mg/L	22		1.0	670	8.0	4785198
Nitrite (N)	mg/L	ND		0.010	0.015	0.010	4784442
Nitrate (N)	mg/L	1.59		0.10	0.20	0.10	4784442
Nitrate + Nitrite (N)	mg/L	1.59		0.10	0.22	0.10	4784442

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B6Q5847
Report Date: 2016/12/15

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

RESULTS OF ANALYSES OF WATER

Maxxam ID		DOU444		DOU445		
Sampling Date		2016/12/05		2016/12/05		
COC Number		C#484840-05-01		C#484840-05-01		
	UNITS	**8**	**QC Batch**	**14A**	**RDL**	**QC Batch**
Inorganics						
Total Ammonia-N	mg/L	ND	4784449	ND	0.050	4784449
Total BOD	mg/L	ND	4784025	ND	2.0	4784025
Total Chemical Oxygen Demand (COD)	mg/L	7.6	4784137	ND	4.0	4784137
Conductivity	umho/cm	1000	4785106	650	1.0	4784461
Total Kjeldahl Nitrogen (TKN)	mg/L	0.12	4785958	0.13	0.10	4785958
pH	pH	7.87	4786516	7.88		4784468
Phenols-4AAP	mg/L	ND	4784069	ND	0.0010	4784069
Total Phosphorus	mg/L	ND	4785748	ND	0.020	4785748
Dissolved Sulphate (SO4)	mg/L	37	4785222	60	1.0	4785222
Alkalinity (Total as CaCO3)	mg/L	300	4785099	250	1.0	4784466
Dissolved Chloride (Cl)	mg/L	120	4785198	23	1.0	4785198
Nitrite (N)	mg/L	ND	4784434	ND	0.010	4784442
Nitrate (N)	mg/L	0.31	4784434	ND	0.10	4784442
Nitrate + Nitrite (N)	mg/L	0.31	4784434	ND	0.10	4784442

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B6Q5847
Report Date: 2016/12/15

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

RESULTS OF ANALYSES OF WATER

Maxxam ID		DOU446		
Sampling Date		2016/12/05		
COC Number		C#484840-05-01		
	UNITS	**14B**	**RDL**	**QC Batch**
Inorganics				
Total Ammonia-N	mg/L	ND	0.050	4784449
Total BOD	mg/L	ND	2.0	4784025
Total Chemical Oxygen Demand (COD)	mg/L	14	4.0	4784137
Conductivity	umho/cm	1700	1.0	4785106
Total Kjeldahl Nitrogen (TKN)	mg/L	0.11	0.10	4785958
pH	pH	7.77		4786516
Phenols-4AAP	mg/L	ND	0.0010	4784069
Total Phosphorus	mg/L	0.094	0.020	4785748
Dissolved Sulphate (SO4)	mg/L	65	1.0	4791032
Alkalinity (Total as CaCO3)	mg/L	360	1.0	4790805
Dissolved Chloride (Cl)	mg/L	260	4.0	4791000
Nitrite (N)	mg/L	ND	0.010	4784442
Nitrate (N)	mg/L	ND	0.10	4784442
Nitrate + Nitrite (N)	mg/L	ND	0.10	4784442

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B6Q5847
Report Date: 2016/12/15

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		DOU440	DOU441	DOU442	DOU443	DOU444		
Sampling Date		2016/12/05	2016/12/05	2016/12/05	2016/12/05	2016/12/05		
COC Number		C#484840-05-01	C#484840-05-01	C#484840-05-01	C#484840-05-01	C#484840-05-01		
	UNITS	**16A**	**16B**	**21A**	**5**	**8**	**RDL**	**QC Batch**
Metals								
Total Iron (Fe)	mg/L	0.11	0.23	0.06	0.06	0.10	0.02	4786091
Dissolved Boron (B)	ug/L	34	30	18	18	16	10	4786510
Dissolved Calcium (Ca)	ug/L	120000	82000	79000	86000	89000	200	4786510
Dissolved Magnesium (Mg)	ug/L	33000	27000	25000	17000	31000	50	4786510
Dissolved Phosphorus (P)	ug/L	ND	ND	ND	ND	ND	100	4786510
Dissolved Potassium (K)	ug/L	2500	1800	960	3600	2400	200	4786510
Dissolved Sodium (Na)	ug/L	97000	2300	19000	490000	70000	100	4786510
Dissolved Zinc (Zn)	ug/L	1100	32	350	1100	960	5.0	4786510

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

Maxxam ID		DOU445	DOU445		DOU446		
Sampling Date		2016/12/05	2016/12/05		2016/12/05		
COC Number		C#484840-05-01	C#484840-05-01		C#484840-05-01		
	UNITS	**14A**	**14A Lab-Dup**	**QC Batch**	**14B**	**RDL**	**QC Batch**
Metals							
Total Iron (Fe)	mg/L	0.51		4786091	ND	0.02	4786091
Dissolved Boron (B)	ug/L	25	26	4786510	28	10	4791804
Dissolved Calcium (Ca)	ug/L	70000	71000	4786510	200000	200	4791804
Dissolved Magnesium (Mg)	ug/L	24000	24000	4786510	46000	50	4791804
Dissolved Phosphorus (P)	ug/L	ND	ND	4786510	140	100	4791804
Dissolved Potassium (K)	ug/L	1000	1000	4786510	2900	200	4791804
Dissolved Sodium (Na)	ug/L	25000	25000	4786510	130000	100	4791804
Dissolved Zinc (Zn)	ug/L	12	13	4786510	1300	5.0	4791804

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Maxxam Job #: B6Q5847
Report Date: 2016/12/15

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		DOU440	DOU441	DOU441		DOU442		
Sampling Date		2016/12/05	2016/12/05	2016/12/05		2016/12/05		
COC Number		C#484840-05-01	C#484840-05-01	C#484840-05-01		C#484840-05-01		
	UNITS	**16A**	**16B**	**16B Lab-Dup**	**RDL**	**21A**	**RDL**	**QC Batch**
Semivolatile Organics								
Acenaphthene	ug/L	ND	ND	ND	0.20	ND	0.20	4783882
Acenaphthylene	ug/L	ND	ND	ND	0.20	ND	0.20	4783882
Anthracene	ug/L	ND	ND	ND	0.20	ND	0.20	4783882
Benzo(a)anthracene	ug/L	ND	ND	ND	0.20	ND	0.20	4783882
Benzo(a)pyrene	ug/L	ND	ND	ND	0.20	ND	0.20	4783882
Benzo(b/j)fluoranthene	ug/L	ND	ND	ND	0.20	ND	0.20	4783882
Benzo(g,h,i)perylene	ug/L	ND	ND	ND	0.20	ND	0.20	4783882
Benzo(k)fluoranthene	ug/L	ND	ND	ND	0.20	ND	0.20	4783882
1-Chloronaphthalene	ug/L	ND	ND	ND	1.0	ND	1.0	4783882
2-Chloronaphthalene	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
Chrysene	ug/L	ND	ND	ND	0.20	ND	0.20	4783882
Dibenz(a,h)anthracene	ug/L	ND	ND	ND	0.20	ND	0.20	4783882
Fluoranthene	ug/L	ND	ND	ND	0.20	ND	0.20	4783882
Fluorene	ug/L	ND	ND	ND	0.20	ND	0.20	4783882
Indeno(1,2,3-cd)pyrene	ug/L	ND	ND	ND	0.20	ND	0.20	4783882
1-Methylnaphthalene	ug/L	ND	ND	ND	0.20	ND	0.20	4783882
2-Methylnaphthalene	ug/L	ND	ND	ND	0.20	ND	0.20	4783882
Naphthalene	ug/L	ND	ND	ND	0.20	ND	0.20	4783882
5-Nitroacenaphthene	ug/L	ND	ND	ND	1.0	ND	1.0	4783882
Perylene	ug/L	ND	ND	ND	0.20	ND	0.20	4783882
Phenanthrene	ug/L	ND	ND	ND	0.20	ND	0.20	4783882
Pyrene	ug/L	ND	ND	ND	0.20	ND	0.20	4783882
2-Chlorophenol	ug/L	ND	ND	ND	0.30	ND	0.30	4783882
4-Chloro-3-Methylphenol	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
m/p-Cresol	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
o-Cresol	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
2,4-Dichlorophenol	ug/L	ND	ND	ND	0.30	ND	0.30	4783882
2,6-Dichlorophenol	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
2,4-Dimethylphenol	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
2,4-Dinitrophenol	ug/L	ND	ND	ND	2.0	ND (1)	2.5	4783882
4,6-Dinitro-2-methylphenol	ug/L	ND	ND	ND	2.0	ND	2.0	4783882
4-Nitrophenol	ug/L	ND	ND	ND	1.4	ND	1.4	4783882

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected
(1) Detection limit was raised due to matrix interference.

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Maxxam Job #: B6Q5847
Report Date: 2016/12/15

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		DOU440	DOU441	DOU441		DOU442		
Sampling Date		2016/12/05	2016/12/05	2016/12/05		2016/12/05		
COC Number		C#484840-05-01	C#484840-05-01	C#484840-05-01		C#484840-05-01		
	UNITS	**16A**	**16B**	**16B Lab-Dup**	**RDL**	**21A**	**RDL**	**QC Batch**
Pentachlorophenol	ug/L	ND	ND	ND	1.0	ND	1.0	4783882
Phenol	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
2,3,4,5-Tetrachlorophenol	ug/L	ND	ND	ND	0.40	ND	0.40	4783882
2,3,4,6-Tetrachlorophenol	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
2,3,5,6-Tetrachlorophenol	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
2,3,4-Trichlorophenol	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
2,3,5-Trichlorophenol	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
2,4,5-Trichlorophenol	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
2,4,6-Trichlorophenol	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
Benzyl butyl phthalate	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
Biphenyl	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
Bis(2-chloroethyl)ether	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
Bis(2-chloroethoxy)methane	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
Bis(2-chloroisopropyl)ether	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
Bis(2-ethylhexyl)phthalate	ug/L	ND	ND	ND	2.0	ND	2.0	4783882
4-Bromophenyl phenyl ether	ug/L	ND	ND	ND	0.30	ND	0.30	4783882
Camphene	ug/L	ND	ND	ND	1.0	ND	1.0	4783882
4-Chlorophenyl phenyl ether	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
Di-N-butyl phthalate	ug/L	ND	ND	ND	2.0	ND	2.0	4783882
Di-N-octyl phthalate	ug/L	ND	ND	ND	0.80	ND	0.80	4783882
2,4-Dinitrotoluene	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
2,6-Dinitrotoluene	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
Diphenyl Ether	ug/L	ND	ND	ND	0.30	ND	0.30	4783882
Indole	ug/L	ND	ND	ND	1.0	ND	1.0	4783882
Nitrosodiphenylamine/Diphenylamine	ug/L	ND	ND	ND	1.0	ND	1.0	4783882
N-Nitroso-di-n-propylamine	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
Surrogate Recovery (%)								
2,4,6-Tribromophenol	%	22	46	24		5.2 (1)		4783882
2-Fluorobiphenyl	%	78	81	81		80		4783882
2-Fluorophenol	%	9.8 (1)	21	15		4.9 (1)		4783882
D14-Terphenyl	%	91	99	96		94		4783882
D5-Nitrobenzene	%	73	76	76		76		4783882
D5-Phenol	%	15	22	21		13		4783882

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected
(1) Surrogate recovery was below the lower control limit. This may represent a low bias in some results.

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Maxxam Job #: B6Q5847
Report Date: 2016/12/15

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		DOU443	DOU444	DOU445	DOU446		
Sampling Date		2016/12/05	2016/12/05	2016/12/05	2016/12/05		
COC Number		C#484840-05-01	C#484840-05-01	C#484840-05-01	C#484840-05-01		
	UNITS	**5**	**8**	**14A**	**14B**	**RDL**	**QC Batch**
Semivolatile Organics							
Acenaphthene	ug/L	ND	ND	ND	ND	0.20	4783882
Acenaphthylene	ug/L	ND	ND	ND	ND	0.20	4783882
Anthracene	ug/L	ND	ND	ND	ND	0.20	4783882
Benzo(a)anthracene	ug/L	ND	ND	ND	ND	0.20	4783882
Benzo(a)pyrene	ug/L	ND	ND	ND	ND	0.20	4783882
Benzo(b/j)fluoranthene	ug/L	ND	ND	ND	ND	0.20	4783882
Benzo(g,h,i)perylene	ug/L	ND	ND	ND	ND	0.20	4783882
Benzo(k)fluoranthene	ug/L	ND	ND	ND	ND	0.20	4783882
1-Chloronaphthalene	ug/L	ND	ND	ND	ND	1.0	4783882
2-Chloronaphthalene	ug/L	ND	ND	ND	ND	0.50	4783882
Chrysene	ug/L	ND	ND	ND	ND	0.20	4783882
Dibenz(a,h)anthracene	ug/L	ND	ND	ND	ND	0.20	4783882
Fluoranthene	ug/L	ND	ND	ND	ND	0.20	4783882
Fluorene	ug/L	ND	ND	ND	ND	0.20	4783882
Indeno(1,2,3-cd)pyrene	ug/L	ND	ND	ND	ND	0.20	4783882
1-Methylnaphthalene	ug/L	ND	ND	ND	ND	0.20	4783882
2-Methylnaphthalene	ug/L	ND	ND	ND	ND	0.20	4783882
Naphthalene	ug/L	ND	ND	ND	ND	0.20	4783882
5-Nitroacenaphthene	ug/L	ND	ND	ND	ND	1.0	4783882
Perylene	ug/L	ND	ND	ND	ND	0.20	4783882
Phenanthrene	ug/L	ND	ND	ND	ND	0.20	4783882
Pyrene	ug/L	ND	ND	ND	ND	0.20	4783882
2-Chlorophenol	ug/L	ND	ND	ND	ND	0.30	4783882
4-Chloro-3-Methylphenol	ug/L	ND	ND	ND	ND	0.50	4783882
m/p-Cresol	ug/L	ND	ND	ND	ND	0.50	4783882
o-Cresol	ug/L	ND	ND	ND	ND	0.50	4783882
2,4-Dichlorophenol	ug/L	ND	ND	ND	ND	0.30	4783882
2,6-Dichlorophenol	ug/L	ND	ND	ND	ND	0.50	4783882
2,4-Dimethylphenol	ug/L	ND	ND	ND	ND	0.50	4783882
2,4-Dinitrophenol	ug/L	ND (1)	ND (1)	ND (1)	ND	2.5	4783882
4,6-Dinitro-2-methylphenol	ug/L	ND	ND	ND	ND	2.0	4783882
4-Nitrophenol	ug/L	ND	ND	ND	ND	1.4	4783882
Pentachlorophenol	ug/L	ND	ND	ND	ND	1.0	4783882

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected
(1) Detection limit was raised due to matrix interference.

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Maxxam Job #: B6Q5847
Report Date: 2016/12/15

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		DOU443	DOU444	DOU445	DOU446		
Sampling Date		2016/12/05	2016/12/05	2016/12/05	2016/12/05		
COC Number		C#484840-05-01	C#484840-05-01	C#484840-05-01	C#484840-05-01		
	UNITS	**5**	**8**	**14A**	**14B**	**RDL**	**QC Batch**
Phenol	ug/L	ND	ND	ND	ND	0.50	4783882
2,3,4,5-Tetrachlorophenol	ug/L	ND	ND	ND	ND	0.40	4783882
2,3,4,6-Tetrachlorophenol	ug/L	ND	ND	ND	ND	0.50	4783882
2,3,5,6-Tetrachlorophenol	ug/L	ND	ND	ND	ND	0.50	4783882
2,3,4-Trichlorophenol	ug/L	ND	ND	ND	ND	0.50	4783882
2,3,5-Trichlorophenol	ug/L	ND	ND	ND	ND	0.50	4783882
2,4,5-Trichlorophenol	ug/L	ND	ND	ND	ND	0.50	4783882
2,4,6-Trichlorophenol	ug/L	ND	ND	ND	ND	0.50	4783882
Benzyl butyl phthalate	ug/L	ND	ND	ND	ND	0.50	4783882
Biphenyl	ug/L	ND	ND	ND	ND	0.50	4783882
Bis(2-chloroethyl)ether	ug/L	ND	ND	ND	ND	0.50	4783882
Bis(2-chloroethoxy)methane	ug/L	ND	ND	ND	ND	0.50	4783882
Bis(2-chloroisopropyl)ether	ug/L	ND	ND	ND	ND	0.50	4783882
Bis(2-ethylhexyl)phthalate	ug/L	ND	2.4	ND	ND	2.0	4783882
4-Bromophenyl phenyl ether	ug/L	ND	ND	ND	ND	0.30	4783882
Camphene	ug/L	ND	ND	ND	ND	1.0	4783882
4-Chlorophenyl phenyl ether	ug/L	ND	ND	ND	ND	0.50	4783882
Di-N-butyl phthalate	ug/L	ND	ND	ND	ND	2.0	4783882
Di-N-octyl phthalate	ug/L	ND	ND	ND	ND	0.80	4783882
2,4-Dinitrotoluene	ug/L	ND	ND	ND	ND	0.50	4783882
2,6-Dinitrotoluene	ug/L	ND	ND	ND	ND	0.50	4783882
Diphenyl Ether	ug/L	ND	ND	ND	ND	0.30	4783882
Indole	ug/L	ND	ND	ND	ND	1.0	4783882
Nitrosodiphenylamine/Diphenylamine	ug/L	ND	ND	ND	ND	1.0	4783882
N-Nitroso-di-n-propylamine	ug/L	ND	ND	ND	ND	0.50	4783882
Surrogate Recovery (%)							
2,4,6-Tribromophenol	%	15	23	18	0.40 (1)		4783882
2-Fluorobiphenyl	%	82	79	77	86		4783882
2-Fluorophenol	%	6.8 (1)	8.9 (1)	12	0.00 (1)		4783882
D14-Terphenyl	%	95	95	93	96		4783882
D5-Nitrobenzene	%	74	70	73	75		4783882
D5-Phenol	%	15	15	19	1.5 (1)		4783882

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected
(1) Surrogate recovery was below the lower control limit. This may represent a low bias in some results.

Maxxam Job #: B6Q5847
Report Date: 2016/12/15

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		DOU440	DOU441	DOU442	DOU443		
Sampling Date		2016/12/05	2016/12/05	2016/12/05	2016/12/05		
COC Number		C#484840-05-01	C#484840-05-01	C#484840-05-01	C#484840-05-01		
	UNITS	**16A**	**16B**	**21A**	**5**	**RDL**	**QC Batch**
Volatile Organics							
Acetone (2-Propanone)	ug/L	ND	ND	ND	ND	10	4782177
Benzene	ug/L	ND	ND	ND	ND	0.10	4782177
Bromodichloromethane	ug/L	ND	ND	ND	ND	0.10	4782177
Acrolein	ug/L	ND	ND	ND	ND	10	4782179
Bromoform	ug/L	ND	ND	ND	ND	0.20	4782177
Bromomethane	ug/L	ND	ND	ND	ND	0.50	4782177
Carbon Tetrachloride	ug/L	ND	ND	ND	ND	0.10	4782177
Chlorobenzene	ug/L	ND	ND	ND	ND	0.10	4782177
Chloroform	ug/L	ND	ND	ND	ND	0.10	4782177
Acrylonitrile	ug/L	ND	ND	ND	ND	5.0	4782179
Chloromethane	ug/L	ND	ND	ND	ND	0.50	4782177
Dibromochloromethane	ug/L	ND	ND	ND	ND	0.20	4782177
1,2-Dichlorobenzene	ug/L	ND	ND	ND	ND	0.20	4782177
1,3-Dichlorobenzene	ug/L	ND	ND	ND	ND	0.20	4782177
1,4-Dichlorobenzene	ug/L	ND	ND	ND	ND	0.20	4782177
1,1-Dichloroethane	ug/L	ND	ND	ND	ND	0.10	4782177
1,2-Dichloroethane	ug/L	ND	ND	ND	ND	0.20	4782177
1,1-Dichloroethylene	ug/L	ND	ND	ND	ND	0.10	4782177
cis-1,2-Dichloroethylene	ug/L	ND	ND	ND	ND	0.10	4782177
trans-1,2-Dichloroethylene	ug/L	ND	ND	ND	ND	0.10	4782177
1,2-Dichloropropane	ug/L	ND	ND	ND	ND	0.10	4782177
cis-1,3-Dichloropropene	ug/L	ND	ND	ND	ND	0.20	4782177
trans-1,3-Dichloropropene	ug/L	ND	ND	ND	ND	0.20	4782177
Ethylbenzene	ug/L	ND	ND	ND	ND	0.10	4782177
Ethylene Dibromide	ug/L	ND	ND	ND	ND	0.20	4782177
Methylene Chloride(Dichloromethane)	ug/L	ND	ND	ND	ND	0.50	4782177
Methyl Ethyl Ketone (2-Butanone)	ug/L	ND	ND	ND	ND	5.0	4782177
Methyl Isobutyl Ketone	ug/L	ND	ND	ND	ND	5.0	4782177
Methyl t-butyl ether (MTBE)	ug/L	ND	ND	ND	ND	0.20	4782177
Styrene	ug/L	ND	ND	ND	ND	0.20	4782177
1,1,1,2-Tetrachloroethane	ug/L	ND	ND	ND	ND	0.20	4782177
1,1,2,2-Tetrachloroethane	ug/L	ND	ND	ND	ND	0.20	4782177
Tetrachloroethylene	ug/L	ND	ND	ND	ND	0.10	4782177

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B6Q5847
Report Date: 2016/12/15

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		DOU440	DOU441	DOU442	DOU443		
Sampling Date		2016/12/05	2016/12/05	2016/12/05	2016/12/05		
COC Number		C#484840-05-01	C#484840-05-01	C#484840-05-01	C#484840-05-01		
	UNITS	**16A**	**16B**	**21A**	**5**	**RDL**	**QC Batch**
Toluene	ug/L	ND	ND	ND	ND	0.20	4782177
1,1,1-Trichloroethane	ug/L	ND	ND	ND	ND	0.10	4782177
1,1,2-Trichloroethane	ug/L	ND	ND	ND	ND	0.20	4782177
Trichloroethylene	ug/L	ND	ND	ND	ND	0.10	4782177
Trichlorofluoromethane (FREON 11)	ug/L	ND	ND	ND	ND	0.20	4782177
Vinyl Chloride	ug/L	ND	ND	ND	ND	0.20	4782177
p+m-Xylene	ug/L	ND	ND	ND	ND	0.10	4782177
o-Xylene	ug/L	ND	ND	ND	ND	0.10	4782177
Total Xylenes	ug/L	ND	ND	ND	ND	0.10	4782177
Surrogate Recovery (%)							
4-Bromofluorobenzene	%	96	95	94	95		4782177
D4-1,2-Dichloroethane	%	103	104	105	106		4782177
D8-Toluene	%	96	96	95	96		4782177

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B6Q5847
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City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		DOU444	DOU445	DOU446		
Sampling Date		2016/12/05	2016/12/05	2016/12/05		
COC Number		C#484840-05-01	C#484840-05-01	C#484840-05-01		
	UNITS	**8**	**14A**	**14B**	**RDL**	**QC Batch**
Volatile Organics						
Acetone (2-Propanone)	ug/L	ND	ND	ND	10	4782177
Benzene	ug/L	ND	ND	ND	0.10	4782177
Bromodichloromethane	ug/L	ND	ND	ND	0.10	4782177
Acrolein	ug/L	ND	ND	ND	10	4782179
Bromoform	ug/L	ND	ND	ND	0.20	4782177
Bromomethane	ug/L	ND	ND	ND	0.50	4782177
Carbon Tetrachloride	ug/L	ND	ND	ND	0.10	4782177
Chlorobenzene	ug/L	ND	ND	ND	0.10	4782177
Chloroform	ug/L	ND	ND	2.4	0.10	4782177
Acrylonitrile	ug/L	ND	ND	ND	5.0	4782179
Chloromethane	ug/L	ND	ND	ND	0.50	4782177
Dibromochloromethane	ug/L	ND	ND	ND	0.20	4782177
1,2-Dichlorobenzene	ug/L	ND	ND	ND	0.20	4782177
1,3-Dichlorobenzene	ug/L	ND	ND	ND	0.20	4782177
1,4-Dichlorobenzene	ug/L	ND	ND	ND	0.20	4782177
1,1-Dichloroethane	ug/L	ND	ND	ND	0.10	4782177
1,2-Dichloroethane	ug/L	ND	ND	ND	0.20	4782177
1,1-Dichloroethylene	ug/L	ND	ND	ND	0.10	4782177
cis-1,2-Dichloroethylene	ug/L	ND	ND	ND	0.10	4782177
trans-1,2-Dichloroethylene	ug/L	ND	ND	ND	0.10	4782177
1,2-Dichloropropane	ug/L	ND	ND	ND	0.10	4782177
cis-1,3-Dichloropropene	ug/L	ND	ND	ND	0.20	4782177
trans-1,3-Dichloropropene	ug/L	ND	ND	ND	0.20	4782177
Ethylbenzene	ug/L	ND	ND	ND	0.10	4782177
Ethylene Dibromide	ug/L	ND	ND	ND	0.20	4782177
Methylene Chloride(Dichloromethane)	ug/L	ND	ND	ND	0.50	4782177
Methyl Ethyl Ketone (2-Butanone)	ug/L	ND	ND	ND	5.0	4782177
Methyl Isobutyl Ketone	ug/L	ND	ND	ND	5.0	4782177
Methyl t-butyl ether (MTBE)	ug/L	ND	ND	ND	0.20	4782177
Styrene	ug/L	ND	ND	ND	0.20	4782177
1,1,1,2-Tetrachloroethane	ug/L	ND	ND	ND	0.20	4782177
1,1,2,2-Tetrachloroethane	ug/L	ND	ND	ND	0.20	4782177
Tetrachloroethylene	ug/L	ND	ND	ND	0.10	4782177

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B6Q5847
Report Date: 2016/12/15

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		DOU444	DOU445	DOU446		
Sampling Date		2016/12/05	2016/12/05	2016/12/05		
COC Number		C#484840-05-01	C#484840-05-01	C#484840-05-01		
	UNITS	**8**	**14A**	**14B**	**RDL**	**QC Batch**
Toluene	ug/L	ND	ND	ND	0.20	4782177
1,1,1-Trichloroethane	ug/L	ND	ND	ND	0.10	4782177
1,1,2-Trichloroethane	ug/L	ND	ND	ND	0.20	4782177
Trichloroethylene	ug/L	ND	ND	ND	0.10	4782177
Trichlorofluoromethane (FREON 11)	ug/L	ND	ND	ND	0.20	4782177
Vinyl Chloride	ug/L	ND	ND	ND	0.20	4782177
p+m-Xylene	ug/L	ND	ND	ND	0.10	4782177
o-Xylene	ug/L	ND	ND	ND	0.10	4782177
Total Xylenes	ug/L	ND	ND	ND	0.10	4782177
Surrogate Recovery (%)						
4-Bromofluorobenzene	%	95	97	97		4782177
D4-1,2-Dichloroethane	%	105	106	107		4782177
D8-Toluene	%	96	98	99		4782177

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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City of Guelph
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GENERAL COMMENTS

Results relate only to the items tested.

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Maxxam Job #: B6Q5847
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QUALITY ASSURANCE REPORT

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4782177	4-Bromofluorobenzene	2016/12/07	101	70 - 130	101	70 - 130	97	%				
4782177	D4-1,2-Dichloroethane	2016/12/07	96	70 - 130	98	70 - 130	99	%				
4782177	D8-Toluene	2016/12/07	101	70 - 130	101	70 - 130	100	%				
4783882	2,4,6-Tribromophenol	2016/12/08	97	10 - 130	91	10 - 130	72	%				
4783882	2-Fluorobiphenyl	2016/12/08	76	30 - 130	75	30 - 130	79	%				
4783882	2-Fluorophenol	2016/12/08	38	10 - 130	44	10 - 130	41	%				
4783882	D14-Terphenyl	2016/12/08	98	30 - 130	102	30 - 130	94	%				
4783882	D5-Nitrobenzene	2016/12/08	77	30 - 130	76	30 - 130	74	%				
4783882	D5-Phenol	2016/12/08	26	10 - 130	32	10 - 130	28	%				
4782177	1,1,1,2-Tetrachloroethane	2016/12/07	98	70 - 130	99	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4782177	1,1,1-Trichloroethane	2016/12/07	95	70 - 130	97	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4782177	1,1,2,2-Tetrachloroethane	2016/12/07	96	70 - 130	96	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4782177	1,1,2-Trichloroethane	2016/12/07	97	70 - 130	96	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4782177	1,1-Dichloroethane	2016/12/07	95	70 - 130	98	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4782177	1,1-Dichloroethylene	2016/12/07	101	70 - 130	102	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4782177	1,2-Dichlorobenzene	2016/12/07	95	70 - 130	96	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4782177	1,2-Dichloroethane	2016/12/07	93	70 - 130	96	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4782177	1,2-Dichloropropane	2016/12/07	95	70 - 130	96	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4782177	1,3-Dichlorobenzene	2016/12/07	98	70 - 130	98	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4782177	1,4-Dichlorobenzene	2016/12/07	99	70 - 130	99	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4782177	Acetone (2-Propanone)	2016/12/07	100	60 - 140	102	60 - 140	ND, RDL=10	ug/L	NC	30		
4782177	Benzene	2016/12/07	98	70 - 130	100	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4782177	Bromodichloromethane	2016/12/07	97	70 - 130	99	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4782177	Bromoform	2016/12/07	100	70 - 130	103	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4782177	Bromomethane	2016/12/07	82	60 - 140	82	60 - 140	ND, RDL=0.50	ug/L	NC	30		
4782177	Carbon Tetrachloride	2016/12/07	101	70 - 130	102	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4782177	Chlorobenzene	2016/12/07	100	70 - 130	100	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4782177	Chloroform	2016/12/07	93	70 - 130	95	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4782177	Chloromethane	2016/12/07	79	60 - 140	82	60 - 140	ND, RDL=0.50	ug/L				
4782177	cis-1,2-Dichloroethylene	2016/12/07	101	70 - 130	103	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4782177	cis-1,3-Dichloropropene	2016/12/07	102	70 - 130	104	70 - 130	ND, RDL=0.20	ug/L	NC	30		

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4782177	Dibromochloromethane	2016/12/07	102	70 - 130	102	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4782177	Ethylbenzene	2016/12/07	102	70 - 130	102	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4782177	Ethylene Dibromide	2016/12/07	99	70 - 130	98	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4782177	Methyl Ethyl Ketone (2-Butanone)	2016/12/07	97	60 - 140	99	60 - 140	ND, RDL=5.0	ug/L	NC	30		
4782177	Methyl Isobutyl Ketone	2016/12/07	103	70 - 130	102	70 - 130	ND, RDL=5.0	ug/L	NC	30		
4782177	Methyl t-butyl ether (MTBE)	2016/12/07	101	70 - 130	103	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4782177	Methylene Chloride(Dichloromethane)	2016/12/07	91	70 - 130	94	70 - 130	ND, RDL=0.50	ug/L	NC	30		
4782177	o-Xylene	2016/12/07	101	70 - 130	102	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4782177	p+m-Xylene	2016/12/07	101	70 - 130	101	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4782177	Styrene	2016/12/07	102	70 - 130	101	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4782177	Tetrachloroethylene	2016/12/07	97	70 - 130	97	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4782177	Toluene	2016/12/07	98	70 - 130	98	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4782177	Total Xylenes	2016/12/07					ND, RDL=0.10	ug/L	NC	30		
4782177	trans-1,2-Dichloroethylene	2016/12/07	98	70 - 130	98	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4782177	trans-1,3-Dichloropropene	2016/12/07	102	70 - 130	102	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4782177	Trichloroethylene	2016/12/07	94	70 - 130	95	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4782177	Trichlorofluoromethane (FREON 11)	2016/12/07	100	70 - 130	101	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4782177	Vinyl Chloride	2016/12/07	99	70 - 130	101	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4782179	Acrolein	2016/12/08	94	60 - 140	92	60 - 140	ND, RDL=10	ug/L	NC	30		
4782179	Acrylonitrile	2016/12/08	99	60 - 140	100	60 - 140	ND, RDL=5.0	ug/L				
4783882	1-Chloronaphthalene	2016/12/09	67	30 - 130	66	30 - 130	ND, RDL=1.0	ug/L	NC	40		
4783882	1-Methylnaphthalene	2016/12/09	75	30 - 130	73	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4783882	2,3,4,5-Tetrachlorophenol	2016/12/09	99	10 - 130	96	10 - 130	ND, RDL=0.40	ug/L	NC	40		
4783882	2,3,4,6-Tetrachlorophenol	2016/12/09	95	10 - 130	92	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	2,3,4-Trichlorophenol	2016/12/09	86	10 - 130	87	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	2,3,5,6-Tetrachlorophenol	2016/12/09	80	10 - 130	73	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	2,3,5-Trichlorophenol	2016/12/09	101	10 - 130	98	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	2,4,5-Trichlorophenol	2016/12/09	92	10 - 130	90	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	2,4,6-Trichlorophenol	2016/12/09	90	10 - 130	82	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	2,4-Dichlorophenol	2016/12/09	69	10 - 130	66	10 - 130	ND, RDL=0.30	ug/L	NC	40		
4783882	2,4-Dimethylphenol	2016/12/09	57	10 - 130	27	10 - 130	ND, RDL=0.50	ug/L	NC	40		

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QUALITY ASSURANCE REPORT(CONT'D)

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4783882	2,4-Dinitrophenol	2016/12/09	95	10 - 130	98	10 - 130	ND, RDL=2.0	ug/L	NC	40		
4783882	2,4-Dinitrotoluene	2016/12/09	98	30 - 130	101	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	2,6-Dichlorophenol	2016/12/09	78	10 - 130	74	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	2,6-Dinitrotoluene	2016/12/09	89	30 - 130	90	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	2-Chloronaphthalene	2016/12/09	78	30 - 130	74	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	2-Chlorophenol	2016/12/09	65	10 - 130	66	10 - 130	ND, RDL=0.30	ug/L	NC	40		
4783882	2-Methylnaphthalene	2016/12/09	72	30 - 130	69	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4783882	4,6-Dinitro-2-methylphenol	2016/12/09	107	10 - 130	115	10 - 130	ND, RDL=2.0	ug/L	NC	40		
4783882	4-Bromophenyl phenyl ether	2016/12/09	92	30 - 130	91	30 - 130	ND, RDL=0.30	ug/L	NC	40		
4783882	4-Chloro-3-Methylphenol	2016/12/09	77	10 - 130	78	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	4-Chlorophenyl phenyl ether	2016/12/09	88	30 - 130	86	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	4-Nitrophenol	2016/12/09	41	10 - 130	44	10 - 130	ND, RDL=1.4	ug/L	NC	40		
4783882	5-Nitroacenaphthene	2016/12/09	96	30 - 130	101	30 - 130	ND, RDL=1.0	ug/L	NC	40		
4783882	Acenaphthene	2016/12/09	84	30 - 130	83	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4783882	Acenaphthylene	2016/12/09	70	30 - 130	73	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4783882	Anthracene	2016/12/09	90	30 - 130	93	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4783882	Benzo(a)anthracene	2016/12/09	95	30 - 130	101	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4783882	Benzo(a)pyrene	2016/12/09	96	30 - 130	100	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4783882	Benzo(b/j)fluoranthene	2016/12/09	95	30 - 130	97	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4783882	Benzo(g,h,i)perylene	2016/12/09	96	30 - 130	100	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4783882	Benzo(k)fluoranthene	2016/12/09	102	30 - 130	112	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4783882	Benzyl butyl phthalate	2016/12/09	105	30 - 130	109	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	Biphenyl	2016/12/09	74	30 - 130	72	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	Bis(2-chloroethoxy)methane	2016/12/09	77	30 - 130	75	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	Bis(2-chloroethyl)ether	2016/12/09	73	30 - 130	76	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	Bis(2-chloroisopropyl)ether	2016/12/09	75	30 - 130	73	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	Bis(2-ethylhexyl)phthalate	2016/12/09	103	30 - 130	107	30 - 130	ND, RDL=2.0	ug/L	NC	40		
4783882	Camphene	2016/12/09	43	30 - 130	39	30 - 130	ND, RDL=1.0	ug/L	NC	40		
4783882	Chrysene	2016/12/09	96	30 - 130	102	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4783882	Dibenz(a,h)anthracene	2016/12/09	96	30 - 130	100	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4783882	Di-N-butyl phthalate	2016/12/09	108	30 - 130	112	30 - 130	ND, RDL=2.0	ug/L	NC	40		

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4783882	Di-N-octyl phthalate	2016/12/09	115	30 - 130	116	30 - 130	ND, RDL=0.80	ug/L	NC	40		
4783882	Diphenyl Ether	2016/12/09	78	30 - 130	75	30 - 130	ND, RDL=0.30	ug/L	NC	40		
4783882	Fluoranthene	2016/12/09	95	30 - 130	97	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4783882	Fluorene	2016/12/09	86	30 - 130	86	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4783882	Indeno(1,2,3-cd)pyrene	2016/12/09	92	30 - 130	96	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4783882	Indole	2016/12/09	18 (1)	30 - 130	32	30 - 130	ND, RDL=1.0	ug/L	NC	40		
4783882	m/p-Cresol	2016/12/09	51	10 - 130	55	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	Naphthalene	2016/12/09	72	30 - 130	70	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4783882	Nitrosodiphenylamine/Diphenylamine	2016/12/09	93	30 - 130	98	30 - 130	ND, RDL=1.0	ug/L	NC	40		
4783882	N-Nitroso-di-n-propylamine	2016/12/09	86	30 - 130	83	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	o-Cresol	2016/12/09	52	10 - 130	47	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	Pentachlorophenol	2016/12/09	83	10 - 130	67	10 - 130	ND, RDL=1.0	ug/L	NC	40		
4783882	Perylene	2016/12/09	93	30 - 130	93	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4783882	Phenanthrene	2016/12/09	88	30 - 130	89	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4783882	Phenol	2016/12/09	23	10 - 130	29	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	Pyrene	2016/12/09	100	30 - 130	107	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4784025	Total BOD	2016/12/13					ND, RDL=2.0	mg/L	NC	25	95	80 - 120
4784069	Phenols-4AAP	2016/12/08	104	80 - 120	101	85 - 115	ND, RDL=0.0010	mg/L	NC	20		
4784137	Total Chemical Oxygen Demand (COD)	2016/12/09	102	75 - 125	99	75 - 125	ND, RDL=4.0	mg/L	NC	25		
4784434	Nitrate (N)	2016/12/12	97	80 - 120	96	80 - 120	ND, RDL=0.10	mg/L	NC	20		
4784434	Nitrite (N)	2016/12/12	101	80 - 120	87	80 - 120	ND, RDL=0.010	mg/L	NC	20		
4784442	Nitrate (N)	2016/12/12	96	80 - 120	98	80 - 120	ND, RDL=0.10	mg/L	NC	20		
4784442	Nitrite (N)	2016/12/12	100	80 - 120	95	80 - 120	ND, RDL=0.010	mg/L	NC	20		
4784449	Total Ammonia-N	2016/12/14	97	80 - 120	99	85 - 115	ND, RDL=0.050	mg/L	NC	20		
4784461	Conductivity	2016/12/08			103	85 - 115	ND, RDL=1.0	umho/cm	0.30	25		
4784466	Alkalinity (Total as CaCO3)	2016/12/08			94	85 - 115	ND, RDL=1.0	mg/L	0.11	20		
4784468	pH	2016/12/08			102	98 - 103			0.31	N/A		

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Maxxam Job #: B6Q5847
Report Date: 2016/12/15

QUALITY ASSURANCE REPORT(CONT'D)

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4785099	Alkalinity (Total as CaCO3)	2016/12/10			96	85 - 115	ND, RDL=1.0	mg/L	0.071	20		
4785106	Conductivity	2016/12/10			100	85 - 115	ND, RDL=1.0	umho/cm	0.16	25		
4785198	Dissolved Chloride (Cl)	2016/12/09	NC	80 - 120	105	80 - 120	ND, RDL=1.0	mg/L	0.40	20		
4785222	Dissolved Sulphate (SO4)	2016/12/09	NC	75 - 125	105	80 - 120	ND, RDL=1.0	mg/L	0.83	20		
4785748	Total Phosphorus	2016/12/09	99	80 - 120	98	80 - 120	ND, RDL=0.020	mg/L	0.069	20	100	80 - 120
4785958	Total Kjeldahl Nitrogen (TKN)	2016/12/12	101	80 - 120	98	80 - 120	ND, RDL=0.10	mg/L	NC	20	97	80 - 120
4786091	Total Iron (Fe)	2016/12/09	NC	80 - 120	98	80 - 120	ND, RDL=0.02	mg/L	NC	25		
4786510	Dissolved Boron (B)	2016/12/12	99	80 - 120	104	80 - 120	ND, RDL=10	ug/L	NC	20		
4786510	Dissolved Calcium (Ca)	2016/12/12	NC	80 - 120	102	80 - 120	ND, RDL=200	ug/L	1.1	20		
4786510	Dissolved Magnesium (Mg)	2016/12/12	NC	80 - 120	98	80 - 120	ND, RDL=50	ug/L	0.66	20		
4786510	Dissolved Phosphorus (P)	2016/12/12	104	80 - 120	102	80 - 120	ND, RDL=100	ug/L	NC	20		
4786510	Dissolved Potassium (K)	2016/12/12	98	80 - 120	99	80 - 120	ND, RDL=200	ug/L	0.89	20		
4786510	Dissolved Sodium (Na)	2016/12/12	NC	80 - 120	98	80 - 120	ND, RDL=100	ug/L	0.0094	20		
4786510	Dissolved Zinc (Zn)	2016/12/12	100	80 - 120	100	80 - 120	ND, RDL=5.0	ug/L	NC	20		
4786516	pH	2016/12/10			101	98 - 103			0.62	N/A		
4790805	Alkalinity (Total as CaCO3)	2016/12/14			97	85 - 115	ND, RDL=1.0	mg/L	0.17	20		
4791000	Dissolved Chloride (Cl)	2016/12/14	NC	80 - 120	102	80 - 120	ND, RDL=1.0	mg/L	0.51	20		
4791032	Dissolved Sulphate (SO4)	2016/12/14	NC	75 - 125	105	80 - 120	ND, RDL=1.0	mg/L	2.0	20		
4791804	Dissolved Boron (B)	2016/12/14	98	80 - 120	103	80 - 120	ND, RDL=10	ug/L	NC	20		
4791804	Dissolved Calcium (Ca)	2016/12/14	NC	80 - 120	99	80 - 120	ND, RDL=200	ug/L				
4791804	Dissolved Magnesium (Mg)	2016/12/14	96	80 - 120	100	80 - 120	ND, RDL=50	ug/L				
4791804	Dissolved Phosphorus (P)	2016/12/14	105	80 - 120	107	80 - 120	ND, RDL=100	ug/L				
4791804	Dissolved Potassium (K)	2016/12/14	96	80 - 120	101	80 - 120	ND, RDL=200	ug/L				
4791804	Dissolved Sodium (Na)	2016/12/14	NC	80 - 120	99	80 - 120	ND, RDL=100	ug/L				

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Report Date: 2016/12/15

QUALITY ASSURANCE REPORT(CONT'D)

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4791804	Dissolved Zinc (Zn)	2016/12/14	95	80 - 120	99	80 - 120	ND, RDL=5.0	ug/L	NC	20		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) The recovery was below the lower control limit. This may represent a low bias in some results for flagged analytes.

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Maxxam Job #: B6Q5847
Report Date: 2016/12/15

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Cristina Carriere, Scientific Services

Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Maxxam
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Your P.O. #: 720.8121.3516
Your Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your C.O.C. #: C#484840-05-01

Attention:Amy Spence

City of Guelph
Soild Waste RIC (Wet/Dry)
110 Dunlop Drive
Guelph, ON
CANADA N1H 6H8

Report Date: 2017/01/10
Report #: R4318265
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B6Q5847
Received: 2016/12/06, 16:04

Sample Matrix: Water
Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
ABN Compounds in Water by GC/MS	2	2016/12/08	2016/12/09	CAM SOP-00301	EPA 8270 m
ABN Compounds in Water by GC/MS	5	2016/12/08	2016/12/10	CAM SOP-00301	EPA 8270 m
Alkalinity	1	N/A	2016/12/08	CAM SOP-00448	SM 22 2320 B m
Alkalinity	5	N/A	2016/12/10	CAM SOP-00448	SM 22 2320 B m
Alkalinity	1	N/A	2016/12/14	CAM SOP-00448	SM 22 2320 B m
Biochemical Oxygen Demand (BOD)	7	2016/12/08	2016/12/13	CAM SOP-00427	SM 22 5210B m
Chloride by Automated Colourimetry	6	N/A	2016/12/09	CAM SOP-00463	EPA 325.2 m
Chloride by Automated Colourimetry	1	N/A	2016/12/14	CAM SOP-00463	EPA 325.2 m
Chemical Oxygen Demand	7	N/A	2016/12/09	CAM SOP-00416	SM 22 5220 D m
Conductivity	1	N/A	2016/12/08	CAM SOP-00414	SM 22 2510 m
Conductivity	6	N/A	2016/12/10	CAM SOP-00414	SM 22 2510 m
Dissolved Metals by ICPMS	6	N/A	2016/12/12	CAM SOP-00447	EPA 6020B m
Dissolved Metals by ICPMS	1	N/A	2017/01/05	CAM SOP-00447	EPA 6020B m
Total Metals Analysis by ICP	6	2016/12/09	2016/12/09	CAM SOP-00408	EPA 6010C m
Total Metals Analysis by ICP	1	2017/01/09	2017/01/09	CAM SOP-00408	EPA 6010C m
Total Ammonia-N	7	N/A	2016/12/14	CAM SOP-00441	EPA GS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (1)	7	N/A	2016/12/12	CAM SOP-00440	SM 22 4500-NO3I/NO2B
pH	1	N/A	2016/12/08	CAM SOP-00413	SM 4500H+ B m
pH	6	N/A	2016/12/10	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	7	N/A	2016/12/08	CAM SOP-00444	OMOE E3179 m
Sulphate by Automated Colourimetry	6	N/A	2016/12/09	CAM SOP-00464	EPA 375.4 m
Sulphate by Automated Colourimetry	1	N/A	2016/12/14	CAM SOP-00464	EPA 375.4 m
Total Kjeldahl Nitrogen in Water	7	2016/12/09	2016/12/12	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	7	2016/12/09	2016/12/09	CAM SOP-00407	SM 22 4500 P B H m
Volatile Organic Compounds in Water	7	N/A	2016/12/08	CAM SOP-00226	EPA 8260C m
Non-Routine Volatile Organic Compounds	7	N/A	2016/12/08	CAM SOP-00226	EPA 8260 m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

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Your P.O. #: 720.8121.3516
Your Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your C.O.C. #: C#484840-05-01

Attention:Amy Spence

City of Guelph
Soild Waste RIC (Wet/Dry)
110 Dunlop Drive
Guelph, ON
CANADA N1H 6H8

Report Date: 2017/01/10
Report #: R4318265
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B6Q5847
Received: 2016/12/06, 16:04

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
James Aspin, Senior Project Manager
Email: JAspin@maxxam.ca
Phone# (905)817-5771

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B6Q5847
Report Date: 2017/01/10

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

RESULTS OF ANALYSES OF WATER

Maxxam ID		DOU440	DOU440		DOU441	DOU441		
Sampling Date		2016/12/05	2016/12/05		2016/12/05	2016/12/05		
COC Number		C#484840-05-01	C#484840-05-01		C#484840-05-01	C#484840-05-01		
	UNITS	**16A**	**16A Lab-Dup**	**RDL**	**16B**	**16B Lab-Dup**	**RDL**	**QC Batch**
Inorganics								
Total Ammonia-N	mg/L	ND		0.050	ND		0.050	4784449
Total BOD	mg/L	ND	ND	2.0	ND		2.0	4784025
Total Chemical Oxygen Demand (COD)	mg/L	9.4		4.0	ND		4.0	4784137
Conductivity	umho/cm	1300		1.0	610	620	1.0	4785106
Total Kjeldahl Nitrogen (TKN)	mg/L	0.27		0.10	0.11		0.10	4785958
pH	pH	7.58			7.93	7.98		4786516
Phenols-4AAP	mg/L	ND		0.0010	ND		0.0010	4784069
Total Phosphorus	mg/L	ND		0.020	ND		0.020	4785748
Dissolved Sulphate (SO4)	mg/L	57		1.0	36		1.0	4785222
Alkalinity (Total as CaCO3)	mg/L	400		1.0	240	240	1.0	4785099
Dissolved Chloride (Cl)	mg/L	140		2.0	31		1.0	4785198
Nitrite (N)	mg/L	ND	ND	0.010	0.019		0.010	4784442
Nitrate (N)	mg/L	ND	ND	0.10	ND		0.10	4784442
Nitrate + Nitrite (N)	mg/L	ND	ND	0.10	ND		0.10	4784442

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B6Q5847
Report Date: 2017/01/10

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

RESULTS OF ANALYSES OF WATER

Maxxam ID		DOU442	DOU442		DOU443		
Sampling Date		2016/12/05	2016/12/05		2016/12/05		
COC Number		C#484840-05-01	C#484840-05-01		C#484840-05-01		
	UNITS	**21A**	**21A Lab-Dup**	**RDL**	**5**	**RDL**	**QC Batch**
Inorganics							
Total Ammonia-N	mg/L	ND		0.050	ND	0.050	4784449
Total BOD	mg/L	ND		2.0	ND	2.0	4784025
Total Chemical Oxygen Demand (COD)	mg/L	9.1		4.0	10	4.0	4784137
Conductivity	umho/cm	640		1.0	2900	1.0	4785106
Total Kjeldahl Nitrogen (TKN)	mg/L	ND	ND	0.10	0.13	0.10	4785958
pH	pH	7.84			7.85		4786516
Phenols-4AAP	mg/L	ND		0.0010	ND	0.0010	4784069
Total Phosphorus	mg/L	ND		0.020	ND	0.020	4785748
Dissolved Sulphate (SO4)	mg/L	22		1.0	39	1.0	4785222
Alkalinity (Total as CaCO3)	mg/L	290		1.0	310	1.0	4785099
Dissolved Chloride (Cl)	mg/L	22		1.0	670	8.0	4785198
Nitrite (N)	mg/L	ND		0.010	0.015	0.010	4784442
Nitrate (N)	mg/L	1.59		0.10	0.20	0.10	4784442
Nitrate + Nitrite (N)	mg/L	1.59		0.10	0.22	0.10	4784442

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B6Q5847
Report Date: 2017/01/10

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

RESULTS OF ANALYSES OF WATER

Maxxam ID		DOU444		DOU445		
Sampling Date		2016/12/05		2016/12/05		
COC Number		C#484840-05-01		C#484840-05-01		
	UNITS	**8**	**QC Batch**	**14A**	**RDL**	**QC Batch**
Inorganics						
Total Ammonia-N	mg/L	ND	4784449	ND	0.050	4784449
Total BOD	mg/L	ND	4784025	ND	2.0	4784025
Total Chemical Oxygen Demand (COD)	mg/L	7.6	4784137	ND	4.0	4784137
Conductivity	umho/cm	1000	4785106	650	1.0	4784461
Total Kjeldahl Nitrogen (TKN)	mg/L	0.12	4785958	0.13	0.10	4785958
pH	pH	7.87	4786516	7.88		4784468
Phenols-4AAP	mg/L	ND	4784069	ND	0.0010	4784069
Total Phosphorus	mg/L	ND	4785748	ND	0.020	4785748
Dissolved Sulphate (SO4)	mg/L	37	4785222	60	1.0	4785222
Alkalinity (Total as CaCO3)	mg/L	300	4785099	250	1.0	4784466
Dissolved Chloride (Cl)	mg/L	120	4785198	23	1.0	4785198
Nitrite (N)	mg/L	ND	4784434	ND	0.010	4784442
Nitrate (N)	mg/L	0.31	4784434	ND	0.10	4784442
Nitrate + Nitrite (N)	mg/L	0.31	4784434	ND	0.10	4784442

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B6Q5847
Report Date: 2017/01/10

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

RESULTS OF ANALYSES OF WATER

Maxxam ID		DOU446		
Sampling Date		2016/12/05		
COC Number		C#484840-05-01		
	UNITS	**14B**	**RDL**	**QC Batch**
Inorganics				
Total Ammonia-N	mg/L	ND	0.050	4784449
Total BOD	mg/L	ND	2.0	4784025
Total Chemical Oxygen Demand (COD)	mg/L	14	4.0	4784137
Conductivity	umho/cm	1700	1.0	4785106
Total Kjeldahl Nitrogen (TKN)	mg/L	0.11	0.10	4785958
pH	pH	7.77		4786516
Phenols-4AAP	mg/L	ND	0.0010	4784069
Total Phosphorus	mg/L	0.094	0.020	4785748
Dissolved Sulphate (SO4)	mg/L	65	1.0	4791032
Alkalinity (Total as CaCO3)	mg/L	360	1.0	4790805
Dissolved Chloride (Cl)	mg/L	260	4.0	4791000
Nitrite (N)	mg/L	ND	0.010	4784442
Nitrate (N)	mg/L	ND	0.10	4784442
Nitrate + Nitrite (N)	mg/L	ND	0.10	4784442

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B6Q5847
Report Date: 2017/01/10

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		DOU440	DOU441	DOU442	DOU443	DOU444		
Sampling Date		2016/12/05	2016/12/05	2016/12/05	2016/12/05	2016/12/05		
COC Number		C#484840-05-01	C#484840-05-01	C#484840-05-01	C#484840-05-01	C#484840-05-01		
	UNITS	**16A**	**16B**	**21A**	**5**	**8**	**RDL**	**QC Batch**
Metals								
Total Iron (Fe)	mg/L	0.11	0.23	0.06	0.06	0.10	0.02	4786091
Dissolved Boron (B)	ug/L	34	30	18	18	16	10	4786510
Dissolved Calcium (Ca)	ug/L	120000	82000	79000	86000	89000	200	4786510
Dissolved Magnesium (Mg)	ug/L	33000	27000	25000	17000	31000	50	4786510
Dissolved Phosphorus (P)	ug/L	ND	ND	ND	ND	ND	100	4786510
Dissolved Potassium (K)	ug/L	2500	1800	960	3600	2400	200	4786510
Dissolved Sodium (Na)	ug/L	97000	2300	19000	490000	70000	100	4786510
Dissolved Zinc (Zn)	ug/L	1100	32	350	1100	960	5.0	4786510

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

Maxxam ID		DOU445	DOU445		DOU446		DOU446		
Sampling Date		2016/12/05	2016/12/05		2016/12/05		2016/12/05		
COC Number		C#484840-05-01	C#484840-05-01		C#484840-05-01		C#484840-05-01		
	UNITS	**14A**	**14A Lab-Dup**	**QC Batch**	**14B**	**QC Batch**	**14B REPEAT**	**RDL**	**QC Batch**
Metals									
Total Iron (Fe)	mg/L	0.51		4786091	5.0	4818169		0.02	4818169
Dissolved Boron (B)	ug/L	25	26	4786510	26	4786510	28	10	4791804
Dissolved Calcium (Ca)	ug/L	70000	71000	4786510	200000	4786510	200000	200	4791804
Dissolved Magnesium (Mg)	ug/L	24000	24000	4786510	46000	4786510	46000	50	4791804
Dissolved Phosphorus (P)	ug/L	ND	ND	4786510	120	4786510	140	100	4791804
Dissolved Potassium (K)	ug/L	1000	1000	4786510	2500	4786510	2900	200	4791804
Dissolved Sodium (Na)	ug/L	25000	25000	4786510	130000	4786510	130000	100	4791804
Dissolved Zinc (Zn)	ug/L	12	13	4786510	1300	4786510	1300	5.0	4791804

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B6Q5847
Report Date: 2017/01/10

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		DOU446		
Sampling Date		2016/12/05		
COC Number		C#484840-05-01		
	UNITS	**14B REPEAT**	**RDL**	**QC Batch**
Metals				
Dissolved Boron (B)	ug/L	18	10	4813758
Dissolved Calcium (Ca)	ug/L	140000	200	4813758
Dissolved Magnesium (Mg)	ug/L	32000	50	4813758
Dissolved Phosphorus (P)	ug/L	ND	100	4813758
Dissolved Potassium (K)	ug/L	2000	200	4813758
Dissolved Sodium (Na)	ug/L	130000	100	4813758
Dissolved Zinc (Zn)	ug/L	650	5.0	4813758

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B6Q5847
Report Date: 2017/01/10

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		DOU440	DOU441	DOU441		DOU442		
Sampling Date		2016/12/05	2016/12/05	2016/12/05		2016/12/05		
COC Number		C#484840-05-01	C#484840-05-01	C#484840-05-01		C#484840-05-01		
	UNITS	**16A**	**16B**	**16B Lab-Dup**	**RDL**	**21A**	**RDL**	**QC Batch**
Semivolatile Organics								
Acenaphthene	ug/L	ND	ND	ND	0.20	ND	0.20	4783882
Acenaphthylene	ug/L	ND	ND	ND	0.20	ND	0.20	4783882
Anthracene	ug/L	ND	ND	ND	0.20	ND	0.20	4783882
Benzo(a)anthracene	ug/L	ND	ND	ND	0.20	ND	0.20	4783882
Benzo(a)pyrene	ug/L	ND	ND	ND	0.20	ND	0.20	4783882
Benzo(b/j)fluoranthene	ug/L	ND	ND	ND	0.20	ND	0.20	4783882
Benzo(g,h,i)perylene	ug/L	ND	ND	ND	0.20	ND	0.20	4783882
Benzo(k)fluoranthene	ug/L	ND	ND	ND	0.20	ND	0.20	4783882
1-Chloronaphthalene	ug/L	ND	ND	ND	1.0	ND	1.0	4783882
2-Chloronaphthalene	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
Chrysene	ug/L	ND	ND	ND	0.20	ND	0.20	4783882
Dibenz(a,h)anthracene	ug/L	ND	ND	ND	0.20	ND	0.20	4783882
Fluoranthene	ug/L	ND	ND	ND	0.20	ND	0.20	4783882
Fluorene	ug/L	ND	ND	ND	0.20	ND	0.20	4783882
Indeno(1,2,3-cd)pyrene	ug/L	ND	ND	ND	0.20	ND	0.20	4783882
1-Methylnaphthalene	ug/L	ND	ND	ND	0.20	ND	0.20	4783882
2-Methylnaphthalene	ug/L	ND	ND	ND	0.20	ND	0.20	4783882
Naphthalene	ug/L	ND	ND	ND	0.20	ND	0.20	4783882
5-Nitroacenaphthene	ug/L	ND	ND	ND	1.0	ND	1.0	4783882
Perylene	ug/L	ND	ND	ND	0.20	ND	0.20	4783882
Phenanthrene	ug/L	ND	ND	ND	0.20	ND	0.20	4783882
Pyrene	ug/L	ND	ND	ND	0.20	ND	0.20	4783882
2-Chlorophenol	ug/L	ND	ND	ND	0.30	ND	0.30	4783882
4-Chloro-3-Methylphenol	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
m/p-Cresol	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
o-Cresol	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
2,4-Dichlorophenol	ug/L	ND	ND	ND	0.30	ND	0.30	4783882
2,6-Dichlorophenol	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
2,4-Dimethylphenol	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
2,4-Dinitrophenol	ug/L	ND	ND	ND	2.0	ND (1)	2.5	4783882
4,6-Dinitro-2-methylphenol	ug/L	ND	ND	ND	2.0	ND	2.0	4783882
4-Nitrophenol	ug/L	ND	ND	ND	1.4	ND	1.4	4783882

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected
(1) Detection limit was raised due to matrix interference.

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Maxxam Job #: B6Q5847
Report Date: 2017/01/10

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		DOU440	DOU441	DOU441		DOU442		
Sampling Date		2016/12/05	2016/12/05	2016/12/05		2016/12/05		
COC Number		C#484840-05-01	C#484840-05-01	C#484840-05-01		C#484840-05-01		
	UNITS	**16A**	**16B**	**16B Lab-Dup**	**RDL**	**21A**	**RDL**	**QC Batch**
Pentachlorophenol	ug/L	ND	ND	ND	1.0	ND	1.0	4783882
Phenol	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
2,3,4,5-Tetrachlorophenol	ug/L	ND	ND	ND	0.40	ND	0.40	4783882
2,3,4,6-Tetrachlorophenol	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
2,3,5,6-Tetrachlorophenol	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
2,3,4-Trichlorophenol	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
2,3,5-Trichlorophenol	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
2,4,5-Trichlorophenol	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
2,4,6-Trichlorophenol	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
Benzyl butyl phthalate	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
Biphenyl	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
Bis(2-chloroethyl)ether	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
Bis(2-chloroethoxy)methane	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
Bis(2-chloroisopropyl)ether	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
Bis(2-ethylhexyl)phthalate	ug/L	ND	ND	ND	2.0	ND	2.0	4783882
4-Bromophenyl phenyl ether	ug/L	ND	ND	ND	0.30	ND	0.30	4783882
Camphene	ug/L	ND	ND	ND	1.0	ND	1.0	4783882
4-Chlorophenyl phenyl ether	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
Di-N-butyl phthalate	ug/L	ND	ND	ND	2.0	ND	2.0	4783882
Di-N-octyl phthalate	ug/L	ND	ND	ND	0.80	ND	0.80	4783882
2,4-Dinitrotoluene	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
2,6-Dinitrotoluene	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
Diphenyl Ether	ug/L	ND	ND	ND	0.30	ND	0.30	4783882
Indole	ug/L	ND	ND	ND	1.0	ND	1.0	4783882
Nitrosodiphenylamine/Diphenylamine	ug/L	ND	ND	ND	1.0	ND	1.0	4783882
N-Nitroso-di-n-propylamine	ug/L	ND	ND	ND	0.50	ND	0.50	4783882
Surrogate Recovery (%)								
2,4,6-Tribromophenol	%	22	46	24		5.2 (1)		4783882
2-Fluorobiphenyl	%	78	81	81		80		4783882
2-Fluorophenol	%	9.8 (1)	21	15		4.9 (1)		4783882
D14-Terphenyl	%	91	99	96		94		4783882
D5-Nitrobenzene	%	73	76	76		76		4783882
D5-Phenol	%	15	22	21		13		4783882

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected
(1) Surrogate recovery was below the lower control limit. This may represent a low bias in some results.

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Maxxam Job #: B6Q5847
Report Date: 2017/01/10

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		DOU443	DOU444	DOU445	DOU446		
Sampling Date		2016/12/05	2016/12/05	2016/12/05	2016/12/05		
COC Number		C#484840-05-01	C#484840-05-01	C#484840-05-01	C#484840-05-01		
	UNITS	**5**	**8**	**14A**	**14B**	**RDL**	**QC Batch**
Semivolatile Organics							
Acenaphthene	ug/L	ND	ND	ND	ND	0.20	4783882
Acenaphthylene	ug/L	ND	ND	ND	ND	0.20	4783882
Anthracene	ug/L	ND	ND	ND	ND	0.20	4783882
Benzo(a)anthracene	ug/L	ND	ND	ND	ND	0.20	4783882
Benzo(a)pyrene	ug/L	ND	ND	ND	ND	0.20	4783882
Benzo(b/j)fluoranthene	ug/L	ND	ND	ND	ND	0.20	4783882
Benzo(g,h,i)perylene	ug/L	ND	ND	ND	ND	0.20	4783882
Benzo(k)fluoranthene	ug/L	ND	ND	ND	ND	0.20	4783882
1-Chloronaphthalene	ug/L	ND	ND	ND	ND	1.0	4783882
2-Chloronaphthalene	ug/L	ND	ND	ND	ND	0.50	4783882
Chrysene	ug/L	ND	ND	ND	ND	0.20	4783882
Dibenz(a,h)anthracene	ug/L	ND	ND	ND	ND	0.20	4783882
Fluoranthene	ug/L	ND	ND	ND	ND	0.20	4783882
Fluorene	ug/L	ND	ND	ND	ND	0.20	4783882
Indeno(1,2,3-cd)pyrene	ug/L	ND	ND	ND	ND	0.20	4783882
1-Methylnaphthalene	ug/L	ND	ND	ND	ND	0.20	4783882
2-Methylnaphthalene	ug/L	ND	ND	ND	ND	0.20	4783882
Naphthalene	ug/L	ND	ND	ND	ND	0.20	4783882
5-Nitroacenaphthene	ug/L	ND	ND	ND	ND	1.0	4783882
Perylene	ug/L	ND	ND	ND	ND	0.20	4783882
Phenanthrene	ug/L	ND	ND	ND	ND	0.20	4783882
Pyrene	ug/L	ND	ND	ND	ND	0.20	4783882
2-Chlorophenol	ug/L	ND	ND	ND	ND	0.30	4783882
4-Chloro-3-Methylphenol	ug/L	ND	ND	ND	ND	0.50	4783882
m/p-Cresol	ug/L	ND	ND	ND	ND	0.50	4783882
o-Cresol	ug/L	ND	ND	ND	ND	0.50	4783882
2,4-Dichlorophenol	ug/L	ND	ND	ND	ND	0.30	4783882
2,6-Dichlorophenol	ug/L	ND	ND	ND	ND	0.50	4783882
2,4-Dimethylphenol	ug/L	ND	ND	ND	ND	0.50	4783882
2,4-Dinitrophenol	ug/L	ND (1)	ND (1)	ND (1)	ND	2.5	4783882
4,6-Dinitro-2-methylphenol	ug/L	ND	ND	ND	ND	2.0	4783882
4-Nitrophenol	ug/L	ND	ND	ND	ND	1.4	4783882
Pentachlorophenol	ug/L	ND	ND	ND	ND	1.0	4783882

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected
(1) Detection limit was raised due to matrix interference.

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Maxxam Job #: B6Q5847
Report Date: 2017/01/10

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		DOU443	DOU444	DOU445	DOU446		
Sampling Date		2016/12/05	2016/12/05	2016/12/05	2016/12/05		
COC Number		C#484840-05-01	C#484840-05-01	C#484840-05-01	C#484840-05-01		
	UNITS	**5**	**8**	**14A**	**14B**	**RDL**	**QC Batch**
Phenol	ug/L	ND	ND	ND	ND	0.50	4783882
2,3,4,5-Tetrachlorophenol	ug/L	ND	ND	ND	ND	0.40	4783882
2,3,4,6-Tetrachlorophenol	ug/L	ND	ND	ND	ND	0.50	4783882
2,3,5,6-Tetrachlorophenol	ug/L	ND	ND	ND	ND	0.50	4783882
2,3,4-Trichlorophenol	ug/L	ND	ND	ND	ND	0.50	4783882
2,3,5-Trichlorophenol	ug/L	ND	ND	ND	ND	0.50	4783882
2,4,5-Trichlorophenol	ug/L	ND	ND	ND	ND	0.50	4783882
2,4,6-Trichlorophenol	ug/L	ND	ND	ND	ND	0.50	4783882
Benzyl butyl phthalate	ug/L	ND	ND	ND	ND	0.50	4783882
Biphenyl	ug/L	ND	ND	ND	ND	0.50	4783882
Bis(2-chloroethyl)ether	ug/L	ND	ND	ND	ND	0.50	4783882
Bis(2-chloroethoxy)methane	ug/L	ND	ND	ND	ND	0.50	4783882
Bis(2-chloroisopropyl)ether	ug/L	ND	ND	ND	ND	0.50	4783882
Bis(2-ethylhexyl)phthalate	ug/L	ND	2.4	ND	ND	2.0	4783882
4-Bromophenyl phenyl ether	ug/L	ND	ND	ND	ND	0.30	4783882
Camphene	ug/L	ND	ND	ND	ND	1.0	4783882
4-Chlorophenyl phenyl ether	ug/L	ND	ND	ND	ND	0.50	4783882
Di-N-butyl phthalate	ug/L	ND	ND	ND	ND	2.0	4783882
Di-N-octyl phthalate	ug/L	ND	ND	ND	ND	0.80	4783882
2,4-Dinitrotoluene	ug/L	ND	ND	ND	ND	0.50	4783882
2,6-Dinitrotoluene	ug/L	ND	ND	ND	ND	0.50	4783882
Diphenyl Ether	ug/L	ND	ND	ND	ND	0.30	4783882
Indole	ug/L	ND	ND	ND	ND	1.0	4783882
Nitrosodiphenylamine/Diphenylamine	ug/L	ND	ND	ND	ND	1.0	4783882
N-Nitroso-di-n-propylamine	ug/L	ND	ND	ND	ND	0.50	4783882
Surrogate Recovery (%)							
2,4,6-Tribromophenol	%	15	23	18	0.40 (1)		4783882
2-Fluorobiphenyl	%	82	79	77	86		4783882
2-Fluorophenol	%	6.8 (1)	8.9 (1)	12	0.00 (1)		4783882
D14-Terphenyl	%	95	95	93	96		4783882
D5-Nitrobenzene	%	74	70	73	75		4783882
D5-Phenol	%	15	15	19	1.5 (1)		4783882

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected
(1) Surrogate recovery was below the lower control limit. This may represent a low bias in some results.

Maxxam Job #: B6Q5847
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City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
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VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		DOU440	DOU441	DOU442	DOU443		
Sampling Date		2016/12/05	2016/12/05	2016/12/05	2016/12/05		
COC Number		C#484840-05-01	C#484840-05-01	C#484840-05-01	C#484840-05-01		
	UNITS	**16A**	**16B**	**21A**	**5**	**RDL**	**QC Batch**
Volatile Organics							
Acetone (2-Propanone)	ug/L	ND	ND	ND	ND	10	4782177
Benzene	ug/L	ND	ND	ND	ND	0.10	4782177
Bromodichloromethane	ug/L	ND	ND	ND	ND	0.10	4782177
Acrolein	ug/L	ND	ND	ND	ND	10	4782179
Bromoform	ug/L	ND	ND	ND	ND	0.20	4782177
Bromomethane	ug/L	ND	ND	ND	ND	0.50	4782177
Carbon Tetrachloride	ug/L	ND	ND	ND	ND	0.10	4782177
Chlorobenzene	ug/L	ND	ND	ND	ND	0.10	4782177
Chloroform	ug/L	ND	ND	ND	ND	0.10	4782177
Acrylonitrile	ug/L	ND	ND	ND	ND	5.0	4782179
Chloromethane	ug/L	ND	ND	ND	ND	0.50	4782177
Dibromochloromethane	ug/L	ND	ND	ND	ND	0.20	4782177
1,2-Dichlorobenzene	ug/L	ND	ND	ND	ND	0.20	4782177
1,3-Dichlorobenzene	ug/L	ND	ND	ND	ND	0.20	4782177
1,4-Dichlorobenzene	ug/L	ND	ND	ND	ND	0.20	4782177
1,1-Dichloroethane	ug/L	ND	ND	ND	ND	0.10	4782177
1,2-Dichloroethane	ug/L	ND	ND	ND	ND	0.20	4782177
1,1-Dichloroethylene	ug/L	ND	ND	ND	ND	0.10	4782177
cis-1,2-Dichloroethylene	ug/L	ND	ND	ND	ND	0.10	4782177
trans-1,2-Dichloroethylene	ug/L	ND	ND	ND	ND	0.10	4782177
1,2-Dichloropropane	ug/L	ND	ND	ND	ND	0.10	4782177
cis-1,3-Dichloropropene	ug/L	ND	ND	ND	ND	0.20	4782177
trans-1,3-Dichloropropene	ug/L	ND	ND	ND	ND	0.20	4782177
Ethylbenzene	ug/L	ND	ND	ND	ND	0.10	4782177
Ethylene Dibromide	ug/L	ND	ND	ND	ND	0.20	4782177
Methylene Chloride(Dichloromethane)	ug/L	ND	ND	ND	ND	0.50	4782177
Methyl Ethyl Ketone (2-Butanone)	ug/L	ND	ND	ND	ND	5.0	4782177
Methyl Isobutyl Ketone	ug/L	ND	ND	ND	ND	5.0	4782177
Methyl t-butyl ether (MTBE)	ug/L	ND	ND	ND	ND	0.20	4782177
Styrene	ug/L	ND	ND	ND	ND	0.20	4782177
1,1,1,2-Tetrachloroethane	ug/L	ND	ND	ND	ND	0.20	4782177
1,1,2,2-Tetrachloroethane	ug/L	ND	ND	ND	ND	0.20	4782177
Tetrachloroethylene	ug/L	ND	ND	ND	ND	0.10	4782177

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B6Q5847
Report Date: 2017/01/10

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		DOU440	DOU441	DOU442	DOU443		
Sampling Date		2016/12/05	2016/12/05	2016/12/05	2016/12/05		
COC Number		C#484840-05-01	C#484840-05-01	C#484840-05-01	C#484840-05-01		
	UNITS	**16A**	**16B**	**21A**	**5**	**RDL**	**QC Batch**
Toluene	ug/L	ND	ND	ND	ND	0.20	4782177
1,1,1-Trichloroethane	ug/L	ND	ND	ND	ND	0.10	4782177
1,1,2-Trichloroethane	ug/L	ND	ND	ND	ND	0.20	4782177
Trichloroethylene	ug/L	ND	ND	ND	ND	0.10	4782177
Trichlorofluoromethane (FREON 11)	ug/L	ND	ND	ND	ND	0.20	4782177
Vinyl Chloride	ug/L	ND	ND	ND	ND	0.20	4782177
p+m-Xylene	ug/L	ND	ND	ND	ND	0.10	4782177
o-Xylene	ug/L	ND	ND	ND	ND	0.10	4782177
Total Xylenes	ug/L	ND	ND	ND	ND	0.10	4782177
Surrogate Recovery (%)							
4-Bromofluorobenzene	%	96	95	94	95		4782177
D4-1,2-Dichloroethane	%	103	104	105	106		4782177
D8-Toluene	%	96	96	95	96		4782177

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B6Q5847
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City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		DOU444	DOU445	DOU446		
Sampling Date		2016/12/05	2016/12/05	2016/12/05		
COC Number		C#484840-05-01	C#484840-05-01	C#484840-05-01		
	UNITS	**8**	**14A**	**14B**	**RDL**	**QC Batch**
Volatile Organics						
Acetone (2-Propanone)	ug/L	ND	ND	ND	10	4782177
Benzene	ug/L	ND	ND	ND	0.10	4782177
Bromodichloromethane	ug/L	ND	ND	ND	0.10	4782177
Acrolein	ug/L	ND	ND	ND	10	4782179
Bromoform	ug/L	ND	ND	ND	0.20	4782177
Bromomethane	ug/L	ND	ND	ND	0.50	4782177
Carbon Tetrachloride	ug/L	ND	ND	ND	0.10	4782177
Chlorobenzene	ug/L	ND	ND	ND	0.10	4782177
Chloroform	ug/L	ND	ND	2.4	0.10	4782177
Acrylonitrile	ug/L	ND	ND	ND	5.0	4782179
Chloromethane	ug/L	ND	ND	ND	0.50	4782177
Dibromochloromethane	ug/L	ND	ND	ND	0.20	4782177
1,2-Dichlorobenzene	ug/L	ND	ND	ND	0.20	4782177
1,3-Dichlorobenzene	ug/L	ND	ND	ND	0.20	4782177
1,4-Dichlorobenzene	ug/L	ND	ND	ND	0.20	4782177
1,1-Dichloroethane	ug/L	ND	ND	ND	0.10	4782177
1,2-Dichloroethane	ug/L	ND	ND	ND	0.20	4782177
1,1-Dichloroethylene	ug/L	ND	ND	ND	0.10	4782177
cis-1,2-Dichloroethylene	ug/L	ND	ND	ND	0.10	4782177
trans-1,2-Dichloroethylene	ug/L	ND	ND	ND	0.10	4782177
1,2-Dichloropropane	ug/L	ND	ND	ND	0.10	4782177
cis-1,3-Dichloropropene	ug/L	ND	ND	ND	0.20	4782177
trans-1,3-Dichloropropene	ug/L	ND	ND	ND	0.20	4782177
Ethylbenzene	ug/L	ND	ND	ND	0.10	4782177
Ethylene Dibromide	ug/L	ND	ND	ND	0.20	4782177
Methylene Chloride(Dichloromethane)	ug/L	ND	ND	ND	0.50	4782177
Methyl Ethyl Ketone (2-Butanone)	ug/L	ND	ND	ND	5.0	4782177
Methyl Isobutyl Ketone	ug/L	ND	ND	ND	5.0	4782177
Methyl t-butyl ether (MTBE)	ug/L	ND	ND	ND	0.20	4782177
Styrene	ug/L	ND	ND	ND	0.20	4782177
1,1,1,2-Tetrachloroethane	ug/L	ND	ND	ND	0.20	4782177
1,1,2,2-Tetrachloroethane	ug/L	ND	ND	ND	0.20	4782177
Tetrachloroethylene	ug/L	ND	ND	ND	0.10	4782177

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		DOU444	DOU445	DOU446		
Sampling Date		2016/12/05	2016/12/05	2016/12/05		
COC Number		C#484840-05-01	C#484840-05-01	C#484840-05-01		
	UNITS	**8**	**14A**	**14B**	**RDL**	**QC Batch**
Toluene	ug/L	ND	ND	ND	0.20	4782177
1,1,1-Trichloroethane	ug/L	ND	ND	ND	0.10	4782177
1,1,2-Trichloroethane	ug/L	ND	ND	ND	0.20	4782177
Trichloroethylene	ug/L	ND	ND	ND	0.10	4782177
Trichlorofluoromethane (FREON 11)	ug/L	ND	ND	ND	0.20	4782177
Vinyl Chloride	ug/L	ND	ND	ND	0.20	4782177
p+m-Xylene	ug/L	ND	ND	ND	0.10	4782177
o-Xylene	ug/L	ND	ND	ND	0.10	4782177
Total Xylenes	ug/L	ND	ND	ND	0.10	4782177
Surrogate Recovery (%)						
4-Bromofluorobenzene	%	95	97	97		4782177
D4-1,2-Dichloroethane	%	105	106	107		4782177
D8-Toluene	%	96	98	99		4782177

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
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GENERAL COMMENTS

Revised report: Sample #DOU446 dissolved and total metals reanalyzed. (2017/01/10)

Results relate only to the items tested.

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Maxxam Job #: B6Q5847
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QUALITY ASSURANCE REPORT

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4782177	4-Bromofluorobenzene	2016/12/07	101	70 - 130	101	70 - 130	97	%				
4782177	D4-1,2-Dichloroethane	2016/12/07	96	70 - 130	98	70 - 130	99	%				
4782177	D8-Toluene	2016/12/07	101	70 - 130	101	70 - 130	100	%				
4783882	2,4,6-Tribromophenol	2016/12/08	97	10 - 130	91	10 - 130	72	%				
4783882	2-Fluorobiphenyl	2016/12/08	76	30 - 130	75	30 - 130	79	%				
4783882	2-Fluorophenol	2016/12/08	38	10 - 130	44	10 - 130	41	%				
4783882	D14-Terphenyl	2016/12/08	98	30 - 130	102	30 - 130	94	%				
4783882	D5-Nitrobenzene	2016/12/08	77	30 - 130	76	30 - 130	74	%				
4783882	D5-Phenol	2016/12/08	26	10 - 130	32	10 - 130	28	%				
4782177	1,1,1,2-Tetrachloroethane	2016/12/07	98	70 - 130	99	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4782177	1,1,1-Trichloroethane	2016/12/07	95	70 - 130	97	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4782177	1,1,2,2-Tetrachloroethane	2016/12/07	96	70 - 130	96	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4782177	1,1,2-Trichloroethane	2016/12/07	97	70 - 130	96	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4782177	1,1-Dichloroethane	2016/12/07	95	70 - 130	98	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4782177	1,1-Dichloroethylene	2016/12/07	101	70 - 130	102	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4782177	1,2-Dichlorobenzene	2016/12/07	95	70 - 130	96	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4782177	1,2-Dichloroethane	2016/12/07	93	70 - 130	96	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4782177	1,2-Dichloropropane	2016/12/07	95	70 - 130	96	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4782177	1,3-Dichlorobenzene	2016/12/07	98	70 - 130	98	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4782177	1,4-Dichlorobenzene	2016/12/07	99	70 - 130	99	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4782177	Acetone (2-Propanone)	2016/12/07	100	60 - 140	102	60 - 140	ND, RDL=10	ug/L	NC	30		
4782177	Benzene	2016/12/07	98	70 - 130	100	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4782177	Bromodichloromethane	2016/12/07	97	70 - 130	99	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4782177	Bromoform	2016/12/07	100	70 - 130	103	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4782177	Bromomethane	2016/12/07	82	60 - 140	82	60 - 140	ND, RDL=0.50	ug/L	NC	30		
4782177	Carbon Tetrachloride	2016/12/07	101	70 - 130	102	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4782177	Chlorobenzene	2016/12/07	100	70 - 130	100	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4782177	Chloroform	2016/12/07	93	70 - 130	95	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4782177	Chloromethane	2016/12/07	79	60 - 140	82	60 - 140	ND, RDL=0.50	ug/L				
4782177	cis-1,2-Dichloroethylene	2016/12/07	101	70 - 130	103	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4782177	cis-1,3-Dichloropropene	2016/12/07	102	70 - 130	104	70 - 130	ND, RDL=0.20	ug/L	NC	30		

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4782177	Dibromochloromethane	2016/12/07	102	70 - 130	102	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4782177	Ethylbenzene	2016/12/07	102	70 - 130	102	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4782177	Ethylene Dibromide	2016/12/07	99	70 - 130	98	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4782177	Methyl Ethyl Ketone (2-Butanone)	2016/12/07	97	60 - 140	99	60 - 140	ND, RDL=5.0	ug/L	NC	30		
4782177	Methyl Isobutyl Ketone	2016/12/07	103	70 - 130	102	70 - 130	ND, RDL=5.0	ug/L	NC	30		
4782177	Methyl t-butyl ether (MTBE)	2016/12/07	101	70 - 130	103	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4782177	Methylene Chloride(Dichloromethane)	2016/12/07	91	70 - 130	94	70 - 130	ND, RDL=0.50	ug/L	NC	30		
4782177	o-Xylene	2016/12/07	101	70 - 130	102	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4782177	p+m-Xylene	2016/12/07	101	70 - 130	101	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4782177	Styrene	2016/12/07	102	70 - 130	101	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4782177	Tetrachloroethylene	2016/12/07	97	70 - 130	97	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4782177	Toluene	2016/12/07	98	70 - 130	98	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4782177	Total Xylenes	2016/12/07					ND, RDL=0.10	ug/L	NC	30		
4782177	trans-1,2-Dichloroethylene	2016/12/07	98	70 - 130	98	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4782177	trans-1,3-Dichloropropene	2016/12/07	102	70 - 130	102	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4782177	Trichloroethylene	2016/12/07	94	70 - 130	95	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4782177	Trichlorofluoromethane (FREON 11)	2016/12/07	100	70 - 130	101	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4782177	Vinyl Chloride	2016/12/07	99	70 - 130	101	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4782179	Acrolein	2016/12/08	94	60 - 140	92	60 - 140	ND, RDL=10	ug/L	NC	30		
4782179	Acrylonitrile	2016/12/08	99	60 - 140	100	60 - 140	ND, RDL=5.0	ug/L				
4783882	1,2,3,4-Tetrachlorobenzene	2016/12/09							NC	40		
4783882	1,2,3,5-Tetrachlorobenzene	2016/12/09							NC	40		
4783882	1,2,3-Trichlorobenzene	2016/12/09							NC	40		
4783882	1,2,4,5-Tetrachlorobenzene	2016/12/09							NC	40		
4783882	1,2,4-Trichlorobenzene	2016/12/09							NC	40		
4783882	1,2-Dichlorobenzene	2016/12/09							NC	40		
4783882	1,3,5-Trichlorobenzene	2016/12/09							NC	40		
4783882	1,3-Dichlorobenzene	2016/12/09							NC	40		
4783882	1,4-Dichlorobenzene	2016/12/09							NC	40		
4783882	1-Chloronaphthalene	2016/12/09	67	30 - 130	66	30 - 130	ND, RDL=1.0	ug/L	NC	40		
4783882	1-Methylnaphthalene	2016/12/09	75	30 - 130	73	30 - 130	ND, RDL=0.20	ug/L	NC	40		

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4783882	2,3,4,5-Tetrachlorophenol	2016/12/09	99	10 - 130	96	10 - 130	ND, RDL=0.40	ug/L	NC	40		
4783882	2,3,4,6-Tetrachlorophenol	2016/12/09	95	10 - 130	92	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	2,3,4-Trichlorophenol	2016/12/09	86	10 - 130	87	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	2,3,5,6-Tetrachlorophenol	2016/12/09	80	10 - 130	73	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	2,3,5-Trichlorophenol	2016/12/09	101	10 - 130	98	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	2,3,6-Trichlorophenol	2016/12/09							NC	40		
4783882	2,3-Dichlorophenol	2016/12/09							NC	40		
4783882	2,4,5-Trichlorophenol	2016/12/09	92	10 - 130	90	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	2,4,6-Trichlorophenol	2016/12/09	90	10 - 130	82	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	2,4-Dichlorophenol	2016/12/09	69	10 - 130	66	10 - 130	ND, RDL=0.30	ug/L	NC	40		
4783882	2,4-Dimethylphenol	2016/12/09	57	10 - 130	27	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	2,4-Dinitrophenol	2016/12/09	95	10 - 130	98	10 - 130	ND, RDL=2.0	ug/L	NC	40		
4783882	2,4-Dinitrotoluene	2016/12/09	98	30 - 130	101	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	2,5-Dichlorophenol	2016/12/09							NC	40		
4783882	2,6-Dichlorophenol	2016/12/09	78	10 - 130	74	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	2,6-Dinitrotoluene	2016/12/09	89	30 - 130	90	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	2-Chloronaphthalene	2016/12/09	78	30 - 130	74	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	2-Chlorophenol	2016/12/09	65	10 - 130	66	10 - 130	ND, RDL=0.30	ug/L	NC	40		
4783882	2-Methylnaphthalene	2016/12/09	72	30 - 130	69	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4783882	2-Nitrophenol	2016/12/09							NC	40		
4783882	3,3'-Dichlorobenzidine	2016/12/09							NC	40		
4783882	3,4,5-Trichlorophenol	2016/12/09							NC	40		
4783882	3,4-Dichlorophenol	2016/12/09							NC	40		
4783882	3,5-Dichlorophenol	2016/12/09							NC	40		
4783882	4,6-Dinitro-2-methylphenol	2016/12/09	107	10 - 130	115	10 - 130	ND, RDL=2.0	ug/L	NC	40		
4783882	4-Bromophenyl phenyl ether	2016/12/09	92	30 - 130	91	30 - 130	ND, RDL=0.30	ug/L	NC	40		
4783882	4-Chloro-3-Methylphenol	2016/12/09	77	10 - 130	78	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	4-Chlorophenyl phenyl ether	2016/12/09	88	30 - 130	86	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	4-Nitrophenol	2016/12/09	41	10 - 130	44	10 - 130	ND, RDL=1.4	ug/L	NC	40		
4783882	5-Nitroacenaphthene	2016/12/09	96	30 - 130	101	30 - 130	ND, RDL=1.0	ug/L	NC	40		
4783882	Acenaphthene	2016/12/09	84	30 - 130	83	30 - 130	ND, RDL=0.20	ug/L	NC	40		

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4783882	Acenaphthylene	2016/12/09	70	30 - 130	73	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4783882	Acridine	2016/12/09							NC	40		
4783882	Anthracene	2016/12/09	90	30 - 130	93	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4783882	Benzo(a)anthracene	2016/12/09	95	30 - 130	101	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4783882	Benzo(a)pyrene	2016/12/09	96	30 - 130	100	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4783882	Benzo(b/j)fluoranthene	2016/12/09	95	30 - 130	97	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4783882	Benzo(e)pyrene	2016/12/09							NC	40		
4783882	Benzo(g,h,i)perylene	2016/12/09	96	30 - 130	100	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4783882	Benzo(k)fluoranthene	2016/12/09	102	30 - 130	112	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4783882	Benzyl butyl phthalate	2016/12/09	105	30 - 130	109	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	Biphenyl	2016/12/09	74	30 - 130	72	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	Bis(2-chloroethoxy)methane	2016/12/09	77	30 - 130	75	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	Bis(2-chloroethyl)ether	2016/12/09	73	30 - 130	76	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	Bis(2-chloroisopropyl)ether	2016/12/09	75	30 - 130	73	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	Bis(2-ethylhexyl)phthalate	2016/12/09	103	30 - 130	107	30 - 130	ND, RDL=2.0	ug/L	NC	40		
4783882	Camphene	2016/12/09	43	30 - 130	39	30 - 130	ND, RDL=1.0	ug/L	NC	40		
4783882	Chrysene	2016/12/09	96	30 - 130	102	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4783882	Dibenz(a,h)anthracene	2016/12/09	96	30 - 130	100	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4783882	Diethyl phthalate	2016/12/09							NC	40		
4783882	Dimethyl phthalate	2016/12/09							NC	40		
4783882	Di-N-butyl phthalate	2016/12/09	108	30 - 130	112	30 - 130	ND, RDL=2.0	ug/L	NC	40		
4783882	Di-N-octyl phthalate	2016/12/09	115	30 - 130	116	30 - 130	ND, RDL=0.80	ug/L	NC	40		
4783882	Diphenyl Ether	2016/12/09	78	30 - 130	75	30 - 130	ND, RDL=0.30	ug/L	NC	40		
4783882	Fluoranthene	2016/12/09	95	30 - 130	97	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4783882	Fluorene	2016/12/09	86	30 - 130	86	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4783882	Hexachlorobenzene	2016/12/09							NC	40		
4783882	Hexachlorobutadiene	2016/12/09							NC	40		
4783882	Hexachlorocyclopentadiene	2016/12/09							NC	40		
4783882	Hexachloroethane	2016/12/09							NC	40		
4783882	Indeno(1,2,3-cd)pyrene	2016/12/09	92	30 - 130	96	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4783882	Indole	2016/12/09	18 (1)	30 - 130	32	30 - 130	ND, RDL=1.0	ug/L	NC	40		

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Maxxam Job #: B6Q5847
Report Date: 2017/01/10

QUALITY ASSURANCE REPORT(CONT'D)

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4783882	Isophorone	2016/12/09							NC	40		
4783882	m/p-Cresol	2016/12/09	51	10 - 130	55	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	Naphthalene	2016/12/09	72	30 - 130	70	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4783882	Nitrobenzene	2016/12/09							NC	40		
4783882	Nitrosodiphenylamine/Diphenylamine	2016/12/09	93	30 - 130	98	30 - 130	ND, RDL=1.0	ug/L	NC	40		
4783882	N-Nitroso-di-n-propylamine	2016/12/09	86	30 - 130	83	30 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	o-Cresol	2016/12/09	52	10 - 130	47	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	p-Chloroaniline	2016/12/09							NC	40		
4783882	Pentachlorobenzene	2016/12/09							NC	40		
4783882	Pentachlorophenol	2016/12/09	83	10 - 130	67	10 - 130	ND, RDL=1.0	ug/L	NC	40		
4783882	Perylene	2016/12/09	93	30 - 130	93	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4783882	Phenanthrene	2016/12/09	88	30 - 130	89	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4783882	Phenol	2016/12/09	23	10 - 130	29	10 - 130	ND, RDL=0.50	ug/L	NC	40		
4783882	Pyrene	2016/12/09	100	30 - 130	107	30 - 130	ND, RDL=0.20	ug/L	NC	40		
4783882	Quinoline	2016/12/09							NC	40		
4784025	Total BOD	2016/12/13					ND, RDL=2.0	mg/L	NC	25	95	80 - 120
4784069	Phenols-4AAP	2016/12/08	104	80 - 120	101	85 - 115	ND, RDL=0.0010	mg/L	NC	20		
4784137	Total Chemical Oxygen Demand (COD)	2016/12/09	102	75 - 125	99	75 - 125	ND, RDL=4.0	mg/L	NC	25		
4784434	Nitrate (N)	2016/12/12	97	80 - 120	96	80 - 120	ND, RDL=0.10	mg/L	NC	20		
4784434	Nitrite (N)	2016/12/12	101	80 - 120	87	80 - 120	ND, RDL=0.010	mg/L	NC	20		
4784442	Nitrate (N)	2016/12/12	96	80 - 120	98	80 - 120	ND, RDL=0.10	mg/L	NC	20		
4784442	Nitrite (N)	2016/12/12	100	80 - 120	95	80 - 120	ND, RDL=0.010	mg/L	NC	20		
4784449	Total Ammonia-N	2016/12/14	97	80 - 120	99	85 - 115	ND, RDL=0.050	mg/L	NC	20		
4784461	Conductivity	2016/12/08			103	85 - 115	ND, RDL=1.0	umho/cm	0.30	25		
4784466	Alkalinity (Total as CaCO3)	2016/12/08			94	85 - 115	ND, RDL=1.0	mg/L	0.11	20		
4784468	pH	2016/12/08			102	98 - 103			0.31	N/A		
4785099	Alkalinity (Total as CaCO3)	2016/12/10			96	85 - 115	ND, RDL=1.0	mg/L	0.071	20		

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QUALITY ASSURANCE REPORT(CONT'D)

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4785099	p-Alkalinity	2016/12/10							NC	20		
4785106	Conductivity	2016/12/10			100	85 - 115	ND, RDL=1.0	umho/cm	0.16	25		
4785198	Dissolved Chloride (Cl)	2016/12/09	NC	80 - 120	105	80 - 120	ND, RDL=1.0	mg/L	0.40	20		
4785222	Dissolved Sulphate (SO4)	2016/12/09	NC	75 - 125	105	80 - 120	ND, RDL=1.0	mg/L	0.83	20		
4785748	Total Phosphorus	2016/12/09	99	80 - 120	98	80 - 120	ND, RDL=0.020	mg/L	0.069	20	100	80 - 120
4785958	Total Kjeldahl Nitrogen (TKN)	2016/12/12	101	80 - 120	98	80 - 120	ND, RDL=0.10	mg/L	NC	20	97	80 - 120
4786091	Total Iron (Fe)	2016/12/09	NC	80 - 120	98	80 - 120	ND, RDL=0.02	mg/L	NC	25		
4786510	Dissolved Aluminum (Al)	2016/12/12							NC	20		
4786510	Dissolved Antimony (Sb)	2016/12/12							NC	20		
4786510	Dissolved Arsenic (As)	2016/12/12							NC	20		
4786510	Dissolved Barium (Ba)	2016/12/12							0.67	20		
4786510	Dissolved Beryllium (Be)	2016/12/12							NC	20		
4786510	Dissolved Bismuth (Bi)	2016/12/12							NC	20		
4786510	Dissolved Boron (B)	2016/12/12	99	80 - 120	104	80 - 120	ND, RDL=10	ug/L	NC	20		
4786510	Dissolved Cadmium (Cd)	2016/12/12							NC	20		
4786510	Dissolved Calcium (Ca)	2016/12/12	NC	80 - 120	102	80 - 120	ND, RDL=200	ug/L	1.1	20		
4786510	Dissolved Cesium (Cs)	2016/12/12							NC	20		
4786510	Dissolved Chromium (Cr)	2016/12/12							NC	20		
4786510	Dissolved Cobalt (Co)	2016/12/12							NC	20		
4786510	Dissolved Copper (Cu)	2016/12/12							NC	20		
4786510	Dissolved Iron (Fe)	2016/12/12							NC	20		
4786510	Dissolved Lead (Pb)	2016/12/12							NC	20		
4786510	Dissolved Lithium (Li)	2016/12/12							NC	20		
4786510	Dissolved Magnesium (Mg)	2016/12/12	NC	80 - 120	98	80 - 120	ND, RDL=50	ug/L	0.66	20		
4786510	Dissolved Manganese (Mn)	2016/12/12							NC	20		
4786510	Dissolved Molybdenum (Mo)	2016/12/12							2.4	20		
4786510	Dissolved Nickel (Ni)	2016/12/12							NC	20		
4786510	Dissolved Phosphorus (P)	2016/12/12	104	80 - 120	102	80 - 120	ND, RDL=100	ug/L	NC	20		
4786510	Dissolved Potassium (K)	2016/12/12	98	80 - 120	99	80 - 120	ND, RDL=200	ug/L	0.89	20		

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QUALITY ASSURANCE REPORT(CONT'D)

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4786510	Dissolved Rubidium (Rb)	2016/12/12							NC	20		
4786510	Dissolved Selenium (Se)	2016/12/12							NC	20		
4786510	Dissolved Silicon (Si)	2016/12/12							1.9	20		
4786510	Dissolved Silver (Ag)	2016/12/12							NC	20		
4786510	Dissolved Sodium (Na)	2016/12/12	NC	80 - 120	98	80 - 120	ND, RDL=100	ug/L	0.0094	20		
4786510	Dissolved Strontium (Sr)	2016/12/12							1.5	20		
4786510	Dissolved Tellurium (Te)	2016/12/12							NC	20		
4786510	Dissolved Thallium (Tl)	2016/12/12							NC	20		
4786510	Dissolved Thorium (Th)	2016/12/12							NC	20		
4786510	Dissolved Tin (Sn)	2016/12/12							NC	20		
4786510	Dissolved Titanium (Ti)	2016/12/12							NC	20		
4786510	Dissolved Tungsten (W)	2016/12/12							NC	20		
4786510	Dissolved Uranium (U)	2016/12/12							2.6	20		
4786510	Dissolved Vanadium (V)	2016/12/12							NC	20		
4786510	Dissolved Zinc (Zn)	2016/12/12	100	80 - 120	100	80 - 120	ND, RDL=5.0	ug/L	NC	20		
4786510	Dissolved Zirconium (Zr)	2016/12/12							NC	20		
4786516	pH	2016/12/10			101	98 - 103			0.62	N/A		
4790805	Alkalinity (Total as CaCO3)	2016/12/14			97	85 - 115	ND, RDL=1.0	mg/L	0.17	20		
4791000	Dissolved Chloride (Cl)	2016/12/14	NC	80 - 120	102	80 - 120	ND, RDL=1.0	mg/L	0.51	20		
4791032	Dissolved Sulphate (SO4)	2016/12/14	NC	75 - 125	105	80 - 120	ND, RDL=1.0	mg/L	2.0	20		
4791804	Dissolved Boron (B)	2016/12/14	98	80 - 120	103	80 - 120	ND, RDL=10	ug/L				
4791804	Dissolved Calcium (Ca)	2016/12/14	NC	80 - 120	99	80 - 120	ND, RDL=200	ug/L				
4791804	Dissolved Magnesium (Mg)	2016/12/14	96	80 - 120	100	80 - 120	ND, RDL=50	ug/L				
4791804	Dissolved Phosphorus (P)	2016/12/14	105	80 - 120	107	80 - 120	ND, RDL=100	ug/L				
4791804	Dissolved Potassium (K)	2016/12/14	96	80 - 120	101	80 - 120	ND, RDL=200	ug/L				
4791804	Dissolved Sodium (Na)	2016/12/14	NC	80 - 120	99	80 - 120	ND, RDL=100	ug/L				
4791804	Dissolved Zinc (Zn)	2016/12/14	95	80 - 120	99	80 - 120	ND, RDL=5.0	ug/L				
4813321	Total Iron (Fe)	2017/01/05	99	80 - 120	95	80 - 120	ND, RDL=0.02	mg/L				
4813758	Dissolved Boron (B)	2017/01/05	100	80 - 120	98	80 - 120	ND, RDL=10	ug/L	NC	20		
4813758	Dissolved Calcium (Ca)	2017/01/05	NC	80 - 120	93	80 - 120	ND, RDL=200	ug/L				
4813758	Dissolved Magnesium (Mg)	2017/01/05	99	80 - 120	98	80 - 120	ND, RDL=50	ug/L				

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Maxxam Job #: B6Q5847
Report Date: 2017/01/10

QUALITY ASSURANCE REPORT(CONT'D)

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4813758	Dissolved Phosphorus (P)	2017/01/05	103	80 - 120	100	80 - 120	ND, RDL=100	ug/L				
4813758	Dissolved Potassium (K)	2017/01/05	99	80 - 120	97	80 - 120	ND, RDL=200	ug/L				
4813758	Dissolved Sodium (Na)	2017/01/05	98	80 - 120	96	80 - 120	ND, RDL=100	ug/L	0.061	20		
4813758	Dissolved Zinc (Zn)	2017/01/05	100	80 - 120	95	80 - 120	ND, RDL=5.0	ug/L	NC	20		
4818169	Total Iron (Fe)	2017/01/09	97	80 - 120	93	80 - 120	ND, RDL=0.02	mg/L				

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) The recovery was below the lower control limit. This may represent a low bias in some results for flagged analytes.

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Maxxam Job #: B6Q5847
Report Date: 2017/01/10

City of Guelph
Client Project #: Wet/Dry Ground Water
Site Location: FALL GW
Your P.O. #: 720.8121.3516

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Cristina Carriere, Scientific Services

Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

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Maxxam
A Bureau Veritas Group Company

Your P.O. #: 720.8121.3516
Your Project #: WET/DRY GROUNDWATER
Site Location: FALL GW
Your C.O.C. #: 587870-04-01

Attention:Amy Spence

City of Guelph
Soild Waste RIC (Wet/Dry)
110 Dunlop Drive
Guelph, ON
CANADA N1H 6H8

Report Date: 2016/12/16
Report #: R4289716
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6Q6975
Received: 2016/12/07, 15:30

Sample Matrix: Water
Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
ABN Compounds in Water by GC/MS	7	2016/12/09	2016/12/13	CAM SOP-00301	EPA 8270 m
Alkalinity	7	N/A	2016/12/10	CAM SOP-00448	SM 22 2320 B m
Biochemical Oxygen Demand (BOD)	7	2016/12/08	2016/12/13	CAM SOP-00427	SM 22 5210B m
Chloride by Automated Colourimetry	2	N/A	2016/12/09	CAM SOP-00463	EPA 325.2 m
Chloride by Automated Colourimetry	5	N/A	2016/12/13	CAM SOP-00463	EPA 325.2 m
Chemical Oxygen Demand	7	N/A	2016/12/13	CAM SOP-00416	SM 22 5220 D m
Conductivity	7	N/A	2016/12/10	CAM SOP-00414	SM 22 2510 m
Dissolved Metals by ICPMS	7	N/A	2016/12/12	CAM SOP-00447	EPA 6020B m
Total Metals Analysis by ICP	7	2016/12/13	2016/12/13	CAM SOP-00408	EPA 6010C m
Total Ammonia-N	7	N/A	2016/12/15	CAM SOP-00441	EPA GS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (1)	7	N/A	2016/12/13	CAM SOP-00440	SM 22 4500-NO3I/NO2B
pH	7	N/A	2016/12/10	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	7	N/A	2016/12/09	CAM SOP-00444	OMOE E3179 m
Sulphate by Automated Colourimetry	2	N/A	2016/12/09	CAM SOP-00464	EPA 375.4 m
Sulphate by Automated Colourimetry	5	N/A	2016/12/13	CAM SOP-00464	EPA 375.4 m
Total Kjeldahl Nitrogen in Water	7	2016/12/12	2016/12/14	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	7	2016/12/13	2016/12/13	CAM SOP-00407	SM 22 4500 P B H m
Volatile Organic Compounds in Water	7	N/A	2016/12/09	CAM SOP-00226	EPA 8260C m
Non-Routine Volatile Organic Compounds	7	N/A	2016/12/12	CAM SOP-00226	EPA 8260 m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report.

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Your P.O. #: 720.8121.3516
Your Project #: WET/DRY GROUNDWATER
Site Location: FALL GW
Your C.O.C. #: 587870-04-01

Attention:Amy Spence

City of Guelph
Soild Waste RIC (Wet/Dry)
110 Dunlop Drive
Guelph, ON
CANADA N1H 6H8

Report Date: 2016/12/16
Report #: R4289716
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6Q6975
Received: 2016/12/07, 15:30

Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
James Aspin, Senior Project Manager
Email: JAspin@maxxam.ca
Phone# (905)817-5771

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B6Q6975
Report Date: 2016/12/16

City of Guelph
Client Project #: WET/DRY GROUNDWATER
Site Location: FALL GW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

RESULTS OF ANALYSES OF WATER

Maxxam ID		DOZ584		DOZ585		DOZ586	DOZ586		
Sampling Date		2016/12/06		2016/12/06		2016/12/06	2016/12/06		
COC Number		587870-04-01		587870-04-01		587870-04-01	587870-04-01		
	UNITS	**17A**	**QC Batch**	**17B**	**QC Batch**	**22A**	**22A Lab-Dup**	**RDL**	**QC Batch**
Inorganics									
Total Ammonia-N	mg/L	ND	4788932	ND	4788932	0.060		0.050	4788932
Total BOD	mg/L	7.0	4784027	7.0	4784027	6.0		2.0	4784027
Total Chemical Oxygen Demand (COD)	mg/L	ND	4788546	ND	4788546	ND		4.0	4788546
Conductivity	umho/cm	690	4786108	1100	4786108	790		1.0	4786108
Total Kjeldahl Nitrogen (TKN)	mg/L	0.11	4788551	ND	4788551	0.11		0.10	4788551
pH	pH	7.94	4786110	7.95	4786110	8.01			4786110
Phenols-4AAP	mg/L	ND	4785719	ND	4785719	ND		0.0010	4785719
Total Phosphorus	mg/L	0.032	4790157	0.027	4790157	0.061	0.063	0.020	4790157
Dissolved Sulphate (SO4)	mg/L	60	4788623	56	4788458	78		1.0	4785222
Alkalinity (Total as CaCO3)	mg/L	240	4786105	310	4786105	240		1.0	4786105
Dissolved Chloride (Cl)	mg/L	37	4788620	120	4788465	56		1.0	4785198
Nitrite (N)	mg/L	0.011	4786140	ND	4786140	ND		0.010	4786140
Nitrate (N)	mg/L	ND	4786140	1.46	4786140	0.14		0.10	4786140
Nitrate + Nitrite (N)	mg/L	ND	4786140	1.46	4786140	0.14		0.10	4786140

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B6Q6975
Report Date: 2016/12/16

City of Guelph
Client Project #: WET/DRY GROUNDWATER
Site Location: FALL GW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

RESULTS OF ANALYSES OF WATER

Maxxam ID		DOZ587	DOZ587		DOZ588		DOZ589		
Sampling Date		2016/12/06	2016/12/06		2016/12/06		2016/12/06		
COC Number		587870-04-01	587870-04-01		587870-04-01		587870-04-01		
	UNITS	**22B**	**22B Lab-Dup**	**QC Batch**	**26**	**QC Batch**	**13A**	**RDL**	**QC Batch**
Inorganics									
Total Ammonia-N	mg/L	ND		4788932	0.10	4788932	0.11	0.050	4788932
Total BOD	mg/L	ND		4784027	7.0	4784027	ND	2.0	4784027
Total Chemical Oxygen Demand (COD)	mg/L	ND		4788546	ND	4788546	ND	4.0	4788546
Conductivity	umho/cm	1200		4786108	780	4785106	970	1.0	4786108
Total Kjeldahl Nitrogen (TKN)	mg/L	ND	ND	4788551	0.15	4788551	0.21	0.10	4788551
pH	pH	7.81		4786110	7.95	4786516	7.96		4786110
Phenols-4AAP	mg/L	ND		4785719	ND	4785719	ND	0.0010	4785719
Total Phosphorus	mg/L	ND		4790157	0.065	4790157	ND	0.020	4790157
Dissolved Sulphate (SO4)	mg/L	30		4788623	83	4788458	100	1.0	4788458
Alkalinity (Total as CaCO3)	mg/L	350		4786105	240	4785099	250	1.0	4786105
Dissolved Chloride (Cl)	mg/L	140		4788620	57	4788465	100	1.0	4788465
Nitrite (N)	mg/L	ND		4786140	ND	4786140	ND	0.010	4787701
Nitrate (N)	mg/L	1.80		4786140	0.13	4786140	ND	0.10	4787701
Nitrate + Nitrite (N)	mg/L	1.80		4786140	0.13	4786140	ND	0.10	4787701

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B6Q6975
Report Date: 2016/12/16

City of Guelph
Client Project #: WET/DRY GROUNDWATER
Site Location: FALL GW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

RESULTS OF ANALYSES OF WATER

Maxxam ID		DOZ589			DOZ590		
Sampling Date		2016/12/06			2016/12/06		
COC Number		587870-04-01			587870-04-01		
	UNITS	**13A Lab-Dup**	**RDL**	**QC Batch**	**13B**	**RDL**	**QC Batch**
Inorganics							
Total Ammonia-N	mg/L		0.050	4788932	ND	0.050	4788932
Total BOD	mg/L		2.0	4784027	8.0	2.0	4784027
Total Chemical Oxygen Demand (COD)	mg/L		4.0	4788546	11	4.0	4788546
Conductivity	umho/cm		1.0	4786108	1400	1.0	4786108
Total Kjeldahl Nitrogen (TKN)	mg/L		0.10	4788551	ND	0.10	4788551
pH	pH			4786110	7.77		4786110
Phenols-4AAP	mg/L		0.0010	4785719	ND	0.0010	4785719
Total Phosphorus	mg/L		0.020	4790157	0.10	0.10	4790157
Dissolved Sulphate (SO4)	mg/L	100	1.0	4788458	47	1.0	4785222
Alkalinity (Total as CaCO3)	mg/L		1.0	4786105	340	1.0	4786105
Dissolved Chloride (Cl)	mg/L	100	1.0	4788465	180	2.0	4785198
Nitrite (N)	mg/L	ND	0.010	4787701	ND	0.010	4787701
Nitrate (N)	mg/L	ND	0.10	4787701	1.40	0.10	4787701
Nitrate + Nitrite (N)	mg/L	ND	0.10	4787701	1.40	0.10	4787701

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B6Q6975
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City of Guelph
Client Project #: WET/DRY GROUNDWATER
Site Location: FALL GW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		DOZ584	DOZ585	DOZ585	DOZ586	DOZ587	DOZ588		
Sampling Date		2016/12/06	2016/12/06	2016/12/06	2016/12/06	2016/12/06	2016/12/06		
COC Number		587870-04-01	587870-04-01	587870-04-01	587870-04-01	587870-04-01	587870-04-01		
	UNITS	**17A**	**17B**	**17B Lab-Dup**	**22A**	**22B**	**26**	**RDL**	**QC Batch**
Metals									
Total Iron (Fe)	mg/L	1.2	1.2	1.2	0.72	0.18	0.74	0.02	4789905
Dissolved Boron (B)	ug/L	30	25		22	26	21	10	4786929
Dissolved Calcium (Ca)	ug/L	82000	91000		93000	140000	92000	200	4786929
Dissolved Magnesium (Mg)	ug/L	29000	22000		32000	32000	32000	50	4786929
Dissolved Phosphorus (P)	ug/L	ND	ND		ND	ND	ND	100	4786929
Dissolved Potassium (K)	ug/L	1500	1600		1500	1900	1500	200	4786929
Dissolved Sodium (Na)	ug/L	14000	99000		18000	50000	18000	100	4786929
Dissolved Zinc (Zn)	ug/L	9.6	110		ND	23	ND	5.0	4786929

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

Maxxam ID		DOZ589		DOZ590		
Sampling Date		2016/12/06		2016/12/06		
COC Number		587870-04-01		587870-04-01		
	UNITS	**13A**	**RDL**	**13B**	**RDL**	**QC Batch**
Metals						
Total Iron (Fe)	mg/L	0.39	0.02	2.0	0.02	4789905
Dissolved Boron (B)	ug/L	48	10	27	10	4786929
Dissolved Calcium (Ca)	ug/L	97000	400	140000	200	4786929
Dissolved Magnesium (Mg)	ug/L	34000	50	29000	50	4786929
Dissolved Phosphorus (P)	ug/L	ND	100	ND	100	4786929
Dissolved Potassium (K)	ug/L	2700	200	2300	200	4786929
Dissolved Sodium (Na)	ug/L	45000	100	110000	100	4786929
Dissolved Zinc (Zn)	ug/L	ND	5.0	120	5.0	4786929

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B6Q6975
Report Date: 2016/12/16

City of Guelph
Client Project #: WET/DRY GROUNDWATER
Site Location: FALL GW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		DOZ584	DOZ585	DOZ586	DOZ587	DOZ588		
Sampling Date		2016/12/06	2016/12/06	2016/12/06	2016/12/06	2016/12/06		
COC Number		587870-04-01	587870-04-01	587870-04-01	587870-04-01	587870-04-01		
	UNITS	**17A**	**17B**	**22A**	**22B**	**26**	**RDL**	**QC Batch**
Semivolatile Organics								
Acenaphthene	ug/L	ND	ND	ND	ND	ND	0.20	4787715
Acenaphthylene	ug/L	ND	ND	ND	ND	ND	0.20	4787715
Anthracene	ug/L	ND	ND	ND	ND	ND	0.20	4787715
Benzo(a)anthracene	ug/L	ND	ND	ND	ND	ND	0.20	4787715
Benzo(a)pyrene	ug/L	ND	ND	ND	ND	ND	0.20	4787715
Benzo(b/j)fluoranthene	ug/L	ND	ND	ND	ND	ND	0.20	4787715
Benzo(g,h,i)perylene	ug/L	ND	ND	ND	ND	ND	0.20	4787715
Benzo(k)fluoranthene	ug/L	ND	ND	ND	ND	ND	0.20	4787715
1-Chloronaphthalene	ug/L	ND	ND	ND	ND	ND	1.0	4787715
2-Chloronaphthalene	ug/L	ND	ND	ND	ND	ND	0.50	4787715
Chrysene	ug/L	ND	ND	ND	ND	ND	0.20	4787715
Dibenz(a,h)anthracene	ug/L	ND	ND	ND	ND	ND	0.20	4787715
Fluoranthene	ug/L	ND	ND	ND	ND	ND	0.20	4787715
Fluorene	ug/L	ND	ND	ND	ND	ND	0.20	4787715
Indeno(1,2,3-cd)pyrene	ug/L	ND	ND	ND	ND	ND	0.20	4787715
1-Methylnaphthalene	ug/L	ND	ND	ND	ND	ND	0.20	4787715
2-Methylnaphthalene	ug/L	ND	ND	ND	ND	ND	0.20	4787715
Naphthalene	ug/L	ND	ND	ND	ND	ND	0.20	4787715
5-Nitroacenaphthene	ug/L	ND	ND	ND	ND	ND	1.0	4787715
Perylene	ug/L	ND	ND	ND	ND	ND	0.20	4787715
Phenanthrene	ug/L	ND	ND	ND	ND	ND	0.20	4787715
Pyrene	ug/L	ND	ND	ND	ND	ND	0.20	4787715
2-Chlorophenol	ug/L	ND	ND	ND	ND	ND	0.30	4787715
4-Chloro-3-Methylphenol	ug/L	ND	ND	ND	ND	ND	0.50	4787715
m/p-Cresol	ug/L	ND	ND	ND	ND	ND	0.50	4787715
o-Cresol	ug/L	ND	ND	ND	ND	ND	0.50	4787715
2,4-Dichlorophenol	ug/L	ND	ND	ND	ND	ND	0.30	4787715
2,6-Dichlorophenol	ug/L	ND	ND	ND	ND	ND	0.50	4787715
2,4-Dimethylphenol	ug/L	ND	ND	ND	ND	ND	0.50	4787715
2,4-Dinitrophenol	ug/L	ND	ND	ND	ND	ND	2.0	4787715
4,6-Dinitro-2-methylphenol	ug/L	ND	ND	ND	ND	ND	2.0	4787715
4-Nitrophenol	ug/L	ND	ND	ND	ND	ND	1.4	4787715
Pentachlorophenol	ug/L	ND	ND	ND	ND	ND	1.0	4787715

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B6Q6975
Report Date: 2016/12/16

City of Guelph
Client Project #: WET/DRY GROUNDWATER
Site Location: FALL GW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		DOZ584	DOZ585	DOZ586	DOZ587	DOZ588		
Sampling Date		2016/12/06	2016/12/06	2016/12/06	2016/12/06	2016/12/06		
COC Number		587870-04-01	587870-04-01	587870-04-01	587870-04-01	587870-04-01		
	UNITS	**17A**	**17B**	**22A**	**22B**	**26**	**RDL**	**QC Batch**
Phenol	ug/L	ND	ND	ND	ND	ND	0.50	4787715
2,3,4,5-Tetrachlorophenol	ug/L	ND	ND	ND	ND	ND	0.40	4787715
2,3,4,6-Tetrachlorophenol	ug/L	ND	ND	ND	ND	ND	0.50	4787715
2,3,5,6-Tetrachlorophenol	ug/L	ND	ND	ND	ND	ND	0.50	4787715
2,3,4-Trichlorophenol	ug/L	ND	ND	ND	ND	ND	0.50	4787715
2,3,5-Trichlorophenol	ug/L	ND	ND	ND	ND	ND	0.50	4787715
2,4,5-Trichlorophenol	ug/L	ND	ND	ND	ND	ND	0.50	4787715
2,4,6-Trichlorophenol	ug/L	ND	ND	ND	ND	ND	0.50	4787715
Benzyl butyl phthalate	ug/L	ND	ND	ND	ND	ND	0.50	4787715
Biphenyl	ug/L	ND	ND	ND	ND	ND	0.50	4787715
Bis(2-chloroethyl)ether	ug/L	ND	ND	ND	ND	ND	0.50	4787715
Bis(2-chloroethoxy)methane	ug/L	ND	ND	ND	ND	ND	0.50	4787715
Bis(2-chloroisopropyl)ether	ug/L	ND	ND	ND	ND	ND	0.50	4787715
Bis(2-ethylhexyl)phthalate	ug/L	ND	ND	ND	ND	ND	2.0	4787715
4-Bromophenyl phenyl ether	ug/L	ND	ND	ND	ND	ND	0.30	4787715
Camphene	ug/L	ND	ND	ND	ND	ND	1.0	4787715
4-Chlorophenyl phenyl ether	ug/L	ND	ND	ND	ND	ND	0.50	4787715
Di-N-butyl phthalate	ug/L	ND	ND	ND	ND	ND	2.0	4787715
Di-N-octyl phthalate	ug/L	ND	ND	ND	ND	ND	0.80	4787715
2,4-Dinitrotoluene	ug/L	ND	ND	ND	ND	ND	0.50	4787715
2,6-Dinitrotoluene	ug/L	ND	ND	ND	ND	ND	0.50	4787715
Diphenyl Ether	ug/L	ND	ND	ND	ND	ND	0.30	4787715
Indole	ug/L	ND	ND	ND	ND	ND	1.0	4787715
Nitrosodiphenylamine/Diphenylamine	ug/L	ND	ND	ND	ND	ND	1.0	4787715
N-Nitroso-di-n-propylamine	ug/L	ND	ND	ND	ND	ND	0.50	4787715
Surrogate Recovery (%)								
2,4,6-Tribromophenol	%	35	23	45	38	7.2 (1)		4787715
2-Fluorobiphenyl	%	70	81	81	81	81		4787715
2-Fluorophenol	%	13	13	25	19	6.2 (1)		4787715
D14-Terphenyl	%	102	104	100	102	103		4787715
D5-Nitrobenzene	%	69	85	82	83	87		4787715
D5-Phenol	%	19	19	25	22	17		4787715

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected
(1) Surrogate recovery was below the lower control limit. This may represent a low bias in some results.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B6Q6975
Report Date: 2016/12/16

City of Guelph
Client Project #: WET/DRY GROUNDWATER
Site Location: FALL GW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		DOZ589	DOZ590		
Sampling Date		2016/12/06	2016/12/06		
COC Number		587870-04-01	587870-04-01		
	UNITS	**13A**	**13B**	**RDL**	**QC Batch**
Semivolatile Organics					
Acenaphthene	ug/L	ND	ND	0.20	4787715
Acenaphthylene	ug/L	ND	ND	0.20	4787715
Anthracene	ug/L	ND	ND	0.20	4787715
Benzo(a)anthracene	ug/L	ND	ND	0.20	4787715
Benzo(a)pyrene	ug/L	ND	ND	0.20	4787715
Benzo(b/j)fluoranthene	ug/L	ND	ND	0.20	4787715
Benzo(g,h,i)perylene	ug/L	ND	ND	0.20	4787715
Benzo(k)fluoranthene	ug/L	ND	ND	0.20	4787715
1-Chloronaphthalene	ug/L	ND	ND	1.0	4787715
2-Chloronaphthalene	ug/L	ND	ND	0.50	4787715
Chrysene	ug/L	ND	ND	0.20	4787715
Dibenz(a,h)anthracene	ug/L	ND	ND	0.20	4787715
Fluoranthene	ug/L	ND	ND	0.20	4787715
Fluorene	ug/L	ND	ND	0.20	4787715
Indeno(1,2,3-cd)pyrene	ug/L	ND	ND	0.20	4787715
1-Methylnaphthalene	ug/L	ND	ND	0.20	4787715
2-Methylnaphthalene	ug/L	ND	ND	0.20	4787715
Naphthalene	ug/L	ND	0.35	0.20	4787715
5-Nitroacenaphthene	ug/L	ND	ND	1.0	4787715
Perylene	ug/L	ND	ND	0.20	4787715
Phenanthrene	ug/L	ND	ND	0.20	4787715
Pyrene	ug/L	ND	ND	0.20	4787715
2-Chlorophenol	ug/L	ND	ND	0.30	4787715
4-Chloro-3-Methylphenol	ug/L	ND	ND	0.50	4787715
m/p-Cresol	ug/L	ND	ND	0.50	4787715
o-Cresol	ug/L	ND	ND	0.50	4787715
2,4-Dichlorophenol	ug/L	ND	ND	0.30	4787715
2,6-Dichlorophenol	ug/L	ND	ND	0.50	4787715
2,4-Dimethylphenol	ug/L	ND	ND	0.50	4787715
2,4-Dinitrophenol	ug/L	ND	ND	2.0	4787715
4,6-Dinitro-2-methylphenol	ug/L	ND	ND	2.0	4787715
4-Nitrophenol	ug/L	ND	ND	1.4	4787715
Pentachlorophenol	ug/L	ND	ND	1.0	4787715

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B6Q6975
Report Date: 2016/12/16

City of Guelph
Client Project #: WET/DRY GROUNDWATER
Site Location: FALL GW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		DOZ589	DOZ590		
Sampling Date		2016/12/06	2016/12/06		
COC Number		587870-04-01	587870-04-01		
	UNITS	**13A**	**13B**	**RDL**	**QC Batch**
Phenol	ug/L	ND	ND	0.50	4787715
2,3,4,5-Tetrachlorophenol	ug/L	ND	ND	0.40	4787715
2,3,4,6-Tetrachlorophenol	ug/L	ND	ND	0.50	4787715
2,3,5,6-Tetrachlorophenol	ug/L	ND	ND	0.50	4787715
2,3,4-Trichlorophenol	ug/L	ND	ND	0.50	4787715
2,3,5-Trichlorophenol	ug/L	ND	ND	0.50	4787715
2,4,5-Trichlorophenol	ug/L	ND	ND	0.50	4787715
2,4,6-Trichlorophenol	ug/L	ND	ND	0.50	4787715
Benzyl butyl phthalate	ug/L	ND	ND	0.50	4787715
Biphenyl	ug/L	ND	ND	0.50	4787715
Bis(2-chloroethyl)ether	ug/L	ND	ND	0.50	4787715
Bis(2-chloroethoxy)methane	ug/L	ND	ND	0.50	4787715
Bis(2-chloroisopropyl)ether	ug/L	ND	ND	0.50	4787715
Bis(2-ethylhexyl)phthalate	ug/L	ND	ND	2.0	4787715
4-Bromophenyl phenyl ether	ug/L	ND	ND	0.30	4787715
Camphene	ug/L	ND	ND	1.0	4787715
4-Chlorophenyl phenyl ether	ug/L	ND	ND	0.50	4787715
Di-N-butyl phthalate	ug/L	ND	ND	2.0	4787715
Di-N-octyl phthalate	ug/L	ND	ND	0.80	4787715
2,4-Dinitrotoluene	ug/L	ND	ND	0.50	4787715
2,6-Dinitrotoluene	ug/L	ND	ND	0.50	4787715
Diphenyl Ether	ug/L	ND	ND	0.30	4787715
Indole	ug/L	ND	ND	1.0	4787715
Nitrosodiphenylamine/Diphenylamine	ug/L	ND	ND	1.0	4787715
N-Nitroso-di-n-propylamine	ug/L	ND	ND	0.50	4787715
Surrogate Recovery (%)					
2,4,6-Tribromophenol	%	34	57		4787715
2-Fluorobiphenyl	%	83	82		4787715
2-Fluorophenol	%	19	10		4787715
D14-Terphenyl	%	104	102		4787715
D5-Nitrobenzene	%	85	82		4787715
D5-Phenol	%	24	8.9 (1)		4787715

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected
(1) Surrogate recovery was below the lower control limit. This may represent a low bias in some results.

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Maxxam Job #: B6Q6975
Report Date: 2016/12/16

City of Guelph
Client Project #: WET/DRY GROUNDWATER
Site Location: FALL GW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		DOZ584	DOZ584	DOZ585	DOZ586	DOZ587		
Sampling Date		2016/12/06	2016/12/06	2016/12/06	2016/12/06	2016/12/06		
COC Number		587870-04-01	587870-04-01	587870-04-01	587870-04-01	587870-04-01		
	UNITS	**17A**	**17A Lab-Dup**	**17B**	**22A**	**22B**	**RDL**	**QC Batch**
Volatile Organics								
Acetone (2-Propanone)	ug/L	ND	ND	ND	ND	ND	10	4784695
Benzene	ug/L	ND	ND	ND	ND	ND	0.10	4784695
Bromodichloromethane	ug/L	ND	ND	0.23	ND	ND	0.10	4784695
Acrolein	ug/L	ND	ND	ND	ND	ND	10	4784703
Bromoform	ug/L	ND	ND	ND	ND	ND	0.20	4784695
Bromomethane	ug/L	ND	ND	ND	ND	ND	0.50	4784695
Carbon Tetrachloride	ug/L	ND	ND	ND	ND	ND	0.10	4784695
Chlorobenzene	ug/L	ND	ND	ND	ND	ND	0.10	4784695
Chloroform	ug/L	ND	ND	1.2	ND	ND	0.10	4784695
Acrylonitrile	ug/L	ND	ND	ND	ND	ND	5.0	4784703
Chloromethane	ug/L	ND	ND	ND	ND	ND	0.50	4784695
Dibromochloromethane	ug/L	ND	ND	ND	ND	ND	0.20	4784695
1,2-Dichlorobenzene	ug/L	ND	ND	ND	ND	ND	0.20	4784695
1,3-Dichlorobenzene	ug/L	ND	ND	ND	ND	ND	0.20	4784695
1,4-Dichlorobenzene	ug/L	ND	ND	ND	ND	ND	0.20	4784695
1,1-Dichloroethane	ug/L	ND	ND	ND	ND	ND	0.10	4784695
1,2-Dichloroethane	ug/L	ND	ND	ND	ND	ND	0.20	4784695
1,1-Dichloroethylene	ug/L	ND	ND	ND	ND	ND	0.10	4784695
cis-1,2-Dichloroethylene	ug/L	ND	ND	ND	ND	ND	0.10	4784695
trans-1,2-Dichloroethylene	ug/L	ND	ND	ND	ND	ND	0.10	4784695
1,2-Dichloropropane	ug/L	ND	ND	ND	ND	ND	0.10	4784695
cis-1,3-Dichloropropene	ug/L	ND	ND	ND	ND	ND	0.20	4784695
trans-1,3-Dichloropropene	ug/L	ND	ND	ND	ND	ND	0.20	4784695
Ethylbenzene	ug/L	ND	ND	ND	ND	ND	0.10	4784695
Ethylene Dibromide	ug/L	ND	ND	ND	ND	ND	0.20	4784695
Methylene Chloride(Dichloromethane)	ug/L	ND	ND	ND	ND	ND	0.50	4784695
Methyl Ethyl Ketone (2-Butanone)	ug/L	ND	ND	ND	ND	ND	5.0	4784695
Methyl Isobutyl Ketone	ug/L	ND	ND	ND	ND	ND	5.0	4784695
Methyl t-butyl ether (MTBE)	ug/L	ND	ND	ND	ND	ND	0.20	4784695
Styrene	ug/L	ND	ND	ND	ND	ND	0.20	4784695
1,1,1,2-Tetrachloroethane	ug/L	ND	ND	ND	ND	ND	0.20	4784695
1,1,2,2-Tetrachloroethane	ug/L	ND	ND	ND	ND	ND	0.20	4784695

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B6Q6975
Report Date: 2016/12/16

City of Guelph
Client Project #: WET/DRY GROUNDWATER
Site Location: FALL GW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		DOZ584	DOZ584	DOZ585	DOZ586	DOZ587		
Sampling Date		2016/12/06	2016/12/06	2016/12/06	2016/12/06	2016/12/06		
COC Number		587870-04-01	587870-04-01	587870-04-01	587870-04-01	587870-04-01		
	UNITS	**17A**	**17A Lab-Dup**	**17B**	**22A**	**22B**	**RDL**	**QC Batch**
Tetrachloroethylene	ug/L	ND	ND	ND	ND	ND	0.10	4784695
Toluene	ug/L	ND	ND	ND	ND	ND	0.20	4784695
1,1,1-Trichloroethane	ug/L	ND	ND	ND	ND	ND	0.10	4784695
1,1,2-Trichloroethane	ug/L	ND	ND	ND	ND	ND	0.20	4784695
Trichloroethylene	ug/L	ND	ND	ND	ND	ND	0.10	4784695
Trichlorofluoromethane (FREON 11)	ug/L	ND	ND	ND	ND	ND	0.20	4784695
Vinyl Chloride	ug/L	ND	ND	ND	ND	ND	0.20	4784695
p+m-Xylene	ug/L	ND	ND	ND	ND	ND	0.10	4784695
o-Xylene	ug/L	ND	ND	ND	ND	ND	0.10	4784695
Total Xylenes	ug/L	ND	ND	ND	ND	ND	0.10	4784695
Surrogate Recovery (%)								
4-Bromofluorobenzene	%	98	95	96	98	97		4784695
D4-1,2-Dichloroethane	%	106	105	107	105	108		4784695
D8-Toluene	%	96	96	97	97	95		4784695

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B6Q6975
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City of Guelph
Client Project #: WET/DRY GROUNDWATER
Site Location: FALL GW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		DOZ588	DOZ589	DOZ590		
Sampling Date		2016/12/06	2016/12/06	2016/12/06		
COC Number		587870-04-01	587870-04-01	587870-04-01		
	UNITS	**26**	**13A**	**13B**	**RDL**	**QC Batch**
Volatile Organics						
Acetone (2-Propanone)	ug/L	ND	ND	ND	10	4784695
Benzene	ug/L	ND	ND	ND	0.10	4784695
Bromodichloromethane	ug/L	ND	ND	ND	0.10	4784695
Acrolein	ug/L	ND	ND	ND	10	4784703
Bromoform	ug/L	ND	ND	ND	0.20	4784695
Bromomethane	ug/L	ND	ND	ND	0.50	4784695
Carbon Tetrachloride	ug/L	ND	ND	ND	0.10	4784695
Chlorobenzene	ug/L	ND	ND	ND	0.10	4784695
Chloroform	ug/L	ND	ND	ND	0.10	4784695
Acrylonitrile	ug/L	ND	ND	ND	5.0	4784703
Chloromethane	ug/L	ND	ND	ND	0.50	4784695
Dibromochloromethane	ug/L	ND	ND	ND	0.20	4784695
1,2-Dichlorobenzene	ug/L	ND	ND	ND	0.20	4784695
1,3-Dichlorobenzene	ug/L	ND	ND	ND	0.20	4784695
1,4-Dichlorobenzene	ug/L	ND	ND	ND	0.20	4784695
1,1-Dichloroethane	ug/L	ND	ND	ND	0.10	4784695
1,2-Dichloroethane	ug/L	ND	ND	ND	0.20	4784695
1,1-Dichloroethylene	ug/L	ND	ND	ND	0.10	4784695
cis-1,2-Dichloroethylene	ug/L	ND	ND	ND	0.10	4784695
trans-1,2-Dichloroethylene	ug/L	ND	ND	ND	0.10	4784695
1,2-Dichloropropane	ug/L	ND	ND	ND	0.10	4784695
cis-1,3-Dichloropropene	ug/L	ND	ND	ND	0.20	4784695
trans-1,3-Dichloropropene	ug/L	ND	ND	ND	0.20	4784695
Ethylbenzene	ug/L	ND	ND	ND	0.10	4784695
Ethylene Dibromide	ug/L	ND	ND	ND	0.20	4784695
Methylene Chloride(Dichloromethane)	ug/L	ND	ND	ND	0.50	4784695
Methyl Ethyl Ketone (2-Butanone)	ug/L	ND	ND	ND	5.0	4784695
Methyl Isobutyl Ketone	ug/L	ND	ND	ND	5.0	4784695
Methyl t-butyl ether (MTBE)	ug/L	ND	ND	ND	0.20	4784695
Styrene	ug/L	ND	ND	ND	0.20	4784695
1,1,1,2-Tetrachloroethane	ug/L	ND	ND	ND	0.20	4784695
1,1,2,2-Tetrachloroethane	ug/L	ND	ND	ND	0.20	4784695
Tetrachloroethylene	ug/L	ND	ND	ND	0.10	4784695

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B6Q6975
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City of Guelph
Client Project #: WET/DRY GROUNDWATER
Site Location: FALL GW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		DOZ588	DOZ589	DOZ590		
Sampling Date		2016/12/06	2016/12/06	2016/12/06		
COC Number		587870-04-01	587870-04-01	587870-04-01		
	UNITS	**26**	**13A**	**13B**	**RDL**	**QC Batch**
Toluene	ug/L	ND	ND	ND	0.20	4784695
1,1,1-Trichloroethane	ug/L	ND	ND	ND	0.10	4784695
1,1,2-Trichloroethane	ug/L	ND	ND	ND	0.20	4784695
Trichloroethylene	ug/L	ND	ND	ND	0.10	4784695
Trichlorofluoromethane (FREON 11)	ug/L	ND	ND	ND	0.20	4784695
Vinyl Chloride	ug/L	ND	ND	ND	0.20	4784695
p+m-Xylene	ug/L	ND	ND	ND	0.10	4784695
o-Xylene	ug/L	ND	ND	ND	0.10	4784695
Total Xylenes	ug/L	ND	ND	ND	0.10	4784695
Surrogate Recovery (%)						
4-Bromofluorobenzene	%	93	98	105		4784695
D4-1,2-Dichloroethane	%	103	105	106		4784695
D8-Toluene	%	96	98	100		4784695

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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GENERAL COMMENTS

Sample DOZ584 [17A] : COD < BOD: Both values fall within the method uncertainty for duplicates and are likely equivalent.

Sample DOZ585 [17B] : COD < BOD: Both values fall within the method uncertainty for duplicates and are likely equivalent.

Sample DOZ586 [22A] : COD < BOD: Both values fall within the method uncertainty for duplicates and are likely equivalent.

Sample DOZ588 [26] : COD < BOD: Both values fall within the method uncertainty for duplicates and are likely equivalent.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

City of Guelph
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			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4784695	4-Bromofluorobenzene	2016/12/09	103	70 - 130	99	70 - 130	96	%				
4784695	D4-1,2-Dichloroethane	2016/12/09	98	70 - 130	99	70 - 130	103	%				
4784695	D8-Toluene	2016/12/09	101	70 - 130	101	70 - 130	97	%				
4787715	2,4,6-Tribromophenol	2016/12/12	64	10 - 130	96	10 - 130	24	%				
4787715	2-Fluorobiphenyl	2016/12/12	37	30 - 130	68	30 - 130	78	%				
4787715	2-Fluorophenol	2016/12/12	23	10 - 130	58	10 - 130	15	%				
4787715	D14-Terphenyl	2016/12/12	100	30 - 130	104	30 - 130	98	%				
4787715	D5-Nitrobenzene	2016/12/12	40	30 - 130	87	30 - 130	86	%				
4787715	D5-Phenol	2016/12/12	17	10 - 130	41	10 - 130	23	%				
4784027	Total BOD	2016/12/13					ND, RDL=2.0	mg/L	NC	25	93	80 - 120
4784695	1,1,1,2-Tetrachloroethane	2016/12/09	92	70 - 130	93	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4784695	1,1,1-Trichloroethane	2016/12/09	90	70 - 130	91	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4784695	1,1,2,2-Tetrachloroethane	2016/12/09	89	70 - 130	95	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4784695	1,1,2-Trichloroethane	2016/12/09	91	70 - 130	95	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4784695	1,1-Dichloroethane	2016/12/09	98	70 - 130	93	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4784695	1,1-Dichloroethylene	2016/12/09	92	70 - 130	89	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4784695	1,2-Dichlorobenzene	2016/12/09	92	70 - 130	91	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4784695	1,2-Dichloroethane	2016/12/09	91	70 - 130	92	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4784695	1,2-Dichloropropane	2016/12/09	92	70 - 130	97	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4784695	1,3-Dichlorobenzene	2016/12/09	96	70 - 130	94	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4784695	1,4-Dichlorobenzene	2016/12/09	100	70 - 130	99	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4784695	Acetone (2-Propanone)	2016/12/09	86	60 - 140	88	60 - 140	ND, RDL=10	ug/L	NC	30		
4784695	Benzene	2016/12/09	95	70 - 130	96	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4784695	Bromodichloromethane	2016/12/09	94	70 - 130	95	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4784695	Bromoform	2016/12/09	93	70 - 130	94	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4784695	Bromomethane	2016/12/09	69	60 - 140	78	60 - 140	ND, RDL=0.50	ug/L	NC	30		
4784695	Carbon Tetrachloride	2016/12/09	94	70 - 130	95	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4784695	Chlorobenzene	2016/12/09	98	70 - 130	97	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4784695	Chloroform	2016/12/09	89	70 - 130	91	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4784695	Chloromethane	2016/12/09	89	60 - 140	73	60 - 140	ND, RDL=0.50	ug/L	NC	30		

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			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4784695	cis-1,2-Dichloroethylene	2016/12/09	99	70 - 130	98	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4784695	cis-1,3-Dichloropropene	2016/12/09	99	70 - 130	101	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4784695	Dibromochloromethane	2016/12/09	95	70 - 130	98	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4784695	Ethylbenzene	2016/12/09	99	70 - 130	100	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4784695	Ethylene Dibromide	2016/12/09	94	70 - 130	96	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4784695	Methyl Ethyl Ketone (2-Butanone)	2016/12/09	102	60 - 140	104	60 - 140	ND, RDL=5.0	ug/L	NC	30		
4784695	Methyl Isobutyl Ketone	2016/12/09	104	70 - 130	105	70 - 130	ND, RDL=5.0	ug/L	NC	30		
4784695	Methyl t-butyl ether (MTBE)	2016/12/09	102	70 - 130	99	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4784695	Methylene Chloride(Dichloromethane)	2016/12/09	92	70 - 130	91	70 - 130	ND, RDL=0.50	ug/L	NC	30		
4784695	o-Xylene	2016/12/09	107	70 - 130	102	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4784695	p+m-Xylene	2016/12/09	104	70 - 130	100	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4784695	Styrene	2016/12/09	104	70 - 130	104	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4784695	Tetrachloroethylene	2016/12/09	91	70 - 130	90	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4784695	Toluene	2016/12/09	92	70 - 130	95	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4784695	Total Xylenes	2016/12/09					ND, RDL=0.10	ug/L	NC	30		
4784695	trans-1,2-Dichloroethylene	2016/12/09	99	70 - 130	92	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4784695	trans-1,3-Dichloropropene	2016/12/09	98	70 - 130	101	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4784695	Trichloroethylene	2016/12/09	92	70 - 130	92	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4784695	Trichlorofluoromethane (FREON 11)	2016/12/09	89	70 - 130	89	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4784695	Vinyl Chloride	2016/12/09	99	70 - 130	91	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4784703	Acrolein	2016/12/12	95	60 - 140	93	60 - 140	ND, RDL=10	ug/L	NC	30		
4784703	Acrylonitrile	2016/12/12	97	60 - 140	92	60 - 140	ND, RDL=5.0	ug/L	NC	30		
4785099	Alkalinity (Total as CaCO3)	2016/12/10			96	85 - 115	ND, RDL=1.0	mg/L	0.071	20		
4785106	Conductivity	2016/12/10			100	85 - 115	ND, RDL=1.0	umho/cm	0.16	25		
4785198	Dissolved Chloride (Cl)	2016/12/09	NC	80 - 120	105	80 - 120	ND, RDL=1.0	mg/L	0.40	20		
4785222	Dissolved Sulphate (SO4)	2016/12/09	NC	75 - 125	105	80 - 120	ND, RDL=1.0	mg/L	0.83	20		
4785719	Phenols-4AAP	2016/12/09	100	80 - 120	100	85 - 115	ND, RDL=0.0010	mg/L	NC	20		
4786105	Alkalinity (Total as CaCO3)	2016/12/10			96	85 - 115	ND, RDL=1.0	mg/L	0.78	20		

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			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4786108	Conductivity	2016/12/10			101	85 - 115	ND, RDL=1.0	umho/cm	0	25		
4786110	pH	2016/12/10			101	98 - 103			0.11	N/A		
4786140	Nitrate (N)	2016/12/13	88	80 - 120	97	80 - 120	ND, RDL=0.10	mg/L	0.64	20		
4786140	Nitrite (N)	2016/12/13	96	80 - 120	101	80 - 120	ND, RDL=0.010	mg/L	NC	20		
4786516	pH	2016/12/10			101	98 - 103			0.62	N/A		
4786929	Dissolved Boron (B)	2016/12/12	101	80 - 120	105	80 - 120	ND, RDL=10	ug/L	0.25	20		
4786929	Dissolved Calcium (Ca)	2016/12/12	100	80 - 120	94	80 - 120	ND, RDL=200	ug/L	2.7	20		
4786929	Dissolved Magnesium (Mg)	2016/12/12	101	80 - 120	96	80 - 120	ND, RDL=50	ug/L	1.9	20		
4786929	Dissolved Phosphorus (P)	2016/12/12	105	80 - 120	101	80 - 120	ND, RDL=100	ug/L	NC	20		
4786929	Dissolved Potassium (K)	2016/12/12	102	80 - 120	97	80 - 120	ND, RDL=200	ug/L	1.6	20		
4786929	Dissolved Sodium (Na)	2016/12/12	NC	80 - 120	98	80 - 120	ND, RDL=100	ug/L	0.89	20		
4786929	Dissolved Zinc (Zn)	2016/12/12	95	80 - 120	96	80 - 120	ND, RDL=5.0	ug/L	NC	20		
4787701	Nitrate (N)	2016/12/13	91	80 - 120	96	80 - 120	ND, RDL=0.10	mg/L	NC	20		
4787701	Nitrite (N)	2016/12/13	98	80 - 120	98	80 - 120	ND, RDL=0.010	mg/L	NC	20		
4787715	1-Chloronaphthalene	2016/12/12	34	30 - 130	72	30 - 130	ND, RDL=1.0	ug/L				
4787715	1-Methylnaphthalene	2016/12/12	38	30 - 130	80	30 - 130	ND, RDL=0.20	ug/L				
4787715	2,3,4,5-Tetrachlorophenol	2016/12/12	78	10 - 130	104	10 - 130	ND, RDL=0.40	ug/L				
4787715	2,3,4,6-Tetrachlorophenol	2016/12/12	60	10 - 130	95	10 - 130	ND, RDL=0.50	ug/L				
4787715	2,3,4-Trichlorophenol	2016/12/12	49	10 - 130	94	10 - 130	ND, RDL=0.50	ug/L				
4787715	2,3,5,6-Tetrachlorophenol	2016/12/12	43	10 - 130	74	10 - 130	ND, RDL=0.50	ug/L				
4787715	2,3,5-Trichlorophenol	2016/12/12	55	10 - 130	111	10 - 130	ND, RDL=0.50	ug/L				
4787715	2,4,5-Trichlorophenol	2016/12/12	50	10 - 130	95	10 - 130	ND, RDL=0.50	ug/L				
4787715	2,4,6-Trichlorophenol	2016/12/12	44	10 - 130	91	10 - 130	ND, RDL=0.50	ug/L				
4787715	2,4-Dichlorophenol	2016/12/12	32	10 - 130	73	10 - 130	ND, RDL=0.30	ug/L				
4787715	2,4-Dimethylphenol	2016/12/12	9.1 (1)	10 - 130	28	10 - 130	ND, RDL=0.50	ug/L				
4787715	2,4-Dinitrophenol	2016/12/12	69	10 - 130	112	10 - 130	ND, RDL=2.0	ug/L				
4787715	2,4-Dinitrotoluene	2016/12/12	73	30 - 130	105	30 - 130	ND, RDL=0.50	ug/L				
4787715	2,6-Dichlorophenol	2016/12/12	40	10 - 130	89	10 - 130	ND, RDL=0.50	ug/L				

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QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4787715	2,6-Dinitrotoluene	2016/12/12	49	30 - 130	95	30 - 130	ND, RDL=0.50	ug/L				
4787715	2-Chloronaphthalene	2016/12/12	43	30 - 130	81	30 - 130	ND, RDL=0.50	ug/L				
4787715	2-Chlorophenol	2016/12/12	37	10 - 130	82	10 - 130	ND, RDL=0.30	ug/L				
4787715	2-Methylnaphthalene	2016/12/12	36	30 - 130	75	30 - 130	ND, RDL=0.20	ug/L				
4787715	4,6-Dinitro-2-methylphenol	2016/12/12	104	10 - 130	123	10 - 130	ND, RDL=2.0	ug/L				
4787715	4-Bromophenyl phenyl ether	2016/12/12	52	30 - 130	87	30 - 130	ND, RDL=0.30	ug/L				
4787715	4-Chloro-3-Methylphenol	2016/12/12	42	10 - 130	89	10 - 130	ND, RDL=0.50	ug/L				
4787715	4-Chlorophenyl phenyl ether	2016/12/12	44	30 - 130	84	30 - 130	ND, RDL=0.50	ug/L				
4787715	4-Nitrophenol	2016/12/12	44	10 - 130	59	10 - 130	ND, RDL=1.4	ug/L				
4787715	5-Nitroacenaphthene	2016/12/12	97	30 - 130	102	30 - 130	ND, RDL=1.0	ug/L				
4787715	Acenaphthene	2016/12/12	45	30 - 130	88	30 - 130	ND, RDL=0.20	ug/L				
4787715	Acenaphthylene	2016/12/12	41	30 - 130	78	30 - 130	ND, RDL=0.20	ug/L				
4787715	Anthracene	2016/12/12	68	30 - 130	92	30 - 130	ND, RDL=0.20	ug/L				
4787715	Benzo(a)anthracene	2016/12/12	98	30 - 130	102	30 - 130	ND, RDL=0.20	ug/L				
4787715	Benzo(a)pyrene	2016/12/12	97	30 - 130	101	30 - 130	ND, RDL=0.20	ug/L				
4787715	Benzo(b/j)fluoranthene	2016/12/12	94	30 - 130	97	30 - 130	ND, RDL=0.20	ug/L				
4787715	Benzo(g,h,i)perylene	2016/12/12	94	30 - 130	99	30 - 130	ND, RDL=0.20	ug/L				
4787715	Benzo(k)fluoranthene	2016/12/12	102	30 - 130	117	30 - 130	ND, RDL=0.20	ug/L				
4787715	Benzyl butyl phthalate	2016/12/12	97	30 - 130	101	30 - 130	ND, RDL=0.50	ug/L				
4787715	Biphenyl	2016/12/12	40	30 - 130	76	30 - 130	ND, RDL=0.50	ug/L				
4787715	Bis(2-chloroethoxy)methane	2016/12/12	36	30 - 130	78	30 - 130	ND, RDL=0.50	ug/L				
4787715	Bis(2-chloroethyl)ether	2016/12/12	38	30 - 130	86	30 - 130	ND, RDL=0.50	ug/L				
4787715	Bis(2-chloroisopropyl)ether	2016/12/12	37	30 - 130	81	30 - 130	ND, RDL=0.50	ug/L				
4787715	Bis(2-ethylhexyl)phthalate	2016/12/13	98	30 - 130	104	30 - 130	ND, RDL=2.0	ug/L	NC	40		
4787715	Camphene	2016/12/12	18 (2)	30 - 130	40	30 - 130	ND, RDL=1.0	ug/L				
4787715	Chrysene	2016/12/12	98	30 - 130	101	30 - 130	ND, RDL=0.20	ug/L				
4787715	Dibenz(a,h)anthracene	2016/12/12	94	30 - 130	96	30 - 130	ND, RDL=0.20	ug/L				
4787715	Di-N-butyl phthalate	2016/12/13	99	30 - 130	105	30 - 130	ND, RDL=2.0	ug/L	NC	40		
4787715	Di-N-octyl phthalate	2016/12/12	105	30 - 130	108	30 - 130	ND, RDL=0.80	ug/L				
4787715	Diphenyl Ether	2016/12/12	39	30 - 130	77	30 - 130	ND, RDL=0.30	ug/L				

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QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4787715	Fluoranthene	2016/12/12	93	30 - 130	99	30 - 130	ND, RDL=0.20	ug/L				
4787715	Fluorene	2016/12/12	49	30 - 130	89	30 - 130	ND, RDL=0.20	ug/L				
4787715	Indeno(1,2,3-cd)pyrene	2016/12/12	90	30 - 130	95	30 - 130	ND, RDL=0.20	ug/L				
4787715	Indole	2016/12/12	19 (2)	30 - 130	34	30 - 130	ND, RDL=1.0	ug/L				
4787715	m/p-Cresol	2016/12/12	27	10 - 130	64	10 - 130	ND, RDL=0.50	ug/L				
4787715	Naphthalene	2016/12/12	39	30 - 130	82	30 - 130	ND, RDL=0.20	ug/L				
4787715	Nitrosodiphenylamine/Diphenylamine	2016/12/12	71	30 - 130	100	30 - 130	ND, RDL=1.0	ug/L				
4787715	N-Nitroso-di-n-propylamine	2016/12/12	44	30 - 130	91	30 - 130	ND, RDL=0.50	ug/L				
4787715	o-Cresol	2016/12/12	19	10 - 130	56	10 - 130	ND, RDL=0.50	ug/L				
4787715	Pentachlorophenol	2016/12/12	55	10 - 130	62	10 - 130	ND, RDL=1.0	ug/L				
4787715	Perylene	2016/12/12	93	30 - 130	96	30 - 130	ND, RDL=0.20	ug/L				
4787715	Phenanthrene	2016/12/12	64	30 - 130	90	30 - 130	ND, RDL=0.20	ug/L				
4787715	Phenol	2016/12/12	16	10 - 130	38	10 - 130	ND, RDL=0.50	ug/L				
4787715	Pyrene	2016/12/12	98	30 - 130	105	30 - 130	ND, RDL=0.20	ug/L				
4788458	Dissolved Sulphate (SO4)	2016/12/13	NC	75 - 125	103	80 - 120	ND, RDL=1.0	mg/L	0.74	20		
4788465	Dissolved Chloride (Cl)	2016/12/13	NC	80 - 120	105	80 - 120	ND, RDL=1.0	mg/L	0.36	20		
4788546	Total Chemical Oxygen Demand (COD)	2016/12/13	106	75 - 125	100	75 - 125	ND, RDL=4.0	mg/L	NC	25		
4788551	Total Kjeldahl Nitrogen (TKN)	2016/12/14	105	80 - 120	100	80 - 120	ND, RDL=0.10	mg/L	NC	20	99	80 - 120
4788620	Dissolved Chloride (Cl)	2016/12/13	105	80 - 120	103	80 - 120	ND, RDL=1.0	mg/L	NC	20		
4788623	Dissolved Sulphate (SO4)	2016/12/13	NC	75 - 125	100	80 - 120	ND, RDL=1.0	mg/L	3.1	20		
4788932	Total Ammonia-N	2016/12/15	92	80 - 120	97	85 - 115	ND, RDL=0.050	mg/L	NC	20		
4789905	Total Iron (Fe)	2016/12/13	NC	80 - 120	94	80 - 120	ND, RDL=0.02	mg/L	0.59	25		

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Client Project #: WET/DRY GROUNDWATER
Site Location: FALL GW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4790157	Total Phosphorus	2016/12/13	100	80 - 120	100	80 - 120	ND, RDL=0.020	mg/L	NC	20	101	80 - 120

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) The recovery was below the lower control limit. This may represent a low bias in some results for flagged analytes.

(2) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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Maxxam Job #: B6Q6975
Report Date: 2016/12/16

City of Guelph
Client Project #: WET/DRY GROUNDWATER
Site Location: FALL GW
Your P.O. #: 720.8121.3516
Sampler Initials: AS

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Cristina Carriere

Cristina Carriere, Scientific Services

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Your Project #: Wet/Dry ground water
Your C.O.C. #: 417043-01-01

Attention:Amy Spence

City of Guelph
Soild Waste RIC (Wet/Dry)
110 Dunlop Drive
Guelph, ON
CANADA N1H 6H8

Report Date: 2016/03/18
Report #: R3935158
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B650393
Received: 2016/03/11, 15:44

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Alkalinity	2	N/A	2016/03/14	CAM SOP-00448	SM 22 2320 B m
Biochemical Oxygen Demand (BOD)	2	N/A	2016/03/17	CAM SOP-00427	SM 22 5210B m
Chloride by Automated Colourimetry	2	N/A	2016/03/14	CAM SOP-00463	EPA 325.2 m
Chemical Oxygen Demand	1	N/A	2016/03/16	CAM SOP-00416	SM 22 5220 D m
Chemical Oxygen Demand	1	N/A	2016/03/18	CAM SOP-00416	SM 22 5220 D m
Conductivity	2	N/A	2016/03/14	CAM SOP-00414	SM 22 2510 m
Dissolved Metals by ICPMS	2	N/A	2016/03/15	CAM SOP-00447	EPA 6020A m
Total Metals Analysis by ICP	2	2016/03/15	2016/03/15	CAM SOP-00408	EPA 6010C m
Total Ammonia-N	1	N/A	2016/03/17	CAM SOP-00441	EPA GS I-2522-90 m
Total Ammonia-N	1	N/A	2016/03/18	CAM SOP-00441	EPA GS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (1)	2	N/A	2016/03/14	CAM SOP-00440	SM 22 4500-NO3I/NO2B
pH	2	N/A	2016/03/14	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	2	N/A	2016/03/15	CAM SOP-00444	OMOE E3179 m
Sulphate by Automated Colourimetry	2	N/A	2016/03/14	CAM SOP-00464	EPA 375.4 m
Total Kjeldahl Nitrogen in Water	2	2016/03/15	2016/03/16	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	2	2016/03/17	2016/03/17	CAM SOP-00407	SM 4500 P B H m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
James Aspin, Senior Project Manager
Email: JAspin@maxxam.ca
Phone# (905)817-5771

==========

Maxxam Job #: B650393
Report Date: 2016/03/18

City of Guelph
Client Project #: Wet/Dry ground water

RESULTS OF ANALYSES OF WATER

Maxxam ID		BZX516	BZX516			BZX517		
Sampling Date		2016/03/11	2016/03/11			2016/03/11		
COC Number		417043-01-01	417043-01-01			417043-01-01		
	UNITS	**15A**	**15A Lab-Dup**	**RDL**	**QC Batch**	**15B**	**RDL**	**QC Batch**
Inorganics								
Total Ammonia-N	mg/L	ND		0.050	4418665	0.057	0.050	4421997
Total BOD	mg/L	ND		2.0	4415656	ND	2.0	4415656
Total Chemical Oxygen Demand (COD)	mg/L	ND		4.0	4418602	36	4.0	4421577
Conductivity	umho/cm	880	880	1.0	4415975	2500	1.0	4415975
Total Kjeldahl Nitrogen (TKN)	mg/L	ND		0.10	4418232	0.46	0.10	4418232
pH	pH	7.94	7.94		4415976	7.93		4415976
Phenols-4AAP	mg/L	ND		0.0010	4415988	ND	0.0010	4415988
Total Phosphorus	mg/L	ND		0.020	4421527	0.12	0.10	4421527
Dissolved Sulphate (SO4)	mg/L	110		1.0	4415965	270	1.0	4415965
Alkalinity (Total as CaCO3)	mg/L	250	250	1.0	4415974	130	1.0	4415974
Dissolved Chloride (Cl)	mg/L	69		1.0	4415961	520	5.0	4415961
Nitrite (N)	mg/L	ND		0.010	4415959	0.022	0.010	4415959
Nitrate (N)	mg/L	ND		0.10	4415959	0.80	0.10	4415959
Nitrate + Nitrite (N)	mg/L	ND		0.10	4415959	0.82	0.10	4415959

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B650393
Report Date: 2016/03/18

City of Guelph
Client Project #: Wet/Dry ground water

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		BZX516	BZX516	BZX517		
Sampling Date		2016/03/11	2016/03/11	2016/03/11		
COC Number		417043-01-01	417043-01-01	417043-01-01		
	UNITS	**15A**	**15A Lab-Dup**	**15B**	**RDL**	**QC Batch**
Metals						
Total Iron (Fe)	mg/L	1.0	1.0	4.3	0.02	4418253
Dissolved Boron (B)	ug/L	24		180	10	4416910
Dissolved Calcium (Ca)	ug/L	110000		72000	200	4416910
Dissolved Magnesium (Mg)	ug/L	36000		6100	50	4416910
Dissolved Phosphorus (P)	ug/L	ND		ND	100	4416910
Dissolved Potassium (K)	ug/L	1400		4000	200	4416910
Dissolved Sodium (Na)	ug/L	27000		450000	100	4416910
Dissolved Zinc (Zn)	ug/L	ND		10	5.0	4416910

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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GENERAL COMMENTS

Results relate only to the items tested.

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Maxxam Job #: B650393
Report Date: 2016/03/18

QUALITY ASSURANCE REPORT

City of Guelph
Client Project #: Wet/Dry ground water

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4415656	Total BOD	2016/03/17					ND, RDL=2.0	mg/L			101	80 - 120
4415959	Nitrate (N)	2016/03/14	NC	80 - 120	99	80 - 120	ND, RDL=0.10	mg/L	0.19	25		
4415959	Nitrite (N)	2016/03/14	112	80 - 120	101	80 - 120	ND, RDL=0.010	mg/L	NC	25		
4415961	Dissolved Chloride (Cl)	2016/03/14	NC	80 - 120	104	80 - 120	ND, RDL=1.0	mg/L	0.30	20		
4415965	Dissolved Sulphate (SO4)	2016/03/14	NC	75 - 125	100	80 - 120	ND, RDL=1.0	mg/L	2.3	20		
4415974	Alkalinity (Total as CaCO3)	2016/03/14			94	85 - 115	ND, RDL=1.0	mg/L	1.9	25		
4415975	Conductivity	2016/03/14			101	85 - 115	ND, RDL=1.0	umho/cm	0	25		
4415976	pH	2016/03/14			101	98 - 103			0.026	N/A		
4415988	Phenols-4AAP	2016/03/15	99	80 - 120	98	85 - 115	ND, RDL=0.0010	mg/L	NC	20		
4416910	Dissolved Boron (B)	2016/03/15	NC	80 - 120	105	80 - 120	ND, RDL=10	ug/L	1.4	20		
4416910	Dissolved Calcium (Ca)	2016/03/15	NC	80 - 120	104	80 - 120	ND, RDL=200	ug/L	1.8	20		
4416910	Dissolved Magnesium (Mg)	2016/03/15	110	80 - 120	103	80 - 120	ND, RDL=50	ug/L	1.4	20		
4416910	Dissolved Phosphorus (P)	2016/03/15	111	80 - 120	107	80 - 120	ND, RDL=100	ug/L	NC	20		
4416910	Dissolved Potassium (K)	2016/03/15	106	80 - 120	104	80 - 120	ND, RDL=200	ug/L	1.8	20		
4416910	Dissolved Sodium (Na)	2016/03/15	NC	80 - 120	104	80 - 120	ND, RDL=100	ug/L	2.3	20		
4416910	Dissolved Zinc (Zn)	2016/03/15	95	80 - 120	93	80 - 120	ND, RDL=5.0	ug/L	NC	20		
4418232	Total Kjeldahl Nitrogen (TKN)	2016/03/16	97	80 - 120	103	80 - 120	ND, RDL=0.10	mg/L	NC	20	103	80 - 120
4418253	Total Iron (Fe)	2016/03/15	NC	80 - 120	91	80 - 120	ND, RDL=0.02	mg/L	0.59	25		
4418602	Total Chemical Oxygen Demand (COD)	2016/03/16	101	75 - 125	100	75 - 125	ND, RDL=4.0	mg/L	1.6	25		
4418665	Total Ammonia-N	2016/03/17	101	80 - 120	102	85 - 115	ND, RDL=0.050	mg/L	NC	20		
4421527	Total Phosphorus	2016/03/17	103	80 - 120	99	80 - 120	ND, RDL=0.020	mg/L	7.4	20	105	80 - 120
4421577	Total Chemical Oxygen Demand (COD)	2016/03/18	97	75 - 125	100	75 - 125	ND, RDL=4.0	mg/L	1.4	25		

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4421997	Total Ammonia-N	2016/03/18	98	80 - 120	101	85 - 115	ND, RDL=0.050	mg/L	NC	20		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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Maxxam Job #: B650393
Report Date: 2016/03/18

City of Guelph
Client Project #: Wet/Dry ground water

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Brad Newman, Scientific Specialist

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Maxxam
A Bureau Veritas Group Company

Your P.O. #: 720.8121.3516
Your Project #: SW WET/DRY
Site Location: SW WET/DRY
Your C.O.C. #: 560404-01-01

Attention:Amy Spence

City of Guelph
Soild Waste RIC (Wet/Dry)
110 Dunlop Drive
Guelph, ON
CANADA N1H 6H8

Report Date: 2016/05/27
Report #: R4005492
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6A1086
Received: 2016/05/18, 15:51

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Alkalinity	2	N/A	2016/05/21	CAM SOP-00448	SM 22 2320 B m
Biochemical Oxygen Demand (BOD)	2	N/A	2016/05/24	CAM SOP-00427	SM 22 5210B m
Chloride by Automated Colourimetry	2	N/A	2016/05/20	CAM SOP-00463	EPA 325.2 m
Chemical Oxygen Demand	2	N/A	2016/05/24	CAM SOP-00416	SM 22 5220 D m
Conductivity	2	N/A	2016/05/21	CAM SOP-00414	SM 22 2510 m
Total Metals Analysis by ICPMS	2	N/A	2016/05/26	CAM SOP-00447	EPA 6020A m
Total Ammonia-N	2	N/A	2016/05/22	CAM SOP-00441	EPA GS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (1)	2	N/A	2016/05/24	CAM SOP-00440	SM 22 4500-NO3I/NO2B
pH	2	N/A	2016/05/21	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	2	N/A	2016/05/20	CAM SOP-00444	OMOE E3179 m
Sulphate by Automated Colourimetry	2	N/A	2016/05/20	CAM SOP-00464	EPA 375.4 m
Total Kjeldahl Nitrogen in Water	1	2016/05/19	2016/05/21	CAM SOP-00938	OMOE E3516 m
Total Kjeldahl Nitrogen in Water	1	2016/05/19	2016/05/24	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	2	2016/05/22	2016/05/24	CAM SOP-00407	SM 4500 P B H m
Low Level Total Suspended Solids	2	N/A	2016/05/19	CAM SOP-00428	SM 22 2540D m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
James Aspin, Senior Project Manager
Email: JAspin@maxxam.ca
Phone# (905)817-5771

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Maxxam Job #: B6A1086
Report Date: 2016/05/27

City of Guelph
Client Project #: SW WET/DRY
Site Location: SW WET/DRY
Your P.O. #: 720.8121.3516

RESULTS OF ANALYSES OF WATER

Maxxam ID		CJO055	CJO056	CJO056		
Sampling Date		2016/05/17	2016/05/17	2016/05/17		
COC Number		560404-01-01	560404-01-01	560404-01-01		
	UNITS	**TP1-OUT**	**EPTS01**	**EPTS01 Lab-Dup**	**RDL**	**QC Batch**
Inorganics						
Total Ammonia-N	mg/L	ND	ND		0.050	4506147
Total BOD	mg/L	3.0	ND		2.0	4504826
Total Chemical Oxygen Demand (COD)	mg/L	51	5.8		4.0	4508302
Conductivity	umho/cm	870	630	630	1.0	4508212
Total Kjeldahl Nitrogen (TKN)	mg/L	0.89	0.25		0.10	4506173
pH	pH	7.79	8.09	8.10		4508213
Phenols-4AAP	mg/L	ND	ND		0.0010	4504884
Total Phosphorus	mg/L	0.16	ND		0.020	4508714
Total Suspended Solids	mg/L	8	1		1	4504787
Dissolved Sulphate (SO4)	mg/L	83	13		1.0	4506351
Alkalinity (Total as CaCO3)	mg/L	140	240	240	1.0	4508210
Dissolved Chloride (Cl)	mg/L	130	42		1.0	4506349
Nitrite (N)	mg/L	ND	0.023		0.010	4508228
Nitrate (N)	mg/L	ND	2.27		0.10	4508228
Nitrate + Nitrite (N)	mg/L	ND	2.30		0.10	4508228

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B6A1086
Report Date: 2016/05/27

City of Guelph
Client Project #: SW WET/DRY
Site Location: SW WET/DRY
Your P.O. #: 720.8121.3516

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		CJO055	CJO056		
Sampling Date		2016/05/17	2016/05/17		
COC Number		560404-01-01	560404-01-01		
	UNITS	**TP1-OUT**	**EPTS01**	**RDL**	**QC Batch**
Metals					
Total Boron (B)	mg/L	0.055	0.013	0.010	4511329
Total Calcium (Ca)	mg/L	70	74	0.20	4511329
Total Iron (Fe)	mg/L	1.6	ND	0.10	4511329
Total Magnesium (Mg)	mg/L	7.2	21	0.050	4511329
Total Potassium (K)	mg/L	3.2	1.2	0.20	4511329
Total Sodium (Na)	mg/L	97	30	0.10	4511329
Total Zinc (Zn)	mg/L	0.013	0.061	0.0050	4511329

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B6A1086
Report Date: 2016/05/27

City of Guelph
Client Project #: SW WET/DRY
Site Location: SW WET/DRY
Your P.O. #: 720.8121.3516

GENERAL COMMENTS

Results relate only to the items tested.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B6A1086
Report Date: 2016/05/27

QUALITY ASSURANCE REPORT

City of Guelph
Client Project #: SW WET/DRY
Site Location: SW WET/DRY
Your P.O. #: 720.8121.3516

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4504787	Total Suspended Solids	2016/05/19					ND,RDL=1	mg/L	NC	25	98	85 - 115
4504826	Total BOD	2016/05/24					ND, RDL=2.0	mg/L	NC	25	99	80 - 120
4504884	Phenols-4AAP	2016/05/20	96	80 - 120	99	85 - 115	ND, RDL=0.0010	mg/L	NC	20		
4506147	Total Ammonia-N	2016/05/22	100	80 - 120	98	85 - 115	ND, RDL=0.050	mg/L	NC	20		
4506173	Total Kjeldahl Nitrogen (TKN)	2016/05/20	NC	80 - 120	98	80 - 120	ND, RDL=0.10	mg/L	1.8	20	101	80 - 120
4506349	Dissolved Chloride (Cl)	2016/05/20	NC	80 - 120	103	80 - 120	ND, RDL=1.0	mg/L	1.1	20		
4506351	Dissolved Sulphate (SO4)	2016/05/20	NC	75 - 125	103	80 - 120	ND, RDL=1.0	mg/L	0.76	20		
4508210	Alkalinity (Total as CaCO3)	2016/05/21			95	85 - 115	ND, RDL=1.0	mg/L	0.28	25		
4508212	Conductivity	2016/05/21			101	85 - 115	ND, RDL=1.0	umho/cm	0.96	25		
4508213	pH	2016/05/21			102	98 - 103			0.20	N/A		
4508228	Nitrate (N)	2016/05/24	NC	80 - 120	101	80 - 120	ND, RDL=0.10	mg/L	1.3	25		
4508228	Nitrite (N)	2016/05/24	NC	80 - 120	108	80 - 120	ND, RDL=0.010	mg/L	6.2	25		
4508302	Total Chemical Oxygen Demand (COD)	2016/05/24	100	75 - 125	99	75 - 125	ND, RDL=4.0	mg/L	NC	25		
4508714	Total Phosphorus	2016/05/24	103	80 - 120	101	80 - 120	ND, RDL=0.020	mg/L	NC	20	105	80 - 120
4511329	Total Boron (B)	2016/05/26	100	80 - 120	98	80 - 120	ND, RDL=0.010	mg/L	NC	20		
4511329	Total Calcium (Ca)	2016/05/26	NC	80 - 120	95	80 - 120	ND, RDL=0.20	mg/L	7.1	20		
4511329	Total Iron (Fe)	2016/05/26	99	80 - 120	95	80 - 120	ND, RDL=0.10	mg/L	NC	20		
4511329	Total Magnesium (Mg)	2016/05/26	98	80 - 120	96	80 - 120	ND, RDL=0.050	mg/L	5.8	20		
4511329	Total Potassium (K)	2016/05/26	98	80 - 120	95	80 - 120	ND, RDL=0.20	mg/L	5.5	20		
4511329	Total Sodium (Na)	2016/05/26	NC	80 - 120	97	80 - 120	ND, RDL=0.10	mg/L	5.4	20		

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Maxxam Job #: B6A1086
Report Date: 2016/05/27

QUALITY ASSURANCE REPORT(CONT'D)

City of Guelph
Client Project #: SW WET/DRY
Site Location: SW WET/DRY
Your P.O. #: 720.8121.3516

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4511329	Total Zinc (Zn)	2016/05/26	101	80 - 120	100	80 - 120	ND, RDL=0.0050	mg/L	NC	20		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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Maxxam Job #: B6A1086
Report Date: 2016/05/27

City of Guelph
Client Project #: SW WET/DRY
Site Location: SW WET/DRY
Your P.O. #: 720.8121.3516

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Brad Newman, Scientific Specialist

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Maxxam
A Bureau Veritas Group Company

Your Project #: Wet / Dry Surface Water
Site Location: WET/DRY 15MM RAIN EVENT
Your C.O.C. #: 544554-04-01

Attention:Amy Spence

City of Guelph
Soild Waste RIC (Wet/Dry)
110 Dunlop Drive
Guelph, ON
CANADA N1H 6H8

Report Date: 2016/06/03
Report #: R4014066
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6A7983
Received: 2016/05/27, 20:40

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Alkalinity	2	N/A	2016/06/01	CAM SOP-00448	SM 22 2320 B m
Biochemical Oxygen Demand (BOD)	2	N/A	2016/06/02	CAM SOP-00427	SM 22 5210B m
Chloride by Automated Colourimetry	2	N/A	2016/05/30	CAM SOP-00463	EPA 325.2 m
Chemical Oxygen Demand	2	N/A	2016/05/30	CAM SOP-00416	SM 22 5220 D m
Conductivity	2	N/A	2016/06/01	CAM SOP-00414	SM 22 2510 m
Total Metals Analysis by ICPMS	2	N/A	2016/06/02	CAM SOP-00447	EPA 6020A m
Total Ammonia-N	2	N/A	2016/05/31	CAM SOP-00441	EPA GS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (1)	2	N/A	2016/06/02	CAM SOP-00440	SM 22 4500-NO3I/NO2B
pH	2	N/A	2016/06/01	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	2	N/A	2016/06/01	CAM SOP-00444	OMOE E3179 m
Sulphate by Automated Colourimetry	2	N/A	2016/05/30	CAM SOP-00464	EPA 375.4 m
Total Kjeldahl Nitrogen in Water	2	2016/05/30	2016/06/01	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	2	2016/06/01	2016/06/02	CAM SOP-00407	SM 22 4500 P B H m
Low Level Total Suspended Solids	2	N/A	2016/05/31	CAM SOP-00428	SM 22 2540D m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
James Aspin, Senior Project Manager
Email: JAspin@maxxam.ca
Phone# (905)817-5771

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Maxxam Job #: B6A7983
Report Date: 2016/06/03

City of Guelph
Client Project #: Wet / Dry Surface Water
Site Location: WET/DRY 15MM RAIN EVENT
Sampler Initials: AS

RESULTS OF ANALYSES OF WATER

Maxxam ID		CKX954		CKX955	CKX955		
Sampling Date		2016/05/26		2016/05/26	2016/05/26		
COC Number		544554-04-01		544554-04-01	544554-04-01		
	UNITS	**TP1-OUT**	**RDL**	**EPTS01**	**EPTS01 Lab-Dup**	**RDL**	**QC Batch**
Inorganics							
Total Ammonia-N	mg/L	0.67	0.050	0.093		0.050	4516992
Total BOD	mg/L	8.0	2.0	ND		2.0	4515999
Total Chemical Oxygen Demand (COD)	mg/L	100	4.0	12		4.0	4516970
Conductivity	umho/cm	470	1.0	580		1.0	4517658
Total Kjeldahl Nitrogen (TKN)	mg/L	1.6	0.10	0.16	0.12	0.10	4517263
pH	pH	7.27		8.15			4517659
Phenols-4AAP	mg/L	0.0038	0.0010	ND		0.0010	4516302
Total Phosphorus	mg/L	0.24	0.10	ND		0.020	4520284
Total Suspended Solids	mg/L	40	2	3		1	4517047
Dissolved Sulphate (SO4)	mg/L	69	1.0	11		1.0	4516476
Alkalinity (Total as CaCO3)	mg/L	63	1.0	240		1.0	4517654
Dissolved Chloride (Cl)	mg/L	47	1.0	33		1.0	4516483
Nitrite (N)	mg/L	0.059	0.010	0.023		0.010	4516444
Nitrate (N)	mg/L	0.53	0.10	2.00		0.10	4516444
Nitrate + Nitrite (N)	mg/L	0.59	0.10	2.02		0.10	4516444

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B6A7983
Report Date: 2016/06/03

City of Guelph
Client Project #: Wet / Dry Surface Water
Site Location: WET/DRY 15MM RAIN EVENT
Sampler Initials: AS

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		CKX954	CKX955		
Sampling Date		2016/05/26	2016/05/26		
COC Number		544554-04-01	544554-04-01		
	UNITS	**TP1-OUT**	**EPTS01**	**RDL**	**QC Batch**
Metals					
Total Boron (B)	mg/L	0.068	0.013	0.010	4522470
Total Calcium (Ca)	mg/L	50	73	0.20	4522470
Total Iron (Fe)	mg/L	2.0	ND	0.10	4522470
Total Magnesium (Mg)	mg/L	5.3	21	0.050	4522470
Total Potassium (K)	mg/L	4.3	1.3	0.20	4522470
Total Sodium (Na)	mg/L	42	24	0.10	4522470
Total Zinc (Zn)	mg/L	0.10	0.069	0.0050	4522470

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B6A7983
Report Date: 2016/06/03

City of Guelph
Client Project #: Wet / Dry Surface Water
Site Location: WET/DRY 15MM RAIN EVENT
Sampler Initials: AS

GENERAL COMMENTS

Results relate only to the items tested.

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Maxxam Job #: B6A7983
Report Date: 2016/06/03

QUALITY ASSURANCE REPORT

City of Guelph
Client Project #: Wet / Dry Surface Water
Site Location: WET/DRY 15MM RAIN EVENT
Sampler Initials: AS

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4515999	Total BOD	2016/06/02					ND, RDL=2.0	mg/L	NC	25	89	80 - 120
4516302	Phenols-4AAP	2016/06/01	96	80 - 120	97	85 - 115	ND, RDL=0.0010	mg/L	NC	20		
4516444	Nitrate (N)	2016/06/02	97	80 - 120	97	80 - 120	ND, RDL=0.10	mg/L	NC	25		
4516444	Nitrite (N)	2016/06/02	109	80 - 120	109	80 - 120	ND, RDL=0.010	mg/L	NC	25		
4516476	Dissolved Sulphate (SO4)	2016/05/30	92	75 - 125	98	80 - 120	ND, RDL=1.0	mg/L	NC	20		
4516483	Dissolved Chloride (Cl)	2016/05/30	NC	80 - 120	105	80 - 120	ND, RDL=1.0	mg/L	2.0	20		
4516970	Total Chemical Oxygen Demand (COD)	2016/05/30	101	75 - 125	102	75 - 125	ND, RDL=4.0	mg/L	0.024	25		
4516992	Total Ammonia-N	2016/05/31	96	80 - 120	101	85 - 115	ND, RDL=0.050	mg/L	NC	20		
4517047	Total Suspended Solids	2016/05/31					ND,RDL=1	mg/L	NC	25	100	85 - 115
4517263	Total Kjeldahl Nitrogen (TKN)	2016/06/01	89	80 - 120	96	80 - 120	ND, RDL=0.10	mg/L	NC	20	96	N/A
4517654	Alkalinity (Total as CaCO3)	2016/06/01			97	85 - 115	ND, RDL=1.0	mg/L	0.73	25		
4517658	Conductivity	2016/06/01			99	85 - 115	ND, RDL=1.0	umho/cm	0.36	25		
4517659	pH	2016/06/01			101	98 - 103			0.49	N/A		
4520284	Total Phosphorus	2016/06/02	102	80 - 120	100	80 - 120	ND, RDL=0.020	mg/L	NC	20	102	80 - 120
4522470	Total Boron (B)	2016/06/02	96	80 - 120	93	80 - 120	ND, RDL=0.010	mg/L	NC	20		
4522470	Total Calcium (Ca)	2016/06/02	NC	80 - 120	104	80 - 120	ND, RDL=0.20	mg/L				
4522470	Total Iron (Fe)	2016/06/02	103	80 - 120	103	80 - 120	ND, RDL=0.10	mg/L	NC	20		
4522470	Total Magnesium (Mg)	2016/06/02	103	80 - 120	102	80 - 120	ND, RDL=0.050	mg/L				
4522470	Total Potassium (K)	2016/06/02	106	80 - 120	104	80 - 120	ND, RDL=0.20	mg/L	NC	20		
4522470	Total Sodium (Na)	2016/06/02	100	80 - 120	101	80 - 120	ND, RDL=0.10	mg/L	2.7	20		

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Maxxam Job #: B6A7983
Report Date: 2016/06/03

QUALITY ASSURANCE REPORT(CONT'D)

City of Guelph
Client Project #: Wet / Dry Surface Water
Site Location: WET/DRY 15MM RAIN EVENT
Sampler Initials: AS

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4522470	Total Zinc (Zn)	2016/06/02	104	80 - 120	104	80 - 120	ND, RDL=0.0050	mg/L	NC	20		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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Maxxam Job #: B6A7983
Report Date: 2016/06/03

City of Guelph
Client Project #: Wet / Dry Surface Water
Site Location: WET/DRY 15MM RAIN EVENT
Sampler Initials: AS

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Cristina Carriere

Cristina Carriere, Scientific Services

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Maxxam
A Bureau Veritas Group Company

Your P.O. #: 720.8121.3516
Your Project #: Wet / Dry Surface Water
Your C.O.C. #: 544554-05-01

Attention:Amy Spence

City of Guelph
Soild Waste RIC (Wet/Dry)
110 Dunlop Drive
Guelph, ON
CANADA N1H 6H8

Report Date: 2016/07/08
Report #: R4057243
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6D4614
Received: 2016/06/29, 15:50

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Alkalinity	2	N/A	2016/07/04	CAM SOP-00448	SM 22 2320 B m
Biochemical Oxygen Demand (BOD)	2	N/A	2016/07/07	CAM SOP-00427	SM 22 5210B m
Chloride by Automated Colourimetry	2	N/A	2016/07/04	CAM SOP-00463	EPA 325.2 m
Chemical Oxygen Demand	2	N/A	2016/07/04	CAM SOP-00416	SM 22 5220 D m
Conductivity	2	N/A	2016/07/04	CAM SOP-00414	SM 22 2510 m
Total Metals Analysis by ICPMS	2	N/A	2016/07/07	CAM SOP-00447	EPA 6020A m
Total Ammonia-N	2	N/A	2016/07/06	CAM SOP-00441	EPA GS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (1)	2	N/A	2016/07/04	CAM SOP-00440	SM 22 4500-NO3I/NO2B
pH	2	N/A	2016/07/04	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	2	N/A	2016/07/05	CAM SOP-00444	OMOE E3179 m
Sulphate by Automated Colourimetry	2	N/A	2016/07/04	CAM SOP-00464	EPA 375.4 m
Total Kjeldahl Nitrogen in Water	2	2016/07/02	2016/07/05	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	1	2016/07/05	2016/07/05	CAM SOP-00407	SM 22 4500 P B H m
Total Phosphorus (Colourimetric)	1	2016/07/07	2016/07/08	CAM SOP-00407	SM 22 4500 P B H m
Low Level Total Suspended Solids	2	N/A	2016/07/05	CAM SOP-00428	SM 22 2540D m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
James Aspin, Senior Project Manager
Email: JAspin@maxxam.ca
Phone# (905)817-5771
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Maxxam Job #: B6D4614
Report Date: 2016/07/08

City of Guelph
Client Project #: Wet / Dry Surface Water
Your P.O. #: 720.8121.3516

RESULTS OF ANALYSES OF WATER

Maxxam ID		CPY270		CPY276		
Sampling Date		2016/06/28		2016/06/28		
COC Number		544554-05-01		544554-05-01		
	UNITS	**TP1-OUT**	**QC Batch**	**EPTS01**	**RDL**	**QC Batch**
Inorganics						
Total Ammonia-N	mg/L	ND	4563074	ND	0.050	4563094
Total BOD	mg/L	ND	4562823	ND	2.0	4562823
Total Chemical Oxygen Demand (COD)	mg/L	34	4563069	11	4.0	4563069
Conductivity	umho/cm	510	4563590	640	1.0	4563590
Total Kjeldahl Nitrogen (TKN)	mg/L	0.60	4563088	0.40	0.10	4563088
pH	pH	8.23	4563589	8.02		4563589
Phenols-4AAP	mg/L	ND	4562769	ND	0.0010	4562769
Total Phosphorus	mg/L	0.039	4568470	ND	0.020	4565120
Total Suspended Solids	mg/L	2	4562782	2	1	4562782
Dissolved Sulphate (SO4)	mg/L	40	4562820	13	1.0	4562820
Alkalinity (Total as CaCO3)	mg/L	140	4563586	260	1.0	4563586
Dissolved Chloride (Cl)	mg/L	41	4562818	37	1.0	4562818
Nitrite (N)	mg/L	ND	4562843	0.062	0.010	4562843
Nitrate (N)	mg/L	0.26	4562843	1.62	0.10	4562843
Nitrate + Nitrite (N)	mg/L	0.26	4562843	1.68	0.10	4562843

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B6D4614
Report Date: 2016/07/08

City of Guelph
Client Project #: Wet / Dry Surface Water
Your P.O. #: 720.8121.3516

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		CPY270	CPY270	CPY276		
Sampling Date		2016/06/28	2016/06/28	2016/06/28		
COC Number		544554-05-01	544554-05-01	544554-05-01		
	UNITS	**TP1-OUT**	**TP1-OUT Lab-Dup**	**EPTS01**	**RDL**	**QC Batch**
Metals						
Total Boron (B)	mg/L	0.058	0.059	0.018	0.010	4567414
Total Calcium (Ca)	mg/L	56	57	75	0.20	4567414
Total Iron (Fe)	mg/L	0.15	0.14	ND	0.10	4567414
Total Magnesium (Mg)	mg/L	4.8	4.7	21	0.050	4567414
Total Potassium (K)	mg/L	2.1	2.0	1.3	0.20	4567414
Total Sodium (Na)	mg/L	40	40	26	0.10	4567414
Total Zinc (Zn)	mg/L	ND	ND	0.053	0.0050	4567414

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B6D4614
Report Date: 2016/07/08

City of Guelph
Client Project #: Wet / Dry Surface Water
Your P.O. #: 720.8121.3516

GENERAL COMMENTS

Results relate only to the items tested.

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Maxxam Job #: B6D4614
Report Date: 2016/07/08

QUALITY ASSURANCE REPORT

City of Guelph
Client Project #: Wet / Dry Surface Water
Your P.O. #: 720.8121.3516

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4562769	Phenols-4AAP	2016/07/05	104	80 - 120	101	85 - 115	ND, RDL=0.0010	mg/L	NC	20		
4562782	Total Suspended Solids	2016/07/05					ND,RDL=1	mg/L	NC	25	100	85 - 115
4562818	Dissolved Chloride (Cl)	2016/07/04	NC	80 - 120	101	80 - 120	ND, RDL=1.0	mg/L	2.0	20		
4562820	Dissolved Sulphate (SO4)	2016/07/04	NC	75 - 125	106	80 - 120	ND, RDL=1.0	mg/L	0.27	20		
4562823	Total BOD	2016/07/07					ND, RDL=2.0	mg/L	NC	25	93	80 - 120
4562843	Nitrate (N)	2016/07/04	NC	80 - 120	97	80 - 120	ND, RDL=0.10	mg/L	1.5	25		
4562843	Nitrite (N)	2016/07/04	NC	80 - 120	102	80 - 120	ND, RDL=0.010	mg/L	0.53	25		
4563069	Total Chemical Oxygen Demand (COD)	2016/07/04	93	75 - 125	103	75 - 125	ND, RDL=4.0	mg/L	1.3	25		
4563074	Total Ammonia-N	2016/07/06	93	80 - 120	95	85 - 115	ND, RDL=0.050	mg/L	NC	20		
4563088	Total Kjeldahl Nitrogen (TKN)	2016/07/05	101	80 - 120	98	80 - 120	ND, RDL=0.10	mg/L	NC	20	100	80 - 120
4563094	Total Ammonia-N	2016/07/06	100	80 - 120	104	85 - 115	ND, RDL=0.050	mg/L	1.1	20		
4563586	Alkalinity (Total as CaCO3)	2016/07/04			96	85 - 115	ND, RDL=1.0	mg/L	0.086	25		
4563589	pH	2016/07/04			101	98 - 103			0.19	N/A		
4563590	Conductivity	2016/07/04			99	85 - 115	ND, RDL=1.0	umho/cm	0.21	25		
4565120	Total Phosphorus	2016/07/05	100	80 - 120	99	80 - 120	ND, RDL=0.020	mg/L	1.9	20	99	80 - 120
4567414	Total Boron (B)	2016/07/07	102	80 - 120	101	80 - 120	ND, RDL=0.010	mg/L	2.5	20		
4567414	Total Calcium (Ca)	2016/07/07	NC	80 - 120	102	80 - 120	ND, RDL=0.20	mg/L	2.0	20		
4567414	Total Iron (Fe)	2016/07/07	103	80 - 120	102	80 - 120	ND, RDL=0.10	mg/L	NC	20		
4567414	Total Magnesium (Mg)	2016/07/07	102	80 - 120	101	80 - 120	ND, RDL=0.050	mg/L	2.2	20		
4567414	Total Potassium (K)	2016/07/07	101	80 - 120	102	80 - 120	ND, RDL=0.20	mg/L	0.58	20		
4567414	Total Sodium (Na)	2016/07/07	NC	80 - 120	102	80 - 120	0.11, RDL=0.10	mg/L	0.34	20		
4567414	Total Zinc (Zn)	2016/07/07	104	80 - 120	104	80 - 120	ND, RDL=0.0050	mg/L	NC	20		

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4568470	Total Phosphorus	2016/07/08	103	80 - 120	102	80 - 120	ND, RDL=0.020	mg/L	NC	20	103	80 - 120

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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Maxxam Job #: B6D4614
Report Date: 2016/07/08

City of Guelph
Client Project #: Wet / Dry Surface Water
Your P.O. #: 720.8121.3516

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Cristina Carriere

Cristina Carriere, Scientific Services

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Maxxam
A Bureau Veritas Group Company

Your P.O. #: 720.8121.3516
Your Project #: Wet / Dry Surface Water
Site#: 110 DUNLOP-WET DRY
Site Location: 15 MM RAIN EVENT
Your C.O.C. #: 544554-07-01

Attention:Amy Spence

City of Guelph
Soild Waste RIC (Wet/Dry)
110 Dunlop Drive
Guelph, ON
CANADA N1H 6H8

Report Date: 2016/08/05
Report #: R4094053
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6G0194
Received: 2016/07/29, 15:58

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Low Level Total Suspended Solids	2	N/A	2016/08/03	CAM SOP-00428	SM 22 2540D m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
James Aspin, Senior Project Manager
Email: JAspin@maxxam.ca
Phone# (905)817-5771
==========
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Maxxam Job #: B6G0194
Report Date: 2016/08/05

City of Guelph
Client Project #: Wet / Dry Surface Water
Site Location: 15 MM RAIN EVENT
Your P.O. #: 720.8121.3516

RESULTS OF ANALYSES OF WATER

Maxxam ID		CUM709	CUM710	CUM710		
Sampling Date		2016/07/29	2016/07/29	2016/07/29		
COC Number		544554-07-01	544554-07-01	544554-07-01		
	UNITS	**TP1-OUT**	**EPTSO1**	**EPTSO1 Lab-Dup**	**RDL**	**QC Batch**
Inorganics						
Total Suspended Solids	mg/L	2	3	3	1	4603805

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Maxxam Job #: B6G0194
Report Date: 2016/08/05

City of Guelph
Client Project #: Wet / Dry Surface Water
Site Location: 15 MM RAIN EVENT
Your P.O. #: 720.8121.3516

GENERAL COMMENTS

Results relate only to the items tested.

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Maxxam Job #: B6G0194
Report Date: 2016/08/05

QUALITY ASSURANCE REPORT

City of Guelph
Client Project #: Wet / Dry Surface Water
Site Location: 15 MM RAIN EVENT
Your P.O. #: 720.8121.3516

			Method Blank		RPD		QC Standard	
QC Batch	**Parameter**	**Date**	**Value**	**UNITS**	**Value (%)**	**QC Limits**	**% Recovery**	**QC Limits**
4603805	Total Suspended Solids	2016/08/03	ND,RDL=1	mg/L	NC	25	96	85 - 115

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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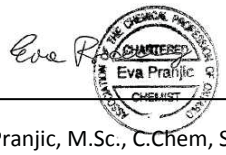
Maxxam Job #: B6G0194
Report Date: 2016/08/05

City of Guelph
Client Project #: Wet / Dry Surface Water
Site Location: 15 MM RAIN EVENT
Your P.O. #: 720.8121.3516

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

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A Bureau Veritas Group Company

Your P.O. #: 720.8121.3516
Your Project #: Wet / Dry Surface Water
Site#: 110 DUNLOP DR
Your C.O.C. #: 544554-06-01

Attention:Amy Spence

City of Guelph
Soild Waste RIC (Wet/Dry)
110 Dunlop Drive
Guelph, ON
CANADA N1H 6H8

Report Date: 2016/08/09
Report #: R4101126
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6G0196
Received: 2016/07/29, 15:58

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Alkalinity	2	N/A	2016/08/02	CAM SOP-00448	SM 22 2320 B m
Biochemical Oxygen Demand (BOD)	2	N/A	2016/08/04	CAM SOP-00427	SM 22 5210B m
Chloride by Automated Colourimetry	2	N/A	2016/08/02	CAM SOP-00463	EPA 325.2 m
Chemical Oxygen Demand	2	N/A	2016/08/04	CAM SOP-00416	SM 22 5220 D m
Conductivity	2	N/A	2016/08/02	CAM SOP-00414	SM 22 2510 m
Total Metals Analysis by ICPMS	2	N/A	2016/08/08	CAM SOP-00447	EPA 6020A m
Total Ammonia-N	2	N/A	2016/08/04	CAM SOP-00441	EPA GS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (1)	2	N/A	2016/08/03	CAM SOP-00440	SM 22 4500-NO3I/NO2B
pH	2	N/A	2016/08/02	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	2	N/A	2016/08/02	CAM SOP-00444	OMOE E3179 m
Sulphate by Automated Colourimetry	2	N/A	2016/08/02	CAM SOP-00464	EPA 375.4 m
Total Kjeldahl Nitrogen in Water	1	2016/08/03	2016/08/03	CAM SOP-00938	OMOE E3516 m
Total Kjeldahl Nitrogen in Water	1	2016/08/03	2016/08/04	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	2	2016/08/04	2016/08/05	CAM SOP-00407	SM 22 4500 P B H m
Low Level Total Suspended Solids	2	N/A	2016/08/03	CAM SOP-00428	SM 22 2540D m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
James Aspin, Senior Project Manager
Email: JAspin@maxxam.ca
Phone# (905)817-5771

==========

Maxxam Job #: B6G0196
Report Date: 2016/08/09

City of Guelph
Client Project #: Wet / Dry Surface Water
Your P.O. #: 720.8121.3516

RESULTS OF ANALYSES OF WATER

Maxxam ID		CUM716	CUM716			CUM717	CUM717		
Sampling Date		2016/07/29 20:38	2016/07/29 20:38			2016/07/29 20:38	2016/07/29 20:38		
COC Number		544554-06-01	544554-06-01			544554-06-01	544554-06-01		
	UNITS	**TP1-OUT**	**TP1-OUT Lab-Dup**	**RDL**	**QC Batch**	**EPTSO1**	**EPTSO1 Lab-Dup**	**RDL**	**QC Batch**
Inorganics									
Total Ammonia-N	mg/L	0.067		0.050	4603879	ND		0.050	4603879
Total BOD	mg/L	3.0	3.0	2.0	4601168	2.0		2.0	4601166
Total Chemical Oxygen Demand (COD)	mg/L	29		4.0	4604194	21	22	4.0	4604194
Conductivity	umho/cm	320		1.0	4602133	570		1.0	4602133
Total Kjeldahl Nitrogen (TKN)	mg/L	0.70		0.10	4603666	0.21		0.10	4604059
pH	pH	7.77			4602132	8.26			4602132
Phenols-4AAP	mg/L	ND		0.0010	4601516	ND		0.0010	4601516
Total Phosphorus	mg/L	0.11		0.10	4605997	ND		0.020	4605997
Total Suspended Solids	mg/L	1		1	4603805	7		1	4603805
Dissolved Sulphate (SO4)	mg/L	61		1.0	4601942	13		1.0	4601942
Alkalinity (Total as CaCO3)	mg/L	69		1.0	4602131	220		1.0	4602131
Dissolved Chloride (Cl)	mg/L	15		1.0	4601939	38		1.0	4601939
Nitrite (N)	mg/L	ND		0.010	4602363	0.070		0.010	4602363
Nitrate (N)	mg/L	ND		0.10	4602363	1.57		0.10	4602363
Nitrate + Nitrite (N)	mg/L	ND		0.10	4602363	1.64		0.10	4602363

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B6G0196
Report Date: 2016/08/09

City of Guelph
Client Project #: Wet / Dry Surface Water
Your P.O. #: 720.8121.3516

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		CUM716	CUM717		
Sampling Date		2016/07/29 20:38	2016/07/29 20:38		
COC Number		544554-06-01	544554-06-01		
	UNITS	**TP1-OUT**	**EPTSO1**	**RDL**	**QC Batch**
Metals					
Total Boron (B)	mg/L	0.045	0.014	0.010	4606281
Total Calcium (Ca)	mg/L	44	66	0.20	4606281
Total Iron (Fe)	mg/L	0.29	ND	0.10	4606281
Total Magnesium (Mg)	mg/L	3.1	23	0.050	4606281
Total Potassium (K)	mg/L	3.5	1.5	0.20	4606281
Total Sodium (Na)	mg/L	13	25	0.10	4606281
Total Zinc (Zn)	mg/L	0.0055	0.041	0.0050	4606281

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B6G0196
Report Date: 2016/08/09

City of Guelph
Client Project #: Wet / Dry Surface Water
Your P.O. #: 720.8121.3516

GENERAL COMMENTS

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Maxxam Job #: B6G0196
Report Date: 2016/08/09

QUALITY ASSURANCE REPORT

City of Guelph
Client Project #: Wet / Dry Surface Water
Your P.O. #: 720.8121.3516

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4601166	Total BOD	2016/08/04					ND, RDL=2.0	mg/L	NC	25	96	80 - 120
4601168	Total BOD	2016/08/04					ND, RDL=2.0	mg/L	NC	25	102	80 - 120
4601516	Phenols-4AAP	2016/08/02	NC	80 - 120	101	85 - 115	ND, RDL=0.0010	mg/L	NC	20		
4601939	Dissolved Chloride (Cl)	2016/08/02	NC	80 - 120	102	80 - 120	ND, RDL=1.0	mg/L	3.6	20		
4601942	Dissolved Sulphate (SO4)	2016/08/02	NC	75 - 125	104	80 - 120	ND, RDL=1.0	mg/L	1.0	20		
4602131	Alkalinity (Total as CaCO3)	2016/08/02			98	85 - 115	ND, RDL=1.0	mg/L	0.42	25		
4602132	pH	2016/08/02			101	98 - 103			0.15	N/A		
4602133	Conductivity	2016/08/02			101	85 - 115	ND, RDL=1.0	umho/cm	0	25		
4602363	Nitrate (N)	2016/08/03	97	80 - 120	98	80 - 120	ND, RDL=0.10	mg/L	NC	25		
4602363	Nitrite (N)	2016/08/03	107	80 - 120	104	80 - 120	ND, RDL=0.010	mg/L	NC	25		
4603666	Total Kjeldahl Nitrogen (TKN)	2016/08/03	NC	80 - 120	104	80 - 120	ND, RDL=0.10	mg/L	2.4	20	103	80 - 120
4603805	Total Suspended Solids	2016/08/03					ND,RDL=1	mg/L	NC	25	96	85 - 115
4603879	Total Ammonia-N	2016/08/04	103	80 - 120	95	85 - 115	ND, RDL=0.050	mg/L	NC	20		
4604059	Total Kjeldahl Nitrogen (TKN)	2016/08/05	NC	80 - 120	100	80 - 120	ND, RDL=0.10	mg/L	3.6	20	97	80 - 120
4604194	Total Chemical Oxygen Demand (COD)	2016/08/04	100	75 - 125	101	75 - 125	ND, RDL=4.0	mg/L	3.3	25		
4605997	Total Phosphorus	2016/08/05	102	80 - 120	102	80 - 120	ND, RDL=0.020	mg/L	NC	20	103	80 - 120
4606281	Total Boron (B)	2016/08/08	98	80 - 120	97	80 - 120	ND, RDL=0.010	mg/L	NC	20		
4606281	Total Calcium (Ca)	2016/08/08	NC	80 - 120	97	80 - 120	ND, RDL=0.20	mg/L	0.00095	20		
4606281	Total Iron (Fe)	2016/08/08	100	80 - 120	98	80 - 120	ND, RDL=0.10	mg/L	NC	20		
4606281	Total Magnesium (Mg)	2016/08/08	NC	80 - 120	101	80 - 120	ND, RDL=0.050	mg/L	2.3	20		
4606281	Total Potassium (K)	2016/08/08	102	80 - 120	100	80 - 120	ND, RDL=0.20	mg/L	NC	20		
4606281	Total Sodium (Na)	2016/08/08	101	80 - 120	100	80 - 120	ND, RDL=0.10	mg/L	2.2	20		

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Maxxam Job #: B6G0196
Report Date: 2016/08/09

QUALITY ASSURANCE REPORT(CONT'D)

City of Guelph
Client Project #: Wet / Dry Surface Water
Your P.O. #: 720.8121.3516

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4606281	Total Zinc (Zn)	2016/08/08	99	80 - 120	99	80 - 120	ND, RDL=0.0050	mg/L	NC	20		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

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Maxxam Job #: B6G0196
Report Date: 2016/08/09

City of Guelph
Client Project #: Wet / Dry Surface Water
Your P.O. #: 720.8121.3516

VALIDATION SIGNATURE PAGE

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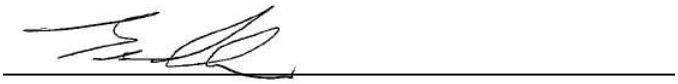

Brad Newman, Scientific Specialist

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Maxxam
A Bureau Veritas Group Company

Your P.O. #: 720.8121.3516
Your Project #: Wet / Dry Surface Water
Site#: WET/DRY
Site Location: WET/DRY SW
Your C.O.C. #: 572158-01-01

Attention:Amy Spence

City of Guelph
Soild Waste RIC (Wet/Dry)
110 Dunlop Drive
Guelph, ON
CANADA N1H 6H8

Report Date: 2016/09/02
Report #: R4152481
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6H5944
Received: 2016/08/18, 15:35

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Alkalinity	2	N/A	2016/08/23	CAM SOP-00448	SM 22 2320 B m
Biochemical Oxygen Demand (BOD)	2	N/A	2016/08/24	CAM SOP-00427	SM 22 5210B m
Chloride by Automated Colourimetry	2	N/A	2016/08/23	CAM SOP-00463	EPA 325.2 m
Chemical Oxygen Demand	2	N/A	2016/08/24	CAM SOP-00416	SM 22 5220 D m
Conductivity	2	N/A	2016/08/23	CAM SOP-00414	SM 22 2510 m
Total Metals Analysis by ICPMS	2	N/A	2016/08/24	CAM SOP-00447	EPA 6020A m
Total Ammonia-N	2	N/A	2016/08/24	CAM SOP-00441	EPA GS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (1)	2	N/A	2016/08/24	CAM SOP-00440	SM 22 4500-NO3I/NO2B
pH	2	N/A	2016/08/23	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	2	N/A	2016/08/22	CAM SOP-00444	OMOE E3179 m
Sulphate by Automated Colourimetry	2	N/A	2016/08/23	CAM SOP-00464	EPA 375.4 m
Total Kjeldahl Nitrogen in Water	2	2016/08/23	2016/08/24	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	1	2016/08/24	2016/08/24	CAM SOP-00407	SM 22 4500 P B H m
Total Phosphorus (Colourimetric)	1	2016/08/24	2016/08/24	CAM SOP-00407	SM 22 4500 P B H m
Low Level Total Suspended Solids	1	N/A	2016/08/20	CAM SOP-00428	SM 22 2540D m
Low Level Total Suspended Solids	1	N/A	2016/08/22	CAM SOP-00428	SM 22 2540D m
Volatile Organic Compounds in Water	2	N/A	2016/08/23	CAM SOP-00226	EPA 8260C m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
James Aspin, Senior Project Manager
Email: JAspin@maxxam.ca
Phone# (905)817-5771

==========

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Maxxam Job #: B6H5944
Report Date: 2016/09/02

City of Guelph
Client Project #: Wet / Dry Surface Water
Site Location: WET/DRY SW
Your P.O. #: 720.8121.3516

RESULTS OF ANALYSES OF WATER

Maxxam ID		CXK034			CXK035	CXK035		
Sampling Date		2016/08/17			2016/08/17	2016/08/17		
COC Number		572158-01-01			572158-01-01	572158-01-01		
	UNITS	**TP1-OUT**	**RDL**	**QC Batch**	**EPT SO1**	**EPT SO1 Lab-Dup**	**RDL**	**QC Batch**
Inorganics								
Total Ammonia-N	mg/L	ND	0.050	4631248	ND		0.050	4631248
Total BOD	mg/L	18	2.0	4626901	ND	ND	2.0	4626901
Total Chemical Oxygen Demand (COD)	mg/L	100	4.0	4631256	16		4.0	4631256
Conductivity	umho/cm	370	1.0	4631092	610		1.0	4631092
Total Kjeldahl Nitrogen (TKN)	mg/L	1.3	0.10	4631213	0.44		0.10	4631213
pH	pH	7.35		4631094	8.08			4631094
Phenols-4AAP	mg/L	0.011	0.0010	4628866	ND		0.0010	4628866
Total Phosphorus	mg/L	0.71	0.020	4632563	0.007		0.004	4632621
Total Suspended Solids	mg/L	9	1	4629796	2	1	1	4628711
Dissolved Sulphate (SO4)	mg/L	32	1.0	4629754	14		1.0	4629754
Alkalinity (Total as CaCO3)	mg/L	120	1.0	4631089	240		1.0	4631089
Dissolved Chloride (Cl)	mg/L	22	1.0	4629747	38		1.0	4629747
Nitrite (N)	mg/L	ND	0.010	4629738	0.077		0.010	4629738
Nitrate (N)	mg/L	ND	0.10	4629738	1.68		0.10	4629738
Nitrate + Nitrite (N)	mg/L	ND	0.10	4629738	1.75		0.10	4629738

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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City of Guelph
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ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		CXK034	CXK035		
Sampling Date		2016/08/17	2016/08/17		
COC Number		572158-01-01	572158-01-01		
	UNITS	**TP1-OUT**	**EPT SO1**	**RDL**	**QC Batch**
Metals					
Total Boron (B)	mg/L	0.044	0.016	0.010	4632631
Total Calcium (Ca)	mg/L	51	69	0.20	4632631
Total Iron (Fe)	mg/L	1.5	ND	0.10	4632631
Total Magnesium (Mg)	mg/L	4.4	21	0.050	4632631
Total Potassium (K)	mg/L	7.3	1.4	0.20	4632631
Total Sodium (Na)	mg/L	16	24	0.10	4632631
Total Zinc (Zn)	mg/L	0.0090	0.038	0.0050	4632631

RDL = Reportable Detection Limit
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ND = Not detected

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Maxxam Job #: B6H5944
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City of Guelph
Client Project #: Wet / Dry Surface Water
Site Location: WET/DRY SW
Your P.O. #: 720.8121.3516

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		CXK034		CXK035	CXK035		
Sampling Date		2016/08/17		2016/08/17	2016/08/17		
COC Number		572158-01-01		572158-01-01	572158-01-01		
	UNITS	**TP1-OUT**	**RDL**	**EPT SO1**	**EPT SO1 Lab-Dup**	**RDL**	**QC Batch**
Volatile Organics							
Acetone (2-Propanone)	ug/L	ND	50	ND	ND	10	4620535
Benzene	ug/L	ND	0.50	ND	ND	0.10	4620535
Bromodichloromethane	ug/L	ND	0.50	ND	ND	0.10	4620535
Bromoform	ug/L	ND	1.0	ND	ND	0.20	4620535
Bromomethane	ug/L	ND	2.5	ND	ND	0.50	4620535
Carbon Tetrachloride	ug/L	ND	0.50	ND	ND	0.10	4620535
Chlorobenzene	ug/L	ND	0.50	ND	ND	0.10	4620535
Chloroform	ug/L	ND	0.50	1.5	1.5	0.10	4620535
Dibromochloromethane	ug/L	ND	1.0	ND	ND	0.20	4620535
1,2-Dichlorobenzene	ug/L	ND	1.0	ND	ND	0.20	4620535
1,3-Dichlorobenzene	ug/L	ND	1.0	ND	ND	0.20	4620535
1,4-Dichlorobenzene	ug/L	ND	1.0	ND	ND	0.20	4620535
Dichlorodifluoromethane (FREON 12)	ug/L	ND	2.5	ND	ND	0.50	4620535
1,1-Dichloroethane	ug/L	ND	0.50	ND	ND	0.10	4620535
1,2-Dichloroethane	ug/L	ND	1.0	ND	ND	0.20	4620535
1,1-Dichloroethylene	ug/L	ND	0.50	ND	ND	0.10	4620535
cis-1,2-Dichloroethylene	ug/L	ND	0.50	ND	ND	0.10	4620535
trans-1,2-Dichloroethylene	ug/L	ND	0.50	ND	ND	0.10	4620535
1,2-Dichloropropane	ug/L	ND	0.50	ND	ND	0.10	4620535
cis-1,3-Dichloropropene	ug/L	ND	1.0	ND	ND	0.20	4620535
trans-1,3-Dichloropropene	ug/L	ND	1.0	ND	ND	0.20	4620535
Ethylbenzene	ug/L	ND	0.50	ND	ND	0.10	4620535
Ethylene Dibromide	ug/L	ND	1.0	ND	ND	0.20	4620535
Hexane	ug/L	ND	2.5	ND	ND	0.50	4620535
Methylene Chloride(Dichloromethane)	ug/L	ND	2.5	ND	ND	0.50	4620535
Methyl Ethyl Ketone (2-Butanone)	ug/L	ND	25	ND	ND	5.0	4620535
Methyl Isobutyl Ketone	ug/L	ND	25	ND	ND	5.0	4620535
Methyl t-butyl ether (MTBE)	ug/L	ND	1.0	ND	ND	0.20	4620535
Styrene	ug/L	ND	1.0	ND	ND	0.20	4620535
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	ND	ND	0.20	4620535
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	ND	ND	0.20	4620535
Tetrachloroethylene	ug/L	ND	0.50	ND	ND	0.10	4620535

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B6H5944
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City of Guelph
Client Project #: Wet / Dry Surface Water
Site Location: WET/DRY SW
Your P.O. #: 720.8121.3516

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		CXK034		CXK035	CXK035		
Sampling Date		2016/08/17		2016/08/17	2016/08/17		
COC Number		572158-01-01		572158-01-01	572158-01-01		
	UNITS	**TP1-OUT**	**RDL**	**EPT SO1**	**EPT SO1 Lab-Dup**	**RDL**	**QC Batch**
Toluene	ug/L	ND	1.0	ND	ND	0.20	4620535
1,1,1-Trichloroethane	ug/L	ND	0.50	ND	ND	0.10	4620535
1,1,2-Trichloroethane	ug/L	ND	1.0	ND	ND	0.20	4620535
Trichloroethylene	ug/L	ND	0.50	ND	ND	0.10	4620535
Trichlorofluoromethane (FREON 11)	ug/L	ND	1.0	ND	ND	0.20	4620535
Vinyl Chloride	ug/L	ND	1.0	ND	ND	0.20	4620535
p+m-Xylene	ug/L	ND	0.50	ND	ND	0.10	4620535
o-Xylene	ug/L	ND	0.50	ND	ND	0.10	4620535
Total Xylenes	ug/L	ND	0.50	ND	ND	0.10	4620535
Surrogate Recovery (%)							
4-Bromofluorobenzene	%	94		94	95		4620535
D4-1,2-Dichloroethane	%	93		95	95		4620535
D8-Toluene	%	103		103	102		4620535

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
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GENERAL COMMENTS

Sample CXK034-01 : VOC Water Analysis: Due to foaming, sample required dilution. The detection limits were adjusted accordingly.

Results relate only to the items tested.

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Maxxam Job #: B6H5944
Report Date: 2016/09/02

QUALITY ASSURANCE REPORT

City of Guelph
Client Project #: Wet / Dry Surface Water
Site Location: WET/DRY SW
Your P.O. #: 720.8121.3516

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4620535	4-Bromofluorobenzene	2016/08/23	99	70 - 130	97	70 - 130	91	%				
4620535	D4-1,2-Dichloroethane	2016/08/23	97	70 - 130	94	70 - 130	93	%				
4620535	D8-Toluene	2016/08/23	101	70 - 130	102	70 - 130	103	%				
4620535	1,1,1,2-Tetrachloroethane	2016/08/23	94	70 - 130	94	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4620535	1,1,1-Trichloroethane	2016/08/23	92	70 - 130	95	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4620535	1,1,2,2-Tetrachloroethane	2016/08/23	95	70 - 130	89	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4620535	1,1,2-Trichloroethane	2016/08/23	94	70 - 130	90	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4620535	1,1-Dichloroethane	2016/08/23	95	70 - 130	95	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4620535	1,1-Dichloroethylene	2016/08/23	100	70 - 130	102	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4620535	1,2-Dichlorobenzene	2016/08/23	91	70 - 130	94	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4620535	1,2-Dichloroethane	2016/08/23	92	70 - 130	89	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4620535	1,2-Dichloropropane	2016/08/23	95	70 - 130	93	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4620535	1,3-Dichlorobenzene	2016/08/23	90	70 - 130	96	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4620535	1,4-Dichlorobenzene	2016/08/23	91	70 - 130	95	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4620535	Acetone (2-Propanone)	2016/08/23	95	60 - 140	83	60 - 140	ND, RDL=10	ug/L	NC	30		
4620535	Benzene	2016/08/23	96	70 - 130	96	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4620535	Bromodichloromethane	2016/08/23	94	70 - 130	94	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4620535	Bromoform	2016/08/23	94	70 - 130	92	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4620535	Bromomethane	2016/08/23	79	60 - 140	84	60 - 140	ND, RDL=0.50	ug/L	NC	30		
4620535	Carbon Tetrachloride	2016/08/23	95	70 - 130	99	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4620535	Chlorobenzene	2016/08/23	94	70 - 130	95	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4620535	Chloroform	2016/08/23	93	70 - 130	93	70 - 130	ND, RDL=0.10	ug/L	3.0	30		
4620535	cis-1,2-Dichloroethylene	2016/08/23	93	70 - 130	93	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4620535	cis-1,3-Dichloropropene	2016/08/23	94	70 - 130	93	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4620535	Dibromochloromethane	2016/08/23	95	70 - 130	93	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4620535	Dichlorodifluoromethane (FREON 12)	2016/08/23	69	60 - 140	73	60 - 140	ND, RDL=0.50	ug/L	NC	30		
4620535	Ethylbenzene	2016/08/23	96	70 - 130	98	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4620535	Ethylene Dibromide	2016/08/23	93	70 - 130	90	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4620535	Hexane	2016/08/23	100	70 - 130	102	70 - 130	ND, RDL=0.50	ug/L	NC	30		
4620535	Methyl Ethyl Ketone (2-Butanone)	2016/08/23	94	60 - 140	85	60 - 140	ND, RDL=5.0	ug/L	NC	30		
4620535	Methyl Isobutyl Ketone	2016/08/23	95	70 - 130	86	70 - 130	ND, RDL=5.0	ug/L	NC	30		

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Maxxam Job #: B6H5944
Report Date: 2016/09/02

QUALITY ASSURANCE REPORT(CONT'D)

City of Guelph
Client Project #: Wet / Dry Surface Water
Site Location: WET/DRY SW
Your P.O. #: 720.8121.3516

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4620535	Methyl t-butyl ether (MTBE)	2016/08/23	93	70 - 130	87	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4620535	Methylene Chloride(Dichloromethane)	2016/08/23	92	70 - 130	92	70 - 130	ND, RDL=0.50	ug/L	NC	30		
4620535	o-Xylene	2016/08/23	97	70 - 130	97	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4620535	p+m-Xylene	2016/08/23	95	70 - 130	96	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4620535	Styrene	2016/08/23	99	70 - 130	96	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4620535	Tetrachloroethylene	2016/08/23	90	70 - 130	96	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4620535	Toluene	2016/08/23	95	70 - 130	97	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4620535	Total Xylenes	2016/08/23					ND, RDL=0.10	ug/L	NC	30		
4620535	trans-1,2-Dichloroethylene	2016/08/23	93	70 - 130	95	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4620535	trans-1,3-Dichloropropene	2016/08/23	91	70 - 130	90	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4620535	Trichloroethylene	2016/08/23	90	70 - 130	93	70 - 130	ND, RDL=0.10	ug/L	NC	30		
4620535	Trichlorofluoromethane (FREON 11)	2016/08/23	95	70 - 130	99	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4620535	Vinyl Chloride	2016/08/23	93	70 - 130	96	70 - 130	ND, RDL=0.20	ug/L	NC	30		
4626901	Total BOD	2016/08/24					ND, RDL=2.0	mg/L	NC	25	99	80 - 120
4628711	Total Suspended Solids	2016/08/20					ND,RDL=1	mg/L	NC	25	98	85 - 115
4628866	Phenols-4AAP	2016/08/22	98	80 - 120	97	85 - 115	ND, RDL=0.0010	mg/L	NC	20		
4629738	Nitrate (N)	2016/08/24	93	80 - 120	99	80 - 120	ND, RDL=0.10	mg/L	NC	25		
4629738	Nitrite (N)	2016/08/24	100	80 - 120	100	80 - 120	ND, RDL=0.010	mg/L	NC	25		
4629747	Dissolved Chloride (Cl)	2016/08/23	NC	80 - 120	103	80 - 120	ND, RDL=1.0	mg/L	0.49	20		
4629754	Dissolved Sulphate (SO4)	2016/08/23	NC	75 - 125	106	80 - 120	ND, RDL=1.0	mg/L	0.98	20		
4629796	Total Suspended Solids	2016/08/22					ND,RDL=1	mg/L	2.7	25	97	85 - 115
4631089	Alkalinity (Total as CaCO3)	2016/08/24			97	85 - 115	ND, RDL=1.0	mg/L	0.87	25		
4631092	Conductivity	2016/08/23			100	85 - 115	ND, RDL=1.0	umho/cm	0.32	25		
4631094	pH	2016/08/23			101	98 - 103			0.11	N/A		
4631213	Total Kjeldahl Nitrogen (TKN)	2016/08/24	NC	80 - 120	104	80 - 120	ND, RDL=0.10	mg/L	2.2	20	103	80 - 120
4631248	Total Ammonia-N	2016/08/24	92	80 - 120	100	85 - 115	ND, RDL=0.050	mg/L	NC	20		
4631256	Total Chemical Oxygen Demand (COD)	2016/08/24	104	75 - 125	105	75 - 125	ND, RDL=4.0	mg/L	0	25		

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QUALITY ASSURANCE REPORT(CONT'D)

City of Guelph
Client Project #: Wet / Dry Surface Water
Site Location: WET/DRY SW
Your P.O. #: 720.8121.3516

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4632563	Total Phosphorus	2016/08/24	102	80 - 120	100	80 - 120	ND, RDL=0.020	mg/L	NC	20	101	80 - 120
4632621	Total Phosphorus	2016/08/24	94	80 - 120	89	80 - 120	ND, RDL=0.004	mg/L	NC	20	90	80 - 120
4632631	Total Boron (B)	2016/08/24	104	80 - 120	101	80 - 120	ND, RDL=0.010	mg/L	NC	20		
4632631	Total Calcium (Ca)	2016/08/24	102	80 - 120	99	80 - 120	ND, RDL=0.20	mg/L	2.7	20		
4632631	Total Iron (Fe)	2016/08/24	104	80 - 120	101	80 - 120	ND, RDL=0.10	mg/L	NC	20		
4632631	Total Magnesium (Mg)	2016/08/24	104	80 - 120	101	80 - 120	ND, RDL=0.050	mg/L	1.2	20		
4632631	Total Potassium (K)	2016/08/24	97	80 - 120	94	80 - 120	ND, RDL=0.20	mg/L	NC	20		
4632631	Total Sodium (Na)	2016/08/24	102	80 - 120	99	80 - 120	ND, RDL=0.10	mg/L	1.7	20		
4632631	Total Zinc (Zn)	2016/08/24	105	80 - 120	102	80 - 120	ND, RDL=0.0050	mg/L	NC	20		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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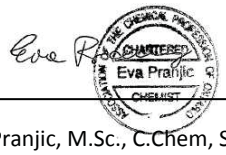
Maxxam Job #: B6H5944
Report Date: 2016/09/02

City of Guelph
Client Project #: Wet / Dry Surface Water
Site Location: WET/DRY SW
Your P.O. #: 720.8121.3516

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

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Maxxam
A Bureau Veritas Group Company

Your P.O. #: 720.8121.3516
Your Project #: Wet / Dry Surface Water
Site Location: 110 DUNLOP DRIVE
Your C.O.C. #: 572158-02-01

Attention:Amy Spence

City of Guelph
Soild Waste RIC (Wet/Dry)
110 Dunlop Drive
Guelph, ON
CANADA N1H 6H8

Report Date: 2016/09/29
Report #: R4184830
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6K3140
Received: 2016/09/21, 15:51

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Alkalinity	2	N/A	2016/09/23	CAM SOP-00448	SM 22 2320 B m
Biochemical Oxygen Demand (BOD)	2	N/A	2016/09/27	CAM SOP-00427	SM 22 5210B m
Chloride by Automated Colourimetry	2	N/A	2016/09/23	CAM SOP-00463	EPA 325.2 m
Chemical Oxygen Demand	1	N/A	2016/09/23	CAM SOP-00416	SM 22 5220 D m
Chemical Oxygen Demand	1	N/A	2016/09/26	CAM SOP-00416	SM 22 5220 D m
Conductivity	2	N/A	2016/09/23	CAM SOP-00414	SM 22 2510 m
Total Metals Analysis by ICPMS	2	N/A	2016/09/27	CAM SOP-00447	EPA 6020B m
Total Ammonia-N	2	N/A	2016/09/27	CAM SOP-00441	EPA GS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (1)	2	N/A	2016/09/26	CAM SOP-00440	SM 22 4500-NO3I/NO2B
pH	2	N/A	2016/09/23	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	2	N/A	2016/09/26	CAM SOP-00444	OMOE E3179 m
Sulphate by Automated Colourimetry	2	N/A	2016/09/23	CAM SOP-00464	EPA 375.4 m
Total Kjeldahl Nitrogen in Water	1	2016/09/23	2016/09/27	CAM SOP-00938	OMOE E3516 m
Total Kjeldahl Nitrogen in Water	1	2016/09/26	2016/09/28	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	2	2016/09/26	2016/09/27	CAM SOP-00407	SM 22 4500 P B H m
Low Level Total Suspended Solids	2	N/A	2016/09/22	CAM SOP-00428	SM 22 2540D m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
James Aspin, Senior Project Manager
Email: JAspin@maxxam.ca
Phone# (905)817-5771

==========

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Maxxam Job #: B6K3140
Report Date: 2016/09/29

City of Guelph
Client Project #: Wet / Dry Surface Water
Site Location: 110 DUNLOP DRIVE
Your P.O. #: 720.8121.3516

RESULTS OF ANALYSES OF WATER

Maxxam ID		DCO050		DCO051	DCO051		
Sampling Date		2016/09/20		2016/09/20	2016/09/20		
COC Number		572158-02-01		572158-02-01	572158-02-01		
	UNITS	**TP1-OUT**	**QC Batch**	**EPTSO1**	**EPTSO1 Lab-Dup**	**RDL**	**QC Batch**
Inorganics							
Total Ammonia-N	mg/L	0.16	4674005	ND		0.050	4674005
Total BOD	mg/L	ND	4671573	ND		2.0	4671573
Total Chemical Oxygen Demand (COD)	mg/L	34	4673200	9.6		4.0	4674255
Conductivity	umho/cm	450	4672562	640		1.0	4672562
Total Kjeldahl Nitrogen (TKN)	mg/L	0.87	4673857	0.32		0.10	4676080
pH	pH	7.96	4672573	8.17			4672573
Phenols-4AAP	mg/L	ND	4672209	ND		0.0010	4672209
Total Phosphorus	mg/L	0.11	4675977	ND	ND	0.020	4675977
Total Suspended Solids	mg/L	8	4672731	1	2	1	4672731
Dissolved Sulphate (SO4)	mg/L	60	4672579	14	14	1.0	4672579
Alkalinity (Total as CaCO3)	mg/L	130	4672556	270		1.0	4672556
Dissolved Chloride (Cl)	mg/L	22	4672575	37	38	1.0	4672575
Nitrite (N)	mg/L	0.016	4673488	0.095		0.010	4673488
Nitrate (N)	mg/L	0.16	4673488	1.92		0.10	4673488
Nitrate + Nitrite (N)	mg/L	0.17	4673488	2.01		0.10	4673488

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B6K3140
Report Date: 2016/09/29

City of Guelph
Client Project #: Wet / Dry Surface Water
Site Location: 110 DUNLOP DRIVE
Your P.O. #: 720.8121.3516

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		DCO050	DCO051		
Sampling Date		2016/09/20	2016/09/20		
COC Number		572158-02-01	572158-02-01		
	UNITS	**TP1-OUT**	**EPTSO1**	**RDL**	**QC Batch**
Metals					
Total Boron (B)	mg/L	0.071	0.019	0.010	4677490
Total Calcium (Ca)	mg/L	72	87	0.20	4677490
Total Iron (Fe)	mg/L	0.63	ND	0.10	4677490
Total Magnesium (Mg)	mg/L	5.2	23	0.050	4677490
Total Potassium (K)	mg/L	11	1.5	0.20	4677490
Total Sodium (Na)	mg/L	14	23	0.10	4677490
Total Zinc (Zn)	mg/L	ND	0.050	0.0050	4677490

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B6K3140
Report Date: 2016/09/29

City of Guelph
Client Project #: Wet / Dry Surface Water
Site Location: 110 DUNLOP DRIVE
Your P.O. #: 720.8121.3516

GENERAL COMMENTS

Results relate only to the items tested.

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Maxxam Job #: B6K3140
Report Date: 2016/09/29

QUALITY ASSURANCE REPORT

City of Guelph
Client Project #: Wet / Dry Surface Water
Site Location: 110 DUNLOP DRIVE
Your P.O. #: 720.8121.3516

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4671573	Total BOD	2016/09/27					ND, RDL=2.0	mg/L	NC	25	94	80 - 120
4672209	Phenols-4AAP	2016/09/26	102	80 - 120	95	85 - 115	ND, RDL=0.0010	mg/L	17	20		
4672556	Alkalinity (Total as CaCO3)	2016/09/23			99	85 - 115	ND, RDL=1.0	mg/L	0.38	25		
4672562	Conductivity	2016/09/23			100	85 - 115	ND, RDL=1.0	umho/cm	0.23	25		
4672573	pH	2016/09/23			102	98 - 103			1.2	N/A		
4672575	Dissolved Chloride (Cl)	2016/09/23	NC	80 - 120	104	80 - 120	ND, RDL=1.0	mg/L	0.38	20		
4672579	Dissolved Sulphate (SO4)	2016/09/23	NC	75 - 125	98	80 - 120	ND, RDL=1.0	mg/L	1.1	20		
4672731	Total Suspended Solids	2016/09/22					ND,RDL=1	mg/L	NC	25	100	85 - 115
4673200	Total Chemical Oxygen Demand (COD)	2016/09/23	103	75 - 125	103	75 - 125	ND, RDL=4.0	mg/L	NC	25		
4673488	Nitrate (N)	2016/09/26	NC	80 - 120	102	80 - 120	ND, RDL=0.10	mg/L	4.2	25		
4673488	Nitrite (N)	2016/09/26	22 (1)	80 - 120	108	80 - 120	ND, RDL=0.010	mg/L	NC	25		
4673857	Total Kjeldahl Nitrogen (TKN)	2016/09/27	98	80 - 120	98	80 - 120	ND, RDL=0.10	mg/L	NC	20	97	80 - 120
4674005	Total Ammonia-N	2016/09/27	95	80 - 120	102	85 - 115	ND, RDL=0.050	mg/L	NC	20		
4674255	Total Chemical Oxygen Demand (COD)	2016/09/26	101	75 - 125	104	75 - 125	ND, RDL=4.0	mg/L	1.5	25		
4675977	Total Phosphorus	2016/09/27	105	80 - 120	103	80 - 120	ND, RDL=0.020	mg/L	NC	20	102	80 - 120
4676080	Total Kjeldahl Nitrogen (TKN)	2016/09/28	107	N/A	102	80 - 120	ND, RDL=0.10	mg/L	3.3	20	103	N/A
4677490	Total Boron (B)	2016/09/27	91	80 - 120	91	80 - 120	ND, RDL=0.010	mg/L				
4677490	Total Calcium (Ca)	2016/09/27	NC	80 - 120	102	80 - 120	ND, RDL=0.20	mg/L				
4677490	Total Iron (Fe)	2016/09/27	96	80 - 120	95	80 - 120	ND, RDL=0.10	mg/L	2.2	20		
4677490	Total Magnesium (Mg)	2016/09/27	NC	80 - 120	96	80 - 120	ND, RDL=0.050	mg/L				
4677490	Total Potassium (K)	2016/09/27	97	80 - 120	97	80 - 120	ND, RDL=0.20	mg/L				
4677490	Total Sodium (Na)	2016/09/27	NC	80 - 120	96	80 - 120	ND, RDL=0.10	mg/L				

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Maxxam Job #: B6K3140
Report Date: 2016/09/29

QUALITY ASSURANCE REPORT(CONT'D)

City of Guelph
Client Project #: Wet / Dry Surface Water
Site Location: 110 DUNLOP DRIVE
Your P.O. #: 720.8121.3516

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4677490	Total Zinc (Zn)	2016/09/27	97	80 - 120	97	80 - 120	ND, RDL=0.0050	mg/L				

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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Maxxam Job #: B6K3140
Report Date: 2016/09/29

City of Guelph
Client Project #: Wet / Dry Surface Water
Site Location: 110 DUNLOP DRIVE
Your P.O. #: 720.8121.3516

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Cristina Carriere

Cristina Carriere, Scientific Services

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Maxxam
A Bureau Veritas Group Company

Your P.O. #: 720.8121.3516
Your Project #: WET/ DRY SURFACE WATER
Site Location: 110 DUNLOP DRIVE
Your C.O.C. #: 572158-03-01

Attention:Amy Spence

City of Guelph
Soild Waste RIC (Wet/Dry)
110 Dunlop Drive
Guelph, ON
CANADA N1H 6H8

Report Date: 2016/10/28
Report #: R4227333
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6M7231
Received: 2016/10/20, 15:51

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Alkalinity	2	N/A	2016/10/25	CAM SOP-00448	SM 22 2320 B m
Biochemical Oxygen Demand (BOD)	2	2016/10/22	2016/10/27	CAM SOP-00427	SM 22 5210B m
Chloride by Automated Colourimetry	2	N/A	2016/10/24	CAM SOP-00463	EPA 325.2 m
Chemical Oxygen Demand	2	N/A	2016/10/25	CAM SOP-00416	SM 22 5220 D m
Conductivity	2	N/A	2016/10/25	CAM SOP-00414	SM 22 2510 m
Total Metals Analysis by ICPMS	2	N/A	2016/10/27	CAM SOP-00447	EPA 6020B m
Total Ammonia-N	1	N/A	2016/10/27	CAM SOP-00441	EPA GS I-2522-90 m
Total Ammonia-N	1	N/A	2016/10/28	CAM SOP-00441	EPA GS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (1)	2	N/A	2016/10/26	CAM SOP-00440	SM 22 4500-NO3I/NO2B
pH	2	N/A	2016/10/25	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	2	N/A	2016/10/27	CAM SOP-00444	OMOE E3179 m
Sulphate by Automated Colourimetry	2	N/A	2016/10/24	CAM SOP-00464	EPA 375.4 m
Total Kjeldahl Nitrogen in Water	2	2016/10/22	2016/10/27	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	2	2016/10/24	2016/10/24	CAM SOP-00407	SM 22 4500 P B H m
Low Level Total Suspended Solids	2	2016/10/22	2016/10/25	CAM SOP-00428	SM 22 2540D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.

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Your P.O. #: 720.8121.3516
Your Project #: WET/ DRY SURFACE WATER
Site Location: 110 DUNLOP DRIVE
Your C.O.C. #: 572158-03-01

Attention:Amy Spence

City of Guelph
Soild Waste RIC (Wet/Dry)
110 Dunlop Drive
Guelph, ON
CANADA N1H 6H8

Report Date: 2016/10/28
Report #: R4227333
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6M7231
Received: 2016/10/20, 15:51

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
James Aspin, Senior Project Manager
Email: JAspin@maxxam.ca
Phone# (905)817-5771

==========

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Maxxam Job #: B6M7231
Report Date: 2016/10/28

City of Guelph
Client Project #: WET/ DRY SURFACE WATER
Site Location: 110 DUNLOP DRIVE
Your P.O. #: 720.8121.3516

RESULTS OF ANALYSES OF WATER

Maxxam ID		DHD314	DHD314		DHD315	DHD315		
Sampling Date		2016/10/19	2016/10/19		2016/10/19	2016/10/19		
COC Number		572158-03-01	572158-03-01		572158-03-01	572158-03-01		
	UNITS	**TP1-OUT**	**TP1-OUT Lab-Dup**	**QC Batch**	**EPTSO1**	**EPTSO1 Lab-Dup**	**RDL**	**QC Batch**
Inorganics								
Total Ammonia-N	mg/L	ND		4713877	0.081		0.050	4714775
Total BOD	mg/L	ND		4713674	ND		2.0	4713674
Total Chemical Oxygen Demand (COD)	mg/L	37		4713873	11		4.0	4713873
Conductivity	umho/cm	970		4715523	680		1.0	4715523
Total Kjeldahl Nitrogen (TKN)	mg/L	1.0		4713770	0.65		0.10	4713770
pH	pH	8.03		4715522	8.11			4715522
Phenols-4AAP	mg/L	ND		4718445	ND		0.0010	4718437
Total Phosphorus	mg/L	0.052		4715503	0.021		0.020	4715503
Total Suspended Solids	mg/L	1	1	4714056	2	2	1	4714068
Dissolved Sulphate (SO4)	mg/L	320		4714018	15		1.0	4714018
Alkalinity (Total as CaCO3)	mg/L	170		4715518	280		1.0	4715518
Dissolved Chloride (Cl)	mg/L	26		4714075	43		1.0	4714075
Nitrite (N)	mg/L	0.012		4714792	0.099		0.010	4714792
Nitrate (N)	mg/L	0.39		4714792	2.23		0.10	4714792
Nitrate + Nitrite (N)	mg/L	0.40		4714792	2.33		0.10	4714792

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B6M7231
Report Date: 2016/10/28

City of Guelph
Client Project #: WET/ DRY SURFACE WATER
Site Location: 110 DUNLOP DRIVE
Your P.O. #: 720.8121.3516

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		DHD314	DHD314	DHD315		
Sampling Date		2016/10/19	2016/10/19	2016/10/19		
COC Number		572158-03-01	572158-03-01	572158-03-01		
	UNITS	**TP1-OUT**	**TP1-OUT Lab-Dup**	**EPTSO1**	**RDL**	**QC Batch**
Metals						
Total Boron (B)	mg/L	0.075	0.075	0.018	0.010	4718644
Total Calcium (Ca)	mg/L	160	170	80	0.20	4718644
Total Iron (Fe)	mg/L	0.49	0.60	ND	0.10	4718644
Total Magnesium (Mg)	mg/L	12	12	22	0.050	4718644
Total Potassium (K)	mg/L	8.2	8.1	1.7	0.20	4718644
Total Sodium (Na)	mg/L	21	21	25	0.10	4718644
Total Zinc (Zn)	mg/L	0.0055	0.0053	0.060	0.0050	4718644

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B6M7231
Report Date: 2016/10/28

City of Guelph
Client Project #: WET/ DRY SURFACE WATER
Site Location: 110 DUNLOP DRIVE
Your P.O. #: 720.8121.3516

GENERAL COMMENTS

Results relate only to the items tested.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B6M7231
Report Date: 2016/10/28

QUALITY ASSURANCE REPORT

City of Guelph
Client Project #: WET/ DRY SURFACE WATER
Site Location: 110 DUNLOP DRIVE
Your P.O. #: 720.8121.3516

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4713674	Total BOD	2016/10/27					ND, RDL=2.0	mg/L	NC	25	93	80 - 120
4713770	Total Kjeldahl Nitrogen (TKN)	2016/10/27	NC	N/A	97	80 - 120	0.13, RDL=0.10	mg/L	8.0	20	96	N/A
4713873	Total Chemical Oxygen Demand (COD)	2016/10/25	104	75 - 125	101	75 - 125	ND, RDL=4.0	mg/L				
4713877	Total Ammonia-N	2016/10/27	94	80 - 120	94	85 - 115	ND, RDL=0.050	mg/L				
4714018	Dissolved Sulphate (SO4)	2016/10/24	NC	75 - 125	104	80 - 120	ND, RDL=1.0	mg/L	0.86	20		
4714056	Total Suspended Solids	2016/10/25					ND,RDL=1	mg/L	NC	25	98	85 - 115
4714068	Total Suspended Solids	2016/10/25					ND,RDL=1	mg/L	NC	25	100	85 - 115
4714075	Dissolved Chloride (Cl)	2016/10/24	NC	80 - 120	102	80 - 120	ND, RDL=1.0	mg/L	1.6	20		
4714775	Total Ammonia-N	2016/10/28	95	80 - 120	98	85 - 115	ND, RDL=0.050	mg/L	NC	20		
4714792	Nitrate (N)	2016/10/26	NC	80 - 120	101	80 - 120	ND, RDL=0.10	mg/L	0.67	20		
4714792	Nitrite (N)	2016/10/26	109	80 - 120	107	80 - 120	ND, RDL=0.010	mg/L	NC	20		
4715503	Total Phosphorus	2016/10/24	103	80 - 120	101	80 - 120	ND, RDL=0.020	mg/L	0.95	20	101	80 - 120
4715518	Alkalinity (Total as CaCO3)	2016/10/25			97	85 - 115	ND, RDL=1.0	mg/L	1.1	20		
4715522	pH	2016/10/25			102	98 - 103			0.77	N/A		
4715523	Conductivity	2016/10/25			98	85 - 115	ND, RDL=1.0	umho/cm	0.21	25		
4718437	Phenols-4AAP	2016/10/27	94	80 - 120	99	85 - 115	ND, RDL=0.0010	mg/L	NC	20		
4718445	Phenols-4AAP	2016/10/27	95	80 - 120	100	85 - 115	ND, RDL=0.0010	mg/L	NC	20		
4718644	Total Boron (B)	2016/10/27	91	80 - 120	93	80 - 120	ND, RDL=0.010	mg/L	0.35	20		
4718644	Total Calcium (Ca)	2016/10/27	NC	80 - 120	97	80 - 120	ND, RDL=0.20	mg/L	2.7	20		
4718644	Total Iron (Fe)	2016/10/27	100	80 - 120	102	80 - 120	0.11, RDL=0.10	mg/L	NC	20		
4718644	Total Magnesium (Mg)	2016/10/27	97	80 - 120	101	80 - 120	ND, RDL=0.050	mg/L	0.16	20		
4718644	Total Potassium (K)	2016/10/27	97	80 - 120	100	80 - 120	ND, RDL=0.20	mg/L	0.45	20		

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Maxxam Job #: B6M7231
Report Date: 2016/10/28

QUALITY ASSURANCE REPORT(CONT'D)

City of Guelph
Client Project #: WET/ DRY SURFACE WATER
Site Location: 110 DUNLOP DRIVE
Your P.O. #: 720.8121.3516

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4718644	Total Sodium (Na)	2016/10/27	NC	80 - 120	101	80 - 120	ND, RDL=0.10	mg/L	0.47	20		
4718644	Total Zinc (Zn)	2016/10/27	97	80 - 120	102	80 - 120	ND, RDL=0.0050	mg/L	NC	20		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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Maxxam Job #: B6M7231
Report Date: 2016/10/28

City of Guelph
Client Project #: WET/ DRY SURFACE WATER
Site Location: 110 DUNLOP DRIVE
Your P.O. #: 720.8121.3516

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Cristina Carriere

Cristina Carriere, Scientific Services

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Maxxam
A Bureau Veritas Group Company

Your P.O. #: 720.8121.3516
Your Project #: WET/DRY SW
Site Location: 110 DUNLOP DRIVE
Your C.O.C. #: 560404-02-01

Attention:Amy Spence

City of Guelph
Soild Waste RIC (Wet/Dry)
110 Dunlop Drive
Guelph, ON
CANADA N1H 6H8

Report Date: 2016/12/05
Report #: R4274604
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6P7919
Received: 2016/11/25, 16:35

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Alkalinity	2	N/A	2016/11/29	CAM SOP-00448	SM 22 2320 B m
Biochemical Oxygen Demand (BOD)	2	2016/11/28	2016/12/03	CAM SOP-00427	SM 22 5210B m
Chloride by Automated Colourimetry	2	N/A	2016/11/28	CAM SOP-00463	EPA 325.2 m
Chemical Oxygen Demand	2	N/A	2016/11/30	CAM SOP-00416	SM 22 5220 D m
Conductivity	2	N/A	2016/11/29	CAM SOP-00414	SM 22 2510 m
Total Metals Analysis by ICPMS	2	N/A	2016/12/02	CAM SOP-00447	EPA 6020B m
Total Ammonia-N	2	N/A	2016/12/02	CAM SOP-00441	EPA GS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (1)	2	N/A	2016/11/30	CAM SOP-00440	SM 22 4500-NO3I/NO2B
pH	2	N/A	2016/11/29	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	2	N/A	2016/12/02	CAM SOP-00444	OMOE E3179 m
Sulphate by Automated Colourimetry	2	N/A	2016/11/28	CAM SOP-00464	EPA 375.4 m
Total Kjeldahl Nitrogen in Water	2	2016/11/29	2016/11/30	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	2	2016/11/29	2016/11/29	CAM SOP-00407	SM 22 4500 P B H m
Low Level Total Suspended Solids	2	2016/11/26	2016/11/30	CAM SOP-00428	SM 22 2540D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.

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Your P.O. #: 720.8121.3516
Your Project #: WET/DRY SW
Site Location: 110 DUNLOP DRIVE
Your C.O.C. #: 560404-02-01

Attention:Amy Spence

City of Guelph
Soild Waste RIC (Wet/Dry)
110 Dunlop Drive
Guelph, ON
CANADA N1H 6H8

Report Date: 2016/12/05
Report #: R4274604
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6P7919
Received: 2016/11/25, 16:35

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
James Aspin, Senior Project Manager
Email: JAspin@maxxam.ca
Phone# (905)817-5771

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Maxxam Job #: B6P7919
Report Date: 2016/12/05

City of Guelph
Client Project #: WET/DRY SW
Site Location: 110 DUNLOP DRIVE
Your P.O. #: 720.8121.3516
Sampler Initials: AS

RESULTS OF ANALYSES OF WATER

Maxxam ID		DNF520			DNF521	DNF521		
Sampling Date		2016/11/24			2016/11/24	2016/11/24		
COC Number		560404-02-01			560404-02-01	560404-02-01		
	UNITS	**TP1-OUT**	**RDL**	**QC Batch**	**EPTSO1**	**EPTSO1 Lab-Dup**	**RDL**	**QC Batch**
Inorganics								
Total Ammonia-N	mg/L	ND	0.050	4769926	0.058		0.050	4769926
Total BOD	mg/L	12	2.0	4768154	ND		2.0	4768154
Total Chemical Oxygen Demand (COD)	mg/L	75	4.0	4769862	ND		4.0	4769862
Conductivity	umho/cm	540	1.0	4767383	690		1.0	4767383
Total Kjeldahl Nitrogen (TKN)	mg/L	0.79	0.10	4769882	0.23		0.10	4769882
pH	pH	7.81		4767385	8.27			4767385
Phenols-4AAP	mg/L	0.0023	0.0010	4769922	ND		0.0010	4769922
Total Phosphorus	mg/L	0.14	0.10	4770262	ND	ND	0.020	4769966
Total Suspended Solids	mg/L	8	1	4767113	7		1	4767113
Dissolved Sulphate (SO4)	mg/L	60	1.0	4767300	16		1.0	4767300
Alkalinity (Total as CaCO3)	mg/L	110	1.0	4767380	280		1.0	4767380
Dissolved Chloride (Cl)	mg/L	29	1.0	4767296	42		1.0	4767296
Nitrite (N)	mg/L	ND	0.010	4767337	0.037		0.010	4767337
Nitrate (N)	mg/L	ND	0.10	4767337	3.09		0.10	4767337
Nitrate + Nitrite (N)	mg/L	ND	0.10	4767337	3.13		0.10	4767337

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B6P7919
Report Date: 2016/12/05

City of Guelph
Client Project #: WET/DRY SW
Site Location: 110 DUNLOP DRIVE
Your P.O. #: 720.8121.3516
Sampler Initials: AS

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		DNF520	DNF521		
Sampling Date		2016/11/24	2016/11/24		
COC Number		560404-02-01	560404-02-01		
	UNITS	**TP1-OUT**	**EPTSO1**	**RDL**	**QC Batch**
Metals					
Total Boron (B)	mg/L	0.058	0.016	0.010	4774217
Total Calcium (Ca)	mg/L	65	90	0.20	4774217
Total Iron (Fe)	mg/L	0.55	ND	0.10	4774217
Total Magnesium (Mg)	mg/L	6.7	24	0.050	4774217
Total Potassium (K)	mg/L	7.2	1.6	0.20	4774217
Total Sodium (Na)	mg/L	24	23	0.10	4774217
Total Zinc (Zn)	mg/L	0.037	0.069	0.0050	4774217

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B6P7919
Report Date: 2016/12/05

City of Guelph
Client Project #: WET/DRY SW
Site Location: 110 DUNLOP DRIVE
Your P.O. #: 720.8121.3516
Sampler Initials: AS

GENERAL COMMENTS

Results relate only to the items tested.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B6P7919
Report Date: 2016/12/05

QUALITY ASSURANCE REPORT

City of Guelph
Client Project #: WET/DRY SW
Site Location: 110 DUNLOP DRIVE
Your P.O. #: 720.8121.3516
Sampler Initials: AS

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4767113	Total Suspended Solids	2016/11/30					ND,RDL=1	mg/L	NC	25	98	85 - 115
4767296	Dissolved Chloride (Cl)	2016/11/28	119	80 - 120	102	80 - 120	ND, RDL=1.0	mg/L	0.44	20		
4767300	Dissolved Sulphate (SO4)	2016/11/28	NC	75 - 125	102	80 - 120	ND, RDL=1.0	mg/L	0.44	20		
4767337	Nitrate (N)	2016/11/30	NC	80 - 120	101	80 - 120	ND, RDL=0.10	mg/L	0.45	20		
4767337	Nitrite (N)	2016/11/30	96	80 - 120	92	80 - 120	ND, RDL=0.010	mg/L	NC	20		
4767380	Alkalinity (Total as CaCO3)	2016/11/29			97	85 - 115	ND, RDL=1.0	mg/L	1.4	20		
4767383	Conductivity	2016/11/29			100	85 - 115	ND, RDL=1.0	umho/cm	0	25		
4767385	pH	2016/11/29			101	98 - 103			0.59	N/A		
4768154	Total BOD	2016/12/03					ND, RDL=2.0	mg/L	NC	25	100	80 - 120
4769862	Total Chemical Oxygen Demand (COD)	2016/11/30	101	75 - 125	99	75 - 125	ND, RDL=4.0	mg/L	NC	25		
4769882	Total Kjeldahl Nitrogen (TKN)	2016/12/01	NC	80 - 120	98	80 - 120	ND, RDL=0.10	mg/L	0.39	20	98	80 - 120
4769922	Phenols-4AAP	2016/12/02	95	80 - 120	100	85 - 115	ND, RDL=0.0010	mg/L	NC	20		
4769926	Total Ammonia-N	2016/12/02	101	80 - 120	99	85 - 115	ND, RDL=0.050	mg/L	NC	20		
4769966	Total Phosphorus	2016/11/29	102	80 - 120	100	80 - 120	ND, RDL=0.020	mg/L	NC	20	102	80 - 120
4770262	Total Phosphorus	2016/11/29	100	80 - 120	100	80 - 120	ND, RDL=0.020	mg/L	NC	20	103	80 - 120
4774217	Total Boron (B)	2016/12/02	98	80 - 120	91	80 - 120	ND, RDL=0.010	mg/L	NC	20		
4774217	Total Calcium (Ca)	2016/12/02	NC	80 - 120	97	80 - 120	ND, RDL=0.20	mg/L	0.55	20		
4774217	Total Iron (Fe)	2016/12/02	97	80 - 120	98	80 - 120	ND, RDL=0.10	mg/L	1.7	20		
4774217	Total Magnesium (Mg)	2016/12/02	NC	80 - 120	98	80 - 120	ND, RDL=0.050	mg/L	1.1	20		
4774217	Total Potassium (K)	2016/12/02	99	80 - 120	98	80 - 120	ND, RDL=0.20	mg/L	2.3	20		
4774217	Total Sodium (Na)	2016/12/02	NC	80 - 120	98	80 - 120	ND, RDL=0.10	mg/L	1.6	20		

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Maxxam Job #: B6P7919
Report Date: 2016/12/05

QUALITY ASSURANCE REPORT(CONT'D)

City of Guelph
Client Project #: WET/DRY SW
Site Location: 110 DUNLOP DRIVE
Your P.O. #: 720.8121.3516
Sampler Initials: AS

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4774217	Total Zinc (Zn)	2016/12/02	95	80 - 120	99	80 - 120	ND, RDL=0.0050	mg/L	NC	20		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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Maxxam Job #: B6P7919
Report Date: 2016/12/05

City of Guelph
Client Project #: WET/DRY SW
Site Location: 110 DUNLOP DRIVE
Your P.O. #: 720.8121.3516
Sampler Initials: AS

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Cristina Carriere

Cristina Carriere, Scientific Services

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Maxxam
A Bureau Veritas Group Company

Your Project #: Wet / Dry Surface Water
Site Location: SW WET/DRY
Your C.O.C. #: 544554-01-01

Attention:Amy Spence

City of Guelph
Soild Waste RIC (Wet/Dry)
110 Dunlop Drive
Guelph, ON
CANADA N1H 6H8

Report Date: 2016/02/12
Report #: R3893133
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B624279
Received: 2016/02/04, 15:43

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Alkalinity	3	N/A	2016/02/08	CAM SOP-00448	SM 22 2320 B m
Biochemical Oxygen Demand (BOD)	3	N/A	2016/02/11	CAM SOP-00427	SM 22 5210B m
Chloride by Automated Colourimetry	3	N/A	2016/02/08	CAM SOP-00463	EPA 325.2 m
Chemical Oxygen Demand	3	N/A	2016/02/11	CAM SOP-00416	SM 22 5220 D m
Conductivity	3	N/A	2016/02/08	CAM SOP-00414	SM 22 2510 m
Total Metals Analysis by ICPMS	3	N/A	2016/02/11	CAM SOP-00447	EPA 6020A m
Total Ammonia-N	3	N/A	2016/02/11	CAM SOP-00441	EPA GS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (1)	3	N/A	2016/02/08	CAM SOP-00440	SM 22 4500-NO3I/NO2B
pH	3	N/A	2016/02/08	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	3	N/A	2016/02/08	CAM SOP-00444	OMOE E3179 m
Sulphate by Automated Colourimetry	3	N/A	2016/02/08	CAM SOP-00464	EPA 375.4 m
Total Kjeldahl Nitrogen in Water	3	2016/02/11	2016/02/11	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	3	2016/02/10	2016/02/11	CAM SOP-00407	SM 4500 P B H m
Low Level Total Suspended Solids	3	N/A	2016/02/10	CAM SOP-00428	SM 22 2540D m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
James Aspin, Senior Project Manager
Email: JAspin@maxxam.ca
Phone# (905)817-5771

==========

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Maxxam Job #: B624279
Report Date: 2016/02/12

City of Guelph
Client Project #: Wet / Dry Surface Water
Site Location: SW WET/DRY
Sampler Initials: AS

RESULTS OF ANALYSES OF WATER

Maxxam ID		BUL201		BUL202	BUL203	BUL203		
Sampling Date		2016/02/03		2016/02/03	2016/02/03	2016/02/03		
COC Number		544554-01-01		544554-01-01	544554-01-01	544554-01-01		
	UNITS	**TP1-OUT**	**RDL**	**EPTS01**	**P2SW1**	**P2SW1 Lab-Dup**	**RDL**	**QC Batch**
Inorganics								
Total Ammonia-N	mg/L	ND	0.050	0.065	ND	ND	0.050	4378156
Total BOD	mg/L	ND	2.0	ND	ND	ND	2.0	4372971
Total Chemical Oxygen Demand (COD)	mg/L	25	4.0	5.0	14		4.0	4378135
Conductivity	umho/cm	1100	1.0	790	370		1.0	4372394
Total Kjeldahl Nitrogen (TKN)	mg/L	0.32	0.10	0.37	0.42		0.10	4378193
pH	pH	7.24		7.77	6.95			4372396
Phenols-4AAP	mg/L	ND	0.0010	ND	ND		0.0010	4372963
Total Phosphorus	mg/L	0.090	0.020	ND	0.10		0.020	4376691
Total Suspended Solids	mg/L	11	1	ND	10		1	4377060
Dissolved Sulphate (SO4)	mg/L	28	1.0	15	2.4		1.0	4371847
Alkalinity (Total as CaCO3)	mg/L	86	1.0	290	66		1.0	4372399
Dissolved Chloride (Cl)	mg/L	240	3.0	68	76		1.0	4371840
Nitrite (N)	mg/L	0.011	0.010	0.033	ND		0.010	4372349
Nitrate (N)	mg/L	ND	0.10	3.49	ND		0.10	4372349
Nitrate + Nitrite (N)	mg/L	0.11	0.10	3.52	ND		0.10	4372349

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B624279
Report Date: 2016/02/12

City of Guelph
Client Project #: Wet / Dry Surface Water
Site Location: SW WET/DRY
Sampler Initials: AS

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		BUL201	BUL202	BUL203		
Sampling Date		2016/02/03	2016/02/03	2016/02/03		
COC Number		544554-01-01	544554-01-01	544554-01-01		
	UNITS	**TP1-OUT**	**EPTS01**	**P2SW1**	**RDL**	**QC Batch**
Metals						
Total Boron (B)	mg/L	0.022	0.014	ND	0.010	4378399
Total Calcium (Ca)	mg/L	36	95	23	0.20	4378399
Total Iron (Fe)	mg/L	0.75	ND	0.13	0.10	4378399
Total Magnesium (Mg)	mg/L	4.4	25	4.0	0.050	4378399
Total Potassium (K)	mg/L	2.0	1.7	1.8	0.20	4378399
Total Sodium (Na)	mg/L	180	39	44	0.10	4378399
Total Zinc (Zn)	mg/L	0.046	0.11	0.013	0.0050	4378399

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B624279
Report Date: 2016/02/12

City of Guelph
Client Project #: Wet / Dry Surface Water
Site Location: SW WET/DRY
Sampler Initials: AS

GENERAL COMMENTS

Results relate only to the items tested.

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Maxxam Job #: B624279
Report Date: 2016/02/12

QUALITY ASSURANCE REPORT

City of Guelph
Client Project #: Wet / Dry Surface Water
Site Location: SW WET/DRY
Sampler Initials: AS

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4371840	Dissolved Chloride (Cl)	2016/02/08	NC	80 - 120	105	80 - 120	ND, RDL=1.0	mg/L	0.77	20		
4371847	Dissolved Sulphate (SO4)	2016/02/08	NC	75 - 125	101	80 - 120	ND, RDL=1.0	mg/L	1.5	20		
4372349	Nitrate (N)	2016/02/08	99	80 - 120	101	80 - 120	ND, RDL=0.10	mg/L	NC	25		
4372349	Nitrite (N)	2016/02/08	104	80 - 120	104	80 - 120	ND, RDL=0.010	mg/L	NC	25		
4372394	Conductivity	2016/02/08			103	85 - 115	ND, RDL=1.0	umho/cm	0.32	25		
4372396	pH	2016/02/08			101	98 - 103			1.1	N/A		
4372399	Alkalinity (Total as CaCO3)	2016/02/08			96	85 - 115	ND, RDL=1.0	mg/L	4.5	25		
4372963	Phenols-4AAP	2016/02/08	105	80 - 120	99	85 - 115	ND, RDL=0.0010	mg/L	NC	20		
4372971	Total BOD	2016/02/11					ND, RDL=2.0	mg/L	NC	25	94	85 - 115
4376691	Total Phosphorus	2016/02/11	103	80 - 120	102	80 - 120	ND, RDL=0.020	mg/L	NC	20	104	80 - 120
4377060	Total Suspended Solids	2016/02/10					ND,RDL=1	mg/L	NC	25	99	85 - 115
4378135	Total Chemical Oxygen Demand (COD)	2016/02/11	NC	75 - 125	99	75 - 125	ND, RDL=4.0	mg/L	0.22	25		
4378156	Total Ammonia-N	2016/02/11	101	80 - 120	102	85 - 115	ND, RDL=0.050	mg/L	NC	20		
4378193	Total Kjeldahl Nitrogen (TKN)	2016/02/11	NC	80 - 120	101	80 - 120	ND, RDL=0.10	mg/L	1.6	20	100	80 - 120
4378399	Total Boron (B)	2016/02/11	91	80 - 120	86	80 - 120	ND, RDL=0.010	mg/L	1.8	20		
4378399	Total Calcium (Ca)	2016/02/11	NC	80 - 120	100	80 - 120	ND, RDL=0.20	mg/L				
4378399	Total Iron (Fe)	2016/02/11	99	80 - 120	100	80 - 120	ND, RDL=0.10	mg/L				
4378399	Total Magnesium (Mg)	2016/02/11	NC	80 - 120	101	80 - 120	ND, RDL=0.050	mg/L				
4378399	Total Potassium (K)	2016/02/11	102	80 - 120	102	80 - 120	ND, RDL=0.20	mg/L				
4378399	Total Sodium (Na)	2016/02/11	NC	80 - 120	103	80 - 120	0.13, RDL=0.10	mg/L				

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Maxxam Job #: B624279
Report Date: 2016/02/12

QUALITY ASSURANCE REPORT(CONT'D)

City of Guelph
Client Project #: Wet / Dry Surface Water
Site Location: SW WET/DRY
Sampler Initials: AS

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4378399	Total Zinc (Zn)	2016/02/11	97	80 - 120	96	80 - 120	ND, RDL=0.0050	mg/L	NC	20		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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Maxxam Job #: B624279
Report Date: 2016/02/12

City of Guelph
Client Project #: Wet / Dry Surface Water
Site Location: SW WET/DRY
Sampler Initials: AS

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Brad Newman, Scientific Specialist

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Maxxam
A Bureau Veritas Group Company

Your Project #: WET / DRY SURFACE WATER
Site Location: SW WET/DRY
Your C.O.C. #: 544554-02-01

Attention:Amy Spence

City of Guelph
Soild Waste RIC (Wet/Dry)
110 Dunlop Drive
Guelph, ON
CANADA N1H 6H8

Report Date: 2016/03/28
Report #: R3944128
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B655567
Received: 2016/03/18, 15:50

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Alkalinity	3	N/A	2016/03/21	CAM SOP-00448	SM 22 2320 B m
Biochemical Oxygen Demand (BOD)	3	N/A	2016/03/24	CAM SOP-00427	SM 22 5210B m
Chloride by Automated Colourimetry	3	N/A	2016/03/21	CAM SOP-00463	EPA 325.2 m
Chemical Oxygen Demand	3	N/A	2016/03/24	CAM SOP-00416	SM 22 5220 D m
Conductivity	3	N/A	2016/03/21	CAM SOP-00414	SM 22 2510 m
Total Metals Analysis by ICPMS	3	N/A	2016/03/28	CAM SOP-00447	EPA 6020A m
Total Ammonia-N	3	N/A	2016/03/24	CAM SOP-00441	EPA GS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (1)	3	N/A	2016/03/22	CAM SOP-00440	SM 22 4500-NO3I/NO2B
pH	3	N/A	2016/03/21	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	3	N/A	2016/03/21	CAM SOP-00444	OMOE E3179 m
Sulphate by Automated Colourimetry	3	N/A	2016/03/21	CAM SOP-00464	EPA 375.4 m
Total Kjeldahl Nitrogen in Water	3	2016/03/23	2016/03/23	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	3	2016/03/23	2016/03/23	CAM SOP-00407	SM 4500 P B H m
Low Level Total Suspended Solids	3	N/A	2016/03/24	CAM SOP-00428	SM 22 2540D m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

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James Aspin, Senior Project Manager
Email: JAspin@maxxam.ca
Phone# (905)817-5771

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Maxxam Job #: B655567
Report Date: 2016/03/28

City of Guelph
Client Project #: WET / DRY SURFACE WATER
Site Location: SW WET/DRY

RESULTS OF ANALYSES OF WATER

Maxxam ID		CAY722	CAY722		CAY723		CAY724		
Sampling Date		2016/03/17	2016/03/17		2016/03/17		2016/03/17		
COC Number		544554-02-01	544554-02-01		544554-02-01		544554-02-01		
	UNITS	**EPTS01**	**EPTS01 Lab-Dup**	**RDL**	**TP1-OUT**	**RDL**	**P2SW1**	**RDL**	**QC Batch**
Inorganics									
Total Ammonia-N	mg/L	ND		0.050	ND	0.050	ND	0.050	4428920
Total BOD	mg/L	ND		2.0	2.0	2.0	2.0	2.0	4424916
Total Chemical Oxygen Demand (COD)	mg/L	10		4.0	33	4.0	23	4.0	4429059
Conductivity	umho/cm	780		1.0	590	1.0	290	1.0	4424940
Total Kjeldahl Nitrogen (TKN)	mg/L	0.21		0.10	0.41	0.10	0.31	0.10	4428864
pH	pH	7.99			7.69		7.53		4424941
Phenols-4AAP	mg/L	ND		0.0010	ND	0.0010	ND	0.0010	4424876
Total Phosphorus	mg/L	ND		0.020	0.11	0.040	0.062	0.020	4429087
Total Suspended Solids	mg/L	ND	ND	1	29	1	11	1	4430992
Dissolved Sulphate (SO4)	mg/L	16		1.0	37	1.0	8.4	1.0	4424897
Alkalinity (Total as CaCO3)	mg/L	270		1.0	100	1.0	79	1.0	4424939
Dissolved Chloride (Cl)	mg/L	69		1.0	91	1.0	37	1.0	4424895
Nitrite (N)	mg/L	0.039	0.041	0.010	ND	0.010	ND	0.010	4424906
Nitrate (N)	mg/L	3.22	3.27	0.10	ND	0.10	ND	0.10	4424906
Nitrate + Nitrite (N)	mg/L	3.26	3.31	0.10	ND	0.10	ND	0.10	4424906

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B655567
Report Date: 2016/03/28

City of Guelph
Client Project #: WET / DRY SURFACE WATER
Site Location: SW WET/DRY

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		CAY722	CAY723		CAY724		
Sampling Date		2016/03/17	2016/03/17		2016/03/17		
COC Number		544554-02-01	544554-02-01		544554-02-01		
	UNITS	**EPTS01**	**TP1-OUT**	**QC Batch**	**P2SW1**	**RDL**	**QC Batch**
Metals							
Total Boron (B)	mg/L	0.013	0.041	4429696	0.010	0.010	4431054
Total Calcium (Ca)	mg/L	81	41	4429696	24	0.20	4431054
Total Iron (Fe)	mg/L	ND	2.0	4429696	0.60	0.10	4431054
Total Magnesium (Mg)	mg/L	22	4.2	4429696	3.7	0.050	4431054
Total Potassium (K)	mg/L	1.4	2.2	4429696	1.5	0.20	4431054
Total Sodium (Na)	mg/L	37	63	4429696	30	0.10	4431054
Total Zinc (Zn)	mg/L	0.096	0.075	4429696	0.041	0.0050	4431054

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B655567
Report Date: 2016/03/28

City of Guelph
Client Project #: WET / DRY SURFACE WATER
Site Location: SW WET/DRY

GENERAL COMMENTS

Results relate only to the items tested.

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Maxxam Job #: B655567
Report Date: 2016/03/28

QUALITY ASSURANCE REPORT

City of Guelph
Client Project #: WET / DRY SURFACE WATER
Site Location: SW WET/DRY

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4424876	Phenols-4AAP	2016/03/21	94	80 - 120	98	85 - 115	ND, RDL=0.0010	mg/L	NC	20		
4424895	Dissolved Chloride (Cl)	2016/03/21	NC	80 - 120	103	80 - 120	ND, RDL=1.0	mg/L	8.5	20		
4424897	Dissolved Sulphate (SO4)	2016/03/21	NC	75 - 125	102	80 - 120	ND, RDL=1.0	mg/L	15	20		
4424906	Nitrate (N)	2016/03/22	82	80 - 120	102	80 - 120	ND, RDL=0.10	mg/L	1.5	25		
4424906	Nitrite (N)	2016/03/22	111	80 - 120	100	80 - 120	ND, RDL=0.010	mg/L	NC	25		
4424916	Total BOD	2016/03/24					ND, RDL=2.0	mg/L	NC	25	105	80 - 120
4424939	Alkalinity (Total as CaCO3)	2016/03/21			95	85 - 115	ND, RDL=1.0	mg/L	0.87	25		
4424940	Conductivity	2016/03/21			101	85 - 115	ND, RDL=1.0	umho/cm	0.20	25		
4424941	pH	2016/03/21			101	98 - 103			0.21	N/A		
4428864	Total Kjeldahl Nitrogen (TKN)	2016/03/23	102	80 - 120	98	80 - 120	ND, RDL=0.10	mg/L	NC	20	100	80 - 120
4428920	Total Ammonia-N	2016/03/24	93	80 - 120	99	85 - 115	ND, RDL=0.050	mg/L	NC	20		
4429059	Total Chemical Oxygen Demand (COD)	2016/03/24	100	75 - 125	102	75 - 125	ND, RDL=4.0	mg/L	0.0021	25		
4429087	Total Phosphorus	2016/03/23	102	80 - 120	100	80 - 120	ND, RDL=0.020	mg/L	6.5	20	104	80 - 120
4429696	Total Boron (B)	2016/03/28	96	80 - 120	91	80 - 120	ND, RDL=0.010	mg/L				
4429696	Total Calcium (Ca)	2016/03/28	NC	80 - 120	96	80 - 120	ND, RDL=0.20	mg/L				
4429696	Total Iron (Fe)	2016/03/28	95	80 - 120	94	80 - 120	ND, RDL=0.10	mg/L	0.53	20		
4429696	Total Magnesium (Mg)	2016/03/28	NC	80 - 120	93	80 - 120	ND, RDL=0.050	mg/L				
4429696	Total Potassium (K)	2016/03/28	97	80 - 120	98	80 - 120	ND, RDL=0.20	mg/L				
4429696	Total Sodium (Na)	2016/03/28	NC	80 - 120	93	80 - 120	ND, RDL=0.10	mg/L				
4429696	Total Zinc (Zn)	2016/03/28	97	80 - 120	97	80 - 120	ND, RDL=0.0050	mg/L	NC	20		
4430992	Total Suspended Solids	2016/03/24					ND,RDL=1	mg/L	NC	25	100	85 - 115
4431054	Total Boron (B)	2016/03/28	106	80 - 120	106	80 - 120	ND, RDL=0.010	mg/L	NC	20		
4431054	Total Calcium (Ca)	2016/03/28	NC	80 - 120	106	80 - 120	ND, RDL=0.20	mg/L				
4431054	Total Iron (Fe)	2016/03/28	102	80 - 120	102	80 - 120	ND, RDL=0.10	mg/L				

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Maxxam Job #: B655567
Report Date: 2016/03/28

QUALITY ASSURANCE REPORT(CONT'D)

City of Guelph
Client Project #: WET / DRY SURFACE WATER
Site Location: SW WET/DRY

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4431054	Total Magnesium (Mg)	2016/03/28	NC	80 - 120	104	80 - 120	ND, RDL=0.050	mg/L				
4431054	Total Potassium (K)	2016/03/28	106	80 - 120	108	80 - 120	ND, RDL=0.20	mg/L				
4431054	Total Sodium (Na)	2016/03/28	NC	80 - 120	106	80 - 120	ND, RDL=0.10	mg/L				
4431054	Total Zinc (Zn)	2016/03/28	98	80 - 120	100	80 - 120	ND, RDL=0.0050	mg/L	3.4	20		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

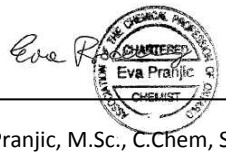
Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B655567
Report Date: 2016/03/28

City of Guelph
Client Project #: WET / DRY SURFACE WATER
Site Location: SW WET/DRY

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

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Maxxam
A Bureau Veritas Group Company

Your P.O. #: 720.8121.3516
Your Project #: Wet / Dry Surface Water
Site#: SW WET/DRY
Site Location: SW WET/DRY
Your C.O.C. #: 544554-03-01

Attention:Amy Spence

City of Guelph
Soild Waste RIC (Wet/Dry)
110 Dunlop Drive
Guelph, ON
CANADA N1H 6H8

Report Date: 2016/05/05
Report #: R3982954
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B684360
Received: 2016/04/27, 15:44

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Alkalinity	2	N/A	2016/05/02	CAM SOP-00448	SM 22 2320 B m
Biochemical Oxygen Demand (BOD)	2	N/A	2016/05/04	CAM SOP-00427	SM 22 5210B m
Chloride by Automated Colourimetry	2	N/A	2016/05/02	CAM SOP-00463	EPA 325.2 m
Chemical Oxygen Demand	2	N/A	2016/05/02	CAM SOP-00416	SM 22 5220 D m
Conductivity	2	N/A	2016/05/02	CAM SOP-00414	SM 22 2510 m
Total Metals Analysis by ICPMS	2	N/A	2016/05/03	CAM SOP-00447	EPA 6020A m
Total Ammonia-N	2	N/A	2016/05/03	CAM SOP-00441	EPA GS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (1)	2	N/A	2016/05/02	CAM SOP-00440	SM 22 4500-NO3I/NO2B
pH	2	N/A	2016/05/02	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	1	N/A	2016/05/02	CAM SOP-00444	OMOE E3179 m
Phenols (4AAP)	1	N/A	2016/05/04	CAM SOP-00444	OMOE E3179 m
Sulphate by Automated Colourimetry	2	N/A	2016/05/02	CAM SOP-00464	EPA 375.4 m
Total Kjeldahl Nitrogen in Water	2	2016/04/30	2016/05/03	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	2	2016/05/02	2016/05/03	CAM SOP-00407	SM 4500 P B H m
Low Level Total Suspended Solids	2	N/A	2016/05/02	CAM SOP-00428	SM 22 2540D m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
James Aspin, Senior Project Manager
Email: JAspin@maxxam.ca
Phone# (905)817-5771
==========
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Maxxam Job #: B684360
Report Date: 2016/05/05

City of Guelph
Client Project #: Wet / Dry Surface Water
Site Location: SW WET/DRY
Your P.O. #: 720.8121.3516
Sampler Initials: RS

RESULTS OF ANALYSES OF WATER

Maxxam ID		CGN587	CGN587		CGN588		
Sampling Date		2016/04/26	2016/04/26		2016/04/26		
COC Number		544554-03-01	544554-03-01		544554-03-01		
	UNITS	**EPT S01**	**EPT S01 Lab-Dup**	**QC Batch**	**TP1-OUT**	**RDL**	**QC Batch**
Inorganics							
Total Ammonia-N	mg/L	0.076		4480018	ND	0.050	4480018
Total BOD	mg/L	ND		4478237	ND	2.0	4478237
Total Chemical Oxygen Demand (COD)	mg/L	7.0	7.7	4480078	22	4.0	4480078
Conductivity	umho/cm	640		4480112	420	1.0	4480112
Total Kjeldahl Nitrogen (TKN)	mg/L	ND		4480052	0.37	0.10	4480052
pH	pH	8.11		4480114	7.73		4480114
Phenols-4AAP	mg/L	ND		4479656	ND	0.0010	4479665
Total Phosphorus	mg/L	ND		4481152	0.093	0.020	4481152
Total Suspended Solids	mg/L	ND	ND	4477214	18	1	4477254
Dissolved Sulphate (SO4)	mg/L	12		4479976	28	1.0	4479976
Alkalinity (Total as CaCO3)	mg/L	240		4480116	58	1.0	4480116
Dissolved Chloride (Cl)	mg/L	45		4479975	68	1.0	4479975
Nitrite (N)	mg/L	0.019		4479984	0.014	0.010	4479984
Nitrate (N)	mg/L	2.10		4479984	0.11	0.10	4479984
Nitrate + Nitrite (N)	mg/L	2.12		4479984	0.13	0.10	4479984

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B684360
Report Date: 2016/05/05

City of Guelph
Client Project #: Wet / Dry Surface Water
Site Location: SW WET/DRY
Your P.O. #: 720.8121.3516
Sampler Initials: RS

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		CGN587	CGN588		
Sampling Date		2016/04/26	2016/04/26		
COC Number		544554-03-01	544554-03-01		
	UNITS	**EPT S01**	**TP1-OUT**	**RDL**	**QC Batch**
Metals					
Total Boron (B)	mg/L	0.011	0.029	0.010	4482084
Total Calcium (Ca)	mg/L	70	25	0.20	4482084
Total Iron (Fe)	mg/L	ND	0.98	0.10	4482084
Total Magnesium (Mg)	mg/L	19	2.4	0.050	4482084
Total Potassium (K)	mg/L	1.1	1.4	0.20	4482084
Total Sodium (Na)	mg/L	34	53	0.10	4482084
Total Zinc (Zn)	mg/L	0.077	0.042	0.0050	4482084

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B684360
Report Date: 2016/05/05

City of Guelph
Client Project #: Wet / Dry Surface Water
Site Location: SW WET/DRY
Your P.O. #: 720.8121.3516
Sampler Initials: RS

GENERAL COMMENTS

Results relate only to the items tested.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B684360
Report Date: 2016/05/05

QUALITY ASSURANCE REPORT

City of Guelph
Client Project #: Wet / Dry Surface Water
Site Location: SW WET/DRY
Your P.O. #: 720.8121.3516
Sampler Initials: RS

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4477214	Total Suspended Solids	2016/05/02					ND,RDL=1	mg/L	NC	25	100	85 - 115
4477254	Total Suspended Solids	2016/05/02					ND,RDL=1	mg/L	0	25	97	85 - 115
4478237	Total BOD	2016/05/04					ND, RDL=2.0	mg/L	NC	25	111	80 - 120
4479656	Phenols-4AAP	2016/05/04	96	80 - 120	101	85 - 115	ND, RDL=0.0010	mg/L	6.9	20		
4479665	Phenols-4AAP	2016/05/02	NC	80 - 120	97	85 - 115	ND, RDL=0.0010	mg/L	18	20		
4479975	Dissolved Chloride (Cl)	2016/05/02	116	80 - 120	103	80 - 120	ND, RDL=1.0	mg/L	NC	20		
4479976	Dissolved Sulphate (SO4)	2016/05/02	112	75 - 125	104	80 - 120	ND, RDL=1.0	mg/L	0.84	20		
4479984	Nitrate (N)	2016/05/02	94	80 - 120	93	80 - 120	ND, RDL=0.10	mg/L	NC	25		
4479984	Nitrite (N)	2016/05/02	110	80 - 120	107	80 - 120	ND, RDL=0.010	mg/L	NC	25		
4480018	Total Ammonia-N	2016/05/03	98	80 - 120	100	85 - 115	ND, RDL=0.050	mg/L	NC	20		
4480052	Total Kjeldahl Nitrogen (TKN)	2016/05/03	90	80 - 120	97	80 - 120	ND, RDL=0.10	mg/L	1.9	20	94	80 - 120
4480078	Total Chemical Oxygen Demand (COD)	2016/05/02	107	75 - 125	102	75 - 125	ND, RDL=4.0	mg/L	NC	25		
4480112	Conductivity	2016/05/02			102	85 - 115	ND, RDL=1.0	umho/cm	0.36	25		
4480114	pH	2016/05/02			102	98 - 103			0.25	N/A		
4480116	Alkalinity (Total as CaCO3)	2016/05/02			96	85 - 115	ND, RDL=1.0	mg/L	0.056	25		
4481152	Total Phosphorus	2016/05/03	104	80 - 120	98	80 - 120	ND, RDL=0.020	mg/L	NC	20	101	80 - 120
4482084	Total Boron (B)	2016/05/03	95	80 - 120	98	80 - 120	ND, RDL=0.010	mg/L				
4482084	Total Calcium (Ca)	2016/05/03	NC	80 - 120	99	80 - 120	ND, RDL=0.20	mg/L				
4482084	Total Iron (Fe)	2016/05/03	100	80 - 120	101	80 - 120	ND, RDL=0.10	mg/L				
4482084	Total Magnesium (Mg)	2016/05/03	NC	80 - 120	101	80 - 120	ND, RDL=0.050	mg/L				
4482084	Total Potassium (K)	2016/05/03	100	80 - 120	102	80 - 120	ND, RDL=0.20	mg/L				
4482084	Total Sodium (Na)	2016/05/03	NC	80 - 120	102	80 - 120	ND, RDL=0.10	mg/L				

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Maxxam Job #: B684360
Report Date: 2016/05/05

QUALITY ASSURANCE REPORT(CONT'D)

City of Guelph
Client Project #: Wet / Dry Surface Water
Site Location: SW WET/DRY
Your P.O. #: 720.8121.3516
Sampler Initials: RS

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4482084	Total Zinc (Zn)	2016/05/03	100	80 - 120	103	80 - 120	ND, RDL=0.0050	mg/L				

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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Maxxam Job #: B684360
Report Date: 2016/05/05

City of Guelph
Client Project #: Wet / Dry Surface Water
Site Location: SW WET/DRY
Your P.O. #: 720.8121.3516
Sampler Initials: RS

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Cristina Carriere

Cristina Carriere, Scientific Services

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Appendix E

Certificate of Approval – WRIC and Transfer Station

Ontario

Ministry of the Environment
Ministère de l'Environnement

AMENDED PROVISIONAL CERTIFICATE OF APPROVAL
WASTE DISPOSAL SITE
NUMBER A170128
Issue Date: February 10, 2011

The Corporation of the City of Guelph
1 Carden St
Guelph, Ontario
N1H 3A1

Site Location: 110 Dunlop Drive
Guelph City, County of Wellington
N1H 6N1

You have applied in accordance with Section 27 of the Environmental Protection Act for approval of:

the establishment and operation of a Waste Disposal Site (Transfer and Processing) consisting of a 29.54 hectare of property for the purposes of composting, multi-material recovery, and waste transfer to serve the municipalities and businesses of the Province of Ontario and *Municipal Hazardous and Special Waste Transfer Station* serving the County of Wellington and City of Guelph,

to be used for:

a) the use and operation of an Organic Waste Processing Facility composting of the following categories of waste *(Note: Use of the site for additional categories of wastes requires a new application and amendments to the Provisional Certificate of Approval);* organic non-hazardous waste from residential, industrial, commercial and institutional sources limited to a maximum Site indoor storage capacity of 8,500 tonnes;

b) the use and operation of a *Material Recovery Facility* for processing, transfer and temporary storage of the following categories of waste *(Note: Use of the Site for additional categories of wastes requires a new application and amendments to the Provisional Certificate of Approval);* municipal waste including food and beverage cans, cardboard, glass, newspaper, plastic, waste electrical and electronic equipment and other such materials as would be collected by means of the source separated *dry waste* collection system limited to a maximum indoor storage capacity of 3850 tonnes and having an outdoor storage area for recyclable waste and *leaf and yard waste* that is located to the west of the Organic Waste Processing Facility;

c) the use and operation of a Municipal Hazardous and Special Waste facility for the transfer and temporary storage of the following categories of waste *(Note: Use of the Site for additional categories of wastes requires a new application and amendments to the Provisional Certificate of Approval); Municipal Hazardous and Special Waste* limited to the following waste classes; 112, 121, 145, 146, 148, 212, 213, 221, 242, 251, 252, 261, 263, 269, 312, and 331 as outlined in the New Ontario Waste Classes January 1986 limited to a maximum Site storage capacity of 15 tonnes; and

d) the use and operation of a Waste Disposal Site (Transfer) for non-hazardous solid industrial waste *(Note: Use of the Site for additional categories of wastes requires a new application and amendments to the Provisional Certificate of Approval);* from industrial, commercial and institutional sources, commercial waste and domestic waste, with an indoor storage maximum capacity of 795 tonnes and outdoor storage areas for *leaf and yard waste* and for recyclable waste.

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

(a) "**Act**" means the *Environmental Protection Act*, R.S.O. 1990, C.E-19, as amended;

(b) "**Air Pollution Control Equipment**" means the air pollution control equipment to abate emissions to the atmosphere

originating from the *Processing Building;*

(c) "**Amendment Materials**" means the materials derived from plants or animals, including materials consisting of other compounds of carbon, all readily biodegradable, and limited to materials listed in Condition 54.(2) of this Certificate;

(d) "**birds**" means pigeons, gulls, terns, crows, hawks, ducks, geese or any other birds that create a hazard to aircraft;

(e) "**brush**" means tree limbs, natural Christmas trees or other woody materials;

(f) "**Certificate**" means this entire provisional Certificate of Approval document, issued in accordance with section 39 of the *Act*, and includes any schedules to it, the application and the supporting documentation listed in schedule "A;

(g) "**Certificate of Approval (Air/Noise)**" means the Certificate of Approval issued under section 9 of the *EPA* for this Composting Site;

(h) "**City**" means the Corporation of the City of Guelph;

(i) "**Clean Wood**" means wood that is not painted wood, treated w*ood or laminated wood. Clean Wood does not include wood waste or waste wood;*

(j) **"Competent Person**" **or "Competent People"** means a person or people who has/have training and knowledge of the following:

i. relevant waste management legislation, regulations and guidelines;
ii. major environmental concerns pertaining to the waste to be handled;
iii. contents of the *Facility's* Design and Operating Report;
iv. the terms, conditions and operating requirements of the *Certificate;*
v. the applicable Fire Code and how it applies to proper storage and handling of waste that may be reactive, oxidizing, explosive or flammable;
vi. the *WRIC Environmental Emergency Plan,* including exit locations and evacuation routing, and location of relevant equipment available for emergency situations;
vii. procedures for recording and responding to public complaints;
viii. record keeping procedures as outlined in Conditions 51 and 63 of this *Certificate;*
ix. occupational health and safety concerns pertaining to the wastes to be processed;
x. specific written procedures for the control of nuisance conditions;
xi. operation and management of the *Site,* in accordance with the specific job requirements of each individual operator;
xii. procedures for the identification and refusal of unacceptable wastes;
xiii. proper handling of waste, and
xiv. proper procedures for the storage of waste and proper maintenance of the *Site;*

(k) "**Compost**" means the material produced by an aerobic Composting of the Organic Waste and which has been tested to show compliance with the Compost quality criteria listed in Schedule B of this *Certificate* and can be used as a soil additive or for other similar uses. Compost is not considered a waste;

(l) "**Composting**" means an aerobic biological process, conducted under controlled engineered conditions designed to decompose and stabilize organic matter; simple exposure of organic matter under non-engineered conditions resulting in uncontrolled decay is not considered Composting;

(m) "**Composting Residual Waste**" means waste resulting from the Organic Waste processing activities at the *Composting Site* and the waste that cannot be Composted and that is destined for final disposal;

(n) "**Composting Site**" means the Organic Waste Composting Site, which is a part of the waste disposal site located at 110 Dunlop Drive in the City of Guelph, approved in this *Certificate* and as described and referred to in Items #32 to #47 of the attached Schedule"A";

(o) **"Current Design and Operations Report"** or **"Current Design and Operations Reports"** means the Design and Operations Report or the Design and Operations Reports that is/are referenced in Items 49, 50, and/or 51 of Schedule "A" of this *Certificate* or the most recent Design and Operations Report that the Owner has submitted to the Ministry in accordance with Condition 68(4) of this *Certificate*;

(p) "**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 V of the *Act*;

(q) "**District Manager**" means the District Manager of the of the Guelph District Office of the Ministry;

(r) "**District Office**" means the local office of the Ministry in which the Site is geographically located;

(s) **"dry waste"** means those waste materials not identified in the wet and household hazardous waste streams;

(t) "**Engineer's Report**" means a report prepared under the direction of and signed by an Independent Professional Engineer that sets out the *Operating Envelope;*

(u) **"Finished Compost"** means the Organic Waste that has been Composted and fully cured and is considered ready for sampling and testing for compliance with the *Compost* quality criteria. Finished Compost is considered a waste until testing for the *Compost* quality criteria is completed and compliance with the criteria is demonstrated;

(v) **"Immature Compost"** means the Organic Waste which has been Composted in the aerate *Composting* tunnels and screened within the confines of the *Processing Building*. Composted Organic Waste is considered an Immature Compost until it has been fully cured and is ready for compliance testing for *Compost* quality criteria. Immature Compost is considered a waste;

(w) **"incident"** means an abnormal event which causes a spill, emission, emergency situation or other occurrences which may have an adverse effect on the environment, cause a nuisance or endanger public health and safety;

(x) "**Independent Professional Engineer**" means a Professional Engineer licensed to Practice in the Province of Ontario and who is not an employee of the Owner;

(y) "**Infrastructure**" means the structural elements that are used at the waste disposal site approved by this *Certificate* including buildings, structures, grounds and utilities;

(z) "**leaf and yard waste**" means waste consisting of leaves, grass clippings and other plant materials but not tree limbs or other woody materials;

(aa) **"Material Recovery Facility"** or **"MRF"** means the facility where *dry waste* is received, processed and stored, and includes the material recovery building and an outside storage area;

(bb) **"Ministry"** means the Ontario Ministry of the Environment and includes all officials, employees or other persons acting on its behalf;

(cc) "**Modifications**" means a change to the waste disposal site identified in the Engineer's Report and approved by this *Certificate* including changes to how the *Site* is used, operated, altered or enlarged;

(dd) **"Municipality"** means The Corporation of the City of Guelph, and includes its officers, employees, agents and contractors;

(ee) ***"Municipal Hazardous and Special Waste"*** **and the acronym** ***"MHSW"*** means hazardous waste or special waste generated by households located in the geographic boundaries of the City of Guelph and County of Wellington that fall within waste numbers 112, 121, 145, 146, 148, 212, 213, 221, 242, 251, 252, 261, 263, 269, 312, and 331 as outlined in the New Ontario Waste Classes, January 1996. as defined in Ontario Regulation 347; and also includes wet cell batteries and small dry cell batteries, household cleaners and detergents, aerosols, waxes and polishes, fluorescent tubes and energy efficient light bulbs and mercury switches and thermostats;

(ff) "**Municipal Hazardous and Special Waste Transfer Station**" or **"MHSW Waste Transfer Station"** means the location where the *MHSW* waste is received, bulked, packed, stored and transferred to recyclers and/or to final disposal;

(gg) "***NMA***" means *Nutrient Management Act*, 2002, S.O. 2002, c. 4, as amended from time to time;

(hh) "**Ontario Regulation 347** and ***O. Reg. 347***" means Ontario Regulation 347, R.R.O. 1990, General - Waste Management, made under the *Act*, as amended from time to time;

(ii) "**Ontario Regulation 362**" means Ontario Regulation 362 - R.R.O. 1990, Waste Management PCBs, or as amended, made under the *Act*;

(jj) "**Ontario Regulation 903**" means Ontario Regulation 903 – R.R.O. 1990, Wells, amended to Ontario Regulation 128/03, made under the *OWRA*;

(kk) "**Operating Envelope**" means the limits on the pre-approved *Modifications* that the *Owner* may make to the *Site* without further amendment to the *Certificate*;

(ll) "**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 54 of this *Certificate*;

(mm) "**Owner**" means any person that is responsible for the establishment and operation of the *Site* being approved by this *Certificate*, and includes The Corporation of the City of Guelph**,** its successors and assigns;

(nn) "***OWRA***" means the *Ontario Water Resources Act*, R.S.O. 1990, c. O.40, as amended;

(oo) "***PA***" means the *Pesticides Act*, R.S.O. 1990, c. P-11, as amended from time to time;

(pp) "**PCB**", " **PCB waste"** and "**PCBs"** means any monochlorinated or polychlorinated biphenyl or any mixture of them or mixture that contains one or more of them;

(qq) "**Processing Building**" means the building at the *Composting Site* where the *Organic Waste* is received, pre-processed, Composted, screened and cured;

(rr) "**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 the *PA* or Section 4 of the *NMA* or Section 8 of *SDWA;*

(ss) "**Public Liaison Committee**" and **"ToR PLC"** and ***PLC"*** :means the committee referred to in Conditions 29, and 30 that is established to monitor the construction and operation of any activity at the *Site;*

(tt) "**putrescible waste**" means solid waste that contains organic matter capable of being decomposed by microorganisms;

(uu) "**Rejected Waste**" means the load of incoming waste received at the *Composting Site* and deemed by *Owner* to contain waste that does not meet the incoming *Organic Waste* quality criteria set out in this *Certificate* or that cannot be Composted;

(vv) "**residual waste**" means waste resulting from the operations at the *Site* and directed for disposal;

(ww) **"residual waste (Processing Building)"** means waste resulting from the Organic Waste processing activities at the *Composting Site* and the waste that cannot be Composted and that is destined for final disposal;

(xx) "**Re-Start-up**" means resumption of the *Organic Waste* processing activities at the *Composting Site* following suspension of operations or a long duration power failure at the *Composting Site*;

(yy) **"small generators"** means small sources of waste of unknown origin that the City manages as a result of improper or illegal disposal of waste within the City of Guelph and is/are less than 500 kg of solid, non-hazardous waste per load or/and a combined total of less than 100 litres per month of hazardous wastes listed in Ontario Regulation 347 Schedule 1 or Schedule 2B and characteristic waste, or/and less than 1 kg per month of hazardous waste listed in Ontario Regulation 347 Schedule 2A, or/and less than 500 litres per month or 6000 litres per year of liquid industrial waste. Where the small generators generate both hazardous and liquid industrial waste, the sum total of the two shall not exceed 6000 litres per year;

(zz) "***SDWA***" means *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32, as amended from time to time;

(aaa) "**Site**" means the 29.54 hectare Waste Disposal Site (Processing and Transfer) for the purposes of receipt, storage, processing and transfer of waste by *Composting*, waste transfer,and multi-material recovery, to serve the municipalities and businesses of the Province of Ontario and *Municipal Hazardous and Special Transfer Waste Station*, serving the County of Wellington and City of Guelph located on Lot 4 and 5 Concession 1, Division C, Guelph, Ontario as shown on Reference Plan 61R-5574;

(bbb) "**Start-up Date**" means the date on which the *Organic Waste* is first received at the *Composting Site*;

(ccc) "**Trained Personnel**" means an employee who in addition to being a *Competent Person* is trained in accordance with the requirements of Condition 60 and knowledgeable through instruction and/or practice;

(ddd) **"Waste Transfer Station"** means the part of the *Site* that is used to receive, process and transfer non-hazardous solid waste including municipal, industrial, commercial and institutional wastes, *leaf and yard waste* and source separated recyclables;

(eee) "**waste wood**" means waste that is a wood or a wood product that has been treated with adhesives or preservatives or painted and includes manufactured wood such as medium density fibreboard;

(fff) "**wet waste**" means organic waste material consisting of food scraps and other non-hazardous waste with similar characteristics collected as part of the *Municipality's* residential curbside collection program;

(ggg) "**wood waste"** means waste that is wood or a wood product that is not contaminated with chromated copper arsenate, ammoniacal copper arsenic pentachlorophenol, creosote or other wood preservative, is not part of an upholstered article, does not have an affixed or adhered rigid surface and from which hardware or fittings have been removed;

(hhh) **"WRIC"** means the City of Guelph Waste Resource Innovation Centre located at 80/110

Dunlop Drive, Guelph; and

(iii) **"WRIC Environmental Emergency Plan"** means the plan that is required by Condition 45 for the Waste Resource Innovation centre facility located at 80/110 Dunlop Drive, Guelph.

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

TERMS AND CONDITIONS

1. The issuance of, and compliance with, this *Certificate* does not:

(1) relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement including, but not limited to:

(a) obtaining *Site* plan approval from the local municipal authority;
(b) obtaining all necessary building permits from the local municipal authority Building Services Division;
(c) obtaining approval from the Chief Fire Prevention Officer, local municipal authority: or

(2) limit in any way the authority of the Ministry to require certain steps be taken or to require the *Owner* and Operator to furnish any further information related to compliance with this *Certificate*.

A. INTERPRETATION

2. The requirements of this *Certificate* are severable. If any requirement of this *Certificate*, or application of any requirement of this *Certificate*, to any circumstances is held invalid, the application of such requirement to other circumstances and the remainder of this *Certificate* shall not be affected thereby.

3. Where there is a conflict between a provision of any document, including the application referred to in this *Certificate* and the conditions of this *Certificate*, the conditions in this *Certificate* shall take precedence.

4. 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.

5. 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.

B. CHANGE IN OWNERSHIP

6. (a) The *City* shall notify the *Director*, in writing, of any of the following changes within, thirty (30) days of the change occurring;
(i) change of *Owner/*operator of the *Site* or both;
(ii) change of address of the *City*'s office or address of the new owner; and
(iii) any changes in the legal name of the *Certificate* holder, or any change of business name or style where applicable;

(b) Notification shall include a copy of the most current "Initial Notice" or "Notice of Change" filed under the Corporations Information Act, R.S.O. 1990, as amended from time to time, or if that act is not applicable, a copy of the most recent registration under the Business Names Act, R.S.O. 1990, as amended from time to time; and

(c) In the event of any change in ownership of the *Site*, the *Owner* shall notify in writing the succeeding owner of the existence of this *Certificate*, and a copy of such notice shall be forwarded to the *Director*.

C) RECORDS and *MINISTRY* ACCESS

7. (a) The *City* shall make all records, diagrams and reports, available upon request for inspection by a Provincial Officer;

and

(b) The *City* shall maintain, at all times, up-to-date *Site* plans, plant drawings, operation plans, contingency plans, emergency measures and any other similar type information at the facility for as long as the facility is operational and shall retain this information for five (5) years following closure of the facility.

8. The *Municipality* shall allow *Ministry* personnel, or a *Ministry* authorized representative(s), upon presentation of credentials, to carry out any and all inspections authorized by Section 156, 157 or 158 of the *Act*, Section 15, 16, 17 of the Ontario Water Resources Act, R.S.O. 1990, or Section 19, 20 of the Pesticides Act, R.S.O. 1990, as amended from time to time, of any place to which this *Certificate* relates; and, without restricting the generality of the foregoing to:

(i) enter upon any premises where the records required by the Conditions of this *Certificate* are kept;

(ii) have access to and copy, at any reasonable time, any records required by the Conditions of this *Certificate*;

(iii) inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations required by the Conditions of this *Certificate*; and

(iv) sample and monitor at reasonable times for the purposes of assuring compliance with the Conditions of this *Certificate*.

9. (a) The *Municipality* shall, forthwith upon request of the *Director, District Manager,* or Provincial Officer (as defined in the *Act*), furnish any information requested by such persons with respect to compliance with this *Certificate*, including but not limited to, any records required to be kept under this *Certificate*; and

(b) In the event the *Municipality* provides the *Ministry* with information, records, documentation or notification in accordance with this *Certificate* (for the purposes of this Condition referred to as "Information");

(i) the receipt of Information by the *Ministry;*

(ii) the acceptance by the *Ministry* of the Information completeness or accuracy; or

(iii) the failure of the *Ministry* to prosecute the *Municipality,* or require the *Municipality* to take any action under this *Certificate* or any statute or regulation in relation to the Information;

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

10. Any information relating to this *Certificate* and contained in *Ministry* files may be made available to the public in accordance with the provisions of the Freedom of Information and Privacy Protection Act, R.S.O. 1990, C.F-31.

11. All records and monitoring data required by the Conditions of this *Certificate* must be kept on the *Site* for a minimum period of at least five (5) years.

D. *SITE* OPERATIONS

General

12. a) Except as otherwise provided by these Terms and Conditions, this *Site* shall be designed, developed, used, maintained and operated in accordance with the Applications for Provisional Certificate of Approval for a Waste Disposal Site dated October 22, 2009 and January 11, 2010 and signed by Bill Shields, Supervisor of Governance and Compliance, City of Guelph and associated plans and specifications, and the other supporting documentation listed in the attached Schedule "A" of this *Certificate;* and

b) Within ninety (90) days from the first receipt of *Organic Waste* at the *Composting Site*, a set of as-built drawings showing the *Composting Site*, as constructed, shall be prepared and kept at the *Composting Site*.

13. Only vehicles operating under the City's current Waste Management System Certificate of Approval No. A170150 are

permitted to bring waste to this *Site*during Sunday operating hours.

14. (i) The *Site* shall be operated and maintained in an environmentally safe manner which ensures the health and safety of all persons and minimizes visual impacts, surface water ponding, dust, odours, vectors, litter, vibration, noise and hazard to aircraft; and

(ii) If at any time problems such as dust, odours, vectors, litter, vibration, noise, hazard to aircraft or other nuisances are generated at the *Site*, resulting in complaints received by this *Ministry* and validated by a Provincial Officer, then the *City* shall upon request of the *Ministry*, take appropriate remedial action immediately. Appropriate measures may include temporary stoppage of all operations until the problem has been rectified and measures have been undertaken to prevent future occurrence.

Receiving Waste

15. a) *Residual waste,* transported from the *Site,* shall not exceed an average of one thousand (1000) tonnes per day averaged over a calendar year. If the *residual waste* approaches an average of one thousand (1000) tonnes per day, the *City* shall take measures immediately to reduce the receipt of the waste that causes the *residual waste* to approach the average of one thousand (1000) tonnes per day. *Residual waste* shall be disposed of at a waste disposal site approved by the *Ministry* to accept such waste;

b) The maximum amount of *residual waste* that may be transported from the *Site* is 1200 tonnes per day; and

c) In the event that *residual waste* and/or processed waste cannot be transferred from the *Site*, the *Owner* shall cease accepting any additional waste at the *Site.*

16. All in-coming and outgoing wastes to and from the *Site* shall be screened and inspected by *Competent Person* or *Trained Personnel* as detailed in the *Current Design and Operations Reports*, prior to being received, transferred and shipped to ensure wastes are being managed and disposed of in accordance with the *Act* and *O. Reg. 347*.

Waste Storage

17. Waste shall be stored at the *Site* in accordance with the *Current Design and Operations Reports* and at a minimum the *Owner* shall ensure that:

(1) i) all activities related to unloading waste, in-process waste and *residual waste* shall be conducted indoors at all times; and
ii) Condition 17. (1) i) does not apply to materials destined for recycling markets; and
iii) Condition 17.(1)(i) does not apply to materials received at the Public Drop-Off area.

(2) all *putrescible waste* shall be removed from the tipping floor of the *Waste Transfer Station* and the *MRF* at the end of each operating day and the tipping floor cleaned as necessary. Any *putrescible waste* that is not removed from the *Site* at the end of the operating day shall be stored indoors in a tarped or enclosed container;

(3) all containers used for the outside storage of non-putrescible processed waste that is destined for recycling markets shall be maintained in a leakproof condition and shall be tarped or enclosed unless material is being added or removed;

(4) The following are the maximum storage amounts that area allowed at the *Site*:
(a) *Waste Transfer Station* - 795 tonnes inside the *Waste Transfer Station* building;
(b) *MRF*- 3850 tonnes inside *MRF* building;
(c) Organic Waste Processing Facility- 8,500 tonnes inside building;
(d) Outdoor storage of the following:
i) *leaf and yard waste*- 4000 tonnes;
ii) a maximum of 3050 tonnes of non-putrescible recyclable wastes stored in dedicated bunkers or covered bins on an asphalt paved pad of approximate area of 6100 square metres pads located to the south of the transfer station and an asphalt paved pad of approximate area 2,100 square metres to the west of the Organic Processing Facility for the storage of such

recyclable materials as waste electronics, tires, scrap metal, corrugated cardboard and reusable materials;
iii) outdoor storage for a maximum of twelve (12) hours of two loaded transfer trailers from *Waste Transfer Station;*
iv) outdoor storage of *waste wood, wood waste* and *Amendment Materials* that are referred to in Condition 54 (9) of this *Certificate* in amounts that are needed for the processing of *Organic Waste* at the *Organic Waste Processing Facility;*
v) Any outdoor storage of recyclable waste shall not create a nuisance or hazard;
(e) wastes that are in bins in the Public Drop-Off area that is identified in Appendix A-1 of the Design and Operations Report that is identified in item 51 of Schedule "A"; and
(f) *MHSW Waste Transfer Station*-15 tonnes;

(5) The maximum storage times are as follows:

(a) *Waste Transfer Station* - i) *Organic Waste*- except as provided in (in building) Condition 17 (5) (a) ii), 24-hours storage time at the *Waste Transfer Station* until the *Start-up Date;*
ii) due to exceptional circumstances or an emergency, the *Owner* may request to the *District Manager* that maximum 24-hour storage allowed by Condition 17 (5)(a) i) be extended to up to 72-hours and the *District Manager* has the authority to grant written concurrence to such a request;

iii) after the *Start-up Date, Organic Waste, Residual Waste* and/or *rejected waste* may be stored at the *Waste Transfer Station* in accordance with Condition 56 (2)(h), 56(3)(c), and/or 56(4)(b);
iv) after the *Start-up Date,* due to exceptional circumstances or an emergency that results in the cessation of further processing at the *Composting Site,* on a one time basis for each such cessation of further processing, the *Owner* may remove the unprocessed organic waste from the *Composting Site* and transfer it in a covered container, on a priority basis, to the *Waste Transfer Station* and have it removed from the *Waste Transfer Station* on the same day that the transfer of unprocessed Organic Waste occurred on;

v) all other waste - 72-hours;

vi) due to exceptional circumstances or an emergency, the *Owner* may request to the *District Manager* that maximum 72-hour storage allowed by Condition 17 (5)(a) v) be extended to up to seven (7) days and the *District Manager* has the authority to grant written concurrence to such a request; and
vii) notwithstanding Conditions 17 i), ii), iii), iv), v) and vi), if the *District Manager* determines that the storage of odorous waste at the *Waste Transfer Station* is causing significant odour issues, the odorous waste at the *Waste Transfer Station* shall be immediately removed from the *Site;*

(b) *MRF* i) 5 days for generation of *residual waste* from date of (in building) generation; and

ii) 120 days for all other waste;

(c) Organic Waste i) as outlined in Condition 54 (8)(a)

Processing Facility of this *Certificate, Organic Waste* shall

be incorporated into active *Composting* process within 36-hours of receipt;
ii) as outlined in condition 54 (8)(e) of this *Certificate, residual waste (Processing Building)*
-maximum of 14 days storage time from generation date;

(d) Outdoor storage of waste - i) 12 hours for a maximum of two loaded and

transfer trailers from the *Waste Transfer Station;* and
ii) seven (7) days storage time for all other waste stored outside;

(e) Outdoor storage of materials referred to in Conditions 54 (9) and 17 (4)d.(iv) -
the reasonable amount of time required for operational needs at the *Organic Waste Processing Facility* for the outdoor storage of *waste wood, wood waste* and
*Amendment Materials;*and

(f) *MHSW* - 90 days storage time; and

(6) No storage or transfer areas, other than those approved under this *Certificate* shall be used for waste storage or transferring.

Dirt, Dust and Airborne Emissions
18. (a) The *City* shall ensure that dust and/or other material that may become a contaminant, generated by activities on the *Site*, is minimized in a manner that ensures there are no off-*Site* impacts of such emissions. The *City* shall implement control measures as outlined in the approved Operation and Management Plan to comply with this Condition;

(b) The *City* shall ensure that vehicles entering the *Site* do not drag into the *Site*, dirt and/or other material that may become a contaminant or a nuisance. The *City* shall ensure that vehicles leaving the *Site* do not drag out of the buildings or off the *Site* waste, dirt and/or other material that may become a contaminant or a nuisance; and

(c) All parking areas, on-*Site* roads that are used for transportation of wastes, recyclable material and/or processed material including *Compost,* and storage areas shall be paved and shall be cleaned as necessary to prevent dust and litter from blowing off the *Site*.

Litter
19. (a) Litter shall be picked up daily from the *Site* and from roads and ditches within one (1) kilometer of the *Site*;

(b) All collected and stored litter shall be in closed or covered containers;

(c) Litter collected through the litter control program shall be transferred off-*Site* or processed within four (4) days of collection; and

(d) The *City* shall undertake all reasonable measures at the *Site* to ensure that there is no unauthorized dumping of waste on the *Site*.

Rodents and Vermin
20. (a) The *City* shall implement the approved litter control to minimize and control the occurrence of vectors, rodents and vermin; and

(b) If necessary, the *City* shall retain the services of a pest management company to monitor and controls vectors, rodents and vermin.

Odour
21. a) The Odour Monitoring Program that is required by Condition 58 (13) of this *Certificate* also shall be designed to detect and identify any odours originating from the operation of the *Waste Transfer Station* and the *MRF;*

b) *Organic Waste* received at the public drop-off bins shall remain covered at all times other than loading and shall be emptied indoors daily; and

c) If *putrescible waste* is received at the *Material Recovery Facility,* it shall remain covered at all times other than during loading and unloading.

Noise
22. (a) All off-road equipment used at the *Site* shall be operated in such a manner that sound levels from such equipment do not exceed 85 decibels at 15 metres measurement distance;

(b) All off-road equipment shall be operated and maintained in accordance with the procedures specified in Publication NPC-115 of the *Ministry's* Model Municipal Noise Control By-law;

(c) All stationary equipment shall be operated and maintained in accordance with the procedures specified in Publication NPC-105 of the *Ministry's* Model Municipal Noise Control By-law; and

(d) Notwithstanding Conditions 22, (a), (b) and (c), if at any time noise and vibration nuisances are generated at the *Site*, resulting in complaints received by this *Ministry* and validated by a Provincial Officer, the *City* shall take remedial action immediately.

Hazard to Aircraft

23. (a) The *City* shall ensure that the activities related to the operation of the *Site* do not create a hazard to aircraft;

(b) The *City* shall ensure that there is no net increase in bird populations at the *Site* above the baseline levels established by the baseline study that has been conducted by the *Owner;*

(c) If the population of *birds* in the vicinity of the facility increases above the baseline levels, the *City* shall immediately undertake additional bird deterrent measures, to bring the bird population in accordance with baseline levels;

(d) The *City* shall ensure that the number of thermals created by the *Site* is kept to the minimum and that the number of *birds* soaring in these thermals shall not exceed ten (10) at any given time;

(e) The *City* shall ensure that the amount of dust, steam, smoke or other airborne vapour discharged from the facility is kept to the minimum and shall not restrict visibility on or near the Guelph Air Park;

(f) The *City* shall continue to implement a bird control management plan, as required, to ensure the *Site* is not an attraction to *birds*. The bird control management plan shall include but not be limited to additional bird deterrent measures in addition to the measure outlined in Item 6 of Schedule "A"; and

(g) Upon receipt of a written notification that Transport Canada or such other governmental agency of equivalent jurisdiction over airport operations has served notice or a similar written warning to shut down or curtail airport operations at the Guelph Air Park due to hazard to aircraft as a result of *birds* in the vicinity of the airport, which may or may not be a direct result of the *Site* operations, the *City* shall undertake the following measures immediately:
(i) cease acceptance of all waste at the *Site*, except *MHSW*, unless in the opinion of the *District Manager*, the reason for the hazard to aircraft as a result of *birds* is known, and is not a direct or indirect result of *Site* operations;
(ii) if the reason for the hazard to aircraft as a result of *birds* is known and is a direct or indirect result of *Site* operations, take all reasonable measures to investigate the problem, institute remedial/mitigative measures immediately, devise a long-term action plan to avoid any such future occurrences at the airport and submit a comprehensive report of such plans to the *Director*, and the appropriate agency that has served the notification to shutdown or curtail airport operations;
(iii) if the reason for the hazard to aircraft as a result of *birds* is not known, the *City* shall undertake a comprehensive study, acceptable to the *Director* and the agency that served notification to shutdown or curtail operations to determine if such hazard to aircraft was a direct or indirect result of the *Site* operations and to propose measures to prevent any similar or related occurrences that may create a hazard to aircraft;
(iv) the *City* shall submit the reports required by Condition 23 (g) (ii) and (iii) to the *Director* for approval and to the agency that served notification to shutdown or curtail airport operations. Upon the *Director's* approval, the *City* shall implement remedial/mitigative/contingency measures, as required;
(v) The *City* shall not accept any waste at the *Site* unless a qualified professional consultant has submitted a report stating that the hazard to aircraft as a result of *birds* has been resolved, or is not the direct or indirect result of *Site* operations, and the *Director* has authorized that the *Site* can again begin to accept waste;
(vi) notwithstanding Condition 23 (g) (ii), (iii), (iv) and (v), the *City* may continue to process any waste materials inside the *Organic Waste Processing Facility* and the *Material Recovery Facility* that were present at the *Site* prior to the *City* ceasing to accept waste at the *Site* pursuant to Condition 23 (g) (i). The *City* shall continue to ensure that all *Site* activities do not create a hazard to aircraft safety;
(vii) During the period of shutdown the *City* shall implement its contingency plan for disposal of waste at approved alternative location(s); and
(viii) Condition 23(g) (i) to (vii) does not relieve the *City* from implementing all necessary contingency/mitigative measures

to ensure that *Site* activities do not create a hazard to aircraft.

Traffic

24. The *City* shall make adjustments to traffic flow patterns, including but not limited to the use of traffic lights as required, to minimize any adverse traffic impacts resulting from the facility traffic patterns.

Operating Hours

25. (a) All control measures at the *Site,* including but not limited to, dust, odours, vectors, litter, noise and hazard to aircraft shall take place 24-hours a day, seven (7) days a week;

Composting Site

(b) The allowed hours of operation of the *Composting Site* operation are covered by Condition 56 (1);

***MHSW Transfer Station, MRF,* and Public Drop-off area**

(c) Waste and recyclable materials destined for the *MHSW,* the *MRF,* and/or the Public Drop-off area may be received at the *Site* only from 7:00a.m. to 11:00p.m. from Monday to Friday, and from 8:00a.m. to 4:00p.m. on Saturday;

(d) Waste and/or recyclable materials may be transferred from the *Site* only during the following hours:
(i) Monday to Friday 7:00a.m. to 6:00 p.m; and
(ii) Saturday 8:00 a.m. to 4:00 p.m.;

(e) Outdoor processing of waste and/or recyclables associated with the *MHSW Transfer Station,*the *MRF* and/or the Public Drop-off area may occur only in the following hours:

(i) Monday to Friday 7:00 a.m. to 11:00 p.m.; and
(ii) Saturday 8:00 a.m. to 4:00 p.m.;

(f) Indoor processing at the *MRF* and/or the *MHSW* may take place from Monday 12:00 a.m. to Saturday 11:59 p.m. In extraordinary circumstances, indoor processing may take place beyond these hours to eliminate any backlog of material requiring processing;

(g) Due to exceptional circumstances or an emergency, the *Owner* may request to the *District Manager* that the hours of operation of the *MHSW Transfer Station,* the *MRF* and/or the Public Drop-off area be extended and the *District Manager* has the authority to grant written concurrence to such a request;

Waste Transfer Station

(h) Subject to Condition 13, waste destined for the Waste Transfer Station may be received at the *Site* only from Monday to Sunday from 7:00a.m. to 7:00p.m.;

(i) Notwithstanding the hours of operation for waste receipt at the *Waste Transfer Station* referenced in Condition 25 (g), the *Site's* activities and movement of waste within the *Site*related to the *Waste Transfer Station,* including outgoing shipments, may occur only during the hours of 7:00a.m. to 11:00p.m Monday to Saturday; and

(j) Due to exceptional circumstances or an emergency, the *Owner* may request to the *District Manager* that the hours of operation of the *Waste Transfer Station* be extended and the *District Manager* has the authority to grant written concurrence to such a request.

Competent People* and *Trained Personnel

26. a) The *Municipality* shall ensure through proper training programs and personnel records that all personnel directly involved with activities relating to the operation, maintenance and inspection of the *Site* are *Competent People* and that all personnel directly involved with the activities of the *Organic Waste Processing Facility* are *Trained Personnel* and that they are given refresher training on the components of a *Competent Person* or *Trained Personnel* as applicable, at least once every three years; and

b) The *Municipality* shall keep a record that is in electronic or written format that is easily accessible for inspection by a *Provincial Officer* of all employees who are *Competent People* and *Trained Personnel.*

27. The *Municipality* shall ensure that *Competent People* or *Trained Personnel* are available at all times during the hours of operation of this *Site*. No loading, unloading, or sorting of recyclables or any waste material shall occur unless a *Competent Person* or *Trained Personnel* supervises the loading, unloading, or sorting operation.

28. All in-coming and outgoing wastes shall be screened and inspected by *Competent People* or *Trained Personnel* as detailed in the *Current Design and Operations Reports*, prior to being received, transferred and shipped to ensure wastes are being managed and disposed of in accordance with the Act and *O. Reg. 347*.

Public Liaison Committee

29. (1) The *Owner* shall invite the following groups to provide input and/or comments into preparation of the Terms of Reference for the *Public Liaison Committee (ToR PLC):*

(a) home owners within 2,000 metres of the *Composting Site*;
(b) any interested non-governmental organization (NGOs); and
(c) any interested person(s) or group(s);

(2) (a) The *Owner* shall consider all input and/or comments submitted by the groups listed above during preparation of the *ToR PLC*; and

(b) A minimum of ninety (90) days prior to the receipt of the *Organic Waste* at the *Composting Site*, the *Owner* shall prepare and submit to the *District Manager* the *ToR PLC*, including documentation demonstrating consideration of all public input and/or comments received, for written concurrence of the *District Manager;*

(3) The *ToR PLC* shall be amended from time to time according to appropriate amending procedures identified within the content of the *ToR PLC*. Any amendment to the *ToR PLC* must be agreed to by the *District Manager* prior to its implementation;

(4) Within sixty (60) days from the *District Manager`s* concurrence to the *ToR PLC,* the *Owner* shall take all reasonable steps to establish a *Public Liaison Committee (PLC)* which shall serve as a forum for dissemination, consultation, review and exchange of information regarding the operation of the *Composting Site*, including environmental monitoring, maintenance, complaint resolution, and new approvals or amendments to existing approvals related to the operation of this *Composting Site*;

(5) The *Owner* shall invite representation from the following groups to participate on the *PLC*:

(a) home owners within 2,000 metres of the *Composting Site;*
(b) any interested NGOs; and
(c) any interested person(s) or group(s);

(6) The number of representatives from each group shall be as specified in the *ToR PLC* approved by the *District Manager;*

(7) No later than ninety (90) days from the *District Manager`s* concurrence to the *ToR PLC,* the *Owner* shall submit to the *District Manager* a written report that details steps to be taken by the *Owner* to establish, maintain and participate in a *PLC*. This report shall include the identification of each of the representatives that have been invited to participate in the *PLC*;

(8) A copy of the Annual Report that is required by Conditions 52 shall be provided to the *Public Liaison Committee* at the first scheduled meeting following March 31st; and

(9) The *City* shall allow reasonable access to the *Site* for any member of the *Public Liaison Committee;*

30. The *City* shall make available to the *Public Liaison Committee,* all records and reports required by this *Certificate* for the purposes of monitoring the ongoing operations of the *Site.*

E. STORMWATER AND WASTEWATER MANAGEMENT:

31. The *Municipality* shall manage all discharges from this *Site* including stormwater run-off, including the stormwater

collected and contained in the Stormwater Collection Ponds, in accordance with Municipal and Private Sewage Works Certificate of Approval number 5015-856HHG and appropriate Municipal, Provincial and or Federal Legislation, Regulations and By-laws.

F. MONITORING PROGRAM

Groundwater Monitoring

32. Groundwater shall be sampled on a semi-annual basis (spring and fall).

33. The analyses of samples collected in accordance with Condition 32 shall seek to identify chloride, nitrate and a suite of compounds characteristic of waste at the *Site*. Sampling frequency and parameters for analysis may be adjusted upon the approval of the *District Manager,* as groundwater information become available.

34. All monitoring wells which form part of any monitoring program shall be protected from damage. Any groundwater monitoring wells that are damaged shall be repaired or replaced forthwith or properly abandoned in accordance with *Ontario Regulation 903*.

Surface Water Monitoring

35. (a) The *City* shall annually review and update the existing surface water sampling program, designed to detect and quantify any impacts originating from the *Site*;

(b) A surface water sampling program shall be implemented to ensure early detection of contaminants in the event that such contaminants escape the *Site*. Surface water shall be sampled monthly for the following conventional parameters: biochemical oxygen demand (BOD), suspended solids (SS), ammonia, nitrogen, Total Kjeldahl Nitrogen (TKN), total phosphorus and phenolics. For all other parameters, surface water shall be sampled on a semi-annual basis (spring and fall). The analysis shall seek to identify chloride, nitrate and a suite of organic and inorganic compounds characteristic of waste generated at the *Site;*

(c) Sampling frequency and parameter for analysis may be adjusted upon the approval of the *District Manager,* as surface water information become available;

(d) Surface water shall be sampled at the discharge location of the final surface water detention pond;

(e) The *City* shall ensure that all stormwater which comes in contact with waste material is treated or discharged into the sanitary sewer; and

(f) The *City* shall annually review and update the detailed maintenance schedules for the infiltration trenches and stormwater detention ponds.

Reporting on monitoring.

36. The *Municipality* shall include the results from the approved program covering the previous calendar year, with the interpretation of the monitoring results prepared by a qualified hydrogeologist, engineer or scientist in the Annual Report referenced in Condition 52. Following a review of the analytical results or, of any of the reports required by this Condition, the *District Manager* or, the *Director* may alter the frequencies and locations of sampling and parameters for analysis required by this Condition if he/she considers it necessary for proper assessment of the quality of the groundwater or, if he/she is requested to do so by the *Municipality* and considers it acceptable by the evidence of information in support of the request.

G. *SITE* SECURITY

37. (a) The *City* shall ensure that a *Competent Person* is available at all times during the hours of operation at this *Site*. No loading or unloading of waste, *Compost* and/or recyclable material, including the public drop-off bins, shall occur unless a *Competent Person* supervises the loading or unloading operation. No public drop-off shall be allowed beyond the normal

operating hours of the facility. No processing shall occur unless a *Competent Person* supervises the processing;

(b) Not less than once each calendar year, the *City* shall ensure that a fire inspection is carried out to determine if adequate fire prevention and protection measures are in place for the facility;

(c) The *City* shall ensure that the *Site* is adequately lit at all times;

(d) The *City* shall ensure that the existing signs posted on the *Site*, which identify the name of the facility and an emergency and/or *incident* reporting telephone number, continue to be adequately maintained;

(e) The *City* shall ensure that the existing 1.6 metre high fence with lockable gates is adequately maintained in order to continue to preserve the security of the *Site*; and

(f) The *City* shall ensure that the *Site* is secured beyond the normal operating hours of the facility to prevent unauthorized entry.

H. *WASTE TRANSFER STATION*

38. a) Except as noted in Condition 38 b) and c) of this *Certificate*, the *Waste Transfer Station* may accept non-hazardous solid industrial waste from industrial, commercial and institutional sources, commercial waste and domestic waste;

b) asbestos waste may not be accepted at the *Waste Transfer Station;* and

c) *Organic Waste* may only be accepted at the *Waste Transfer Station* in accordance with Condition 17.(5)(a).

39. a) Except as noted in Condition 17.(5)(a) ii), iii), iv) and vi) in accordance with Condition 17.(5)(a)i), the maximum storage time at the *Waste Transfer Station* building for allowed *Organic Waste* is 24-hours; and

b) The maximum storage capacity in the building at the *Waste Transfer Station* is 795 tonnes in the *Waste Transfer Station* building.

I. *MATERIAL RECOVERY FACILITY*

40. (a) The *City* shall ensure that only municipal waste recyclable material, generated within the Province of Ontario is received at this *Site;*

(b) The maximum storage capacity at the *MRF* is 3,850 tonnes;

(c) All materials to be processed at the *Material Recovery Facility* shall be unloaded and processed indoors except commingled recyclables which may also, as required, be unloaded into the outdoor storage bunker assigned to this material, or in the *Organic Waste Processing Facility* when not in use for *Composting*;

(d) The *City* shall ensure all storage containers are maintained in good condition;

(e) The *City* shall limit any outside storage to processed or source-separated non-putrescible dry materials, dropped off by either commercial or residential vehicles, including but not necessarily limited to tires, rubble, electronic waste, source separated roofing shingles, mattresses, textiles, white goods, construction and demolition wastes, commingled recyclables, *wood waste, waste wood*, glass, scrap metal, and drywall;

(f) The *Owner* may apply to the *District Manager* for the outdoor storage in concrete bunkers or in storage containers of additional non-hazardous solid waste(s) that is/are not provided for in Condition 40 (e) and the *District Manager* may provide written concurrence to the *Owner* for the storage of non-hazardous solid waste(s) that is/are not provided for in Condition 40 (e);

(g) Outside storage shall be on an asphalt pad, or equivalent impermeable surface, within designated concrete bunkers, or in closed storage containers in a manner and in amounts which does not create a nuisance or hazard;

(h) The *City* shall implement litter controls including, but not limited to, covering waste with netting and limiting the receipt

or movement of materials on windy days. Litter pick-up shall occur daily and after the movement of waste either into the *Material Recovery Facility* for processing or after loading vehicles for off-*Site* transfer at a minimum;

(i) The outdoor storage of any wastes that may attract *birds,* vectors, rodents and/or vermin is prohibited;

(j) The *City* shall ensure that the addition, removal and processing of all wastes and/or recyclable material occurs only in the presence of a *Competent Person;*

(k) The *Material Recovery Facility* doors for vehicular traffic shall normally be kept closed and shall only be opened for entry or departure of vehicles if there is an attraction to *birds;*

(l) All *dry waste* shall be processed and shipped off-*Site* within 120 days of receipt; and

(m) *Residual waste* not suitable for further processing at the *Site* shall be moved off-*Site* within five (5) days of generation.

J. *MUNICIPAL HAZARDOUS AND SPECIAL WASTE TRANSFER STATION*

41. In this section, "processed waste" means wastes that have been bulked together in a common container or packaged for disposal.

42. (a) The operation of this *MHSW Transfer Station* is limited to the collection and transfer of waste classes 112, 121, 145, 146, 148, 212, 213, 221, 242, 251, 252, 261, 263, 269, 312, and 331 and also includes wet cell batteries and small dry cell batteries, household cleaners and detergents, aerosols, waxes and polishes, fluorescent tubes and energy efficient light bulbs, mercury switches and thermostats; as outlined in the New Ontario Waste Classes, January 1996, and waste allowed by Condition 43(b); and

(b) The maximum amount of *MHSW* and waste allowed by Condition 43(b) that may be stored at the *Site* is 15 tonnes.

43. (a) The *City* shall ensure that only *MHSW* generated by residents living within the City of Guelph and the County of Wellington is received. No industrial, commercial and/or institutional hazardous waste shall be received at this facility;

(b) Subject to the limitations outlined in Condition 42 of this Certificate, the City of Guelph may accept for collection and transfer at the *MHSW Transfer Station, MHSW* or other waste acquired by the City from *small generators*as a result of the management of incidents of improper or illegal dumping in the City of Guelph, none of which shall exceed the quantities outlined in the definition of *small generators* that is defined in the definitions section of this Certificate;

(c) The *City* shall ensure that a *Competent Person* is on duty at all times during the operation of the *MHSW Transfer Station* to provide proper supervision of activities;

(d) The *City* shall ensure that adequate fire fighting equipment is available at the *MHSW Transfer Station* location at all times and that on-*Site* staff are trained in the use of such equipment;

(e) The *City* shall ensure that the local police and fire departments are informed of the operation at the *MHSW Transfer Station* at all times and are kept up-to-date on the types and quantities of waste that the facility handles;

(f) 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 Guelph Fire Department, a Professional Engineer or who has specialized training in fire and explosion hazards;

(g) The *City* shall ensure that the management and disposal of waste at the *MHSW Transfer Station* is done in accordance with Ontario Regulation 347;

(h) i) The *MHSW Transfer Station* shall be inspected by a *Competent Person*

on each operating day basis to ensure the proper storage and handling of *MHSW* waste and that the integrity of waste containers is intact;

ii) A daily record of the inspections required by Condition 43(g)i shall be maintained by the *Owner;*

iii) At a minimum, the record shall indicate the date and time of the inspection, the name of the *Competent Person* who did the inspection, a description of any unusual observations, such as spills, made during the inspection, description of any action taken to correct an *incident* that was identified and any recommendations for preventing a recurrence of a similar *incident;* and

iv) the records required by Condition 43(g)ii shall be made readily available for an inspection by a *Provincial Officer;*

(i) No MHSW waste shall be stored on-*Site* longer than ninety (90) days from the date it was received;

(j) All storage of waste shall be in accordance with the *Ministry's* "Guidelines for Environmental Protection Measures at Chemical and Waste Storage Facilities," May 2007, and its amendments;

(k) The *City* shall have a *Competent Person* annually review and update the existing waste screening measures for all incoming waste, to ensure only wastes approved by this *Certificate* are received at this facility;

(l) Any updated report on the waste screening measures shall be submitted to the *District Manager;* and

(m) The *City* shall ensure that no *PCB waste* are accepted at the *Site*. 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:
(i) 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*;
(ii) The *City* shall ensure a waste tracking system is established to property identify the source of any confirmed *PCB waste;*
(iii) 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;
(iv) 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
(v) 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 Certificate of Approval which specifies the manner in which *PCB waste* may be stored, handled, collected, transported or disposed of.

44. The *City* may offer materials in Ontario Waste Classes 145 (paint), 331 (aerosols), 213 (car products) and 148 (cleaning products) to the public.

K. *WRIC ENVIRONMENTAL EMERGENCY PLAN*

45. (a) Within thirty (30) days of commencing the receipt of Organic Waste at the *Composting Site,* the *Owner* shall update its "Solid Waste Resources Emergency and Contingency Plan" that is contained in the *Owner's* Design and Operations Reports that are referenced by Items 49, 50 and 51 of Schedule "A" by submitting to the *District Manager* a *WRIC Environmental Emergency Plan* for the entire *Site.* The *WRIC Environmental Emergency Plan* for the entire *Site* shall be prepared in consultation with the local Municipality and the City of Guelph Fire Department;

(b) The *WRIC Environmental Emergency Plan* shall identify measures for the preparation for, the prevention of, the response to and the recovery from environmental emergencies at the *Site* including but not limited to:

(i) a spill, process upset, emission of odours, fire, explosion or any other emergency situation, and disruption at the *Site* such as power failure and/or equipment failure;
(ii) specific clean-up methods for wastes expected to be generated from an emergency situation;
(iii) fire and explosion prevention planning and fire protection systems;
(iv) a list of equipment and clean-up materials available for dealing with the projected emergency situation;
(v) measures to be taken to prevent incompatible chemicals at the *MHSW* Transfer Station from coming into contact;

(vi) Environmental Emergency Planning measures for the *Composting Site* that are required by Condition 61 of this Certificate;
(vii) measure to be undertaken in the event hazard to aircraft problems develop or there is a net increase in *birds* at the *Site*;
(viii) measures to be undertaken in the event any unauthorized non-hazardous or hazardous waste or unidentifiable waste appears at the *Site*;
(ix) measures to be undertaken in the event of groundwater and/or surface water contamination;
(x) notification protocol with names and telephone numbers of persons to be contacted, including persons responsible for the *Site*, the *Ministry's District Office* and Spills Action Centre, the local Fire Department, the local Municipality, the local Medical Officer of Health, and the Ministry of Labour, and the names and telephone numbers of waste management companies available for emergency response; and
(xi) a complaints procedure that has a minimum the information that is outlined in Condition 46;

(c) No waste shall be received at the *Composting Site* for storage or processing until the *District Manager* provides a written concurrence for the emergency response and contingency planning measures for the issues in the *WRIC Environmental Emergency Plan* that deals with the *Composting Site;*

(d) The city shall keep up-to-date copies of its *WRIC Environmental Emergency Plan* at central locations at the *Composting Site*, the *Waste Transfer Station,* the *MRF* and the *MHSW Waste Transfer Station;*

(e) The *WRIC Environmental Emergency Plan* shall be reviewed on an annual basis and updated, if necessary by the *Owner.* Any revised version of the *WRIC Environmental Emergency Plan* shall be submitted within fifteen (15) days of the revision for comments and concurrence to the local Municipality, the Fire Department and to the *District Manager;* and

(f) After five (5) years from the date of issue of this *Certificate,* the *Owner* may apply in writing to the *District Manager* for agreement of the removal of the requirement in Condition 45(e) that requires *District Manager* concurrence. Also, the *District Manager* may provide written notice to the *Owner* that they are exempted from the noted provision in Condition 45(e).

Complaints Procedure

46. If at any time, the *Municipality* receives complaints regarding the operation of the *Site*, the *Municipality* shall respond to these complaints according to the following procedure:

(a) The *Municipality* shall record each complaint on a formal complaint form entered in a sequentially numbered log book. The information recorded shall include the nature of the complaint, circumstances of the complaint including weather conditions, the name, address and the telephone number of the complainant and the time and date of the complaint;

(b) The *Municipality,* 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 *Municipality* shall immediately orally notify the *Ministry* of the complaint, followed with the submission of a written report within one (1) week, of the complaint detailing what actions, if any, were taken to identify and remediate the cause of the complaint and what remedial action, if any, would be taken.

47. The *Municipality* shall take immediate measures to clean-up all spills, related discharges and process upsets of wastes which result from the operation of the *Site*. All spills and upsets shall be immediately reported to the *Ministry's* Spills Action Centre at (416) 325-3000 or 1-800-268-6060 and shall be recorded in a written log or an electronic file format, referred to in Condition 51 of this *Certificate*, as to the nature of the spill or upset, and the action taken for clean-up, correction and prevention of future occurrences.

L. INSPECTION

48. The ***Municipality*** shall have a *Competent Person* or *Trained Personnel* conduct regular daily and weekly inspections of the equipment and facilities as outlined in the Design and Operations Reports of this *Certificate* and as is required by Condition 57 of the *Certificate* to ensure that all equipment and facilities at the *Site* are maintained in good working order at all times. Any deficiencies detected during these regular inspections must be promptly corrected. A written record must be maintained at the *Site*, which includes the following:

(a) name and signature of *Trained Personnel* conducting the inspection;

(b) date and time of the inspection;

(c) list of equipment inspected and all deficiencies observed;

(d) a detailed description of the maintenance activity;

(e) date and time of maintenance activity; and

(f) recommendations for remedial action and actions undertaken.

49. The *Municipality,* in addition to inspections and documentation requirements carried out in Condition 48, shall conduct on each operating day, a physical inspection of the following areas to ensure the *Site* is secure or operating properly and that no off-*Site* impacts such as vermin, vectors, odour, noise, dust, litter, or other possible contaminants resulting from the operation of the Facility:

(a) Oil/water separator;
(b) holding tanks and associated containment areas;
(c) drainage swales, culverts and catch basins and stormwater management pond; and
(d) security fence, barriers and property line.

50. The *City* shall remedy any malfunction and/or deficiency which these inspections reveal.

M. RECORD KEEPING

51. (a) The *City* shall maintain written records of daily *Site* inspections at the *Site*. This record shall be in the form of a *Site* Inspection daily log(s) and shall include as a minimum:
(i) the requirement outlined in Condition 63 of the *Certificate;*
(ii) date and time of inspection;
(iii) name, title and signature of a *Competent Person* or *Trained Personnel* supervising the inspection;
(iv) a listing of all equipment, fencing, gates etc inspected and any deficiencies observed;
(v) any maintenance conducted as a result of these inspections;
(vi) recommendations for remedial action and date remedial action, if necessary, was completed;
(vii) indication whether odours are detectable;
(viii) indication of any litter collected;
(ix) indication of any *incidents;* and
(x) indication of *birds;*

(b) The *City* shall maintain daily written records of the waste and/or recyclable material received and processed at the *Waste Transfer Station,* the *Material Recovery Facility,* the *Municipal Hazardous and Special Waste Facility* and *the Organic Waste and Composting Site.* This record shall include as a minimum:
(i) date, quantity and source of waste and/or recyclable material received;

(ii) date and quantity of waste and/or recyclable material processed;
(iii) date, quantity and the destination of material transferred off-*Site*; and
(iv) date, quantity and destination of any *rejected waste* from the *Organic Processing Facility;*

(c) The log for the *Organic Waste* and *Composting Site* shall be in accordance with Condition 63;

(d) analytical results, when required of all in-coming and outgoing wastes and materials; and

(e) results of inspections and reports required under Conditions 48, 49 and 50, including the name and signature of the person conducting the inspection and completing the report.

N. ANNUAL REPORT

52. The *City* shall submit an annual report on the operation of the *Site* for the previous calendar year to the *District Manager* by March 31st of each year. This report will include the information required as follows:

(a) the information required by Condition 63 (8) of the *Certificate* dealing with the *Composting Site;*

(b) a monthly summary of the waste and/or recyclable materials received at the *Site*, including quantity, source and *Ontario Regulation 347* waste classes;
(c) a monthly summary of the wastes and/or recyclable materials processed at the *Site* including quantity and *Ontario Regulation 347* waste classes;
(d) a monthly summary of the waste and/or recyclable materials transferred off-*Site* including quantity, destination and *Ontario Regulation 347* waste classes;
(e) an annual summary of the analytical results for the groundwater, and surface water monitoring program including an interpretation of the results and any remedial/mitigative action undertaken;

(f) an annual summary of any deficiencies, items of non-compliance or process aberrations that occurred and remedial/mitigative action taken to correct them;
(g) a summary of any changes to the *Engineer's Report* and/or the Design and Operations Report that have been approved by the *Director* since the last annual report;
(h) a summary of any changes to the Design and Operations Report Design and the WRIC Environmental Emergency Plan that were made in accordance with Condition 68(1) of this *Certificate*;
(i) a summary of any changes to the Design and Operations Report that have been approved by the *Director* since the last annual report;
(j) update on activities of the *PLC*; and
(k) all measurement units shall be reported in consistent metric units.

O. CLOSURE PLAN:

53. (a) The *Municipality* shall submit, for approval by the *Director,* a written Closure Plan for the *Site* four (4) months prior to the closure of the *Site*. This plan must include as a minimum, a description of the work that will be done to facilitate closure of the *Site* and a schedule for completion of that work;

(b) The closure plan shall include the requirement of Condition 65 of this *Certificate*; and

(c) Within ten (10) days after closure of the *Site*, the *Municipality* shall notify the *Director* in writing that the *Site* has been closed in accordance with the approved Closure Plan.

P. *ORGANIC WASTE* AND *COMPOSTING SITE*

54. **Service Area, Approved Waste Types, Rates & Storage**
(1) The *Composting Site* may only accept solid non-hazardous residential, commercial, institutional or industrial *Organic Waste* from the Provinces of Ontario, limited to the following *Organic Waste*:

(a) Source-Separated *Organic Waste* limited to the following:

(i) food wastes: fruit, vegetable and general table scraps, meat and fish/shellfish products, dairy products, eggs and egg shells, herbs, nuts and seeds, sugar and spices, confectionery products, sauces, bones, pet food, bread, grains, rice, pasta, flour, coffee grounds and tea bags;
(ii) solidified cooking oils and cooked or raw grease and fats from residential sources only;
(iii) paper fibres: soiled paper towels, tissues, paper plates, coffee filters, soiled paper food packaging items such as boxboard, cardboard, newspaper, and other paper fibre packaging materials;
(iv) fresh flowers, houseplants and their soil, hair, pet fur, feathers and sawdust, wood shavings;
(v) ashes from residential sources only;
(vi) pet waste that is not collected or encased in a bag; and
(vii) pet litter box or bedding wastes, including the intermingled pet waste;

(b) *Organic Waste* from the industrial, commercial and institutional sources that produce or collect food wastes;

(c) *Leaf and Yard Waste;* and

(d) *Compost* overs as described in the supporting documentation listed in the attached Schedule "A".

(2) The *Composting Site* may accept the following *Amendment Materials*:

(a) straw and hay; and
(b) *brush*, *Clean Wood* and Clean Wood products.

(3) The *Composting Site* may accept the *wood waste* and the *waste wood*, as defined in this *Certificate*, for processing to undertake size reduction on the paved outdoor pad referred to as the Amendment, Recyclables, and Leaf and Yard Staging Area, described in documentation listed in the attached Schedule "A", for the purpose of subsequent transfer from the *Composting Site*.

(4) (a) The *Owner* shall not accept at the *Composting Site* any cooked or raw grease and fats from industrial, commercial and institutional sources;

(b) The *Owner* shall not accept at the *Composting Site* animal carcasses, used sanitary products and human body waste;

(c) The *Owner* shall not receive pet waste from commercial, institutional or industrial sources;

(d) The *Owner* shall not accept at the *Composting Site* any *Organic Waste* that is collected through a waste collection program that allows use of bags, except the waste that is generated in and collected by the City of Guelph and in accordance with Table 1 entitled "Proposed Phase-out of Plastic Bag Usage in Organics Collection" included in Item #40 of the attached Schedule "A";

(e) The *Owner* shall ensure that the *Organic Waste* collected in bags in accordance with restrictions specified above, is given priority in the processing and transfer to the *Composting* tunnels;

(f) The *Owner* shall ensure that the *Organic Waste* collected in bags in accordance with restrictions specified above, is transported directly from the collection route to the *Composting Site,* without any intermediate transfer step; and

(g) The *Owner* shall not accept at the *Composting Site* any waste that is classified as hazardous waste or liquid industrial waste in accordance with *O. Reg. 347*.

(5) The *Owner* is only approved to receive *Organic Waste* in quantities that are not to exceed:

(a) a maximum of 450 tonnes on a daily basis; and

(b) a maximum of 60,000 tonnes per year.

(6) The *Owner* is approved to store a maximum of 8,500 tonnes of waste at the *Composting Site* at any one time.

(7) All waste and *Amendment Materials* storage at the *Composting Site* is subject to the following limitations:

> (a) all unprocessed *Organic Waste* and the *Immature Compost* in various stages of curing and the *Finished Compost* shall be stored within the confines of the *Processing Building;*
>
> (b) the *leaf and yard waste,* the *waste wood*, the *wood waste* and the *Amendment Materials* may be stored outdoors on the paved pad referred to as the Amendment, Recyclables, and Leaf and Yard Staging Area, described in documentation listed in the attached Schedule "A";
>
> (c) all *Compost* shall be stored within the confines of the *Processing Building;*
>
> (d) all solid *residual waste (Processing Building)* shall be stored within the confines of the *Processing Building;* and
>
> (e) all solid *putrescible waste* generated through activities not relating to the handling and processing of *Organic Waste* (ie. office, lunch room, etc.) may be stored within the confines of the *Processing Building* and it shall be removed from the *Composting Site* as required in accordance with *O. Reg* 347 and the *EPA*.

(8) *Organic Waste* storage duration at the *Composting Site* is limited to the following:

> (a) The *Owner* shall ensure that the *Organic Waste,* excluding the *leaf and yard waste,* received at the *Composting Site* is incorporated into active *Composting* process no later than thirty six (36) hours from the time of its receipt;
>
> (b) The *Owner* shall ensure that the *Organic Waste* collected in bags in accordance with restrictions specified in this *Certificate*, is given priority in the processing and transfer to the *Composting* tunnels;
>
> (c) The *Owner* shall ensure that the *leaf and yard waste* storage duration shall not exceed seven (7) calendar days from the time of its receipt;
>
> (d) Notwithstanding provisions of Conditions 54.(8)(a) and (c), above, the *Owner* shall transfer all *Organic Waste* processed in the *Processing Building* into the *Composting* tunnels at the end of the operating day each Friday; and
>
> (e) The *Owner* shall not store the *residual waste (Processing Building),*at the Site in excess of fourteen (14) days from the date of its generation, or as directed by the *District Manager*.

(9) (a) The *Owner* shall ensure that all outside storage of the *leaf and yard waste,* the *wood waste,* the *waste wood* and the *Amendment Materials* is undertaken in a manner that does not cause an adverse effect or a hazard to the environment or any person; and

> (b) If in the opinion of the *District Manager*, the outside storage of the *leaf and yard waste,* the *wood waste,* the *waste wood* and the *Amendment Materials* results in odour complaint(s), the *Owner,* in consultation with the *District Manager* shall undertake appropriate steps, including reducing waste storage duration or the storage method, so that odour complaint(s) are eliminated.

(10) No outside waste storage of material from or for the Organic Waste Processing Facility other than the *leaf and yard waste,* the *waste wood,* the *wood waste* and the *Amendment Materials,* is approved under this Certificate."

(11) The *Owner* shall ensure that all *wood waste* and *waste wood* that has undergone size reduction at the Amendment, Recyclables, and Leaf and Yard Staging Area is segregated from the shredded *leaf and yard waste* and the *Amendment Materials* to prevent contamination of *Organic Waste* and *Amendment Materials* intended for the Composing Process.

(12) In the event that *Organic Waste* cannot be processed at the *Composting Site* in accordance with the requirements of this *Certificate*, the *Owner* shall cease accepting additional *Organic Waste* and shall remove all unprocessed *Organic Waste*

from the *Composting Site* in accordance with the procedures outlined in the *WRIC Environmental Emergency Plan*.

(13) All waste removed from the *Composting Site* shall be transferred to a waste disposal site for which a Provisional Certificate of Approval has been issued by the *Ministry* and the site is approved to receive this type and quantity of waste.

55. ***Composting Site*** **Security**
(1) The *Owner* shall ensure that all unloading and loading of waste and all *Organic Waste* processing activities at the *Composting Site* are at all times undertaken by *Trained Personnel.*

(2) The *Owner* shall ensure that the *Composting Site* is operated in a safe and secure manner, and that all waste is properly handled, packaged or contained and stored so as not to pose any threat to the general public and the *Composting Site* personnel.

56. ***Composting Site*** **Operations**

(1) The *Composting Site* is approved to operate within the following operating hours, subject to limitations of the local municipal by-laws:

Receipt and Removal of Waste from the Composting Site
(a) The *Owner* may only receive *Organic Waste* at the *Composting Site* and ship waste from the *Composting Site* between the hours of 7:00 a.m. and 6:00 p.m. Monday through Friday and between the hours of 8:00 a.m. and 4:00 p.m on Saturday;

Shipment of Compost from the Composting Site
(b) The *Owner* may only ship *Compost* from the *Composting Site* between the hours of 7:00 a.m. and 6:00 p.m. Monday through Friday and between the hours of 8:00 a.m. and 4:00 p.m on Saturday;

Processing Within the Processing Building
(c) The *Owner* may process the *Organic Waste* within the confines of the *Processing Building* twenty four (24) hours per day, seven (7) days per week;

Emergency Receipt of Waste
(d) The *Owner* may receive the *Organic Waste* at the *Composting Site* outside of the operating hours specified in sub-condition (a), above, on an emergency basis only;

(e) Within twenty four (24) hours from the emergency receipt of the *Organic Waste,* the *Owner* shall notify, in writing, the *District Manager* during regular business hours or verbally the Spills Action Centre, that the *Organic Waste* was received outside of the approved hours; and

(f) If in the opinion of the *District Manager,* the emergency receipt of the *Organic Waste* results in complaints, following the written notification from the *District Manager,* the *Owner* shall not receive the *Organic Waste* outside of the approved hours, until such time as the deficiencies causing complaints are rectified to the District Manager's satisfaction.

(2) **Incoming Waste/*Amendment Materials* receipt:**

(a) The *Owner* shall ensure that all unloading of the incoming *Organic Waste* at the *Composting Site*, takes place entirely within the confines of the *Processing Building;*

(b) Notwithstanding provisions of Condition 56.(2)(a), the *Owner* may unload the *leaf and yard waste,* the *wood waste,* the *waste wood* and the *Amendment Materials* outdoors on the paved pad referred to as the Amendment, Recyclables, and Leaf and Yard Staging Area, described in documentation listed in the attached Schedule "A";

(c) The *Owner* shall ensure that all loads of the incoming *Organic Waste,* excluding the *leaf and yard waste,* are accompanied by documentation containing the results of the required waste characterization as required by Condition 58.(2) or the identification of a pre-approved generator of waste as required by Conditions 58.(3)(b)

and 58.(3)(c);

(d) *Trained Personnel* shall inspect the required documentation prior to acceptance of the incoming *Organic Waste* at the *Composting Site;*

(e) The *Organic Waste* that has not been characterized in accordance with this *Certificate* or that is not accompanied by the required documentation shall not be accepted at the *Composting Site;*

(f) *Trained Personnel* shall visually inspect all incoming *Organic Waste* to ensure that only approved waste type is accepted at the *Composting Site;*

(g) The *Owner* shall only accept the incoming *Organic Waste* that is delivered in vehicles that have been approved by the *Ministry,* as required; and

(h) In the event that *Organic Waste* cannot be processed at the *Processing Building,* the portion of *Organic Waste* originating from the geographical area of the City of Guelph may be accepted at the *Waste Transfer Station* and may be stored for a maximum of 24-hours.

(3) ***Rejected Waste (Organic Composting Facility)*** **handling:**

(a) In the event that *Rejected Waste* is inadvertently accepted at the *Composting Site*, the *Owner* shall ensure that all *Rejected Waste:*

(i) is stored in a way that ensures that no adverse effects result from such storage;
(ii) is segregated from all other *Organic Waste;*
(iii) is handled and removed from the *Composting Site* in accordance with *O.Reg. 347* and the *EPA; and*
(iv) is removed from the *Composting Site* within three (3) days of its receipt or as acceptable to the *District Manager;*

(b) In the event that *Rejected Waste* is inadvertently accepted at the *Composting Site*, a record shall be made in the daily log book or in an electronic file of the reason why the waste was rejected and of the origin of the waste, if known; and

(c) i) *Rejected Waste* may be transferred to the *Waste Transfer Station* in a covered container; and

ii) In the event that *Rejected Waste* is transferred to the *Waste Transfer Station,*it shall be handled on a priority basis and removed from the *Waste Transfer Station* on the same day that the transfer of *Rejected* Waste occurred on.

(4) ***residual waste (Processing Building)*** **handling:**

(a) Subject to Condition 56 (4) (b), the *Owner* shall ensure that storage of all solid *residual waste (Processing Building)* resulting from processing of the *Organic Waste* at the *Composting Site* is undertaken within the confines of the *Processing Building;*

(b) i) *residual waste (Processing Building)*may be transferred to the *Waste Transfer Station* in a covered container; and

ii) In the event that *residual waste (Processing Building)* is transferred to the *Waste Transfer Station,* it shall be handled on a priority basis and removed from the *Waste Transfer Station* on the same day that the transfer of *residual waste (Processing Building)* occurred on.

(5) **Waste Processing:**

(a) The *Owner* shall ensure that all *Organic Waste* preprocessing, other than the activities approved under

Condition 56.(5)(c)(i), all *Organic Waste Composting*, all *Immature Compost* screening and curing and all *Finished Compost* screening are undertaken within the confines of the *Processing Building;*

(b) The *Owner* shall segregate the *Immature Compost* at various stages of curing until all *Compost* quality criteria specified in this *Certificate* are tested for and met; and

(c) (i) *Brush*, *Clean Wood* and clean wood products, *wood waste* and *waste wood* may undergo size reduction by shredding, grinding and/or chipping using *Ministry* approved equipment on the outdoor paved pad referred to as the Amendment, Recyclables, and Leaf and Yard Staging Area, described in documentation listed in the attached Schedule "A"; and

(ii) The *Owner* shall take precautions to ensure that size reduction activities do not cause a nuisance or impact including by limiting the hours of operation and/or refraining from carrying out size reduction during days with unfavourable meteorological conditions.

(6) **Odour Control:**

(a) The *Owner* shall maintain a negative air pressure atmosphere within the *Processing Building,* as compared to the ambient atmospheric pressure, at all times;

(b) The *Owner* shall ensure that the outside loading bay doors into the *Processing Building* are kept fully closed at all times except to permit the entry or exit of maintenance and waste and *Compost* transportation vehicles;

(c) The *Owner* shall ensure that the outside loading bay doors of the Receiving Area of the *Processing Building* are equipped with the air curtains, as described in the documentation of the attached Schedule "A", and that these air curtains are installed and maintained in accordance with the recommendations of the equipment manufacturer;

(d) The *Owner* shall ensure that, at all times, the air from the *Processing Building* is exhausted through an appropriate *Air Pollution Control Equipment* approved by the *Ministry* in the *Certificate of Approval (Air/Noise);*

(e) If in the opinion of the *District Manager,* the fugitive air emissions originating from the *Processing Building* result in odour complaint(s), the *Owner* shall implement modifications to the *Processing Building* as proposed in the *WRIC Environmental Emergency Plan,* within the time frame acceptable to the *District Manager;*

(f) The *Owner* shall ensure that no equipment handling *Organic Waste* or their storage containers are kept outside, unless they have been washed to prevent odours; and

(g) (i) Prior to the receipt of *Organic Waste* at the *Composting Site*, the *Owner* shall undertake an appropriate test to confirm the integrity of the *Processing Building* containment;

(ii) This test shall be undertaken in accordance with the test protocol prepared in the consultation with and approved by the *District Manager;* and

(iii) This test shall be repeated as directed or agreed by the *District Manager.*

57. **Equipment and *Composting Site* Inspections & Maintenance**

(1) Prior to receipt of any *Organic Waste* at the *Composting Site*, the *Owner* shall prepare a comprehensive written inspection program which includes inspections of all aspects of the *Composting Site's* operations including the following:

(a) *Processing Building* including all outside bay doors, the *Air Pollution Control Equipment* and the presence of rust on metal surfaces within the confines of the *Processing Building;*

(b) on-*Site* roads for presence of leaks and drips from the waste delivery trucks;
(c) presence of excessive fugitive dust emissions from the on-*Site* roads;
(d) on and off-*Site* litter; and
(e) presence of vector and vermin.

(2) The inspections are to be undertaken daily by *Trained Personnel* in accordance with the inspection program to ensure that all equipment and facilities at the *Composting Site* are maintained in good working order at all times and that no negative impacts are occurring as a result of the *Organic Waste* management operations at the *Composting Site.* Any deficiencies detected during these regular inspections must be corrected as soon as reasonable.

(3) The *Owner* shall develop and implement a preventative maintenance program for all equipment associated with the processing and managing of *Organic Waste* at the *Composting Site* and with control of odour and dust emissions. The preventative maintenance program shall be maintained up-to-date and shall be available for inspection by a *Provincial Officer* upon request.

58. **Quality Criteria, Testing & Monitoring**

(1) **Cross-Contamination Prevention**

(a) The *Owner* shall ensure that the incoming *Organic Waste* is kept separate and does not come in contact with the *Immature Compost* / the *Finished Compost* and the *Compost* except where the *Immature Compost* / the *Finished Compost* and the *Compost* are being fed back into the *Composting* process; and

(b) The *Owner* may use the equipment utilized in processing of the incoming *Organic Waste* to process the *Immature Compost* / the *Finished Compost* and the *Compost* provided that the equipment has been cleaned, in accordance with the procedures described in documents listed in the attached Schedule "A", to prevent the *Immature Compost* / the *Finished Compost* and the *Compost* from being contaminated by the incoming *Organic Waste.*

(2) **Quality Control Monitoring of the *Organic Waste* at the generator site:**

(a) Prior to being accepted at the *Composting Site* for the first time, the incoming *Organic Waste* from a new source/stream shall be characterized in accordance with the *Ministry's* regulatory requirements for sampling and testing to ensure that the incoming *Organic Waste* complies with the quality criteria specified in this *Certificate*. The incoming *Organic Waste* may be considered a pre-approved waste source/stream once the incoming *Organic Waste* meets the required quality criteria and has been classified as such by the *Owner;* and

(b) The incoming *Organic Waste* shall be re-characterized following any process changes, operational issues or other factors that may affect the quality of the incoming *Organic Waste* from the pre-approved source/stream.

(3) **Quality Control Monitoring of the *Organic Waste* at the *Composting Site*:**

(a) The *Owner* shall not accept for *Composting* any individual *Organic Waste* source or an additive necessary for *Composting* that exceeds the following quality parameters set out in "Schedule B" of this *Certificate:*

(i) trace elements; and
(ii) organic chemicals;

(b) (i) Notwithstanding requirements from Condition 58.(2), the *Owner* shall conduct quality control monitoring of the incoming *Organic Waste* from each source/stream, except the *leaf and yard waste;* and

(ii) The *Owner* sample and analyze the incoming *Organic Waste* weekly; and

(c) (i) For the incoming *Organic Waste* from a particular source/stream with consistent quality as demonstrated through a minimum of four (4) analytical events spaced over a minimum of four (4) weeks, the *Owner* may reduce the sampling frequency to once every two (2) months; and

(ii) A minimum of seven (7) business days prior to the change in the *Organic Waste* sampling frequency, as permitted by Condition 58.(3)(b)(ii), the *Owner* shall submit a written notification of the proposed change to the *District Manager*.

Compost Quality Criteria

(4) The *Finished Compost* is considered to be *Compost* when it meets the following *Compost* quality criteria:

(a) *Compost* quality criteria set out in Schedule "B" of this *Certificate*; and

(b) curing duration of a minimum of twenty one (21) days and compliance with one (1) of the following three (3) maturity criteria:

(i) the respiration rate is less than, or equal to, 400 milligrams of oxygen per kilogram of volatile solids (or organic matter) per hour; or

(ii) the carbon dioxide evolution rate is less than, or equal to, 4 milligrams of carbon in the form of carbon dioxide per gram of organic matter per day; or

(iii) the temperature rise of the *Compost* above ambient temperature is less than $8^{O}C$.

Quality Control Monitoring of _Finished Compost_

(5) As a minimum, the *Owner* shall conduct quality control monitoring of the *Finished Compost* as follows:

(a) a composite sample, consisting of a minimum of ten (10) representative grab samples, shall be collected for every 500 tonnes of the *Finished Compost* produced during the first four (4) months of operation;

(b) following the first four (4) months of operation, a composite sample, consisting of a minimum of ten (10) representative grab samples, shall be collected every two (2) months representing all *Compost* generated within the preceding sixty (60) days or every 5,000 tonnes of the *Finished Compost,* whichever comes first;

(c) if non-compliance with the *Compost* quality criteria has taken place during three (3) consecutive sampling events, the *Owner* shall sample and test the *Finished Compost* in accordance with Condition 58.(5)(a) until compliance with the *Compost* criteria is demonstrated again; and

(d) all composite samples shall be analyzed for the parameters listed in Schedule "B".

Enhanced Pathogen Testing

(6) (a) As a minimum, the *Owner* shall conduct an enhanced pathogen quality control monitoring of the *Finished Compost* as follows:

(i) a composite sample, consisting of a minimum of ten (10) representative grab samples, shall be collected and tested for every 500 tonnes of the *Finished Compost;* and

(b) Prior to any change in the pathogen testing program, the *Owner* shall submit a minimum of one (1) year of the testing data that demonstrates compliance with the pathogens *Compost* quality criteria to the *District Manager*. This testing data shall be cross-referenced with the pasteurization temperature monitoring data required to be collected in Condition 58.(10).

Sampling And Testing Methods

(7) All sampling and testing required in this *Certificate* for the purpose of verifying compliance with the *Compost* quality criteria from Condition 58.(4) shall be undertaken in compliance with the document entitled “National Standard of Canada CAN/BNQ 0413-200/2005 Organic Soil Conditioners – Composts”, dated 2005, as amended.

Non-compliance with Compost Quality Criteria

(8) (a) The *Finished Compost* is classified as waste until sampling/testing required by this *Certificate* demonstrates that all *Compost* quality criteria specified in this *Certificate* are met;

(b) (i) The *Finished Compost* that does not meet the pathogen criteria from Schedule "B" and/or non-biodegradable matter criteria from Condition 58.(4) shall be moved back to the aerobic *Composting* tunnels for re-processing;

(ii) Should the *Finished Compost* consistently exceed the pathogen criteria set out in Schedule "B", as demonstrated by three (3) sampling/testing events, the *Owner,* in consultation with the *District Manager*, shall implement appropriate modifications to the *Composting* process to ensure consistent destruction of pathogens;

(iii) The *Finished Compost* that does not meet the maturation criteria from Condition 58.(4) shall be re-tested and shall not be removed from the Maturation Area of the *Processing Building* until the maturation criteria are met;

(iv) The *Finished Compost* that does not meet the trace elements and/or organic chemicals criteria from Schedule "B" shall be kept segregated from all other waste and from the *Compost* and shall be handled as waste; and

(v) The *Finished Compost* that continues to be classified as waste shall be handled and be disposed of in accordance with *O. Reg. 347* and the *EPA*.

Process Monitoring
(9) The *Owner* shall ensure that the following process parameters are monitored:

(a) temperature of the *Composting Organic Waste* in the *Composting* tunnels, as proposed in documentation in the attached Schedule "A";
(b) temperature of the headspace air in the *Composting* tunnels, as proposed in documentation in the attached Schedule "A";
(c) inlet air temperature;
(d) outlet air temperature;
(e) relative humidity in the *Composting* tunnels;
(f) air flow into the tunnels;
(g) oxygen content in the air; and
(h) temperature of the *Immature Compost* in the curing piles.

Compliance With *Composting* Process Operating Parameters
(10) (a) The *Owner* shall ensure that the *Organic Waste Composting* in the *Composting* tunnels, is maintained at a minimum pasteurization temperature of 55^{O}C for a minimum of seventy two (72) hours, in accordance with the documentation listed in attached Schedule "A", to ensure complete inactivation of pathogens in the *Composting Organic Waste;*

(b) As a minimum, two (2) temperature probes shall monitor the required pasteurization temperature within the *Composting Organic Waste* and three (3) temperature probes shall monitor the headspace air temperature of each *Composting* tunnel;

(c) The pasteurization temperature measurements within the *Composting Organic Waste* must be taken one (1) metre inside the *Composting* stockpile mass; and

(d) Should temperature monitoring show that the required pasteurization temperature has not been achieved, the *Composting* process must be continued until the above requirement has been met.

Temperature Monitoring Within the Curing Stockpiles
(11) As a minimum, the *Owner* shall monitor the temperature of the *Immature Compost* within the curing stockpiles weekly. The measurements shall be taken one (1) metre inside the curing stockpile mass and at points sufficient to provide a temperature profile of the *Immature Compost*.

(12) The *Owner* shall not start the curing process duration countdown until the temperature monitoring required by Condition 58.(11), above, demonstrates that the temperature of the *Immature Compost* in the Maturation Area does not exceed 50 ^{O}C.

Odour Monitoring Program
(13) A minimum of ninety (90) days prior to any *Organic Waste* being received at the *Composting Site,* the *Owner* shall prepare and submit to the *District Manager* an Odour Monitoring Program. The Odour Monitoring Program shall be designed to detect and identify any odours originating from the operation of the *Composting Site* which may cause nuisance impacts. The Odour Monitoring Program shall include a description of the equipment and inspection protocol to ensure that negative pressure is maintained at all times throughout the *Processing Building.* The Odour Monitoring Program shall be implemented after written concurrence from the *District Manager* has been received. In the future, should it be necessary to modify the approved Odour Monitoring Program written authorization of the *District Manager* is required.

59. **Nuisance Impact Control & Housekeeping**

(1) The *Owner* shall ensure that all vehicles that have delivered *Organic Waste* to the *Composting Site* are not leaking or dripping waste when leaving the *Composting Site*.

(2) The *Owner* shall ensure that the exterior of all trucks delivering *Organic Waste* to the *Composting Site* is cleaned prior to leaving the *Composting Site,* as needed, to prevent odours. Truck washing shall occur only in the dedicated wash down area of the *Processing Building***.**

(3) Should the *Owner* become aware that the truck(s) delivering waste to the *Composting Site* have leaked waste or wastewater on the municipal roadways, the *Owner* shall immediately submit a written and/or verbal notification to the owner of the leaking vehicle(s).

(4) The *Owner* shall:

(a) take all practical steps to prevent the escape of litter from the *Composting Site;*
(b) pick up litter around the *Composting Site* on a daily basis, or more frequently if necessary; and
(c) if necessary, erect litter fences around the areas causing a litter problem.

(5) Prior to the receipt of any *Organic Waste* at the *Composting Site,* the *Owner* shall:

(a) implement necessary housekeeping procedures to eliminate sources of attraction for vermin and vectors; and
(b) hire a qualified, licensed pest control professional to design and implement a pest control plan for the *Composting Site.* The pest control plan shall remain in place, and be updated from time to time as necessary, until the *Composting Site* has been closed and this *Certificate* has been revoked.

(6) The *Owner* shall ensure that all *Composting Site* roads and operations / yard areas are regularly swept / washed to prevent dust impacts from the *Composting Site*.

(7) The *Owner* shall store all *Compost* within the confines of the *Processing Building.*

(8) The *Owner* shall regularly clean and disinfect, if necessary, all equipment and storage areas that are used to handle and process waste at the *Composting Site*.

60. **Operations Manual & Staff Training**

(1) The *Owner* shall prepare an Operations Manual for use by the *Composting Site* personnel. The Operations Manual shall contain the following:

(a) outline the responsibilities of the *Composting Site* personnel;
(b) personnel training protocols;

(c) waste receiving and screening procedures;
(d) unloading, handling and storage procedures;
(e) waste processing and process monitoring procedures;
(f) sampling and testing procedures;
(g) *Composting Site* inspections and recording procedures;
(h) the emergency response procedures; and
(i) procedure for handling complaints as described in the *Certificate of Approval (Air/Noise)* for this *Composting Site.*

(2) A copy of this Operations Manual shall be kept at the *Composting Site,* must be accessible to personnel at all times and must be updated, as required.

(3) (a) All employees of the *Composting Site* shall be trained with respect to the following, as it is relevant to the employee's position:

(i) terms, conditions and operating requirements of this *Certificate*;
(ii) operation and management of the *Site,* or area(s) within the *Composting Site,* as per the specific job requirements of each individual employee, and which may include procedures for receiving, screening and identifying waste, refusal, handling, processing and temporarily storing wastes;
(iii) an outline of the responsibilities of the *Composting Site* employees including roles and responsibilities during emergency situations;
(iv) the *WRIC Environmental Emergency Plan*, including exit locations and evacuation routing, and location of relevant equipment available for emergency situations;
(v) environmental, and occupational health and safety concerns pertaining to the wastes to be handled;
(vi) emergency first-aid information;
(vii) relevant waste management legislation and regulations, including the *EPA* and *O. Reg. 347*;
(viii) recording procedures as required by this *Certificate*;
(ix) equipment and *Composting Site* inspection procedures, as required by this *Certificate*;
(x) nuisance impact control & housekeeping procedures, as required by this *Certificate*; and
(xi) procedures for recording and responding to public complaints as required by the *Certificate of Approval (Air/Noise)* for this *Composting Site.*

(4) The *Owner* shall ensure that all employees are trained in the requirements of this *Certificate* relevant to the employee's position:

(a) upon commencing employment at the *Composting Site* in a particular position;
(b) whenever items listed in Condition 60.(1) are changed; or
(c) during the planned three (3)-year refresher training.

61. ***Environmental Emergency Plan (Composting Facility)***

(1) The emergency response and contingency planning measures for the *Composting Site* that are required by Condition 45(a)(vi) shall include, as a minimum, the following information:

(a) procedures and actions to be taken should the incoming *Organic Waste* not meet the quality criteria specified by this *Certificate*;
(b) procedures and actions to be taken should the composted *Organic Waste* fail to meet the compost quality criteria specified by the *Certificate*;
(c) procedures and actions to be taken should the occurrence of the complaints require the *Owner* to suspend the waste processing activities at the *Composting Site;*
(d) modifications to the *Processing Building* and the implementation schedule should the fugitive odour emissions originating from the *Processing Building* result in odour complaints;
(e) procedures and actions to be taken should a long term power failure at the *Composting Site* or a suspension of waste processing activities require a phased *Re-Start-up* of operations; and
(f) procedures to be taken should it be necessary for the *Owner* to remove the unprocessed *Organic Waste* from the *Composting Site.*

(2) The emergency response and contingency planning measures for the *Composting Site* that are required by Condition 45(a)(vi) shall be prepared in consultation with the *District Manager,* the local Municipality and the Guelph Fire Department.

(3) As is required by Condition 45(c) of this Certificate, no waste shall be received at the *Composting Site* for storage or processing until the *District Manager* provides a written concurrence to the Plan.

62. **Emergency Response and Reporting**

(1) The *Owner* shall immediately take all necessary measures, as outlined in the applicable *WRIC Environmental Emergency Plan*, to handle the emergency situations occurring at the *Composting Site* and/or *Re-Start-up* of operations.

(2) The *Owner* shall ensure that the equipment and materials outlined in the applicable *WRIC Environmental Emergency Plan* are immediately available at the *Composting Site* at all times and are in a good state of repair and fully operational.

(3) The *Owner* shall ensure that all *Composting Site* personnel are fully trained in the use of the equipment and materials outlined in the applicable *WRIC Environmental Emergency Plan*, and in the procedures to be employed in the event of an emergency.

(4) All Spills, as defined in the *EPA*, shall be immediately reported to the ***Ministry's*** **Spills Action Centre at 1-800-268-6060** and shall be recorded in the log book as to the nature and cause of the spill, and the action taken for clean-up, correction and prevention of similar future occurrences.

(5) Should a Spill, as defined in the *EPA,* occur at the *Composting Site,* in addition to fulfilling the requirements from the *EPA,* the *Owner* shall submit to the *District Manager,* a written report within three (3) calendar days outlining the nature of the Spill, remedial measure taken and the measures taken to prevent future occurrences at the *Composting Site.*

63. **Records Keeping**

Daily Activities

(1) The *Owner* shall maintain an on-*Site* written or digital record of activities undertaken at the *Composting Site.* All measurements shall be recorded in consistent metric units of measurement. The record shall include, as a minimum, the following information:

(a) date, quantity, source and type of the *Organic Waste,* (including any analytical data), received at the *Composting Site;*
(b) date, quantity, type and the destination of the *Compost,* transferred from the *Composting Site;*
(c) date, quantity, type and the destination of the *residual waste,* transferred from the *Composting Site* for final disposal;
(d) date, quantity, type and the destination of the *Rejected Waste,* transferred from the *Composting Site;*
(e) pre-Composting and post-Composting processing activities undertaken at the *Composting Site;*
(f) tunnel loading / unloading activities and number of *Composting* tunnels actively undergoing *Composting*;
(g) amount of the *Immature Compost* transferred from the *Composting* tunnels to the curing area;
(h) housecleaning activities, including litter collection, floor and equipment washing;
(i) loss of negative pressure within the *Processing Building* and the activities undertaken to restore the required negative pressure; and
(j) results of the hydrogen sulphide and ammonia monitoring required by the *Certificate of Approval (Air/Noise)* for this *Composting Site.*

Monitoring Records

(2) (a) The *Owner* shall establish and maintain a written or digital record of all monitoring activities at the *Composting Site* as required by this *Certificate* and the *Certificate of Approval (Air/Noise)* for this *Composting Site;* and

(b) The *Owner* shall establish and maintain a tracking system that tracks the pasteurization temperature measurements from the *Composting* tunnels and the testing results from the enhanced pathogen testing required by this *Certificate*. This tracking system shall include, as a minimum, the following information:

(i) identification of the *Composting* tunnel used for the purpose of the *Organic Waste* pasteurization;
(ii) the in-waste and the headspace temperature during the *Composting Organic Waste* pasteurization cycle, as required by this *Certificate*; and
(iii) the results of the pathogen testing, as required by this *Certificate*.

Emergency Situations
(3) The *Owner* shall maintain an on-*Site* written or digital record of the emergency situations. The record shall include, as a minimum, the following:

(a) the type of an emergency situation;
(b) description of how the emergency situation was handled;
(c) the type and amount of material spilled, if applicable;
(d) a description of how the spilled material was cleaned up and stored, if generated; and
(e) the location and time of final disposal, if applicable.

Inspections
(4) The *Owner* shall maintain an on-*Site* written or digital record of inspections as required by this *Certificate*. The record shall include, as a minimum, the following:

(a) the name and signature of the *Trained Personnel* 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.

Training
(5) The *Owner* shall maintain an on-*Site* written or digital record of training as required by this *Certificate*. The record shall include, as a minimum, the following:

(a) date of training;
(b) name and signature of employee who has been trained; and
(c) description of the training provided.

Sampling & Testing Records
(6) The *Owner* shall establish and maintain a written or digital record of all sampling and testing activities at the *Composting Site.* This record shall include, as a minimum, the following information:

(a) waste sampled, sample collection locations and volume 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 conducting the testing; and
(f) conclusions drawn with respect to the results of the testing.

Complaints Response Records
(7) The *Owner* shall establish and maintain a written or digital record of complaints received and the responses made as required by the *Certificate of Approval (Air/Noise)* for this *Composting Site.*

Annual Report
(8) By March 31st following the end of each operating year, the *Owner* shall prepare and submit to the *District Manager,* an Annual Report summarizing the operation of the *Composting Site* covering the previous calendar year. This Annual Report shall include, as a minimum, the following information:

(a) a monthly mass balance of the *Organic Waste* received, processed and transferred from this *Composting Site,* including waste type, quantity, sources and/or disposal destinations;
(b) an annual summary mass balance of the *Organic Waste,* the *wood waste,* the *waste wood* and the Amendment Material received, processed and transferred from this *Composting Site,* including waste type, quantity, sources and/or disposal destination;
(c) an annual summary of any deficiencies, items of non-compliance or process aberrations that occurred at this *Composting Site* and any remedial / mitigative action taken to correct them;
(d) a descriptive summary of any spills, *incidents* or other emergency situations which have occurred at this *Composting Site,* any remedial measures taken, and the measures taken to prevent future occurrences;
(e) a summary describing any *Rejected Waste* including quantity, waste type, reasons for rejection and origin of the *Rejected Waste;*
(f) the quantity, by weight and volume of *Compost* and residues produced and the quantity of *Compost* and residues removed from the facility;
(g) any environmental and operational problems, that could negatively impact the environment, encountered during the operation of the *Composting Site* or identified during the facility inspections and any mitigative actions taken;
(h) any changes to the *WRIC Environmental Emergency Plan*, the Operations Manual or the Closure Plan that have been approved by the *Director* since the last Annual Report;
(i) any recommendations to minimize environmental impacts from the operation of the *Composting Site* and to improve *Composting Site* operations and monitoring programs in this regard;
(j) a summary of any complaints received and the responses made, as required by the *Certificate of Approval (Air/Noise)* for the *Composting Site;*
(k) a description of the *Compost* distribution/markets;
(l) conclusions from the enhanced pathogen testing as the results relate to the pasteurization temperature monitoring; and
(m) a condition-by-condition analysis of compliance with all Conditions of this *Certificate*.

64. **Wastewater Management**
(1) The *Owner* shall ensure that all wastewater generated within the *Processing Building* is:

(a) contained within the *Processing Building* and the storage tanks approved by this *Certificate*;
(b) collected in the sufficiently designed wastewater storage facilities; and
(c) either utilized in the process or discharged to the sanitary sewer or disposed of at a *Ministry* approved site.

(2) The *Owner* shall regularly empty, clean and disinfect if necessary, all sumps or wastewater storage/holding areas that are used to contain and collect the wastewater generated within the *Processing Building.*

(3) The *Owner* shall ensure that only uncontaminated water is used to irrigate the *Composting Organic Waste* after the *Composting Organic Waste* has completed the pasteurization phase of the *Composting* Process.

(4) The *Owner* shall ensure that the impermeable membrane under the *Processing Building* is installed in accordance with the manufacturer specifications to ensure its integrity and effectiveness as a wastewater leak barrier.

65. **Closure Plan**

(1) (a) The *Owner* shall submit, for approval by the *Director,* a written Closure Plan for the *Composting Site* at least six (6) months prior to closure of the *Composting Site.* This plan shall include, as a minimum, a description of the work that will be done to facilitate closure of the *Composting Site* and a schedule for completion of the required work; and

(b) Within ten (10) days after closure of the *Composting Site,* the *Owner* shall notify the *Director,* in writing, that the *Composting Site* is closed and that the *Composting Site* Closure Plan has been implemented.

66. ***Ministry's*** **Supplementary Requirements**

Unless otherwise specified by the conditions of this *Certificate*, the *Owner* shall comply with the requirements of the *Ministry's* document entitled "Interim Guidelines for the Production and Use of Aerobic Compost in Ontario", dated November 2004, as amended.

67. **Q. LIMITED OPERATIONAL FLEXIBILITY – Design, Operation and Management**

(1) The *Owner* may make *Modifications* to the *Material Recovery Facility* (*MRF*), and the *Waste Transfer Station* and the Design and Operations Reports for the *Material Recovery Facility* and the *Waste Transfer Station* in accordance with this *Certificate* and the pre-approved changes of the *Operating Envelope* as described in the *Engineer's Report* that is identified in Item 52 of Schedule "A".

(2) For greater certainty, the follow are *Modifications* that would be allowed at the *MRF* or the Transfer Station:

1) The following *Modifications* to the *infrastructure;* i) replacement of truck doors;
ii) the installation of a coverall building to house a maximum of 1000 tonnes of recyclable wastes; iii) movement or *Modifications* to the staging area for recyclable materials; iv) additional outdoor storage of recyclable materials in staging area on an asphalt
pad;
v) landscaping changes; vi) on-*Site* roadway changes; vii) relocation of scales;
viii) Installation of additional parking stalls and/or rearrangement of parking
areas; ix) Installation or *Modifications* to lighting; x) Construction of a facility for the collection and distribution of reusable items
xi) installation or *Modifications* to signage;
xii) changes to improve the working environment for the employees within the *MRF* or Transfer Station such as installation or improvements to heating units, air conditioning units, air handling units, odour control systems or dust control systems as long as such changes would occur within the building and would not adversely effect the surroundings environment and would not require an application for a Section 9 Certificate of Approval; and

2) The ability to make *Modifications* to the *Site's* processing operations and equipment to improve the efficiency and effectiveness of the operation of the Waste Transfer Site or the Municipal Recycling Facility such as:

i) *Modifications* or repairs to the building and its facilities including walls, floors, pits, roof, doors, plumbing, and electrical;
ii) The installation or replacement of recycling or transfer plant equipment such as balers, conveyors, separation equipment, and compactors;
iii) Addition or replacement of mobile equipment for use of the *Waste Transfer Station* or the Municipal Recycling Facility; and
iv) relocation and modification of maintenance and waste processing operations inside the building used for the *Waste Transfer Station* or the Municipal Recycling Facility.

(3) For greater certainty, the following *Modifications* to the *Site* are not permitted as part of the *Operating Envelope:*

i) Any changes to the *MHSW;*
ii) Any changes to the *Organic Waste* Processing Facility;
iii) *Modifications* to the type of waste accepted at the *Site*;
iv) *Modifications* to the storage capacity of the *Waste Transfer Station* or the Municipal Recycling Facility;
v) extending the *Site* onto adjacent lands;
vi) changing the function of the approved operations of the *MRF* and the *Waste Transfer Station*;
vii) accepting hazardous waste, liquid industrial waste, or municipal or industrial sewage;
viii) changes to the *Site* not identified in the *Engineer's Report;* or
ix) changes to the *Site* that have requirements under the Environmental Assessment Act.

(4) The *Owner* shall provide a written notification to the *District Manager* and *Director* at least fifteen (15) days prior to

making *Modifications* to the *Site* in accordance with 67(1) At a minimum the notification shall include the following:

(1) a description of the change to the operations of the *Site* including an assessment of the anticipated environmental effects of the *Modifications;*

(2) updated versions of, or amendments to, all relevant technical documents required by this *Certificate* that are affected by the Modification including but not necessarily limited to an updated *Site* Plan drawing, Design and Operations Report, the Emergency Response, Spill Reporting and Contingency Plan and the Closure Plan including a document control record that tracks all changes that were made to the documents; and

(3) a statement signed by the *Owner* and an *Independent Professional Engineer* declaring that the *Modifications* made to the *Site* are done so in accordance with the *Operating Envelope,* are consistent with industry's best management practices and are not likely to result in an adverse effect.

(5) Notwithstanding Condition 67(4), if the *Modifications* made to the *Site* require an amendment to the *WRIC Environmental Emergency Plan*, the *Owner* shall obtain the authorization of the local fire services authority prior to instituting the *Modifications.* A copy of the approved plan must be forwarded to the *District Manager* within fifteen (15) days of such approval.

68. **Design and Operations Report**

(1) The Design and Operations Reports shall be retained at the *Site*; kept up to date; and be available for inspection by *Ministry* staff. The Design and Operations Report shall contain at a minimum the information specified for a waste processing site as described in the most recent version of the *Ministry* publication "Guide for Applying for Approval of Waste Disposal Site".

(2) The *Owner* may amend the *Current Design and Operations Reports* for the *MRF* and the *Waste Transfer Station* in accordance with Condition 67(1) of this *Certificate*.

(3) Changes to the Design and Operations Reports, with the exception of changes made under Condition 67(1), shall be submitted to the *Director* for approval.

(4) If the *Owner* has made *Modifications* to the *Site* in accordance with Condition 67(1), the *Owner* shall ensure that the *Site* is built, operated and maintained in accordance with the *current Design and Operations Report*.

(5) The *Owner* shall maintain a document control record at the *Site* that tracks all changes that are made to the Design and Operations Report.

(6) The *Owner* may accept any solid Municipal Waste at the *Site* if the *Owner* has received written notification from a *Ministry* employee appointed for the purposes of Section 31 of the EPA, including the *Director* and *District Manager,* advising the *Owner* that the waste may be received to alleviate an emergency described in Section 31 of the EPA.

SCHEDULE "A"

This Schedule "A" forms part of this Certificate.

1. Applications for a Certificate of Approval for a Waste Disposal Site (Processing & Transfer) dated August 27, 1991, September 10, 1993, and January 2, 2007 and supporting documentation submitted therewith.

2. Applications for Certificate of Approval for a Waste Disposal Site (Processing & Transfer) submitted on April 4, 2008, February 24, 2009, October 22, 2009 and January 12, 2010 by Bill Shields, Supervisor, Governance & Compliance, City of Guelph Solid Waste Resources Division, including the Report, dated October 2009 and prepared by Golder Associates Ltd.and all other supporting documentation.

3. Applications for a Provisional Certificate of Approval for a Waste Disposal Site dated January 30, 2002 and February 1, 2005 signed by Cathy Smith, Manager, Solid Waste Resources Division, Corporation of the City of Guelph and other

supporting documentation.

4. Application for a Provisional Certificate of Approval for a Waste Disposal Site signed by Janet Laird, Director of Environmental Services, City of Guelph, dated February 17, 2006.

5. Plume Visibility Study, Wet/Dry Processing Facility, Guelph, Ontario dated November 20, 1991.

6. Evaluation of Potential Birds Hazards to Aircraft Safety Associated with the City of Guelph's Proposed Wet/Dry Recycling Facility Adjacent to the Guelph Air Park, dated March 5, 1992.

7. Letter from Mr. Dean Wyman, Manager, Solid Waste Resources Division, City of Guelph, to EAAB, dated June 12, 2006 requesting amendments to Certificate of Approval No. 9241-5DTRD9 and providing the rationale for the proposed amendments.

8. Letter to E. Gill, Ministry of Environment from K.J. Bull, City of Guelph, dated December 18, 1992 and additional information submitted therewith including the document "City of Guelph Hazardous Waste Facility Operation Manual" dated December 1992.

9. Letter and supporting documentation dated April 4, 1994, to Mr. H. M. Wong, Ontario Ministry of Environment and Energy from Mr. Richard Cave, R. Cave and Associates Ltd.

10. Letter date March 31, 1995 to the Ministry of Environment and Energy, Cambridge *District Office* from R.D. Funnell, P.Eng., City Engineer, re: Wet-Dry Recycling Centre - Annual Report.

11. Letter dated May 16, 1995 to Dave Ross, Ministry of Environment and Energy, from R.D. Funnell, P.Eng., City Engineer, RE: City of Guelph's Application to Amend Provisional Certificate of Approval No. A170128 for Waste Disposal Site (Processing) with the attached Application for an Approval of Waste Disposal Site dated May 17, 1995.

12. Letter dated December 30, 1996, to Mr. H. Wong, Ministry of Environment and Energy, West Central Region from R.D. Funnell, P.Eng., Director of Works, RE: Amendments to Certificate of Approval (Waste Disposal) No. A170128 for the City of Guelph's Wet-Dry Recycling Centre, including application dated December 31, 1996 and supporting documentation.

13. Letter dated July 14, 1997 to Mr. Hardy Wong, Director, West Central Region from Jutta Siebel, Wet-Dry Residential Coordinator, RE: City of Guelph's Wet-Dry Recycling Centre Certificate of Approval No. A170128.

14. Letter and application from Janet Laird, Manager of Solid Waste Services, City of Guelph to G. Carpentier, MOE dated April 3, 1998 re: Amendment to Certificate of Approval A170128.

15. Letter from Jutta Siebel, Wet-Dry Residential Coordinator, City of Guelph to G. Carpentier, dated May 4, 1998 re: Public Consultation and Analytical Data.

16. The covering letter from Ms. J. Laird, Manager of Solid Waste Services, City of Guelph to Mr. G. Carpentier, MOE, dated May 27, 1998 with attachments:

(a) Application for approval of a waste disposal site.
(b) Public consultation process for amendments to Certificate of Approval No. A170128.

17. The covering letter from Ms. J. Laird, to Mr. G. Carpentier, dated June 19, 1998 with attachments:

(a) Waste acceptance policy at the wet-dry recycling centre;
(b) Section 2.9 "Penalties for Improper Disposal" from the "A Guide for Solid Waste Disposal at Eastview Sanitary Landfill Site and the Wet-Dry Recycling Centre";
(c) Contingency plan for "odourous" wet/organic waste received at the wet-dry recycling centre.

18. Letter and application from Janet Laird, Manager of Solid Waste Services, City of Guelph, to G. Carpentier, MOE, dated October 26, 1998, re: Amendment to Provisional Certificate of Approval A170128.

19. Facsimile from Jutta Siebel, Wet-Dry Residential Coordinator, City of Guelph, to Stephen Rouleau, MOE, dated January 13, 1999, re: Copper and Mercury Levels in Compost.

20. Facsimile from Jutta Siebel, Wet-Dry Residential Coordinator, City of Guelph, to Stephen Rouleau, MOE, dated January 15, 1999 re: Copper and Mercury Levels in *leaf and yard waste.*

21. Letter and application from Janet Laird, Manager of Solid Waste Services, City of Guelph, to Adam Ciulini, MOE, dated February 12, 1999, re: Rationale for Amendment.

22. Memorandum from Adam Ciulini, MOE, to A. Dominski, MOE, dated April 12, 1999, re: Waste Management Policy Branch's Support of the Amendment.

23. Letter and application from Janet Laird, Manager of Solid Waste Services, City of Guelph to G. Carpentier, MOE, dated August 19, 1999, re: Amendment to Certificate of Approval No. A170128.

24. Document entitled City of Guelph - Request for Amendments to Provisional Certificate of Approval No. A170128, prepared for City of Guelph, prepared by Gartner Lee Limited, dated February 2006 except for Section 2.4, 2.6, 3.4 and 3.5 which are not approved by the Director.

25. Letter from Dean Wyman, Manager, Solid Waste Resources Division, City of Guelph, to EAAB, dated June 12, 2006 re: changes to and clarification of document submitted in support of the application for amendments.

26. Email from Dean Wyman, Manager, Solid Waste Resources Division, City of Guelph, to Veronica Pochmursky, EAAB, sent September 6, 2006, re: City of Guelph's procedures for *Clean Wood* and contaminated wood and final destination of contaminated or combined wood.

27. Letter Dated February 8, 2007 from Bill Shields, Supervisor, Governance and Compliance, City of Guelph to T. Gebrezghi, MOE, amendment of Section (C) of Page 1 of the CofA;

28. Letter dated March 14, 2007 from Khaled Mamun, P. Eng., EAAB to Jennifer Turnbull, City of Guelph, requesting for additional information;

29. Fax dated March 28, 2007 from Dean Wyman, Manager, Solid Waste Resources Division, City of Guelph to Khaled Mamun, P. Eng., MOE, submission of the additional information.

30. Fax dated April 11, 2007 from Dean Wyman, Solid Waste Resources Division, City of Guelph to Khaled Mamun, P. Eng., MOE, re: addition of Waste Class 121.

31. Document "City of Guelph Household Hazardous Waste Depot Request for Amendment to Certificate of Approval A170128", dated April 2008, including all appendixes.

32. E-mail dated February 2, 2010 (4:44 p.m.) from Amy Burke, Golder Associates Ltd., to Margaret Wojcik, Ontario Ministry of the Environment, including an attachment entitled "08-1112-0126 LET 2010'02'02 MOE Response.pdf" to provide additional information on the proposal.

33. E-mail dated February 17, 2010 (11:12 a.m.) from Ravi Mahabir, Golder Associates Ltd., to Bijal Shah and Margaret Wojcik, Ontario Ministry of the Environment, including an attachment entitled "0811120126 City of Guelph OWPF Response to MOE 17Feb10.pdf" to provide additional information on the proposal.

34. E-mail dated March 1, 2010 (7:46 a.m.) from Amy Burke, Golder Associates Ltd., to Margaret Wojcik, Ontario Ministry of the Environment, including an attachment entitled "08-1112-0126 MEM 2010'02'25.pdf" to provide additional information on the proposed air curtains.

35. E-mail dated March 30, 2010 (4:56 p.m.) from Ravi Mahabir, Golder Associates Ltd., to Margaret Wojcik, Ontario Ministry of the Environment, including an attachment entitled "0811120126 City of Guelph OWPF Response to MOE 30Mar,2010.pdf" to provide additional information on the proposal.

36. E-mail dated April 8, 2010 (2:23 p.m.) from Ravi Mahabir, Golder Associates Ltd., to Margaret Wojcik, Ontario Ministry of the Environment, including an attachment entitled "0811120126 City of Guelph OWPF Response to MOE 8Apr10.pdf" to provide additional information on the proposal.

37. E-mail dated April 9, 2010 (8:27 a.m.) from Ravi Mahabir, Golder Associates Ltd., to Margaret Wojcik, Ontario Ministry of the Environment, including an attachment entitled "Revised Flowchart April 9,2010.pdf" to provide a correction to the previously submitted information.

38. E-mail dated April 09, 2010 (11:08 a.m.) from Ravi Mahabir, Golder Associates Ltd., to Margaret Wojcik, Ontario Ministry of the Environment, including an attachment entitled "08375-801-W02-1a.pdf" to provide additional information on the proposal.

39. E-mail dated April 28, 2010 (1:06 p.m.) from Ravi Mahabir, Golder Associates Ltd., to Margaret Wojcik, Ontario Ministry of the Environment, including an attachment entitled "0811120126 City of Guelph OWPF Responses to MOE 28Apr10.pdf" to provide additional information on the proposal.

40. E-mail dated May 05, 2010 (9:24 a.m.) from Ravi Mahabir, Golder Associates Ltd., to Margaret Wojcik, Ontario Ministry of the Environment, including an attachment entitled "0811120126 City of Guelph OWPF Responses to MOE 4May,2010 FSC.pdf" to provide additional information on the proposal including the schedule for phasing out the use of plastic bags to collect the *Organic Waste* in the City of Guelph, the approach to temperature monitoring of material within *Composting* tunnels.

41. E-mail dated May 7, 2010 (2:36 p.m.) from Ravi Mahabir, Golder Associates Ltd., to Margaret Wojcik, Ontario Ministry of the Environment, to clarify the proposal with respect to mixing of the *Composting* waste.

42. E-mail dated May 7, 2010 (3:52 p.m.) from Ravi Mahabir, Golder Associates Ltd., to Margaret Wojcik, Ontario Ministry of the Environment, to confirm that the acid spray system will be installed and operational at the start-up of the *Composting Site.*

43. E-mail dated May 11, 2010 (2:49 p.m.) from Ravi Mahabir, Golder Associates Ltd., to Margaret Wojcik, Ontario Ministry of the Environment, including an attachment entitled "compost temperatures.pdf" to provide data on compost temperature from two different monitoring methods.

44. E-mail dated May 26, 2010 (2:30 p.m.) from Ravi Mahabir, Golder Associates Ltd., to Margaret Wojcik, Ontario Ministry of the Environment, including an attachment entitled "0811120126 Draft CofA Review - Supporting Information RSM May 25,2010.pdf" providing additional clarification on the types of wastes to be received at the *Composting Site.*

45. E-mail dated June 2, 2010 (10:41 a.m.) from Amy Burke, Golder Associates Ltd., to Margaret Wojcik, Ontario Ministry of the Environment, providing additional clarification on the types of amendment and other wastes to be received at the *Composting Site,* the equipment decontamination procedure and the proposed pasteurization temperature monitoring.

46. E-mail dated June 18, 2010 (8:08 a.m.) from Bill Shields, Corporation of the City of Guelph, to Margaret Wojcik, Ontario Ministry of the Environment, including attachments entitled "Fig1_GuelphWRIC_Screening.pdf, Fig2_GuelphWRIC_Screening.pdf, Fig1_GuelphWRIC_Screening Option 3 (2010-05-04).pdf" describing the visual screening features and the landscaping completed at the Site.

47. E-mail dated June 25, 2010 (12:38 p.m.) from Amy Burke, Golder Associates Ltd., to Margaret Wojcik, Ontario Ministry of the Environment, including attachments entitled "0811120126 Draft CofA Review - Additional Comments 2010'06'25.pdf" and "0811120126 Draft CofA Review - Addition Comments 2010'06'23 Site_Layout_v2.pdf" showing the location of the outdoor paved pad referred to as the Amendment, Recyclables, and Leaf and Yard Waste Staging Area and describing handling of wastes at the said outdoor pad.

48. Letter from Mr. Dean Wyman, Manager, Solid Waste Resources Division, City of Guelph, to EAAB, dated June 12, 2006 requesting amendments to Certificate of Approval No. 9241-5DTRD9 and providing the rationale for the proposed amendments.

49. The Design and Operations Report for the City of Guelph *Material Recovery Facility* prepared by Golder Associates, dated January 12, 2010.

50. The Design and Operations Report for the City of Guelph *Waste Transfer Station* prepared by Golder Associates, dated January 12, 2010.

51. The Design and Operations Report for the City of Guelph WRIC Public Drop Off and *Municipal Hazardous and Special Waste* Facilities prepared by Golder Associates, dated January 12, 2010 and supplemental information provided by e-mail from Pamela Russell, P.Eng. of Golder Associates, to Jim Chisholm, P.Eng., Senior Review Engineer of the Ministry.

52. Engineers Report for the City of Guelph Waste Recycling Innovation Centre prepared by Golder Associates dated July 20, 2010 and provided by e-mail from Pamela Russell, P.Eng. of Golder Associates, to Jim Chisholm, P.Eng., Senior Review Engineer of the Ministry.

53. e-mail of July 20, 2010 from Pamela Russell of Golder Associate, to Jim Chisholm, Senior Review Engineer, Ministry of Environment along with attachments.

54. e-mail of Nov. 2, 2010 from Amy Burke of Golder Associates to Jim Chisholm, Senior Review Engineer, Ministry of Environment.

SCHEDULE "B"

This Schedule "B" forms part of this Certificate of Approval.

Compost Quality Criteria

Parameter		**Concentration**
Trace Elements (mg/kg dry weight)[1]	arsenic	13
	cadmium	3
	chromium	210
	cobalt	34
	copper	100
	lead	150
	mercury	0.8
	molybdenum	5
	nickel	62
	selenium	2
	zinc	500
Organic chemicals (mg/kg dry weight)[1]	*PCBs*[2]	0.5
Pathogens	fecal coliforms	<1000 MPN/g of total solids calculated on a dry weight basis[3]
	salmonellae	<3 MPN/4g total solids calculated on a dry weight basis[3]
Non-biodegradable matter[4] % dry weight	plastic	1
	other	2

Note 1 – means milligrams per kilogram

Note 2 - means polychlorinated biphenols
Note 3 - means “Most Probable Number”
Note 4 - will not fit through a size 8 mesh

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

1. The reason for Conditions 1 to 5 inclusive and Conditions 10 and 11 is to clarify the legal rights and obligations of this Certificate.

2. The reason for Condition 6 is to ensure that the Site is operated under the corporate, limited or applicant's own name which appears on the application and supporting information submitted with the application and not under any name which the Director has not been asked to consider.

3. The reason for Conditions 7, 8 and 9 is to ensure that Ministry personnel, when acting in the course of their duties, will be given unobstructed access to the information and records related to the Site which are required by this Certificate, and to enable the Ministry to be assured of the City's compliance with the terms and conditions stated in this Certificate.

4. The reason for Conditions 16, 17, 18, 19, 20, 21, 22, and 24, is to minimize and/or prevent nuisance or adverse environmental affects from occurring. The use and operation of the Site without these conditions may create a nuisance or result in a hazard to the health and safety of any person or the environment.

5. The reason for Condition 23 is to ensure that there is no adverse impact on aircraft safety in the area and no net increase in the bird population in the area, as a result of the use and operation of this Site.

6. The reason for Conditions 12(a), 12(b), 13 and 14 is to ensure that the Site is operated in accordance with the application and supporting documentation for this Certificate and not in any manner which the Director has not been asked to consider. The operation of the Site without these conditions would not be in the public interest and may result in unacceptable environmental impacts. The imposition and compliance with these conditions will further ensure that the facility is operated and monitored in accordance with established procedures and practices for this type of facility.

7. The reason for Condition 15 is to outline the maximum amount of residual waste that can be taken from the Site in one day. Any amount above an average o 1000 tonnes per day requires an Environmental Assessment.

8. The reason for Condition 25 is to ensure that the Site will not be operated at hours during which such operation could cause material discomfort to any person.

9. The reason for Condition 26, 27, 28 is to have personnel that have the sufficient skills, knowledge and experience to do the work that is necessary at the Site.

10. The reason for Condition 29 and 30 is to require the Owner to establish a forum and provide reasonable access to the Site for the exchange of information and public dialogue on activities carried out at the Composting Site and other parts of the Site. Open communication with the public and local authorities is important in helping to maintain high standards for the operation of the Composting Site and other parts of the Site and protection of the natural environment. The use and operation of the Site without this condition would not be in the public interest.

11. The reason for Condition 31 is to protect the environment from an adverse effect as a result of activities at the Site.

12. The reason for Conditions 32, 33, 34, 35, and 36 is to minimize the risk of environmentally unacceptable discharges of a contaminant into the environment. Compliance with the monitoring programs outlined in these conditions will enable the City to allow for an early detection system for any unacceptable discharges of contaminants and allow for the implementation of a contingency plan.

13. The reason for Condition 37 is to minimize the risk of vandalism and to ensure that the Site is only operated in the presence of competent people to ensure the waste is properly managed.

14. The reason for Conditions 38, 39, 40, 41, 42, 43, and 44 to ensure the Site is operated in accordance with the application and this Certificate and not in any manner which the Director has not been asked to consider. Operation of the Site without these conditions would not be in the public interest.

15. The reason for Condition 45 is to ensure the City has an up-to-date Environmental Emergency Plan for the Site for the prompt control, abatement, mitigation and clean-up of emergency incidents, accidental discharge of contaminants, potential environmental or nuisance related impacts.

16. The reason for Condition 46 is to ensure that the City has a robust Complaints Procedure

17. The reason for Condition 47 is to make sure that the City takes immediate measures to responds to a spill and process upset and informs the Ministry immediately of such spills or upset.

18. The reason for conditions 48, 49, 50, 51, and 52 is so that the City have a robust inspection program at the site and that the inspections are properly recorded and an annual summary of activities at the site are sent to the ministry.

19. The reason for Condition 53 is to ensure the orderly shut down of the composting facility or other parts of the site.

20. Condition 54. is included to specify the approved Organic Waste receipt rate, the approved Organic Waste types and the service area from which the Organic Waste may be accepted at the Composting Site based on the Owner's application and supporting documentation.

21. Condition 55. is included to ensure that the Composting Site is sufficiently secured, supervised and operated by properly Trained Personnel and to ensure controlled access and integrity of the Composting Site by preventing unauthorized access when the Composting Site is closed and no Composting Site personnel is on duty.

22. Condition 56.(1) is included to specify the hours of operation for the Composting Site to ensure that the hours of the Composting Site's operation do not result in an adverse effect or a hazard to the natural environment or any person.

23. Condition 56.(2) is included to ensure that only the approved waste types are accepted and processed at the Composting Site.

24. Condition 56.(3) is included to specify the requirements for handling of the Rejected Waste that was inadvertently received at the Composting Site.

25. Conditions 56.(4) and (5) are included to ensure that waste and amendment materials handling and storage are undertaken in done in a way which does not result in an adverse effect or a hazard to the environment or any person.

26. Condition 56.(6) is included to specify odour control measures to minimize a potential for odour emissions from the Composting Site.
27. Condition 57. is included to require the Composting Site to be maintained and inspected thoroughly and on a regular basis to ensure that the operations at the Composting Site are undertaken in a manner which does not result in an adverse effect or a hazard to the health and safety of the environment or any person.

28. Condition 58. is included to require the Owner to characterize all waste received at the Composting Site and shipped off the Composting Site to ensure that only waste approved by this Certificate is handled at the Composting Site and that all waste transferred off the Composting Site is handled in accordance with the Ministry's requirements. Condition 38. is also included to require the Owner to monitor the Composting process parameters.

29. Condition 59. is included to ensure that the Composting Site is operated and maintained in an environmentally acceptable manner which does not result in a negative impact on the natural environment or any person.

30. Condition 60. is included to ensure that personnel employed at the Composting Site are fully aware and properly trained on the requirements and restrictions related to Composting Site operations under this Certificate.

31. Condition 61. is included to ensure that the Owner is prepared and properly equipped to take action in the event of an emergency situation.

32. Conditions 62. also is included to require further spill notification to the Ministry, in addition to the requirements already listed in Part X of the EPA.

33. Condition 63. is included to ensure that detailed records of Composting Site activities, inspections, monitoring and upsets are recorded and maintained for inspection and information purposes.

34. Condition 64. is included to ensure that the wastewater generated at the Composting Site is handled in accordance with the Ministry's requirements and in a manner which does not result in a negative impact on the natural environment or any person.

35. Condition 65. is included to ensure that final closure of the Composting Site is completed in accordance with Ministry's standards.

36. Condition 66. is included to require the Owner to design, operate, maintain and monitor the waste management activities at the Composting Site in compliance with the Ministry's supplementary requirements as they become published and amended from time to time.

37. The reason for Conditions 67 and 68 is to ensure that the Site is operated 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.

This Provisional Certificate of Approval revokes and replaces Certificate(s) of Approval No. A170128 and 9241-5DTRD9 issued on September 29, 2006 and April 24, 2003 respectively.

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

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

The Notice should also include:

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

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

This Notice must be served upon:

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

AND

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

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

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

DATED AT TORONTO this 10th day of February, 2011

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

JC/
c: District Manager, MOE Guelph
Pamela Russell, Golder Associates Ltd.

Ontario

Ministry of the Environment
Ministère de l'Environnement

AMENDMENT TO PROVISIONAL CERTIFICATE OF APPROVAL
WASTE DISPOSAL SITE
NUMBER A170128
Notice No. 1
Issue Date: September 22, 2011

The Corporation of the City of Guelph
1 Carden St
Guelph, Ontario
N1H 3A1

Site Location: 110 Dunlop Drive
Division 'C', RP 61R-5574
Lot 4 and 5, Concession 1
Guelph City, County of Wellington
N1H 6N1

You are hereby notified that I have amended Provisional Certificate of Approval No. A170128 issued on February 10, 2011 for the use and operation of a 29.54 hectare Waste Disposal Site (Transfer/Processing) *, as follows:*

1. The following Condition 58.(1) is amended to read as follows:

58. **Quality Criteria, Testing & Monitoring**

(1) **Cross-Contamination Prevention:**

(a) The *Owner* shall ensure that the incoming *Organic Waste* is kept separate and does not come in contact with the *Immature Compost* / the *Finished Compost* and the *Compost* except where the *Immature Compost* / the *Finished Compost* and the *Compost* are being fed back into the *Composting* process.

(b) The *Owner* may use the equipment utilized in processing of the incoming *Organic Waste* to process the *Immature Compost* / the *Finished Compost* and the *Compost* provided that the equipment has been cleaned, in accordance with the procedures described in documents listed in the attached Schedule "A", to prevent the *Immature Compost* / the *Finished*

Compost and the *Compost* from being contaminated by the incoming *Organic Waste.*

(c) The *Owner* may use the equipment utilized in screening of the *Immature* Compost to screen the *Compost* provided that the screening equipment has been adequately cleaned prior to its use to screen the Compost and in accordance with the procedures described in documents listed in the attached Schedule "A", to prevent the *Compost* from being contaminated by the *Immature Compost.*

2. The following documents are added to Schedule "A":

55. The application for the Certificate of Approval for a Waste Disposal Site, dated September 8, 2011 and signed by Bill Shields, Corporation of the City of Guelph, including the following attachments:

(a) E-mail dated September 2, 2011 (11:17 a.m.) from Ravi Mahabir, Dillon Consulting Limited, to Tesfaye Gebrezghi, Ontario Ministry of the Environment, describing the considered proposal and including the following attachments:

(i) 104328 Letter to MOE on Facility Refinements Aug22,2011 RSM.pdf;
(ii) Guelph screen Layout.pdf

(b) E-mail dated September 8, 2011 (8:57 a.m.) from Ravi Mahabir, Dillon Consulting Limited, to Margaret Wojcik, Ontario Ministry of the Environment, describing the further technical details of the proposal and the cross contamination prevention procedures and including the following attachments:

(i) 104328 Letter to MOE on Facility Refinements Sep2,2011 RSM signed.pdf;

(ii) 104328 Letter to MOE on OWPF Screening Plant Operations Sep8,2011 RSM.pdf

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

to replace the previously approved two separate screening plants with a single double-deck screening plant to allow for increased working space within the Maturation Hall.

This Notice shall constitute part of the approval issued under Provisional Certificate of Approval No. A170128 dated February 10, 2011, as amended.

In accordance with Section 139 of the Environmental Protection Act, R.S.O. 1990, Chapter E-19, as amended, you may by written notice served upon me and the Environmental Review Tribunal within 15 days

after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act, provides that the Notice requiring the hearing shall state:

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

The Notice should also include:

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

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

This Notice must be served upon:

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

AND

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

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

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

DATED AT TORONTO this 22nd day of September, 2011

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

MW/
c: District Manager, MOE Guelph
Ravi Mahabir, P. Eng., Dillon Consulting Limited

Ontario

Ministry of the Environment
Ministère de l'Environnement

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER A170128
Notice No. 2
Issue Date: November 2, 2012

The Corporation of the City of Guelph
1 Carden St
Guelph, Ontario
N1H 3A1

Site Location: 110 Dunlop Drive
110 Dunlop Dr
Guelph City, County of Wellington
N1H 6N1

You are hereby notified that I have amended Approval No. A170128 issued on February 10, 2011 and amended on September 22, 2011 for the use and operation of a 29.54 hectare Waste Disposal Site (Transfer/Processing), as follows: , as follows:

The following sub-conditions in Condition 54 are hereby amended as follows:

54. **Service Area, Approved Waste Types, Rates & Storage**

(1.1) The *Composting Site* may only accept solid non-hazardous residential, commercial, institutional or industrial *Organic Waste* from the Provinces of Ontario, limited to the following *Organic Waste* :

(a) Source-Separated *Organic Waste* limited to the following:
- (i) food wastes: fruit, vegetable and general table scraps, meat and fish/shellfish products, dairy products, eggs and egg shells, herbs, nuts and seeds, sugar and spices, confectionery products, sauces, bones, pet food, bread, grains, rice, pasta, flour, coffee grounds and tea bags;
- (ii) solidified cooking oils and cooked or raw grease and fats from residential sources only;
- (iii) paper fibres: soiled paper towels, tissues, paper plates, coffee filters, soiled paper food packaging items such as boxboard, cardboard, newspaper, and other paper fibre packaging materials;
- (iv) fresh flowers, houseplants and their soil, hair, pet fur, feathers and sawdust, wood shavings;
- (v) ashes from residential sources only;

(vi) pet waste that is not collected or encased in a bag; and
(vii) pet litter box or bedding wastes, including the intermingled pet waste;

(b) *Organic Waste* from the industrial, commercial and institutional sources that produce or collect food wastes;

(c) *Leaf and Yard Waste;* and

(d) *Compost* overs as described in the supporting documentation listed in the attached Schedule "A".

(1.2) (a) A minimum of eight (8) months prior to accepting *Organic Waste* from any new source at the *Site* , the *Owner* shall provide written notice to the *District Manager* of its intent to commence acceptance of the new waste .

(b) The *Owner* shall submit to the *District Manager* the following information regarding the new waste source in writing at least six (6) weeks prior to receiving the new waste identified in Condition 54 (1.2)(a):

(i) the name and location of the generator,
(ii) the date the *Owner* proposes to commence accepting the waste at the *Site* ,
(iii) description of the constituent components of the waste being accepted,
(iv) confirmation whether inclusion of the waste component referenced above in Condition 54 (1.2)(a) is characterized as incidental or inadvertent,
(v) information related to the handling and storage of the waste prior to its delivery to the *Site* , and
(vi) all operational plans the *Owner* proposes for integrating the processing of waste from the new source into the waste stream currently being processed at the Site.

(4) (d) i. The *Owner* shall not accept at the *Composting Site* any *Organic Waste* that is collected through a waste collection program that allows use of bags, except the waste that is generated in and collected by the City of Guelph and in accordance with Table 1 entitled "Proposed Phase-out of Plastic Bag Usage in Organics Collection" included in Item #40 of the attached Schedule "A";

ii. Notwithstanding Condition 54 (4)(d) (i) above, the *Owner* is allowed to accept *Organic Waste* that has been placed in a biodegradable certified compostable bag.

iii. The *Owner* shall ensure that any *Organic Waste* accepted at the *Site* that is

generated outside of the *City* that is collected through a waste collection program will only be collected in biodegradable certified compostable bags in accordance with Item 56 in Schedule "A".

The following Item is hereby added to Schedule "A":

56. Environmental Compliance Approval Application submitted by the City of Guelph requesting amendment to Condition No. 54 (4)(d). The application was signed and dated by Bill Shields, Supervisor of Goverance and Compliance on October 3, 2012. The supporting documentation for the application include the following:

    a. ECA Amendment Outline prepared by Golder Associates which consists of a letter dated October 2, 2012 addressed to Mr. Bill Shields, City of Guelph from Ms Amy Burke and Mr. Michael Cant, Golder Associates (Project No. 12-1188-0007);
    b. Public Liaison Committee Comments and Responses prepared by the City of Guelph which includes:

        i. Memorandum dated February 10, 2010 entitled "Addendum to ESDM Report for City of Guelph OWPF Responses to Request Information/Clarification from MOE" addressed to Bijal Shah, Ministry of the Environment from Ravi Mahabir and Sean Capstick, Golder Associates; and
        ii. Memorandum dated May 4, 2010 entitled "Summary of Key Items Discussed at April 29 Meeting with MOE" addressed to Tes Gebrezghi, Bijal Shah and Margaret Wojcik, Ministry of the Environment from Ravi Mahabir and Sean Capstick, Golder Associates; and

    c. ECA Amendment Support Letter provided by Wellington Organix Inc. which consists of a letter dated August 29, 2012 addressed to Mr. David Gordon, City of Guelph from Mr. Mark Jared, Wellington Organix.

The reason(s) for this amendment to the Approval are as follows:

1. *The reason for the amendment to Condition 54 (1.1) and (1.2) is to ensure the City notifies the Ministry should the City start to accept waste from other clients.*

2. *The reason for the amendment to Condition 54 (4)(d) is to permit the City of Guelph to accept incoming waste in certified biogradeable compostable bags as the City has shown that operational changes have addressed odour issues at the Site and the restriction on waste being accepted in plastic bags is longer required.*

This Notice shall constitute part of the approval issued under Approval No. A170128 dated February 10, 2011

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon

me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

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

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

The Notice should also include:

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

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

This Notice must be served upon:

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

AND

The Director appointed for the purposes of
Part II.1 of the Environmental Protection Act
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 314-4506 or www.ert.gov.on.ca**

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

DATED AT TORONTO this 2nd day of November, 2012

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

DG/
c: District Manager, MOE Guelph

Amy Burke, Golder Associates Ltd.

Ontario

Ministry of the Environment
Ministère de l'Environnement

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER A170128
Notice No. 3
Issue Date: January 24, 2013

The Corporation of the City of Guelph
1 Carden St
Guelph, Ontario
N1H 3A1

Site Location: 110 Dunlop
110 Dunlop Dr , Guelph Organic Waste Composting Facility,
Guelph City, County of Wellington
N1H 6N1

You are hereby notified that I have amended Approval No. A170128 issued on February 10, 2011 and amended on September 22, 2011 and November 2, 2012 forthe establishment and operation of a Waste Disposal Site (Transfer and Processing) consisting of a 29.54 hectare of property for the purposes of composting, multi-material recovery, and waste transfer to serve the municipalities and businesses of the Province of Ontario, the State of New York, the State of Michigan and Municipal Hazardous and Special Waste Transfer Station serving the County of Wellington and City of Guelph,

to be used for:

a) the use and operation of an Organic Waste Processing Facility composting of the following categories of waste (Note: Use of the site for additional categories of wastes requires a new application and amendments to the Provisional Certificate of Approval); organic non-hazardous waste from residential, industrial, commercial and institutional sources limited to a maximum Site indoor storage capacity of 8,500 tonnes;

b) the use and operation of a Material Recovery Facility for processing, transfer and temporary storage of the following categories of waste (Note: Use of the Site for additional categories of wastes requires a new application and amendments to the Provisional Certificate of Approval); municipal waste including food and beverage cans, cardboard, glass, newspaper, plastic, waste electrical and electronic equipment and other such materials as would be collected by means of the source separated dry waste collection system limited to a maximum indoor storage capacity of 3850 tonnes and having an outdoor storage area for recyclable waste and leaf and yard waste that is located to the west of the Organic Waste Processing Facility;

c) the use and operation of a Municipal Hazardous and Special Waste facility for the transfer and temporary storage of the following categories of waste (Note: Use of the Site for additional categories of wastes requires a new application and amendments to the Provisional Certificate of Approval); Municipal Hazardous and Special Waste limited to the following waste classes; 112, 121, 145, 146, 148, 212, 213, 221, 242, 251, 252, 261, 263, 269, 312, and 331 as outlined in the <u>New Ontario Waste Classes</u> January 1986 limited to a maximum Site storage capacity of 15 tonnes; and

d) the use and operation of a Waste Disposal Site (Transfer) for non-hazardous solid industrial waste (Note: Use of the Site for additional categories of wastes requires a new application and amendments to the Provisional Certificate of Approval);from industrial, commercial and institutional sources, commercial waste and domestic waste, with an indoor storage maximum capacity of 795 tonnes and outdoor storage areas for leaf and yard waste and for recyclable waste.

, as follows:

The following Definition is hereby amended as follows:

(aaa) "**Site**" means the 29.54 hectare Waste Disposal Site (Processing and Transfer) for the purposes of receipt, storage, processing and transfer of waste by *Composting*, waste transfer,and multi-material recovery, to serve the municipalities and businesses of the Province of Ontario, the State of New York, the State of Michigam and *Municipal Hazardous and Special Transfer Waste Station*, serving the County of Wellington and City of Guelph located on Lot 4 and 5 Concession 1, Division C, Guelph, Ontario as shown on Reference Plan 61R-5574;

The following Condition is hereby revoked:

56. (6) **Odour Control:**

(a) The *Owner* shall maintain a negative air pressure atmosphere within the *Processing Building,* as compared to the ambient atmospheric pressure, at all times;

The following Conditions are hereby amended as follows:

Public Liaison Committee

29. (1) The *Owner* shall invite the following groups to provide input and/or comments into preparation of the Terms of Reference for the *Public Liaison Committee (ToR PLC):*

(a) home owners within 2,000 metres of the *Site*;
(b) any interested non-governmental organization (NGOs); and
(c) any interested person(s) or group(s);

(2) (a) The *Owner* shall consider all input and/or comments submitted by the groups listed above during preparation of the *ToR PLC*; and

(b) A minimum of ninety (90) days prior to the receipt of the *Waste* at the *Site*, the *Owner* shall prepare and submit to the *District Manager* the *ToR PLC*, including documentation demonstrating consideration of all public input and/or comments received, for written concurrence of the *District Manager;*

(3) The *ToR PLC* shall be amended from time to time according to appropriate amending procedures identified within the content of the *ToR PLC*. Any amendment to the *ToR PLC* must be agreed to by the *District Manager* prior to its implementation;

(4) Within sixty (60) days from the *District Manager`s* concurrence to the *ToR PLC,* the *Owner* shall take all reasonable steps to establish a *Public Liaison Committee (PLC)* which shall serve as a forum for dissemination, consultation, review and exchange of information regarding the operation of the *Site*, including environmental monitoring, maintenance, complaint resolution, and new approvals or amendments to existing approvals related to the operation of this *Site*;

(5) The *Owner* shall invite representation from the following groups to participate on the *PLC*:

(a) home owners within 2,000 metres of the *Site;*
(b) any interested NGOs; and
(c) any interested person(s) or group(s);

(6) The number of representatives from each group shall be as specified in the *ToR PLC* approved by the *District Manager;*

(7) No later than ninety (90) days from the *District Manager`s* concurrence to the *ToR PLC,* the *Owner* shall submit to the *District Manager* a written report that details steps to be taken by the *Owner* to establish, maintain and participate in a *PLC*. This report shall include the identification of each of the representatives that have been invited to participate in the *PLC*;

(8) A copy of the Annual Report that is required by Conditions 52 shall be provided to the *Public Liaison Committee* at the first scheduled meeting following March 31st; and

(9) The *City* shall allow reasonable access to the *Site* for any member of the *Public Liaison Committee;*

40. (a) The *City* shall ensure that only municipal waste recyclable material, generated within the Province of Ontario, the State of New York and the State of Michigan is received at this *Site;*

54. (1.2) (a) A minimum of **six (6)** months prior to accepting *Organic Waste* from any new source at the *Site*, the *Owner* shall provide written notice to the *District Manager* of its intent to commence acceptance of the new waste .

The following Item is hereby added to Schedule "A":

57. Environmental Compliance Approval Application requesting that Condition 40 (a) relating to the service area be amended. The application was signed by Mr. Bill Shields, Supervisor of Governance and Compliance, City of Guelph and dated August 2, 2012.

58. Letter dated November 2, 2012 addressed to Mr. Dale Gable, Ministry of the Environment from Mr. Bill Shields, Supervisor of Governance and Compliance, City of Guelph requesting Condition 56 (6)(a) be revoked.

The reasons for this amendment to the Approval are as follows:

1. The reason for the revocation of Condition 56 (6)(a) is the requirement to maintain negative air pressure is addressed with the ECA related to the air. This condition is a duplicate requirement.

2. The reason for the amendment to Condition 29 is to ensure the PLC is an exchange of information for the entire Site and not limited to the Composting Site.

3. The reason for the amendment to Condition No. 40 is to approve the service area expansion to include the State of New York as applied for by the City. This is to ensure the facility and equipment can operate at its peak efficiency.

4. The reason for the amendment to Condition 54 (1.2)(a) which corrects an administrative error in the last notice.

This Notice shall constitute part of the approval issued under Approval No. A170128 dated February 10, 2011

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

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

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

The Notice should also include:

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

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

This Notice must be served upon:

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

AND

The Director appointed for the purposes of Part II.1 of
the Environmental Protection Act
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 314-4506 or www.ert.gov.on.ca**

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

DATED AT TORONTO this 24th day of January, 2013

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

DG/
c: District Manager, MOE Guelph
Amy Burke, Golder Associates Ltd.

Ontario

Ministry of the Environment
Ministère de l'Environnement

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER A170128
Notice No. 3
Issue Date: January 24, 2013

The Corporation of the City of Guelph
1 Carden St
Guelph, Ontario
N1H 3A1

Site Location: 110 Dunlop
110 Dunlop Dr , Guelph Organic Waste Composting Facility,
Guelph City, County of Wellington
N1H 6N1

You are hereby notified that I have amended Approval No. A170128 issued on February 10, 2011 and amended on September 22, 2011 and November 2, 2012 for the establishment and operation of a Waste Disposal Site (Transfer and Processing) consisting of a 29.54 hectare of property for the purposes of composting, multi-material recovery, and waste transfer to serve the municipalities and businesses of the Province of Ontario, the State of New York, the State of Michigan and Municipal Hazardous and Special Waste Transfer Station serving the County of Wellington and City of Guelph,

to be used for:

a) the use and operation of an Organic Waste Processing Facility composting of the following categories of waste (Note: Use of the site for additional categories of wastes requires a new application and amendments to the Provisional Certificate of Approval); organic non-hazardous waste from residential, industrial, commercial and institutional sources limited to a maximum Site indoor storage capacity of 8,500 tonnes;

b) the use and operation of a Material Recovery Facility for processing, transfer and temporary storage of the following categories of waste (Note: Use of the Site for additional categories of wastes requires a new application and amendments to the Provisional Certificate of Approval); municipal waste including food and beverage cans, cardboard, glass, newspaper, plastic, waste electrical and electronic equipment and other such materials as would be collected by means of the source separated dry waste collection system limited to a maximum indoor storage capacity of 3850 tonnes and having an outdoor storage area for recyclable waste and leaf and yard waste that is located to the west of the Organic Waste Processing Facility;

c) *the use and operation of a Municipal Hazardous and Special Waste facility for the transfer and temporary storage of the following categories of waste (Note: Use of the Site for additional categories of wastes requires a new application and amendments to the Provisional Certificate of Approval); Municipal Hazardous and Special Waste limited to the following waste classes; 112, 121, 145, 146, 148, 212, 213, 221, 242, 251, 252, 261, 263, 269, 312, and 331 as outlined in the New Ontario Waste Classes January 1986 limited to a maximum Site storage capacity of 15 tonnes; and*

d) *the use and operation of a Waste Disposal Site (Transfer) for non-hazardous solid industrial waste (Note: Use of the Site for additional categories of wastes requires a new application and amendments to the Provisional Certificate of Approval);from industrial, commercial and institutional sources, commercial waste and domestic waste, with an indoor storage maximum capacity of 795 tonnes and outdoor storage areas for leaf and yard waste and for recyclable waste.*

, as follows:

The following Definition is hereby amended as follows:

(aaa) "**Site**" means the 29.54 hectare Waste Disposal Site (Processing and Transfer) for the purposes of receipt, storage, processing and transfer of waste by *Composting* , waste transfer,and multi-material recovery, to serve the municipalities and businesses of the Province of Ontario, the State of New York, the State of Michigam and *Municipal Hazardous and Special Transfer Waste Station* , serving the County of Wellington and City of Guelph located on Lot 4 and 5 Concession 1, Division C, Guelph, Ontario as shown on Reference Plan 61R-5574;

The following Condition is hereby revoked:

56. (6) **Odour Control:**

(a) The *Owner* shall maintain a negative air pressure atmosphere within the *Processing Building,* as compared to the ambient atmospheric pressure, at all times;

The following Conditions are hereby amended as follows:

Public Liaison Committee

29. (1) The *Owner* shall invite the following groups to provide input and/or comments into preparation of the Terms of Reference for the *Public Liaison Committee (ToR PLC):*

(a) home owners within 2,000 metres of the *Site* ;
(b) any interested non-governmental organization (NGOs); and
(c) any interested person(s) or group(s);

(2) (a) The *Owner* shall consider all input and/or comments submitted by the groups listed above during preparation of the *ToR PLC* ; and

(b) A minimum of ninety (90) days prior to the receipt of the *Waste* at the *Site* , the *Owner* shall prepare and submit to the *District Manager* the *ToR PLC* , including documentation demonstrating consideration of all public input and/or comments received, for written concurrence of the *District Manager;*

(3) The *ToR PLC* shall be amended from time to time according to appropriate amending procedures identified within the content of the *ToR PLC* . Any amendment to the *ToR PLC* must be agreed to by the *District Manager* prior to its implementation;

(4) Within sixty (60) days from the *District Manager`s* concurrence to the *ToR PLC,* the *Owner* shall take all reasonable steps to establish a *Public Liaison Committee (PLC)* which shall serve as a forum for dissemination, consultation, review and exchange of information regarding the operation of the *Site* , including environmental monitoring, maintenance, complaint resolution, and new approvals or amendments to existing approvals related to the operation of this *Site* ;

(5) The *Owner* shall invite representation from the following groups to participate on the *PLC* :

(a) home owners within 2,000 metres of the *Site;*
(b) any interested NGOs; and
(c) any interested person(s) or group(s);

(6) The number of representatives from each group shall be as specified in the *ToR PLC* approved by the *District Manager;*

(7) No later than ninety (90) days from the *District Manager`s* concurrence to the *ToR PLC,* the *Owner* shall submit to the *District Manager* a written report that details steps to be taken by the *Owner* to establish, maintain and participate in a *PLC* . This report shall include the identification of each of the representatives that have been invited to participate in the *PLC* ;

(8) A copy of the Annual Report that is required by Conditions 52 shall be provided to the *Public Liaison Committee* at the first scheduled meeting following March 31st; and

(9) The *City* shall allow reasonable access to the *Site* for any member of the *Public Liaison Committee;*

40. (a) The *City* shall ensure that only municipal waste recyclable material, generated within the Province of Ontario, the State of New York and the State of Michigan is received at this *Site;*

54. (1.2) (a) A minimum of **six (6)** months prior to accepting *Organic Waste* from any new source at the *Site* , the *Owner* shall provide written notice to the *District Manager* of its intent to commence acceptance of the new waste .

The following Item is hereby added to Schedule "A":

57. Environmental Compliance Approval Application requesting that Condition 40 (a) relating to the service area be amended. The application was signed by Mr. Bill Shields, Supervisor of Governance and Compliance, City of Guelph and dated August 2, 2012.

58. Letter dated November 2, 2012 addressed to Mr. Dale Gable, Ministry of the Environment from Mr. Bill Shields, Supervisor of Governance and Compliance, City of Guelph requesting Condition 56 (6)(a) be revoked.

The reasons for this amendment to the Approval are as follows:

1. *The reason for the revocation of Condition 56 (6)(a) is the requirement to maintain negative air pressure is addressed with the ECA related to the air. This condition is a duplicate requirement.*

2. *The reason for the amendment to Condition 29 is to ensure the PLC is an exchange of information for the entire Site and not limited to the Composting Site.*

3. *The reason for the amendment to Condition No. 40 is to approve the service area expansion to include the State of New York as applied for by the City. This is to ensure the facility and equipment can operate at its peak efficiency.*

4. *The reason for the amendment to Condition 54 (1.2)(a) which corrects an administrative error in the last notice.*

This Notice shall constitute part of the approval issued under Approval No. A170128 dated February 10, 2011

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

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

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

The Notice should also include:

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

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

This Notice must be served upon:

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

AND

The Director appointed for the purposes of
Part II.1 of the Environmental Protection Act
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 314-4506 or www.ert.gov.on.ca**

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

DATED AT TORONTO this 24th day of January, 2013

THIS NOTICE WAS MAILED
ON Jan. 29, 2013
9 C
(Signed)

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

DG/
c: District Manager, MOE Guelph
Amy Burke, Golder Associates Ltd. ✓

Ontario

Ministry of the Environment
Ministère de l'Environnement

AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 9496-9NFKJ9
Issue Date: January 7, 2015

The Corporation of the City of Guelph
1 Carden Street
Guelph, Ontario
N1H 3A1

Site Location: Guelph Waste Resource Innovation Centre (WRIC)
110 Dunlop Drive
City of Guelph, County of Wellington

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:

an amendment to the wastewater infrastructure Works serving the 29.54 hectare Waste Resource Innovation Centre (WRIC) site, consisting of a Solid Waste Transfer Station, a Material Recovery Facility, an Organic Waste Processing Facility, a Municipal Hazardous and Special Waste Depot and a Public Drop-Off (PDO) Area, located at 110 Dunlop Drive on Part of Lot 5, Concession 1, Division C, in the City of Guelph, for the conveyance of sanitary sewage to the existing municipal sanitary sewer system, and for the collection, treatment and disposal of stormwater run-off from the WRIC site, providing Enhanced Level water quality control and erosion protection, and attenuating post-development peak flows to pre-development levels for the 5-year and 100-year storm events, to consolidate previous approvals for the site, to add new storm sewers and stormwater management facilities for the Public Drop-Off (PDO) Area at the eastern portion of the site, and to modify the stormwater facilities at the Solid Waste Transfer Station, consisting of the following:

Proposed Works:

Public Drop-Off (PDO) Area

storm sewers: - installation of a new stormwater conveyance system serving the Public Drop-Off (PDO) Area, discharging to an oil and grit separator (Oil/Grit1), identified below;

oil and grit separator (Oil/Grit1 - catchment area 1.35 hectares): - one (1) oil and grit separator (Wilkinson Watergate Model WG400, or Approved Equivalent), having a sediment storage capacity of 1.4 m^3, an oil storage capacity of 7.2 m^3, and a total storage volume of 14.7 m^3, and a maximum treatment flow rate of 393 L/s, discharging via a 525 mm diameter outlet pipe to a bioretention and infiltration facility, identified below;

bioretention and infiltration facility (catchment area 2.73 ha): - establishment of a bioretention filter and infiltration basin (Cell 1) and a second infiltration basin (Cell 2) located to the south-east of the Public Drop-Off (PDO) Area, having a minimum detention storage volume of approximately 586 m^3 for the 100-year storm event, with an emergency spillway discharging via an existing ditch within a stormwater easement along the east side of the site to Dunlop Drive, and ultimately to the Eramosa River and the Grand River;

Solid Waste Transfer Station (TS) Area

storm sewers: - diversion of the existing storm sewer collection system located south-east of the Solid Waste Transfer Station (TS) from the spill collection and treatment system for the Solid Waste Transfer Station (TS) to an oil and grit separator (Oil/Grit2), identified below;

oil and grit separator (Oil/Grit2 - catchment area 1.09 hectares): - one (1) oil and grit separator (Wilkinson Watergate Model WG400, or Approved Equivalent), having a sediment storage capacity of 1.4 m^3, an oil storage capacity of 7.2 m^3, and a total storage volume of 14.7 m^3, and a maximum treatment flow rate of 393 L/s, discharging via a 375 mm diameter outlet pipe to the existing a stormwater management pond serving the Solid Waste Transfer Station, identified below;

stormwater management pond (catchment area 5.51 ha): - modification of the drainage area to the existing stormwater management dry pond serving the Solid Waste Transfer Station, with a total storage volume of 2,899 m^3 at a depth of 1.97 m with a maximum release rate of 628 L/s achieved during a 100-year design storm due to flow restriction by a staged outlet control structure consisting of three orifices having 0.25 m, 0.30 m and 0.50 m diameters;

Previous Works:

Solid Waste Transfer Station

a stormwater and spill collection and treatment system for the Solid Waste Transfer Station serving a concrete apron and a concrete fuel tank base at the petroleum fuelling facility, including:
- a series of catchbasins, manholes and underground storm sewers, discharging to an oil/water separator;
- one (1) coalescing oil/water separator, having a holding capacity of 2,700 L and designed for a maximum flow rate of 260 L/min, discharging to a pump chamber;
- a pump chamber (manhole) equipped with a pump with a rated capacity of 5 L/sec at a total dynamic head of 3.3 m, discharging via an existing swale to a stormwater management pond, identified below;

a stormwater management pond (catchment area 5.85 ha) for the Solid Waste Transfer Station discharging to an existing ditch on Dunlop Drive located to the north-east of the Solid Waste Transfer Station, including:
- a network of vegetated ditches and swales constructed on the site to collect and convey the 100-year design storm run-off to the stormwater management pond via two 525 mm diameter culverts under the driveway;
- one (1) stormwater management dry pond with a total storage volume of 2,899 m^3 at a depth of 1.97 m with a maximum release rate of 628 L/s achieved during a 100-year design storm due to flow restriction by a staged outlet control structure consisting of three orifices having 0.25 m, 0.30 m and 0.50 m diameters;
- one (1) shut-off valve at the outlet control structure to allow diversion of any contaminated stormwater to a

sanitary sewage-leachate pumping station (SLPS), identified below;

sanitary sewage-leachate pumping station (SLPS) servicing the Solid Waste Transfer Station consisting of one (1) 3.5 m square by 5.6 m deep concrete wet well with duplex submersible sewage pumps each rated at 14 L/s at 13 m total dynamic head under normal operating condition and 22 L/s at 12 m total dynamic head under a stormwater management pond full/by-pass condition, a 300 mm diameter sanitary sewer inlet, a 200 mm diameter by-pass pipe from/to the adjacent stormwater management pond, identified above, discharging via a 150 mm diameter forcemain along Dunlop Drive to an existing municipal sanitary sewer on Watson Parkway;

Other Operations

redirection of the overflow outlet from the Municipal Hazardous and Special Waste Depot underground spill tank to the lined portion of the compost pad storage pond (CPSP) using a buried sewer pipe equipped with a flat gate and rip-rap protection;

Sanitary and Storm Sewers

sanitary sewers and sewer connections with diameters of 100 mm, 150 mm, and 200 mm;

storm sewers with diameters of 300 mm, 600 mm, and 900 mm;

small sanitary sewage pumping station, located in the north-east sector of the site, consisting of one (1) 1.2 m diameter sewage pumping station (SPS), complete with one (1) 4.8 m deep wet well, two (2) grinder pumps, each rated at 7.6 L/s at a total dynamic head of 16 m, and one (1) 100 mm diameter forcemain from the SPS to sanitary sewer manhole (MH 1) on Dunlop Drive connected to the existing municipal sanitary sewer system;

Stormwater Management Facilities

a stormwater management facility servicing the Waste Resource Innovation Centre, designed as a stormwater detention wet pond (SDP), having a permanent pool volume of 705 m^3 for quality control and outlet control devices for quantity control, including:
- a perimeter drainage swale around the site;
- subsurface infiltration trenches to accommodate roof-top run-off;
- grass-lined drainage ditches;
- two (2) double-inlet catch basins located within the grassed ditch to capture and direct surface stormwater run-off from around the perimeter of the outdoor compost curing pad (OCCP) to a 300 mm diameter storm sewer leading to stormwater detention pond 1 (SDP1);
- one (1) lined compost pad storage pond (CPSP) with a temporary storage capacity of 100 m^3 for run-off from the 1.56 ha outdoor compost curing pad (OCCP) having a total storage capacity of 540 m^3;
- one (1) 600 mm diameter inlet storm sewer connecting the compost pad storage pond (CPSP) and manhole (MH 5) at the outdoor compost curing pad (OCCP);
- an outlet from the compost pad storage pond (CPSP) to the sanitary sewer system via a 200 mm diameter sewer leading to manhole (MH A2), with a 50 mm diameter orifice plate at the pipe inlet, for conveyance of the run-off from the outdoor compost curing pad (OCCP) to the sewage pumping station (SPS) at a maximum controlled rate of 7 L/s for the 100-year storm event;

- a separation berm between the compost pad storage pond (CPSP) and stormwater detention pond 1 (SDP1), including a ditch inlet catch basin with invert at 0.45 m above the bottom of the compost pad storage pond (CPSP), to convey excess flow to stormwater detention pond 1 (SDP1) during the 2-year storm event or greater with corresponding compost pad storage pond (CPSP) volumes of greater than 100 m^3 via a 900 mm diameter pipe from the ditch inlet catchbasin and over the separation berm;
- an impermeable liner along the base and slopes of the compost pad storage pond (CPSP);

a stormwater detention wet pond (SDP1, catchment area 5.71 ha) having a permanent pool volume of approximately 630 m^3 at a depth of 0.6 m and a total storage volume of 2,090 m^3, including the permanent pool volume, including:
- seven (7) stormwater inlet locations around the pond perimeter for direct conveyance of run-off from a total drainage area of up to 5.71 ha into the pond, in addition to the 900 mm diameter overflow line from the compost pad storage pond (CPSP) ditch inlet catch basin to a rip rap protected area;
- a small, impermeable berm constructed around the pond outlet structure to ensure the minimum required permanent pool storage volume for quality control;
- an outlet structure for discharge of effluent to stormwater detention pond 2 (SDP2) via a 900 mm diameter sewer equipped at the inlet with a headwall and an adjustable steel gate with a 200 mm diameter orifice for quantity control;

a stormwater detention wet pond (SDP2, catchment area 2.87 ha) having a permanent pool volume of approximately 75 m^3 and a total storage volume of 1,870 m^3, including the permanent pool volume, designed for controlled outflow rates of 0.12 m^3/s for the 5-year storm event and 0.18 m^3/s for the 100-year storm event, including:
- four (4) stormwater inlet locations around the pond perimeter for direct conveyance of run-off from a total drainage area of 2.87 ha into the pond, in addition to the 900 mm diameter inlet sewer from stormwater detention pond 1 (SDP1);
- a small, impermeable berm constructed around the pond outlet structure to ensure the minimum required permanent pool storage volume for quality control;
- an outlet structure for discharge of effluent to the Dunlop Drive roadside ditch via a 900 mm diameter CSP sewer equipped at the inlet with a headwall and an adjustable steel gate with a 400 mm diameter orifice for quantity control;

including erosion/sedimentation control measures during construction and all other controls, electrical equipment, instrumentation, piping, valves and appurtenances essential for the proper operation of the aforementioned Works;

all in accordance with the submitted supporting documents listed in Schedule "A" forming part of this Approval.

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

"Approval" means this entire document including the application and any supporting documents listed in any schedules in this Approval;

"Approved Equivalent" means a substituted product that meets the required quality and performance standards of a named product and has been approved for substitution in writing by the Director.

"Director" means a person appointed by the Minister pursuant to section 5 of the Environmental Protection Act for the purposes of Part II.1 of the Environmental Protection Act;

"Ministry" means the ministry of the government of Ontario responsible for the Environmental Protection Act and the Ontario Water Resources Act and includes all officials, employees or other persons acting on its behalf;

"Owner" means The Corporation of the City of Guelph and includes their successors and assignees;

"Previous Works" means those portions of the sewage Works previously approved under an Approval;

"Water Supervisor" means the Water Supervisor of the Guelph office of the Ministry;

"Works" means the sewage works described in the Owner's application(s) and this Approval.

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

TERMS AND CONDITIONS

1. GENERAL PROVISIONS

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

(2) Except as otherwise provided by these Conditions, the Owner shall design, build, install, operate and maintain the Works in accordance with the description given in this Approval, and the application for approval of the Works.

(3) Where there is a conflict between a provision of any submitted document referred to in this Approval and the Conditions of this Approval, the Conditions in this Approval shall take precedence, and where there is a conflict between the listed submitted documents, the document bearing the most recent date shall prevail.

(4) Where there is a conflict between the listed submitted documents, and the application, the application shall take precedence unless it is clear that the purpose of the document was to amend the application.

(5) The Conditions of this Approval are severable. If any Condition of this Approval, or the application of any requirement of this Approval to any circumstance, is held invalid or unenforceable, the application of such Condition to other circumstances and the remainder of this Approval shall not be affected thereby.

(6) The issuance of, and compliance with the Conditions of this Approval does not:

(a) relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement, including, but not limited to, the obligation to obtain approval from the local conservation authority necessary to construct or operate the sewage Works; or

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

(7) This Approval includes the collection, treatment and disposal of stormwater run-off from the 29.54 hectare Waste Resource Innovation Centre (WRIC) in the City of Guelph, to provide Enhanced Level water quality control and erosion protection, discharging via existing ditches to the Eramosa River. Any changes within the drainage areas that might increase the required storage volumes or increase the flows to or from the stormwater management facilities or any structural/physical changes to the stormwater management facilities, including the inlets and outlets will require an amendment to this Approval.

2. EXPIRY OF APPROVAL

This Approval will cease to apply to those parts of the proposed Works which have not been constructed within **five (5) years** of the date of this Approval.

3. CHANGE OF OWNER

(1) The Owner shall notify the Water Supervisor and the Director, in writing, of any of the following changes within **thirty (30) days** of the change occurring:

(a) change of Owner;

(b) change of address of the Owner;

(c) change of partners where the Owner is or at any time becomes a partnership, and a copy of the most recent declaration filed under the Business Names Act, R.S.O. 1990, c. B17 shall be included in the notification to the Water Supervisor;

(d) change of name of the corporation where the Owner is or at any time becomes a corporation, and a copy of the most current information filed under the Corporations Information Act, R.S.O. 1990, c. C39 shall be included in the notification to the Water Supervisor.

4. OPERATION AND MAINTENANCE

(1) The Owner shall ensure that the design minimum liquid retention volume(s) is maintained in the wet ponds at all times.

(2) The Owner shall conduct a monthly visual inspection of the oil/water separators and the effluent from the pumping manhole during discharge of treated water for any visual oil sheen.

(3) The Owner shall inspect the Works at least once a year and, if necessary, clean and maintain the Works to prevent the excessive build-up of sediments, debris, and/or vegetation, maintain the inlet and outlet structures, and address any signs of slope erosion.

(4) The Owner shall maintain a logbook to record the results of these inspections and any cleaning and maintenance operations undertaken, and shall keep the logbook at the Corporate Office for inspection by the Ministry. The logbook shall include the following:

(a) the name of the Works; and

(b) the date and results of each inspection, maintenance and cleaning, including an estimate of the quantity of any materials removed.

5. MONITORING AND REPORTING

(1) The Owner shall implement a ground water and surface water sampling program to ensure early detection of
contaminants in the event that such contaminants escape the Waste Resource Innovation Centre (WRIC) site, as follows:

(2) Ground Water and Surface Water shall be sampled and analysed for the following parameter suite:

Parameters (sampled semi-annually in the spring and fall)	Biological Oxygen Demand (BOD)	Chloride (Cl)
	Chemical Oxygen Demand (COD)	Sodium (Na)
	Total Kjeldahl Nitrogen (KTN)	Calcium (Ca)
	Ammonia as Nitrogen (NH3-N)	Boron (B)
	Total Phosphorus (Total P)	Total Iron (Fe)
	Total Sulphate (SO4)	Phosphorus (P)
	Phenols	Zinc (Zn)
	Nitrate (NO3) and Nitrite (NO2)	
General Parameters (semi-annually)	pH	Magnesium (Mg)
	Conductivity	Potassium (K)
	Alkalinity	
Organics (sampled annually)	EPA 624,625 (ATG 16+17+18) & ATG (19+20)	
Field Parameters	pH, Conductivity, Temperature	

(3) The surface water monitoring shall include obtaining grab samples at the discharge locations of the final surface water off the Waste Resource Innovation Centre (WRIC) site, for at least three (3) wet events per year (a wet event is defined as a minimum of 15 mm of rain in the previous 24 hours), and tested for Total Suspended Solids (mg/L), and the results recorded. Two (2) of the events must occur within the May to September time period.

(4) The Owner shall **annually** review and update the ground water and surface water sampling programs, designed to detect and quantify any impacts originating from the Waste Resource Innovation Centre (WRIC) site.

(5) Sampling frequency and parameters for analysis may be adjusted upon the written approval of the Water Supervisor, from time to time, as ground water and surface water information becomes available.

(6) All ground water monitoring wells which form part of any monitoring program shall be protected from damage. Any ground water monitoring wells that are damaged shall be repaired or replaced forthwith or properly abandoned in accordance with Ontario Regulation 903.

(7) The Owner shall **annually** review and update, if required, the detailed maintenance schedules for the stormwater management facilities on the Waste Resource Innovation Centre (WRIC) site.

(8) The Owner shall submit to the Water Supervisor, **every year**, a copy of the test results as per Condition 5, Subsection (2) and Subsection (3), above.

(9) The Owner shall submit to the Water Supervisor, an **annual report** on the ground water and surface water sampling and monitoring program described herein, and shall include an interpretation of the results prepared by a qualified hydrogeologist, engineer or scientist, and shall identify any remedial/mitigative action taken.

6. SPILL CONTINGENCY AND POLLUTION PREVENTION PLAN

(1) Upon commencement of operation of the Works, the Owner shall implement a Spill Contingency and Pollution Prevention Plan that outlines procedures as to how to mitigate the impacts of a spill within the area serviced by the Works and/or prevent pollution incidents. The said plan shall include as a minimum, but not limited to:

(a) the name, job title and location (address) of the Owner, person in charge, management or control of the Waste Resource Innovation Centre (WRIC) at 110 Dunlop Drive;

(b) the name, job title and 24-hour telephone number of the person(s) responsible for activating the Spill Contingency and Pollution Prevention Plan;

(c) a site plan drawn to scale showing the facility, nearby buildings, streets, catchbasins & manholes, drainage patterns (including direction(s) of flow in storm sewers) and any features which need to be taken into account in terms of potential impacts on access and response (including physical obstructions and location of response and clean-up equipment);

(d) steps to be taken to report, contain, clean up and dispose of contaminants following a spill;

(e) a listing of telephone numbers for: local clean-up companies who may be called upon to assist in responding to spills; local emergency responders including health institution(s); and MOE Spills Action Centre 1-800-268-6060;

(f) Materials Safety Data Sheets (MSDS) for each and every hazardous material which may be transported or stored within the area serviced by the Works;

(g) the means (internal corporate procedures) by which the Spill Contingency and Pollution Prevention Plan is activated;

(h) a description of the spill response and pollution prevention training provided to employees assigned to work in the area serviced by the Works, the date(s) on which the training was provided and to whom;

(i) an inventory of response and clean-up equipment available to implement the Spill Contingency and Pollution Prevention Plan, location and date of maintenance/replacement if warranted, including testing and calibration of the equipment; and

(j) the date on which the Spill Contingency and Pollution Prevention Plan was prepared and subsequently, amended.

(2) The Spill Contingency and Pollution Prevention Plan shall be kept in a conspicuous place near the reception area on site.

(3) The Spill Contingency and Pollution Prevention Plan will be amended from time to time as needed by changes in the operation of the facility or to reflect updates in the Municipal By-Laws, or improved Best Management Practices by the Owner.

7. TEMPORARY EROSION AND SEDIMENT CONTROL

(1) The Owner shall install and maintain temporary sediment and erosion control measures during construction and conduct inspections once every **two (2) weeks** and after each significant storm event (a significant storm event is defined as a minimum of 25 mm of rain in any 24 hours period). The inspections and maintenance of the temporary sediment and erosion control measures shall continue until they are no longer required and at which time they shall be removed and all disturbed areas reinstated properly.

(2) The Owner shall maintain records of inspections and maintenance which shall be made available for inspection by the Ministry, upon request. The record shall include the name of the inspector, date of inspection, and the remedial measures, if any, undertaken to maintain the temporary sediment and erosion control measures.

8. RECORD KEEPING

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

Schedule "A"

1. Application for Approval of Industrial Sewage Works, dated October 18, 2002, and associated documents, submitted by The Corporation of the City of Guelph;

2. Application for Approval of Municipal and Private Sewage Works, dated August 16, 2007, and received on August 20, 2007, submitted by The Corporation of the City of Guelph;

3. Storm & Sanitary Drainage Assessment Report for the City of Guelph Waste Resource Innovation Centre, dated August, 2007, prepared by Gartner Lee Limited;

4. Letters with attachments from Glenn Farmer of Gartner Lee Limited to the Ministry, dated October 5, 2007 and November 26, 2007;

5. E-mail with attachments from Glenn Farmer of Gartner Lee Limited to the Ministry, dated April 1, 2008;

6. E-mail from the Ministry to Glenn Farmer of Gartner Lee Limited, dated April 21, 2008;

7. Stormwater Management Report and final plans and specifications, dated 1992, prepared by R. Cave and Associates Engineering Ltd., Consulting Engineers;

8. Application for Approval of Municipal and Private Sewage Works, along with supporting information, dated April 13, 2010 and received on April 14, 2010, submitted by the The Corporation of the City of Guelph;

9. E-mail along with supporting information from Glenn Farmer of AECOM to the Ministry, dated May 14, 2010;

10. Application for Approval of Sewage Works, dated August 25, 2011 and submitted by The Corporation of the City of Guelph;

11. Design Brief and engineering drawings and specifications, dated August 9, 2011, provided by Vida Stripinis & Associates Limited;

12. Application for Approval of Municipal and Private Sewage Works, dated March 25, 2014, and received on April 15, 2014, submitted by the The Corporation of the City of Guelph;

13. Pipe Data Form and Storm Sewer Design Sheet, dated February 2014, prepared by Sco-Terra Consulting Group Limited;

14. Design Level Stormwater Management Plan, dated April 2014, prepared by Sco-Terra Consulting Group Limited;

15. Set of Engineering Drawings (22 drawings), dated April 14, 2014, prepared by Sco-Terra Consulting Group Limited;

16. E-mail and letter from Richard Pellerin of Sco-Terra Consulting Group Limited to the Ministry, dated September 24, 2014; and

17. E-mails from Richard Pellerin of Sco-Terra Consulting Group Limited to the Ministry, dated November 25, 2014, December 18, 2014, and January 7, 2015.

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

1. Condition 1 is imposed to ensure that the Works are built and operated in the manner in which they were described for review and upon which approval was granted. This Condition is also included to emphasize the precedence of Conditions in the Approval and the practice that the Approval is based on the most current document, if several conflicting documents are submitted for review.

2. Condition 2 is included to ensure that, when the Works are constructed, the Works will meet the standards that apply at the time of construction to ensure the ongoing protection of the environment.

3. Condition 3 is included to ensure that the Ministry records are kept accurate and current with respect to approved Works and to ensure that any subsequent Owner of the Works is made aware of the Approval and continues to operate the Works in compliance with it.

4. Condition 4 is included to require that the Works be properly operated and maintained such that the environment is protected.

5. Condition 5 is included to enable the Owner to evaluate and demonstrate the performance of the Works on a continual basis, so that the Works are properly operated and maintained at a level which is consistent with the design objectives specified in the Approval and that the Works do not cause any impairment to the receiving watercourse.

6. Condition 6 is included to ensure that the Ministry is immediately informed of the occurrence of an emergency or otherwise abnormal situation so that appropriate steps are taken to address the immediate concerns regarding the protection of public health and minimizing environmental damage and to be able to devise an overall abatement strategy to prevent long term degradation and the re-occurrence of the situation.

7. Condition 7 is included as installation, regular inspection and maintenance of the temporary sediment and erosion control measures is required to mitigate the impact on the downstream receiving watercourse during construction, until they are no longer required.

8. Condition 8 is included to require that all records are retained for a sufficient time period to adequately evaluate the long-term operation and maintenance of the Works.

Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). 5015-856HHF, and 5320-8NXK2Y issued on June 16, 2010 and December 8, 2011 respectively.

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

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

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

The Notice should also include:

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

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

This Notice must be served upon:

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

AND

The Director appointed for the purposes of
Part II.1 of the Environmental Protection Act
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 314-4506 or www.ert.gov.on.ca**

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

DATED AT TORONTO this 7th day of January, 2015

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

DC/

c: DWMD Supervisor, MOE Guelph office
Richard Pellerin, P. Eng, Sco-Terra Consulting Group Limited

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER A170128
Notice No. 4
Issue Date: January 9, 2015

The Corporation of the City of Guelph
1 Carden St
Guelph, Ontario
N1H 3A1

Site Location: Guelph Waste Resource Innovation Centre (WRIC)
110 Dunlop Dr
Guelph City, County of Wellington
N1H 6N1

You are hereby notified that I have amended Approval No. A170128 issued on February 10, 2011 forthe use and operation of a 29.54 hectare Waste Disposal Site (Transfer/Processing), as follows:

1. Paragraphs c) and d) of the pre-amble have been amended to read as follows:

   c) the use and operation of a Municipal Hazardous and Special Waste facility for the transfer and temporary storage of the following categories of waste *(Note: Use of the Site for additional categories of wastes requires a new application and amendments to the Provisional Certificate of Approval); Municipal Hazardous and Special Waste* limited to the following waste classes; 112, 121, 145, 146, 147, 148, 212, 213, 221, 242, 251, 252, 261, 263, 269, 312, and 331 as described in the Ministry of the Environment's document entitled *"Ontario Waste Classes"*, dated February 2013, as amended, limited to a maximum Site storage capacity of 15 tonnes; and

   d) the use and operation of a Waste Disposal Site (Transfer) for solid non-hazardous waste from industrial, commercial and institutional sources, commercial waste and domestic waste, with an indoor storage maximum capacity of 795 tonnes and outdoor storage areas for leaf and yard waste and for recyclable waste.

2. The following definitions have been amended to read as follows:

   (g) "**Environmental Compliance Approval (Air/Noise)**" means the **Environmental Compliance Approval** issued for the Site for the activities mentioned in subsection 9 (1) of the *EPA* for the Composting Site;

(ee) **"Municipal Hazardous and Special Waste"and "MHSW**" mean hazardous waste or special waste generated by households located within geographic boundaries of the City of Guelph and the County of Wellington that fall within waste numbers 112, 121, 145, 146, 147, 148, 212, 213, 221, 242, 251, 252, 261, 263, 269, 312, and 331 as set out in the Ministry of the Environment's document entitled "Ontario Waste Classes", dated February 2013, as amended, and as defined in *Regulation 347,*and also include wet cell batteries and small dry cell batteries, household cleaners and detergents, aerosols, waxes and polishes, fluorescent tubes and energy efficient light bulbs and mercury switches and thermostats;

3. The following definitions have been added:

(jjj) "**Public Drop-off area**" means the East Public Drop-Off and the West Public Drop-Off areas set out in the supporting documentation included in the attached Schedule "A";

(kkk) "**Environmental Compliance Approval (Municipal and Private Sewage Works)**" means the Environmental Compliance Approval issued for the Site for the activities mentioned in subsection 53 of the *OWRA;*

4. The following conditions have been amended to read as follows:

	Waste Storage
17.(4)(e)	wastes that are in bins in the Public Drop-Off area; and
	Complaints Procedure
46.(c)	The *Municipality* shall immediately orally notify the *Ministry* of the complaint, followed with the submission of a written report within three (3) days, of the complaint detailing what actions, if any, were taken to identify and remediate the cause of the complaint and what remedial action, if any, would be taken.
	Annual Report
52.(e)	an annual summary of the analytical results from the groundwater monitoring program and from surface water monitoring required in Environmental Compliance Approval (Municipal and Private Sewage Works), including an interpretation of the results and any remedial/mitigative action undertaken;
	Organic Waste and Composting Site
54.(1.2)(b)(iv)	confirmation whether inclusion of the *Organic Waste* in a biodegradable certified compostable bag is characterized as incidental/inadvertent or a result of collection through a waste collection program that allows the use of the said compostable bags;

5. Conditions 32, 33, 34, 35 and 36 are deleted.

6. The following documents have been added to Schedule "A":

57. Environmental Compliance Approval Application dated April 2, 2013, signed by Bill Shields, The Corporation of the City of Guelph, including the attached supporting documentation.

58. E-mail dated March 17, 2014 (9:31 a.m.) from Bill Shields, The Corporation of the City of Guelph, to Margaret Wojcik, Ontario Ministry of the Environment and Climate Change, with the description of the amended access to the West PDO and including the description of the wastes received at this location.

The reasons for this amendment to the Approval are as follows:

to approve an additional Public Drop-Off location, a new brush and leaf and yard waste storage areas, the new waste class to be accepted at Municipal Hazardous and Special Waste facility and to correct an administrative ambiguity in Condition 54.(1.2)(b)(iv). Conditions 32 through 35 are deleted since the groundwater and the surface water monitoring is required in the Environmental Compliance Approval (Municipal and Private Sewage Works) issued for the Site.

This Notice shall constitute part of the approval issued under Approval No. A170128 dated February 10, 2011, as amended.

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

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

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

The Notice should also include:

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

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

This Notice must be served upon:

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

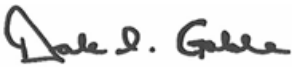
AND

The Director appointed for the purposes of
Part II.1 of the Environmental Protection Act
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 314-3717 or www.ert.gov.on.ca**

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

DATED AT TORONTO this 9th day of January, 2015



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

MW/
c: District Manager, MOE Guelph
Chris Visser, Golder Associates Ltd.

AECOM
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December 3, 2013

Mr. Bill Shields
Supervisor of Governance & Compliance
Solid Waste Resources
Environmental Services Department
City of Guelph
59 Carden Street
Guelph, ON N1H 3A1

Dear Mr. Shields:

Project No: 60266226-03

Regarding: Follow Up Response to Ministry of the Environment Comments on the Surface Water Monitoring Program and Proposed Action Plan– City of Guelph

We have reviewed the comments received from the Ministry of the Environment (MOE) via email on October 31, 2013 with regard to our further response to the surface water comments from MOE review of the 2012 Annual Report dated October 8, 2013.

Based on the follow-up comments the MOE has agreed to the monitoring of Stormwater Detention Pond 2 (SD2) during and after precipitation events with water quality sampling only if discharge is required. The MOE has also requested that if this monitoring is to proceed that documentation regarding the operations of the pond should be provided in order to address, capacity, freeboard and the trigger level at which the pond will be discharged.

Discussion

A detailed assessment of the storm water ponds is contained in the "Storm & Sanitary Drainage Assessment Report for the City of Guelph Waste Resource Innovation Centre, dated August 2007 (GLL70-176). The physical characteristics of Pond SD2, as outlined in Table 3.5 of the drainage assessment report, are provided in the table below.

Depth / Stage (m)	Storage Volume (m3)	Pond Outflow 400 mmϕ. (m^3/s)[1]	Pond Outflow 900 mm ϕCSP (m^3/s)[1]	Comments
0	75	0000	0.000	Pond invert
0.2	470	0.149	0.293	400 mm orifice set at + 0.15 m above invert
0.45	870	0.224	0.535	
1.0	1870	0.334	1.254	Maximum pond depth

Notes: 1-units were incorrectly stated as L/s in the report (GLL70-176) as values in report are correctly report in m^3/s.

Based on the detailed site assessment, it was determined that the Pond SD2 outlet could accommodate the peak flow generated by a 100 year storm (i.e., predicted outflow is 1.2 m^3/s versus 1.33 m^3/s pre development levels). However, it was concluded through modelling, that due to the modification to the system, which included the blockage of the outlet at SD2, that there could be surface flooding in the low lying areas for storm events in excess of a 5 year storm. Although this has not been observed at the site to-date, it is recommended that the trigger water level in the pond be set based on the theoretical calculation for a 5 year storm, in order to be conservative. Therefore, the trigger water level is to be set at 0.46 m as per the theoretical volume calculated in Pond SD2 of 890 m^3 from a 5 year storm (Table 3.6 in the drainage assessment report).

Based on the above information, the following surface water monitoring program is recommended:

- Assess Storm Water Detention Pond 2 on a monthly basis/ and or during periods of rain/storm events (where practical);
- Install a staff gauge at the point of discharge from Pond SD2 to record observed levels;
- When a target level of 0.46 m above pond invert is reached, discharge would be required;
- Water quality sampling should be completed, prior to any discharge, to insure all applicable Provincial Water Quality Objectives (PWQO) and Canadian Water Quality Guidelines (CWQG) are met.
- If applicable guidelines are met off site discharge should be completed until below the outlet invert. Upon reaching this level, the outlet should then be closed.

Further to the above, the storm water management pond (TP) on the transfer station property will continue on the monthly frequency, under non stagnant conditions, based on current proposed upgrades to the transfer station facility. As part of this, sampling of the background station EPTS-01 should also continue on a monthly basis.

We trust that this meets your requirement at this time. Should you need further information or clarifications please do not hesitate to contact me at (905) 747-7482.

Sincerely,
AECOM Canada Ltd.

Terry La Chapelle, B.Sc., P.Geo.
Senior Geologist, Project Manager

TLC:mm .
cc: Kevin Noll, MOE
Glenn Farmer, AECOM

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