2013/2014 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NEWFOUNDLAND AND LABRADOR

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EXECUTIVE SUMMARY

Conestoga-Rovers & Associates (CRA) was retained by the Newfoundland and Labrador Department of Environment and Conservation (DOEC) to complete the 2013/14 monitoring and maintenance program at the Come By Chance Secure Landfill (Site) located on Refinery Road in Come By Chance, Newfoundland and Labrador (NL) as shown on Figure 1. Site visits and field activities were completed in accordance with the DOEC Tier I schedule as outlined in the June 2012 Operations, Maintenance , and Monitoring (OMM) Manual.

The Come By Chance Secure Landfill covers an area of approximately 19,778 square metres (m^2) located approximately 2.5 km west of the Trans Canada Highway and approximately 4 km south of the Town of Come By Chance, Newfoundland and Labrador (NL). The landfill was constructed between 1994 and 1996 to facilitate the clean-up of hazardous waste associated with the Come By Chance Oil Refinery. Leachate containment is achieved through the use of a redundant liner system consisting of independent primary and secondary liners as well as a drainage pipe system to manage excess fluid and provide a means for leachate discharge. A groundwater drainage system (GWDS) was installed in March 2009 starting at the east side of the landfill and is graded at one percent toward the northeast corner, then along the north side, and eventually discharging beyond the gravel road west of the Site.

The work completed by CRA during the 2013/14 monitoring and maintenance program generally involved sampling of the primary and secondary leachate collection valve chambers in advance of pumping down the chambers by discharging to a nearby ditch, groundwater and surface water sampling, landfill cover inspection, groundwater drainage system inspection, and clean-out inspection with cleaning (if required).

The summer Site sampling event was conducted in August 2013 with the leachate pumping event completed in October 2013. A summary of the 2013/14 monitoring and maintenance program is provided below along with recommendations for future work.

E.1 SAMPLING SCHEDULE

In accordance with the OMM Manual, CRA recommend that future leachate sampling continue to be conducted using the Tier I schedule (once per year) since leachate elevations were measured at less than 0.6 metres below the top of the valve chambers for the PLCS and SLCS again during the 2013 Site visits.

Monitoring and Maintenance Schedule: In accordance with the OMM Manual, CRA continue to recommend that groundwater, surface water, and leachate sampling be conducted using the Tier I schedule (once per year) since leachate elevations were measured at less than 0.6 metres below the top of the valve chambers for the PLCS and SLCS in 2012. In addition, the continued maintenance and inspection program for the landfill cover and groundwater drainage system clean-outs should be scheduled to coincide with the sampling program.

E.2 GROUNDWATER

In general, BTEX/mTPH, PAH, PCB, VOC, general chemistry, and metals analytical data show groundwater conditions to be of better quality compared to leachate analytical data; therefore, it does not appear that groundwater is being influenced by leachate from the secure landfill. Based on static groundwater levels measured during the 2013 Site visit, it also appears that groundwater infiltration may still be occurring at the northeastern area of the Site.

E.3 SURFACE WATER

In general, the BTEX/mTPH, PAH, PCB, VOC, and general chemistry analytical data show surface water conditions as dramatically distinct in comparison to the leachate analytical data; therefore, it does not appear that leachate is seeping from the landfill liners into the downgradient surface water; therefore, the secure landfill liners appear to be performing in accordance with their original intent of acting as a barrier between leachate accumulations within the landfill and surface water in the surrounding area.

E.4 LEACHATE AND POTENTIAL INFILTRATION SOURCES

In accordance with the OMM Manual, the pumping event consisted of two Site visits so that a desired flow rate of 15 L/min could be achieved. During the first Site visit for leachate pumping in October 2013, it was observed that the PLCS and SLCS valves were in the open position with the discharge hose no longer connected to the PLCS valve. CRA determined in-flow rates by pumping down each valve chamber, measuring the change in head over a fixed period of time, then calculating in-flow. Maintaining these valves in the open position does not create any integrity issues for containment as the hydraulic head in the two leachate valve chambers has not risen above the ground surface. It was also noted that leachate elevations in the PLCS and SLCS for two consecutive Site visits were less than 0.6 metres below the top of the valve chambers.

A review of the current and historical leachate pumping volumes from the PLCS and SLCS valve chambers demonstrates that pumped leachate volumes have decreased since the installation of the groundwater drainage system. A comparison of the average pumped leachate volumes from the PLCS prior to and following installation of the groundwater drainage system shows a decrease of approximately 25 percent. In addition, a comparison of the average pumped leachate volumes from the SLCS prior to and following installation of the groundwater drainage system shows a decrease of approximately 55 percent. Consequently, it appears the groundwater drainage system has contributed to the reduction of volumes of pumped leachate from the PLCS and SLCS; however, significant volumes of leachate are still present within the two liners that require pumping on a regular basis.

E.5 LANDFILL COVER AND VEGETATION CONTROL

The landfill cover inspection was conducted on August 28, 2013, which indicated that minor maintenance is required. The only issue of concern related to maintenance is the cutting of vegetation, typically alders, which have reached 1.5 metres in height, considerably more than the OMM recommended height restriction of 0.3 metres. Meadow vole activity from tunneling and nesting was previously noted in numerous locations on the landfill cover during the 2012 inspection; however, evidence of meadow vole activity was not observed due to the vegetation present during the 2013 inspection.

Upon reviewing the results of the elevation control survey, it was noted the elevation control points decreased by an average of 25 millimetres between the original elevations surveyed in August 2010 and the recent survey completed in August 2013. Based on this information, the difference in elevation of the control points indicate that very limited and insignificant settlement is occurring at the landfill cover, which in turn indicates the contents of the landfill are not settling.

E.6 GROUNDWATER DRAINAGE SYSTEM

Four GWDS clean-outs were previously installed as part of the original system construction; visual inspections confirmed that water was not present. The discharge location, previously located on the west side of the gravel service road, was excavated and reconstructed at the roadside embankment as part of redevelopment of the area, which was related to the construction of a new asphalt plant (J-1 Contracting) prior to the August 2013 Site visit. A very low flow of water was observed from the discharge of the GWDS. A new rodent screen was installed during the October 2013 Site visit.

Debris or blockages were not present in any of the clean-outs during the Site visit and combined with the water flow from the downgradient discharge, it was determined the GWDS was functioning properly and cleaning was not required.

E.7 RECOMMENDATIONS

Based on the findings of the 2013/14 monitoring and maintenance program along with data from previous monitoring programs, the following recommendations are offered for consideration by DOEC:

Monitoring and Maintenance Schedule: The leachate quality is continually reporting BTEX/TPH, PAH, PCB, general chemistry, and metals concentrations at levels that would not affect the surrounding environment, most notably groundwater and surface water. In addition, the landfill was constructed approximately 20 years ago and based on the historical analytical data reviewed in this report, it appears that leachate has reached a steady-state condition. Furthermore, groundwater infiltration has been evident for many years and has acted as a flushing mechanism for any contaminants that may have been present, although elevated levels of contaminants have not historically been identified. Therefore, CRA recommend that further monitoring of the landfill and pumping out of the PLCS and SLCS are not required; however, annual inspections should be continued to ensure the landfill cover system is not compromised by erosion. CRA understands that DOEC would prefer to continue monitoring activities at the landfill as a matter of due diligence.

Vegetation Control: CRA recommend that all vegetation on the landfill cover that measures over 0.3 metres in height should be cut down. This work can be completed in conjunction with vegetation control in the monitor well locations outside the fenced area of the landfill.

In addition, it was noted that access to two monitor wells (MW93-1 and MW93-1A) was somewhat difficult due to the excessive vegetative growth in the area with alders reaching heights of 1.8 metres. CRA recommend that alders be cut down in this location to better facilitate future field programs (i.e. the transport of field equipment such as water level meters, coolers, sample jars, etc.).

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1.0 INTRODUCTION

Conestoga-Rovers & Associates (CRA) was retained by the Newfoundland and Labrador Department of Environment and Conservation (DOEC) to complete the 2013/14 monitoring and maintenance program at the Come By Chance Secure Landfill (Site) located on Refinery Road in Come By Chance, Newfoundland and Labrador (NL) as shown on Figure 1. Site visits and field activities were completed in accordance with the DOEC Tier I schedule as outlined in the June 2012 Operations, Maintenance , and Monitoring (OMM) Manual.

The work generally involved sampling of the primary and secondary leachate collection valve chambers in advance of pumping down the chambers by discharging to a nearby ditch, groundwater and surface water sampling, landfill cover inspection, and groundwater drainage system inspection, and clean-out inspection with cleaning (if required).

The summer Site sampling event was conducted in August 2013 with the leachate pumping event completed in October 2013.

2.0 SITE DESCRIPTION

The Come By Chance Secure Landfill covers an area of approximately 19,778 square metres (m^2) located approximately 2.5 km west of the Trans Canada Highway and approximately 4 km south of the Town of Come By Chance (Town), Newfoundland and Labrador (NL). The landfill was constructed between 1994 and 1996 to facilitate the clean-up of hazardous waste associated with the Come By Chance Oil Refinery. Leachate containment is achieved through the use of a redundant liner system consisting of independent primary and secondary liners as well as a drainage pipe system to manage excess fluid and provide a means for leachate discharge.

A groundwater drainage system was installed in March 2009 starting at the east side of the landfill and is graded at one percent toward the northeast corner, then along the north side, and eventually discharging beyond the gravel road west of the Site. The system consists of 140 metres of perforated PVC pipe, 150 mm in diameter, installed in a trench of washed crushed stone measuring approximately 600 mm x 600 mm wrapped in filter fabric and 110 metres of corrugated steel pipe, 200 mm in diameter.

3.0 METHODOLOGY

3.1 GROUNDWATER SAMPLING

On August 28, 2013, static water levels were measured using an electronic product/water interface probe at the on-Site monitor wells (Table 1). The monitor wells were then developed, allowed to recover, and sampled using dedicated, disposable bailers. Seven groundwater samples were collected from the on-Site monitor wells during the sampling event, including one field duplicate (DUP-05) from MW10-01. Note that two monitor well locations (MW93-1 and MW93-2) were surrounded with very high vegetative growth in the area; alders were still noted to reach a height of approximately 1.8 metres.

All groundwater samples collected from the six existing monitor wells (MW93-1, MW93-1A, MW93-2, MW93-2A, MW10-1, and MW10-1A) were submitted for analysis of benzene, toluene, ethylbenzene, xylene (BTEX), modified total petroleum hydrocarbons (mTPH), polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs), general chemistry, and metals. Groundwater samples were submitted to Maxxam Analytics Inc. (Maxxam) in Bedford, Nova Scotia for analysis except BTEX/mTPH samples that were submitted to Maxxam in St. John's, NL.

3.2 SURFACE WATER SAMPLING

Surface water sampling was intended to demonstrate background analyte concentrations from the upgradient sample location (SURFACE-UP) and assess potential leachate infiltration into surface water by sampling downgradient (SURFACE-DOWN). The previous SURFACE-DOWN location was destroyed as a result of an industrial development with an asphalt plant; therefore, a new SURFACE-DOWN location was selected and sampled in November 2012. The surface water locations are located southeast of the fenced area and upstream (SURFACE-UP) along with one southwest of the Site beyond the gravel road and downstream (SURFACE-DOWN), both of which were submitted for analysis of BTEX/mTPH, PAHs, PCBs, VOCs, general chemistry, and metals that included hexavalent and total chromium. All surface water samples were submitted to Maxxam in Bedford, NS for analysis except BTEX/mTPH samples that were submitted to Maxxam in St. John's, NL. GPS co-ordinates using NAD27 (UTM Zone 21) geo-reference were also recorded for the two surface water sample locations (Table 2), which are shown on Figure 2.

3.3 LEACHATE SAMPLING AND PUMPING

CRA collected leachate samples on August 28, 2013 from the primary and secondary containment leachate systems (PLCS and SLCS, respectively) for BTEX/mTPH, PAHs, PCBs, VOCs, general chemistry, metals, and toxicity. All leachate samples were submitted to Maxxam in Bedford, NS for analysis except BTEX/mTPH samples that were submitted to Maxxam in St. John's, NL; toxicity samples were submitted to Stantec Consulting Ltd. (Stantec) in St. John's, NL. Note that all laboratories are CALA certified for the respective analyses that were completed. GPS co-ordinates using NAD27 (UTM Zone 21) geo-reference were confirmed for the two leachate collection system valve chamber sample locations (Table 2), which are shown on Figure 2. Field data recorded prior to and during the PLCS and SLCS leachate discharge events are presented in Tables 3 and 4, respectively.

Leachate analytical data was required to determine if pumping down the PLCS and SLCS valve chambers and discharging into a nearby ditch was permitted under the Provincial Environmental Control Water and Sewer Regulations, Schedule A (2003) for the respective comparison criteria, where available. The tabulated analytical results from the sampling event were presented to DOEC for review and approval. Since the drainage ditch location planned for leachate discharge is within the Town boundaries, approval was also requested from the Town prior to discharging leachate from both collection systems into the nearby ditch.

3.4 LANDFILL COVER INSPECTION AND ELEVATION CONTROL

A landfill cover visual inspection was completed during the Site visit in August 2013 along with a detailed inspection documented in Table 5 in accordance with the OMM Manual (Refer to Photographs 1 and 4 of Appendix A). The comprehensive landfill cover inspection conducted in August 2013 assessed the following:

- Height of vegetation;
- Condition of landfill vents;
- Condition of slopes
- Condition of lateral drains.
- Evidence or erosion/animal burrows

The ability to accurately measure potential settlement of the landfill cover was recently incorporated into the landfill surface with the installation of concrete elevation control points that were established at four locations on the landfill cover in 2010. GPS co-ordinates using NAD27 (UTM Zone 21) geo-reference were available for the four elevation control points and landfill vent locations (Table 2), which are shown on

Figure 2. In addition, results of the elevational control point survey are presented in Table 6.

3.5 GROUNDWATER DRAINAGE SYSTEM

Historically, large volumes of leachate from the SLCS were required to be pumped during each Site visit, which was previously suspect to be a result of groundwater infiltration into the secondary liner. Consequently, a Groundwater Drainage System (GWDS) was installed in 2009 outside the fenced area of the secure landfill along the eastern and northern boundaries at an elevation that was anticipated to intercept groundwater and divert it through the drainage system.

A visual inspection of the groundwater drainage system was conducted during the August 2013 Site visit to determine if cleaning was required and/or if groundwater was present in the clean-out locations. GPS co-ordinates using NAD27 (UTM Zone 21) geo-reference were available for the four clean-out locations (Table 2), which are shown on Figure 2. Following construction of an asphalt plant on the western side of the gravel road beyond the secure landfill, the original discharge location for the GWDS was destroyed and relocated to an area immediately adjacent to the gravel road. Refer to Photographs 2 and 7 of Appendix A showing a typical clean-out location during the 2013 Site visit and the new discharge location, which did not have a rodent grill attached during the August 2013 Site visit; however, a rodent screen was installed during the October 2013 Site visit.

4.0 GUIDELINE FRAMEWORK

4.1 GROUNDWATER

As specified in the OMM Manual, petroleum hydrocarbon compound concentrations (BTEX/TPH) in groundwater were assessed in relation to the Atlantic Risk-Based Corrective Action (RBCA) Version 3.0 (July 2012) Tier I Risk-Based Screening Levels (RBSLs) for a commercial property with non-potable groundwater and coarse-grained soil.

PAH, PCB, VOC, metals, and general chemistry concentrations in groundwater were assessed in relation to the Ontario Ministry of the Environment (MOE) "Soil, Ground Water, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act" dated April 15, 2011, Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition.

4.2 SURFACE WATER

As specified in the OMM Manual, BTE, PAH, VOC, metals (including trivalent and hexavalent chromium), and general chemistry concentrations in surface water were evaluated in relation to the Canadian Council of Ministers of the Environment (CCME) Canadian Water Quality Guidelines (CWQGs) for the Protection of Aquatic Life (Freshwater or FAL). The FAL were from the Canadian Environmental Quality Guidelines (Update 7.0, September 2007).

TPH in surface water was evaluated in relation to the British Columbia Contaminated Sites Regulation (B.C. Reg. 375/96) Schedule 6 Generic Numerical Water Standards for Aquatic Life (Aquatic Life Generic Standards - freshwater) for Total Petroleum Hydrocarbons.

4.3 LEACHATE

As specified in the OMM Manual, leachate was assessed in relation to the Newfoundland and Labrador Regulation 65/03, Environmental Control Water and Sewage Regulations, 2003, Schedule "A", under the Water Resources Act (Filed May 23, 2003) (referred to as Schedule "A" of the DOEC Regulations); and the CCME CWQGs for the Protection of FAL, updated 2007.

5.0 ANALYTICAL RESULTS

5.1 GROUNDWATER

Groundwater analytical results for BTEX/mTPH, PAHs, PCBs, VOCs, general chemistry, and metals are presented in Tables 7 to 12, respectively. Sample locations are shown on Figure 2 and Laboratory Certificates of Analyses are included as Appendix B. Additional discussion is presented in Section 6.1 regarding the groundwater analytical results.

5.1.1 BTEX/mTPH IN GROUNDWATER

Laboratory analytical results for BTEX/mTPH from the six groundwater samples (MW93-1, MW93-1A, MW93-2, MW93-2A, MW10-1, and MW10-1A) are presented in Table 7, all of which reported BTEX/mTPH concentrations as non-detectable and below the applicable guidelines.

One field duplicate (DUP-05) was also collected from MW10-1 during the August 2013 sampling event, which reported BTEX/mTPH concentrations consistent with the original sample results.

5.1.2 PAHs IN GROUNDWATER

Laboratory analytical results for PAHs from the six groundwater samples (MW93-1, MW93-1A, MW93-2, MW93-2A, MW10-1, and MW10-1A) are presented in Table 8, all of which reported PAH concentrations as non-detectable or below the applicable guidelines.

In addition, one field duplicate (DUP-05) was also collected from MW10-1 that reported PAH concentrations consistent with the original sample results.

5.1.3 PCBs IN GROUNDWATER

Laboratory analytical results for PCBs from the six groundwater samples (MW93-1, MW93-1A, MW93-2, MW93-2A, MW10-1, and MW10-1A) are presented in Table 9, all of which reported PCB concentrations as non-detectable and below the applicable guidelines.

In addition, one field duplicate (DUP-05) was collected from MW10-1 that also reported PCB concentrations consistent with the original sample results.

5.1.4 VOCs IN GROUNDWATER

Laboratory analytical results for VOCs from the six groundwater samples (MW93-1, MW93-1A, MW93-2, MW93-2A, MW10-1, and MW10-1A) are presented in Table 10, all of which reported VOC concentrations as non-detectable or below the applicable guidelines.

In addition, one field duplicate (DUP-05) was collected from MW10-1 that also reported VOC concentrations consistent with the original sample results.

5.1.5 GENERAL CHEMISTRY IN GROUNDWATER

Laboratory analytical results for general chemistry from the six groundwater samples (MW93-1, MW93-1A, MW93-2, MW93-2A, MW10-1, and MW10-1A) are presented in Table 11, all of which reported general chemistry concentrations as non-detectable or below the applicable guidelines.

In addition, one field duplicate (DUP-05) was collected from MW10-1 that also reported general chemistry concentrations consistent with the original sample results.

5.1.6 METALS IN GROUNDWATER

Laboratory analytical results for metals from the six groundwater samples (MW93-1, MW93-1A, MW93-2, MW93-2A, MW10-1, and MW10-1A) are presented in Table 12, all of which reported metals concentrations as non-detectable or below the applicable guidelines.

In addition, one field duplicate (DUP-05) was collected from MW10-1 that also reported metals concentrations consistent with the original sample results.

5.2 SURFACE WATER

Surface water analytical results for BTEX/mTPH, PAHs, PCBs, VOCs, general chemistry, and metals that included hexavalent chromium were compared to applicable guidelines are shown in Tables 13 to 18, respectively. Sample locations are shown on

Figure 2 and Laboratory Certificates of Analyses are included as Appendix B. Additional discussion is presented in Section 6.2 regarding the surface water analytical results.

5.2.1 BTEX/mTPH IN SURFACE WATER

Laboratory analytical results for BTEX/mTPH from the two surface water samples (SURFACE-UP and SURFACE-DOWN) collected in August 2013 are presented in Table 13, both of which reported BTEX/mTPH concentrations as non-detectable and below the applicable guidelines.

5.2.2 PAHs IN SURFACE WATER

Laboratory analytical results for PAHs from the two surface water samples (SURFACE-UP and SURFACE-DOWN) collected in August 2013 are presented in Table 14, both of which reported PAH concentrations as non-detectable and below the applicable guidelines.

5.2.3 PCBs IN SURFACE WATER

Laboratory analytical results for PCBs from the two surface water samples (SURFACE-UP and SURFACE-DOWN) collected in August 2013 are presented in Table 15, all of which reported PCB concentrations as non-detectable. Note that CCME CWQGs (FAL) does not specify a criterion for PCBs in surface water.

5.2.4 VOCs IN SURFACE WATER

Laboratory analytical results for VOCs from the two surface water samples (SURFACE-UP and SURFACE-DOWN) collected in August 2013 are presented in Table 16, both of which reported VOC concentrations as non-detectable and within the applicable guidelines.

5.2.5 GENERAL CHEMISTRY IN SURFACE WATER

Laboratory analytical results for general chemistry from the two surface water samples (SURFACE-UP and SURFACE-DOWN) collected in August 2013 are presented in

Table 17, both of which reported general chemistry concentrations as non-detectable or within the applicable guidelines.

5.2.6 METALS IN SURFACE WATER

Laboratory analytical results for metals from two surface water samples (SURFACE-UP and SURFACE-DOWN) collected in August 2013 are presented in Table 18, both of which reported metals concentrations as non-detectable or below the applicable guidelines except exceedances at both locations for iron.

The upgradient sample collected in August 2013 reported iron exceedances at concentrations very similar to the downgradient sample. The summary table below demonstrates the difference in concentrations between the upgradient reference sample and the downgradient sample.

Summary Table of Upgradient vs. Downgradient Surface Water Sample Exceedances – November 2012			
Analyte	**Upgradient Concentration (µg/L)**	**Downgradient Concentration (µg/L)**	**Difference**
Iron	530	*440*	0.83 x

#.## Exceeds CCME CWQGs

The above-noted exceedances were identified in previous monitoring reports from 2008, 2011, and 2012.

5.3 LEACHATE SAMPLING

Leachate analytical results for BTEX/mTPH, PAHs, PCBs, VOCs, general chemistry, and metals are presented in Tables 19 to 24, respectively. Sample locations are shown on Figure 2 and Laboratory Certificates of Analyses are included as Appendix B. In addition, PLCS and SLCS toxicity analytical results for 2013 as reported by Stantec are included as Appendix C. Further discussion is presented in Section 6.3 regarding the leachate analytical results.

5.3.1 BTEX/mTPH IN LEACHATE

Laboratory analytical results for BTEX/mTPH from the two leachate samples (PLCS and SLCS) collected in August 2013 are presented in Table 19, both of which reported BTEX/mTPH concentrations as very low or non-detectable. TPH concentrations were also below the Schedule A criterion for Provincial Environmental Control Water and Sewer regulations. In addition, BTEX and TPH concentrations were below the CCME CWQGs FAL criteria and the Tier I Surface Water Ecological Screening Levels for protection of aquatic life.

In addition, one field duplicate (DUP-06) was collected from SLCS that also reported BTEX/mTPH concentrations consistent with the original sample results.

5.3.2 PAHs IN LEACHATE

Laboratory analytical results for PAHs from the two leachate samples (PLCS and SLCS) collected in August 2013 are presented in Table 20, both of which reported PAH concentrations as very low or non-detectable and below CCME CWQGs (FAL), where applicable. Provincial regulations or guidelines for PAHs do not exist in consideration of discharging an effluent into a drainage ditch.

In addition, one field duplicate (DUP-06) was collected from SLCS that also reported PAH concentrations consistent with the original sample results.

5.3.3 PCBs IN LEACHATE

Laboratory analytical results for PCBs from the two leachate samples (PLCS and SLCS) collected in August 2013 are presented in Table 21, both of which reported PCB concentrations as non-detectable. Provincial regulations or guidelines for PCBs do not exist in consideration of discharging an effluent into a drainage ditch and the CCME CWQGs (FAL) do not specify criteria for PCBs.

In addition, one field duplicate (DUP-06) was collected from SLCS that also reported PCB concentrations consistent with the original sample results.

5.3.4 VOCs IN LEACHATE

Laboratory analytical results for VOCs from the two leachate samples (PLCS and SLCS) collected in August 2013 are presented in Table 22, both of which reported VOC concentrations as non-detectable. Provincial regulations or guidelines for VOCs do not exist in consideration of discharging an effluent into a drainage ditch.

In addition, one field duplicate (DUP-06) was collected from SLCS that also reported VOC concentrations consistent with the original sample results.

5.3.5 GENERAL CHEMISTRY IN LEACHATE

Laboratory analytical results for general chemistry from the two leachate samples (PLCS and SLCS) collected in August 2013 are presented in Table 23, both of which reported general chemistry concentrations as non-detectable or within the applicable guidelines.

In addition, one field duplicate (DUP-06) was collected from SLCS that also reported general chemistry concentrations consistent with the original sample results.

5.3.6 METALS IN LEACHATE

Laboratory analytical results for metals from the two leachate samples (PLCS and SLCS) collected during the August 2013 sampling event are presented in Table 24, both of which reported metals concentrations as non-detectable or below the Provincial regulations except iron. This exceedance was previously reported during the 2012 sampling event at PLCS as well as the 2008, October 2009, and 2012 sampling events at SLCS.

In addition, one field duplicate (DUP-06) was collected from SLCS that generally reported metals concentrations consistent with the original sample results.

5.3.7 TOXICITY IN LEACHATE

Leachate samples from the PLCS and SLCS were also submitted for toxicity analysis, which concluded the effluent from the PLCS and SLCS were non-toxic to rainbow trout with zero mortality for both samples after 96 hours.

6.0 DISCUSSION

6.1 GROUNDWATER

A review of groundwater analytical data from the August 2013 sampling event was compared to leachate analytical data collected from the PLCS and SLCS to determine if leachate appeared to be impacting groundwater. In general, BTEX/mTPH, PAH, PCB, VOC, general chemistry, and metals analytical data show groundwater conditions to be of better quality compared to leachate analytical data; therefore, it does not appear that groundwater is being influenced by leachate from the secure landfill. Groundwater data that includes previous monitoring programs from 2008 to 2012 is included in Appendix D.

Based on static groundwater levels measured during the 2013 Site visit, groundwater was confirmed to flow in a southwesterly direction toward Come By Chance Cove. In addition, static groundwater elevations in 2013 from the three sets of monitor wells and two surface water sample locations were compared to the PLCS and SLCS leachate elevations in the valve chambers. The groundwater elevations at MW93-1 and MW93-1A were measured at approximately 0.24 and 0.49 metres above the leachate elevation at the SLCS valve chamber, respectively. In comparison, groundwater elevations at MW93-2, MW93-2A, MW10-1, and MW10-1A measured approximately 1.66 to 2.34 metres below the leachate elevation at the SLCS valve chamber.

6.2 SURFACE WATER

A review of the downgradient surface water analytical data from the August 2013 sampling event was compared to leachate analytical data to determine if leachate may be impacting the surface water. In general, the BTEX/mTPH, PAH, PCB, VOC, and general chemistry analytical data show surface water conditions as dramatically distinct in comparison to the leachate analytical data. One metal (iron) reported exceedances in the upgradient and downgradient surface water samples. The leachate analytical data also reported exceedances for the same metal (iron); however, iron concentrations in the leachate were approximately 20 to 50 times that of the surface water samples. Surface water data that includes previous monitoring programs from 2008 to 2012 is included in Appendix D. Based on this information, it does not appear that leachate is seeping from the landfill liners into the downgradient surface water; therefore, the secure landfill liners appear to be performing in accordance with their original intent of acting as a barrier between leachate accumulations within the landfill and surface water in the surrounding area.

6.3 LEACHATE

Prior to pumping and discharging leachate from the PLCS and SLCS, all analytical parameters were reviewed for compliance with Schedule A. In addition, copies of the results were submitted to DOEC and the Town for approval prior to the pumping event. On September 30 and October 10, 2013, approvals for discharge were received from DOEC and the Town, respectively. In accordance with the OMM Manual, the pumping event consisted of two Site visits so that a desired flow rate of 15 L/min was achieved on two successive days.

During the initial leachate pumping event in October 2013, it was observed that the PLCS and SLCS valves were in the open position with the discharge hose no longer connected to the PLCS valve. CRA determined in-flow rates by pumping down each valve chamber, measuring the change in head over a fixed period of time, then calculated in-flow rates. Maintaining these valves in the open position does not create any integrity issues for containment as the hydraulic head in the two leachate valve chambers has not historically risen above the ground surface.

6.3.1 OCTOBER 2013 LEACHATE PUMPING EVENT

CRA returned to the Site on October 10, 2013 to initiate the leachate collection system pumping program. Approximately 21,000 Litres (L) were pumped from the PLCS valve chamber with a final measured in-flow rate of 15.0 L/min while approximately 42,000 L were pumped from the SLCS valve chamber with a final measured in-flow rate of 11.0 L/min. The desired in-flow rate of 15 L/min was achieved for the PLCS and SLCS during the initial pumping event.

CRA completed the subsequent leachate collection system pumping program on October 11, 2013. Approximately 1,700 L were pumped from the PLCS valve chamber with a final measured in-flow rate of 8.0 L/min while approximately 500 L were pumped from the SLCS valve chamber with a final measured in-flow rate of 4.0 L/min.

6.3.2 LEACHATE PUMPING EVALUATION

Volumes of leachate pumped and discharged from the PLCS and SLCS were compared to previous pumped volumes. A summary of leachate pumping from November 2000 to October 2013 is presented in the table below.

Summary of Leachate Pumping Volumes (Litres)			
Year	**Month**	**PLCS**	**SLCS**
2000	November	13,000	70,000
2003	November	15,000	56,000
2004	August	NA	45,000
2004	September	15,500	83,000
2004	October	NA	32,000
2006	October	NA	68,000
2007	February	6,000	63,000
2007	July	NA	103,000
2008	November	NA	74,000
Average Pre GWDS		***~12,500***	***66,000***
2009	August	3,406	19,475
2009	December	4,542	30,699
2010	February	3,406	21,350
2010	August	12,100	35,200
2011	January	8,600	30,200
2012	November	12,200	24,900
2013	October	22,700	42,500
Average Post GWDS		***~9,600***	***~29,100***

GWDS: Groundwater drainage system installed in March 2009

NA: No leachate present / Not available

A review of the current and historical leachate pumping volumes from the PLCS and SLCS valve chambers demonstrates that pumped leachate volumes have decreased since the installation of the GWDS. A comparison of the average pumped leachate volumes from the PLCS prior to and following installation of the GWDS shows a decrease of approximately 25 percent. In addition, a comparison of the average pumped leachate volumes from the SLCS prior to and following installation of the GWDS shows a decrease of approximately 55 percent. Consequently, the GWDS appears to contribute to reduce volumes of pumped leachate from the PLCS and SLCS; however, significant volumes of leachate are still present within the two liners that require pumping on a regular basis (Refer to photograph 9 of Appendix A).

6.4 LANDFILL COVER INSPECTION

A landfill cover inspection was conducted on August 28, 2013. Notable items resulting from the landfill cover inspection are outlined below:

- Vegetation height reaching 1.5 metres, typically alders, which exceeds the OMM requirement of maximum vegetation height of 0.3 metres.
- Landfill vents in good condition and not obstructed.
- No evidence of erosion or large animal burrows on the landfill cover.
- Meadow vole activity from tunneling and nesting was previously noted in numerous locations on the landfill cover during the 2012 inspection; however, evidence of meadow vole activity was not observed due to the vegetation present during the 2013 inspection.
- Slopes in good condition and covered with vegetation with no signs of erosion.
- Lateral drains dry with occasional areas of standing water.

Landfill cover inspection data from previous monitoring programs is included in Appendix D.

Upon reviewing the results of the elevation control survey, it was noted the elevation control points decreased slightly in elevation by an average of 24 millimetres between the original elevations surveyed in August 2010 and the recent survey completed in August 2013. Based on this information, the difference in elevation of the control points indicate that very limited and insignificant settlement is occurring at the landfill cover, which in turn indicates the contents of the landfill are not settling.

6.5 GROUNDWATER DRAINAGE SYSTEM

Four GWDS clean-outs were previously installed as part of the original system construction; visual inspections confirmed that water was not present. The discharge location, previously located on the west side of the gravel service road, was excavated and reconstructed at the roadside embankment as part of redevelopment of the area, which was related to the construction of a new asphalt plant (J-1 Contracting) prior to the August 2013 Site visit. A rodent screen was not observed covering the discharge pipe during the August 2013 Site inspection; however, a new rodent screen was installed during the October 2013 Site visit. A very low flow of water was observed from the discharge of the GWDS.

Debris or blockages were not present in any of the clean-outs during the Site visit and combined with the water flow from the downgradient discharge, it was determined the GWDS was functioning properly and cleaning was not required.

7.0 SUMMARY AND RECOMMENDATIONS

Conestoga-Rovers & Associates (CRA) was retained by the Newfoundland and Labrador Department of Environment and Conservation (DOEC) to complete the 2013/14 monitoring and maintenance program at the Come By Chance Secure Landfill (Site) located on Refinery Road in Come By Chance, Newfoundland and Labrador (NL) as shown on Figure 1. Site visits and field activities were completed in accordance with the DOEC 2012 Operations and Maintenance Manual (OMM).

The Come By Chance Secure Landfill covers an area of approximately 19,778 square metres (m^2) located approximately 2.5 km west of the Trans Canada Highway and approximately 4 km south of the Town, NL. The landfill was constructed between 1994 and 1996 to facilitate the clean-up of hazardous waste associated with the Come By Chance Oil Refinery. Leachate containment is achieved through the use of a redundant liner system consisting of independent primary and secondary liners as well as a drainage pipe system to manage excess fluid and provide a means for leachate discharge.

A groundwater drainage system was installed in March 2009 starting at the east side of the landfill and is graded at one percent toward the northeast corner, then along the north side, and eventually discharging beyond the gravel road west of the Site.

The work completed by CRA during the 2013/14 monitoring and maintenance program involved sampling of the primary and secondary leachate collection valve chambers in advance of pumping down the chambers by discharging to a nearby ditch, groundwater and surface water sampling, landfill cover inspection, and groundwater drainage system inspection, and clean-out repairs. In addition, a hydraulic connectivity investigation was conducted to determine if surrounding groundwater was influencing leachate levels and if a hydraulic connection existed between the primary and secondary liners.

The Site visit with leachate, groundwater, and surface water sampling was conducted in August 2013; the leachate pumping event was completed in October 2013. Information regarding the 2013/14 monitoring and maintenance program is summarized below in Section 7.1 with recommendations provided in Section 7.2.

7.1 2013/14 MONITORING AND MAINTENANCE SUMMARY

7.1.1 GROUNDWATER

In general, BTEX/mTPH, PAH, PCB, VOC, general chemistry, and metals analytical data show groundwater conditions to be of better quality compared to leachate analytical data; therefore, it does not appear that groundwater is being influenced by leachate from the secure landfill. Based on static groundwater levels measured during the 2013 Site visit, it also appears that groundwater infiltration may still be occurring at the northeastern area of the Site.

7.1.2 SURFACE WATER

In general, the BTEX/mTPH, PAH, PCB, VOC, and general chemistry analytical data show surface water conditions as dramatically distinct in comparison to the leachate analytical data. One metal (iron) reported exceedances in the upgradient and downgradient surface water samples. In addition, the leachate analytical data also reported exceedances for the same metal (iron); however, iron concentrations in the leachate were approximately 20 to 50 times that of the surface water samples. Based on this information, it does not appear that leachate is seeping from the landfill liners into the downgradient surface water; therefore, the secure landfill liners appear to be performing in accordance with their original intent of acting as a barrier between leachate accumulations within the landfill and surface water in the surrounding area.

7.1.3 LEACHATE

In accordance with the OMM, both pumping events consisted of two Site visits so that a desired flow rate of 15 L/min could be achieved on two successive days. During the Site visit for leachate pumping in October 2013, it was observed that the PLCS and SLCS valves were permanently in the open position with the discharge hose no longer connected to the PLCS valve. CRA determined in-flow rates by pumping down each valve chamber, measuring the change in head over a fixed period of time, then calculating in-flow. It was also noted that leachate elevations in the PLCS and SLCS for two consecutive Site visits were less than 0.6 metres below the top of the valve chambers.

A review of the current and historical leachate pumping volumes from the PLCS and SLCS valve chambers demonstrates that pumped leachate volumes have decreased since the installation of the groundwater drainage system. A comparison of the average

pumped leachate volumes from the PLCS prior to and following installation of the groundwater drainage system shows a decrease of approximately 25 percent. In addition, a comparison of the average pumped leachate volumes from the SLCS prior to and following installation of the groundwater drainage system shows a decrease of approximately 55 percent. Consequently, it appears the groundwater drainage system has contributed to the reduction of volumes of pumped leachate from the PLCS and SLCS; however, significant volumes of leachate are still present within the two liners that require pumping on a regular basis.

7.1.4 LANDFILL COVER

The landfill cover inspection was conducted on August 28, 2013, which indicated that minor maintenance is required. The only issue of concern related to maintenance is the cutting of vegetation, typically alders, which have reached 1.5 metres in height, considerably more than the OMM recommended height restriction of 0.3 metres. Meadow vole activity from tunneling and nesting was previously noted in numerous locations on the landfill cover during the 2012 inspection; however, evidence of meadow vole activity was not observed due to the vegetation present during the 2013 inspection.

Upon reviewing the results of the elevation control survey, it was noted the elevation control points decreased by an average of 25 millimetres between the original elevations surveyed in August 2010 and the recent survey completed in 2013. Based on this information, the difference in elevation of the control points indicate that very limited and insignificant settlement is occurring at the landfill cover, which in turn indicates the contents of the landfill are not settling.

7.1.5 GROUNDWATER DRAINAGE SYSTEM

Four GWDS clean-outs were previously installed as part of the original system construction; visual inspections confirmed that water was not present. The discharge location, previously located on the west side of the gravel service road, was excavated and reconstructed at the roadside embankment as part of redevelopment of the area, which was related to the construction of a new asphalt plant (J-1 Contracting) prior to the August 2013 Site visit; a rodent screen was not observed covering the pipe discharge. A very low flow of water was observed from the discharge of the GWDS.

Debris or blockages were not present in any of the clean-outs during the Site visit and combined with the water flow from the downgradient discharge, it was determined the GWDS was functioning properly and cleaning was not required.

7.2 RECOMMENDATIONS

Based on the findings of the 2013/14 monitoring and maintenance program along with data from previous monitoring programs, the following recommendations are offered for consideration by DOEC:

Monitoring and Maintenance Schedule: The leachate quality is continually reporting BTEX/TPH, PAH, PCB, general chemistry, and metals concentrations at levels that would not affect the surrounding environment, most notably groundwater and surface water. In addition, the landfill was constructed approximately 20 years ago and based on the historical analytical data reviewed in this report, it appears that leachate has reached a steady-state condition. Furthermore, groundwater infiltration has been evident for many years and has acted as a flushing mechanism for any contaminants that may have been present, although elevated levels of contaminants have not historically been identified. Therefore, CRA recommend that further monitoring of the landfill and pumping out of the PLCS and SLCS are not required; however, annual inspections should be continued to ensure the landfill cover system is not compromised by erosion. CRA understands that DOEC would prefer to continue monitoring activities at the landfill as a matter of due diligence.

Vegetation Control: CRA recommend that all vegetation on the landfill cover that measures over 0.3 metres in height should be cut down. This work can be completed in conjunction with vegetation control in the monitor well locations outside the fenced area of the landfill.

In addition, it was noted that access to two monitor wells (MW93-1 and MW93-1A) was somewhat difficult due to the excessive vegetative growth in the area with alders reaching heights of 1.8 metres. CRA recommend that alders be cut down in this location to better facilitate future field programs (i.e. the transport of field equipment such as water level meters, coolers, sample jars, etc.).

8.0 REFERENCES

Report entitled "*Annual Summary Report, 2009/2010 Environmental Monitoring and Maintenance Program, Come By Chance Secure Landfill, Come By Chance, Newfoundland*" prepared by Pinchin Leblanc Environmental Limited for Newfoundland and Labrador Department of Environment and Conservation, dated May 2010.

Report entitled "*Annual Summary Report 2010/2011 Monitoring and Maintenance Program, Come By Chance Secure Landfill, Come By Chance, NL*" prepared by CRA Limited for Newfoundland and Labrador Department of Environment and Conservation, dated March 2011.

Report entitled "*2011/2012 Monitoring and Maintenance Program, Come By Chance Secure Landfill, Come By Chance, NL*" prepared by CBCL Limited for Newfoundland and Labrador Department of Environment and Conservation, dated May 24, 2012.

Report entitled "*Come By Chance Secure Landfill – Operations, Maintenance and Monitoring (OMM) Manual*" prepared by Newfoundland and Labrador Department of Environment and Conservation, Pollution Prevention Division, dated June 2012.

Report entitled "*2012/2013 Monitoring and Maintenance Program, Come By Chance Secure Landfill, Come By Chance, NL*" prepared by CRA Limited for Newfoundland and Labrador Department of Environment and Conservation, dated May 2013.

9.0 CLOSURE

All of Which is Respectfully Submitted,

CONESTOGA-ROVERS & ASSOCIATES

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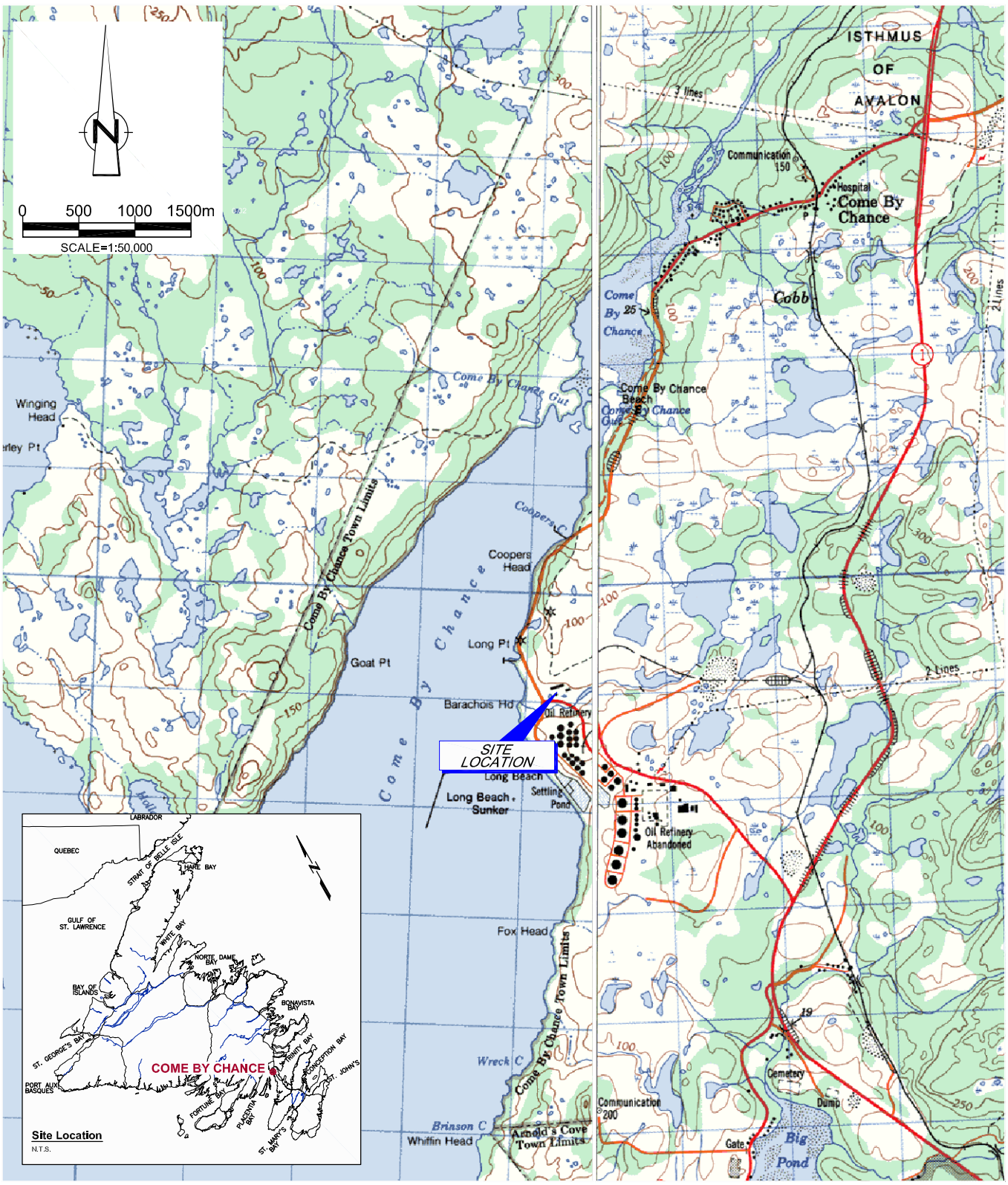

figure 1

SITE LOCATION MAP
2013/2014 MONITORING AND MAINTENANCE PROGRAM
DEPT. OF ENVIRONMENT AND CONSERVATION
Come By Chance Secure Landfill, Come By Chance, NL

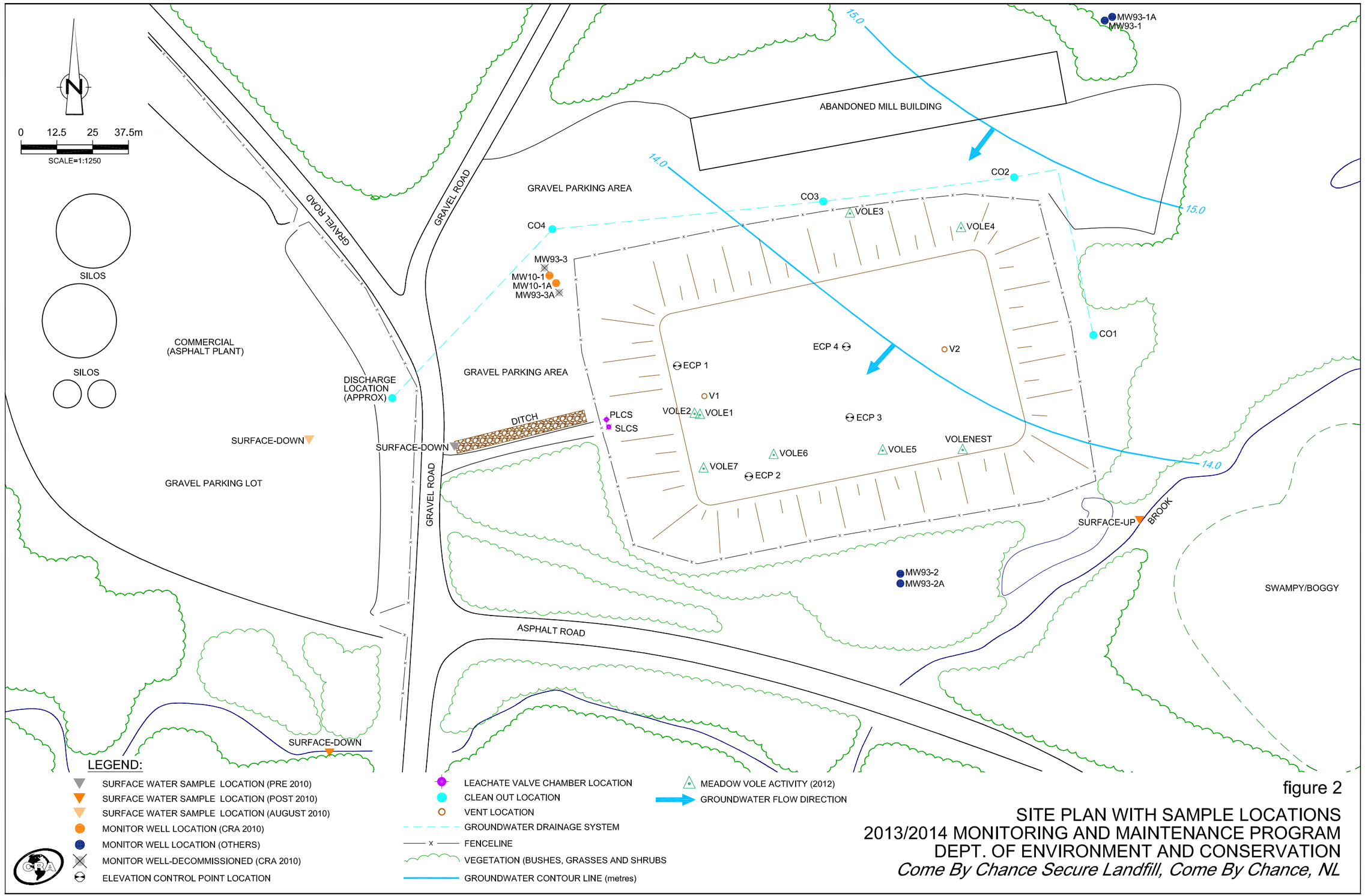

figure 2

SITE PLAN WITH SAMPLE LOCATIONS 2013/2014 MONITORING AND MAINTENANCE PROGRAM DEPT. OF ENVIRONMENT AND CONSERVATION

Come By Chance Secure Landfill, Come By Chance, NL

084308(003) GN-NL002

TABLE 1

STATIC WATER LEVELS
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

ID	Ground Surface Elevation	Length of Stick-up	TOC Elevation	Groundwater Depth	Water Elevation
				Aug 28, 2013	Aug 28, 2013
	(masl)	(m)	(masl)	(mbTOC)	(masl)
PLCS	15.960	-	15.960	0.550	15.410
SLCS	15.955	-	15.955	0.549	15.406
MW 93-1	16.300	1.100	17.400	1.756	15.644
MW 93-1A	16.310	1.400	17.710	1.815	15.895
MW 93-2	14.290	1.100	15.390	2.323	13.067
MW 93-2A	14.310	1.100	15.410	1.663	13.747
MW 10-1	15.790	0.846	16.636	3.427	13.209
MW 10-1A	15.890	0.854	16.744	3.513	13.231

Notes:

m = Metres
TOC = Top of Casing
masl = Metres Above Sea Level
mbTOC = Metres Below Top of Casing

TABLE 2

GPS CO-ORDINATES OF KEY SITE FEATURES
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

ID	NORTHING	EASTING
	(m)	(m)
PLCS	5299282.569	724372.496
SLCS	5299280.034	724373.295
MW 93-1	5299421.760	724546.360
MW 93-1A	5299422.020	724548.440
MW 93-2	5299235.085	724470.927
MW 93-2A	5299232.673	724472.066
MW 10-1	5299332.811	724352.601
MW 10-1A	5299330.374	724354.471
SURFACE UP	5299241.840	724543.520
SURFACE DOWN	5299166.473	724273.883
ECP 1	5299300.345	724396.495
ECP 2	5299262.242	724421.331
ECP 3	5299284.519	724455.814
ECP 4	5299308.292	724454.469
CLEAN-OUT 1	5299162.490	724361.549
CLEAN-OUT2	5299172.051	724428.014
CLEAN-OUT 3	5299117.496	724456.616
CLEAN-OUT 4	5299348.991	724353.634
VENT 1	5299290.775	724406.665
VENT 2	5299307.780	724490.445

Notes:

All points recorded using Universal Transverse Mercator
Zone 21 as coordinate system

PLCS = Primary Leachate Collection System Valve Chamber
SLCS = Secondary Leachate Collection System Valve Chamber
MW = Monitoring Well
ECP = Elevation Control Point

TABLE 3

LEACHATE SAMPLING AND PUMPING INFORMATION
PRIMARY LEACHATE COLLECTION SYSTEM
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

PLCS LEACHATE SAMPLING					PLCS PUMPING EVENT				
Date	Weather	Valve Condition	Initial head (mbTOVC)	Analysis Conducted Sample Condition	Date	Weather	Valve Condition	Final Flow Rate (L/min)	Pumping Time (hours)
August 28, 2013	Overcast, +17 °C	Unknown*	0.55	BTEX, TPH, Gen. Chem., Metals, PAH, VOC, PCB, Toxicity	October 11, 2013	Overcast, 10 °C	Open, flowing freely, hose disconnected	8.0	9.5

Notes:

Always maintain samples at 4°C

Plan to deliver samples to analytical laboratory within 3 days of sampling

mbTOVC - Metres from water level to top of valve chamber

*PLCS valve chamber completely filled with leachate; therefore, unable to inspect valve

Elevation of Top of PLCS Valve Chamber = 15.960 m

Containers Required For Analysis

BTEX:	3 x 40 mL amber glass vials (filled, with no headspace)
TPH:	2 x 250 mL amber glass
Gen Chem:	1 x 1 L plastic
PAHs:	2 x 250 mL amber glass
VOCs:	3 x 40 mL amber glass vials (filled, with no headspace)
PCBs:	2 x 250 mL glass
Metals:	1 x 50 mL plastic tube or 1 x 250 mL plastic
Toxicity:	2 x 20 L plastic food grade

TABLE 4

LEACHATE SAMPLING AND PUMPING INFORMATION
SECONDARY LEACHATE COLLECTION SYSTEM
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

SLCS LEACHATE SAMPLING					SLCS PUMPING EVENT				
Date	**Weather**	**Valve Condition**	**Initial head (mbTOVC)**	**Analysis Conducted Sample Condition**	**Date**	**Weather**	**Valve Condition**	**Final Flow Rate (L/min)**	**Pumping Time (hours)**
August 28, 2013	Overcast, +17 °C	Unknown*	0.55	BTEX, TPH, Gen. Chem., Metals, PAH, VOC, PCB, Toxicity	October 11, 2013	Overcast, 10 °C	Open, flowing freely, hose disconnected	4	7.5

Notes:

Always maintain samples at 4°C

Plan to deliver samples to analytical laboratory within 3 days of sampling

mbTOVC - Metres from water level to top of manhole

*SLCS valve chamber completely filled with leachate; therefore, unable to inspect valve

Elevation of Top of SLCS Valve Chamber = 15.96 m

Containers Required For Analysis

BTEX:	3 x 40 mL amber glass vials (filled, with no headspace)
TPH:	2 x 250 mL amber glass
Gen Chem:	1 x 1 L plastic
PAHs:	2 x 250 mL amber glass
VOCs:	3 x 40 mL amber glass vials (filled, with no headspace)
PCBs:	2 x 250 mL glass
Metals:	1 x 50 mL plastic tube or 1 x 250 mL plastic
Toxicity:	2 x 20 L plastic food grade

TABLE 5

LANDFILL CAP INSPECTION FORM
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Date	Weather	Landfill Cap Inspection					Elevational Survey Control Points			
		Vegetative Height (metres)	Vent Condition	Evidence of Erosion / Animal Burrows	Condition of Slopes	Condition of Lateral Drains	Point 1	Point 2	Point 3	Point 4
August 28, 2013	Overcast, +17 °C	0 - 1.5 m	No damage, not obstructed	No evidence	No erosion, damage noted	Dry, occasional puddles, grassy	20.423	20.417	20.923	21.170

Notes: Elevations measured using an assumed benchmark of 15.960 m at top of PLCS valve chamber

TABLE 6

ELEVATIONAL CONTROL POINT SURVEY DATA
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Original Survey Date:				Jul 16, 2010	
Recent Survey Date:				Aug 28, 2013	
Location	**Original Elevation**	**2010**		**2013**	
		Survey	**DIFF**	**Survey**	**DIFF**
PLCS	15.960	-	-	-	-
ECP1	20.439	20.388	0.051	20.423	0.016
ECP2	20.442	20.405	0.037	20.417	0.025
ECP3	20.935	20.896	0.039	20.923	0.012
ECP4	21.212	21.162	0.050	21.170	0.042

Notes:

BM = PLCS
All measurements are in metres.
ECP = Elevational Control Point
DIFF = Difference of original versus current elevations
(Positive indicates amount of settlement)

TABLE 7

GROUNDWATER ANALYTICAL DATA - BTEX/mTPH (mg/L)
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Sample Location	Date Sampled	Benzene	Toluene	Ethyl-benzene	Xylenes	Total Petroleum Hydrocarbons (TPH)					Comments
						F1 C_6-C_{10}	F2 C_{10}-C_{16}	F3 C_{16}-C_{21}	F3 C_{21}-C_{32}	Modified TPH	
MW 93-1	Aug 28, 2013	<	<	<	<	<	<	<	<	<	-
MW 93-1A	Aug 28, 2013	<	<	<	<	<	<	<	<	<	-
MW 93-2	Aug 28, 2013	<	<	<	<	<	<	<	<	<	-
MW 93-2A	Aug 28, 2013	<	<	<	<	<	<	<	<	<	-
MW 10-1	Aug 28, 2013	<	<	<	<	<	<	<	<	<	-
DUP-05	Aug 28, 2013	<	<	<	<	<	<	<	<	<	-
MW 10-1A	Aug 28, 2013	<	<	<	<	<	<	<	<	<	-
RDL		0.001	0.001	0.001	0.002	0.01	0.05	0.1	0.1	0.1	-
Atlantic RBCA Tier I RBSLs [1] (Commercial, Non-Potable)		**20**	**20**	**20**	**20**	**na**	**na**	**na**	**na**	**20**	**Gasoline**
										20	**Diesel / #2 Fuel Oil**
										20	**# 6 Oil**

Notes:

Analysis completed by Maxxam Analytics Inc. laboratory in St. John's, NL.
1. Atlantic Risk-Based Corrective Action (RBCA) 2012 Tier I Risk-Based Screening Level (RBSL) Table values {coarse-grained soil}.

RDL = Reportable Detection Limit
< = Parameter below detection limit
- = Not analysed
0.0 = above criteria
<(#) = Parameter below specified detection limit
DUP-05 = Field Duplicate of MW 10-1
MW = Monitor Well

G = Gasoline
FO = Fuel Oil
LO = Lube Oil
W = Weathered

TABLE 8

GROUNDWATER ANALYTICAL DATA - PAHs
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	MW 93-1	MW 93-1A	MW 93-2	MW 93-2A	MW 10-1	DUP-05	MW 10-1A	RDL	Criteria*
	Aug 28, 2013	Aug 28, 2013	Aug 28, 2013	Aug 28, 2013	Aug 28, 2013	Aug 28, 2013	Aug 28, 2013		
1-Methylnaphthalene	<	<	<	<	<	<	<	0.05	1,800
2-Methylnaphthalene	<	<	<	<	<	<	<	0.05	1,800
Acenaphthene	<	<	<	<	<	<	<	0.01	600
Acenaphthylene	<	<	<	<	<	<	<	0.01	1.8
Anthracene	<	<	<	<	<	<	<	0.01	2.4
Benzo(a)anthracene	<	<	<	<	<	<	<	0.01	4.7
Benzo(a)pyrene	<	<	<	<	<	<	<	0.01	0.8
Benzo(b)fluoranthene	<	<	<	<	<	<	<	0.01	0.75
Benzo(g,h,i)perylene	<	<	<	<	<	<	<	0.01	0.2
Benzo(j)fluoranthene	<	<	<	<	<	<	<	0.01	-
Benzo(k)fluoranthene	<	<	<	<	<	<	<	0.01	0.4
Chrysene	<	<	<	<	<	<	<	0.01	1
Dibenz(a,h)anthracene	<	<	<	<	<	<	<	0.01	0.52
Fluoranthene	<	<	<	<	<	<	<	0.01	130
Fluorene	<	<	<	<	<	<	<	0.01	400
Indeno(1,2,3-cd)pyrene	<	<	<	<	<	<	<	0.01	0.2
Naphthalene	<	<	<	<	<	<	<	0.20	1,400
Perylene	<	<	<	<	<	<	0.019	0.01	-
Phenanthrene	<	<	<	<	<	<	0.013	0.01	580
Pyrene	<	<	<	<	<	<	<	0.01	68

Analysis completed by Maxxam Analytics Inc. laboratory in Bedford, NS.
* Ontario Ministry of the Environment (MOE) "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", April 15, 2011, Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
RDL = Reportable Detection Limit **0.0**
MW = Monitor Well
- = Not analysed/No criteria
< = Parameter below detection limit
DUP-05 = Field Duplicate of MW 10-1

TABLE 9

GROUNDWATER ANALYTICAL DATA - PCBs
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	MW 93-1	MW 93-1A	MW 93-2	MW 93-2A	MW 10-1	DUP-05	MW 10-1A	RDL	Criteria*
	Aug 28, 2013	Aug 28, 2013	Aug 28, 2013	Aug 28, 2013	Aug 28, 2013	Aug 28, 2013	Aug 28, 2013		
Total PCBs	<	<	<	<	<	<	<	0.05	7.8

Notes:

Analysis completed by Maxxam Analytics Inc. laboratory in Bedford, NS.
* Ontario Ministry of the Environment (MOE) "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", April 15, 2011, Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition

RDL = Reportable Detection Limit
MW = Monitor Well
< = Parameter below detection limit
DUP-05 = Field Duplicate of MW 10-1

0.0 = above criteria

TABLE 10

GROUNDWATER ANALYTICAL DATA - VOCs
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	RDL	MW 93-1	MW 93-1A	DUP-03	MW 93-2	MW 93-2A	MW 10-1	DUP-05	MW 10-1A	Criteria*
		Aug 28, 2013	Aug 28, 2013	Aug 28, 2013	Aug 28, 2013	Aug 28, 2013	Aug 28, 2013	Aug 28, 2013	Aug 28, 2013	
Benzene	1.00	<	<	<	<	<	<	<	<	44
Bromodichloromethane	1.00	<	<	<	<	<	<	<	<	85,000
Bromoform	1.00	<	<	<	<	<	<	<	<	380
Bromomethane	3.00	<	<	<	<	<	<	<	<	5.6
Carbon Tetrachloride	1.00	<	<	<	<	<	<	<	<	0.79
Chlorobenzene	1.00	<	<	<	<	<	<	<	<	630
Chloroethane	8.00	<	<	<	<	<	<	<	<	-
Chloroform	1.00	<	<	<	<	<	<	<	<	2.4
Chloromethane	8.00	<	<	<	<	<	<	<	<	-
Dibromochloromethane	1.00	<	<	<	<	<	<	<	<	82,000
1,2-Dichlorobenzene	0.50	<	<	<	<	<	<	<	<	4,600
1,3-Dichlorobenzene	1.00	<	<	<	<	<	<	<	<	9,600
1,4-Dichlorobenzene	1.00	<	<	<	<	<	<	<	<	8
1,1-Dichloroethane	2.00	<	<	<	<	<	<	<	<	320
1,2-Dichloroethane	1.00	<	<	<	<	<	<	<	<	1.6
1,1-Dichloroethylene	0.50	<	<	<	<	<	<	<	<	1.6
cis-1,2-Dichloroethylene	2.00	<	<	<	<	<	<	<	<	1.6
trans-1,2-Dichloroethylene	2.00	<	<	<	<	<	<	<	<	1.6
1,2-Dichloropropane	1.00	<	<	<	<	<	3.8	3.6	7.1	16
cis-1,3-Dichloropropene	2.00	<	<	<	<	<	<	<	<	5.2
trans-1,3-Dichloropropene	1.00	<	<	<	<	<	<	<	<	5.2
Ethylbenzene	1.00	<	<	<	<	<	<	<	<	2,300
Methylene Chloride(Dichloromethane)	3.00	<	<	<	<	<	<	<	<	610
Xylenes	2.00	<	<	<	<	<	<	<	<	4,200
Styrene	1.00	<	<	<	<	<	<	<	<	1,300
Tetrachloroethylene	1.00	<	<	<	<	<	<	<	<	1.6
1,1,2,2-Tetrachloroethane	1.00	<	<	<	<	<	<	<	<	3.2
Toluene	1.00	<	<	<	<	<	<	<	<	18,000
Trichloroethylene	1.00	<	<	<	<	<	<	<	<	1.6
1,1,1-Trichloroethane	1.00	<	<	<	<	<	<	<	<	640
1,1,2-Trichloroethane	1.00	<	<	<	<	<	<	<	<	4.7
Trichlorofluoromethane (FREON 11)	8.00	<	<	<	<	<	<	<	<	2,500
Vinyl Chloride	0.50	<	<	<	<	<	<	<	<	0.5

Notes:
Analysis completed by Maxxam Analytics Inc. laboratory in Bedford, NS.
* Ontario Ministry of the Environment

RDL = Reportable Detection Limit
MW = Monitor Well
0.0 = above criteria
-= Not analysed/No criteria
< = Parameter below detection limit
DUP-05 = Field Duplicate of MW 10-1

TABLE 11

GROUNDWATER ANALYTICAL DATA - GENERAL CHEMISTRY
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	RDL	Units	MW 93-1	MW 93-1A	MW 93-2	MW 93-2A	MW 10-1	DUP-05	MW 10-1A	Criteria*
			Aug 28, 2013	Aug 28, 2013	Aug 28, 2013	Aug 28, 2013	Aug 28, 2013	Aug 28, 2013	Aug 28, 2013	
Anion Sum	N/A	me/L	6.2	7.23	6.33	1.72	2.92	2.96	1.66	-
Bicarb. Alkalinity (calc. as CaCO3)	1.00	mg/L	240	300	220	14	120	120	49	-
Calculated TDS	1.00	mg/L	330	380	350	120	160	160	100	-
Carb. Alkalinity (calc. as CaCO3)	1.00	mg/L	2.6	2.8	1.3	<	<	<	<	-
Cation Sum	N/A	me/L	5.82	7.05	5.97	1.87	2.89	2.91	1.61	-
Hardness (CaCO3)	1.00	mg/L	140	170	250	42	130	130	68	-
Ion Balance (% Difference)	N/A	%	3.16	1.26	2.93	4.18	0.52	0.85	1.53	-
Langelier Index (@ 20C)	N/A	N/A	0.51	0.65	0.591	-3.37	-0.202	-0.192	-1.51	-
Langelier Index (@ 4C)	N/A	N/A	0.261	0.401	0.342	-3.62	-0.452	-0.442	-1.76	-
Nitrate (N)	0.05	mg/L	<	<	<	<	<	<	0.068	-
Saturation pH (@ 20C)	N/A	N/A	7.54	7.34	7.22	9.14	7.64	7.63	8.29	-
Saturation pH (@ 4C)	N/A	N/A	7.79	7.59	7.47	9.39	7.89	7.88	8.54	-
Total Alkalinity (Total as CaCO3)	30	mg/L	250	310	220	14	120	120	49	-
Dissolved Chloride (Cl)	1	mg/L	24	11	19	22	5.4	5.8	5.7	-
Colour	5.00	TCU	<	<	<	65	<	<	8.2	-
Nitrate + Nitrite	0.05	mg/L	<	<	<	<	<	<	0.068	-
Nitrite (N)	0.01	mg/L	<	<	<	<	<	<	<	-
Nitrogen (Ammonia Nitrogen)	0.05	mg/L	<	<	<	0.53	<	<	<	-
Total Organic Carbon (C)	0.50	mg/L	1.1	2.6 (1)	1	16	3	3.1	34 (1)	-
Orthophosphate (P)	0.01	mg/L	0.013	<	<	<	<	<	<	-
pH	N/A	pH	8.05	7.99	7.81	5.77	7.44	7.44	6.78	-
Reactive Silica (SiO2)	0.50	mg/L	8.1	6.3	18	6.4	6.9	7	11	-
Dissolved Sulphate (SO4)	2	mg/L	27	38	68	40	17	18	24	-
Turbidity	0.1	NTU	2.1	160	1.1	44	110	110	>1000	-
Conductivity	1	uS/cm	540	620	560	190	270	280	160	-

Notes:
Analysis completed by Maxxam Analytics Inc. laboratory in St. John's, NL.
* Ontario Ministry of the Environment

RDL = Reportable Detection Limit **0.0** = above criteria
MW = Monitor Well
- = Not analysed/No criteria
< = Parameter below detection limit
DUP1 = Field Duplicate of MW 10-1
(1) = Reporting limit was increased due to turbidity

TABLE 12

GROUNDWATER ANALYTICAL DATA - METALS
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	RDL	MW 93-1	MW 93-1A	MW 93-2	MW 93-2A	MW 10-1	DUP-05	MW 10-1A	Criteria*
		Aug 28, 2013	Aug 28, 2013	Aug 28, 2013	Aug 28, 2013	Aug 28, 2013	Aug 28, 2013	Aug 28, 2013	
Aluminum (Al)	5.0	8.3	10	5.4	290	30	26	58	-
Antimony (Sb)	1.0	<	<	<	<	<	<	<	20,000
Arsenic (As)	1.0	<	<	1.9	<	<	<	<	1,900
Barium (Ba)	1.0	100	83	170	48	38	38	35	29,000
Beryllium (Be)	1.0	<	<	<	<	<	<	<	67
Bismuth (Bi)	2.0	<	<	<	<	<	<	<	-
Boron (B)	5.0	110	69	1,100	<	<	<	<	45,000
Cadmium (Cd)	0.017	0.044	<	<	0.32	0.037	0.053	0.033	2.7
Calcium (Ca)	100	31,000	42,000	75,000	11,000	45,000	45,000	23,000	-
Chromium (Cr)	1.0	<	<	<	<	<	<	<	810/140[(1)]
Cobalt (Co)	0.4	<	1	<	0.93	0.41	<	12	66
Copper (Cu)	2.0	<	<	<	<	5.8	6	11	87
Iron (Fe)	50	570	530	57	12,000	84	<	560	-
Lead (Pb)	0.5	<	<	<	1	<	<	<	25
Magnesium (Mg)	100	15,000	17,000	15,000	3,300	4,100	4,000	2,500	-
Manganese (Mn)	2.0	110	160	980	5,000	27	26	860	-
Molybdenum (Mo)	2.0	15	16	<	<	<	<	3.2	9,200
Nickel (Ni)	2.0	<	<	<	<	2	2.1	11	490
Phosphorus (P)	100	<	<	<	<	<	<	<	-
Potassium (K)	100	1,800	2,700	1,300	1,300	1,200	1,300	720	-
Selenium (Se)	1.0	<	<	<	<	<	<	<	63
Silver (Ag)	0.1	<	<	<	<	<	<	0.15	1.5
Sodium (Na)	100	69,000	80,000	22,000	12,000	6,600	6,600	5,100	2,300,000
Strontium (Sr)	2.0	240	280	220	52	98	98	56	-
Thallium (Tl)	0.1	<	<	<	<	<	<	<	510
Tin (Sn)	2.0	<	<	<	<	<	<	<	-
Titanium (Ti)	2.0	<	<	<	2.2	<	<	<	-
Uranium (U)	0.1	0.16	2.3	0.26	<	0.29	0.29	<	-
Vanadium (V)	2.0	<	<	<	<	<	<	<	250
Zinc (Zn)	5.0	12	<	<	190	8.2	11	6.9	1,100

Notes:

Analysis completed by Maxxam Analytics Inc. laboratory in Bedford, NS.
* Ontario Ministry of

RDL = Reportable Detection Limit **0.0** = above criteria
MW = Monitor Well
- = Not analysed/No criteria
< = Parameter below detection limit
DUP-05 = Field Duplicate of MW 10-1
(1) Criteria for Total Chromium = 810 ug/L, Criteria for Chromium (VI) = 140 ug/L

TABLE 13

SURFACE WATER ANALYTICAL DATA - BTEX/mTPH (mg/L)
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Sample Location	Date Sampled	Benzene	Toluene	Ethyl-benzene	Xylenes	Total Petroleum Hydrocarbons (TPH)					Comments
						F1	F2	F3		Modified TPH	
						C_6-C_{10}	C_{10}-C_{16}	C_{16}-C_{21}	C_{21}-C_{32}		
SURFACE UP	Aug 28, 2013	<	<	<	<	<	<	<	<	<	-
SURACE DOWN	Aug 28, 2013	<	<	<	<	<	<	<	<	<	-
RDL		0.001	0.001	0.001	0.002	0.01	0.05	0.1	0.1	0.1	-
2012 RBCA Tier I Ecological Screening Levels for the Protection of Aquatic Life [1]		**2.10**	**0.77**	**0.32**	**0.33**	**-**	**-**	**-**	**-**	**1.5**	**Gasoline**
										0.1	**Diesel /#2 Fuel Oil**
										0.1	**#6 Oil**

Notes:

Analysis completed by Maxxam Analytics Inc. laboratory in St. John's, NL.
1. Atlantic RBCA (Risk-Based Corrective Action) Version 3.0 (July 2012) Tier I Surface Water Screening Levels for the Protection of Freshwater and Marine Aquatic Life (mg/L)

RDL = Reportable Detection Limit
< = Parameter below detection limit
- = Not analysed
DUP = Laboratory duplicate
0.0 = above criteria

TPuH = Total Purgeable Hydrocarbons
TExH = Total Extractable Hydrocarbons
TPH = Total Petroleum Hydrocarbons
Modified TPH = mTPH = TExH + TPuH
TPH = mTPH + BTEX

G = Gasoline
FO = Fuel Oil
LO = Lube Oil
W = Weathered

TABLE 14

SURFACE WATER ANALYTICAL DATA - PAHs
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	RDL	SURFACE UP	SURFACE DOWN	Criteria*
		Aug 28, 2013	Aug 28, 2013	
1-Methylnaphthalene	0.05	<	<	-
2-Methylnaphthalene	0.05	<	<	-
Acenaphthene	0.01	<	<	5.8
Acenaphthylene	0.01	<	<	-
Anthracene	0.01	<	<	0.012
Benzo(a)anthracene	0.01	<	<	0.018
Benzo(a)pyrene	0.01	<	<	0.015
Benzo(b)fluoranthene	0.01	<	<	-
Benzo(g,h,i)perylene	0.01	<	<	-
Benzo(j)fluoranthene	0.01	<	<	-
Benzo(k)fluoranthene	0.01	<	<	-
Chrysene	0.01	<	<	-
Dibenz(a,h)anthracene	0.01	<	<	-
Fluoranthene	0.01	<	<	0.04
Fluorene	0.01	<	<	3.0
Indeno(1,2,3-cd)pyrene	0.01	<	<	-
Naphthalene	0.2	<	<	1.1
Perylene	0.01	<	<	-
Phenanthrene	0.01	<	<	0.4
Pyrene	0.01	<	<	0.025

Analysis completed by Maxxam Analytics Inc. laboratory in St. John's, NL.
* Canadian Council of Ministers of the Environment (CCME) Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life (2007 - Update 7.1).

RDL = Reportable Detection Limit **0.0**
- = Not analysed/No criteria
< = Parameter below detection limit

TABLE 15

SURFACE WATER ANALYTICAL DATA - TOTAL PCBs
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	RDL	SURFACE UP	SURFACE DOWN	Criteria*
		Aug 28, 2013	Aug 28, 2013	
Total PCBs	0.05	<	<	-

Notes:

Analysis completed by Maxxam Analytics Inc. laboratory in St. John's, NL.
* Canadian Council of Ministers of the Environment (CCME) Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life (2007 - Update 7.1).

RDL = Reportable Detection Limit **0.0** = above criteria
< = Parameter below detection limit

TABLE 16

SURFACE WATER ANALYTICAL DATA - VOCs
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	RDL	SURFACE UP	SURFACE DOWN	Criteria*
		Aug 28, 2013	Aug 28, 2013	
Benzene	1	<	<	370
Bromodichloromethane	1	<	<	-
Bromoform	1	<	<	-
Bromomethane	3	<	<	-
Carbon Tetrachloride	1	<	<	13.3
Chlorobenzene	1	<	<	1.3
Chloroethane	8	<	<	-
Chloroform	1	<	<	1.8
Chloromethane	8	<	<	-
Dibromochloromethane	1	<	<	-
1,2-Dichlorobenzene	0.5	<	<	0.7
1,3-Dichlorobenzene	1	<	<	150
1,4-Dichlorobenzene	1	<	<	26
1,1-Dichloroethane	2	<	<	-
1,2-Dichloroethane	1	<	<	100
1,1-Dichloroethylene	0.5	<	<	-
cis-1,2-Dichloroethylene	2	<	<	-
trans-1,2-Dichloroethylene	2	<	<	-
1,2-Dichloropropane	1	<	<	-
cis-1,3-Dichloropropene	2	<	<	-
trans-1,3-Dichloropropene	1	<	<	-
Ethylbenzene	1	<	<	90
Methylene Chloride(Dichloromethane)	3	<	<	98.1
o-Xylene	1	<	<	-
p+m-Xylene	2	<	<	-
Styrene	1	<	<	300
Tetrachloroethylene	1	<	<	72
1,1,2,2-Tetrachloroethane	1	<	<	-
Toluene	1	<	<	111
Trichloroethylene	1	<	<	2.0
1,1,1-Trichloroethane	1	<	<	-
1,1,2-Trichloroethane	1	<	<	-
Trichlorofluoromethane (FREON 11)	8	<	<	21
Vinyl Chloride	0.5	<	<	-

Notes:
Analysis completed by Maxxam Analytics Inc. laboratory in St. John's, NL.
* Canadian Council of Ministers of the Environment (CCME) Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life (2007 - Update 7.1).

RDL = Reportable Detection Limit **0.0** = above criteria
- = Not analysed/No criteria
< = Parameter below detection limit

TABLE 17

SURFACE WATER ANALYTICAL DATA - GENERAL CHEMISTRY
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	RDL	Units	SURFACE UP	SURFACE DOWN	Criteria*
			Aug 28, 2013	Aug 28, 2013	
Anion Sum	N/A	me/L	0.64	0.69	-
Bicarb. Alkalinity (calc. as CaCO3)	1	mg/L	11	12	-
Calculated TDS	1	mg/L	39	41	-
Carb. Alkalinity (calc. as CaCO3)	1	mg/L	<	<	-
Cation Sum	N/A	me/L	0.74	0.74	-
Hardness (CaCO3)	1	mg/L	15	16	-
Ion Balance (% Difference)	N/A	%	7.25	3.5	-
Langelier Index (@ 20C)	N/A	N/A	-2.82	-2.57	-
Langelier Index (@ 4C)	N/A	N/A	-3.07	-2.82	-
Nitrate (N)	0.05	mg/L	<	<	13
Saturation pH (@ 20C)	N/A	N/A	9.61	9.56	-
Saturation pH (@ 4C)	N/A	N/A	9.86	9.81	-
Total Alkalinity (Total as CaCO3)	30	mg/L	11	12	-
Carbonaceous BOD	5	mg/L	-	-	-
Dissolved Chloride (Cl)	1	mg/L	12	13	-
Colour	5	TCU	65	71	-
Strong Acid Dissoc. Cyanide (CN)	0.002	mg/L	-	-	-
Nitrate + Nitrite	0.05	mg/L	<	<	-
Nitrite (N)	0.01	mg/L	<	<	0.06
Nitrogen (Ammonia Nitrogen)	0.05	mg/L	<	<	-
Total Organic Carbon (C)	0.5	mg/L	8.2	7.9	-
Orthophosphate (P)	0.01	mg/L	<	<	-
pH	N/A	pH	6.79	6.99	6.5 - 9
Phenols-4AAP	0.001	mg/L	-	-	-
Reactive Silica (SiO2)	0.5	mg/L	1.5	1.6	-
Total Suspended Solids (TSS)	2	mg/L	-	-	-
Dissolved Sulphate (SO4)	2	mg/L	3.2	3.5	-
Sulphide	0.02	mg/L	-	-	-
Turbidity	0.1	NTU	1.6	0.77	-
Conductivity	1	uS/cm	72	76	-
Total Oil & Grease	5	mg/L	-	-	-

Notes:
Analysis completed by Maxxam Analytics Inc. laboratory in St. John's, NL.
* Canadian Council of Ministers of the Environment (CCME) Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life (2007 - Update 7.1).

RDL = Reportable Detection Limit
0.0 = above criteria
-= Not analysed/No criteria
< = Parameter below detection limit

TABLE 18

SURFACE WATER ANALYTICAL DATA - TOTAL METALS
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	RDL	Units	SURFACE UP	SURFACE DOWN	Criteria*
			Aug 28, 2013	Aug 28, 2013	
Aluminum (Al)	5.0	ug/L	86	83	100(1)
Antimony (Sb)	1.0	ug/L	<	<	-
Arsenic (As)	1.0	ug/L	<	<	5.0
Barium (Ba)	1.0	ug/L	9.1	8.6	-
Beryllium (Be)	1.0	ug/L	<	<	-
Bismuth (Bi)	2.0	ug/L	<	<	-
Boron (B)	5.0	ug/L	<	<	-
Cadmium (Cd)	0.017	ug/L	<	<	0.015/0.036(2)
Calcium (Ca)	100	ug/L	4,500	4,500	-
Chromium (Cr)	1.0	ug/L	<	<	8.9(3)
Hexavalent Chromium (Cr^{6+})	1.0	ug/L	0.61	0.68	1.0
Cobalt (Co)	0.4	ug/L	<	<	-
Copper (Cu)	2.0	ug/L	<	<	2(4)
Iron (Fe)	50	ug/L	**530**	**440**	300
Lead (Pb)	0.50	ug/L	<	<	1, 2(5)
Magnesium (Mg)	100	ug/L	1,000	1,100	-
Manganese (Mn)	2.0	ug/L	110	66	-
Molybdenum (Mo)	2.0	ug/L	<	<	73.00
Nickel (Ni)	2.0	ug/L	<	<	25, 65(6)
Phosphorus (P)	100	ug/L	<	<	-
Potassium (K)	100	ug/L	310	320	-
Selenium (Se)	1.0	ug/L	<	<	1.0
Silver (Ag)	0.1	ug/L	<	<	0.1
Sodium (Na)	100	ug/L	9,300	9,100	-
Strontium (Sr)	2.0	ug/L	16	17	-
Thallium (Tl)	0.1	ug/L	<	<	0.8
Tin (Sn)	2.0	ug/L	<	<	-
Titanium (Ti)	2.0	ug/L	2	2.5	-
Uranium (U)	0.10	ug/L	<	<	-
Vanadium (V)	2.0	ug/L	<	<	-
Zinc (Zn)	5.0	ug/L	<	<	30

Notes:

Analysis completed by Maxxam Analytics Inc. laboratory in St. John's, NL.
* Canadian Council of Ministers of the Environment (CCME) Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life (2007 - Update 7.1).

RDL = Reportable Detection Limit
- = Not analysed/No criteria
< = Parameter below detection limit
0.0 = above criteria

(1) Aluminum guideline = 5 ug/L at pH < 6.5
= 100 ug/L at pH ≥ 6.5

(2) Cadmium guideline = $10^{\{0.86[\log(\text{hardness})]-3.2\}}$

(3) Criteria for Chromium (III) = 8.9 ug/L, Criteria for Chromium (VI) = 1.0 ug/L

(4) Copper guideline = 2 ug/L at [$CaCO_3$] = 0-120 mg/L
= 3 ug/L at [$CaCO_3$] = 120-180 mg/L
= 4 ug/L at [$CaCO_3$] >180 mg/L

(5) Lead guideline = 1 ug/L at [$CaCO_3$] = 0-60 mg/L
= 2 ug/L at [$CaCO_3$] = 60-120 mg/L
= 4 ug/L at [$CaCO_3$] = 120-180 mg/L
= 7 ug/L at [$CaCO_3$] >180 mg/L

(6) Nickel guideline = 25 ug/L at [$CaCO_3$] = 0-60 mg/L
= 65 ug/L at [$CaCO_3$] = 60-120 mg/L
= 110 ug/L at [$CaCO_3$] = 120-180 mg/L
= 150 ug/L at [$CaCO_3$] >180 mg/L

TABLE 19

LEACHATE ANALYTICAL DATA - BTEX/mTPH (mg/L)
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Sample Location	Date Sampled	Benzene	Toluene	Ethyl-benzene	Xylenes	Total Petroleum Hydrocarbons (TPH)					Comments
						F1 C_6-C_{10}	F2 C_{10}-C_{16}	F3 C_{16}-C_{21}	F3 C_{21}-C_{32}	Modified TPH	
PLCS	Aug 28, 2013	<	<	<	<	<	<	<	<	<	-
SLCS	Aug 28, 2013	<	<	<	<	<	0.058	0.062	<	0.12	No resemblance to petroleum products in fuel oil range.
DUP-06	Aug 28, 2013	<	<	<	<	<	0.071	0.061	<	0.13	No resemblance to petroleum products in fuel oil range.
RDL		0.0013	0.0013	0.0013	0.0026	0.013	0.05	0.05	0.1	0.1	-
Schedule A Water & Sewer Regulations [1]		-	-	-	-	-	-		-	15	-
2007 CCME Freshwater Aquatic Life Guidelines [2]		**4.00**	**2.00**	**0.39**	**-**	**-**	**-**	**-**	**-**	**-**	**Gasoline**
										-	**Diesel /#2 Fuel Oil**
										-	**#6 Oil**
2012 Tier I Surface Water ESL - Freshwater [3]		**2.10**	**0.77**	**0.32**	**0.33**	**-**	**-**	**-**	**-**	**1.5**	**Gasoline**
										0.1	**Diesel /#2 Fuel Oil**
										0.1	**#6 Oil**

Notes:

Analysis completed by Maxxam Analytics Inc. laboratory in St. John's, NL.

1. Schedule A of NL Environmental Control Water and Sewer Regulations, 2003.
2. 2007 CCME Freshwater Aquatic Life Guidelines
3 Atlantic Risk-Based Corrective Action (RBCA) Tier I Surface Water Ecological Screening Level (ESL) Table values for protection of freshwater and marine aquatic life.
DUP-06 = Field duplicate of SLCS

PLCS = Primary Leachate Collection System
SLCS = Secondary Leachate Collection System
RDL = Reportable Detection Limit
< = Parameter below detection limit
- = Not analysed
0.00 = above criteria

LEACHATE ANALYTICAL DATA - PAHs (ug/L)
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	RDL	PLCS	SLCS	DUP-06	Criteria	
		Aug 28, 2013	Aug 28, 2013	Aug 28, 2013	NL [1]	CCME [2]
1-Methylnaphthalene	0.05	<	<	<	-	-
2-Methylnaphthalene	0.05	<	<	<	-	-
Acenaphthene	0.01	<	0.014	0.017	-	580
Acenaphthylene	0.01	<	<	<(0.02)	-	-
Anthracene	0.01	<	<(0.06)	<(0.15)	-	1.2
Benzo(a)anthracene	0.01	<	0.05	0.062	-	1.8
Benzo(a)pyrene	0.01	<	<	<	-	1.5
Benzo(b)fluoranthene	0.01	<	<	<	-	-
Benzo(g,h,i)perylene	0.01	<	<	<	-	-
Benzo(j)fluoranthene	0.01	<	<	<	-	-
Benzo(k)fluoranthene	0.01	<	<	<	-	-
Chrysene	0.01	<	0.085	0.11	-	-
Dibenz(a,h)anthracene	0.01	<	<	<	-	-
Fluoranthene	0.01	0.011	0.24	0.29	-	4
Fluorene	0.01	<	<(0.02)	<(0.04)	-	300
Indeno(1,2,3-cd)pyrene	0.01	<	<	<	-	-
Naphthalene	0.2	<	<	<	-	110
Perylene	0.01	<	<	<	-	-
Phenanthrene	0.01	<	<	<(0.04)	-	40
Pyrene	0.01	0.052	1.3	1.7	-	2.5

Analysis completed by Maxxam Analytics Inc. laboratory in Bedford, NS
1. Schedule A of NL Environmental Control Water and Sewer Regulations, 2003.

2. CCME Canadian Water Quality Guidelines for Protection of Freshwater Aquatic Life (2007 - Update 7.1) with a dilution factor of 100 based on distance between ditch and receiving waters and percolation through soil.

PLCS = Primary Leachate Collection System
SLCS = Secondary Leachate Collection System

0.0 = above CCME Criteria

< = Parameter below detection limit
<(0.0) = Parameter below elevated detection limit
DUP-06 = Field Duplicate of SLCS

RDL = Reportable Detection Limit
- = Not analysed/No criteria

TABLE 21

LEACHATE ANALYTICAL DATA - TOTAL PCBs (ug/L)
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	RDL	PLCS	SLCS	DUP-06	Criteria[1]
		Aug 28, 2013	Aug 28, 2013	Aug 28, 2013	
Total PCBs	0.05	<	<	<	-

Notes:

Analysis completed by Maxxam Analytics Inc. laboratory in Bedford, NS.
1. Schedule A of NL Environmental Control Water and Sewer Regulations, 2003.

PLCS = Primary Leachate Collection System
SLCS = Secondary Leachate Collection System

< = Parameter below detection limit
0.0 = above Criteria

RDL = Reportable Detection Limit
DUP-06 = Field Duplicate of SLCS

- = Not analysed/No criteria

TABLE 22

LEACHATE ANALYTICAL DATA - VOCs (ug/L)
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	RDL	PLCS	SLCS	DUP-06	Criteria[1]
		Aug 28, 2013	Aug 28, 2013	Aug 28, 2013	
Benzene	1	<	<	<	-
Bromodichloromethane	1	<	<	<	-
Bromoform	1	<	<	<	-
Bromomethane	3	<	<	<	-
Carbon Tetrachloride	1	<	<	<	-
Chlorobenzene	1	<	<	<	-
Chloroethane	8	<	<	<	-
Chloroform	1	<	<	<	-
Chloromethane	8	<	<	<	-
Dibromochloromethane	1	<	<	<	-
1,2-Dichlorobenzene	0.5	<	<	<	-
1,3-Dichlorobenzene	1	<	<	<	-
1,4-Dichlorobenzene	1	<	<	<	-
1,1-Dichloroethane	2	<	<	<	-
1,2-Dichloroethane	1	<	<	<	-
1,1-Dichloroethylene	0.5	<	<	<	-
cis-1,2-Dichloroethylene	2	<	<	<	-
trans-1,2-Dichloroethylene	2	<	<	<	-
1,2-Dichloropropane	1	<	<	<	-
cis-1,3-Dichloropropene	2	<	<	<	-
trans-1,3-Dichloropropene	1	<	<	<	-
Ethylbenzene	1	<	<	<	-
Methylene Chloride(Dichloromethane)	3	<	<	<	-
o-Xylene	1	<	<	<	-
p+m-Xylene	2	<	<	<	-
Styrene	1	<	<	<	-
Tetrachloroethylene	1	<	<	<	-
1,1,2,2-Tetrachloroethane	1	<	<	<	-
Toluene	1	<	<	<	-
Trichloroethylene	1	<	<	<	-
1,1,1-Trichloroethane	1	<	<	<	-
1,1,2-Trichloroethane	1	<	<	<	-
Trichlorofluoromethane (FREON 11)	8	<	<	<	-
Vinyl Chloride	0.5	<	<	<	-

Notes:

Analysis completed by Maxxam Analytics Inc. laboratory in Bedford, NS.
1. Schedule A of NL Environmental Control Water and Sewer Regulations, 2003.

PLCS = Primary Leachate Collection System
SLCS = Secondary Leachate Collection System

< = Parameter below detection limit
0.0 = above Criteria

RDL = Reportable Detection Limit
DUP-06 = Field Duplicate of SLCS

- = Not analysed/No criteria

TABLE 23

LEACHATE ANALYTICAL DATA - GENERAL CHEMISTRY
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	RDL	Units	PLCS	SLCS	DUP-06	Criteria[1]
			Aug 28, 2013	Aug 28, 2013	Aug 28, 2013	
Anion Sum	N/A	me/L	10	11.2	12.8	-
Bicarb. Alkalinity (calc. as CaCO3)	1	mg/L	420	460	530	-
Calculated TDS	1	mg/L	540	640	710	1,000
Carb. Alkalinity (calc. as CaCO3)	1	mg/L	<	<	<	-
Cation Sum	N/A	me/L	10	13.5	14.2	-
Chromium (+3)			<	<	<	
Hardness (CaCO3)	1	mg/L	430	560	580	-
Ion Balance (% Difference)	N/A	%	0.05	9.25	5.24	-
Langelier Index (@ 20C)	N/A	N/A	0.449	0.511	0.487	-
Langelier Index (@ 4C)	N/A	N/A	0.202	0.264	0.24	-
Nitrate (N)	0.05	mg/L	0.11	0.077	<	10
Saturation pH (@ 20C)	N/A	N/A	6.73	6.6	6.53	-
Saturation pH (@ 4C)	N/A	N/A	6.98	6.85	6.78	-
Total Alkalinity (Total as CaCO3)	30.00	mg/L	420	460	530	-
Carbonaceous BOD	mg/L	5.00	<	<	<	20
Dissolved Chloride (Cl)	1	mg/L	30	38	42	1,000
Colour	5	TCU	8.6	13	12	-
Strong Acid Dissoc. Cyanide (CN)	0.002	mg/L	<(2)	<(2)	<(2)	25
Nitrate + Nitrite	0.05	mg/L	0.11	0.1	<	-
Nitrite (N)	0.01	mg/L	<	0.028	<	-
Nitrogen (Ammonia Nitrogen)	0.05	mg/L	0.35	0.38	0.53	2
Total Organic Carbon (C)	0.5	mg/L	13	18	19(1)	-
Orthophosphate (P)	0.01	mg/L	<	<	<	-
pH	N/A	pH	7.18	7.11	7.02	5.5 - 9.0
Phenols-4AAP	0.001	mg/L	0.0064	0.0088	0.0086	0.10
Reactive Silica (SiO2)	0.5	mg/L	14	15	16	-
Total Suspended Solids (TSS)	2.0	mg/L	1.6	29	28	30
Dissolved Sulphate (SO4)	2.0	mg/L	42	40	43	-
Sulphide	0.02	mg/L	<	<	<	0.50
Turbidity	0.1	NTU	140	130	220	-
Conductivity	1	uS/cm	820	950	1,100	-
Total Oil & Grease	5.00	mg/L	<	<	<	-

Notes:
Analysis completed by Maxxam Analytics Inc. laboratory in Bedford, NS.

1. Schedule A of NL Environmental Control Water and Sewer Regulations, 2003.

PLCS = Primary Leachate Collection System
SLCS = Secondary Leachate Collection System
(1)= Elevated reporting limit due to sample matrix
(2)= The sample was decanted due to sediment
< = Parameter below detection limit
<(0.0) = Parameter below elevated detection limit
DUP-06 = Field Duplicate of SLCS

0.0 = above Criteria
RDL = Reportable Detection Limit
- = Not analysed/No criteria

TABLE 24

LEACHATE ANALYTICAL DATA - TOTAL METALS (ug/L)
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	RDL	PLCS	SLCS	DUP-06	Criteria[1]
		Aug 28, 2013	Aug 28, 2013	Aug 28, 2013	
Aluminum (Al)	5	18	22	28	-
Antimony (Sb)	1	<	<	<	-
Arsenic (As)	1	<	<	1.1	500
Barium (Ba)	1	85	98	110	5,000
Beryllium (Be)	1	<	<	<	-
Bismuth (Bi)	2	<	<	<	-
Boron (B)	5	1,700	2,300	2,400	5,000
Cadmium (Cd)	0.017	0.012	<	<	50
Calcium (Ca)	100	130,000	170,000	180,000	-
Chromium (Cr)	1	<	<	<	1,000
Hexavalent Chromium (Cr^{6+})	1	0.58	<	<	50
Cobalt (Co)	0.4	<	0.61	0.47	-
Copper (Cu)	2	<	<	<	300
Iron (Fe)	50	**12,000**	**22,000**	**27,000**	10,000
Lead (Pb)	0.5	<	<	<	200
Magnesium (Mg)	100	23,000	34,000	35,000	-
Manganese (Mn)	2	5,700	9,300	9,500	-
Mercury (Hg)	0.013	<	<	<	5
Molybdenum (Mo)	2	<	<	<	-
Nickel (Ni)	2	<	<	<	500
Phosphorus (P)	100	<	<	<	0.5
Potassium (K)	100	6,100	9,100	10,000	-
Selenium (Se)	1	<	<	<	10
Silver (Ag)	0.1	<	<	<	50
Sodium (Na)	100	19,000	26,000	28,000	-
Strontium (Sr)	2	300	430	450	-
Thallium (Tl)	0.1	<	<	<	-
Tin (Sn)	2	<	<	<	-
Titanium (Ti)	2	<	<	2.5	-
Uranium (U)	1	0.66	1.2	1.1	-
Vanadium (V)	2	<	<	<	-
Zinc (Zn)	5	<	16	180	500

Notes:

Analysis completed by Maxxam Analytics Inc. laboratory in Bedford, NS.
1. Schedule A of NL Environmental Control Water and Sewer Regulations, 2003.

PLCS = Primary Leachate Collection System
SLCS = Secondary Leachate Collection System

0.0 = above Criteria
RDL = Reportable Detection Limit
- = Not analysed/No criteria

< = Parameter below detection limit
<(0.0) = Parameter below elevated detection limit
DUP-06 = Field Duplicate of SLCS

LEACHATE PUMPING LOG
COME BY CHANCE SECURE LANDFILL, COME BY CHANCE, NL

1/2

NAME: PRIMARY
CHAMBER DIAMETER: 1.46 m
AREA: 1.67 m^2

OCTOBER 10, 2013

INTERVAL	PUMPING / FILLING	DEPTH (mbtoc)		TIME		CALCULATIONS				
		START	END	START	END	ΔD (m)	VOLUME (m^3)	ΔT	Q (L/min)	< 15 L/min?
1	PUMP	0.520	1.856	1:50	1:52	1.336	2.231	2	112	N
2	FILL	1.856	1.555	1:52	2:02	0.301	0.503	10	50	N
3	PUMP	0.613	3.211	2:42	2:47	2.598	4.339	5	87	N
4	FILL	3.211	2.905	2:47	2:57	0.306	0.511	10	51	N
5	PUMP	2.605	3.264	3:08	3:11	0.659	1.101	4	28	N
6	FILL	3.264	2.954	3:11	3:21	0.310	0.518	10	52	N
7	PUMP	2.496	3.296	3:37	3:40	0.800	1.336	3	45	N
8	FILL	3.296	2.981	3:40	3:50	0.315	0.526	10	53	N
9	FILL	2.981	2.716	3:50	4:00	0.265	0.443	10	44	N
10	FILL	2.716	2.431	4:00	4:10	0.285	0.476	10	48	N
11	PUMP	2.304	3.262	4:25	4:20	0.958	1.600	5	32	N
12	FILL	3.262	2.946	4:20	4:30	0.316	0.528	10	53	N
13	FILL	2.946	2.680	4:30	4:40	0.266	0.444	10	44	N
14	PUMP	2.216	3.274	4:58	5:02	1.058	1.767	4	44	N
15	FILL	3.274	2.996	5:02	5:12	0.278	0.464	10	46	N
16	FILL	2.996	2.732	5:12	5:22	0.264	0.441	10	44	N
17	FILL	2.737	2.479	5:22	5:32	0.253	0.423	10	42	N
18	FILL	2.479	2.218	5:32	5:42	0.261	0.435	10	44	N
19	PUMP	2.089	3.274	5:47	5:50	1.185	1.979	3	66	N
20	FILL	3.274	3.020	5:50	6:00	0254	0.424	10	42	N
21	FILL	3.020	2.776	6:00	6:10	0.244	0.407	10	41	N
22	FILL	2.776	2.517	6:10	6:20	0.264	0.441	10	44	N
23	FILL	2.512	2.254	6:20	6:30	0258	0.431	10	43	N
24	FILL	2.254	1.998	6:30	6:40	0.256	0.428	10	43	N
25	FILL	1.998	1.742	6:40	6:50	0.256	0.428	10	43	N
26	PUMP	1.570	3.258	6:87	7:07	1.688	2.819	5	56	N
27	FILL	3.258	3.010	7:02	7:12	0.248	0.414	10	41	N
28	FILL	3.010	2.755	7:12	7:22	0.255	0.426	10	43	N
29	FILL	2.755	1.520	7:22	7:32	0.235	0.392	10	39	N
30	FILL	2.520	2.279	7:32	7:42	0.241	0.402	10	40	N

LEACHATE PUMPING LOG
COME BY CHANCE SECURE LANDFILL, COME BY CHANCE, NL

2/2

NAME: PRIMARY
CHAMBER DIAMETER: 1.46 m
AREA: 1.67 m^2

OCTOBER 10, 2013

INTERVAL	PUMPING / FILLING	DEPTH (mbtoc)		TIME		CALCULATIONS				
		START	END	START	END	ΔD (m)	VOLUME (m^3)	ΔT	Q (L/min)	< 15 L/min?
1	FILL	2.279	2.035	7:42	7:52	0.244	0.407	10	41	N
2	PUMP	1.690	3.276	8:05	8:10	1.586	2.649	5	53	N
3	FILL	3.276	3.040	8:10	8:20	0.236	0.394	10	39	N
4	FILL	3.040	2.810	8:20	830	0.230	0.384	10	38	N
5	FILL	2.810	2.569	8:30	8:40	0.241	0.402	10	40	N
6	FILL	2.569	2,342	8:40	8:50	0.227	0.379	10	38	N
7	FILL	2.342	2,130	8:50	9:00	0.212	0.354	10	35	N
8	FILL	2,130	1.920	9:00	9:10	0.210	0.350	10	35	N
9	FILL	1.920	1,683	9:10	9:20	0.237	0.395	10	40	N
10	PUMP	1.683	3.275	9:20	9:24	1.592	2.659	4	66	N
11	FILL	3.275	3.079	9:24	9:34	0.196	0.327	10	33	N
12	FILL	3.079	2.908	9:34	9:44	0.171	0.286	10	29	N
13	FILL	2.908	2.771	9:44	9:54	0.137	0.229	10	23	N
14	FILL	2.771	2.654	9:54	10:04	0.057	0.095	10	10	✓
15	FILL	2.654	2.565	10:04	10:14	0.089	0.148	10	15	✓
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LEACHATE PUMPING LOG
COME BY CHANCE SECURE LANDFILL, COME BY CHANCE, NL

1/1

NAME: SECONDARY
CHAMBER DIAMETER: 1.46 m
AREA: 1.67 m^2

OCTOBER 10, 2013

INTERVAL	PUMPING / FILLING	DEPTH (mbtoc)		TIME		CALCULATIONS				
		START	END	START	END	ΔD (m)	VOLUME (m^3)	ΔT	Q (L/min)	< 16 L/min?
1	PUMP	0.485	2.785	12:29	12:37	2.300	3.841	8	480	N
2	FILL	2.785	1.638	12:37	12:47	1.147	1.915	10	192	N
3	PUMP	0.486	2.790	2:50	2:55	2.305	3.849	5	77	N
4	FILL	2.790	1.864	2:50	3:05	0.926	1.546	10	155	N
6	PUMP	1.271	2.814	3:15	3:20	1.543	2.577	5	52	N
6	FILL	2.814	1.799	3:20	3:30	1.015	1.695	10	170	N
7	PUMP	1.206	2.881	3:43	3:48	1.675	2.797	5	56	N
8	FILL	2.881	1.921	3:48	3:58	0.960	1.603	10	160	N
9	FILL	1.921	1.430	3:58	4:08	0.491	0.820	10	82	N
10	PUMP	1.238	3.911	4:24	4:30	1.673	2.794	5	47	N
11	~~FILL~~	~~3.911~~	~~1.967~~	~~4:30~~	~~4:40~~			~~10~~		
12	FILL	1.967	1.619	4:40	4:50	0.348	0581	10	58	N
13	PUMP	1.619	2.905	4:50	4:54	1.286	2.148	4	54	N
14	FILL	2.905	2.338	4:54	5:04	0.567	0.947	10	95	N
15	FILL	2.338	1.972	5:04	5:14	0.366	0.611	10	61	N
16	FILL	1.977	1.777	5:14	5:24	0.195	0.326	10	33	N
17	FILL	1.777	1.685	5:24	5:34	0.092	0.154	10	15	N
18	PUMP	1.641	2.841	5:53	5:58	1200	2.004	5	40	N
19	FILL	2.841	2.605	5:58	6:08	0.236	0.394	10	39	N
20	FILL	2.605	2.466	6:08	6:18	0.139	0.23	10	23	N
21	FILL	2.466	2.370	6:18	6:28	0.096	0.160	10	16	N
22	FILL	2370	2.286	6:28	6:38	0.084	0.140	10	14	✓
23	PUMP	2.186	2.920	6:51	6:54	0.734	1.226	3	41	✓
24	FILL	2.920	2.835	6:54	7:04	0.085	0.142	10	14	✓
25	FILL	2.835	2.772	7:04	7:14	0.063	0.105	10	11	✓
26										
27										
28										
29										
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LEACHATE PUMPING LOG
COME BY CHANCE SECURE LANDFILL, COME BY CHANCE, NL

1/1

NAME: PRIMARY
CHAMBER DIAMETER: 1.46 m
AREA: 1.67 m^2

OCTOBER 11, 2013

INTERVAL	PUMPING / FILLING	DEPTH (mbtoc)		TIME		CALCULATIONS				
		START	END	START	END	ΔD (m)	VOLUME (m^3)	ΔT	Q (L/min)	< 15 L/min?
1	PUMP	1.273	3.278	8:14	8:18	2.005	3.348	4	84	✓
2	FILL	3.278	3.018	8:18	8:28	0.260	0.434	10	43	✓
3	PUMP	2.574	3.269	9:07	9:10	0.695	1.161	3	39	✓
4	FILL	3.269	3.224	9:10	9:20	0.045	0.075	10	8	✓
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LEACHATE PUMPING LOG
COME BY CHANCE SECURE LANDFILL, COME BY CHANCE, NL

NAME: SECONDARY
CHAMBER DIAMETER: 1.46 m
AREA: 1.67 m^2

OCTOBER 11, 2013

INTERVAL	PUMPING / FILLING	DEPTH (mbtoc)		TIME		CALCULATIONS				
		START	END	START	END	ΔD (m)	VOLUME (m^3)	ΔT	Q (L/min)	< 15 L/min?
1	PUMP	1.666	2.868	8:21	8:26	1.202	2.007	5	40	✓
2	FILL	2.808	2.746	8:26	8:30	0.122	0.203	10	20	✓
3	PUMP	2.678	2.924	8:51	8:53	0.246	0.411	2	21	✓
4	FILL	2.924	2.900	8:53	9:03	0.024	0.040	10	4	✓
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APPENDIX A

SITE PHOTOGRAPHS

Photo 1: View, looking east, towards the landfill during the August 2013 sampling event.

Photo 2: View, looking south, toward clean-out 2 near landfill fencing in the background. Note newly installed flush mount.

Photo 3: View, looking northeast, showing the vegetative overgrowth around MW 10-1 and MW 10-1A during the August 2013 sampling event.

Photo 4: View, looking northeast, of the vegetative overgrowth at the ECP-4 during the landfill cover inspection in August 2013.

Photo 5: View, looking west, showing the vegetative overgrowth around MW93-1 and MW93-1A during the August 2013 sampling event.

Photo 6: View, looking north, after trimming vegetative overgrowth around MW93-1A.

Photo 7: View, looking northeast, of the groundwater interception drainage system during the August 2013 Site visit. Note discharge pipe without a rodent screen and iron oxide staining.

Photo 8: View, looking northeast, of groundwater drainage system discharge location with new rodent screen installed during the October 2013 Site visit.

Photo 9: View, looking southwest, while pumping leachate from the PLCS and SPCS valve chambers in October 2013.

APPENDIX B

LABORATORY CERTIFICATES OF ANALYSES

Your P.O. #: 20-016417
Your Project #: 084308
Site Location: MONITORING & MAINTENANCE/COME BY CHANCE
Your C.O.C. #: B 155509

Attention: Brian Luffman
Conestoga-Rovers and Associates Ltd
Mount Pearl/St. John's
PO Box 8353 Stn A
1118 Topsail Rd
St. John's, NL
A1B 3N7

Report Date: 2013/09/17
This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B3E4554
Received: 2013/08/29, 13:15

Sample Matrix: Water
Samples Received: 12

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
TEH in Water (PIRI)	12	2013/09/04	2013/09/06	ATL SOP 00198	Based on Atl. PIRI
VPH in Water (PIRI) (1)	12	2013/09/04	2013/09/05	ATL SOP 00118	Based on Atl. PIRI
ModTPH (T1) Calc. for Water	12	N/A	2013/09/06	N/A	Based on Atl. PIRI

Remarks:

Reporting results to two significant figures at the RDL is to permit statistical evaluation and is not intended to be an indication of analytical precision.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
* Results relate only to the items tested.

(1) This test was performed by Bedford

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Rob Whelan, Laboratory Manager
Email: RWhelan@maxxam.ca
Phone# (709) 754-0203

==========

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.

Total cover pages: 1

Maxxam Job #: B3E4554
Report Date: 2013/09/17

Conestoga-Rovers and Associates Ltd
Client Project #: 084308
Site Location: MONITORING & MAINTENANCE/COME BY CHANCE
Your P.O. #: 20-016417
Sampler Initials: MM

ATLANTIC MUST IN WATER - PIRI TIER I (WATER)

Maxxam ID		SV9949	SV9949	SV9951	SV9952	SV9953	SV9954	SV9955		
Sampling Date		2013/08/28 10:30	2013/08/28 10:30	2013/08/28 11:00	2013/08/28 11:30	2013/08/28 12:00	2013/08/28 12:30	2013/08/28 13:00		
Received Temperature (°C)		3.0	3.0	3.0	3.0	3.0	3.0	3.0		
	Units	**PLCS**	**PLCS Lab-Dup**	**SLCS**	**MW93-1**	**MW93-1A**	**MW93-2**	**MW93-2A**	**RDL**	**QC Batch**
Petroleum Hydrocarbons										
Benzene	mg/L	<0.0010		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	3336929
Toluene	mg/L	<0.0010		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	3336929
Ethylbenzene	mg/L	<0.0010		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	3336929
Xylene (Total)	mg/L	<0.0020		<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	3336929
C6 - C10 (less BTEX)	mg/L	<0.010		<0.010	<0.010	<0.010	<0.010	<0.010	0.010	3336929
>C10-C16 Hydrocarbons	mg/L	<0.050	<0.050	0.058	<0.050	<0.050	<0.050	<0.050	0.050	3337010
>C16-C21 Hydrocarbons	mg/L	<0.050	<0.050	0.062	<0.050	<0.050	<0.050	<0.050	0.050	3337010
>C21-<C32 Hydrocarbons	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	3337010
Modified TPH (Tier1)	mg/L	<0.10		0.12	<0.10	<0.10	<0.10	<0.10	0.10	3331894
Reached Baseline at C32	mg/L	YES	YES	YES	YES	YES	YES	YES	N/A	3337010
Hydrocarbon Resemblance	mg/L			SEECOMMENT(1)					N/A	3337010
Surrogate Recovery (%)										
Isobutylbenzene - Extractable	%	102	101	103	103	109	104	97		3337010
Isobutylbenzene - Volatile	%	100		102	98	92	97	97		3336929
n-Dotriacontane - Extractable	%	102	100	101	104	106(2)	102	93		3337010

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) - No resemblance to petroleum products in fuel oil range.
(2) - TEH sample contained sediment.

Maxxam Analytics International Corporation o/a Maxxam Analytics 49-55 Elizabeth Ave, Suite 101A, St.John's, NL, Canada A1A 1W9 Tel: 709-754-0203 Toll Free: 888-492-7227 Fax:709-754-8612 www.maxxam.ca

Maxxam Job #: B3E4554
Report Date: 2013/09/17

Conestoga-Rovers and Associates Ltd
Client Project #: 084308
Site Location: MONITORING & MAINTENANCE/COME BY CHANCE
Your P.O. #: 20-016417
Sampler Initials: MM

ATLANTIC MUST IN WATER - PIRI TIER I (WATER)

Maxxam ID		SV9956	SV9957	SV9958	SV9959	SV9960	SV9961		
Sampling Date		2013/08/28 13:45	2013/08/28 14:15	2013/08/28 14:30	2013/08/28 15:00	2013/08/28 15:30	2013/08/28 16:00		
Received Temperature (°C)		3.0	3.0	3.0	3.0	3.0	3.0		
	Units	**MW10-1**	**MW10-1A**	**DUP-05**	**DUP-06**	**SURFACE UP**	**SURFACE DOWN**	**RDL**	**QC Batch**
Petroleum Hydrocarbons									
Benzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	3336929
Toluene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	3336929
Ethylbenzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	3336929
Xylene (Total)	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	3336929
C6 - C10 (less BTEX)	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	3336929
>C10-C16 Hydrocarbons	mg/L	<0.050	<0.050	<0.050	0.071	<0.050	<0.050	0.050	3337010
>C16-C21 Hydrocarbons	mg/L	<0.050	<0.050	<0.050	0.061	<0.050	<0.050	0.050	3337010
>C21-<C32 Hydrocarbons	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	3337010
Modified TPH (Tier1)	mg/L	<0.10	<0.10	<0.10	0.13	<0.10	<0.10	0.10	3331894
Reached Baseline at C32	mg/L	YES	YES	YES	YES	YES	YES	N/A	3337010
Hydrocarbon Resemblance	mg/L				SEECOMMENT(1)			N/A	3337010
Surrogate Recovery (%)									
Isobutylbenzene - Extractable	%	101	102	106	104	100	101		3337010
Isobutylbenzene - Volatile	%	97	92(2)	96	99	96	97		3336929
n-Dotriacontane - Extractable	%	102(3)	104(3)	105	106	103	102		3337010

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) - No resemblance to petroleum products in fuel oil range.
(2) - VPH sample contained sediment.
(3) - TEH sample contained sediment.

Maxxam Analytics International Corporation o/a Maxxam Analytics 49-55 Elizabeth Ave, Suite 101A, St.John's, NL, Canada A1A 1W9 Tel: 709-754-0203 Toll Free: 888-492-7227 Fax:709-754-8612 www.maxxam.ca

Maxxam Job #: B3E4554
Report Date: 2013/09/17

Conestoga-Rovers and Associates Ltd
Client Project #: 084308
Site Location: MONITORING & MAINTENANCE/COME BY CHANCE
Your P.O. #: 20-016417
Sampler Initials: MM

GENERAL COMMENTS

Revised report - sample IDs changed as per client request, 2013/09/17

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Maxxam Job #: B3E4554
Report Date: 2013/09/17

Conestoga-Rovers and Associates Ltd
Client Project #: 084308
Site Location: MONITORING & MAINTENANCE/COME BY CHANCE
Your P.O. #: 20-016417
Sampler Initials: MM

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
3336929	Isobutylbenzene - Volatile	2013/09/04	100	70 - 130	94	70 - 130	100	%		
3336929	Benzene	2013/09/04	112	70 - 130	107	70 - 130	<0.0010	mg/L	NC	40
3336929	Toluene	2013/09/04	112	70 - 130	107	70 - 130	<0.0010	mg/L	NC	40
3336929	Ethylbenzene	2013/09/04	113	70 - 130	104	70 - 130	<0.0010	mg/L	NC	40
3336929	Xylene (Total)	2013/09/04	111	70 - 130	104	70 - 130	<0.0020	mg/L	NC	40
3336929	C6 - C10 (less BTEX)	2013/09/04					<0.010	mg/L	NC	40
3337010	Isobutylbenzene - Extractable	2013/09/06	103	30 - 130	98	30 - 130	103	%		
3337010	n-Dotriacontane - Extractable	2013/09/06	108	30 - 130	105	30 - 130	106	%		
3337010	>C10-C16 Hydrocarbons	2013/09/06	92(1)	30 - 130	92	30 - 130	<0.050	mg/L	NC(2)	40
3337010	>C16-C21 Hydrocarbons	2013/09/06	103(1)	30 - 130	104	30 - 130	<0.050	mg/L	NC(2)	40
3337010	>C21-<C32 Hydrocarbons	2013/09/06	95(1)	30 - 130	108	30 - 130	<0.10	mg/L	NC(2)	40

N/A = Not Applicable
RPD = Relative Percent Difference
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
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 (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.
(1) - Matrix Spike Parent ID [SV9951-01]
(2) - Duplicate Parent ID [SV9949-01]

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Validation Signature Page

Maxxam Job #: B3E4554

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

Paula Chaplin, Project Manager

Rose MacDonald, Scientific Specialist (Organics)

==========

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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49 Elizabeth Ave., St John's, NL A1A 1W9 Tel: 709-754-0203 Fax: 709-754-8612 Toll Free: 1-888-492-7227
90 Esplanade Sydney, NS B1P 1A1 Tel: 902-567-1255 Fax: 902-539-6504 Toll Free: 1-888-535-7770
www.maxxamanalytics.com E-mail: Clientservicesbedford@maxxamanalytics.com

MAXXAM Chain of Custody Record

COC #: B 155509 Page 1 of 2

This column for lab use only:
Client Code 16275
Maxxam Job # B3E4554

Cooler ID	Seal Present	Seal Intact	Temp 1	Temp 2	Temp 3	Average Temp
			3.0	4.0	2.0	

Integrity: YES (NO) | Integrity / Checklist by
Labelled by | Location / Bin #

INVOICE INFORMATION:
Company Name: Conestoga-Rovers
Contact Name: Brian Luffman
Address: 1118 Topsail Road
St. John's, NL Postal Code A1B3N7
Email: bluffman@craworld.com
Ph: (709)364-5353 Fax: (709)364-5368

REPORT INFORMATION (if differs from invoice):
Company Name:
Contact Name:
Address:
Postal Code
Email:
Ph: Fax:

PO # To Follow
Project # / Phase # D84308
Project Name / Site Location Monitoring + maintenance Camp Bystrand
Quote B34651
Site #
Task Order #
Sampled by Mike Maher & Andrew Bryant

TURNAROUND TIME
Standard ☒
10 day ☐
If RUSH Specify Date:
Pre-schedule rush work
Charge for # Jars used but not submitted: 0

Guideline Requirements / Detection Limits / Special Instructions
Please C.C.
datanl@craworld.com

*Specify Matrix: Surface/Salt/Ground/Tapwater/Sewage/Effluent/Potable/NonPotable/Tissue/Soil/Sludge/Metal/Seawater

Field Sample Identification	Matrix*	Date/Time Sampled	# & type of bottles	Field Filtered & Preserved	Lab Filtration Required	RCAP-30 Choose Total or Diss Metals	RCAP-MS Choose Total or Diss Metals	Metals Water: Total Digest (Default Method) for well water, surface water	Metals Water: Dissolved for ground water	Metals Water: Mercury	Metals Soil: Metals & Mercury Default Available Digest Method	Metals Soil: Metals Total Digest - for Ocean sediments (HNO3/HF/HClO4)	Metals Soil: Mercury Low level by Cold Vapour AA	Metals Soil: Selenium (low level) Req'd for CCME Residential, Parklands, Agricultural	Metals Soil: Hot Water soluble Boron (required for CCME Agricultural)	Hydrocarbons: RBCA Hydrocarbons (BTEX, C6-C32)	Hydrocarbons: Hydrocarbons Soil (Potable), NS Fuel Oil Spill Policy Low Level BTEX, C6-C32	Hydrocarbons: NB Potable Water BTEX, VPH, Low level T.E.H.	Hydrocarbons: TPH Fractionation	Hydrocarbons: PAH's	Hydrocarbons: PAH's with Acridine, Quinoline	VOCs / PCBs	Cyanide / Sulfides	Total Phenolics	TSS / Chromium III + VI	Total Oil & Grease (IR)
Not Filtered/Field Preserved	1 PLCS	Leachate	Aug 28/13 10:30am	23					X	X						X				X		X	X	X	X	X
Not Filtered/Field Preserved	2 SLCS	Leachate	Aug 28/13 11:00am	23					X	X						X				X		X	X	X	X	X
	3 MW93-1	Water	Aug 28/13 11:30am	14	X	NO				X						X				X		X				
	4 MW 93-1A	Water	Aug 28/13 12:00pm	14	X	NO				X						X				X		X				
	5 MW 93-2	Water	Aug 28/13 12:30pm	14	X	NO				X						X				X		X				
	6 MW 93-2A	Water	Aug 28/13 1:00pm	14	X	NO				X						X				X		X				
	7 MW10-1	Water	Aug 28/13 1:45pm	14	X	NO				X						X				X		X				
	8 MW10-1A	Water	Aug 28/13 2:15pm	14	X	NO				X						X				X		X				
	9 DUP1	Water	Aug 28/13 2:30pm	14	X	NO				X						X				X		X				
Not Filtered/Field Preserved	10 DUP2	Leachate	Aug 28/13 3:00pm	23		NO			X							X				X		X	X	X	X	X

RELINQUISHED BY: (Signature/Print)	Date	Time	RECEIVED BY: (Signature/Print)	Date	Time
Mike Maher/Mike Maher	Aug 29/13	8:00am	Michael Richards	2013/08/29	13:15

White: Maxxam Yellow : Mail Pink: Client

Maxxam Analytics International Corporation

200 Bluewater Road, Suite 105, Bedford, Nova Scotia B4B 1G9 Tel: 902-420-0203 Fax: 902-420-8612 Toll Free: 1-800-565-7227
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MAXXAM Chain of Custody Record

COC #: B 155506 Page 2 of 2

This column for lab use only:
Client Code 16275
Maxxam Job # B3E4554

Cooler ID	Seal Present	Seal Intact	Temp 1	Temp 2	Temp 3	Average Temp
			3.0	4.0	2.0	

Integrity: YES (NO) Integrity / Checklist by:
Labelled by: Location / Bin #:

INVOICE INFORMATION:
Company Name: Comestoga-Rovers
Contact Name: Brian Luffman
Address: 1118 Topsail Road
St. John's, NL Postal Code A1B3N7
Email: bluffman@craworld.com
Ph: (709) 364-5353 Fax: (709) 364-5368

REPORT INFORMATION (if differs from invoice):
Company Name:
Contact Name:
Address:
Postal Code
Email:
Ph: Fax:

PO # To Follow
Project # / Phase # 084308
Project Name / Site Location monitoring & Maintenance / Come By Chance
Quote B34651
Site #
Task Order #
Sampled by Mike Maher Andrew Bryant

TURNAROUND TIME
Standard ☒
10 day ☐
If RUSH Specify Date:
Pre-schedule rush work
Charge for # Jars used but not submitted: 0

Guideline Requirements / Detection Limits / Special Instructions
Please C.C.
daten1@craworld.com

*Specify Matrix: Surface/Salt/Ground/Tapwater/Sewage/Effluent/Potable/NonPotable/Tissue/Soil/Sludge/Metal/Seawater

Field Sample Identification	Matrix*	Date/Time Sampled	# & type of bottles	Field Filtered & Preserved	Lab Filtration Required	RCAP-30 Choose Total or Diss Metals	RCAP-MS Choose Total or Diss Metals	Metals Water: Total Digest (Default Method) for well water, surface water	Metals Water: Dissolved for ground water	Metals Soil: Mercury	Metals Soil: Metals & Mercury Default Available Digest Method	Metals Soil: Metals Total Digest - for Ocean sediments (HNO3/HF/HCLO4)	Metals Soil: Mercury Low level by Cold Vapour AA	Metals Soil: Selenium (low level) Req'd for CCME Residential, Parklands, Agricultural	Metals Soil: Hot Water soluble Boron (required for CCME Agricultural)	Hydrocarbons: RBCA Hydrocarbons (BTEX, C6-C32)	Hydrocarbons: Hydrocarbons Soil (Potable), NS Fuel Oil Spill Policy Low Level BTEX, C6-C32	Hydrocarbons: NB Potable Water BTEX, VPH, Low level T.E.H.	Hydrocarbons: TPH Fractionation	Hydrocarbons: PAH's	Hydrocarbons: PAH's with Acridine, Quinoline	VOCs	PCBs	Chromium VI
Not Filtered/ Field Preserved	1 Surface up	Water	Aug 28/13 3:30pm	15	X			X								X				X		+	+	X
Not Filtered/ Field preserved	2 Surface Down	Water	Aug 28/13 4:00pm	15	X			X								X				X		+	+	X
	3																							
	4																							
	5																							
	6																							
	7																							
	8																							
	9																							
	10																							

RELINQUISHED BY: (Signature/Print)	Date	Time	RECEIVED BY: (Signature/Print)	Date	Time
Mike Maher/Mike Maher	Aug 29/13	8:00am	[illegible]	2013/08/29	13:15

White: Maxxam Yellow: Mail Pink: Client

Success Through Science®

Your P.O. #: 20-016417
Your Project #: 084308
Site Location: MONITORING AND MAINTENANCE/COME BY CHANCE
Your C.O.C. #: B 155509, B 155506

Attention: Brian Luffman
Conestoga-Rovers and Associates Ltd
Mount Pearl/St. John's
PO Box 8353 Stn A
1118 Topsail Rd
St. John's, NL
A1B 3N7

Report Date: 2013/09/23
This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B3E5248
Received: 2013/08/30, 10:33

Sample Matrix: Water
Samples Received: 12

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Carbonate, Bicarbonate and Hydroxide (1)	12	N/A	2013/09/17	CAM SOP-00102	APHA 4500-CO2 D
Alkalinity (1)	12	N/A	2013/09/16	ATL SOP 00013	Based on EPA310.2
Carbonaceous BOD (1)	3	N/A	2013/09/04	ATL SOP 00041	Based on APHA 5210B
Chloride (1)	12	N/A	2013/09/16	ATL SOP 00014	Based on SM4500-Cl-
Str. Acid Diss. Cyanide water (1,3)	3	N/A	2013/09/05	ATL SOP 00040	Based on EPA335.3
Colour (1)	12	N/A	2013/09/13	ATL SOP 00020	Based on SM2120C
Chromium 3+ by calculation (1)	4	2013/08/30	2013/09/10		
Chromium 3+ by calculation (1)	1	2013/08/30	2013/09/11		
Chromium (VI) in Water (2)	2	N/A	2013/09/06	CAM SOP-00436	EPA 7199
Chromium (VI) in Water (2)	2	N/A	2013/09/09	CAM SOP-00436	EPA 7199
Chromium (VI) in Water (2)	1	N/A	2013/09/10	CAM SOP-00436	EPA 7199
Conductance - water (1)	12	N/A	2013/09/16	ATL SOP-00004	Based on SM2510B
Hardness (calculated as CaCO3) (1)	12	N/A	2013/09/16	ATL SOP 00048	Based on SM2340B
Mercury - Total (CVAA,LL) (1)	3	2013/09/11	2013/09/11	ATL SOP 00026	Based on EPA245.1
Metals Water Diss. MS (as rec'd) (1)	7	N/A	2013/09/04	ATL SOP 00058	Based on EPA6020A
Metals Water Total MS (1,4)	3	2013/09/06	2013/09/06	ATL SOP 00058	Based on EPA6020A
Metals Water Total MS (1,4)	1	2013/09/06	2013/09/09	ATL SOP 00058	Based on EPA6020A
Metals Water Total MS (1,4)	1	2013/09/20	2013/09/21	ATL SOP 00058	Based on EPA6020A
Ion Balance (% Difference) (1)	12	N/A	2013/09/17		
Anion and Cation Sum (1)	12	N/A	2013/09/17		
Nitrogen Ammonia - water (1)	12	N/A	2013/09/16	ATL SOP 00015	Based on USEPA 350.1
Nitrogen - Nitrate + Nitrite (1)	12	N/A	2013/09/16	ATL SOP 00016	Based on USGS - Enz.
Nitrogen - Nitrite (1)	12	N/A	2013/09/16	ATL SOP 00017	Based on SM4500-NO2B
Nitrogen - Nitrate (as N) (1)	11	N/A	2013/09/16	ATL SOP 00018	Based on ASTMD3867
Nitrogen - Nitrate (as N) (1)	1	N/A	2013/09/17	ATL SOP 00018	Based on ASTMD3867
PAH in Water by GC/MS (SIM) (1)	9	2013/09/04	2013/09/05	ATL SOP 00103	Based on EPA 8270C
PAH in Water by GC/MS (SIM) (1)	3	2013/09/04	2013/09/06	ATL SOP 00103	Based on EPA 8270C
PCBs in water by GC/ECD (1)	6	2013/09/04	2013/09/09	ATL SOP 00107	Based on EPA8082
PCBs in water by GC/ECD (1)	6	2013/09/04	2013/09/11	ATL SOP 00107	Based on EPA8082
Phenols (4-AAP) (1)	3	N/A	2013/09/04	ATL SOP 00039	Based on EPA 420.2
pH (1,5)	12	N/A	2013/09/16	ATL SOP 00003	Based on SM4500H+B
Phosphorus - ortho (1)	12	N/A	2013/09/13	ATL SOP 00021	Based on USEPA 365.2
Sat. pH and Langelier Index (@ 20C) (1)	12	N/A	2013/09/17	ATL SOP-00049	.
Sat. pH and Langelier Index (@ 4C) (1)	12	N/A	2013/09/17	ATL SOP-00049	.
Reactive Silica (1)	12	N/A	2013/09/16	ATL SOP 00022	Based on EPA 366.0
Sulphate (1)	12	N/A	2013/09/13	ATL SOP 00023	Based on EPA 375.4
Sulphide (2)	3	N/A	2013/09/03	CAM SOP-00455	SM 4500-S G
Total Dissolved Solids (TDS calc) (1)	12	N/A	2013/09/17		
Organic carbon - Total (TOC) (1)	12	N/A	2013/09/16	ATL SOP 00037	Based on SM5310C
Total Oil and Grease - Water (1)	3	2013/09/04	2013/09/09	ATL SOP 00101	Based on EPA1664

Maxxam Job #: B3E5248
Report Date: 2013/09/23

Conestoga-Rovers and Associates Ltd
Client Project #: 084308
Site Location: MONITORING AND MAINTENANCE/COME BY CHANCE
Your P.O. #: 20-016417
Sampler Initials: MM

Sample Matrix: Water
Samples Received: 12

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Total Suspended Solids (1)	3	N/A	2013/09/04	ATL SOP 00007	based on EPA 160.2
Turbidity (1)	12	N/A	2013/09/17	ATL SOP 00011	based on EPA 180.1
Volatile Organic Compounds in Water (1,4)	10	2013/09/06	2013/09/06	ATL SOP 00122/00133	Based on EPA624
Volatile Organic Compounds in Water (1,4)	2	2013/09/06	2013/09/07	ATL SOP 00122/00133	Based on EPA624

Remarks:

Reporting results to two significant figures at the RDL is to permit statistical evaluation and is not intended to be an indication of analytical precision.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
* Results relate only to the items tested.

(1) This test was performed by Bedford
(2) This test was performed by Maxxam Analytics Mississauga
(3) Strong acid dissociable cyanide value may include contribution from thiocyanate.
New RDLs in effect due to release of NS Contaminated Sites Regulations. Reduced RDL based on MDL study performance. Low level analytical run checks being implemented.
(4) New RDLs in effect due to release of NS Contaminated Sites Regulations. Reduced RDL based on MDL study performance. Low level analytical run checks being implemented.
(5) The APHA Standard Method require pH to be analyzed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the APHA Standard Method holding time.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Michelle Hill, Project Manager
Email: MHill@maxxam.ca
Phone# (902) 420-0203 Ext:289

==========

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.

Total cover pages: 2

Maxxam Job #: B3E5248
Report Date: 2013/09/23

Conestoga-Rovers and Associates Ltd
Client Project #: 084308
Site Location: MONITORING AND MAINTENANCE/COME BY CHANCE
Your P.O. #: 20-016417
Sampler Initials: MM

RESULTS OF ANALYSES OF WATER

Maxxam ID		SW3523	SW3523			SW3524	SW3524			SW3525		
Sampling Date		2013/08/28 10:30	2013/08/28 10:30			2013/08/28 11:00	2013/08/28 11:00			2013/08/28 11:30		
	Units	**PLCS**	**PLCS Lab-Dup**	**RDL**	**QC Batch**	**SLCS**	**SLCS Lab-Dup**	**RDL**	**QC Batch**	**MW93-1**	**RDL**	**QC Batch**
Calculated Parameters												
Anion Sum	me/L	10.0		N/A	3347450	11.2		N/A	3347450	6.20	N/A	3347450
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	420		1.0	3347448	460		1.0	3347448	240	1.0	3347448
Calculated TDS	mg/L	540		1.0	3347453	640		1.0	3347453	330	1.0	3347453
Carb. Alkalinity (calc. as CaCO3)	mg/L	<1.0		1.0	3347448	<1.0		1.0	3347448	2.6	1.0	3347448
Cation Sum	me/L	10.0		N/A	3347450	13.5		N/A	3347450	5.82	N/A	3347450
Chromium (+3)	mg/L	<0.001		0.001	3333541	<0.001		0.001	3333541			
Hardness (CaCO3)	mg/L	430		1.0	3347420	560		1.0	3347420	140	1.0	3347420
Ion Balance (% Difference)	%	0.0500		N/A	3347449	9.25		N/A	3347449	3.16	N/A	3347449
Langelier Index (@ 20C)	N/A	0.449			3347451	0.511			3347451	0.510		3347451
Langelier Index (@ 4C)	N/A	0.202			3347452	0.264			3347452	0.261		3347452
Nitrate (N)	mg/L	0.11		0.050	3347421	0.077		0.050	3347421	<0.050	0.050	3351081
Saturation pH (@ 20C)	N/A	6.73			3347451	6.60			3347451	7.54		3347451
Saturation pH (@ 4C)	N/A	6.98			3347452	6.85			3347452	7.79		3347452
Inorganics												
Total Alkalinity (Total as CaCO3)	mg/L	420		25	3348535	460		25	3348535	250	25	3348535
Carbonaceous BOD	mg/L	<5.0		5.0	3333592	<5.0		5.0	3333592			
Dissolved Chloride (Cl)	mg/L	30		1.0	3348540	38		1.0	3348540	24	1.0	3348540
Colour	TCU	8.6		5.0	3348552	13		5.0	3348552	<5.0	5.0	3348552
Strong Acid Dissoc. Cyanide (CN)	mg/L	<0.0010(1)		0.0010	3338556	<0.0010(1)		0.0010	3338556			
Nitrate + Nitrite	mg/L	0.11		0.050	3348558	0.10		0.050	3348558	<0.050	0.050	3348558
Nitrite (N)	mg/L	<0.010		0.010	3348559	0.028		0.010	3348559	<0.010	0.010	3348559
Nitrogen (Ammonia Nitrogen)	mg/L	0.35		0.050	3348772	0.38		0.050	3348772	<0.050	0.050	3348772
Total Organic Carbon (C)	mg/L	13		0.50	3351226	18	18	0.50	3351226	1.1	0.50	3351225
Orthophosphate (P)	mg/L	<0.010		0.010	3348555	<0.010		0.010	3348555	0.013	0.010	3348555
pH	pH	7.18	7.25	N/A	3350371	7.11		N/A	3350369	8.05	N/A	3350369
Phenols-4AAP	mg/L	0.0064		0.0010	3337223	0.0088		0.0010	3337223			
Reactive Silica (SiO2)	mg/L	14		0.50	3348543	15		0.50	3348543	8.1	0.50	3348543
Total Suspended Solids	mg/L	1.6		1.0	3335326	29		2.0	3335326			
Dissolved Sulphate (SO4)	mg/L	42		4.0	3348542	40		2.0	3348542	27	2.0	3348542
Sulphide	mg/L	<0.020		0.020	3335827	<0.020		0.020	3335827			
Turbidity	NTU	140		1.0	3350646	130	120	1.0	3350646	2.1	0.10	3350646

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) - The sample was decanted due to sediment.

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Maxxam Job #: B3E5248
Report Date: 2013/09/23

Conestoga-Rovers and Associates Ltd
Client Project #: 084308
Site Location: MONITORING AND MAINTENANCE/COME BY CHANCE
Your P.O. #: 20-016417
Sampler Initials: MM

RESULTS OF ANALYSES OF WATER

Maxxam ID		SW3523	SW3523			SW3524	SW3524			SW3525		
Sampling Date		2013/08/28 10:30	2013/08/28 10:30			2013/08/28 11:00	2013/08/28 11:00			2013/08/28 11:30		
	Units	**PLCS**	**PLCS Lab-Dup**	**RDL**	**QC Batch**	**SLCS**	**SLCS Lab-Dup**	**RDL**	**QC Batch**	**MW93-1**	**RDL**	**QC Batch**
Conductivity	uS/cm	820	820	1.0	3350373	950		1.0	3350370	540	1.0	3350370
Petroleum Hydrocarbons												
Total Oil & Grease	mg/L	<5.0		5.0	3337254	<5.0		5.0	3337254			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B3E5248
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Conestoga-Rovers and Associates Ltd
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Sampler Initials: MM

RESULTS OF ANALYSES OF WATER

Maxxam ID		SW3526			SW3527	SW3527		SW3528		
Sampling Date		2013/08/28 12:00			2013/08/28 12:30	2013/08/28 12:30		2013/08/28 13:00		
	Units	**MW93-1A**	**RDL**	**QC Batch**	**MW93-2**	**MW93-2 Lab-Dup**	**RDL**	**MW93-2A**	**RDL**	**QC Batch**
Calculated Parameters										
Anion Sum	me/L	7.23	N/A	3347450	6.33		N/A	1.72	N/A	3347450
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	300	1.0	3347448	220		1.0	14	1.0	3347448
Calculated TDS	mg/L	380	1.0	3347453	350		1.0	120	1.0	3347453
Carb. Alkalinity (calc. as CaCO3)	mg/L	2.8	1.0	3347448	1.3		1.0	<1.0	1.0	3347448
Cation Sum	me/L	7.05	N/A	3347450	5.97		N/A	1.87	N/A	3347450
Hardness (CaCO3)	mg/L	170	1.0	3347420	250		1.0	42	1.0	3347420
Ion Balance (% Difference)	%	1.26	N/A	3347449	2.93		N/A	4.18	N/A	3347449
Langelier Index (@ 20C)	N/A	0.650		3347451	0.591			-3.37		3347451
Langelier Index (@ 4C)	N/A	0.401		3347452	0.342			-3.62		3347452
Nitrate (N)	mg/L	<0.050	0.050	3347421	<0.050		0.050	<0.050	0.050	3347421
Saturation pH (@ 20C)	N/A	7.34		3347451	7.22			9.14		3347451
Saturation pH (@ 4C)	N/A	7.59		3347452	7.47			9.39		3347452
Inorganics										
Total Alkalinity (Total as CaCO3)	mg/L	310	25	3348535	220		25	14	5.0	3348535
Dissolved Chloride (Cl)	mg/L	11	1.0	3348540	19		1.0	22	1.0	3348540
Colour	TCU	<5.0	5.0	3348552	<5.0		5.0	65	25	3348552
Nitrate + Nitrite	mg/L	<0.050	0.050	3348558	<0.050		0.050	<0.050	0.050	3348558
Nitrite (N)	mg/L	<0.010	0.010	3348559	<0.010		0.010	<0.010	0.010	3348559
Nitrogen (Ammonia Nitrogen)	mg/L	<0.050	0.050	3348772	<0.050	<0.050	0.050	0.53	0.050	3348772
Total Organic Carbon (C)	mg/L	2.6(1)	2.5	3351225	1.0		0.50	16	0.50	3351225
Orthophosphate (P)	mg/L	<0.010	0.010	3348555	<0.010		0.010	<0.010	0.010	3348555
pH	pH	7.99	N/A	3350369	7.81		N/A	5.77	N/A	3350369
Reactive Silica (SiO2)	mg/L	6.3	0.50	3348543	18		0.50	6.4	0.50	3348543
Dissolved Sulphate (SO4)	mg/L	38	2.0	3348542	68		10	40	2.0	3348542
Turbidity	NTU	160	1.0	3350646	1.1		0.10	44	0.30	3350647
Conductivity	uS/cm	620	1.0	3350370	560		1.0	190	1.0	3350370

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) - Reporting limit was increased due to turbidity.

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Maxxam Job #: B3E5248
Report Date: 2013/09/23

Conestoga-Rovers and Associates Ltd
Client Project #: 084308
Site Location: MONITORING AND MAINTENANCE/COME BY CHANCE
Your P.O. #: 20-016417
Sampler Initials: MM

RESULTS OF ANALYSES OF WATER

Maxxam ID		SW3529		SW3530		SW3531			SW3532		
Sampling Date		2013/08/28 13:45		2013/08/28 14:15		2013/08/28 14:30			2013/08/28 15:00		
	Units	**MW10-1**	**RDL**	**MW10-1A**	**RDL**	**DUP-05**	**RDL**	**QC Batch**	**DUP-06**	**RDL**	**QC Batch**
Calculated Parameters											
Anion Sum	me/L	2.92	N/A	1.66	N/A	2.96	N/A	3347450	12.8	N/A	3347450
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	120	1.0	49	1.0	120	1.0	3347448	530	1.0	3347448
Calculated TDS	mg/L	160	1.0	100	1.0	160	1.0	3347453	710	1.0	3347453
Carb. Alkalinity (calc. as CaCO3)	mg/L	<1.0	1.0	<1.0	1.0	<1.0	1.0	3347448	<1.0	1.0	3347448
Cation Sum	me/L	2.89	N/A	1.61	N/A	2.91	N/A	3347450	14.2	N/A	3347450
Chromium (+3)	mg/L								<0.001	0.001	3333541
Hardness (CaCO3)	mg/L	130	1.0	68	1.0	130	1.0	3347420	580	1.0	3347420
Ion Balance (% Difference)	%	0.520	N/A	1.53	N/A	0.850	N/A	3347449	5.24	N/A	3347449
Langelier Index (@ 20C)	N/A	-0.202		-1.51		-0.192		3347451	0.487		3347451
Langelier Index (@ 4C)	N/A	-0.452		-1.76		-0.442		3347452	0.240		3347452
Nitrate (N)	mg/L	<0.050	0.050	0.068	0.050	<0.050	0.050	3347421	<0.050	0.050	3347421
Saturation pH (@ 20C)	N/A	7.64		8.29		7.63		3347451	6.53		3347451
Saturation pH (@ 4C)	N/A	7.89		8.54		7.88		3347452	6.78		3347452
Inorganics											
Total Alkalinity (Total as CaCO3)	mg/L	120	25	49	5.0	120	25	3348535	530	50	3348535
Carbonaceous BOD	mg/L								<5.0	5.0	3333592
Dissolved Chloride (Cl)	mg/L	5.4	1.0	5.7	1.0	5.8	1.0	3348540	42	1.0	3348540
Colour	TCU	<5.0	5.0	8.2	5.0	<5.0	5.0	3348552	12	5.0	3348552
Strong Acid Dissoc. Cyanide (CN)	mg/L								<0.0010(1)	0.0010	3338556
Nitrate + Nitrite	mg/L	<0.050	0.050	0.068	0.050	<0.050	0.050	3348558	<0.050	0.050	3348558
Nitrite (N)	mg/L	<0.010	0.010	<0.010	0.010	<0.010	0.010	3348559	<0.010	0.010	3348559
Nitrogen (Ammonia Nitrogen)	mg/L	<0.050	0.050	<0.050	0.050	<0.050	0.050	3348772	0.53	0.050	3348772
Total Organic Carbon (C)	mg/L	3.0	0.50	34(2)	5.0	3.1	0.50	3351225	19(3)	2.5	3351226
Orthophosphate (P)	mg/L	<0.010	0.010	<0.010	0.010	<0.010	0.010	3348555	<0.010	0.010	3348555
pH	pH	7.44	N/A	6.78	N/A	7.44	N/A	3350371	7.02	N/A	3350371
Phenols-4AAP	mg/L								0.0086	0.0010	3337223
Reactive Silica (SiO2)	mg/L	6.9	0.50	11	0.50	7.0	0.50	3348543	16	0.50	3348543
Total Suspended Solids	mg/L								28	2.0	3335326
Dissolved Sulphate (SO4)	mg/L	17	2.0	24	2.0	18	2.0	3348542	43	10	3348542

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) - The sample was decanted due to sediment.
(2) - Reporting limit was increased due to turbidity.
(3) - Elevated reporting limit due to sample matrix.

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Maxxam Job #: B3E5248
Report Date: 2013/09/23

Conestoga-Rovers and Associates Ltd
Client Project #: 084308
Site Location: MONITORING AND MAINTENANCE/COME BY CHANCE
Your P.O. #: 20-016417
Sampler Initials: MM

RESULTS OF ANALYSES OF WATER

Maxxam ID		SW3529		SW3530		SW3531			SW3532		
Sampling Date		2013/08/28 13:45		2013/08/28 14:15		2013/08/28 14:30			2013/08/28 15:00		
	Units	**MW10-1**	**RDL**	**MW10-1A**	**RDL**	**DUP-05**	**RDL**	**QC Batch**	**DUP-06**	**RDL**	**QC Batch**
Sulphide	mg/L								<0.020	0.020	3335827
Turbidity	NTU	110	0.30	>1000	10	110	0.30	3350647	220	1.0	3350647
Conductivity	uS/cm	270	1.0	160	1.0	280	1.0	3350373	1100	1.0	3350373
Petroleum Hydrocarbons											
Total Oil & Grease	mg/L								<5.0	5.0	3337254

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B3E5248
Report Date: 2013/09/23

Conestoga-Rovers and Associates Ltd
Client Project #: 084308
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Your P.O. #: 20-016417
Sampler Initials: MM

RESULTS OF ANALYSES OF WATER

Maxxam ID		SW3532		SW3578		SW3579	SW3579		
Sampling Date		2013/08/28 15:00		2013/08/28 15:30		2013/08/28 16:00	2013/08/28 16:00		
	Units	**DUP-06 Lab-Dup**	**RDL**	**SURFACE UP**	**QC Batch**	**SURFACE DOWN**	**SURFACE DOWN Lab-Dup**	**RDL**	**QC Batch**
Calculated Parameters									
Anion Sum	me/L		N/A	0.640	3347450	0.690		N/A	3347450
Bicarb. Alkalinity (calc. as CaCO3)	mg/L		1.0	11	3347448	12		1.0	3347448
Calculated TDS	mg/L		1.0	39	3347453	41		1.0	3347453
Carb. Alkalinity (calc. as CaCO3)	mg/L		1.0	<1.0	3347448	<1.0		1.0	3347448
Cation Sum	me/L		N/A	0.740	3347450	0.740		N/A	3347450
Chromium (+3)	mg/L		0.001	<0.001	3333541	<0.001		0.001	3333541
Hardness (CaCO3)	mg/L		1.0	15	3347420	16		1.0	3347420
Ion Balance (% Difference)	%		N/A	7.25	3347449	3.50		N/A	3347449
Langelier Index (@ 20C)	N/A			-2.82	3347451	-2.57			3347451
Langelier Index (@ 4C)	N/A			-3.07	3347452	-2.82			3347452
Nitrate (N)	mg/L		0.050	<0.050	3347421	<0.050		0.050	3347421
Saturation pH (@ 20C)	N/A			9.61	3347451	9.56			3347451
Saturation pH (@ 4C)	N/A			9.86	3347452	9.81			3347452
Inorganics									
Total Alkalinity (Total as CaCO3)	mg/L		50	11	3348535	12	12	5.0	3348535
Dissolved Chloride (Cl)	mg/L		1.0	12	3348540	13	13	1.0	3348540
Colour	TCU		5.0	65	3348552	71	63	25	3348552
Nitrate + Nitrite	mg/L		0.050	<0.050	3348558	<0.050	<0.050	0.050	3348558
Nitrite (N)	mg/L		0.010	<0.010	3348559	<0.010	<0.010	0.010	3348559
Nitrogen (Ammonia Nitrogen)	mg/L		0.050	<0.050	3348772	<0.050		0.050	3348772
Total Organic Carbon (C)	mg/L		2.5	8.2	3351226	7.9		0.50	3351226
Orthophosphate (P)	mg/L		0.010	<0.010	3348555	<0.010	<0.010	0.010	3348555
pH	pH		N/A	6.79	3350371	6.99	7.02	N/A	3350374
Reactive Silica (SiO2)	mg/L		0.50	1.5	3348543	1.6	1.6	0.50	3348543
Dissolved Sulphate (SO4)	mg/L		10	3.2	3348542	3.5	3.5	2.0	3348542
Turbidity	NTU		1.0	1.6	3350647	0.77		0.10	3350647
Conductivity	uS/cm		1.0	72	3350373	76	76	1.0	3350375
Petroleum Hydrocarbons									
Total Oil & Grease	mg/L	<5.0	5.0		3337254				

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B3E5248
Report Date: 2013/09/23

Conestoga-Rovers and Associates Ltd
Client Project #: 084308
Site Location: MONITORING AND MAINTENANCE/COME BY CHANCE
Your P.O. #: 20-016417
Sampler Initials: MM

MERCURY BY COLD VAPOUR AA (WATER)

Maxxam ID		SW3523	SW3524	SW3532		
Sampling Date		2013/08/28 10:30	2013/08/28 11:00	2013/08/28 15:00		
	Units	**PLCS**	**SLCS**	**DUP-06**	**RDL**	**QC Batch**
Metals						
Total Mercury (Hg)	ug/L	<0.013	<0.013	<0.013	0.013	3345081

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B3E5248
Report Date: 2013/09/23

Conestoga-Rovers and Associates Ltd
Client Project #: 084308
Site Location: MONITORING AND MAINTENANCE/COME BY CHANCE
Your P.O. #: 20-016417
Sampler Initials: MM

ELEMENTS BY ICP/MS (WATER)

Maxxam ID		SW3523		SW3524	SW3525	SW3526	SW3527	SW3528	SW3529		
Sampling Date		2013/08/28 10:30		2013/08/28 11:00	2013/08/28 11:30	2013/08/28 12:00	2013/08/28 12:30	2013/08/28 13:00	2013/08/28 13:45		
	Units	**PLCS**	**QC Batch**	**SLCS**	**MW93-1**	**MW93-1A**	**MW93-2**	**MW93-2A**	**MW10-1**	**RDL**	**QC Batch**
Metals											
Dissolved Aluminum (Al)	ug/L				8.3	10	5.4	290	30	5.0	3335297
Total Aluminum (Al)	ug/L	18	3357008	22						5.0	3340125
Dissolved Antimony (Sb)	ug/L				<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3335297
Total Antimony (Sb)	ug/L	<1.0	3357008	<1.0						1.0	3340125
Dissolved Arsenic (As)	ug/L				<1.0	<1.0	1.9	<1.0	<1.0	1.0	3335297
Total Arsenic (As)	ug/L	<1.0	3357008	<1.0						1.0	3340125
Dissolved Barium (Ba)	ug/L				100	83	170	48	38	1.0	3335297
Total Barium (Ba)	ug/L	85	3357008	98						1.0	3340125
Dissolved Beryllium (Be)	ug/L				<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3335297
Total Beryllium (Be)	ug/L	<1.0	3357008	<1.0						1.0	3340125
Dissolved Bismuth (Bi)	ug/L				<2.0	<2.0	<2.0	<2.0	<2.0	2.0	3335297
Total Bismuth (Bi)	ug/L	<2.0	3357008	<2.0						2.0	3340125
Dissolved Boron (B)	ug/L				110	69	1100	<50	<50	50	3335297
Total Boron (B)	ug/L	1700	3357008	2300						50	3340125
Dissolved Cadmium (Cd)	ug/L				0.044	<0.010	<0.010	0.32	0.037	0.010	3335297
Total Cadmium (Cd)	ug/L	0.012	3357008	<0.010						0.010	3340125
Dissolved Calcium (Ca)	ug/L				31000	42000	75000	11000	45000	100	3335297
Total Calcium (Ca)	ug/L	130000	3357008	170000						100	3340125
Dissolved Chromium (Cr)	ug/L				<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3335297
Total Chromium (Cr)	ug/L	<1.0	3357008	<1.0						1.0	3340125
Dissolved Cobalt (Co)	ug/L				<0.40	1.0	<0.40	0.93	0.41	0.40	3335297
Total Cobalt (Co)	ug/L	<0.40	3357008	0.61						0.40	3340125
Dissolved Copper (Cu)	ug/L				<2.0	<2.0	<2.0	<2.0	5.8	2.0	3335297
Total Copper (Cu)	ug/L	<2.0	3357008	<2.0						2.0	3340125
Dissolved Iron (Fe)	ug/L				570	530	57	12000	84	50	3335297
Total Iron (Fe)	ug/L	12000	3357008	22000						50	3340125
Dissolved Lead (Pb)	ug/L				<0.50	<0.50	<0.50	1.0	<0.50	0.50	3335297
Total Lead (Pb)	ug/L	<0.50	3357008	<0.50						0.50	3340125
Dissolved Magnesium (Mg)	ug/L				15000	17000	15000	3300	4100	100	3335297
Total Magnesium (Mg)	ug/L	23000	3357008	34000						100	3340125
Dissolved Manganese (Mn)	ug/L				110	160	980	5000	27	2.0	3335297
Total Manganese (Mn)	ug/L	5700	3357008	9300						2.0	3340125
Dissolved Molybdenum (Mo)	ug/L				15	16	<2.0	<2.0	<2.0	2.0	3335297

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B3E5248
Report Date: 2013/09/23

Conestoga-Rovers and Associates Ltd
Client Project #: 084308
Site Location: MONITORING AND MAINTENANCE/COME BY CHANCE
Your P.O. #: 20-016417
Sampler Initials: MM

ELEMENTS BY ICP/MS (WATER)

Maxxam ID		SW3523		SW3524	SW3525	SW3526	SW3527	SW3528	SW3529		
Sampling Date		2013/08/28 10:30		2013/08/28 11:00	2013/08/28 11:30	2013/08/28 12:00	2013/08/28 12:30	2013/08/28 13:00	2013/08/28 13:45		
	Units	**PLCS**	**QC Batch**	**SLCS**	**MW93-1**	**MW93-1A**	**MW93-2**	**MW93-2A**	**MW10-1**	**RDL**	**QC Batch**
Total Molybdenum (Mo)	ug/L	<2.0	3357008	<2.0						2.0	3340125
Dissolved Nickel (Ni)	ug/L				<2.0	<2.0	<2.0	<2.0	2.0	2.0	3335297
Total Nickel (Ni)	ug/L	<2.0	3357008	<2.0						2.0	3340125
Dissolved Phosphorus (P)	ug/L				<100	<100	<100	<100	<100	100	3335297
Total Phosphorus (P)	ug/L	<100	3357008	<100						100	3340125
Dissolved Potassium (K)	ug/L				1800	2700	1300	1300	1200	100	3335297
Total Potassium (K)	ug/L	6100	3357008	9100						100	3340125
Dissolved Selenium (Se)	ug/L				<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3335297
Total Selenium (Se)	ug/L	<1.0	3357008	<1.0						1.0	3340125
Dissolved Silver (Ag)	ug/L				<0.10	<0.10	<0.10	<0.10	<0.10	0.10	3335297
Total Silver (Ag)	ug/L	<0.10	3357008	<0.10						0.10	3340125
Dissolved Sodium (Na)	ug/L				69000	80000	22000	12000	6600	100	3335297
Total Sodium (Na)	ug/L	19000	3357008	26000						100	3340125
Dissolved Strontium (Sr)	ug/L				240	280	220	52	98	2.0	3335297
Total Strontium (Sr)	ug/L	300	3357008	430						2.0	3340125
Dissolved Thallium (Tl)	ug/L				<0.10	<0.10	<0.10	<0.10	<0.10	0.10	3335297
Total Thallium (Tl)	ug/L	<0.10	3357008	<0.10						0.10	3340125
Dissolved Tin (Sn)	ug/L				<2.0	<2.0	<2.0	<2.0	<2.0	2.0	3335297
Total Tin (Sn)	ug/L	<2.0	3357008	<2.0						2.0	3340125
Dissolved Titanium (Ti)	ug/L				<2.0	<2.0	<2.0	2.2	<2.0	2.0	3335297
Total Titanium (Ti)	ug/L	<2.0	3357008	<2.0						2.0	3340125
Dissolved Uranium (U)	ug/L				0.16	2.3	0.26	<0.10	0.29	0.10	3335297
Total Uranium (U)	ug/L	0.66	3357008	1.2						0.10	3340125
Dissolved Vanadium (V)	ug/L				<2.0	<2.0	<2.0	<2.0	<2.0	2.0	3335297
Total Vanadium (V)	ug/L	<2.0	3357008	<2.0						2.0	3340125
Dissolved Zinc (Zn)	ug/L				12	<5.0	<5.0	190	8.2	5.0	3335297
Total Zinc (Zn)	ug/L	<5.0	3357008	16						5.0	3340125

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B3E5248
Report Date: 2013/09/23

Conestoga-Rovers and Associates Ltd
Client Project #: 084308
Site Location: MONITORING AND MAINTENANCE/COME BY CHANCE
Your P.O. #: 20-016417
Sampler Initials: MM

ELEMENTS BY ICP/MS (WATER)

Maxxam ID		SW3529	SW3530	SW3531	SW3532	SW3578	SW3579		
Sampling Date		2013/08/28 13:45	2013/08/28 14:15	2013/08/28 14:30	2013/08/28 15:00	2013/08/28 15:30	2013/08/28 16:00		
	Units	**MW10-1 Lab-Dup**	**MW10-1A**	**DUP-05**	**DUP-06**	**SURFACE UP**	**SURFACE DOWN**	**RDL**	**QC Batch**
Metals									
Dissolved Aluminum (Al)	ug/L	28	58	26				5.0	3335297
Total Aluminum (Al)	ug/L				28	86	83	5.0	3340125
Dissolved Antimony (Sb)	ug/L	<1.0	<1.0	<1.0				1.0	3335297
Total Antimony (Sb)	ug/L				<1.0	<1.0	<1.0	1.0	3340125
Dissolved Arsenic (As)	ug/L	<1.0	<1.0	<1.0				1.0	3335297
Total Arsenic (As)	ug/L				1.1	<1.0	<1.0	1.0	3340125
Dissolved Barium (Ba)	ug/L	39	35	38				1.0	3335297
Total Barium (Ba)	ug/L				110	9.1	8.6	1.0	3340125
Dissolved Beryllium (Be)	ug/L	<1.0	<1.0	<1.0				1.0	3335297
Total Beryllium (Be)	ug/L				<1.0	<1.0	<1.0	1.0	3340125
Dissolved Bismuth (Bi)	ug/L	<2.0	<2.0	<2.0				2.0	3335297
Total Bismuth (Bi)	ug/L				<2.0	<2.0	<2.0	2.0	3340125
Dissolved Boron (B)	ug/L	<50	<50	<50				50	3335297
Total Boron (B)	ug/L				2400	<50	<50	50	3340125
Dissolved Cadmium (Cd)	ug/L	0.034	0.033	0.053				0.010	3335297
Total Cadmium (Cd)	ug/L				<0.010	<0.010	<0.010	0.010	3340125
Dissolved Calcium (Ca)	ug/L	44000	23000	45000				100	3335297
Total Calcium (Ca)	ug/L				180000	4500	4500	100	3340125
Dissolved Chromium (Cr)	ug/L	<1.0	<1.0	<1.0				1.0	3335297
Total Chromium (Cr)	ug/L				<1.0	<1.0	<1.0	1.0	3340125
Dissolved Cobalt (Co)	ug/L	0.41	12	<0.40				0.40	3335297
Total Cobalt (Co)	ug/L				0.47	<0.40	<0.40	0.40	3340125
Dissolved Copper (Cu)	ug/L	5.7	11	6.0				2.0	3335297
Total Copper (Cu)	ug/L				<2.0	<2.0	<2.0	2.0	3340125
Dissolved Iron (Fe)	ug/L	89	560	<50				50	3335297
Total Iron (Fe)	ug/L				27000	530	440	50	3340125
Dissolved Lead (Pb)	ug/L	<0.50	<0.50	<0.50				0.50	3335297
Total Lead (Pb)	ug/L				<0.50	<0.50	<0.50	0.50	3340125
Dissolved Magnesium (Mg)	ug/L	4100	2500	4000				100	3335297
Total Magnesium (Mg)	ug/L				35000	1000	1100	100	3340125
Dissolved Manganese (Mn)	ug/L	28	860	26				2.0	3335297
Total Manganese (Mn)	ug/L				9500	110	66	2.0	3340125
Dissolved Molybdenum (Mo)	ug/L	<2.0	3.2	<2.0				2.0	3335297

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B3E5248
Report Date: 2013/09/23

Conestoga-Rovers and Associates Ltd
Client Project #: 084308
Site Location: MONITORING AND MAINTENANCE/COME BY CHANCE
Your P.O. #: 20-016417
Sampler Initials: MM

ELEMENTS BY ICP/MS (WATER)

Maxxam ID		SW3529	SW3530	SW3531	SW3532	SW3578	SW3579		
Sampling Date		2013/08/28 13:45	2013/08/28 14:15	2013/08/28 14:30	2013/08/28 15:00	2013/08/28 15:30	2013/08/28 16:00		
	Units	**MW10-1 Lab-Dup**	**MW10-1A**	**DUP-05**	**DUP-06**	**SURFACE UP**	**SURFACE DOWN**	**RDL**	**QC Batch**
Total Molybdenum (Mo)	ug/L				<2.0	<2.0	<2.0	2.0	3340125
Dissolved Nickel (Ni)	ug/L	<2.0	11	2.1				2.0	3335297
Total Nickel (Ni)	ug/L				<2.0	<2.0	<2.0	2.0	3340125
Dissolved Phosphorus (P)	ug/L	<100	<100	<100				100	3335297
Total Phosphorus (P)	ug/L				<100	<100	<100	100	3340125
Dissolved Potassium (K)	ug/L	1300	720	1300				100	3335297
Total Potassium (K)	ug/L				10000	310	320	100	3340125
Dissolved Selenium (Se)	ug/L	<1.0	<1.0	<1.0				1.0	3335297
Total Selenium (Se)	ug/L				<1.0	<1.0	<1.0	1.0	3340125
Dissolved Silver (Ag)	ug/L	<0.10	0.15	<0.10				0.10	3335297
Total Silver (Ag)	ug/L				<0.10	<0.10	<0.10	0.10	3340125
Dissolved Sodium (Na)	ug/L	6500	5100	6600				100	3335297
Total Sodium (Na)	ug/L				28000	9300	9100	100	3340125
Dissolved Strontium (Sr)	ug/L	98	56	98				2.0	3335297
Total Strontium (Sr)	ug/L				450	16	17	2.0	3340125
Dissolved Thallium (Tl)	ug/L	<0.10	<0.10	<0.10				0.10	3335297
Total Thallium (Tl)	ug/L				<0.10	<0.10	<0.10	0.10	3340125
Dissolved Tin (Sn)	ug/L	<2.0	<2.0	<2.0				2.0	3335297
Total Tin (Sn)	ug/L				<2.0	<2.0	<2.0	2.0	3340125
Dissolved Titanium (Ti)	ug/L	<2.0	<2.0	<2.0				2.0	3335297
Total Titanium (Ti)	ug/L				2.5	2.0	2.5	2.0	3340125
Dissolved Uranium (U)	ug/L	0.26	<0.10	0.29				0.10	3335297
Total Uranium (U)	ug/L				1.1	<0.10	<0.10	0.10	3340125
Dissolved Vanadium (V)	ug/L	<2.0	<2.0	<2.0				2.0	3335297
Total Vanadium (V)	ug/L				<2.0	<2.0	<2.0	2.0	3340125
Dissolved Zinc (Zn)	ug/L	8.5	6.9	11				5.0	3335297
Total Zinc (Zn)	ug/L				180	<5.0	<5.0	5.0	3340125

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B3E5248
Report Date: 2013/09/23

Conestoga-Rovers and Associates Ltd
Client Project #: 084308
Site Location: MONITORING AND MAINTENANCE/COME BY CHANCE
Your P.O. #: 20-016417
Sampler Initials: MM

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		SW3523	SW3524		SW3532	SW3578		SW3579		
Sampling Date		2013/08/28 10:30	2013/08/28 11:00		2013/08/28 15:00	2013/08/28 15:30		2013/08/28 16:00		
	Units	**PLCS**	**SLCS**	**QC Batch**	**DUP-06**	**SURFACE UP**	**QC Batch**	**SURFACE DOWN**	**RDL**	**QC Batch**
Metals										
Chromium (VI)	ug/L	0.58	<0.50	3338536	<0.50	0.61	3341644	0.68	0.50	3341639

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B3E5248
Report Date: 2013/09/23

Conestoga-Rovers and Associates Ltd
Client Project #: 084308
Site Location: MONITORING AND MAINTENANCE/COME BY CHANCE
Your P.O. #: 20-016417
Sampler Initials: MM

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		SW3523		SW3524		SW3525	SW3526	SW3527	SW3528	SW3529		
Sampling Date		2013/08/28 10:30		2013/08/28 11:00		2013/08/28 11:30	2013/08/28 12:00	2013/08/28 12:30	2013/08/28 13:00	2013/08/28 13:45		
	Units	**PLCS**	**RDL**	**SLCS**	**RDL**	**MW93-1**	**MW93-1A**	**MW93-2**	**MW93-2A**	**MW10-1**	**RDL**	**QC Batch**
Polyaromatic Hydrocarbons												
1-Methylnaphthalene	ug/L	<0.050	0.050	<0.050	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	3337236
2-Methylnaphthalene	ug/L	<0.050	0.050	<0.050	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	3337236
Acenaphthene	ug/L	<0.010	0.010	0.014	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	3337236
Acenaphthylene	ug/L	<0.010	0.010	<0.010	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	3337236
Anthracene	ug/L	<0.010	0.010	<0.060(1)	0.060	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	3337236
Benzo(a)anthracene	ug/L	<0.010	0.010	0.050	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	3337236
Benzo(a)pyrene	ug/L	<0.010	0.010	<0.010	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	3337236
Benzo(b)fluoranthene	ug/L	<0.010	0.010	<0.010	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	3337236
Benzo(g,h,i)perylene	ug/L	<0.010	0.010	<0.010	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	3337236
Benzo(j)fluoranthene	ug/L	<0.010	0.010	<0.010	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	3337236
Benzo(k)fluoranthene	ug/L	<0.010	0.010	<0.010	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	3337236
Chrysene	ug/L	<0.010	0.010	0.085	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	3337236
Dibenz(a,h)anthracene	ug/L	<0.010	0.010	<0.010	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	3337236
Fluoranthene	ug/L	0.011	0.010	0.24	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	3337236
Fluorene	ug/L	<0.010	0.010	<0.020(1)	0.020	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	3337236
Indeno(1,2,3-cd)pyrene	ug/L	<0.010	0.010	<0.010	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	3337236
Naphthalene	ug/L	<0.20	0.20	<0.20	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	3337236
Perylene	ug/L	<0.010	0.010	<0.010	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	3337236
Phenanthrene	ug/L	<0.010	0.010	<0.010	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	3337236
Pyrene	ug/L	0.052	0.010	1.3	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	3337236
Surrogate Recovery (%)												
D10-Anthracene	%	98		90		96	96	98	85	94		3337236
D14-Terphenyl	%	101		98(2)		97	95(2)	99	89(2)	97(2)		3337236
D8-Acenaphthylene	%	96		95		97	96	99	89	92		3337236

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) - Elevated PAH RDL(s) due to matrix / co-extractive interference.
(2) - PAH sample contained sediment.

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Maxxam Job #: B3E5248
Report Date: 2013/09/23

Conestoga-Rovers and Associates Ltd
Client Project #: 084308
Site Location: MONITORING AND MAINTENANCE/COME BY CHANCE
Your P.O. #: 20-016417
Sampler Initials: MM

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		SW3530	SW3531		SW3532		SW3578	SW3579		
Sampling Date		2013/08/28 14:15	2013/08/28 14:30		2013/08/28 15:00		2013/08/28 15:30	2013/08/28 16:00		
	Units	**MW10-1A**	**DUP-05**	**RDL**	**DUP-06**	**RDL**	**SURFACE UP**	**SURFACE DOWN**	**RDL**	**QC Batch**
Polyaromatic Hydrocarbons										
1-Methylnaphthalene	ug/L	<0.050	<0.050	0.050	<0.050	0.050	<0.050	<0.050	0.050	3337236
2-Methylnaphthalene	ug/L	<0.050	<0.050	0.050	<0.050	0.050	<0.050	<0.050	0.050	3337236
Acenaphthene	ug/L	<0.010	<0.010	0.010	0.017	0.010	<0.010	<0.010	0.010	3337236
Acenaphthylene	ug/L	<0.010	<0.010	0.010	<0.020(1)	0.020	<0.010	<0.010	0.010	3337236
Anthracene	ug/L	<0.010	<0.010	0.010	<0.15(1)	0.15	<0.010	<0.010	0.010	3337236
Benzo(a)anthracene	ug/L	<0.010	<0.010	0.010	0.062	0.010	<0.010	<0.010	0.010	3337236
Benzo(a)pyrene	ug/L	<0.010	<0.010	0.010	<0.010	0.010	<0.010	<0.010	0.010	3337236
Benzo(b)fluoranthene	ug/L	<0.010	<0.010	0.010	<0.010	0.010	<0.010	<0.010	0.010	3337236
Benzo(g,h,i)perylene	ug/L	<0.010	<0.010	0.010	<0.010	0.010	<0.010	<0.010	0.010	3337236
Benzo(j)fluoranthene	ug/L	<0.010	<0.010	0.010	<0.010	0.010	<0.010	<0.010	0.010	3337236
Benzo(k)fluoranthene	ug/L	<0.010	<0.010	0.010	<0.010	0.010	<0.010	<0.010	0.010	3337236
Chrysene	ug/L	<0.010	<0.010	0.010	0.11	0.010	<0.010	<0.010	0.010	3337236
Dibenz(a,h)anthracene	ug/L	<0.010	<0.010	0.010	<0.010	0.010	<0.010	<0.010	0.010	3337236
Fluoranthene	ug/L	<0.010	<0.010	0.010	0.29	0.010	<0.010	<0.010	0.010	3337236
Fluorene	ug/L	<0.010	<0.010	0.010	<0.040(1)	0.040	<0.010	<0.010	0.010	3337236
Indeno(1,2,3-cd)pyrene	ug/L	<0.010	<0.010	0.010	<0.010	0.010	<0.010	<0.010	0.010	3337236
Naphthalene	ug/L	<0.20	<0.20	0.20	<0.20	0.20	<0.20	<0.20	0.20	3337236
Perylene	ug/L	0.019	<0.010	0.010	<0.010	0.010	<0.010	<0.010	0.010	3337236
Phenanthrene	ug/L	0.013	<0.010	0.010	<0.040(1)	0.040	<0.010	<0.010	0.010	3337236
Pyrene	ug/L	<0.010	<0.010	0.010	1.7	0.010	<0.010	<0.010	0.010	3337236
Surrogate Recovery (%)										
D10-Anthracene	%	84	91		92		95	95		3337236
D14-Terphenyl	%	88(2)	95(2)		96(2)		93	96		3337236
D8-Acenaphthylene	%	91	93		98		92	91		3337236

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) - Elevated PAH RDL(s) due to matrix / co-extractive interference.
(2) - PAH sample contained sediment.

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Maxxam Job #: B3E5248
Report Date: 2013/09/23

Conestoga-Rovers and Associates Ltd
Client Project #: 084308
Site Location: MONITORING AND MAINTENANCE/COME BY CHANCE
Your P.O. #: 20-016417
Sampler Initials: MM

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		SW3523	SW3523	SW3524	SW3525	SW3526	SW3527	SW3528		
Sampling Date		2013/08/28 10:30	2013/08/28 10:30	2013/08/28 11:00	2013/08/28 11:30	2013/08/28 12:00	2013/08/28 12:30	2013/08/28 13:00		
	Units	**PLCS**	**PLCS Lab-Dup**	**SLCS**	**MW93-1**	**MW93-1A**	**MW93-2**	**MW93-2A**	**RDL**	**QC Batch**
Chlorobenzenes										
1,2-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	3340089
1,3-Dichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3340089
1,4-Dichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3340089
Chlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3340089

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		SW3523	SW3523	SW3524	SW3525	SW3526	SW3527	SW3528		
Sampling Date		2013/08/28 10:30	2013/08/28 10:30	2013/08/28 11:00	2013/08/28 11:30	2013/08/28 12:00	2013/08/28 12:30	2013/08/28 13:00		
	Units	**PLCS**	**PLCS Lab-Dup**	**SLCS**	**MW93-1**	**MW93-1A**	**MW93-2**	**MW93-2A**	**RDL**	**QC Batch**
Volatile Organics										
1,1,1-Trichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3340089
1,1,2,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	3340089
1,1,2-Trichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3340089
1,1-Dichloroethane	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	3340089
1,1-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	3340089
1,2-Dichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3340089
1,2-Dichloropropane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	3340089
Benzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3340089
Bromodichloromethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3340089
Bromoform	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3340089
Bromomethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	3340089
Carbon Tetrachloride	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	3340089
Chloroethane	ug/L	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	8.0	3340089
Chloroform	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3340089
Chloromethane	ug/L	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	8.0	3340089
cis-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	3340089
cis-1,3-Dichloropropene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	3340089
Dibromochloromethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3340089
Ethylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3340089
Ethylene Dibromide	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	3340089
Methylene Chloride(Dichloromethane)	ug/L	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	3.0	3340089
o-Xylene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3340089
p+m-Xylene	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	3340089
Styrene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3340089
Tetrachloroethylene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3340089
Toluene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3340089
trans-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	3340089
trans-1,3-Dichloropropene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	3340089
Trichloroethylene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3340089
Trichlorofluoromethane (FREON 11)	ug/L	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	8.0	3340089
Vinyl Chloride	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	3340089

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		SW3523	SW3523	SW3524	SW3525	SW3526	SW3527	SW3528		
Sampling Date		2013/08/28 10:30	2013/08/28 10:30	2013/08/28 11:00	2013/08/28 11:30	2013/08/28 12:00	2013/08/28 12:30	2013/08/28 13:00		
	Units	**PLCS**	**PLCS Lab-Dup**	**SLCS**	**MW93-1**	**MW93-1A**	**MW93-2**	**MW93-2A**	**RDL**	**QC Batch**
Surrogate Recovery (%)										
4-Bromofluorobenzene	%	99	100	99	100	99	99	99		3340089
D4-1,2-Dichloroethane	%	103	100	101	100	99	100	101		3340089
D8-Toluene	%	99	99	99	99	100	100	99		3340089

RDL = Reportable Detection Limit
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VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		SW3529	SW3530	SW3531	SW3532	SW3578	SW3579		
Sampling Date		2013/08/28 13:45	2013/08/28 14:15	2013/08/28 14:30	2013/08/28 15:00	2013/08/28 15:30	2013/08/28 16:00		
	Units	**MW10-1**	**MW10-1A**	**DUP-05**	**DUP-06**	**SURFACE UP**	**SURFACE DOWN**	**RDL**	**QC Batch**
Chlorobenzenes									
1,2-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	3340089
1,3-Dichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3340089
1,4-Dichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3340089
Chlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3340089

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		SW3529	SW3530	SW3531	SW3532	SW3578	SW3579		
Sampling Date		2013/08/28 13:45	2013/08/28 14:15	2013/08/28 14:30	2013/08/28 15:00	2013/08/28 15:30	2013/08/28 16:00		
	Units	**MW10-1**	**MW10-1A**	**DUP-05**	**DUP-06**	**SURFACE UP**	**SURFACE DOWN**	**RDL**	**QC Batch**
Volatile Organics									
1,1,1-Trichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3340089
1,1,2,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	3340089
1,1,2-Trichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3340089
1,1-Dichloroethane	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	3340089
1,1-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	3340089
1,2-Dichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3340089
1,2-Dichloropropane	ug/L	3.8	7.1	3.6	<0.50	<0.50	<0.50	0.50	3340089
Benzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3340089
Bromodichloromethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3340089
Bromoform	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3340089
Bromomethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	3340089
Carbon Tetrachloride	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	3340089
Chloroethane	ug/L	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	8.0	3340089
Chloroform	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3340089
Chloromethane	ug/L	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	8.0	3340089
cis-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	3340089
cis-1,3-Dichloropropene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	3340089
Dibromochloromethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3340089
Ethylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3340089
Ethylene Dibromide	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	3340089
Methylene Chloride(Dichloromethane)	ug/L	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	3.0	3340089
o-Xylene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3340089
p+m-Xylene	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	3340089
Styrene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3340089
Tetrachloroethylene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3340089
Toluene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3340089
trans-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	3340089
trans-1,3-Dichloropropene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	3340089
Trichloroethylene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3340089
Trichlorofluoromethane (FREON 11)	ug/L	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	8.0	3340089
Vinyl Chloride	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	3340089

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B3E5248
Report Date: 2013/09/23

Conestoga-Rovers and Associates Ltd
Client Project #: 084308
Site Location: MONITORING AND MAINTENANCE/COME BY CHANCE
Your P.O. #: 20-016417
Sampler Initials: MM

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		SW3529	SW3530	SW3531	SW3532	SW3578	SW3579		
Sampling Date		2013/08/28 13:45	2013/08/28 14:15	2013/08/28 14:30	2013/08/28 15:00	2013/08/28 15:30	2013/08/28 16:00		
	Units	**MW10-1**	**MW10-1A**	**DUP-05**	**DUP-06**	**SURFACE UP**	**SURFACE DOWN**	**RDL**	**QC Batch**
Surrogate Recovery (%)									
4-Bromofluorobenzene	%	100	98(1)	99	98	99	100		3340089
D4-1,2-Dichloroethane	%	101	100	98	105	101	101		3340089
D8-Toluene	%	100	100	100	100	100	100		3340089

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

Maxxam ID		SW3523	SW3524	SW3525	SW3526	SW3527	SW3528		
Sampling Date		2013/08/28 10:30	2013/08/28 11:00	2013/08/28 11:30	2013/08/28 12:00	2013/08/28 12:30	2013/08/28 13:00		
	Units	**PLCS**	**SLCS**	**MW93-1**	**MW93-1A**	**MW93-2**	**MW93-2A**	**RDL**	**QC Batch**
PCBs									
Total PCB	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	3336990
Surrogate Recovery (%)									
Decachlorobiphenyl	%	86	76(2)	64	77(3)	92	68		3336990

Maxxam ID		SW3529	SW3530	SW3531	SW3532	SW3578	SW3579		
Sampling Date		2013/08/28 13:45	2013/08/28 14:15	2013/08/28 14:30	2013/08/28 15:00	2013/08/28 15:30	2013/08/28 16:00		
	Units	**MW10-1**	**MW10-1A**	**DUP-05**	**DUP-06**	**SURFACE UP**	**SURFACE DOWN**	**RDL**	**QC Batch**
PCBs									
Total PCB	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	3343659
Surrogate Recovery (%)									
Decachlorobiphenyl	%	92(3)	57(3)	65(4)	46(4)	77	77		3343659

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) - VOC sample contained sediment.
(2) - PCB:Unidentified (possibly halogenated) compounds detected.
(3) - PCB sample contained sediment.
(4) - PCB sample contained sediment. PCB:Unidentified (possibly halogenated) compounds detected.

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Maxxam Job #: B3E5248
Report Date: 2013/09/23

Conestoga-Rovers and Associates Ltd
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Package 1	3.0°C

Each temperature is the average of up to three cooler temperatures taken at receipt

GENERAL COMMENTS

Revised report: Revised to report full RCAp-MS for all samples as per client request. 09/16/2013

Sample SW3523-01: Total/Dissolved Chromium < Hexavalent Chromium: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.

The metals total water digest was completed using an aliquot from the RCAp bottle.

Sample SW3524-01: Poor RCAp Ion Balance due to sample matrix. Excess cations due to presence of turbidity.

Sample SW3532-01: Poor RCAp Ion Balance due to sample matrix. Excess cations due to presence of turbidity.

Sample SW3578-01: Total/Dissolved Chromium < Hexavalent Chromium: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.

RCAp Ion Balance acceptable. Anion/cation agreement within 0.2 meq/L.

Sample SW3579-01: Total/Dissolved Chromium < Hexavalent Chromium: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.

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QUALITY ASSURANCE REPORT

			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
3333592	Carbonaceous BOD	2013/09/04			91	80 - 120	<5.0	mg/L	NC	25	99	80 - 120
3335297	Dissolved Aluminum (Al)	2013/09/04	100(1)	80 - 120	100	80 - 120	<5.0	ug/L	5.3(2)	20		
3335297	Dissolved Antimony (Sb)	2013/09/04	111(1)	80 - 120	107	80 - 120	<1.0	ug/L	NC(2)	20		
3335297	Dissolved Arsenic (As)	2013/09/04	101(1)	80 - 120	98	80 - 120	<1.0	ug/L	NC(2)	20		
3335297	Dissolved Barium (Ba)	2013/09/04	99(1)	80 - 120	98	80 - 120	<1.0	ug/L	0.7(2)	20		
3335297	Dissolved Beryllium (Be)	2013/09/04	102(1)	80 - 120	98	80 - 120	<1.0	ug/L	NC(2)	20		
3335297	Dissolved Bismuth (Bi)	2013/09/04	102(1)	80 - 120	102	80 - 120	<2.0	ug/L	NC(2)	20		
3335297	Dissolved Boron (B)	2013/09/04	103(1)	80 - 120	98	80 - 120	<50	ug/L	NC(2)	20		
3335297	Dissolved Cadmium (Cd)	2013/09/04	100(1)	80 - 120	98	80 - 120	<0.010	ug/L	NC(2)	20		
3335297	Dissolved Calcium (Ca)	2013/09/04	NC(1)	80 - 120	86	80 - 120	<100	ug/L	0.5(2)	20		
3335297	Dissolved Chromium (Cr)	2013/09/04	100(1)	80 - 120	97	80 - 120	<1.0	ug/L	NC(2)	20		
3335297	Dissolved Cobalt (Co)	2013/09/04	99(1)	80 - 120	98	80 - 120	<0.40	ug/L	NC(2)	20		
3335297	Dissolved Copper (Cu)	2013/09/04	97(1)	80 - 120	97	80 - 120	<2.0	ug/L	NC(2)	20		
3335297	Dissolved Iron (Fe)	2013/09/04	101(1)	80 - 120	100	80 - 120	<50	ug/L	NC(2)	20		
3335297	Dissolved Lead (Pb)	2013/09/04	101(1)	80 - 120	99	80 - 120	<0.50	ug/L	NC(2)	20		
3335297	Dissolved Magnesium (Mg)	2013/09/04	104(1)	80 - 120	105	80 - 120	<100	ug/L	0.1(2)	20		
3335297	Dissolved Manganese (Mn)	2013/09/04	100(1)	80 - 120	99	80 - 120	<2.0	ug/L	2.1(2)	20		
3335297	Dissolved Molybdenum (Mo)	2013/09/04	105(1)	80 - 120	103	80 - 120	<2.0	ug/L	NC(2)	20		
3335297	Dissolved Nickel (Ni)	2013/09/04	98(1)	80 - 120	98	80 - 120	<2.0	ug/L	NC(2)	20		
3335297	Dissolved Phosphorus (P)	2013/09/04	107(1)	80 - 120	103	80 - 120	<100	ug/L	NC(2)	20		
3335297	Dissolved Potassium (K)	2013/09/04	104(1)	80 - 120	104	80 - 120	<100	ug/L	1.7(2)	20		
3335297	Dissolved Selenium (Se)	2013/09/04	100(1)	80 - 120	98	80 - 120	<1.0	ug/L	NC(2)	20		
3335297	Dissolved Silver (Ag)	2013/09/04	100(1)	80 - 120	92	80 - 120	<0.10	ug/L	NC(2)	20		
3335297	Dissolved Sodium (Na)	2013/09/04	102(1)	80 - 120	102	80 - 120	<100	ug/L	1.3(2)	20		
3335297	Dissolved Strontium (Sr)	2013/09/04	NC(1)	80 - 120	100	80 - 120	<2.0	ug/L	0.9(2)	20		
3335297	Dissolved Thallium (Tl)	2013/09/04	105(1)	80 - 120	103	80 - 120	<0.10	ug/L	NC(2)	20		
3335297	Dissolved Tin (Sn)	2013/09/04	106(1)	80 - 120	102	80 - 120	<2.0	ug/L	NC(2)	20		
3335297	Dissolved Titanium (Ti)	2013/09/04	100(1)	80 - 120	97	80 - 120	<2.0	ug/L	NC(2)	20		
3335297	Dissolved Uranium (U)	2013/09/04	105(1)	80 - 120	102	80 - 120	<0.10	ug/L	NC(2)	20		
3335297	Dissolved Vanadium (V)	2013/09/04	102(1)	80 - 120	100	80 - 120	<2.0	ug/L	NC(2)	20		
3335297	Dissolved Zinc (Zn)	2013/09/04	102(1)	80 - 120	102	80 - 120	<5.0	ug/L	NC(2)	20		
3335326	Total Suspended Solids	2013/09/04					<1.0	mg/L	18.4	25	97	80 - 120
3335827	Sulphide	2013/09/03	91	80 - 120	99	80 - 120	<0.020	mg/L	NC	20		
3336990	Decachlorobiphenyl	2013/09/09	101	30 - 130	93	30 - 130	87	%				
3336990	Total PCB	2013/09/09	121	70 - 130	119	70 - 130	<0.050	ug/L	NC	40		
3337223	Phenols-4AAP	2013/09/04	100	80 - 120	101	80 - 120	<0.0010	mg/L	NC(3)	25		
3337236	D10-Anthracene	2013/09/05	93	30 - 130	92	30 - 130	96	%				
3337236	D14-Terphenyl	2013/09/05	96	30 - 130	97	30 - 130	100	%				
3337236	D8-Acenaphthylene	2013/09/05	96	30 - 130	93	30 - 130	96	%				

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QUALITY ASSURANCE REPORT

			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
3337236	1-Methylnaphthalene	2013/09/05	91	30 - 130	94	30 - 130	<0.050	ug/L	15.4	40		
3337236	2-Methylnaphthalene	2013/09/05	96	30 - 130	96	30 - 130	<0.050	ug/L	38.1	40		
3337236	Acenaphthene	2013/09/05	101	30 - 130	98	30 - 130	<0.010	ug/L	3.0	40		
3337236	Acenaphthylene	2013/09/05	91	30 - 130	91	30 - 130	<0.010	ug/L	29.3	40		
3337236	Anthracene	2013/09/05	94	30 - 130	92	30 - 130	<0.010	ug/L	2.0	40		
3337236	Benzo(a)anthracene	2013/09/05	94	30 - 130	94	30 - 130	<0.010	ug/L	NC	40		
3337236	Benzo(a)pyrene	2013/09/05	90	30 - 130	94	30 - 130	<0.010	ug/L	NC	40		
3337236	Benzo(b)fluoranthene	2013/09/05	93	30 - 130	89	30 - 130	<0.010	ug/L	NC	40		
3337236	Benzo(g,h,i)perylene	2013/09/05	100	30 - 130	101	30 - 130	<0.010	ug/L	NC	40		
3337236	Benzo(j)fluoranthene	2013/09/05	95	30 - 130	94	30 - 130	<0.010	ug/L	NC	40		
3337236	Benzo(k)fluoranthene	2013/09/05	87	30 - 130	87	30 - 130	<0.010	ug/L	NC	40		
3337236	Chrysene	2013/09/05	100	30 - 130	100	30 - 130	<0.010	ug/L	NC	40		
3337236	Dibenz(a,h)anthracene	2013/09/05	83	30 - 130	83	30 - 130	<0.010	ug/L	NC	40		
3337236	Fluoranthene	2013/09/05	90	30 - 130	92	30 - 130	<0.010	ug/L	2.8	40		
3337236	Fluorene	2013/09/05	99	30 - 130	99	30 - 130	<0.010	ug/L	1.8	40		
3337236	Indeno(1,2,3-cd)pyrene	2013/09/05	88	30 - 130	89	30 - 130	<0.010	ug/L	NC	40		
3337236	Naphthalene	2013/09/05	90	30 - 130	93	30 - 130	<0.20	ug/L	94.0 (4, 5)	40		
3337236	Perylene	2013/09/05	92	30 - 130	94	30 - 130	<0.010	ug/L	NC	40		
3337236	Phenanthrene	2013/09/05	94	30 - 130	90	30 - 130	<0.010	ug/L	9.1	40		
3337236	Pyrene	2013/09/05	92	30 - 130	96	30 - 130	<0.010	ug/L	1.3	40		
3337254	Total Oil & Grease	2013/09/09	84 (6)	70 - 130	84	70 - 130	<5.0	mg/L	NC (7)	40		
3338536	Chromium (VI)	2013/09/06	NC	80 - 120	102	80 - 120	<0.50	ug/L	4.8	20		
3338556	Strong Acid Dissoc. Cyanide (CN)	2013/09/05	NC	80 - 120	98	80 - 120	<0.0010	mg/L	2.0	25		
3340089	1,2-Dichlorobenzene	2013/09/06	105 (8)	70 - 130	102	70 - 130	<0.50	ug/L	NC (9)	40		
3340089	1,3-Dichlorobenzene	2013/09/06	105 (8)	70 - 130	103	70 - 130	<1.0	ug/L	NC (9)	40		
3340089	1,4-Dichlorobenzene	2013/09/06	107 (8)	70 - 130	103	70 - 130	<1.0	ug/L	NC (9)	40		
3340089	Chlorobenzene	2013/09/06	109 (8)	70 - 130	108	70 - 130	<1.0	ug/L	NC (9)	40		
3340089	1,1,1-Trichloroethane	2013/09/06	121 (8)	70 - 130	118	70 - 130	<1.0	ug/L	NC (9)	40		
3340089	1,1,2,2-Tetrachloroethane	2013/09/06	112 (8)	70 - 130	103	70 - 130	<0.50	ug/L	NC (9)	40		
3340089	1,1,2-Trichloroethane	2013/09/06	111 (8)	70 - 130	107	70 - 130	<1.0	ug/L	NC (9)	40		
3340089	1,1-Dichloroethane	2013/09/06	113 (8)	70 - 130	113	70 - 130	<2.0	ug/L	NC (9)	40		
3340089	1,1-Dichloroethylene	2013/09/06	124 (8)	70 - 130	119	70 - 130	<0.50	ug/L	NC (9)	40		
3340089	1,2-Dichloroethane	2013/09/06	111 (8)	70 - 130	109	70 - 130	<1.0	ug/L	NC (9)	40		
3340089	1,2-Dichloropropane	2013/09/06	109 (8)	70 - 130	107	70 - 130	<0.50	ug/L	NC (9)	40		
3340089	4-Bromofluorobenzene	2013/09/06	99	70 - 130	99	70 - 130	100	%				
3340089	Benzene	2013/09/06	117 (8)	70 - 130	113	70 - 130	<1.0	ug/L	NC (9)	40		
3340089	Bromodichloromethane	2013/09/06	104 (8)	70 - 130	102	70 - 130	<1.0	ug/L	NC (9)	40		
3340089	Bromoform	2013/09/06	101 (8)	70 - 130	98	70 - 130	<1.0	ug/L	NC (9)	40		
3340089	Bromomethane	2013/09/06	96 (8)	70 - 130	100	70 - 130	<0.50	ug/L	NC (9)	40		

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QUALITY ASSURANCE REPORT

			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
3340089	Carbon Tetrachloride	2013/09/06	117(8)	70 - 130	115	70 - 130	<0.50	ug/L	NC(9)	40		
3340089	Chloroethane	2013/09/06	117(8)	70 - 130	116	70 - 130	<8.0	ug/L	NC(9)	40		
3340089	Chloroform	2013/09/06	112(8)	70 - 130	111	70 - 130	<1.0	ug/L	NC(9)	40		
3340089	Chloromethane	2013/09/06	99(8)	70 - 130	99	70 - 130	<8.0	ug/L	NC(9)	40		
3340089	cis-1,2-Dichloroethylene	2013/09/06	118(8)	70 - 130	116	70 - 130	<0.50	ug/L	NC(9)	40		
3340089	cis-1,3-Dichloropropene	2013/09/06	112(8)	70 - 130	112	70 - 130	<0.50	ug/L	NC(9)	40		
3340089	D4-1,2-Dichloroethane	2013/09/06	100	70 - 130	100	70 - 130	99	%				
3340089	D8-Toluene	2013/09/06	100	70 - 130	100	70 - 130	100	%				
3340089	Dibromochloromethane	2013/09/06	105(8)	70 - 130	104	70 - 130	<1.0	ug/L	NC(9)	40		
3340089	Ethylbenzene	2013/09/06	116(8)	70 - 130	112	70 - 130	<1.0	ug/L	NC(9)	40		
3340089	Ethylene Dibromide	2013/09/06	108(8)	70 - 130	104	70 - 130	<0.20	ug/L	NC(9)	40		
3340089	MethyleneChloride(Dichloromethane)	2013/09/06	116(8)	70 - 130	114	70 - 130	<3.0	ug/L	NC(9)	40		
3340089	o-Xylene	2013/09/06	117(8)	70 - 130	114	70 - 130	<1.0	ug/L	NC(9)	40		
3340089	p+m-Xylene	2013/09/06	114(8)	70 - 130	111	70 - 130	<2.0	ug/L	NC(9)	40		
3340089	Styrene	2013/09/06	112(8)	70 - 130	110	70 - 130	<1.0	ug/L	NC(9)	40		
3340089	Tetrachloroethylene	2013/09/06	119(8)	70 - 130	115	70 - 130	<1.0	ug/L	NC(9)	40		
3340089	Toluene	2013/09/06	117(8)	70 - 130	113	70 - 130	<1.0	ug/L	NC(9)	40		
3340089	trans-1,2-Dichloroethylene	2013/09/06	127(8)	70 - 130	125	70 - 130	<0.50	ug/L	NC(9)	40		
3340089	trans-1,3-Dichloropropene	2013/09/06	98(8)	70 - 130	100	70 - 130	<0.50	ug/L	NC(9)	40		
3340089	Trichloroethylene	2013/09/06	115(8)	70 - 130	113	70 - 130	<1.0	ug/L	NC(9)	40		
3340089	Trichlorofluoromethane (FREON 11)	2013/09/06	124(8)	70 - 130	117	70 - 130	<8.0	ug/L	NC(9)	40		
3340089	Vinyl Chloride	2013/09/06	131(4, 10, 8)	70 - 130	128	70 - 130	<0.50	ug/L	NC(9)	40		
3340125	Total Aluminum (Al)	2013/09/06	99	80 - 120	101	80 - 120	<5.0	ug/L	NC	20		
3340125	Total Antimony (Sb)	2013/09/06	114	80 - 120	109	80 - 120	<1.0	ug/L	NC	20		
3340125	Total Arsenic (As)	2013/09/06	101	80 - 120	98	80 - 120	<1.0	ug/L	NC	20		
3340125	Total Barium (Ba)	2013/09/06	98	80 - 120	99	80 - 120	<1.0	ug/L	1.3	20		
3340125	Total Beryllium (Be)	2013/09/06	103	80 - 120	102	80 - 120	<1.0	ug/L	NC	20		
3340125	Total Bismuth (Bi)	2013/09/06	102	80 - 120	104	80 - 120	<2.0	ug/L	NC	20		
3340125	Total Boron (B)	2013/09/06	NC	80 - 120	105	80 - 120	<50	ug/L	NC	20		
3340125	Total Cadmium (Cd)	2013/09/06	103	80 - 120	100	80 - 120	<0.010	ug/L	NC	20		
3340125	Total Calcium (Ca)	2013/09/06	98	80 - 120	99	80 - 120	<100	ug/L	0.5	20		
3340125	Total Chromium (Cr)	2013/09/06	97	80 - 120	97	80 - 120	<1.0	ug/L	NC	20		
3340125	Total Cobalt (Co)	2013/09/06	97	80 - 120	98	80 - 120	<0.40	ug/L	NC	20		
3340125	Total Copper (Cu)	2013/09/06	94	80 - 120	97	80 - 120	<2.0	ug/L	0.9	20		
3340125	Total Iron (Fe)	2013/09/06	101	80 - 120	102	80 - 120	<50	ug/L	NC	20		
3340125	Total Lead (Pb)	2013/09/06	98	80 - 120	99	80 - 120	<0.50	ug/L	NC	20		
3340125	Total Magnesium (Mg)	2013/09/06	104	80 - 120	103	80 - 120	<100	ug/L	0.4	20		
3340125	Total Manganese (Mn)	2013/09/06	97	80 - 120	101	80 - 120	<2.0	ug/L	NC	20		
3340125	Total Molybdenum (Mo)	2013/09/06	109	80 - 120	105	80 - 120	<2.0	ug/L	NC	20		

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QUALITY ASSURANCE REPORT

			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
3340125	Total Nickel (Ni)	2013/09/06	97	80 - 120	98	80 - 120	<2.0	ug/L	NC	20		
3340125	Total Phosphorus (P)	2013/09/06	103	80 - 120	103	80 - 120	<100	ug/L	NC	20		
3340125	Total Potassium (K)	2013/09/06	102	80 - 120	103	80 - 120	<100	ug/L	1.2	20		
3340125	Total Selenium (Se)	2013/09/06	99	80 - 120	97	80 - 120	<1.0	ug/L	NC	20		
3340125	Total Silver (Ag)	2013/09/06	98	80 - 120	97	80 - 120	<0.10	ug/L	NC	20		
3340125	Total Sodium (Na)	2013/09/06	NC	80 - 120	102	80 - 120	<100	ug/L	0.4	20		
3340125	Total Strontium (Sr)	2013/09/06	100	80 - 120	101	80 - 120	<2.0	ug/L	0.3	20		
3340125	Total Thallium (Tl)	2013/09/06	103	80 - 120	103	80 - 120	<0.10	ug/L	NC	20		
3340125	Total Tin (Sn)	2013/09/06	108	80 - 120	104	80 - 120	<2.0	ug/L	NC	20		
3340125	Total Titanium (Ti)	2013/09/06	100	80 - 120	100	80 - 120	<2.0	ug/L	NC	20		
3340125	Total Uranium (U)	2013/09/06	106	80 - 120	104	80 - 120	<0.10	ug/L	6.2	20		
3340125	Total Vanadium (V)	2013/09/06	102	80 - 120	101	80 - 120	<2.0	ug/L	NC	20		
3340125	Total Zinc (Zn)	2013/09/06	99	80 - 120	99	80 - 120	<5.0	ug/L	NC	20		
3341639	Chromium (VI)	2013/09/10	102	80 - 120	102	80 - 120	<0.50	ug/L	NC	20		
3341644	Chromium (VI)	2013/09/09	100	80 - 120	99	80 - 120	<0.50	ug/L	NC	20		
3343659	Decachlorobiphenyl	2013/09/11	92	30 - 130	87	30 - 130	68	%				
3343659	Total PCB	2013/09/11	118	70 - 130	118	70 - 130	<0.050	ug/L	NC	40		
3345081	Total Mercury (Hg)	2013/09/11	97	80 - 120	101	80 - 120	<0.013	ug/L	NC	25		
3348535	Total Alkalinity (Total as CaCO3)	2013/09/16	99(11)	80 - 120	102	80 - 120	<5.0	mg/L	NC(12)	25		
3348540	Dissolved Chloride (Cl)	2013/09/16	NC(11)	80 - 120	102	80 - 120	<1.0	mg/L	2.4(12)	25	108	80 - 120
3348542	Dissolved Sulphate (SO4)	2013/09/13	104(11)	80 - 120	105	80 - 120	<2.0	mg/L	NC(12)	25		
3348543	Reactive Silica (SiO2)	2013/09/16	98(11)	80 - 120	99	80 - 120	<0.50	mg/L	NC(12)	25		
3348552	Colour	2013/09/13					<5.0	TCU	NC(12)	25	104	80 - 120
3348555	Orthophosphate (P)	2013/09/13	88(11)	80 - 120	94	80 - 120	<0.010	mg/L	NC(12)	25		
3348558	Nitrate + Nitrite	2013/09/16	97(11)	80 - 120	98	80 - 120	<0.050	mg/L	NC(12)	25		
3348559	Nitrite (N)	2013/09/16	95(11)	80 - 120	97	80 - 120	<0.010	mg/L	NC(12)	25		
3348772	Nitrogen (Ammonia Nitrogen)	2013/09/16	103(13)	80 - 120	100	80 - 120	<0.050	mg/L	NC(14)	25		
3350369	pH	2013/09/16							0.2	25	100	80 - 120
3350370	Conductivity	2013/09/16			100	80 - 120	1.4, RDL=1.0	uS/cm	0.5	25		
3350371	pH	2013/09/16							1(15)	25	101	80 - 120
3350373	Conductivity	2013/09/16			100	80 - 120	<1.0	uS/cm	0.1(15)	25		
3350374	pH	2013/09/16							0.4(12)	25	100	80 - 120
3350375	Conductivity	2013/09/16			100	80 - 120	<1.0	uS/cm	0.7(12)	25		
3350646	Turbidity	2013/09/17					<0.10	NTU	4.0(16)	25	99	80 - 120
3350647	Turbidity	2013/09/17					<0.10	NTU	7.4	25	101	80 - 120
3351225	Total Organic Carbon (C)	2013/09/16	94	80 - 120	81	80 - 120	<0.50	mg/L	NC	25		
3351226	Total Organic Carbon (C)	2013/09/16	NC(17)	80 - 120	87	80 - 120	<0.50	mg/L	2.0(16)	25		
3357008	Total Aluminum (Al)	2013/09/21	109	80 - 120	103	80 - 120	<5.0	ug/L				
3357008	Total Antimony (Sb)	2013/09/21	116	80 - 120	107	80 - 120	<1.0	ug/L				

Maxxam Job #: B3E5248
Report Date: 2013/09/23

Conestoga-Rovers and Associates Ltd
Client Project #: 084308
Site Location: MONITORING AND MAINTENANCE/COME BY CHANCE
Your P.O. #: 20-016417
Sampler Initials: MM

QUALITY ASSURANCE REPORT

			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
3357008	Total Arsenic (As)	2013/09/21	106	80 - 120	99	80 - 120	<1.0	ug/L				
3357008	Total Barium (Ba)	2013/09/21	111	80 - 120	104	80 - 120	<1.0	ug/L				
3357008	Total Beryllium (Be)	2013/09/21	105	80 - 120	99	80 - 120	<1.0	ug/L				
3357008	Total Bismuth (Bi)	2013/09/21	110	80 - 120	104	80 - 120	<2.0	ug/L				
3357008	Total Boron (B)	2013/09/21	103	80 - 120	99	80 - 120	<50	ug/L				
3357008	Total Cadmium (Cd)	2013/09/21	104	80 - 120	97	80 - 120	<0.010	ug/L				
3357008	Total Calcium (Ca)	2013/09/21	105	80 - 120	96	80 - 120	<100	ug/L				
3357008	Total Chromium (Cr)	2013/09/21	107	80 - 120	102	80 - 120	<1.0	ug/L				
3357008	Total Cobalt (Co)	2013/09/21	108	80 - 120	101	80 - 120	<0.40	ug/L				
3357008	Total Copper (Cu)	2013/09/21	NC	80 - 120	100	80 - 120	<2.0	ug/L	2.5	20		
3357008	Total Iron (Fe)	2013/09/21	111	80 - 120	107	80 - 120	<50	ug/L				
3357008	Total Lead (Pb)	2013/09/21	110	80 - 120	104	80 - 120	<0.50	ug/L	0.9	20		
3357008	Total Magnesium (Mg)	2013/09/21	113	80 - 120	107	80 - 120	<100	ug/L				
3357008	Total Manganese (Mn)	2013/09/21	107	80 - 120	101	80 - 120	<2.0	ug/L				
3357008	Total Molybdenum (Mo)	2013/09/21	113	80 - 120	103	80 - 120	<2.0	ug/L				
3357008	Total Nickel (Ni)	2013/09/21	106	80 - 120	99	80 - 120	<2.0	ug/L				
3357008	Total Phosphorus (P)	2013/09/21	111	80 - 120	105	80 - 120	<100	ug/L				
3357008	Total Potassium (K)	2013/09/21	110	80 - 120	105	80 - 120	<100	ug/L				
3357008	Total Selenium (Se)	2013/09/21	105	80 - 120	96	80 - 120	<1.0	ug/L				
3357008	Total Silver (Ag)	2013/09/21	107	80 - 120	99	80 - 120	<0.10	ug/L				
3357008	Total Sodium (Na)	2013/09/21	NC	80 - 120	106	80 - 120	<100	ug/L				
3357008	Total Strontium (Sr)	2013/09/21	105	80 - 120	99	80 - 120	<2.0	ug/L				
3357008	Total Thallium (Tl)	2013/09/21	111	80 - 120	106	80 - 120	<0.10	ug/L				
3357008	Total Tin (Sn)	2013/09/21	114	80 - 120	104	80 - 120	<2.0	ug/L				
3357008	Total Titanium (Ti)	2013/09/21	113	80 - 120	103	80 - 120	<2.0	ug/L				
3357008	Total Uranium (U)	2013/09/21	116	80 - 120	108	80 - 120	<0.10	ug/L				

Maxxam Analytics International Corporation o/a Maxxam Analytics 49-55 Elizabeth Ave, Suite 101A, St.John's, NL, Canada A1A 1W9 Tel: 709-754-0203 Toll Free: 888-492-7227 Fax:709-754-8612 www.maxxam.ca

Maxxam Job #: B3E5248
Report Date: 2013/09/23

Conestoga-Rovers and Associates Ltd
Client Project #: 084308
Site Location: MONITORING AND MAINTENANCE/COME BY CHANCE
Your P.O. #: 20-016417
Sampler Initials: MM

QUALITY ASSURANCE REPORT

			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
3357008	Total Vanadium (V)	2013/09/21	110	80 - 120	103	80 - 120	<2.0	ug/L				
3357008	Total Zinc (Zn)	2013/09/21	NC	80 - 120	101	80 - 120	<5.0	ug/L				

N/A = Not Applicable
RDL = Reportable Detection Limit
RPD = Relative Percent Difference
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 not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.
(1) - Matrix Spike Parent ID [SW3529-05]
(10) - Matrix Spike: < 10 % of compounds in multi-component analysis in violation.
(11) - Matrix Spike Parent ID [SW3579-01]
(12) - Duplicate Parent ID [SW3579-01]
(13) - Matrix Spike Parent ID [SW3527-01]
(14) - Duplicate Parent ID [SW3527-01]
(15) - Duplicate Parent ID [SW3523-05]
(16) - Duplicate Parent ID [SW3524-05]
(17) - Matrix Spike Parent ID [SW3532-05]
(2) - Duplicate Parent ID [SW3529-05]
(3) - The sample was decanted due to sediment.
(4) - Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.
(5) - Duplicate: < 10 % of compounds in multi-component analysis in violation.
(6) - Matrix Spike Parent ID [SW3524-01]
(7) - Duplicate Parent ID [SW3532-01]
(8) - Matrix Spike Parent ID [SW3524-11]
(9) - Duplicate Parent ID [SW3523-11]

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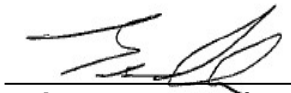
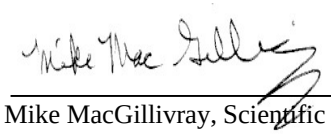
Validation Signature Page

Maxxam Job #: B3E5248

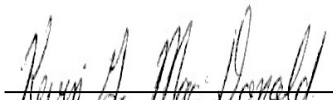
The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



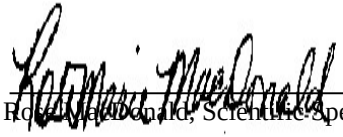
Brad Newman, Scientific Specialist



Mike MacGillivray, Scientific Specialist (Inorganics)



Kevin MacDonald, Inorganics Supervisor



Ron MacDonald, Scientific Specialist (Organics)

==========

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 49-55 Elizabeth Ave, Suite 101A, St.John's, NL, Canada A1A 1W9 Tel: 709-754-0203 Toll Free: 888-492-7227 Fax:709-754-8612 www.maxxam.ca

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49 Elizabeth Ave., St John's, NL A1A 1W9 Tel: 709-754-0203 Fax: 709-754-8612 Toll Free: 1-888-492-7227
90 Esplanade Sydney, NS B1P 1A1 Tel: 902-567-1255 Fax: 902-539-6504 Toll Free: 1-888-535-7770
www.maxxamanalytics.com E-mail: Clientservicesbedford@maxxamanalytics.com

MAXXAM Chain of Custody Record

COC #: B 155509 Page 1 of 2

This column for lab use only

Client Code: 16275

Maxxam Job #: B3E5248

Cooler ID	Seal Present	Seal Intact	Temp 1	Temp 2	Temp 3	Average Temp
			3.0	4.0	2.0	

Integrity: (YES) NO

Integrity / Checklist by: TM

Labelled by:

Location / Bin #: CRT 3

INVOICE INFORMATION:

Company Name: Conestoga-Rovers

Contact Name: Brian Luffman

Address: 1118 Topsail Road St. John's, NL Postal Code A1B3N7

Email: bluffman@craworld.com

Ph: (709) 364-5353 Fax: (709) 364-5368

REPORT INFORMATION (if differs from invoice):

Company Name:

Contact Name:

Address:

Postal Code

Email:

Ph: Fax:

PO #: To Follow

Project # / Phase #: 084-508

Project Name / Site Location: Monitoring & Maintenance / Come by chance

Quote: B34651

Site #:

Task Order #:

Sampled by: Mike Maher & Andrew Bryant

TURNAROUND TIME

Standard ☒

10 day ☐

If RUSH Specify Date:

Pre-schedule rush work

Charge for # Jars used but not submitted: 0

Guideline Requirements / Detection Limits / Special Instructions

Please C.C. datanl@craworld.com

TPH Must Done in NL

*Specify Matrix: Surface/Salt/Ground/Tapwater/Sewage/Effluent/Potable/NonPotable/Tissue/Soil/Sludge/Metal/Seawater

Field Sample Identification	Matrix*	Date/Time Sampled	# & type of bottles	Field Filtered & Preserved	Lab Filtration Required	RCAP-30 Choose Total or Diss Metals	RCAP-MS Choose Total or Diss Metals	Metals Water: Total Digest (Default Method) for well water, surface water	Metals Water: Dissolved for ground water	Metals Water: Mercury	Metals Soil: Metals & Mercury Default Available Digest Method	Metals Soil: Metals Total Digest - for Ocean sediments (HNO3/HF/HCLO4)	Metals Soil: Mercury Low level by Cold Vapour AA	Metals Soil: Selenium (low level) Req'd for CCME Residential, Parklands, Agricultural	Metals Soil: Hot Water soluble Boron (required for CCME Agricultural)	Hydrocarbons: RBCA Hydrocarbons (BTEX, C6-C32)	Hydrocarbons: Hydrocarbons Soil (Potable), NS Fuel Oil Spill Policy Low Level BTEX, C6-C32	Hydrocarbons: NB Potable Water BTEX, VPH, Low level T.E.H.	Hydrocarbons: TPH Fractionation	Hydrocarbons: PAH's	Hydrocarbons: PAH's with Acridine, Quinoline	VOCs / PCBs	Cyanide / Sulfides	Total Phenolics	TSS / Chromium III + VI	Total Oil & Grease / BOD
Not Filtered/Field Preserved 1 PLCS	Leachate	Aug 28/13 10:30am	23		No			X		X						X				X		X	X	X	X	X
Not Filtered/Field Preserved 2 SLCS	Leachate	Aug 28/13 11:00am	23		No			X		X						X				X		X	X	X	X	X
3 MW93-1	Water	Aug 28/13 11:30am	14	X	No				X							X				X		X				
4 MW 93-1A	Water	Aug 28/13 12:00pm	14	X	No				X							X				X		X				
5 MW 93-2	Water	Aug 28/13 12:30pm	14	X	No				X							X				X		X				
6 MW 93-2A	Water	Aug 28/13 1:00pm	14	X	No				X							X				X		X				
7 MW 10-1	Water	Aug 28/13 1:45pm	14	X	No				X							X				X		X				
8 MW 10-1A	Water	Aug 28/13 2:15pm	14	X	No				X							X				X		X				
9 DUP1	Water	Aug 28/13 2:30pm	14	X	No				X							X				X		X				
Not Filtered/Field Preserved 10 DUP2	Leachate	Aug 28/13 3:00pm	23		No			X								X				X		X	X	X	X	X

SHIPPED FROM MAXXAM NL 29-08-2013

2013 AUG 30 AM 10:53

RELINQUISHED BY: (Signature/Print)	Date	Time	RECEIVED BY: (Signature/Print)	Date	Time
Mike Maher/Mike Maher	Aug 29/13	8:00am	Michael Richards	2013/08/29	13:15
			T.MORASH/T.MORASH		

White: Maxxam Yellow: Mail Pink: Client ATL FCD 00149 / Revision 10

Maxxam Analytics International Corporation

200 Bluewater Road, Suite 105, Bedford, Nova Scotia B4B 1G9 — Tel: 902-420-0203 — Fax: 902-420-8612 — Toll Free: 1-800-565-7227
49 Elizabeth Ave., St John's, NL A1A 1W9 — Tel: 709-754-0203 — Fax: 709-754-8612 — Toll Free: 1-888-492-7227
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MAXXAM Chain of Custody Record

COC #: B 155506 Page 2 of 2

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Client Code

Maxxam Job # B3E5248

Cooler ID	Seal Present	Seal Intact	Temp 1	Temp 2	Temp 3	Average Temp
			3.0	4.0	2.0	

Integrity: (YES) NO — Integrity / Checklist by: TN

Labelled by — Location / Bin #

INVOICE INFORMATION:

Company Name: Corestaff - Rovers
Contact Name: Brian Luffman
Address: 1118 Topsail Road
St. John's, NL Postal Code A1B 3N7
Email: bluffman@crawworld.com
Ph: (709) 364-5353 Fax: (709) 364-5358

REPORT INFORMATION (if differs from invoice):

Company Name: SAME
Contact Name:
Address:
Postal Code
Email:
Ph: Fax:

PO # To Follow
Project # / Phase # 084308
Project Name / Site Location Monitoring & Maintenance Cells By Chan
Quote B34651
Site #
Task Order #
Sampled by Mike Maher & Andrew Bryant

TURNAROUND TIME

Standard ☒
10 day ☐
If RUSH Specify Date:
Pre-schedule rush work
Charge for # Jars used but not submitted: 0

Guideline Requirements / Detection Limits / Special Instructions

Please CC.
daten@crawworld.com

TPH Must Done in NL

*Specify Matrix: Surface/Salt/Ground/Tapwater/Sewage/Effluent/Potable/NonPotable/Tissue/Soil/Sludge/Metal/Seawater

Field Sample Identification	Matrix*	Date/Time Sampled	# & type of bottles	Field Filtered & Preserved	Lab Filtration Required	RCAP-30 Choose Total or Diss. Metals	RCAP-MS Choose Total or Diss. Metals	Metals Water: Total Digest (Default Method) for well water, surface water	Metals Water: Dissolved for ground water	Metals Water: Mercury	Metals Soil: Metals & Mercury Default Available Digest Method	Metals Soil: Metals Total Digest - for Ocean sediments (HNO3/HF/HCLO4)	Metals Soil: Mercury Low level by Cold Vapour AA	Metals Soil: Selenium (low level) Req'd for CCME Residential, Parklands, Agricultural	Metals Soil: Hot Water soluble Boron (required for CCME Agricultural)	Hydrocarbons: RBCA Hydrocarbons (BTEX, C6-C32)	Hydrocarbons: Hydrocarbons Soil (Potable), NS Fuel Oil Spill Policy Low Level BTEX, C6-C32	Hydrocarbons: NB Potable Water BTEX, VPH, Low level T.E.H.	Hydrocarbons: TPH Fractionation	Hydrocarbons: PAH's	Hydrocarbons: PAH's with Acridine, Quinoline	VOCs	PCBs	Chromium VI	
not Filtered/ Field Preserved	1 / Surface UP	Water	Aug 29/13 3:30pm	15	X			X								X			X			+	+	
not Filtered/ Field Preserved	2 / Surface Down	Water	Aug 28/13 1:00pm	15	X			X								X			X			+	+	
	3																							
	4																							
	5																							
	6																							
	7																							
	8																							
	9																							
	10																							

SHIPPED FROM 29-08-2013 MAXXAM NL

2013 AUG 30 AM 10:33

RELINQUISHED BY: (Signature/Print)	Date	Time	RECEIVED BY: (Signature/Print)	Date	Time
Mike Maher/Mike Maher	Aug 29/13	8:00am	T. Morash/T. MORASH	2013/8/29	13:15

White: Maxxam — Yellow: Mail — Pink: Client

ATL FCD 00149 / Revision 10

APPENDIX C

STANTEC LETHALITY LABORATORY REPORTS

TABLE D1

HISTORICAL STATIC GROUNDWATER LEVELS
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Location	Ground Surface Elevation	Length of Stick-up	TOC Elevation	Groundwater Depth (mbToC)														
				Mar	Jul	Sep	Oct	Jun	Jul	Oct	Dec	Oct	Sep	Mar	Jul	Dec	Sep	Dec	Aug
	(masl)	(m)	(masl)	2004				2006				2007	2008	2009	2010		2011	2012	2013
PLCS	15.960	--	15.960	--	--	--	--	--	--	--	--	--	--		0.55	0.73	0.59	0.89	0.55
SLCS	15.955	--	15.955	--	--	--	--	--	--	--	--	--	--	--	0.52	0.713	0.55	0.892	0.549
MW 93-1	16.300	1.100	17.400	--	--	--	--	--	--	--	--	--	--	1.975	1.703	1.915	1.921	1.780	1.756
MW 93-1A	16.310	1.400	17.710	0.39	1.88	0.41	0.16	2.06	1.68	2.11	1.84	1.67	2.17	2.50	1.638	1.636	2.204	1.669	1.815
MW 93-2	14.290	1.100	15.390	0.67	0.56	0.58	0.28	1.85	2.16	2.13	--	1.72	2.18	2.20	2.084	2.147	--	2.111	2.323
MW 93-2A	14.310	1.100	15.410	--	--	--	--	--	--	--	--	--	--	1.84	1.456	1.375	--	1.234	1.663
MW 93-3*	--	--	--	--	--	--	--	--	--	--	--	--	--	1.335	--	--	--	--	--
MW 93-3A*	--	--	--	2.37	Dry	--	1.20	Dry	3.21	3.37	--	3.32	Dry	3.52	--	--	--	--	--
MW 10-1	15.790	0.846	16.636	--	--	--	--	--	--	--	--	--	--	--	3.015	3.254	3.551	3.188	3.427
MW 10-1A	15.890	0.854	16.744	--	--	--	--	--	--	--	--	--	--	--	3.084	3.279	3.662	3.234	3.513

Location	Ground Surface Elevation	Length of Stick-up	TOC Elevation	Groundwater Elevation (masl)														
				Mar	Jul	Sep	Oct	Jun	Jul	Oct	Dec	Oct	Sep	Mar	Jul	Dec	Sep	Dec	Aug
	(masl)	(m)	(masl)	2004				2006				2007	2008	2009	2010		2011	2012	2013
PLCS	15.960	--	15.960	--	--	--	--	--	--	--	--	--	--		15.410	15.230	15.370	16.510	16.850
SLCS	15.955	--	15.955	--	--	--	--	--	--	--	--	--	--	--	15.435	15.242	15.410	16.508	16.851
MW 93-1	16.300	1.100	17.400	--	--	--	--	--	--	--	--	--	--	15.425	15.697	15.485	15.479	15.620	15.644
MW 93-1A	16.310	1.400	17.710	17.320	15.830	17.300	17.550	15.650	16.030	15.600	15.870	16.040	15.540	15.210	16.072	16.074	13.756	15.731	15.585
MW 93-2	14.290	1.100	15.390	14.720	14.830	14.810	15.110	13.540	13.230	13.260	--	13.670	13.210	13.190	13.306	13.243	--	15.289	15.077
MW 93-2A	14.310	1.100	15.410	--	--	--	--	--	--	--	--	--	--	13.570	13.954	14.035	--	16.166	15.737
MW 93-3*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW 93-3A*	--	--	15.900	13.530	Dry	--	14.700	Dry	12.690	12.530	--	12.580	Dry	12.380	--	--	--	--	--
MW 10-1	15.790	0.846	16.636	--	--	--	--	--	--	--	--	--	--	--	13.621	13.382	12.409	12.772	12.533
MW 10-1A	15.890	0.854	16.744	--	--	--	--	--	--	--	--	--	--	--	13.660	13.465	12.298	12.726	12.447

Notes:

PLCS = Primary Leachate Collection System Valve Chamber
SLCS = Secondary Leachate Collection System Valve Chamber
MW = Monitor Well
m = Metres
TOC = Top of Casing
masl = Metres Above Sea Level
mbTOC = Metres Below Top of Casing

* = Monitor Well Decommissioned in July 2010

TABLE D2

HISTORICAL GROUNDWATER ANALYTICAL DATA - BTEX/mTPH
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Sample Location	Date Sampled	Benzene	Toluene	Ethyl-benzene	Xylenes	Total Petroleum Hydrocarbons (TPH)					Comments
						F1 C_6-C_{10}	F2 C_{10}-C_{16}	F3 C_{16}-C_{21}	F3 C_{21}-C_{32}	Modified TPH	
MW 93-1	Aug 19, 2009	<	<	<	<	<	<	<		<	-
	Aug 19, 2009[1]	<	<	<	<	<	<	<		<	-
	Jul 16, 2010	<	<	<	<	<	<	<		<	-
	Dec 13, 2010	<	<	<	<	<	<	<		<	-
	Sep 02, 2011	<	<	<	<	<	<	<		<	-
	Aug 30, 2012	<(0.0013)	<(0.0013)	<(0.0013)	<(0.0026)	<(0.013)	<	<		<	-
	Aug 28, 2013	<	<	<	<	<	<	<		<	-
MW 93-1A	2008 (AMEC)	<(0.2)	<(0.2)	<(0.2)	<(0.6)	<(0.05)[2]	<(0.05)[2]	<(0.05)[2]		<(0.15)[2]	-
	Aug 19, 2009	<	<	<	<	<	<	<		<	-
	Jul 16, 2010	<	<	<	<	<	<	<		<	-
	Dec 13, 2010	<	<	<	<	<	<	<		<	-
	Sep 02, 2011	<	<	<	<	<	<	<		<	-
	Aug 30, 2012	<(0.0013)	<(0.0013)	<(0.0013)	<(0.0026)	<(0.013)	<	<		<	-
DUP-03	Aug 30, 2012	<	<	<	<	<	<	<		<	-
	Aug 28, 2013	<	<	<	<	<	<	<		<	-
MW 93-2	2008 (AMEC)	<(0.2)	<(0.2)	<(0.2)	<(0.6)	<(0.05)[2]	<(0.05)[2]	<(0.05)[2]		<(0.15)[2]	-
	Aug 19, 2009	<	<	<	<	<	<	<		<	-
	Jul 16, 2010	<	<	<	<	<	<	<		<	-
	Jul 16, 2010[3]	-	-	-	-	-	<	<		-	-
	Dec 13, 2010	<	<	<	<	<	<	<		<	-
	Dec 13, 2010[3]	-	-	-	-	-	<	<		-	-
	Sep 02, 2011	<	<	<	<	<	<	<		<	-
	Aug 30, 2012	<(0.0013)	<(0.0013)	<(0.0013)	<(0.0026)	<(0.013)	<	<		<	-
	Aug 28, 2013	<	<	<	<	<	<	<		<	-
MW 93-2A	Aug 19, 2009	<	<	<	<	<	<	<		<	-
	Jul 16, 2010	<	<	<	<	<	<	<		<	-
	Dec 13, 2010	<	<	<	<	<	<	<		<	-
	Sep 02, 2011	<	<	<	<	<	<	<		<	-
	Aug 30, 2012	<	<	<	<	<	<	<		<	-
	Aug 28, 2013	<	<	<	<	<	<	<		<	-
MW 10-1	Jul 16, 2010	<	<	<	<	<	<	<		<	-
	Jul 16, 2010[1]	<	<	<	<	<	<	<		<	-
	Dec 13, 2010	<	<	<	<	<	<	<		<	-
	Sep 02, 2011	<	<	<	<	<	<	0.4		0.4	Possible LO fraction
	Aug 30, 2012	<	<	<	<	<	<	<		<	-
	Aug 28, 2013										
DUP-05	Aug 28, 2013	<	<	<	<	<	<	<		<	-
MW 10-1A	Jul 16, 2010	<	<	<	<	<	<	<		<	-
	Dec 13, 2010	<	<	<	<	<	<	<		<	-
	Dec 13, 2010[1]	<	<	<	<	<	<	<		<	-
	Sep 02, 2011	<	<	<	<	<	<	<		<	-
	Aug 30, 2012	<	<	<	<	<	<	<		<	-
DUP- A	Sep 02, 2011	<	<	<	<	<	<	<		<	-
	Aug 28, 2013	<	<	<	<	<	<	<		<	-
RDL		0.001	0.001	0.001	0.002	0.01	0.05	0.1	0.1	0.1	-
Atlantic RBCA Tier I RBSLs*		6.9	20	20	20	na	na	na	na	20	Gasoline
										20	Diesel / #2 Fuel Oil
										20	# 6 Oil

Notes:

Analysis completed by Maxxam Analytics Inc. laboratory in St. John's, NL.
1. Field Duplicate
2. Assumed transcript error by factor of 1,000 from Pinchin LeBlanc Environmental Table 2 from March 2010 OMM Report
3. Lab Duplicate
DUP-A= Field Dup of MW 10-1A
DUP-03= Field Dup of MW 93-1A
DUP-05= Field Dup of MW 10-1
* Atlantic Risk-Based Corrective Action (RBCA) Tier I Risk-Based Screening Level (RBSL) Table values {commercial/non-potable/coarse grained soil}.

G = Gasoline
FO = Fuel Oil
LO = Lube Oil
W = Weathered

RDL = Reportable Detection Limit
< = Parameter below detection limit
- = Not analysed
0.0 = above criteria

TABLE D3

HISTORICAL GROUNDWATER ANALYTICAL DATA - PAHs (ug/L)
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	RDL	Criteria*	MW 93-1							MW 93-1A							
			Aug 19, 2009	Aug 19, 2009 Field Dup	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Aug 30, 2012	Aug 28, 2013	AMEC 2008	Aug 19, 2009	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Aug 30, 2012	Aug 30, 2012 DUP-03	Aug 28, 2013
1-Methylnaphthalene	0.05	13,000	<	<	<	<	<	<	<	<0.03	<	<	<	<	<	<	<
2-Methylnaphthalene	0.05	13,000	<	<	<	<	<	<	<	<0.03	<	<	<	<	<	<	<
Acenaphthene	0.01	1,700	<	<	<	<	0.01	<	<	<0.04	<	<	<	<	<	<	<
Acenaphthylene	0.01	2,000	<	<	<	<	<	<	<	<0.03	<	<	<	<	<	<	<
Acridine	0.05	-	-	-	<	<	-	-	<	-	-	<	<	-	-	-	<
Anthracene	0.01	12	<	<	<	<	<	<	<	<0.01	<	<	<	<	<	<	<
Benzo(a)anthracene	0.01	5	<	<	<	<	<	<	<	<0.01	<	<	<	<	<	<	<
Benzo(a)pyrene	0.01	1.9	<	0.01	<	<	<	<	<	<0.01	<	<	<	<	<	<	<
Benzo(b)fluoranthene	0.01	7	<	0.02	<	<	<	<	<	<0.05	<	<	<	<	<	<	<
Benzo(g,h,i)perylene	0.01	0.2	<	0.02	<	<	<	<	<	<0.03	<	<	<	<	<	<	<
Benzo(k)fluoranthene	0.01	0.4	<	0.02	<	<	<	<	<	<0.05	<	<	<	<	<	<	<
Chrysene	0.01	3	<	<	<	<	<	<	<	<0.04	<	<	<	<	<	<	<
Dibenz(a,h)anthracene	0.01	0.25	<	0.03	<	<	<	<	<	-	<	<	<	<	<	<	<
Fluoranthene	0.01	130	<	<	<	<	<	<	<	<0.03	<	<	<	<	<	<	<
Fluorene	0.01	290	<	<	<	<	<	<	<	<0.03	<	<	<	<	<	<	<
Indeno(1,2,3-cd)pyrene	0.01	0.27	<	0.02	<	<	<	<	<	<0.05	<	<	<	<	<	<	<
Naphthalene	0.20	5,900	<	<	<	<	<	<	<	-	<	<	<	<	<	<	<
Perylene	0.01	-	<	<	<	<	<	<	<	-	<	<	<	<	<	<	<
Phenanthrene	0.01	63	0.01	<	<	<	<	<	<	<0.04	0.01	<	<	<	<	<	<
Pyrene	0.01	40	<	<	<	<	<	<	<	<0.01	<	<	<	<	<	<	<
Quinoline	0.05	-	-	-	<	<	-	-	-	-	-	<	<	-	-	-	-

Analysis completed by Maxxam Analytics Inc. laboratory in Bedford, NS.
* Ontario Ministry of the Environment (MOE) "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", March 9, 2004, Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
RDL = Reportable Detection Limit
- = Not analysed/No criteria
< = Parameter below detection limit
<(#) = Parameter below AMEC laboratory detection limit
0.0 = above criteria
DUP-01 = Field Duplicate of MW 10-1, First Sampling Event
DUP-02 = Field Duplicate of MW 10-1, Second Sampling Event
DUP-A= Field Duplicate of MW-101A
DUP-03= Field Duplicate of MW 93-1A
DUP-05= Field Duplicate of MW 10-1
(1)= Elevated PAH RDL(s) due to matrix/co-extractive interference

TABLE D3

HISTORICAL GROUNDWATER ANALYTICAL DATA - PAHs (ug/L)
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	RDL	Criteria*	MW 93-2							MW 93-2A					
			AMEC 2008	Aug 19, 2009	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Aug 30, 2012	Aug 28, 2013	Aug 19, 2009	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Aug 30, 2012	Aug 28, 2013
1-Methylnaphthalene	0.05	13,000	<0.03	<	<	<	<	<	<	<	<	<	<	<	<
2-Methylnaphthalene	0.05	13,000	<0.03	<	<	<	<	<	<	<	<	<	<	<	<
Acenaphthene	0.01	1,700	<0.04	<	<	<	<	<	<	<	<	<	<	<	<
Acenaphthylene	0.01	2,000	<0.03	<	<	<	<	<	<	<	<	<	<	<	<
Acridine	0.05	-	-	-	<	<	-	-	<	-	<	<	-	-	<
Anthracene	0.01	12	<0.01	<	<	<	<	<	<	<	<	<	<	<	<
Benzo(a)anthracene	0.01	5	<0.01	<	<	<	<	<	<	<	<	<	<	<	<
Benzo(a)pyrene	0.01	1.9	<0.01	<	<	<	<	<	<	<	<	<	<	<	<
Benzo(b)fluoranthene	0.01	7	<0.05	<	<	<	<	<	<	<	<	<	<	<	<
Benzo(g,h,i)perylene	0.01	0.2	<0.03	<	<	<	<	<	<	<	<	<	<	<	<
Benzo(k)fluoranthene	0.01	0.4	<0.05	<	<	<	<	<	<	<	<	<	<	<	<
Chrysene	0.01	3	<0.04	<	<	<	<	<	<	<	<	<	<	<	<
Dibenz(a,h)anthracene	0.01	0.25	-	<	<	<	<	<	<	<	<	<	<	<	<
Fluoranthene	0.01	130	<0.03	<	<	<	<	<	<	<	<	<	<	<	<
Fluorene	0.01	290	<0.03	<	<	<	<	<	<	<	<	<	<	<	<
Indeno(1,2,3-cd)pyrene	0.01	0.27	<0.05	<	<	<	<	<	<	<	<	<	<	<	<
Naphthalene	0.20	5,900	-	<	<	<	<	<	<	<	<	<	<	<	<
Perylene	0.01	-	-	<	<	<	<	<	<	<	<	<	0.02	<	<
Phenanthrene	0.01	63	<0.04	0.01	<	<	<	<	<	0.01	<	<	<	0.012	<
Pyrene	0.01	40	<0.01	<	<	<	<	<	<	<	<	<	<	<	<
Quinoline	0.05	-	-	-	<	<	-	-	-	-	<	<	-	-	-

Analysis completed by Maxxam Analytics Inc. la
* Ontario Ministry of the Environment (MOE) "S
Condition Standards in a Non-Potable Ground W
RDL = Reportable Detection Limit
- = Not analysed/No criteria
< = Parameter below detection limit
<(#) = Parameter below AMEC laboratory detect
0.0 = above criteria
DUP-01 = Field Duplicate of MW 10-1, First Sam
DUP-02 = Field Duplicate of MW 10-1, Second Sa
DUP-A= Field Duplicate of MW-101A
DUP-03= Field Duplicate of MW 93-1A
DUP-05= Field Duplicate of MW 10-1
(1)= Elevated PAH RDL(s) due to matrix/co-extr

TABLE D3

HISTORICAL GROUNDWATER ANALYTICAL DATA - PAHs (ug/L)
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	RDL	Criteria*	MW 10-1								MW 10-1A					
			Jul 16, 2010	Jul 16, 2010 DUP-01	Dec 13, 2010	Dec 13, 2010 DUP-02	Sep 02, 2011	Aug 30, 2012	Aug 28, 2013	Aug 28, 2013 DUP-05	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Sep 02, 2011 DUP-A	Aug 30, 2012	Aug 28, 2013
1-Methylnaphthalene	0.05	13,000	<	<	<	<	<	<	<	<	<	<	<	<	<	<
2-Methylnaphthalene	0.05	13,000	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Acenaphthene	0.01	1,700	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Acenaphthylene	0.01	2,000	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Acridine	0.05	-	<	<	<	<	-	-	<	<	<	<	-	-	-	<
Anthracene	0.01	12	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Benzo(a)anthracene	0.01	5	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Benzo(a)pyrene	0.01	1.9	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Benzo(b)fluoranthene	0.01	7	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Benzo(g,h,i)perylene	0.01	0.2	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Benzo(k)fluoranthene	0.01	0.4	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Chrysene	0.01	3	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Dibenz(a,h)anthracene	0.01	0.25	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Fluoranthene	0.01	130	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Fluorene	0.01	290	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Indeno(1,2,3-cd)pyrene	0.01	0.27	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Naphthalene	0.20	5,900	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Perylene	0.01	-	<	<	<	0.04	<	<	<	<	<	<	<	<	0.017	0.019
Phenanthrene	0.01	63	<	<	<	<	<	<	<	<	<	<	<	<	<	0.013
Pyrene	0.01	40	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Quinoline	0.05	-	<	<	<	<	-	-	-	<	<	<	<	<	-	-

Analysis completed by Maxxam Analytics Inc. la
* Ontario Ministry of the Environment (MOE) "S
Condition Standards in a Non-Potable Ground W
RDL = Reportable Detection Limit
- = Not analysed/No criteria
< = Parameter below detection limit
<(#) = Parameter below AMEC laboratory detect
0.0 = above criteria
DUP-01 = Field Duplicate of MW 10-1, First Samp
DUP-02 = Field Duplicate of MW 10-1, Second Sa
DUP-A= Field Duplicate of MW-101A
DUP-03= Field Duplicate of MW 93-1A
DUP-05= Field Duplicate of MW 10-1
(1)= Elevated PAH RDL(s) due to matrix/co-extr

TABLE D4

GROUNDWATER ANALYTICAL DATA - PCBs
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Sample Location	Date Sampled	Total PCBs
MW 93-1	Aug 19, 2009	<
	Aug 19, 2009	<[1]
	Aug 19, 2009	<[2]
	Jul 16, 2010	<
	Dec 13, 2010	<
	Sep 02, 2011	<
	Aug 30, 2012	<
	Aug 28, 2013	<
MW 93-1A	AMEC 2008	<0.04
	Aug 19, 2009	0.1
	Jul 16, 2010	<
	Dec 13, 2010	<
	Sep 02, 2011	<
	Aug 30, 2012	<
DUP-03	Aug 30, 2012	<
	Aug 28, 2013	<
MW 93-2	AMEC 2008	<0.04
	Aug 19, 2009	<
	Jul 16, 2010	<
	Dec 13, 2010	<
	Sep 02, 2011	<
	Aug 30, 2012	<
	Aug 28, 2013	<
MW 93-2A	Aug 19, 2009	0.11
	Jul 16, 2010	<
	Dec 13, 2010	<
	Sep 02, 2011	<
	Aug 30, 2012	<
	Aug 28, 2013	<
MW 10-1	Jul 16, 2010	<
	Jul 16, 2010	<[2]
	Dec 13, 2010	<
	Sep 02, 2011	<
	Aug 30, 2012	<
	Aug 28, 2013	<
DUP-05	Aug 28, 2013	<
MW 10-1A	Jul 16, 2010	<
	Dec 13, 2010	<
	Dec 13, 2010	<[2]
	Sep 02, 2011	<
	Aug 30, 2012	<
DUP-A	Sep 02, 2011	<
	Aug 28, 2013	<
RDL		0.05
Criteria[*] - Ontario MOE		0.2

Notes:

Analysis completed by Maxxam Analytics Inc. laboratory in Bedford, NS.
1. Lab Duplicate
2. Field Duplicate
* Ontario Ministry of the Environment (MOE) "Soil, Ground Water and Sediment Standrads for Use Under Part XV.1 of the Ground Water Condition

MW = Monitor Well
DUP-01 = Field Duplicate of MW 10-1, First Sampling Event
DUP-02 = Field Duplicate of MW 10-1, Second Sampling Event
DUP-A = Field Duplicate of MW 10-1A
DUP-03= Field Duplicate of MW 93-1A
DUP-04= Field Duplicate of PLCS
DUP-05 = Field Duplicate of MW 10-1
RDL = Reportable Detection Limit
< = Parameter below detection limit
0.0 = above criteria

TABLE D5

HISTORICAL GROUNDWATER ANALYTICAL DATA - VOCs (ug/L)
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	RDL	Criteria*	MW 93-1							MW 93-1A							
			Aug 19, 2009	Aug 19, 2009 Field Dup	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Aug 30, 2012	Aug 28, 2013	AMEC 2008	Aug 19, 2009	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Aug 30, 2012	Aug 30, 2012 DUP-03	Aug 28, 2013
Benzene	1.00	1,900	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Bromodichloromethane	1.00	50,000	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Bromoform	1.00	840	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Bromomethane	3.00	3.7	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Carbon Tetrachloride	1.00	17	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Chlorobenzene	1.00	500	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Chloroethane	8.00	-	<	<	<	<	<10 (1)	<	<	<	<	<	<	<10 (1)	<	<	<
Chloroform	1.00	430	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Chloromethane	8.00	-	<	<	<	<	<10 (1)	<	<	<	<	<	<	<10 (1)	<	<	<
Dibromochloromethane	1.00	50,000	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,2-Dichlorobenzene	0.50	7,600	<	<	<	<	<0.7 (1)	<	<	<	<	<	<	<0.7 (1)	<	<	<
1,3-Dichlorobenzene	1.00	7,600	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,4-Dichlorobenzene	1.00	7,600	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	2.00	9,000	<	<	<	<	<3 (1)	<	<	<	<	<	<	<3 (1)	<	<	<
1,2-Dichloroethane	1.00	17	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethylene	0.50	0.66	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
cis-1,2-Dichloroethylene	2.00	70	<	<	<	<	<3 (1)	<	<	<	<	<	<	<3 (1)	<	<	<
trans-1,2-Dichloroethylene	2.00	100	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,2-Dichloropropane	1.00	9.3	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
cis-1,3-Dichloropropene	2.00	3.8	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
trans-1,3-Dichloropropene	1.00	3.8	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Ethylbenzene	1.00	28,000	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Methylene Chloride(Dichloromethane)	3.00	50,000	<	<	<	<	<4 (1)	<	<	<	<	<	<	<4 (1)	<	<	<
o-Xylene	1.00	5,600	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
p+m-Xylene	2.00	5,600	<	<	<	<	<3 (1)	<	<	<	<	<	<	<3 (1)	<	<	<
Styrene	1.00	940	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Tetrachloroethylene	1.00	5	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,1,2,2-Tetrachloroethane	1.00	22	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Toluene	1.00	5,900	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Trichloroethylene	1.00	50	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,1,1-Trichloroethane	1.00	200	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,1,2-Trichloroethane	1.00	16,000	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Trichlorofluoromethane (FREON 11)	8.00	-	<	<	<	<	<10 (1)	<	<	<	<	<	<	<10 (1)	<	<	<
Vinyl Chloride	0.50	0.5	<	<	<	<	<	<	<	0.2	<	<	<	<	<	<	<

Notes:
Analysis completed by Maxxam Analytics Inc. laboratory in Bedford, NS.
* Ontario Ministry of the Environment (MOE) "Soil, Ground Water and Sediment Standrads for Use Under Part XV.1 of the Environmental Protection Act", March 9, 2004, Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition

RDL = Reportable Detection Limit
SW = Surface Water Sample
-= Not analysed/No criteria
< = Parameter below detection limit
0.0 = above criteria
DUP-01 = Field Duplicate of MW 10-1, First Sampling Event
DUP-02 = Field Duplicate of MW 10-1, Second Sampling Event
DUP-A= Field Duplicate of MW 10-1A
DUP-03= Field Duplicate of MW 93-1A
DUP-05 = Field Duplicate of MW 10-1
(1)=Elevated RDL for analyzed VOC(s)

TABLE D5

HISTORICAL GROUNDWATER ANALYTICAL DATA - VOCs (ug/L)
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	RDL	Criteria*	MW 93-2							MW 93-2A					
			AMEC 2008	Aug 19, 2009	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Aug 30, 2012	Aug 28, 2013	Aug 19, 2009	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Aug 30, 2012	Aug 28, 2013
Benzene	1.00	1,900	<	<	<	<	<	<	<	<	<	<	<	<	<
Bromodichloromethane	1.00	50,000	<	<	<	<	<	<	<	<	<	<	<	<	<
Bromoform	1.00	840	<	<	<	<	<	<	<	<	<	<	<	<	<
Bromomethane	3.00	3.7	<	<	<	<	<	<	<	<	<	<	<	<	<
Carbon Tetrachloride	1.00	17	<	<	<	<	<	<	<	<	<	<	<	<	<
Chlorobenzene	1.00	500	<	<	<	<	<	<	<	<	<	<	<	<	<
Chloroethane	8.00	-	<	<	<	<	<10 (1)	<	<	<	<	<	<10 (1)	<	<
Chloroform	1.00	430	<	<	<	<	<	<	<	<	<	<	<	<	<
Chloromethane	8.00	-	<	<	<	<	<10 (1)	<	<	<	<	<	<10 (1)	<	<
Dibromochloromethane	1.00	50,000	<	<	<	<	<	<	<	<	<	<	<	<	<
1,2-Dichlorobenzene	0.50	7,600	<	<	<	<	<0.7 (1)	<	<	<	<	<	<0.7 (1)	<	<
1,3-Dichlorobenzene	1.00	7,600	<	<	<	<	<	<	<	<	<	<	<	<	<
1,4-Dichlorobenzene	1.00	7,600	<	<	<	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	2.00	9,000	<	<	<	<	<3 (1)	<	<	<	<	<	<3 (1)	<	<
1,2-Dichloroethane	1.00	17	<	<	<	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethylene	0.50	0.66	<	<	<	<	<	<	<	<	<	<	<	<	<
cis-1,2-Dichloroethylene	2.00	70	<	<	<	<	<3 (1)	<	<	<	<	<	<3 (1)	<	<
trans-1,2-Dichloroethylene	2.00	100	<	<	<	<	<	<	<	<	<	<	<	<	<
1,2-Dichloropropane	1.00	9.3	<	<	<	<	<	<	<	<	<	<	<	<	<
cis-1,3-Dichloropropene	2.00	3.8	<	<	<	<	<	<	<	<	<	<	<	<	<
trans-1,3-Dichloropropene	1.00	3.8	<	<	<	<	<	<	<	<	<	<	<	<	<
Ethylbenzene	1.00	28,000	<	<	<	<	<	<	<	<	<	<	<	<	<
Methylene Chloride(Dichloromethane)	3.00	50,000	<	<	<	<	<4 (1)	<	<	<	<	<	<4 (1)	<	<
o-Xylene	1.00	5,600	<	<	<	<	<	<	<	<	<	<	<	<	<
p+m-Xylene	2.00	5,600	<	<	<	<	<3 (1)	<	<	<	<	<	<3 (1)	<	<
Styrene	1.00	940	<	<	<	<	<	<	<	<	<	<	<	<	<
Tetrachloroethylene	1.00	5	<	<	<	<	<	<	<	<	<	<	<	<	<
1,1,2,2-Tetrachloroethane	1.00	22	<	<	<	<	<	<	<	<	<	<	<	<	<
Toluene	1.00	5,900	<	<	<	<	<	<	<	<	<	<	<	<	<
Trichloroethylene	1.00	50	<	<	<	<	<	<	<	<	<	<	<	<	<
1,1,1-Trichloroethane	1.00	200	<	<	<	<	<	<	<	<	<	<	<	<	<
1,1,2-Trichloroethane	1.00	16,000	<	<	<	<	<	<	<	<	<	<	<	<	<
Trichlorofluoromethane (FREON 11)	8.00	-	<	<	<	<	<10 (1)	<	<	<	<	<	<10 (1)	<	<
Vinyl Chloride	0.50	0.5	0.2	<	<	<	<	<	<	<	<	<	<	<	<

Notes:
Analysis completed by Maxxam Analytics Inc. laboratory in Be
* Ontario Ministry of the Environment (MOE) "Soil, Ground W
Protection Act", March 9, 2004, Table 3: Full Depth Generic S

RDL = Reportable Detection Limit
SW = Surface Water Sample
-= Not analysed/No criteria
< = Parameter below detection limit
0.0 = above criteria
DUP-01 = Field Duplicate of MW 10-1, First Sampling Event
DUP-02 = Field Duplicate of MW 10-1, Second Sampling Event
DUP-A= Field Duplicate of MW 10-1A
DUP-03= Field Duplicate of MW 93-1A
DUP-05 = Field Duplicate of MW 10-1
(1)=Elevated RDL for analyzed VOC(s)

TABLE D5

HISTORICAL GROUNDWATER ANALYTICAL DATA - VOCs (ug/L)
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	RDL	Criteria*	MW 10-1								MW 10-1A					
			Jul 16, 2010	Dec 13, 2010	Jul 16, 2010 DUP-01	Dec 13, 2010 DUP-02	Sep 02, 2011	Aug 30, 2012	Aug 28, 2013	Aug 28, 2013 DUP-05	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Aug 30, 2012	Sep 02, 2011 DUP- A	Aug 28, 2013
Benzene	1.00	1,900	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Bromodichloromethane	1.00	50,000	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Bromoform	1.00	840	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Bromomethane	3.00	3.7	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Carbon Tetrachloride	1.00	17	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Chlorobenzene	1.00	500	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Chloroethane	8.00	-	<	<	<	<	<10 (1)	<	<	<	<	<	<10 (1)	<	<10 (1)	<
Chloroform	1.00	430	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Chloromethane	8.00	-	<	<	<	<	<10 (1)	<	<	<	<	<	<10 (1)	<	<10 (1)	<
Dibromochloromethane	1.00	50,000	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,2-Dichlorobenzene	0.50	7,600	<	<	<	<	<0.7 (1)	<	<	<	<	<	<0.7 (1)	<	<0.7 (1)	<
1,3-Dichlorobenzene	1.00	7,600	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,4-Dichlorobenzene	1.00	7,600	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	2.00	9,000	<	<	<	<	<3 (1)	<	<	<	<	<	<3 (1)	<	<3 (1)	<
1,2-Dichloroethane	1.00	17	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethylene	0.50	0.66	<	<	<	<	<	<	<	<	<	<	<	<	<	<
cis-1,2-Dichloroethylene	2.00	70	<	<	<	<	<3 (1)	<	<	<	<	<	<3 (1)	<	<3 (1)	<
trans-1,2-Dichloroethylene	2.00	100	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,2-Dichloropropane	1.00	9.3	<	<	<	4.00	2.00	<	<	<	<	2.00	7.00	3.00	7.00	7.1
cis-1,3-Dichloropropene	2.00	3.8	<	<	<	<	<	<	<	<	<	<	<	<	<	<
trans-1,3-Dichloropropene	1.00	3.8	<	<	<	1.00	<	<	<	<	<	1.00	<	<	<	<
Ethylbenzene	1.00	28,000	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Methylene Chloride(Dichloromethane)	3.00	50,000	<	<	<	<	<4 (1)	<	<	<	<	<	<4 (1)	<	<4 (1)	<
o-Xylene	1.00	5,600	<	<	<	<	<	<	<	<	<	<	<	<	<	<
p+m-Xylene	2.00	5,600	<	<	<	<	<3 (1)	<	<	<	<	<	<3 (1)	<	<3 (1)	<
Styrene	1.00	940	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Tetrachloroethylene	1.00	5	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,1,2,2-Tetrachloroethane	1.00	22	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Toluene	1.00	5,900	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Trichloroethylene	1.00	50	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,1,1-Trichloroethane	1.00	200	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,1,2-Trichloroethane	1.00	16,000	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Trichlorofluoromethane (FREON 11)	8.00	-	<	<	<	<	<10 (1)	<	<	<	<	<	<10 (1)	<	<10 (1)	<
Vinyl Chloride	0.50	0.5	<	<	<	<	<	<	<	<	<	<	<	<	<	<

Notes:
Analysis completed by Maxxam Analytics Inc. laboratory in Be
* Ontario Ministry of the Environment (MOE) "Soil, Ground W
Protection Act", March 9, 2004, Table 3: Full Depth Generic S

RDL = Reportable Detection Limit
SW = Surface Water Sample
-= Not analysed/No criteria
< = Parameter below detection limit
0.0 = above criteria
DUP-01 = Field Duplicate of MW 10-1, First Sampling Event
DUP-02 = Field Duplicate of MW 10-1, Second Sampling Event
DUP-A= Field Duplicate of MW 10-1A
DUP-03= Field Duplicate of MW 93-1A
DUP-05 = Field Duplicate of MW 10-1
(1)=Elevated RDL for analyzed VOC(s)

TABLE D6

HISTORICAL GROUNDWATER ANALYTICAL DATA - GENERAL CHEMISTRY
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	Units	RDL	Criteria*	MW 93-1							MW 93-1A							
				Aug 19, 2009	Aug 19, 2009 Field Dup	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Aug 30, 2012	Aug 28, 2013	AMEC 2008	Aug 19, 2009	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Aug 30, 2012	Aug 30, 2012 DUP-03	Aug 28, 2013
Anion Sum	me/L	N/A	-	6.10	7.22	5.87	5.52	7.47	6.51	6.2	-	7.22	7.33	7.46	5.61	6.5	6.47	7.23
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	1.00	-	236.0	292.0	229.0	210.0	304.0	270	240	-	285.0	293.0	297.0	216.0	260	250	300
Calculated TDS	mg/L	1.00	-	338.0	375.0	313.0	313.0	389.0	338	330	265.0	447.0	390.0	401.0	302.0	334	334	380
Carb. Alkalinity (calc. as CaCO3)	mg/L	1.00	-	2.00	3.00	3.00	2.00	4.00	4.7	2.6	-	3.00	3.00	2.00	3.00	5.2	5.4	2.8
Cation Sum	me/L	N/A	-	6.60	6.77	5.62	5.90	6.90	6.14	5.82	-	9.57	7.02	7.19	5.35	5.89	5.94	7.05
Hardness (CaCO3)	mg/L	1.00	-	160	160	120	120	180	150	140	205	210	170	170	120	140	150	170
Ion Balance (% Difference)	%	N/A	-	4.00	3.22	2.18	3.33	3.97	2.92	3.16	-	14.00	2.16	1.84	2.37	4.92	4.27	1.26
Langelier Index (@ 20C)	N/A	N/A	-	0.50	0.62	0.47	0.38	0.80	0.815	0.51	-	0.70	0.62	0.61	0.55	0.826	0.846	0.65
Langelier Index (@ 4C)	N/A	N/A	-	0.30	0.37	0.22	0.13	0.55	0.566	0.261	-	0.45	0.37	0.36	0.31	0.577	0.597	0.401
Nitrate (N)	mg/L	0.05	-	<	<	<	<	<	<	<	-	<	<	<	<	<	<	<
Saturation pH (@ 20C)	N/A	N/A	-	7.50	7.41	7.64	7.64	7.32	7.45	7.54	-	7.31	7.37	7.32	7.67	7.5	7.5	7.34
Saturation pH (@ 4C)	N/A	N/A	-	7.80	7.66	7.89	7.89	7.57	7.69	7.79	-	7.55	7.62	7.57	7.92	7.75	7.75	7.59
Total Alkalinity (Total as CaCO3)	mg/L	30	-	240	300	230	210	310	280	250	290	290	300	300	220	260	260	310
Carbonaceous BOD	mg/L	5.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Chloride (Cl)	mg/L	1	-	36	35	19	15	11	11	24	11	12	11	11	16	30	30	11
Colour	TCU	5.00	-	<	<	<	<	<	<	<	-	<	<	<5	<5	<	<	<
Strong Acid Dissoc. Cyanide (CN)	mg/L	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L	0.05	-	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Nitrite (N)	mg/L	0.01	2.00	<	<	<	<	<	<	<	0.015	<	<	<	<	<	<	<
Nitrogen (Ammonia Nitrogen)	mg/L	0.05	-	0.10	<	<	<	<	<	<	0.02	<	<	<0.05	<0.05	<	<	<
Total Organic Carbon (C)	mg/L	0.50	-	1.20	1.00	2.10	0.90	930.00	<	1.1	2.00	<	<(5) (1)	<(5) (1)	<(0.5)	1.4	1.5	2.6 (1)
Orthophosphate (P)	mg/L	0.01	-	<	<	<	<	<	<	0.013	-	<	<	0.04	<	<	<	<
pH	pH	N/A	-	8.00	8.03	8.11	8.02	8.12	8.26	8.05	8.02	8.00	7.99	7.93	8.22	8.33	8.35	7.99
Phenols-4AAP	mg/L	0.00	26.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Reactive Silica (SiO2)	mg/L	0.50	-	9.90	10.00	7.60	7.60	6.90	5.3	8.1	-	5.00	7.10	6.80	7.70	9.1	9.1	6.3
Total Suspended Solids (TSS)	mg/L	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Sulphate (SO4)	mg/L	2	-	2	16	33	42	48	33	27	-	55	53	56	38	19	20	38
Sulphide	mg/L	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Turbidity	NTU	0.1	-	0.5	1.3	61.0	34.0	<1000	590	2.1	-	350.0	300.0	470.0	1.1	5.9	5.7	160
Conductivity	uS/cm	1	-	580	580	520	500	630	580	540	511	610	630	640	500	580	590	620
Total Oil & Grease	mg/L	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
Analysis completed by Maxxam Analytics Inc. laboratory in St. John's, NL.
* Ontario Ministry of the Environment (MOE) "Soil, Ground Water and Sediment Standrads for Use Under Part XV.1 of the Environmental Protection Act", March 9, 2004, Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
RDL = Reportable Detection Limit **0.0** = above criteria
- = Not analysed/No criteria
< = Parameter below detection limit
<(#) = Parameter below AMEC laboratory detection limit
DUP-01 = Field Duplicate of MW 10-1, First Sampling Event
DUP-02 = Field Duplicate of MW 10-1, Second Sampling Event
DUP-03= Field Duplicate of MW 93-1A
DUP1= Field Duplicate of MW 10-1
(1) = Elevated detection limit due to matrix interference

TABLE D6

HISTORICAL GROUNDWATER ANALYTICAL DATA - GENERAL CHEMISTRY
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	Units	RDL	Criteria*	MW 93-2							MW 93-2A					
				AMEC 2008	Aug 19, 2009	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Aug 30, 2012	Aug 28, 2013	Aug 19, 2009	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Aug 30, 2012	Aug 28, 2013
Anion Sum	me/L	N/A	-	-	6.90	6.30	6.58	6.42	6.36	6.33	2.69	6.43	1.31	2.42	1.37	1.72
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	1.00	-	-	232.0	205.0	219.0	210.0	210.0	220	62.0	212.0	14.0	61.0	11.0	14
Calculated TDS	mg/L	1.00	-	331.0	380.0	346.0	368.0	361.0	353.0	350	184.0	351.0	87.0	145.0	96.0	120
Carb. Alkalinity (calc. as CaCO3)	mg/L	1.00	-	-	1.00	1.00	1.00	2.00	2.60	1.3	<	1.00	<	<	<	<
Cation Sum	me/L	N/A	-	-	6.50	5.66	6.19	6.10	5.99	5.97	3.43	5.70	1.15	2.09	1.44	1.87
Hardness (CaCO3)	mg/L	1.00	-	245	270	240	250	260	250	250	120	240	31	73	34	42
Ion Balance (% Difference)	%	N/A	-	-	2.60	5.35	3.05	2.56	3.00	2.93	12.10	`	6.50	7.32	2.49	4.18
Langelier Index (@ 20C)	N/A	N/A	-	-	0.50	0.53	0.54	0.68	0.90	0.591	-1.51	0.48	-3.48	-1.21	-3.03	-3.37
Langelier Index (@ 4C)	N/A	N/A	-	-	0.30	0.28	0.29	0.43	0.65	0.342	-1.76	0.24	-3.73	-1.46	-3.28	-3.62
Nitrate (N)	mg/L	0.05	-	-	<	<	<	<	<	<	<	<	0.15	<	<	<
Saturation pH (@ 20C)	N/A	N/A	-	-	7.20	7.28	7.20	7.23	7.22	7.22	8.06	7.27	9.25	8.27	9.28	9.14
Saturation pH (@ 4C)	N/A	N/A	-	-	7.40	7.53	7.45	7.47	7.47	7.47	8.31	7.52	9.50	8.52	9.53	9.39
Total Alkalinity (Total as CaCO3)	mg/L	30	-	205	2,320	210	220	210	220	220	62	210	14	61	12	14
Carbonaceous BOD	mg/L	5.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Chloride (Cl)	mg/L	1	-	24	24	23	21	20	20	19	21	23	14	16	17	22
Colour	TCU	5.00	-	-	<	<	<5	<5	<	<	6.00	<	79.00	120.00	41.00	65
Strong Acid Dissoc. Cyanide (CN)	mg/L	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L	0.05	-	<	<	<	<	<	<	<	<	<	<	<	<	<
Nitrite (N)	mg/L	0.01	2.00	0.02	<	<	<	<	<	<	<	<	<	<	<	<
Nitrogen (Ammonia Nitrogen)	mg/L	0.05	-	<0.01	<	<	<	<	<	<	0.24	<	0.35	0.25	0.40	0.53
Total Organic Carbon (C)	mg/L	0.50	-	2.00	0.50	1.50	1.30	1.00	0.88	1	6.20	1.30	16.00	17.00	22.00	16
Orthophosphate (P)	mg/L	0.01	-	-	<	<	<	<	<	<	<	<	<	<	<	<
pH	pH	N/A	-	7.50	7.70	7.81	7.74	7.90	8.12	7.81	6.55	7.75	5.77	7.06	6.25	5.77
Phenols-4AAP	mg/L	0.00	26.00	-	-	-	-	-	-	-	-	-	-	-	-	-
Reactive Silica (SiO2)	mg/L	0.50	-	-	19.00	18.00	19.00	19.00	18.00	18	12.00	18.00	6.40	11.00	5.70	6.4
Total Suspended Solids (TSS)	mg/L	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Sulphate (SO4)	mg/L	2	-	-	73	74	76	78	71	68	41	74	31	36	32	40
Sulphide	mg/L	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Turbidity	NTU	0.1	-	-	13.0	5.4	13.0	3.9	4.0	1.1	84.0	3.2	100.0	190.0	120.0	44
Conductivity	uS/cm	1	-	549	560	570	580	570	580	560	260	570	140	230	150	190
Total Oil & Grease	mg/L	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
Analysis completed by Maxxam Analytics Inc. laboratory in St. John's, N
* Ontario Ministry of the Environment (MOE) "Soil, Ground Water and
Act", March 9, 2004, Table 3: Full Depth Generic Site Condition Standar
RDL = Reportable Detection Limit **0.0** = above crit
- = Not analysed/No criteria
< = Parameter below detection limit
<(#) = Parameter below AMEC laboratory detection limit
DUP-01 = Field Duplicate of MW 10-1, First Sampling Event
DUP-02 = Field Duplicate of MW 10-1, Second Sampling Event
DUP-03= Field Duplicate of MW 93-1A
DUP1= Field Duplicate of MW 10-1
(1) = Elevated detection limit due to matrix interference

TABLE D6

HISTORICAL GROUNDWATER ANALYTICAL DATA - GENERAL CHEMISTRY
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	Units	RDL	Criteria*	MW 10-1								MW 10-1A					
				Jul 16, 2010	Dec 13, 2010	Jul 16, 2010 DUP-01	Dec 13, 2010 DUP-02	Sep 02, 2011	Aug 30, 2012	Aug 28, 2013	Aug 28, 2013 DUP-05	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Aug 30, 2012	Sep 02, 2011 DUP-A	Aug 28, 2013
Anion Sum	me/L	N/A	-	3.87	2.63	3.89	2.70	3.48	3.24	2.92	2.96	3.86	3.08	1.43	2.11	1.44	1.66
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	1.00	-	94.0	92.0	96.0	95.0	144.0	140	120	120	94.0	114.0	50.0	77.0	51.0	49
Calculated TDS	mg/L	1.00	-	215.0	147.0	217.0	149.0	185.0	174	160	160	215.0	171.0	95.0	122.0	95.0	100
Carb. Alkalinity (calc. as CaCO3)	mg/L	1.00	-	<	<	<	<	<	1.1	<	<	<	<	<	<	<	<
Cation Sum	me/L	N/A	-	3.60	2.55	3.66	2.57	3.27	3.11	2.89	2.91	3.61	3.08	1.57	1.98	1.59	1.61
Hardness (CaCO3)	mg/L	1.00	-	100	110	100	110	150	140	130	130	100	140	61	84	61	68
Ion Balance (% Difference)	%	N/A	-	3.61	1.54	3.05	2.47	3.11	2.05	0.52	0.85	3.35	0.00	4.67	3.18	4.95	1.53
Langelier Index (@ 20C)	N/A	N/A	-	-0.23	-0.79	-0.31	-0.68	0.34	0.365	-0.202	-0.192	-0.36	-0.18	-1.18	-0.60	-1.11	-1.51
Langelier Index (@ 4C)	N/A	N/A	-	-0.48	-1.05	-0.56	-0.93	0.09	0.115	-0.452	-0.442	-0.61	-0.43	-1.43	-0.85	-1.36	-1.76
Nitrate (N)	mg/L	0.05	-	<	0.24	<	0.25	<	0.16	<	<	<	0.26	0.10	0.08	0.08	0.068
Saturation pH (@ 20C)	N/A	N/A	-	7.93	7.79	7.91	7.77	7.51	7.55	7.64	7.63	7.92	7.64	8.32	8.00	8.31	8.29
Saturation pH (@ 4C)	N/A	N/A	-	8.18	8.05	8.16	8.02	7.76	7.8	7.89	7.88	8.17	7.89	8.57	8.25	8.56	8.54
Total Alkalinity (Total as CaCO3)	mg/L	30	-	95	92	96	96	140	140	120	120	95	110	51	77	51	49
Carbonaceous BOD	mg/L	5.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Chloride (Cl)	mg/L	1	-	56	12	56	12	6	3.8	5.4	5.8	56	14	3	4	3	5.7
Colour	TCU	5.00	-	10.00	9.00	6.00	13.00	9.00	5.6	<	<	7.00	5.00	22.00	7.70	18.00	8.2
Strong Acid Dissoc. Cyanide (CN)	mg/L	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L	0.05	-	<	<	<	<	0.90	0.16	<	<	<	<	0.11	0.08	0.08	0.068
Nitrite (N)	mg/L	0.01	2.00	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Nitrogen (Ammonia Nitrogen)	mg/L	0.05	-	0.14	<0.05	0.14	<0.05	0.28	<	<	<	0.15	0.09	<	0.11	<	<
Total Organic Carbon (C)	mg/L	0.50	-	8 (1)	33.00	8 (1)	18.00	18.00	2.7	3	3.1	8 (1)	2.30	15.00	8.70	18.00	34 (1)
Orthophosphate (P)	mg/L	0.01	-	<	<	<	<	<	<	<	<	<	<	<	<	<	<
pH	pH	N/A	-	7.70	7.00	7.60	7.09	7.85	7.91	7.44	7.44	7.56	7.46	7.14	7.40	7.20	6.78
Phenols-4AAP	mg/L	0.00	26.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Reactive Silica (SiO2)	mg/L	0.50	-	7.00	6.20	7.00	6.00	8.00	7.4	6.9	7	7.10	7.60	10.00	10.00	10.00	11
Total Suspended Solids (TSS)	mg/L	2	-	-	-	-	-	-	-	-	-	-	-	7,000	-	9,400	-
Dissolved Sulphate (SO4)	mg/L	2	-	18	21	19	21	20	17	17	18	19	19	22	21	22	24
Sulphide	mg/L	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Turbidity	NTU	0.1	-	640.0	>1000	570.0	540.0	320.0	26	110	110	520.0	110.0	>1000	240.0	>1000	>1000
Conductivity	uS/cm	1	-	380	250	380	260	320	300	270	280	380	300	150	200	150	160
Total Oil & Grease	mg/L	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
Analysis completed by Maxxam Analytics Inc. laboratory in St. John's, N
* Ontario Ministry of the Environment (MOE) "Soil, Ground Water and
Act", March 9, 2004, Table 3: Full Depth Generic Site Condition Standar
RDL = Reportable Detection Limit **0.0** = above crit
- = Not analysed/No criteria
< = Parameter below detection limit
<(#) = Parameter below AMEC laboratory detection limit
DUP-01 = Field Duplicate of MW 10-1, First Sampling Event
DUP-02 = Field Duplicate of MW 10-1, Second Sampling Event
DUP-03= Field Duplicate of MW 93-1A
DUP1= Field Duplicate of MW 10-1
(1) = Elevated detection limit due to matrix interference

APPENDIX D

PREVIOUS MONITORING DATA

TABLE D1

HISTORICAL STATIC GROUNDWATER LEVELS
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Location	Ground Surface Elevation	Length of Stick-up	TOC Elevation	Groundwater Depth (mbToC)														
				Mar	Jul	Sep	Oct	Jun	Jul	Oct	Dec	Oct	Sep	Mar	Jul	Dec	Sep	Dec	Aug
	(masl)	(m)	(masl)	2004				2006				2007	2008	2009	2010		2011	2012	2013
PLCS	15.960	--	15.960	--	--	--	--	--	--	--	--	--	--		0.55	0.73	0.59	0.89	0.55
SLCS	15.955	--	15.955	--	--	--	--	--	--	--	--	--	--	--	0.52	0.713	0.55	0.892	0.549
MW 93-1	16.300	1.100	17.400	--	--	--	--	--	--	--	--	--	--	1.975	1.703	1.915	1.921	1.780	1.756
MW 93-1A	16.310	1.400	17.710	0.39	1.88	0.41	0.16	2.06	1.68	2.11	1.84	1.67	2.17	2.50	1.638	1.636	2.204	1.669	1.815
MW 93-2	14.290	1.100	15.390	0.67	0.56	0.58	0.28	1.85	2.16	2.13	--	1.72	2.18	2.20	2.084	2.147	--	2.111	2.323
MW 93-2A	14.310	1.100	15.410	--	--	--	--	--	--	--	--	--	--	1.84	1.456	1.375	--	1.234	1.663
MW 93-3*	--	--	--	--	--	--	--	--	--	--	--	--	--	1.335	--	--	--	--	--
MW 93-3A*	--	--	--	2.37	Dry	--	1.20	Dry	3.21	3.37	--	3.32	Dry	3.52	--	--	--	--	--
MW 10-1	15.790	0.846	16.636	--	--	--	--	--	--	--	--	--	--	--	3.015	3.254	3.551	3.188	3.427
MW 10-1A	15.890	0.854	16.744	--	--	--	--	--	--	--	--	--	--	--	3.084	3.279	3.662	3.234	3.513

Location	Ground Surface Elevation	Length of Stick-up	TOC Elevation	Groundwater Elevation (masl)														
				Mar	Jul	Sep	Oct	Jun	Jul	Oct	Dec	Oct	Sep	Mar	Jul	Dec	Sep	Dec	Aug
	(masl)	(m)	(masl)	2004				2006				2007	2008	2009	2010		2011	2012	2013
PLCS	15.960	--	15.960	--	--	--	--	--	--	--	--	--	--		15.410	15.230	15.370	16.510	16.850
SLCS	15.955	--	15.955	--	--	--	--	--	--	--	--	--	--	--	15.435	15.242	15.410	16.508	16.851
MW 93-1	16.300	1.100	17.400	--	--	--	--	--	--	--	--	--	--	15.425	15.697	15.485	15.479	15.620	15.644
MW 93-1A	16.310	1.400	17.710	17.320	15.830	17.300	17.550	15.650	16.030	15.600	15.870	16.040	15.540	15.210	16.072	16.074	13.756	15.731	15.585
MW 93-2	14.290	1.100	15.390	14.720	14.830	14.810	15.110	13.540	13.230	13.260	--	13.670	13.210	13.190	13.306	13.243	--	15.289	15.077
MW 93-2A	14.310	1.100	15.410	--	--	--	--	--	--	--	--	--	--	13.570	13.954	14.035	--	16.166	15.737
MW 93-3*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW 93-3A*	--	--	15.900	13.530	Dry	--	14.700	Dry	12.690	12.530	--	12.580	Dry	12.380	--	--	--	--	--
MW 10-1	15.790	0.846	16.636	--	--	--	--	--	--	--	--	--	--	--	13.621	13.382	12.409	12.772	12.533
MW 10-1A	15.890	0.854	16.744	--	--	--	--	--	--	--	--	--	--	--	13.660	13.465	12.298	12.726	12.447

Notes:

PLCS = Primary Leachate Collection System Valve Chamber
SLCS = Secondary Leachate Collection System Valve Chamber
MW = Monitor Well
m = Metres
TOC = Top of Casing
masl = Metres Above Sea Level
mbTOC = Metres Below Top of Casing

* = Monitor Well Decommissioned in July 2010

TABLE D2

HISTORICAL GROUNDWATER ANALYTICAL DATA - BTEX/mTPH
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Sample Location	Date Sampled	Benzene	Toluene	Ethyl-benzene	Xylenes	Total Petroleum Hydrocarbons (TPH)					Comments
						F1 C_6-C_{10}	F2 C_{10}-C_{16}	F3 C_{16}-C_{21}	F3 C_{21}-C_{32}	Modified TPH	
MW 93-1	Aug 19, 2009	<	<	<	<	<	<	<		<	-
	Aug 19, 2009[1]	<	<	<	<	<	<	<		<	-
	Jul 16, 2010	<	<	<	<	<	<	<		<	-
	Dec 13, 2010	<	<	<	<	<	<	<		<	-
	Sep 02, 2011	<	<	<	<	<	<	<		<	-
	Aug 30, 2012	<(0.0013)	<(0.0013)	<(0.0013)	<(0.0026)	<(0.013)	<	<		<	-
	Aug 28, 2013	<	<	<	<	<	<	<		<	-
MW 93-1A	2008 (AMEC)	<(0.2)	<(0.2)	<(0.2)	<(0.6)	<(0.05)[2]	<(0.05)[2]	<(0.05)[2]		<(0.15)[2]	-
	Aug 19, 2009	<	<	<	<	<	<	<		<	-
	Jul 16, 2010	<	<	<	<	<	<	<		<	-
	Dec 13, 2010	<	<	<	<	<	<	<		<	-
	Sep 02, 2011	<	<	<	<	<	<	<		<	-
	Aug 30, 2012	<(0.0013)	<(0.0013)	<(0.0013)	<(0.0026)	<(0.013)	<	<		<	-
DUP-03	Aug 30, 2012	<	<	<	<	<	<	<		<	-
	Aug 28, 2013	<	<	<	<	<	<	<		<	-
MW 93-2	2008 (AMEC)	<(0.2)	<(0.2)	<(0.2)	<(0.6)	<(0.05)[2]	<(0.05)[2]	<(0.05)[2]		<(0.15)[2]	-
	Aug 19, 2009	<	<	<	<	<	<	<		<	-
	Jul 16, 2010	<	<	<	<	<	<	<		<	-
	Jul 16, 2010[3]	-	-	-	-	-	<	<		-	-
	Dec 13, 2010	<	<	<	<	<	<	<		<	-
	Dec 13, 2010[3]	-	-	-	-	-	<	<		-	-
	Sep 02, 2011	<	<	<	<	<	<	<		<	-
	Aug 30, 2012	<(0.0013)	<(0.0013)	<(0.0013)	<(0.0026)	<(0.013)	<	<		<	-
	Aug 28, 2013	<	<	<	<	<	<	<		<	-
MW 93-2A	Aug 19, 2009	<	<	<	<	<	<	<		<	-
	Jul 16, 2010	<	<	<	<	<	<	<		<	-
	Dec 13, 2010	<	<	<	<	<	<	<		<	-
	Sep 02, 2011	<	<	<	<	<	<	<		<	-
	Aug 30, 2012	<	<	<	<	<	<	<		<	-
	Aug 28, 2013	<	<	<	<	<	<	<		<	-
MW 10-1	Jul 16, 2010	<	<	<	<	<	<	<		<	-
	Jul 16, 2010[1]	<	<	<	<	<	<	<		<	-
	Dec 13, 2010	<	<	<	<	<	<	<		<	-
	Sep 02, 2011	<	<	<	<	<	<	0.4		0.4	Possible LO fraction
	Aug 30, 2012	<	<	<	<	<	<	<		<	-
	Aug 28, 2013										
DUP-05	Aug 28, 2013	<	<	<	<	<	<	<		<	-
MW 10-1A	Jul 16, 2010	<	<	<	<	<	<	<		<	-
	Dec 13, 2010	<	<	<	<	<	<	<		<	-
	Dec 13, 2010[1]	<	<	<	<	<	<	<		<	-
	Sep 02, 2011	<	<	<	<	<	<	<		<	-
	Aug 30, 2012	<	<	<	<	<	<	<		<	-
DUP- A	Sep 02, 2011	<	<	<	<	<	<	<		<	-
	Aug 28, 2013	<	<	<	<	<	<	<		<	-
RDL		0.001	0.001	0.001	0.002	0.01	0.05	0.1	0.1	0.1	-
Atlantic RBCA Tier I RBSLs*		6.9	20	20	20	na	na	na	na	20	Gasoline
										20	Diesel / #2 Fuel Oil
										20	# 6 Oil

Notes:

Analysis completed by Maxxam Analytics Inc. laboratory in St. John's, NL.
1. Field Duplicate
2. Assumed transcript error by factor of 1,000 from Pinchin LeBlanc Environmental Table 2 from March 2010 OMM Report
3. Lab Duplicate
DUP-A= Field Dup of MW 10-1A
DUP-03= Field Dup of MW 93-1A
DUP-05= Field Dup of MW 10-1
* Atlantic Risk-Based Corrective Action (RBCA) Tier I Risk-Based Screening Level (RBSL) Table values {commercial/non-potable/coarse grained soil}.

G = Gasoline
FO = Fuel Oil
LO = Lube Oil
W = Weathered

RDL = Reportable Detection Limit
< = Parameter below detection limit
- = Not analysed
0.0 = above criteria

TABLE D3

HISTORICAL GROUNDWATER ANALYTICAL DATA - PAHs (ug/L)
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	RDL	Criteria*	MW 93-1							MW 93-1A							
			Aug 19, 2009	Aug 19, 2009 Field Dup	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Aug 30, 2012	Aug 28, 2013	AMEC 2008	Aug 19, 2009	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Aug 30, 2012	Aug 30, 2012 DUP-03	Aug 28, 2013
1-Methylnaphthalene	0.05	13,000	<	<	<	<	<	<	<	<0.03	<	<	<	<	<	<	<
2-Methylnaphthalene	0.05	13,000	<	<	<	<	<	<	<	<0.03	<	<	<	<	<	<	<
Acenaphthene	0.01	1,700	<	<	<	<	0.01	<	<	<0.04	<	<	<	<	<	<	<
Acenaphthylene	0.01	2,000	<	<	<	<	<	<	<	<0.03	<	<	<	<	<	<	<
Acridine	0.05	-	-	-	<	<	-	-	<	-	-	<	<	-	-	-	<
Anthracene	0.01	12	<	<	<	<	<	<	<	<0.01	<	<	<	<	<	<	<
Benzo(a)anthracene	0.01	5	<	<	<	<	<	<	<	<0.01	<	<	<	<	<	<	<
Benzo(a)pyrene	0.01	1.9	<	0.01	<	<	<	<	<	<0.01	<	<	<	<	<	<	<
Benzo(b)fluoranthene	0.01	7	<	0.02	<	<	<	<	<	<0.05	<	<	<	<	<	<	<
Benzo(g,h,i)perylene	0.01	0.2	<	0.02	<	<	<	<	<	<0.03	<	<	<	<	<	<	<
Benzo(k)fluoranthene	0.01	0.4	<	0.02	<	<	<	<	<	<0.05	<	<	<	<	<	<	<
Chrysene	0.01	3	<	<	<	<	<	<	<	<0.04	<	<	<	<	<	<	<
Dibenz(a,h)anthracene	0.01	0.25	<	0.03	<	<	<	<	<	-	<	<	<	<	<	<	<
Fluoranthene	0.01	130	<	<	<	<	<	<	<	<0.03	<	<	<	<	<	<	<
Fluorene	0.01	290	<	<	<	<	<	<	<	<0.03	<	<	<	<	<	<	<
Indeno(1,2,3-cd)pyrene	0.01	0.27	<	0.02	<	<	<	<	<	<0.05	<	<	<	<	<	<	<
Naphthalene	0.20	5,900	<	<	<	<	<	<	<	-	<	<	<	<	<	<	<
Perylene	0.01	-	<	<	<	<	<	<	<	-	<	<	<	<	<	<	<
Phenanthrene	0.01	63	0.01	<	<	<	<	<	<	<0.04	0.01	<	<	<	<	<	<
Pyrene	0.01	40	<	<	<	<	<	<	<	<0.01	<	<	<	<	<	<	<
Quinoline	0.05	-	-	-	<	<	-	-	-	-	-	<	<	-	-	-	-

Analysis completed by Maxxam Analytics Inc. laboratory in Bedford, NS.
* Ontario Ministry of the Environment (MOE) "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", March 9, 2004, Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
RDL = Reportable Detection Limit
- = Not analysed/No criteria
< = Parameter below detection limit
<(#) = Parameter below AMEC laboratory detection limit
0.0 = above criteria
DUP-01 = Field Duplicate of MW 10-1, First Sampling Event
DUP-02 = Field Duplicate of MW 10-1, Second Sampling Event
DUP-A= Field Duplicate of MW-101A
DUP-03= Field Duplicate of MW 93-1A
DUP-05= Field Duplicate of MW 10-1
(1)= Elevated PAH RDL(s) due to matrix/co-extractive interference

TABLE D3

HISTORICAL GROUNDWATER ANALYTICAL DATA - PAHs (ug/L)
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	RDL	Criteria*	MW 93-2							MW 93-2A					
			AMEC 2008	Aug 19, 2009	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Aug 30, 2012	Aug 28, 2013	Aug 19, 2009	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Aug 30, 2012	Aug 28, 2013
1-Methylnaphthalene	0.05	13,000	<0.03	<	<	<	<	<	<	<	<	<	<	<	<
2-Methylnaphthalene	0.05	13,000	<0.03	<	<	<	<	<	<	<	<	<	<	<	<
Acenaphthene	0.01	1,700	<0.04	<	<	<	<	<	<	<	<	<	<	<	<
Acenaphthylene	0.01	2,000	<0.03	<	<	<	<	<	<	<	<	<	<	<	<
Acridine	0.05	-	-	-	<	<	-	-	<	-	<	<	-	-	<
Anthracene	0.01	12	<0.01	<	<	<	<	<	<	<	<	<	<	<	<
Benzo(a)anthracene	0.01	5	<0.01	<	<	<	<	<	<	<	<	<	<	<	<
Benzo(a)pyrene	0.01	1.9	<0.01	<	<	<	<	<	<	<	<	<	<	<	<
Benzo(b)fluoranthene	0.01	7	<0.05	<	<	<	<	<	<	<	<	<	<	<	<
Benzo(g,h,i)perylene	0.01	0.2	<0.03	<	<	<	<	<	<	<	<	<	<	<	<
Benzo(k)fluoranthene	0.01	0.4	<0.05	<	<	<	<	<	<	<	<	<	<	<	<
Chrysene	0.01	3	<0.04	<	<	<	<	<	<	<	<	<	<	<	<
Dibenz(a,h)anthracene	0.01	0.25	-	<	<	<	<	<	<	<	<	<	<	<	<
Fluoranthene	0.01	130	<0.03	<	<	<	<	<	<	<	<	<	<	<	<
Fluorene	0.01	290	<0.03	<	<	<	<	<	<	<	<	<	<	<	<
Indeno(1,2,3-cd)pyrene	0.01	0.27	<0.05	<	<	<	<	<	<	<	<	<	<	<	<
Naphthalene	0.20	5,900	-	<	<	<	<	<	<	<	<	<	<	<	<
Perylene	0.01	-	-	<	<	<	<	<	<	<	<	<	0.02	<	<
Phenanthrene	0.01	63	<0.04	0.01	<	<	<	<	<	0.01	<	<	<	0.012	<
Pyrene	0.01	40	<0.01	<	<	<	<	<	<	<	<	<	<	<	<
Quinoline	0.05	-	-	-	<	<	-	-	-	-	<	<	-	-	-

Analysis completed by Maxxam Analytics Inc. la
* Ontario Ministry of the Environment (MOE) "S
Condition Standards in a Non-Potable Ground W
RDL = Reportable Detection Limit
- = Not analysed/No criteria
< = Parameter below detection limit
<(#) = Parameter below AMEC laboratory detect
0.0 = above criteria
DUP-01 = Field Duplicate of MW 10-1, First Sam
DUP-02 = Field Duplicate of MW 10-1, Second Sa
DUP-A= Field Duplicate of MW-101A
DUP-03= Field Duplicate of MW 93-1A
DUP-05= Field Duplicate of MW 10-1
(1)= Elevated PAH RDL(s) due to matrix/co-extr

TABLE D3

HISTORICAL GROUNDWATER ANALYTICAL DATA - PAHs (ug/L)
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	RDL	Criteria*	MW 10-1								MW 10-1A					
			Jul 16, 2010	Jul 16, 2010 DUP-01	Dec 13, 2010	Dec 13, 2010 DUP-02	Sep 02, 2011	Aug 30, 2012	Aug 28, 2013	Aug 28, 2013 DUP-05	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Sep 02, 2011 DUP-A	Aug 30, 2012	Aug 28, 2013
1-Methylnaphthalene	0.05	13,000	<	<	<	<	<	<	<	<	<	<	<	<	<	<
2-Methylnaphthalene	0.05	13,000	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Acenaphthene	0.01	1,700	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Acenaphthylene	0.01	2,000	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Acridine	0.05	-	<	<	<	<	-	-	<	<	<	<	-	-	-	<
Anthracene	0.01	12	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Benzo(a)anthracene	0.01	5	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Benzo(a)pyrene	0.01	1.9	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Benzo(b)fluoranthene	0.01	7	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Benzo(g,h,i)perylene	0.01	0.2	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Benzo(k)fluoranthene	0.01	0.4	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Chrysene	0.01	3	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Dibenz(a,h)anthracene	0.01	0.25	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Fluoranthene	0.01	130	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Fluorene	0.01	290	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Indeno(1,2,3-cd)pyrene	0.01	0.27	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Naphthalene	0.20	5,900	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Perylene	0.01	-	<	<	<	0.04	<	<	<	<	<	<	<	<	0.017	0.019
Phenanthrene	0.01	63	<	<	<	<	<	<	<	<	<	<	<	<	<	0.013
Pyrene	0.01	40	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Quinoline	0.05	-	<	<	<	<	-	-	-	<	<	<	<	<	-	-

Analysis completed by Maxxam Analytics Inc. la
* Ontario Ministry of the Environment (MOE) "S
Condition Standards in a Non-Potable Ground W
RDL = Reportable Detection Limit
- = Not analysed/No criteria
< = Parameter below detection limit
<(#) = Parameter below AMEC laboratory detect
0.0 = above criteria
DUP-01 = Field Duplicate of MW 10-1, First Samp
DUP-02 = Field Duplicate of MW 10-1, Second Sa
DUP-A= Field Duplicate of MW-101A
DUP-03= Field Duplicate of MW 93-1A
DUP-05= Field Duplicate of MW 10-1
(1)= Elevated PAH RDL(s) due to matrix/co-extr

TABLE D4

GROUNDWATER ANALYTICAL DATA - PCBs
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Sample Location	Date Sampled	Total PCBs
MW 93-1	Aug 19, 2009	<
	Aug 19, 2009	<[1]
	Aug 19, 2009	<[2]
	Jul 16, 2010	<
	Dec 13, 2010	<
	Sep 02, 2011	<
	Aug 30, 2012	<
	Aug 28, 2013	<
MW 93-1A	AMEC 2008	<0.04
	Aug 19, 2009	0.1
	Jul 16, 2010	<
	Dec 13, 2010	<
	Sep 02, 2011	<
	Aug 30, 2012	<
DUP-03	Aug 30, 2012	<
	Aug 28, 2013	<
MW 93-2	AMEC 2008	<0.04
	Aug 19, 2009	<
	Jul 16, 2010	<
	Dec 13, 2010	<
	Sep 02, 2011	<
	Aug 30, 2012	<
	Aug 28, 2013	<
MW 93-2A	Aug 19, 2009	0.11
	Jul 16, 2010	<
	Dec 13, 2010	<
	Sep 02, 2011	<
	Aug 30, 2012	<
	Aug 28, 2013	<
MW 10-1	Jul 16, 2010	<
	Jul 16, 2010	<[2]
	Dec 13, 2010	<
	Sep 02, 2011	<
	Aug 30, 2012	<
	Aug 28, 2013	<
DUP-05	Aug 28, 2013	<
MW 10-1A	Jul 16, 2010	<
	Dec 13, 2010	<
	Dec 13, 2010	<[2]
	Sep 02, 2011	<
	Aug 30, 2012	<
DUP-A	Sep 02, 2011	<
	Aug 28, 2013	<
RDL		0.05
Criteria[*] - Ontario MOE		0.2

Notes:

Analysis completed by Maxxam Analytics Inc. laboratory in Bedford, NS.
1. Lab Duplicate
2. Field Duplicate
* Ontario Ministry of the Environment (MOE) "Soil, Ground Water and Sediment Standrads for Use Under Part XV.1 of the Ground Water Condition

MW = Monitor Well
DUP-01 = Field Duplicate of MW 10-1, First Sampling Event
DUP-02 = Field Duplicate of MW 10-1, Second Sampling Event
DUP-A = Field Duplicate of MW 10-1A
DUP-03= Field Duplicate of MW 93-1A
DUP-04= Field Duplicate of PLCS
DUP-05 = Field Duplicate of MW 10-1
RDL = Reportable Detection Limit
< = Parameter below detection limit
0.0 = above criteria

TABLE D5

HISTORICAL GROUNDWATER ANALYTICAL DATA - VOCs (ug/L)
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	RDL	Criteria*	MW 93-1							MW 93-1A							
			Aug 19, 2009	Aug 19, 2009 Field Dup	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Aug 30, 2012	Aug 28, 2013	AMEC 2008	Aug 19, 2009	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Aug 30, 2012	Aug 30, 2012 DUP-03	Aug 28, 2013
Benzene	1.00	1,900	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Bromodichloromethane	1.00	50,000	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Bromoform	1.00	840	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Bromomethane	3.00	3.7	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Carbon Tetrachloride	1.00	17	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Chlorobenzene	1.00	500	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Chloroethane	8.00	-	<	<	<	<	<10 (1)	<	<	<	<	<	<	<10 (1)	<	<	<
Chloroform	1.00	430	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Chloromethane	8.00	-	<	<	<	<	<10 (1)	<	<	<	<	<	<	<10 (1)	<	<	<
Dibromochloromethane	1.00	50,000	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,2-Dichlorobenzene	0.50	7,600	<	<	<	<	<0.7 (1)	<	<	<	<	<	<	<0.7 (1)	<	<	<
1,3-Dichlorobenzene	1.00	7,600	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,4-Dichlorobenzene	1.00	7,600	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	2.00	9,000	<	<	<	<	<3 (1)	<	<	<	<	<	<	<3 (1)	<	<	<
1,2-Dichloroethane	1.00	17	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethylene	0.50	0.66	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
cis-1,2-Dichloroethylene	2.00	70	<	<	<	<	<3 (1)	<	<	<	<	<	<	<3 (1)	<	<	<
trans-1,2-Dichloroethylene	2.00	100	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,2-Dichloropropane	1.00	9.3	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
cis-1,3-Dichloropropene	2.00	3.8	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
trans-1,3-Dichloropropene	1.00	3.8	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Ethylbenzene	1.00	28,000	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Methylene Chloride(Dichloromethane)	3.00	50,000	<	<	<	<	<4 (1)	<	<	<	<	<	<	<4 (1)	<	<	<
o-Xylene	1.00	5,600	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
p+m-Xylene	2.00	5,600	<	<	<	<	<3 (1)	<	<	<	<	<	<	<3 (1)	<	<	<
Styrene	1.00	940	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Tetrachloroethylene	1.00	5	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,1,2,2-Tetrachloroethane	1.00	22	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Toluene	1.00	5,900	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Trichloroethylene	1.00	50	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,1,1-Trichloroethane	1.00	200	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,1,2-Trichloroethane	1.00	16,000	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Trichlorofluoromethane (FREON 11)	8.00	-	<	<	<	<	<10 (1)	<	<	<	<	<	<	<10 (1)	<	<	<
Vinyl Chloride	0.50	0.5	<	<	<	<	<	<	<	0.2	<	<	<	<	<	<	<

Notes:
Analysis completed by Maxxam Analytics Inc. laboratory in Bedford, NS.
* Ontario Ministry of the Environment (MOE) "Soil, Ground Water and Sediment Standrads for Use Under Part XV.1 of the Environmental Protection Act", March 9, 2004, Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition

RDL = Reportable Detection Limit
SW = Surface Water Sample
-= Not analysed/No criteria
< = Parameter below detection limit
0.0 = above criteria
DUP-01 = Field Duplicate of MW 10-1, First Sampling Event
DUP-02 = Field Duplicate of MW 10-1, Second Sampling Event
DUP-A= Field Duplicate of MW 10-1A
DUP-03= Field Duplicate of MW 93-1A
DUP-05 = Field Duplicate of MW 10-1
(1)=Elevated RDL for analyzed VOC(s)

TABLE D5

HISTORICAL GROUNDWATER ANALYTICAL DATA - VOCs (ug/L)
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	RDL	Criteria*	MW 93-2							MW 93-2A					
			AMEC 2008	Aug 19, 2009	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Aug 30, 2012	Aug 28, 2013	Aug 19, 2009	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Aug 30, 2012	Aug 28, 2013
Benzene	1.00	1,900	<	<	<	<	<	<	<	<	<	<	<	<	<
Bromodichloromethane	1.00	50,000	<	<	<	<	<	<	<	<	<	<	<	<	<
Bromoform	1.00	840	<	<	<	<	<	<	<	<	<	<	<	<	<
Bromomethane	3.00	3.7	<	<	<	<	<	<	<	<	<	<	<	<	<
Carbon Tetrachloride	1.00	17	<	<	<	<	<	<	<	<	<	<	<	<	<
Chlorobenzene	1.00	500	<	<	<	<	<	<	<	<	<	<	<	<	<
Chloroethane	8.00	-	<	<	<	<	<10 (1)	<	<	<	<	<	<10 (1)	<	<
Chloroform	1.00	430	<	<	<	<	<	<	<	<	<	<	<	<	<
Chloromethane	8.00	-	<	<	<	<	<10 (1)	<	<	<	<	<	<10 (1)	<	<
Dibromochloromethane	1.00	50,000	<	<	<	<	<	<	<	<	<	<	<	<	<
1,2-Dichlorobenzene	0.50	7,600	<	<	<	<	<0.7 (1)	<	<	<	<	<	<0.7 (1)	<	<
1,3-Dichlorobenzene	1.00	7,600	<	<	<	<	<	<	<	<	<	<	<	<	<
1,4-Dichlorobenzene	1.00	7,600	<	<	<	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	2.00	9,000	<	<	<	<	<3 (1)	<	<	<	<	<	<3 (1)	<	<
1,2-Dichloroethane	1.00	17	<	<	<	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethylene	0.50	0.66	<	<	<	<	<	<	<	<	<	<	<	<	<
cis-1,2-Dichloroethylene	2.00	70	<	<	<	<	<3 (1)	<	<	<	<	<	<3 (1)	<	<
trans-1,2-Dichloroethylene	2.00	100	<	<	<	<	<	<	<	<	<	<	<	<	<
1,2-Dichloropropane	1.00	9.3	<	<	<	<	<	<	<	<	<	<	<	<	<
cis-1,3-Dichloropropene	2.00	3.8	<	<	<	<	<	<	<	<	<	<	<	<	<
trans-1,3-Dichloropropene	1.00	3.8	<	<	<	<	<	<	<	<	<	<	<	<	<
Ethylbenzene	1.00	28,000	<	<	<	<	<	<	<	<	<	<	<	<	<
Methylene Chloride(Dichloromethane)	3.00	50,000	<	<	<	<	<4 (1)	<	<	<	<	<	<4 (1)	<	<
o-Xylene	1.00	5,600	<	<	<	<	<	<	<	<	<	<	<	<	<
p+m-Xylene	2.00	5,600	<	<	<	<	<3 (1)	<	<	<	<	<	<3 (1)	<	<
Styrene	1.00	940	<	<	<	<	<	<	<	<	<	<	<	<	<
Tetrachloroethylene	1.00	5	<	<	<	<	<	<	<	<	<	<	<	<	<
1,1,2,2-Tetrachloroethane	1.00	22	<	<	<	<	<	<	<	<	<	<	<	<	<
Toluene	1.00	5,900	<	<	<	<	<	<	<	<	<	<	<	<	<
Trichloroethylene	1.00	50	<	<	<	<	<	<	<	<	<	<	<	<	<
1,1,1-Trichloroethane	1.00	200	<	<	<	<	<	<	<	<	<	<	<	<	<
1,1,2-Trichloroethane	1.00	16,000	<	<	<	<	<	<	<	<	<	<	<	<	<
Trichlorofluoromethane (FREON 11)	8.00	-	<	<	<	<	<10 (1)	<	<	<	<	<	<10 (1)	<	<
Vinyl Chloride	0.50	0.5	0.2	<	<	<	<	<	<	<	<	<	<	<	<

Notes:
Analysis completed by Maxxam Analytics Inc. laboratory in Be
* Ontario Ministry of the Environment (MOE) "Soil, Ground W
Protection Act", March 9, 2004, Table 3: Full Depth Generic S

RDL = Reportable Detection Limit
SW = Surface Water Sample
-= Not analysed/No criteria
< = Parameter below detection limit
0.0 = above criteria
DUP-01 = Field Duplicate of MW 10-1, First Sampling Event
DUP-02 = Field Duplicate of MW 10-1, Second Sampling Event
DUP-A= Field Duplicate of MW 10-1A
DUP-03= Field Duplicate of MW 93-1A
DUP-05 = Field Duplicate of MW 10-1
(1)=Elevated RDL for analyzed VOC(s)

TABLE D5

HISTORICAL GROUNDWATER ANALYTICAL DATA - VOCs (ug/L)
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	RDL	Criteria*	MW 10-1								MW 10-1A					
			Jul 16, 2010	Dec 13, 2010	Jul 16, 2010 DUP-01	Dec 13, 2010 DUP-02	Sep 02, 2011	Aug 30, 2012	Aug 28, 2013	Aug 28, 2013 DUP-05	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Aug 30, 2012	Sep 02, 2011 DUP- A	Aug 28, 2013
Benzene	1.00	1,900	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Bromodichloromethane	1.00	50,000	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Bromoform	1.00	840	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Bromomethane	3.00	3.7	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Carbon Tetrachloride	1.00	17	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Chlorobenzene	1.00	500	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Chloroethane	8.00	-	<	<	<	<	<10 (1)	<	<	<	<	<	<10 (1)	<	<10 (1)	<
Chloroform	1.00	430	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Chloromethane	8.00	-	<	<	<	<	<10 (1)	<	<	<	<	<	<10 (1)	<	<10 (1)	<
Dibromochloromethane	1.00	50,000	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,2-Dichlorobenzene	0.50	7,600	<	<	<	<	<0.7 (1)	<	<	<	<	<	<0.7 (1)	<	<0.7 (1)	<
1,3-Dichlorobenzene	1.00	7,600	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,4-Dichlorobenzene	1.00	7,600	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	2.00	9,000	<	<	<	<	<3 (1)	<	<	<	<	<	<3 (1)	<	<3 (1)	<
1,2-Dichloroethane	1.00	17	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethylene	0.50	0.66	<	<	<	<	<	<	<	<	<	<	<	<	<	<
cis-1,2-Dichloroethylene	2.00	70	<	<	<	<	<3 (1)	<	<	<	<	<	<3 (1)	<	<3 (1)	<
trans-1,2-Dichloroethylene	2.00	100	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,2-Dichloropropane	1.00	9.3	<	<	<	4.00	2.00	<	<	<	<	2.00	7.00	3.00	7.00	7.1
cis-1,3-Dichloropropene	2.00	3.8	<	<	<	<	<	<	<	<	<	<	<	<	<	<
trans-1,3-Dichloropropene	1.00	3.8	<	<	<	1.00	<	<	<	<	<	1.00	<	<	<	<
Ethylbenzene	1.00	28,000	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Methylene Chloride(Dichloromethane)	3.00	50,000	<	<	<	<	<4 (1)	<	<	<	<	<	<4 (1)	<	<4 (1)	<
o-Xylene	1.00	5,600	<	<	<	<	<	<	<	<	<	<	<	<	<	<
p+m-Xylene	2.00	5,600	<	<	<	<	<3 (1)	<	<	<	<	<	<3 (1)	<	<3 (1)	<
Styrene	1.00	940	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Tetrachloroethylene	1.00	5	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,1,2,2-Tetrachloroethane	1.00	22	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Toluene	1.00	5,900	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Trichloroethylene	1.00	50	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,1,1-Trichloroethane	1.00	200	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,1,2-Trichloroethane	1.00	16,000	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Trichlorofluoromethane (FREON 11)	8.00	-	<	<	<	<	<10 (1)	<	<	<	<	<	<10 (1)	<	<10 (1)	<
Vinyl Chloride	0.50	0.5	<	<	<	<	<	<	<	<	<	<	<	<	<	<

Notes:
Analysis completed by Maxxam Analytics Inc. laboratory in Be
* Ontario Ministry of the Environment (MOE) "Soil, Ground W
Protection Act", March 9, 2004, Table 3: Full Depth Generic S

RDL = Reportable Detection Limit
SW = Surface Water Sample
-= Not analysed/No criteria
< = Parameter below detection limit
0.0 = above criteria
DUP-01 = Field Duplicate of MW 10-1, First Sampling Event
DUP-02 = Field Duplicate of MW 10-1, Second Sampling Event
DUP-A= Field Duplicate of MW 10-1A
DUP-03= Field Duplicate of MW 93-1A
DUP-05 = Field Duplicate of MW 10-1
(1)=Elevated RDL for analyzed VOC(s)

TABLE D6

HISTORICAL GROUNDWATER ANALYTICAL DATA - GENERAL CHEMISTRY
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	Units	RDL	Criteria*	MW 93-1							MW 93-1A							
				Aug 19, 2009	Aug 19, 2009 Field Dup	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Aug 30, 2012	Aug 28, 2013	AMEC 2008	Aug 19, 2009	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Aug 30, 2012	Aug 30, 2012 DUP-03	Aug 28, 2013
Anion Sum	me/L	N/A	-	6.10	7.22	5.87	5.52	7.47	6.51	6.2	-	7.22	7.33	7.46	5.61	6.5	6.47	7.23
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	1.00	-	236.0	292.0	229.0	210.0	304.0	270	240	-	285.0	293.0	297.0	216.0	260	250	300
Calculated TDS	mg/L	1.00	-	338.0	375.0	313.0	313.0	389.0	338	330	265.0	447.0	390.0	401.0	302.0	334	334	380
Carb. Alkalinity (calc. as CaCO3)	mg/L	1.00	-	2.00	3.00	3.00	2.00	4.00	4.7	2.6	-	3.00	3.00	2.00	3.00	5.2	5.4	2.8
Cation Sum	me/L	N/A	-	6.60	6.77	5.62	5.90	6.90	6.14	5.82	-	9.57	7.02	7.19	5.35	5.89	5.94	7.05
Hardness (CaCO3)	mg/L	1.00	-	160	160	120	120	180	150	140	205	210	170	170	120	140	150	170
Ion Balance (% Difference)	%	N/A	-	4.00	3.22	2.18	3.33	3.97	2.92	3.16	-	14.00	2.16	1.84	2.37	4.92	4.27	1.26
Langelier Index (@ 20C)	N/A	N/A	-	0.50	0.62	0.47	0.38	0.80	0.815	0.51	-	0.70	0.62	0.61	0.55	0.826	0.846	0.65
Langelier Index (@ 4C)	N/A	N/A	-	0.30	0.37	0.22	0.13	0.55	0.566	0.261	-	0.45	0.37	0.36	0.31	0.577	0.597	0.401
Nitrate (N)	mg/L	0.05	-	<	<	<	<	<	<	<	-	<	<	<	<	<	<	<
Saturation pH (@ 20C)	N/A	N/A	-	7.50	7.41	7.64	7.64	7.32	7.45	7.54	-	7.31	7.37	7.32	7.67	7.5	7.5	7.34
Saturation pH (@ 4C)	N/A	N/A	-	7.80	7.66	7.89	7.89	7.57	7.69	7.79	-	7.55	7.62	7.57	7.92	7.75	7.75	7.59
Total Alkalinity (Total as CaCO3)	mg/L	30	-	240	300	230	210	310	280	250	290	290	300	300	220	260	260	310
Carbonaceous BOD	mg/L	5.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Chloride (Cl)	mg/L	1	-	36	35	19	15	11	11	24	11	12	11	11	16	30	30	11
Colour	TCU	5.00	-	<	<	<	<	<	<	<	-	<	<	<5	<5	<	<	<
Strong Acid Dissoc. Cyanide (CN)	mg/L	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L	0.05	-	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Nitrite (N)	mg/L	0.01	2.00	<	<	<	<	<	<	<	0.015	<	<	<	<	<	<	<
Nitrogen (Ammonia Nitrogen)	mg/L	0.05	-	0.10	<	<	<	<	<	<	0.02	<	<	<0.05	<0.05	<	<	<
Total Organic Carbon (C)	mg/L	0.50	-	1.20	1.00	2.10	0.90	930.00	<	1.1	2.00	<	<(5) (1)	<(5) (1)	<(0.5)	1.4	1.5	2.6 (1)
Orthophosphate (P)	mg/L	0.01	-	<	<	<	<	<	<	0.013	-	<	<	0.04	<	<	<	<
pH	pH	N/A	-	8.00	8.03	8.11	8.02	8.12	8.26	8.05	8.02	8.00	7.99	7.93	8.22	8.33	8.35	7.99
Phenols-4AAP	mg/L	0.00	26.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Reactive Silica (SiO2)	mg/L	0.50	-	9.90	10.00	7.60	7.60	6.90	5.3	8.1	-	5.00	7.10	6.80	7.70	9.1	9.1	6.3
Total Suspended Solids (TSS)	mg/L	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Sulphate (SO4)	mg/L	2	-	2	16	33	42	48	33	27	-	55	53	56	38	19	20	38
Sulphide	mg/L	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Turbidity	NTU	0.1	-	0.5	1.3	61.0	34.0	<1000	590	2.1	-	350.0	300.0	470.0	1.1	5.9	5.7	160
Conductivity	uS/cm	1	-	580	580	520	500	630	580	540	511	610	630	640	500	580	590	620
Total Oil & Grease	mg/L	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
Analysis completed by Maxxam Analytics Inc. laboratory in St. John's, NL.
* Ontario Ministry of the Environment (MOE) "Soil, Ground Water and Sediment Standrads for Use Under Part XV.1 of the Environmental Protection Act", March 9, 2004, Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
RDL = Reportable Detection Limit **0.0** = above criteria
- = Not analysed/No criteria
< = Parameter below detection limit
<(#) = Parameter below AMEC laboratory detection limit
DUP-01 = Field Duplicate of MW 10-1, First Sampling Event
DUP-02 = Field Duplicate of MW 10-1, Second Sampling Event
DUP-03= Field Duplicate of MW 93-1A
DUP1= Field Duplicate of MW 10-1
(1) = Elevated detection limit due to matrix interference

TABLE D6

HISTORICAL GROUNDWATER ANALYTICAL DATA - GENERAL CHEMISTRY
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	Units	RDL	Criteria*	MW 93-2							MW 93-2A					
				AMEC 2008	Aug 19, 2009	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Aug 30, 2012	Aug 28, 2013	Aug 19, 2009	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Aug 30, 2012	Aug 28, 2013
Anion Sum	me/L	N/A	-	-	6.90	6.30	6.58	6.42	6.36	6.33	2.69	6.43	1.31	2.42	1.37	1.72
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	1.00	-	-	232.0	205.0	219.0	210.0	210.0	220	62.0	212.0	14.0	61.0	11.0	14
Calculated TDS	mg/L	1.00	-	331.0	380.0	346.0	368.0	361.0	353.0	350	184.0	351.0	87.0	145.0	96.0	120
Carb. Alkalinity (calc. as CaCO3)	mg/L	1.00	-	-	1.00	1.00	1.00	2.00	2.60	1.3	<	1.00	<	<	<	<
Cation Sum	me/L	N/A	-	-	6.50	5.66	6.19	6.10	5.99	5.97	3.43	5.70	1.15	2.09	1.44	1.87
Hardness (CaCO3)	mg/L	1.00	-	245	270	240	250	260	250	250	120	240	31	73	34	42
Ion Balance (% Difference)	%	N/A	-	-	2.60	5.35	3.05	2.56	3.00	2.93	12.10	`	6.50	7.32	2.49	4.18
Langelier Index (@ 20C)	N/A	N/A	-	-	0.50	0.53	0.54	0.68	0.90	0.591	-1.51	0.48	-3.48	-1.21	-3.03	-3.37
Langelier Index (@ 4C)	N/A	N/A	-	-	0.30	0.28	0.29	0.43	0.65	0.342	-1.76	0.24	-3.73	-1.46	-3.28	-3.62
Nitrate (N)	mg/L	0.05	-	-	<	<	<	<	<	<	<	<	0.15	<	<	<
Saturation pH (@ 20C)	N/A	N/A	-	-	7.20	7.28	7.20	7.23	7.22	7.22	8.06	7.27	9.25	8.27	9.28	9.14
Saturation pH (@ 4C)	N/A	N/A	-	-	7.40	7.53	7.45	7.47	7.47	7.47	8.31	7.52	9.50	8.52	9.53	9.39
Total Alkalinity (Total as CaCO3)	mg/L	30	-	205	2,320	210	220	210	220	220	62	210	14	61	12	14
Carbonaceous BOD	mg/L	5.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Chloride (Cl)	mg/L	1	-	24	24	23	21	20	20	19	21	23	14	16	17	22
Colour	TCU	5.00	-	-	<	<	<5	<5	<	<	6.00	<	79.00	120.00	41.00	65
Strong Acid Dissoc. Cyanide (CN)	mg/L	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L	0.05	-	<	<	<	<	<	<	<	<	<	<	<	<	<
Nitrite (N)	mg/L	0.01	2.00	0.02	<	<	<	<	<	<	<	<	<	<	<	<
Nitrogen (Ammonia Nitrogen)	mg/L	0.05	-	<0.01	<	<	<	<	<	<	0.24	<	0.35	0.25	0.40	0.53
Total Organic Carbon (C)	mg/L	0.50	-	2.00	0.50	1.50	1.30	1.00	0.88	1	6.20	1.30	16.00	17.00	22.00	16
Orthophosphate (P)	mg/L	0.01	-	-	<	<	<	<	<	<	<	<	<	<	<	<
pH	pH	N/A	-	7.50	7.70	7.81	7.74	7.90	8.12	7.81	6.55	7.75	5.77	7.06	6.25	5.77
Phenols-4AAP	mg/L	0.00	26.00	-	-	-	-	-	-	-	-	-	-	-	-	-
Reactive Silica (SiO2)	mg/L	0.50	-	-	19.00	18.00	19.00	19.00	18.00	18	12.00	18.00	6.40	11.00	5.70	6.4
Total Suspended Solids (TSS)	mg/L	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Sulphate (SO4)	mg/L	2	-	-	73	74	76	78	71	68	41	74	31	36	32	40
Sulphide	mg/L	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Turbidity	NTU	0.1	-	-	13.0	5.4	13.0	3.9	4.0	1.1	84.0	3.2	100.0	190.0	120.0	44
Conductivity	uS/cm	1	-	549	560	570	580	570	580	560	260	570	140	230	150	190
Total Oil & Grease	mg/L	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
Analysis completed by Maxxam Analytics Inc. laboratory in St. John's, N
* Ontario Ministry of the Environment (MOE) "Soil, Ground Water and
Act", March 9, 2004, Table 3: Full Depth Generic Site Condition Standar
RDL = Reportable Detection Limit **0.0** = above crit
- = Not analysed/No criteria
< = Parameter below detection limit
<(#) = Parameter below AMEC laboratory detection limit
DUP-01 = Field Duplicate of MW 10-1, First Sampling Event
DUP-02 = Field Duplicate of MW 10-1, Second Sampling Event
DUP-03= Field Duplicate of MW 93-1A
DUP1= Field Duplicate of MW 10-1
(1) = Elevated detection limit due to matrix interference

TABLE D6

HISTORICAL GROUNDWATER ANALYTICAL DATA - GENERAL CHEMISTRY
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	Units	RDL	Criteria*	MW 10-1								MW 10-1A					
				Jul 16, 2010	Dec 13, 2010	Jul 16, 2010 DUP-01	Dec 13, 2010 DUP-02	Sep 02, 2011	Aug 30, 2012	Aug 28, 2013	Aug 28, 2013 DUP-05	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Aug 30, 2012	Sep 02, 2011 DUP-A	Aug 28, 2013
Anion Sum	me/L	N/A	-	3.87	2.63	3.89	2.70	3.48	3.24	2.92	2.96	3.86	3.08	1.43	2.11	1.44	1.66
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	1.00	-	94.0	92.0	96.0	95.0	144.0	140	120	120	94.0	114.0	50.0	77.0	51.0	49
Calculated TDS	mg/L	1.00	-	215.0	147.0	217.0	149.0	185.0	174	160	160	215.0	171.0	95.0	122.0	95.0	100
Carb. Alkalinity (calc. as CaCO3)	mg/L	1.00	-	<	<	<	<	<	1.1	<	<	<	<	<	<	<	<
Cation Sum	me/L	N/A	-	3.60	2.55	3.66	2.57	3.27	3.11	2.89	2.91	3.61	3.08	1.57	1.98	1.59	1.61
Hardness (CaCO3)	mg/L	1.00	-	100	110	100	110	150	140	130	130	100	140	61	84	61	68
Ion Balance (% Difference)	%	N/A	-	3.61	1.54	3.05	2.47	3.11	2.05	0.52	0.85	3.35	0.00	4.67	3.18	4.95	1.53
Langelier Index (@ 20C)	N/A	N/A	-	-0.23	-0.79	-0.31	-0.68	0.34	0.365	-0.202	-0.192	-0.36	-0.18	-1.18	-0.60	-1.11	-1.51
Langelier Index (@ 4C)	N/A	N/A	-	-0.48	-1.05	-0.56	-0.93	0.09	0.115	-0.452	-0.442	-0.61	-0.43	-1.43	-0.85	-1.36	-1.76
Nitrate (N)	mg/L	0.05	-	<	0.24	<	0.25	<	0.16	<	<	<	0.26	0.10	0.08	0.08	0.068
Saturation pH (@ 20C)	N/A	N/A	-	7.93	7.79	7.91	7.77	7.51	7.55	7.64	7.63	7.92	7.64	8.32	8.00	8.31	8.29
Saturation pH (@ 4C)	N/A	N/A	-	8.18	8.05	8.16	8.02	7.76	7.8	7.89	7.88	8.17	7.89	8.57	8.25	8.56	8.54
Total Alkalinity (Total as CaCO3)	mg/L	30	-	95	92	96	96	140	140	120	120	95	110	51	77	51	49
Carbonaceous BOD	mg/L	5.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Chloride (Cl)	mg/L	1	-	56	12	56	12	6	3.8	5.4	5.8	56	14	3	4	3	5.7
Colour	TCU	5.00	-	10.00	9.00	6.00	13.00	9.00	5.6	<	<	7.00	5.00	22.00	7.70	18.00	8.2
Strong Acid Dissoc. Cyanide (CN)	mg/L	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L	0.05	-	<	<	<	<	0.90	0.16	<	<	<	<	0.11	0.08	0.08	0.068
Nitrite (N)	mg/L	0.01	2.00	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Nitrogen (Ammonia Nitrogen)	mg/L	0.05	-	0.14	<0.05	0.14	<0.05	0.28	<	<	<	0.15	0.09	<	0.11	<	<
Total Organic Carbon (C)	mg/L	0.50	-	8 (1)	33.00	8 (1)	18.00	18.00	2.7	3	3.1	8 (1)	2.30	15.00	8.70	18.00	34 (1)
Orthophosphate (P)	mg/L	0.01	-	<	<	<	<	<	<	<	<	<	<	<	<	<	<
pH	pH	N/A	-	7.70	7.00	7.60	7.09	7.85	7.91	7.44	7.44	7.56	7.46	7.14	7.40	7.20	6.78
Phenols-4AAP	mg/L	0.00	26.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Reactive Silica (SiO2)	mg/L	0.50	-	7.00	6.20	7.00	6.00	8.00	7.4	6.9	7	7.10	7.60	10.00	10.00	10.00	11
Total Suspended Solids (TSS)	mg/L	2	-	-	-	-	-	-	-	-	-	-	-	7,000	-	9,400	-
Dissolved Sulphate (SO4)	mg/L	2	-	18	21	19	21	20	17	17	18	19	19	22	21	22	24
Sulphide	mg/L	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Turbidity	NTU	0.1	-	640.0	>1000	570.0	540.0	320.0	26	110	110	520.0	110.0	>1000	240.0	>1000	>1000
Conductivity	uS/cm	1	-	380	250	380	260	320	300	270	280	380	300	150	200	150	160
Total Oil & Grease	mg/L	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
Analysis completed by Maxxam Analytics Inc. laboratory in St. John's, N
* Ontario Ministry of the Environment (MOE) "Soil, Ground Water and
Act", March 9, 2004, Table 3: Full Depth Generic Site Condition Standar
RDL = Reportable Detection Limit **0.0** = above crit
- = Not analysed/No criteria
< = Parameter below detection limit
<(#) = Parameter below AMEC laboratory detection limit
DUP-01 = Field Duplicate of MW 10-1, First Sampling Event
DUP-02 = Field Duplicate of MW 10-1, Second Sampling Event
DUP-03= Field Duplicate of MW 93-1A
DUP1= Field Duplicate of MW 10-1
(1) = Elevated detection limit due to matrix interference

TABLE D7

HISTORICAL GROUNDWATER ANALYTICAL DATA - METALS
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	RDL	Criteria*	MW 93-1							MW 93-1A							
			Aug 19, 2009	Aug 19, 2009 Field Dup	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Aug 30, 2012	Aug 28, 2013	AMEC 2008	Aug 19, 2009	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Aug 30, 2012	Aug 30, 2012 DUP-03	Aug 28, 2013
Aluminum (Al)	5.0	-	100	120	37	17	73.7	73.7	8.3	42000	13,000	15	31	5.9	5.9	13.0	10
Antimony (Sb)	1.0	16,000	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Arsenic (As)	1.0	480	<	<	<	<	<	<	<	36	7	<	<	<	<	<	<
Barium (Ba)	1.0	23,000	130	150	88	70	77.9	77.9	100	426	240	79	73	68.6	68.6	107	83
Beryllium (Be)	1.0	53	<	<	<	<	<1	<1	<	2	<	<	<	<	<	<	<
Bismuth (Bi)	2.0	-	<	<	<	<	<2	<2	<	-	<	<	<	<	<	<	<
Boron (B)	5.0	50,000	120	120	100	99	63	63	110	-	58	56	57	96	96	118	69
Cadmium (Cd)	0.0	11	0.4	<	0.02	0.05	<	<	0.044	3	<	0.03	0.07	<	<	<	<
Calcium (Ca)	100	-	-	-	26,000	29,000	43,500	43,500	31,000	-	-	40,000	45,000	26,300	26,300	33,000	42,000
Chromium (Cr)	1.0	2000/110[(1)]	<	<	<	<	<	<	<	54	39	<	<	<	<	<	<
Cobalt (Co)	0.4	100	<	<	<	<	0.44	0.44	<	**110**	**170**	0.7	0.4	<	<	<	1
Copper (Cu)	2.0	23	6	3	<	<	<2	<2	<	**370**	**170**	2	<	<	<	6.8	<
Iron (Fe)	50	-	670	550	<	<	65	65	570	370	37000	<	<	<	<	55	530
Lead (Pb)	1	32	4.6	1	<	<	<	<	<	**45**	17	<	<	<	<	<	<
Magnesium (Mg)	100	-	-	-	14,000	12,000	16,400	16,400	15,000	-	-	17,000	14,000	12,200	12,200	15,400	17,000
Manganese (Mn)	2.0	-	110	120	120	81	60	60	110	2,620	1200	160	57	259	259	103	160
Molybdenum (Mo)	2.0	7,300	6	6	20	18	16.3	16.3	15	20	11	15	14	19.2	19.2	10.7	16
Nickel (Ni)	2.0	1,600	6	<	<	<	<	<	<	154	87	<	<	<	<	<	<
Phosphorus (P)	100	-	-	-	<	<	-	-	<	-	-	<	130	-	-	<	<
Potassium (K)	100	-	-	-	1,900	2,000	2,680	2,680	1,800	-	-	2,500	2,700	1,830	1,830	1,730	2,700
Selenium (Se)	1.0	50	<	<	<	<	<	<	<	<1	<	<	<	<	<	<	<
Silver (Ag)	0.1	1	<	<	<	<	<	<	<	1	<	<	<	<	<	<	<
Sodium	100	2,300,000	-	-	-	-	76,100	70,400	69,000	-	-	-	-	68,600	68,200	68,600	80,000
Strontium (Sr)	2.0	-	250	260	230	220	263	263	240	-	300	300	280	192	192	249	280
Thallium (Tl)	0.1	400	<	<	<	<	<	<	<	-	-	<	<	<	<	<	<
Tin (Sn)	2.0	-	<	<	<	<	<2	<2	<	-	<	<	<	<	<	<	<
Titanium (Ti)	2.0	-	3	3	<	<	2.6	2.6	<	-	720	<	2	<	<	<	<
Uranium (U)	0.1	-	0.2	0.2	0.3	0.2	3.06	3.06	0.16	-	6	2.9	2.8	0.4	0.4	0.21	2.3
Vanadium (V)	2.0	200	<	<	<	<	<	<	<	155	28	<	<	<	<	<	<
Zinc (Zn)	5.0	1,100	360	32	10	10	<	<	12	443	250	<	<	<	<	<	<

Notes:

Analysis completed by Maxxam Analytics Inc. laboratory in Bedford, NS.
* Ontario Ministry of the Environment (MOE) "Soil, Ground Water and Sediment Standrads for Use Under Part XV.1 of the Environmental Protection Act", March 9, 2004, Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition

RDL = Reportable Detection Limit
- = Not analysed/No criteria
< = Parameter below detection limit
<(#) = Parameter below AMEC laboratory detection limit
0.0 = above criteria
DUP-01 = Field Duplicate of MW 10-1, First Sampling Event
DUP-02 = Field Duplicate of MW 10-1, Second Sampling Event
DUP-03= Field Duplicate of MW 93-1A
DUP-05 = Field Duplicate of MW 10-1
(1) Criteria for Total Chromium = 2000 ug/L, Criteria for Chromium (VI) = 110 ug/L

TABLE D7

HISTORICAL GROUNDWATER ANALYTICAL DATA - METALS
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	RDL	Criteria*	MW 93-2							MW 93-2A					
			AMEC 2008	Aug 19, 2009	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Aug 30, 2012	Aug 28, 2013	Aug 19, 2009	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Aug 30, 2012	Aug 28, 2013
Aluminum (Al)	5.0	-	484	460	9	<	<	<	5.4	630	<	150	86.6	86.6	290
Antimony (Sb)	1.0	16,000	<	<	<	<	<	<	<	<	<	<	<	<	<
Arsenic (As)	1.0	480	3	2	2	2	1.2	1.2	1.9	<	2	<	<	<	<
Barium (Ba)	1.0	23,000	131	180	170	160	171	171	170	69	180	39	54.1	54.1	48
Beryllium (Be)	1.0	53	<0.1	<	<	<	<	<	<	<	<	<	<	<	<
Bismuth (Bi)	2.0	-	<0.5	<	<	<	<	<	<	<	<	<	<	<	<
Boron (B)	5.0	50,000	-	1100	980	1100	<	<	1,100	440.0	1000	24	317	317	<
Cadmium (Cd)	0.0	11	-	<	0.15	0.1	1160	1160	<0.010	11	0.15	3.5	0.304	0.304	0.32
Calcium (Ca)	100	-	-	-	69,000	80,000	77,300	77,400	75,000	-	69,000	9,000	20,600	20,600	11,000
Chromium (Cr)	1.0	2000/110[(1)]	1	<	<	<	<	<	<	<	<	<	<	<	<
Cobalt (Co)	0.4	100	1	<	<	0.4	<	<	<	1	<	1.4	1.19	1.19	0.93
Copper (Cu)	2.0	23	8	5	<	<	0.56	0.56	<	6	<	<	<	<	<
Iron (Fe)	50	-	1300	980	<	<	<	<	57	9900	<	1900	3000	3000	12,000
Lead (Pb)	1	32	5	2	<	<	<	<	<	6.9	<	0.8	1.17	1.17	1
Magnesium (Mg)	100	-	-	-	16,000	13,000	15,600	15,600	15,000		16,000	2,200	5,220	5,220	3,300
Manganese (Mn)	2.0	-	15,300	1200	880	950	1,120	1,120	980	4300	890	4,000	4,190	4,190	5,000
Molybdenum (Mo)	2.0	7,300	2	<	<	<	<	<	<	<	<	<	<	<	<
Nickel (Ni)	2.0	1,600	1	<	<	<	<	<	<	<	<	<	<	<	<
Phosphorus (P)	100	-	-	-	<	150	-	-	<	-	<	<	-	-	<
Potassium (K)	100	-	-	-	1,200	1,400	1,560	1,560	1,300	-	1,200	980	1,040	1,040	1,300
Selenium (Se)	1.0	50	1	<	<	<	<	<	<	<	<	<	<	<	<
Silver (Ag)	0.1	1	-	<	<	<	<	<	<	<	<	<	<	<	<
Sodium	100	2,300,000	-	-	-	-	21,000	20,300	22,000	-	-	-	11,000	9,100	12,000
Strontium (Sr)	2.0	-	-	230	240	230	210	210	220	100	240	41	70.6	70.6	52
Thallium (Tl)	0.1	400	-	<	<	<	<	<	<	<	<	<	<	<	<
Tin (Sn)	2.0	-	-	<	<	<	<	<	<	<	<	<	<	<	<
Titanium (Ti)	2.0	-	-	21	<	<	<	<	<	20	<	2	<	<	2.2
Uranium (U)	0.1	-	-	0	0.3	0.2	0.24	0.24	0.26	0.3	0.3	<	<	<	<
Vanadium (V)	2.0	200	2	<	<	<	<	<	<	4	<	<	<	<	<
Zinc (Zn)	5.0	1,100	33	41	19	18	5	5	<	**1700**	17	**1300**	**568**	568	190

Notes:

Analysis completed by Maxxam Analytics In
* Ontario Ministry of the Environment (MO
Potable Ground Water Condition

RDL = Reportable Detection Limit
- = Not analysed/No criteria
< = Parameter below detection limit
<(#) = Parameter below AMEC laboratory d
0.0 = above criteria
DUP-01 = Field Duplicate of MW 10-1, First
DUP-02 = Field Duplicate of MW 10-1, Secon
DUP-03= Field Duplicate of MW 93-1A
DUP-05 = Field Duplicate of MW 10-1
(1) Criteria for Total Chromium = 2000 ug/

TABLE D7

HISTORICAL GROUNDWATER ANALYTICAL DATA - METALS
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	RDL	Criteria*	MW 10-1								MW 10-1A					
			Jul 16, 2010	Dec 13, 2010	Jul 16, 2010 DUP-01	Dec 13, 2010 DUP-02	Sep 02, 2011	Aug 30, 2012	Aug 28, 2013	Aug 28, 2013 DUP-05	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Aug 30, 2012	Sep 02, 2011 DUP-A	Aug 28, 2013
Aluminum (Al)	5.0	-	200	38	160	36	41.8	41.8	30	26	100	11	74.5	74.5	68.3	58
Antimony (Sb)	1.0	16,000	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Arsenic (As)	1.0	480	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Barium (Ba)	1.0	23,000	100	36	110	38	50.2	50.2	38	38	110	62	28.8	28.8	29.4	35
Beryllium (Be)	1.0	53	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Bismuth (Bi)	2.0	-	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Boron (B)	5.0	50,000	45	9	38	9	<	<	<	<	42	13	<	<	<	<
Cadmium (Cd)	0.0	11	0.03	<	0.03	<	0.032	0.032	0.037	0.053	0.02	0.03	0.039	0.039	0.036	0.033
Calcium (Ca)	100	-	31,000	41,000	32,000	42,000	51,100	51,100	45,000	45,000	31,000	48,000	20,600	20,600	20,800	23,000
Chromium (Cr)	1.0	2000/110[(1)]	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Cobalt (Co)	0.4	100	2.3	1.4	2.4	1.4	4.91	4.91	0.41	<	2.5	3.3	1.54	1.54	2.07	12
Copper (Cu)	2.0	23	5	9	5	9	7.3	7.3	5.8	6	4	<	9.4	9.4	9.1	11
Iron (Fe)	50	-	120	50	140	59	50	50	84	<	82	<	96	96	92	560
Lead (Pb)	1	32	<	<	<	<	<	<	<	<	<	<	<	<	2.66	<
Magnesium (Mg)	100	-	5,800	2,300	5,900	2,300	4,540	4,540	4,100	4,000	5,900	3,900	2,190	2,190	2,150	2,500
Manganese (Mn)	2.0	-	390	190	390	170	239	239	27	26	400	380	106	106	139	860
Molybdenum (Mo)	2.0	7,300	16	3	16	3	2.5	2.5	<	<	14	5	8.5	8.5	6.1	3.2
Nickel (Ni)	2.0	1,600	6	6	6	6	6.5	6.5	2	2.1	5	6	8.9	8.9	8.3	11
Phosphorus (P)	100	-	<	150	<	<	-	-	<	<	<	<	-	-	-	<
Potassium (K)	100	-	6,400	1,100	6,400	980	1,360	1,360	1,200	1,300	6,400	1,400	714	714	693	720
Selenium (Se)	1.0	50	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Silver (Ag)	0.1	1	<	<	<	<	<	<	<	<	<	<	<	<	<	0.15
Sodium	100	2,300,000	-	-	-	-	6,570	7,020	6,600	6,600	-	-	4,670	5,750	4,600	5,100
Strontium (Sr)	2.0	-	98	85	99	87	106	106	98	98	99	100	46.9	46.9	45.4	56
Thallium (Tl)	0.1	400	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Tin (Sn)	2.0	-	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Titanium (Ti)	2.0	-	3	<	3	<	<	<	<	<	2	<	2.1	2.1	<	<
Uranium (U)	0.1	-	0.4	<	0.4	<	0.43	0.43	0.29	0.29	0.4	0.3	<	<	<	<
Vanadium (V)	2.0	200	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Zinc (Zn)	5.0	1,100	5	11	6	11	9	9	8.2	11	5	10	8.9	8.9	10.1	6.9

Notes:

Analysis completed by Maxxam Analytics In
* Ontario Ministry of the Environment (MO
Potable Ground Water Condition

RDL = Reportable Detection Limit
- = Not analysed/No criteria
< = Parameter below detection limit
<(#) = Parameter below AMEC laboratory d
0.0 = above criteria
DUP-01 = Field Duplicate of MW 10-1, First
DUP-02 = Field Duplicate of MW 10-1, Secon
DUP-03= Field Duplicate of MW 93-1A
DUP-05 = Field Duplicate of MW 10-1
(1) Criteria for Total Chromium = 2000 ug/

TABLE D8

HISTORICAL SURFACE WATER ANALYTICAL DATA - BTEX/MTPH
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Sample Location	Date Sampled	Benzene	Toluene	Ethyl-benzene	Xylenes	Total Petroleum Hydrocarbons (TPH)					Comments
						F1	F2	F3		Modified TPH	
						C_6-C_{10}	C_{10}-C_{16}	C_{16}-C_{21}	C_{21}-C_{32}		
SURFACE UP	2008 (AMEC)	<(0.2)	<(0.2)	<(0.2)	<(0.6)	<(0.05)[1]	<(0.05)[1]		<(0.05)[1]	<(0.15)[1]	-
	Aug 19, 2009	<	<	<	<	<	<		<	<	-
	Jul 16, 2010	<	<	<	<	<	<		<	<	-
	Dec 13, 2010	<	<	<	<	<	<		<	<	-
	Sep 02, 2011	<	<	<	<	<	<		<	<	-
	Nov 07, 2012	<	<	<	<	<	<		<	<	-
	Aug 28, 2013	<	<	<	<	<	<	<	<	<	-
SURACE DOWN	2008 (AMEC)	<(0.2)	<(0.2)	<(0.2)	<(0.6)	<(0.05)[1]	<(0.05)[1]		<(0.05)[1]	<(0.15)[1]	-
	Aug 19, 2009	<	<	<	<	<	<		<	<	-
	Jul 16, 2010	<	<	<	<	<	<		<	<	-
	Dec 13, 2010	<	<	<	<	<	<		<	<	-
	Sep 02, 2011	<	0.02	<	<	<	<		<	<	-
	Nov 07, 2012	<	<	<	<	<	<		<	<	-
	Aug 28, 2013	<	<	<	<	<	<	<	<	<	-
RDL		0.001	0.001	0.001	0.002	0.01	0.05	0.1	0.1	0.1	-
2007 CCME Freshwater Aquatic Life Guidelines [2]		**4.00**	**2.00**	**0.39**	**-**	**-**	**-**	**-**	**-**	**-**	**Gasoline**
										-	**Diesel /#2 Fuel Oil**
										-	**#6 Oil**
1997 BC Guidelines for Protection of Aquatic Life [3]		**-**	**-**	**-**	**-**	**1.5**	**0.5**	**-**	**-**	**-**	**-**
										-	**-**
										-	**-**

Notes:

Analysis completed by Maxxam Analytics Inc. laboratory in St. John's, NL.
1. Assumed transcript error by factor of 1,000 from Pinchin LeBlanc Environmental Table 2 from March 2010 OMM Report
2. 2007 CCME Freshwater Aquatic Life Guidelines
3. BC Ministry of Water, Land and Air Protection Guidelines for Protection of Aquatic Life

RDL = Reportable Detection Limit
< = Parameter below detection limit
- = Not analysed

DUP = Laboratory duplicate
0.0 = above criteria
<(#) = Parameter below AMEC laboratory detection limit

TABLE D9

HISTORICAL SURFACE WATER ANALYTICAL DATA - PAHs (ug/L)
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	RDL	Criteria*	SURFACE UP							SURFACE DOWN						
			AMEC 2008	Aug 19, 2009	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Nov 07, 2012	Aug 28, 2013	AMEC 2008	Aug 19, 2009	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Nov 07, 2012	Aug 28, 2013
1-Methylnaphthalene	0.05	-	<0.03	<	<	<	<	<	<	<0.03	<	<	<	<	<	<
2-Methylnaphthalene	0.05	-	<0.03	<	<	<	<	<	<	<0.03	<	<	<	<	<	<
Acenaphthene	0.01	5.8	<0.04	<	<	<	<	<	<	<0.04	<	<	<	<	<	<
Acenaphthylene	0.01	-	<0.03	<	<	<	<	<	<	<0.03	<	<	<	<	<	<
Acridine	0.05	4.4	-	-	<	<	-	-	<	-	-	<	<	-	-	<
Anthracene	0.01	0.012	<0.01	<	<	<	<	<	<	<0.01	<	<	<	<	<	<
Benzo(a)anthracene	0.01	0.018	<0.01	<	<	<	<	<	<	<0.01	<	<	<	<	<	<
Benzo(a)pyrene	0.01	0.015	<0.01	<	<	<	<	<	<	<0.01	<	<	<	<	<	<
Benzo(b)fluoranthene	0.01	-	<0.05	<	<	<	<	<	<	<0.05	<	<	<	<	<	<
Benzo(g,h,i)perylene	0.01	-	<0.03	<	<	<	<	<	<	<0.03	<	<	<	<	<	<
Benzo(j)fluoranthene	0.01		-	-	-	-	<	<	<	-	-	-	-	<	<	<
Benzo(k)fluoranthene	0.01	-	<0.05	<	<	<	<	<	<	<0.05	<	<	<	<	<	<
Chrysene	0.01	-	<0.04	<	<	<	<	<	<	<0.04	<	<	<	<	<	<
Dibenz(a,h)anthracene	0.01	-	-	<	<	<	<	<	<	NA	<	<	<	<	<	<
Fluoranthene	0.01	0.04	<0.03	<	<	<	<	<	<	<0.03	<	<	<	<	<	<
Fluorene	0.01	3.0	<0.03	<	<	<	<	<	<	<0.03	<	<	<	<	<	<
Indeno(1,2,3-cd)pyrene	0.01	-	<0.05	<	<	<	<	<	<	<0.05	<	<	<	<	<	<
Naphthalene	0.2	1.1	-	<	<	<	<	<	<	NA	<	<	<	<	<	<
Perylene	0.01	-	-	<	0.01	<	<	<	<	NA	<	<	<	<	<	<
Phenanthrene	0.01	0.4	<0.04	<	<	<	<	0.011	<	<0.04	0.01	<	<	<	0.012	<
Pyrene	0.01	0.025	<	<	<	<	<	<	<	<0.01	<	<	<	<	<	<
Quinoline	0.05	3.4	-	-	<	<	-	-	<	-	-	<	<	-	-	<

Analysis completed by Maxxam Analytics Inc. laboratory in St. John's, NL.
* Canadian Council of Ministers of the Environment (CCME) Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life (2007 - Update 7.1).

RDL = Reportable Detection Limit
0.0 = above criteria
- = Not analysed/No criteria
< = Parameter below detection limit
<(#) = Parameter below AMEC laboratory detection limit

TABLE D10

HISTORICAL SURFACE WATER ANALYTICAL DATA - PCBs (ug/L)
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	RDL	Criteria*	SURFACE UP						
			AMEC 2008	Aug 19, 2009	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Nov 07, 2012	Aug 28, 2013
Total PCBs	0.05	-	<0.04	0.11	<	<	<	<	<

Parameter	RDL	Criteria*	SURFACE DOWN						
			AMEC 2008	Aug 19, 2009	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Nov 07, 2012	Aug 28, 2013
Total PCBs	0.05	-	<0.04	0.13	<	<	<	<	<

Notes:

Analysis completed by Maxxam Analytics Inc. laboratory in Bedford, NS.
* Canadian Council of Ministers of the Environment (CCME) Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life (2007 - Update 7.1).
RDL = Reportable Detection Limit
< = Parameter below detection limit
< (#) = Parameter below AMEC laboratory detection limit
0.0 = above criteria

TABLE D11

HISTORICAL SURFACE WATER ANALYTICAL DATA - VOCs (ug/L)
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	RDL	Criteria*	SURFACE UP							SURFACE DOWN						
			AMEC 2008	Aug 19, 2009	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Nov 07, 2012	Aug 28, 2013	AMEC 2008	Aug 19, 2009	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Nov 07, 2012	Aug 28, 2013
Benzene	1	370	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Bromodichloromethane	1	-	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Bromoform	1	-	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Bromomethane	3	-	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Carbon Tetrachloride	1	13.3	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Chlorobenzene	1	1.3	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Chloroethane	8	-	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Chloroform	1	1.8	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Chloromethane	8	-	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Dibromochloromethane	1	-	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,2-Dichlorobenzene	0.5	0.7	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,3-Dichlorobenzene	1	150	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,4-Dichlorobenzene	1	26	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	2	-	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,2-Dichloroethane	1	100	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethylene	0.5	-	<	<	<	<	<	<	<	<	<	<	<	<	<	<
cis-1,2-Dichloroethylene	2	-	<	<	<	<	<	<	<	<	<	<	<	<	<	<
trans-1,2-Dichloroethylene	2	-	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,2-Dichloropropane	1	-	<	<	<	<	<	<	<	<	<	<	<	<	<	<
cis-1,3-Dichloropropene	2	-	<	<	<	<	<	<	<	<	<	<	<	<	<	<
trans-1,3-Dichloropropene	1	-	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Ethylbenzene	1	90	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Methylene Chloride(Dichloromethane)	3	98.1	<	<	<	<	<	<	<	<	<	<	<	<	<	<
o-Xylene	1	-	<	<	<	<	<	<	<	<	<	<	<	<	<	<
p+m-Xylene	2	-	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Styrene	1	300	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Tetrachloroethylene	1	72	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,1,2,2-Tetrachloroethane	1	-	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Toluene	1	111	<	<	<	<	2	<	<	<	<	<	<	<	<	<
Trichloroethylene	1	2.0	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,1,1-Trichloroethane	1	-	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,1,2-Trichloroethane	1	-	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Trichlorofluoromethane (FREON 11)	8	21	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Vinyl Chloride	0.5	-	0.2	<	<	<	<	<	<	0.2	<	<	<	<	<	<

Notes:
Analysis completed by Maxxam Analytics Inc. laboratory in Bedford, NS.
* Canadian Council of Ministers of the Environment (CCME) Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life (2007 - Update 7.1).

RDL = Reportable Detection Limit
- = Not analysed/No criteria
< = Parameter below detection limit
0.0 = above criteria

TABLE D12

HISTORICAL SURFACE WATER ANALYTICAL DATA - GENERAL CHEMISTRY
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	Units	RDL	Criteria*	SURFACE UP							SURFACE DOWN						
				AMEC 2008	Aug 19, 2009	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Nov 07, 2012	Aug 28, 2013	AMEC 2008	Aug 19, 2009	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Nov 07, 2012	Aug 28, 2013
Anion Sum	me/L	N/A	-	-	4.8	1.14	0.34	0.68	0.610	0.64	-	3.78	2.69	1.53	3.8	0.630	0.69
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	1	-	-	118	38	6	17	7.6	11	-	150	117	12	159	8.2	12
Calculated TDS	mg/L	1	-	53	267	62	23	63	38.0	39	145	205	140	122	204	39.0	41
Carb. Alkalinity (calc. as CaCO3)	mg/L	1	-	-	<	<	<	<	<	<	-	3	<	<	<	<	<
Cation Sum	me/L	N/A	-	-	4.8	1.05	0.43	1.45	0.650	0.74	-	3.8	2.54	2.4	3.85	0.650	0.74
Hardness (CaCO3)	mg/L	1	-	21.5	100	41	10	29	14	15	138	170	110	70	170	14	16
Ion Balance (% Difference)	%	N/A	-	-	0.6	4.11	11.7	36.2	3.17	7.25	-	0.26	2.87	22.1	0.65	1.56	3.5
Langelier Index (@ 20C)	N/A	N/A	-	-	-0.4	-1.36	-3.49	-3.19	-2.97	-2.82	-	0.996	-0.099	-2.64	0.248	-2.95	-2.57
Langelier Index (@ 4C)	N/A	N/A	-	-	-0.7	-1.61	-3.74	3.44	-3.22	-3.07	-	0.746	-0.35	-2.89	-0.002	-3.20	-2.82
Nitrate (N)	mg/L	0.05	13	<	<	0.17	<	<	0.054	<	<	<	<	2	1.6	0.058	<
Saturation pH (@ 20C)	N/A	N/A	-	-	7.8	8.62	10.1	9.18	9.83	9.61	-	7.39	7.69	9.01	7.39	9.80	9.56
Saturation pH (@ 4C)	N/A	N/A	-	-	8.1	8.87	10.3	9.43	10.1	9.86	-	7.64	7.94	9.26	7.64	10.0	9.81
Total Alkalinity (Total as CaCO3)	mg/L	30	-	24	120	39	39	17	7.6	11	136	150	120	120	160	8.2	12
Carbonaceous BOD	mg/L	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Chloride (Cl)	mg/L	1	-	8.9	79	5	6	7	12	12	3.6	4	1	23	8	12	13
Colour	TCU	5	-	-	44	38	49	140	67	65	-	23	39	120	32	78	71
Strong Acid Dissoc. Cyanide (CN)	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L	0.05	-	-	<	0.17	<	<	0.054	<	-	<	<	2	1.6	0.058	<
Nitrite (N)	mg/L	0.01	0.06	<0.015	<	<	<	<	<	<	<0.015	<	<	<	<	<	<
Nitrogen (Ammonia Nitrogen)	mg/L	0.05	-	-	0.1	<	<	<	<	<	-	<	0.19	0.06	<	<	<
Total Organic Carbon (C)	mg/L	0.5	-	9.5	5.7	6	6.4	41	7.9	8.2	9.2	4.3	5.4	18	2.8	7.9	7.9
Orthophosphate (P)	mg/L	0.01	-	-	<	<	<	<	<	<	-	<	<	<	<	<	<
pH	pH	N/A	6.5 - 9	6.9	7.4	7.26	6.58	5.99	6.86	6.79	7.48	8.39	7.59	6.37	7.64	6.85	6.99
Phenols-4AAP	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Reactive Silica (SiO2)	mg/L	0.5	-	-	6.3	1.5	1.5	3.5	2.1	1.5	-	4	3.1	7.4	1.8	2.2	1.6
Total Suspended Solids (TSS)	mg/L	2	-	-	-	-	-	840	-	-	-	-	-	-	160	-	-
Dissolved Sulphate (SO4)	mg/L	2	-	-	8	11	3	-	5.7	3.2	-	29	15	24	-	5.8	3.5
Sulphide	mg/L	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Turbidity	NTU	0.1	-	-	2.9	3.8	2.2	30	0.72	1.6	-	5.2	39	140	5.6	0.88	0.77
Conductivity	uS/cm	1	-	87	470	110	43	72	66	72	275	290	240	170	340	67	76
Total Oil & Grease	mg/L	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

Analysis completed by Maxxam Analytics Inc. laboratory in Bedford, NS.

* Canadian Council of Ministers of the Environment (CCME) Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life (2007 - Update 7.1).

RDL = Reportable Detection Limit
-= Not analysed/No criteria
< = Parameter below detection limit
< (#) = Parameter below AMEC laboratory detection limit
0.0 = above criteria = above criteria

TABLE D13

HISTORICAL SURFACE WATER ANALYTICAL DATA - METALS
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	Units	RDL	Criteria*	SURFACE UP							SURFACE DOWN						
				AMEC 2008	Aug 19, 2009	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Nov 07, 2012	Aug 28, 2013	AMEC 2008	Aug 19, 2009	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Nov 07, 2012	Aug 28, 2013
Aluminum (Al)	ug/L	5.0	100(1)	484	18	**108**	**257**	**1,140**	**113**	86	**42,000**	69	**527**	**5,210**	**941**	**117**	83
Antimony (Sb)	ug/L	1.0	-	<	<	<	<	-	<	<	<	<	<	<	<	<	<
Arsenic (As)	ug/L	1.0	5.0	3	<	<	<	2.50	<	<	**36**	<	1.1	3.3	2.5	<	<
Barium (Ba)	ug/L	1.0	-	131	26	22.3	9.4	132.0	8.9	9.1	426	82	102	289	179	8.6	8.6
Beryllium (Be)	ug/L	1.0	-	<0.1	<	<	<	<	<	<	1.8	<	<	<	<	<	<
Bismuth (Bi)	ug/L	2.0	-	<0.5	<	<	<	<	<	<	<0.1	<	<	<	<	<	<
Boron (B)	ug/L	5	-	-	14	9.4	6.9	<50	<	<	-	22	27.1	9	<	<	<
Cadmium (Cd)	ug/L	0.017	0.015/0.036(2)	**0.273**	<	**0.028**	**0.04**	**0.066**	<	<	**2.65**	<	**0.044**	**0.232**	**-**	<	<
Calcium (Ca)	ug/L	100	-	-	-	12,900	2,960	8,230	3,870	4,500	-	-	40,100	18,300	62,300	3,890	4,500
Chromium (Cr)	ug/L	1	8.9/1.0(3)	1	<	<	<	2.3	<	<	110	<	<	8	163	<	<
Hexavalent Chromium (Cr^{6+})	ug/L	1	1.00						<	0.61						<	0.68
Cobalt (Co)	ug/L	0.4	-	1	<	<	<	1.9	<	<	307	<	0.9	6.69	1.98	<	<
Copper (Cu)	ug/L	2	2(4)	8	<	<	<	5.3	<	<	370	<	**12.7**	**32.9**	**3**	<	<
Iron (Fe)	ug/L	50	300	**1,300**	**1,300**	289	**722**	**16,700**	**387**	530	**59,000**	**380**	**1,820**	**10,900**	**4,130**	**382**	440
Lead (Pb)	ug/L	0.5	1, 2(5)	5	<	<	<	0.5	<	<	45	<	1.48	**7.64**	**0.69**	<	<
Magnesium (Mg)	ug/L	100	-	-	-	2,140	713	100	1,040	1,000	-	-	3,320	5,840	3,830	1,050	1,100
Manganese (Mn)	ug/L	2	-	1,260	230	98	142	2	41	110	2,620	62	481	427	1,760	38	66
Molybdenum (Mo)	ug/L	2	73.00	2	3.0	<	<	2	<	<	0.09	<	<	<	<2	<	<
Nickel (Ni)	ug/L	2	25, 65(6)	1	<	<	<	2	<	<	2	<	3	16.7	-	<	<
Phosphorus (P)	ug/L	100	-	-	-	<	<	-	<	<	-	-	120	852	-	<	<
Potassium (K)	ug/L	100	-	-	-	588	295	100	363	310	-	-	1080	4060	1030	400	320
Selenium (Se)	ug/L	1	1.0	1	<	<	<	1	<	<	<	<	<	<	<1	<	<
Silver (Ag)	ug/L	0.1	0.1	<	<	<	<	0.1	<	<	0.5	<	<	<	<	<	<
Sodium (Na)	ug/L	100	-	-	-	4,720	3,680	100	7,930	9,300	-	-	4,300	11,500	5,820	7,880	9,100
Strontium (Sr)	ug/L	2	-	-	90	40.7	9.7	2	13.4	16	-	110	85.4	49.9	110	13.3	17
Thallium (Tl)	ug/L	0.1	0.8	-	<	<	<	0.1	<	<	-	<	<	<	<0.1	<	<
Tin (Sn)	ug/L	2	-	-	<	<	<	2	<	<	-	<	<	<	<2	<	<
Titanium (Ti)	ug/L	2	-	-	<	2.1	7.9	2	3.1	2	-	2.0	17.2	148	37.2	2.7	2.5
Uranium (U)	ug/L	0.1	-	-	0.2	<	<	0.1	<	<	-	0.9	0.38	0.38	0.35	<	<
Vanadium (V)	ug/L	2	-	<	<	<	<	2	<	<	155	<	<	0.34	2.8	<	<
Zinc (Zn)	ug/L	5	30	33	<	9.2	10.7	5	<	<	**443**	<	25.2	**103**	**12.4**	<	<
Hardness (CaCO3)	mg/L	1	-	21.5	100	41	10	29	14	15	138	170	110	70	170	14	16
pH	pH	-	6.5 - 9	6.9	7.4	7.26	6.58	5.99	6.86	6.79	7.48	8.39	7.59	6.37	7.64	6.85	6.99

Notes:

Analysis completed by Maxxam Analytics Inc. laboratory in Bedford, NS.
* Canadian Council of Ministers of the Environment (CCME) Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life (2007 - Update 7.1).

(1) Aluminum guideline = 5 ug/L at pH < 6.5
= 100 ug/L at pH ≥ 6.5

(2) Cadmium guideline = $10^{[0.86[\log(\text{hardness})]-3.2]}$

(3) Criteria for Chromium (III) = 8.9 ug/L, Criteria for Chromium (VI) = 1.0 ug/L

(4) Copper guideline = 2 ug/L at $[CaCO_3]$ = 0-120 mg/L
= 3 ug/L at $[CaCO_3]$ = 120-180 mg/L
= 4 ug/L at $[CaCO_3]$ >180 mg/L

(5) Lead guideline = 1 ug/L at $[CaCO_3]$ = 0-60 mg/L
= 2 ug/L at $[CaCO_3]$ = 60-120 mg/L
= 4 ug/L at $[CaCO_3]$ = 120-180 mg/L
= 7 ug/L at $[CaCO_3]$ >180 mg/L

(6) Nickel guideline = 25 ug/L at $[CaCO_3]$ = 0-60 mg/L
= 65 ug/L at $[CaCO_3]$ = 60-120 mg/L
= 110 ug/L at $[CaCO_3]$ = 120-180 mg/L
= 150 ug/L at $[CaCO_3]$ >180 mg/L

RDL = Reportable Detection Limit

- = Not analysed/No criteria
< = Parameter below detection limit
0.0 = above criteria

TABLE D14

HISTORICAL LEACHATE ANALYTICAL DATA - BTEX/MTPH
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Sample Location	Date Sampled	Benzene	Toluene	Ethyl-benzene	Xylenes	Total Petroleum Hydrocarbons (TPH)					Comments
						F1	F2	F3		Modified TPH	
						C_6-C_{10}	C_{10}-C_{16}	C_{16}-C_{21}	C_{21}-C_{32}		
PLCS	Aug 19, 2009	<	<	<	<	<	0.08		0.1	0.2	NR
	Oct 13, 2009	<	<	<	<	<	0.2		0.1	0.3	WFO
	Jan 26, 2010	<	<	<	<	<	0.09		<	<	WFO
	Jul 16, 2010	<	<	<	<	<	<		<	<	-
	Dec 13, 2010	<	<	<	<	<	<		<	<	-
	Sep 02, 2011	<	<	<	<	<	0.05		<	<	-
	Feb 07, 2012	<	<	<	<	<	0.05		<	<	-
	Aug 30, 2012	<	<	<	<	<	<		<	<	-
	Aug 30, 2012 DUP-04	<	<	<	<	<	0.173		<	0.18	No resemblance to petroleum products in fuel oil range.
	Aug 28, 2013	<	<	<	<	<	<	<	<	<	-
SLCS	2008 (AMEC)	<(0.2)	<(0.2)	<(0.2)	<(0.6)	<(0.05)[1]	<(0.05)[1]		<(0.05)[1]	<(0.15)[1]	-
	Aug 19, 2009	<	<	<	<	<	<		<	<	-
	Oct 13, 2009	<	<	<	<	<	0.14		<	0.1	WFO
	Jan 26, 2010	<	<	<	<	<	0.11		<	0.1	WFO
	Jan 26, 2010[2]	<	<	<	<	<	0.11		<	0.1	WFO
	Jul 16, 2010	<	<	<	<	<	<		<	<	-
	Dec 13, 2010	<	<	<	<	<	0.05		<	<	-
	Sep 02, 2011	<	<	<	<	<	0.05		<	<	-
	Feb 07, 2012	<	<	<	<	<	0.11		<	0.21	One product in fuel/ lube oil range
	Feb 07, 2012 (DUP)	<	<	<	<	<	0.11		<	0.11	One product in fuel/ lube oil range
	Aug 30, 2012	<	<	<	<	<	0.159		<	0.16	No resemblance to petroleum products in fuel oil range.
	Aug 28, 2013	<	<	<	<	<	0.058	0.062	<	0.12	No resemblance to petroleum products in fuel oil range.
	Aug 28, 2013 (DUP-06)	<	<	<	<	<	0.071	0.061	<	0.13	No resemblance to petroleum products in fuel oil range.
RDL		0.001	0.001	0.001	0.002	0.01	0.05	0.1	0.1	0.1	-
2007 CCME Freshwater Aquatic Life Guidelines[3]		**4.00**	**2.00**	**0.39**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
										-	**-**
										-	**-**
Schedule A Water & Sewer Regulations*		-	-	-	-	-	-	-	-	**15**	-
2012 Tier I Surface Water ESL - Freshwater[4]		**2.10**	**0.77**	**0.32**	**0.33**	**-**	**-**	**-**	**-**	**1.5**	**Gasoline**
										0.1	**Diesel /#2 Fuel Oil**
										0.1	**#6 Oil**

Notes:

Analysis completed by Maxxam Analytics Inc. laboratory in St. John's, NL.
* Schedule A of Environmental Control Water and Sewer Regulations, 2003.

1. Assumed transcript error by factor of 1,000 from Pinchin LeBlanc Environmental Table 2 from March 2010 OMM Report
2. Field Duplicate
3. 2007 CCME Freshwater Aquatic Life Guidelines
4. Atlantic Risk-Based Corrective Action (RBCA) Tier I Surface Water Ecological Screening Level (ESL) Table values for protection of freshwater and marine aquatic life.

PLCS = Primary Leachate Collection System
SLCS = Secondary Leachate Collection System
DUP-04 = Field Duplicate of PLCS
DUP-06 = Field Duplicate of SLCS

RDL = Reportable Detection Limit
< = Parameter below detection limit
- = Not analysed
0.0 = above criteria

G = Gasoline
FO = Fuel Oil
LO = Lube Oil
W = Weathered

TABLE D15

HISTORICAL LEACHATE ANALYTICAL DATA - PAHs (ug/L)
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	RDL	Criteria*		PLCS									
		NL [1]	CCME [2]	Aug 19, 2009	Oct 13, 2009	Jan 25, 2010	Jul 16, 2010	Dec 13, 2010	Sep 02, 2012	Feb 07, 2012	Aug 30, 2012	Aug 30, 2012 DUP-04	Aug 28, 2013
1-Methylnaphthalene	0.05	-	-	<	<	<	<	<	<	<	<	<	<
2-Methylnaphthalene	0.05	-	-	<	<	<	<	<	<	<	<	<	<
Acenaphthene	0.01	-	580	<	0.01	0.01	<	<	<	0.011	0.041	0.01	<
Acenaphthylene	0.01	-	-	<	<	<	<	<	<	<	<	<	<
Acridine	0.05			-	-	-	<	<	<	<	-	<	-
Anthracene	0.01	-	1.2	<	0.05	0.06	<	0.04	<	<	<0.15 (1)	<0.040 (1)	<
Benzo(a)anthracene	0.01	-	1.8	<	0.01	0.02	<	<	<	<	0.039	0.013	<
Benzo(a)pyrene	0.01	-	1.5	<	<	<	<	<	<	<	<	<	<
Benzo(b)fluoranthene	0.01	-	-	<	<	<	<	<	<	<	<	<	<
Benzo(g,h,i)perylene	0.01	-	-	<	<	<	<	<	<	<	<	<	<
Benzo(j)fluoranthene	0.01	-	-										<
Benzo(k)fluoranthene	0.01	-	-	<	<	<	<	<	<	<	<	<	<
Chrysene	0.01	-	-	<	0.04	0.03	<	0.02	<	<	0.064	0.024	<
Dibenz(a,h)anthracene	0.01	-	-	<	<	<	<	<	<	<	<	<	<
Fluoranthene	0.01	-	4	<	0.05	0.07	<	0.04	<	0.011	0.18	0.046	0.011
Fluorene	0.01	-	300	<	0.02	0.02	<	<	<		0.049	0.014	<
Indeno(1,2,3-cd)pyrene	0.01	-	-	<	<	<	<	<	<	0.017	<	<	<
Naphthalene	0.2	-	110	<	<	<	<	<	<	<	<	<	<
Perylene	0.01	-	-	<	<	<	<	<	<	<	<	<	<
Phenanthrene	0.01	-	40	<	0.17	0.23	<	0.07	<	0.034	<0.020 (1)	<0.060(1)	<
Pyrene	0.01	-	2.5	<	0.36	0.32	<	0.17	0.2	0.046	0.85	0.01	0.052
Quinoline	0.05	-	-	<	-	-	<	<	-	-	-	-	-

Analysis completed by Maxxam Analytics Inc. laboratory in Bedford, NS.

NL = Environmental Control Water and Sewer Regulations, 2003, under the Water Resources Act, Newfoundland and Labrador Regulation 65/03.
CCME = Canadian Council of Ministers of the Environment (CCME) Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life (2007 - Update 7.1).
PLCS = Primary Leachate Collection System
SLCS = Secondary Leachate Collection System
DUP-04= Field Duplicate of PLCS
DUP-06 = Field Duplicate of SLCS
(1) = Elevated PAH RDL(s) due to matrix / co-extractive interference.
RDL = Reportable Detection Limit
- = Not analysed/No criteria
< = Parameter below detection limit
<(#) = Parameter below AMEC laboratory detection limit
0.0 = above NL criteria
0.0 = above CCME criteria for surface water

TABLE D15

HISTORICAL LEACHATE ANALYTICAL DATA - PAHs (ug/L)
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	RDL	Criteria*		SLCS											
		NL [1]	CCME [2]	AMEC 2008	Aug 19, 2009	Oct 13, 2009	Jan 25, 2010	Jan 25, 2010 Field Dup	Jul 16, 2010	Dec 13, 2010	Sep 02, 2012	Feb 07, 2012	Aug 30, 2012	Aug 28, 2013	Aug 28, 2013 DUP-06
1-Methylnaphthalene	0.05	-	-	<0.03	<	<	<	<	<	<	<	<	<	<	<
2-Methylnaphthalene	0.05	-	-	<0.03	<	<	<	<	0.22	<	<	<	<	<	<
Acenaphthene	0.01	-	580	<0.04	<	<	0.01	<	<	<	<	<	0.019	0.014	0.017
Acenaphthylene	0.01	-	-	<0.03	<	<	<	<	<	<	<	<	0.018	<	<(0.02)
Acridine	0.05			-					<	<	<	<	-	-	-
Anthracene	0.01	-	1.2	<0.01	<	0.1	0.06	0.06	<	<	<	<	<0.20 (1)	<(0.06)	<(0.15)
Benzo(a)anthracene	0.01	-	1.8	<0.01	<	0.06	0.02	0.03	<	<	<	<	0.064	0.05	0.062
Benzo(a)pyrene	0.01	-	1.5	<0.01	<	<	<	<	<	<	<	<	<	<	<
Benzo(b)fluoranthene	0.01	-	-	<0.05	<	<	<	<	<	<	<	<	<	<	<
Benzo(g,h,i)perylene	0.01	-	-	<0.03	<	<	<	<	<	<	<	<	<	<	<
Benzo(j)fluoranthene	0.01	-	-											<	<
Benzo(k)fluoranthene	0.01	-	-	<0.05	<	<	<	<	<	<	<	<	<	<	<
Chrysene	0.01	-	-	<0.04	<	0.09	0.04	0.04	<	0.01	<	0.013	0.10	0.085	0.11
Dibenz(a,h)anthracene	0.01	-	-	-	<	<	<	<	<	<	<	<	<	<	<
Fluoranthene	0.01	-	4	<0.03	<	0.26	0.11	0.11	0.01	<	<	0.018	0.37	0.24	0.29
Fluorene	0.01	-	300	<0.03	<	0.02	<	<	<	<	<	<	0.031	<(0.02)	<(0.04)
Indeno(1,2,3-cd)pyrene	0.01	-	-	<0.05	<	<	<	<	<	<	<	<	<	<	<
Naphthalene	0.2	-	110	-	<	<	<	<	<	<	<	<	<	<	<
Perylene	0.01	-	-	-	<	<	<	<	<	<	<	<	<	<	<
Phenanthrene	0.01	-	40	<0.04	<	0.4	0.13	0.07	0.02	0.01	<	0.012	<0.30 (1)	<	<(0.04)
Pyrene	0.01	-	2.5	<0.01	<	1.5	0.55	0.55	0.06	<	<	0.085	1.8	1.3	1.7
Quinoline	0.05	-	-	-	-	-	-	-	<	<	-	-	-	-	-

Analysis completed by Maxxam Analytics Inc. labora

NL = Environmental Control Water and Sewer Regul
CCME = Canadian Council of Ministers of the Enviro
Update 7.1).
PLCS = Primary Leachate Collection System
SLCS = Secondary Leachate Collection System
DUP-04= Field Duplicate of PLCS
DUP-06 = Field Duplicate of SLCS
(1) = Elevated PAH RDL(s) due to matrix / co-extrac
RDL = Reportable Detection Limit
- = Not analysed/No criteria
< = Parameter below detection limit
<(#) = Parameter below AMEC laboratory detection l
0.0 = above NL criteria
<u>0.0</u> = above CCME criteria fo

TABLE D16

HISTORICAL LEACHATE ANALYTICAL DATA - PCBs (ug/L)
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	RDL	Criteria*	PLCS									
			Aug 19, 2009	Oct 13, 2009	Jan 26, 2010	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Feb 07, 2012	Aug 30, 2012	Aug 30, 2012 DUP-04	Aug 28, 2013
Total PCBs	0.05	-	0.16	<	<	<	<	<	<	<	<	<

Parameter	RDL	Criteria*	SLCS										
			AMEC 2008	Aug 19, 2009	Oct 13, 2009	Jan 26, 2010	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Feb 07, 2012	Aug 30, 2012	Aug 28, 2013	Aug 28, 2013 DUP-06
Total PCBs	0.05	-	<0.04	<	<	<	<	<	<	<	<	<	<

Notes:

Analysis completed by Maxxam Analytics Inc. laboratory in Bedford, NS.

* Environmental Control Water and Sewer Regulations, 2003, under the Water Resources Act, Newfoundland and Labrador Regulation 65/03.

PLCS = Primary Leachate Collection System
SLCS = Secondary Leachate Collection System
DUP-04= Field Duplicate of PLCS
DUP-06= Field Duplicate of SLCS
RDL = Reportable Detection Limit

< = Parameter below detection limit

0.0 = above criteria

TABLE D17

HISTORICAL LEACHATE ANALYTICAL DATA - VOCs
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	RDL	Criteria*	PLCS									
			Aug 19, 2009	Oct 13, 2009	Jan 26, 2010	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Feb 07, 2012	Aug 30, 2012	Aug 30, 2012 DUP-04	Aug 28, 2013
Benzene	1	-	<	<	<	<	<	<	<	<	<	<
Bromodichloromethane	1	-	<	<	<	<	<	<	<	<	<	<
Bromoform	1	-	<	<	<	<	<	<	<	<	<	<
Bromomethane	3	-	<	<	<	<	<	<	<(4)	<	<	<
Carbon Tetrachloride	1	-	<	<	<	<	<	<	<	<	<	<
Chlorobenzene	1	-	<	<	<	<	<	<	<	<	<	<
Chloroethane	8	-	<	<	<	<	<	<	<(10)	<	<	<
Chloroform	1	-	<	<	<	<	<	<	<	<	<	<
Chloromethane	8	-	<	<	<	<	<	<	<(10)	<	<	<
Dibromochloromethane	1	-	<	<	<	<	<	<	<	<	<	<
1,2-Dichlorobenzene	0.5	-	<	<	<	<	<	<	<(0.7)	<	<	<
1,3-Dichlorobenzene	1	-	<	<	<	<	<	<	<	<	<	<
1,4-Dichlorobenzene	1	-	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	2	-	<	<	<	<	<	<	<	<	<	<
1,2-Dichloroethane	1	-	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethylene	0.5	-	<	<	<	<	<	<	<(0.7)	<	<	<
cis-1,2-Dichloroethylene	2	-	<	<	<	<	<	<	<(3)	<	<	<
trans-1,2-Dichloroethylene	2	-	<	<	<	<	<	<	<(3)	<	<	<
1,2-Dichloropropane	1	-	<	<	<	<	<	<	<	<	<	<
cis-1,3-Dichloropropene	2	-	<	<	<	<	<	<	<(3)	<	<	<
trans-1,3-Dichloropropene	1	-	<	<	<	<	<	<	<	<	<	<
Ethylbenzene	1	-	<	<	<	<	<	<	<	<	<	<
Methylene Chloride(Dichloromethane)	3	-	<	<	<	<	<	<	<(4)	<	<	<
o-Xylene	1	-	<	<	<	<	<	<	<	<	<	<
p+m-Xylene	2	-	<	<	<	<	<	<	<(3)	<	<	<
Styrene	1	-	<	<	<	<	<	<	<	<	<	<
Tetrachloroethylene	1	-	<	<	<	<	<	<	<	<	<	<
1,1,2,2-Tetrachloroethane	1	-	<	<	<	<	<	<	<	<	<	<
Toluene	1	-	<	<	<	<	<	<	<	<	<	<
Trichloroethylene	1	-	<	<	<	<	<	<	<	<	<	<
1,1,1-Trichloroethane	1	-	<	<	<	<	<	<	<	<	<	<
1,1,2-Trichloroethane	1	-	<	<	<	<	<	<	<	<	<	<
Trichlorofluoromethane (FREON 11)	8	-	<	<	<	<	<	<	<(10)	<	<	<
Vinyl Chloride	0.5	-	<	<	<	<	<	<	<(0.7)	<	<	<

Notes:

Analysis completed by Maxxam Analytics Inc. laboratory in Bedford, NS.
* Environmental Control Water and Sewer Regulations, 2003, under the Water Resources Act, Newfoundland and Labrador Regulation 65/03.
PLCS = Primary Leachate Collection System - = Not analysed/No criteria
SLCS = Secondary Leachate Collection System < = Parameter below detection limit
DUP-04 = Field Duplicate of PLCS
DUP-06 = Field Duplicate of SLCS
RDL = Reportable Detection Limit
0.0 = above criteria

TABLE D17

HISTORICAL LEACHATE ANALYTICAL DATA - VOCs
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	RDL	Criteria*	SLCS											
			AMEC 2008	Aug 19, 2009	Oct 13, 2009	Jan 26, 2010	Jan 26, 2010 Field Dup	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Feb 07, 2012	Aug 30, 2012	Aug 28, 2013	Aug 28, 2013 DUP-06
Benzene	1	-		<	<	<	<	<	<	<	<	<	<	<
Bromodichloromethane	1	-	<	<	<	<	<	<	<	<	<	<	<	<
Bromoform	1	-	<	<	<	<	<	<	<	<	<	<	<	<
Bromomethane	3	-	<	<	<	<	<	<	<	<(4)	<(4)	<	<	<
Carbon Tetrachloride	1	-	<	<	<	<	<	<	<	<	<	<	<	<
Chlorobenzene	1	-	<	<	<	<	<	<	<	<	<	<	<	<
Chloroethane	8	-	<	<	<	<	<	<	<	<(10)	<(10)	<	<	<
Chloroform	1	-	<	<	<	<	<	<	<	<	<	<	<	<
Chloromethane	8	-	<	<	<	<	<	<	<	<(10)	<(10)	<	<	<
Dibromochloromethane	1	-	<	<	<	<	<	<	<	<	<	<	<	<
1,2-Dichlorobenzene	0.5	-	<	<	<	<	<	<	<	<(0.7)	<(0.7)	<	<	<
1,3-Dichlorobenzene	1	-	<	<	<	<	<	<	<	<	<	<	<	<
1,4-Dichlorobenzene	1	-	<	<	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	2	-	<	<	<	<	<	<	<	<	<	<	<	<
1,2-Dichloroethane	1	-	<	<	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethylene	0.5	-	<	<	<	<	<	<	<	<(0.7)	<(0.7)	<	<	<
cis-1,2-Dichloroethylene	2	-	<	<	<	<	<	<	<	<(3)	<(3)	<	<	<
trans-1,2-Dichloroethylene	2	-	<	<	<	<	<	<	<	<(3)	<(3)	<	<	<
1,2-Dichloropropane	1	-	<	<	<	<	<	<	<	<	<	<	<	<
cis-1,3-Dichloropropene	2	-	<	<	<	<	<	<	<	<(3)	<(3)	<	<	<
trans-1,3-Dichloropropene	1	-	<	<	<	<	<	<	<	<	<	<	<	<
Ethylbenzene	1	-	<	<	<	<	<	<	<	<	<	<	<	<
Methylene Chloride(Dichloromethane)	3	-	<	<	<	<	<	<	<	<(4)	<(4)	<	<	<
o-Xylene	1	-	<	<	<	<	<	<	<	<	<	<	<	<
p+m-Xylene	2	-	<	<	<	<	<	<	<	<(3)	<(3)	<	<	<
Styrene	1	-	<	<	<	<	<	<	<	<	<	<	<	<
Tetrachloroethylene	1	-	<	<	<	<	<	<	<	<	<	<	<	<
1,1,2,2-Tetrachloroethane	1	-	<	<	<	<	<	<	<	<	<	<	<	<
Toluene	1	-	<	<	<	<	<	<	<	<	<	<	<	<
Trichloroethylene	1	-	<	<	<	<	<	<	<	<	<	<	<	<
1,1,1-Trichloroethane	1	-	<	<	<	<	<	<	<	<	<	<	<	<
1,1,2-Trichloroethane	1	-	<	<	<	<	<	<	<	<	<	<	<	<
Trichlorofluoromethane (FREON 11)	8	-	<	<	<	<	<	<	<	<(10)	<(10)	<	<	<
Vinyl Chloride	0.5	-	<	<	<	<	<	<	<	<(0.7)	<(0.7)	<	<	<

Notes:

Analysis completed by Maxxam Analytics Inc. laboratory in Bed
* Environmental Control Water and Sewer Regulations, 2003, ur
PLCS = Primary Leachate Collection System - = Not ana
SLCS = Secondary Leachate Collection System < = Parame
DUP-04 = Field Duplicate of PLCS
DUP-06 = Field Duplicate of SLCS
RDL = Reportable Detection Limit
0.0 = above criteria

TABLE D18

HISTORICAL LEACHATE ANALYTICAL DATA - GENERAL CHEMISTRY
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	Units	RDL	Criteria*	PLCS								
				Aug 19, 2009	Oct 13, 2009	Jan 26, 2010	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Aug 30, 2012	Aug 30, 2012 DUP-04	Aug 28, 2013
Anion Sum	me/L	N/A	-	2.30	12.20	12.20	4.86	10.10	4.21	12.5	9.53	10
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	1	-	90	482	453	176	400	167	520	390	420
Calculated TDS	mg/L	1	1,000	133	640	662	263	546	239	624	564	540
Carb. Alkalinity (calc. as CaCO3)	mg/L	1	-	<	<	<	1	1	1	2.6	2.3	<
Cation Sum	me/L	N/A	-	2.30	11.60	11.90	4.47	10.10	4.06	10.7	12.3	10
												<
Hardness (CaCO3)	mg/L	1	-	71	510	540	190	190	140	470	530	430
Ion Balance (% Difference)	%	N/A	-	0.40	2.40	1.30	4.18	0.00	1.81	7.94	12.9	0.05
Langelier Index (@ 20C)	N/A	N/A	-	-0.10	0.60	0.60	0.42	0.86	0.366	1.10	1.11	0.449
Langelier Index (@ 4C)	N/A	N/A	-	-0.40	0.30	0.30	0.17	0.61	0.116	0.856	0.864	0.202
Nitrate (N)	mg/L	0.05	10	0.30	<	0.10	0.35	0.28	0.32	0.061	0.41	0.11
Saturation pH (@ 20C)	N/A	N/A	-	8.00	6.60	6.60	7.40	6.74	7.51	6.63	6.69	6.73
Saturation pH (@ 4C)	N/A	N/A	-	8.30	6.90	6.90	7.65	6.98	7.76	6.87	6.94	6.98
Total Alkalinity (Total as CaCO3)	mg/L	30.00	-	91	480	450	180	400	170	530	390	420
Carbonaceous BOD	mg/L	5.00	20	-	-	-	<	<	-	-	-	<
Dissolved Chloride (Cl)	mg/L	1	-	8	40	33	11	29	11	39	31	30
Colour	TCU	5	-	31	35	20	15	17	18	10	10	8.6
Strong Acid Dissoc. Cyanide (CN)	mg/L	0.002	25	-	-	-	<	<	-	<0.0020	-	<(2)
Nitrate + Nitrite	mg/L	0.05	-	0.30	<	0.10	0.37	0.28	0.32	0.061	0.41	0.11
Nitrite (N)	mg/L	0.01	-	<	<	<	0.03	<	ND	<0.010	<	<
Nitrogen (Ammonia Nitrogen)	mg/L	0.05	2	<	0.30	0.40	<	0.10	ND	0.53	0.45	0.35
Total Organic Carbon (C)	mg/L	0.5	-	4.7	25.0	16.0	6.4	11.0	5.1	16 (1)	20 (5)	13
Orthophosphate (P)	mg/L	0.01	-	<	<	<	<	<	ND	<0.010	<	<
pH	pH	N/A	5.5 - 9.0	7.90	7.20	7.20	7.82	7.59	7.88	7.73	7.8	7.18
Phenols-4AAP	mg/L	0.001	0.10	-	-	-	0.01	0.003	0.003	0.012	-	0.0064
Reactive Silica (SiO2)	mg/L	0.5	-	4.30	16.00	16.00	8.40	13.00	12	17	14	14
Total Suspended Solids (TSS)	mg/L	2.0	30	-	2	6	11	17	5	9.8	-	1.6
Dissolved Sulphate (SO4)	mg/L	2.0	-	11	66	110	47	61	25	43	36	42
Sulphide	mg/L	0.02	0.50	-	-	-	<	<	ND	<0.020	-	<
Turbidity	NTU	0.1	-	0.4	62.0	6.8	1.6	16.0	0.7	160	12	140
Conductivity	uS/cm	1	-	220	1000	1000	440	840	400	1000	820	820
Total Oil & Grease	mg/L	5.00	-	-	-	-	<	<	-	-	-	<
Coliform-Fecal	#/100mL	-	1,000/100 mL	-	-	-	0	0	-	-	-	-
Coliform-Total	#/100mL	-	5,000/100 mL	-	-	-	>80	>80	-	-	-	-

Notes:
Analysis completed by Maxxam Analytics Inc. laboratory in Bedford, NS.
Coliform analysis completed by Newfoundland and Labrador Government Services in Grand Falls-Windsor, NL
* Environmental Control Water and Sewer Regulations, 2003, under the Water Resources Act, Newfoundland and Labrador Regulation 65/03.
PLCS = Primary Leachate Collection System
SLCS = Secondary Leachate Collection System
DUP-04= Field Duplicate of PLCS
DUP-06= Field Duplicate of SLCS
RDL = Reportable Detection Limit **0.0** = above criteria
-= Not analysed/No criteria
< = Parameter below detection limit
<(#) = Parameter below AMEC laboratory detection limit

TABLE D18

HISTORICAL LEACHATE ANALYTICAL DATA - GENERAL CHEMISTRY
2013/14 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	Units	RDL	Criteria*	SLCS										
				AMEC 2008	Aug 19, 2009	Oct 13, 2009	Jan 26, 2010	Jan 26, 2010 Field Dup	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Aug 30, 2012	Aug 28, 2013	Aug 28, 2013 DUP-06
Anion Sum	me/L	N/A	-	-	10.80	13.70	13.60	13.40	8.68	10.90	6.93	12.3	11.2	12.8
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	1	-	-	428	542	532	509	315	420	267	500	460	530
Calculated TDS	mg/L	1	1,000	780	598	737	728	716	460	574	383	647	640	710
Carb. Alkalinity (calc. as CaCO3)	mg/L	1	-	-	<	<	<	<	1	2	2	2.2	<	<
Cation Sum	me/L	N/A	-	-	10.70	13.90	12.90	13.10	7.81	10.40	6.6	12.0	13.5	14.2
													<	<
Hardness (CaCO3)	mg/L	1	-	658	410	580	560	570	320	320	240	500	560	580
Ion Balance (% Difference)	%	N/A	-	-	0.50	0.70	3.70	1.10	5.28	2.44	2.44	1.07	9.25	5.24
Langelier Index (@ 20C)	N/A	N/A	-	-	0.60	0.40	0.50	0.60	0.67	0.99	0.749	1.04	0.511	0.487
Langelier Index (@ 4C)	N/A	N/A	-	-	0.40	0.20	0.30	0.30	0.42	0.74	0.5	0.787	0.264	0.24
Nitrate (N)	mg/L	0.05	10	<0.05	0.10	<	<	<	0.35	0.10	0.48	0.067	0.077	<
Saturation pH (@ 20C)	N/A	N/A	-	-	6.80	6.60	6.60	6.60	7.00	6.73	7.17	6.63	6.6	6.53
Saturation pH (@ 4C)	N/A	N/A	-	-	7.00	6.80	6.80	6.80	7.25	6.98	7.42	6.87	6.85	6.78
Total Alkalinity (Total as CaCO3)	mg/L	30.00	-	587	430	540	530	510	320	420	270	510	460	530
Carbonaceous BOD	mg/L	5.00	20	-	-	-	-	-	<	<	-	-	<	<
Dissolved Chloride (Cl)	mg/L	1	-	67	40	54	48	48	32	43	29	44	38	42
Colour	TCU	5	-	-	17	19	15	15	12	56	10	12	13	12
Strong Acid Dissoc. Cyanide (CN)	mg/L	0.002	25	-	-	-	-	-	<	<	-	<0.0020	<(2)	<(2)
Nitrate + Nitrite	mg/L	0.05	-	-	0.10	<	<	<	0.37	0.10	0.48	0.067	0.1	<
Nitrite (N)	mg/L	0.01	-	<0.015	<	<	<	<	0.02	<	ND	<0.010	0.028	<
Nitrogen (Ammonia Nitrogen)	mg/L	0.05	2	0.43	0.40	0.50	0.50	0.50	0.12	0.26	ND	0.50	0.38	0.53
Total Organic Carbon (C)	mg/L	0.5	-	25.7	16.0	24.0	19.0	19.0	12.0	13.0	ND	20 (1)	18	19(1)
Orthophosphate (P)	mg/L	0.01	-	-	<	<	<	<	<	<	ND	<0.010	<	<
pH	pH	N/A	5.5 - 9.0	6.80	7.40	7.00	7.10	7.10	7.67	7.72	7.92	7.66	7.11	7.02
Phenols-4AAP	mg/L	0.001	0.10	-	-	-	-	-	0.003	<0.01*	0.004	0.014	0.0088	0.0086
Reactive Silica (SiO2)	mg/L	0.5	-	-	19.00	17.00	17.00	18.00	14.00	14.00	19	15	15	16
Total Suspended Solids (TSS)	mg/L	2.0	30	**69**	-	**34**	18	16	5	**33**	**5**	24	29	28
Dissolved Sulphate (SO4)	mg/L	2.0	-	-	54	64	90	88	69	60	34	44	40	43
Sulphide	mg/L	0.02	0.50	-	-	-	-	-	<	<	ND	0.060	<	<
Turbidity	NTU	0.1	-	-	140.0	200.0	77.0	65.0	6.6	17.0	0.9	280	130	220
Conductivity	uS/cm	1	-	1250	980	990	1200	1100	750	900	620	1100	950	1,100
Total Oil & Grease	mg/L	5.00	-	-	-	-	-	-	<	<	-	-	<	<
Coliform-Fecal	#/100mL	-	1,000/100 mL	-	-	-	-	-	0	- [(1)]	-	-	-	-
Coliform-Total	#/100mL	-	5,000/100 mL	-	-	-	-	-	>80	- [(1)]	-	-	-	-

Notes:
Analysis completed by Maxxam Analytics Inc. laboratory in Bedford, NS.
Coliform analysis completed by Newfoundland and Labrador Government Ser
* Environmental Control Water and Sewer Regulations, 2003, under the Water
65/03.
PLCS = Primary Leachate Collection System
SLCS = Secondary Leachate Collection System
DUP-04= Field Duplicate of PLCS
DUP-06= Field Duplicate of SLCS
RDL = Reportable Detection Limit **0.0**
-= Not analysed/No criteria
< = Parameter below detection limit
<(#) = Parameter below AMEC laboratory detection limit

TABLE D19

HISTORICAL LEACHATE ANALYTICAL DATA - TOTAL METALS (ug/L)
2012/13 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	RDL	Criteria*	PLCS								
			Aug 19, 2009	Oct 13, 2009	Jan 26, 2010	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Aug 30, 2012	Aug 30, 2012 DUP-04	Aug 28, 2013
Aluminum (Al)	5	-	35	<	<	36.8	<	41	14.2	22.2	18
Antimony (Sb)	1	-	<	<	<	<	<	-	<	<	<
Arsenic (As)	1	500	<	<	<	<	<	-	<	1.0	<
Barium (Ba)	1	5,000	7.0	73	71	13.3	51	11	72.7	85.7	85
Beryllium (Be)	1	-	<	<	<	<	<	-	<	<	<
Bismuth (Bi)	2	-	<	<	<	<	<	-	<	<	<
Boron (B)	5	5,000	170	7,400	3,400	1,170	2,230	650	1,500	1,890	1,700
Cadmium (Cd)	0.017	50	<	<	<	<	<	-	<	<	0.012
Calcium (Ca)	100	-	-	-	-	58,400	138,000	46,100	140,000	159,000	
Total Chromium (Cr)	1	1,000	<	<	<	<	<	-	<	<	<
Chromium VI	0.001	0.05	-	-	-	<	<	-	-	<	0.58
Cobalt (Co)	0.4	-	<	<	<	<	<	-	<	<	<
Copper (Cu)	2	300	4.0	<	<	2.50	<	2	<	<	<
Iron (Fe)	50	10,000	77	4,900	4,000	1,790	3,150	342	5,470	**14,300**	**12,000**
Lead (Pb)	5	200	<	<	<	<	<	-	<	<	<
Magnesium (Mg)	100	-	-	-	-	10,700	24,300	7,070	28,800	32,900	23,000
Manganese (Mn)	2	-	7.0	9,100	8,800	1,130	6,240	369	7,270	8,770	5,700
Mercury (Hg)	0.013	5	-	-	<	<	<	-	-	<	<
Molybdenum (Mo)	2	-	<	<	<	<	<	-	<	<	<
Nickel (Ni)	2	500	<	<	<	<	<	-	<	<	<
Phosphorus (P)	100	0.5	-	-	-	<	<	-	<	<	<
Potassium (K)	100	-	-	-	-	7,270	6,530	21,000	5,840	5,800	6,100
Selenium (Se)	1	10	<	<	<	<	<	-	<	<	<
Silver (Ag)	0.1	50	-	-	-	<	<	-	<	<	<
Sodium (Na)	100	-	<	<	<	9,880	22,500	14,300	21,100	23,700	19,000
Strontium (Sr)	2	-	52	360	350	156	289	104	318	362	300
Thallium (Tl)	0.1	-	<	<	<	<	<	-	<	<	<
Tin (Sn)	2	-	<	<	<	<	<	-	<	<	<
Titanium (Ti)	2	-	<	<	<	<	<	-	<	2.00	<
Uranium (U)	1	-	0.1	<	<	0.25	<	0	0.79	0.94	0.66
Vanadium (V)	2	-	<	<	<	<	<	-	<	<	<
Zinc (Zn)	50	500	<	67.0	<	8.10	<	14	<	6.50	<

Notes:

Analysis completed by Maxxam Analytics Inc. laboratory in Bedford, NS.
* Environmental Control Water and Sewer Regulations, 2003, under the Water Resources Act, Newfoundland and Labrador Regulation 65/03.
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RDL = Reportable Detection Limit -= Not analysed/No criteria
< = Parameter below detection limit
<(#) = Parameter below AMEC laboratory detection limit
0.0 = above criteria

TABLE D19

HISTORICAL LEACHATE ANALYTICAL DATA - TOTAL METALS (ug/L)
2012/13 MONITORING AND MAINTENANCE PROGRAM
COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Parameter	RDL	Criteria*	SLCS										
			AMEC 2008	Aug 19, 2009	Oct 13, 2009	Jan 26, 2010	Jan 26, 2010 Field Dup	Jul 16, 2010	Dec 13, 2010	Sep 02, 2011	Aug 30, 2012	Aug 28, 2013	Aug 28, 2013 DUP-06
Aluminum (Al)	5	-	42	<	100	<	<	23.1	<	23.7	16.3	22	28
Antimony (Sb)	1	-	<1	<	<	<	<	<	<	-	<	<	<
Arsenic (As)	1	500	2	<	<	<	<	<	<	-	1.1	<	1.1
Barium (Ba)	1	5,000	69.8	38	93	68	68	18.9	40	5.3	78.2	98	110
Beryllium (Be)	1	-	<0.1	<	<	<	<	<	<	-	<	<	<
Bismuth (Bi)	2	-	1.1	<	<	<	<	<	<	-	<	<	<
Boron (B)	5	5,000	-	2,800	3,100	2,300	2,400	1,970	1,870	1,350	2,500	2,300	2,400
Cadmium (Cd)	0.017	50	1.3	<	<	<	<	<	<	-	<	<	<
Calcium (Ca)	100	-	-	-	-	-	-	90,900	135,000	69,700	147,000	170,000	180,000
Total Chromium (Cr)	1	1,000	1	<	<	<	<	<	<	63.2	<	<	<
Chromium VI	0.001	0.05	-	-	-	-	-	<	<	-	-	<	<
Cobalt (Co)	0.4	-	<1	<	<	<	<	0.49	<	-	1.04	0.61	0.47
Copper (Cu)	2	300	1	<	<	<	<	<	<	-	<	<	<
Iron (Fe)	50	10,000	**29,900**	6,800	**19,000**	8,500	8,300	1,320	2,240	-		**22,000**	**27,000**
Lead (Pb)	5	200	6	<	<	<	<	<	<	-	<	<	<
Magnesium (Mg)	100	-	-	-	-	-	-	23,500	27,400	16900	33,200	34,000	35,000
Manganese (Mn)	2	-	11,000	5,400	10,000	8,900	9,000	3,270	5,120	241	8,250	9,300	9,500
Mercury (Hg)	0.013	5	-	-	-	<	<	<	<	-	-	<	<
Molybdenum (Mo)	2	-	2	<	<	<	<	<	<	-	7.20	<	<
Nickel (Ni)	2	500	1	<	<	<	<	<	<	-	2.40	<	<
Phosphorus (P)	100	0.5	-	-	-	-	-	<	<	-	<	<	<
Potassium (K)	100	-	-	-	-	-	-	<	7,750	28,400	8,870	9,100	10,000
Selenium (Se)	1	10	1	<	<	<	<	<	<	-	<	<	<
Silver (Ag)	0.1	50	-	-	-	-	-	<	<	-	<	<	<
Sodium (Na)	100	-	0.6	<	<	<	<	21,300	25,500	23,100	26,600	26,000	28,000
Strontium (Sr)	2	-	-	280	440	380	390	282	324	183	369	430	450
Thallium (Tl)	0.1	-	-	<	<	<	<	<	<	-	<	<	<
Tin (Sn)	2	-	-	<	<	<	<	<	<	-	<	<	<
Titanium (Ti)	2	-	-	<	<	<	<	<	<	-	<	<	2.5
Uranium (U)	1	-	-	0.8	1	2	2	1.11	1	0.71	5.05	1.2	1.1
Vanadium (V)	2	-	4	<	<	<	<	<	<	-	<	<	<
Zinc (Zn)	50	500	7	<	<	<	<	5.20	<	32.2	8.30	16	180

Notes:

Analysis completed by Maxxam Analytics Inc. labc
* Environmental Control Water and Sewer Regulat
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