Municipality of Greenstone

2019, 2020 & 2021 Environmental Quality Monitoring Report Geraldton Landfill Municipality of Greenstone, Ontario

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1 Introduction

EXP Services Inc. (EXP) was commissioned by the Municipality of Greenstone to prepare the 2019, 2020 & 2021 Environmental Quality Monitoring Report for the Geraldton Landfill Site (the "site") located in Part of Mining Claim T.B. 14031, Township of Ashmore, District of Thunder Bay (see Figure 1 in Appendix A). The site is currently governed by Amended Environmental Compliance Approval (ECA) No. A7004401, dated December 23, 2020 and issued by the Ontario Ministry of Environment, Conservation and Parks (MECP). Although the site had exceeded its approved capacity (i.e., 273,000 m^3), the amended ECA allowed the site to continue to receive waste until December 31, 2021. The site ceased receiving waste on that date and closure activities have commenced, as specified in the ECA. A draft Updated Closure Plan, dated December 7, 2021, was submitted to the MECP for review/approval, and acknowledgment of receipt was received from the MECP on December 22, 2021 (copy in Appendix B). The Municipality and EXP are awaiting MECP comments on the submission.

Copies of the current ECA and its predecessors (including several Notices) dating back to November 2008 are found in Appendix B. A copy of the most recent MECP Inspection Report for the site in EXP's possession, dated July 2017, is also found in Appendix B. Note that there were no actions required.

The environmental quality monitoring was carried out primarily for the purpose of assessing the landfill site's compliance with the MECP's Guideline B-7 (Reasonable Use Policy or RUP) with respect to groundwater flow and impact, in accordance with Trigger Values previously developed and provided to MECP, as required by the ECA. However, considering that Kenogamisis Lake is downgradient of the site, the report also compares results with criteria designed to protect surface water quality.

As specified in the ECA, the following items are required to be included in a report to the MECP:

i. the results and an interpretive analysis of the results of environmental monitoring program, including an assessment of the need to amend the monitoring program;
ii. an assessment with regards to compliance of the groundwater quality at the property boundary and compliance point with regards to Guideline B-7 – Reasonable Use Concept;
iii. an assessment of the operation and performance of all engineered facilities, the need to amend the design or operation of the site, and the adequacy of and need to implement the contingency plans;
iv. an assessment of the efficiency of the leachate management at the site;
v. site plans showing the existing contours of the site;
vi. areas of landfilling operation during the reporting period;
vii. areas of intended operation during the next reporting period;

viii. areas of excavation during the reporting period;

ix. the progress of final cover, vegetative cover, and any intermediate cover application;

x. previously existing site facilities;

xi. facilities installed during the reporting period;

xii. site preparations and facilities planned for installation during the next reporting period;

xiii. calculations of the volume of waste, daily and intermediate cover, and final cover deposited or placed at the site during the reporting period and a calculation of the total volume of site capacity used during the reporting period;

xiv. a summary of the quantity of any leachate or pre-treated leachate removed from the site during each operating week;

xv. a summary of the weekly, maximum daily and total annual quantity (tonnes) of waste received at the site;

xvi. A summary of type and quantity of all wastes received and transferred from the site (from both the Waste Transfer Facility and Household Hazardous Waste Depot) and the destination the wastes were being shipped to;

xvii. a summary of any complaints received and the responses made;

xviii. a discussion of any operational problems encountered at the site and corrective action taken;

xix. a summary of the amount of wastes refused for acceptance at the site, the reasons for refusal and the carrier who brought the waste to the site;

xx. a report on the status of all monitoring wells and a statement as to compliance with Ontario Regulation 903;

xxi. any other information with respect to the site which the District Manager or Regional Director may require from time to time*;*

xxii. a statement of compliance with all conditions of this ECA and other relevant Ministry groundwater and surface water requirements;

xxiii. a confirmation that the site inspection program as required by this ECA has been complied with by the *Owner*;

xxiv. any changes in operations, equipment or procedures employed at the site; and

xxv. recommendations regarding any proposed changes in operations of the site.

Details on landfill maintenance/operation and current and proposed closure activities can be found in the Updated Design and Operations Plan with Closure Plan[1] and the most recent

[1] EXP Services Inc. (2012). *Updated Design and Operations Plan with Closure Plan, Geraldton Landfill, Municipality of Greenstone*. Ref. No. THB-0006189-THB-200. October 16, 2012.

Updated Closure Plan[2] prepared by EXP. Note that MECP comments on the Updated Closure Plan have not yet been received.

Additionally, in 2013, an Environmental Screening Report (ESR)[3] was prepared by EXP in support of a formal expansion of the site, which was approved. However, as noted above, the approved site capacity has been exceeded and the site is no longer receiving waste. The Municipality of Greenstone is pursuing other available waste management options.

It is EXP's understanding that any operational information required to be reported to the MECP under the terms of the ECA and not included in the present monitoring report would be provided directly by the Municipality.

[2] EXP Services Inc. (2021). *Updated Closure Plan, Geraldton Landfill, Municipality of Greenstone*. Ref. No. THB-00006189-RE-THB-400. Draft Report. December 7, 2021.
[3] EXP Services Inc. (2013). *Environmental Screening Report, Expansion of Geraldton Waste Disposal Site, Municipality of Greenstone (Final Draft).* Ref. No. THB-0006189-THB-400. January 25, 2013.

2 Site Description

The subject property is located on the north side of Highway 11, approximately 3.2 km east of the junction with Highway 584 and about 4 km southeast of the Town of Geraldton in the Municipality of Greenstone, as shown on Figure 1 (Appendix A). The original legal description is: Part of Mining Claim TB14031, Township of Ashmore, District of Thunder Bay. However, as described in previously-cited reports, the site has been expanded, with additional buffer lands having been expropriated and additional attenuation lands having been transferred from the Crown/MNRF. Access to the site is provided by a gravel road off Highway 11 and is controlled by a lockable gate and chain-link fencing.

Based on a review of geological mapping, the site is situated in an area with glaciofluvial outwash plain with occasional bedrock and valley landforms, and the soil consists mainly of sand deposits (see Figure 2). The topography is generally knobby, hummocky, kettled and/or pitted with mainly moderate local relief and generally dry surface conditions. The active landfill area encompasses a portion of an abandoned earth borrow pit. The current landfill area is located in a relatively flat, low-lying area; however, the surrounding land to the north and east is elevated relative to the site. The high ground north and east of the site is about 12 m higher than the bottom of the landfill area. The most recent updated topographic survey was conducted in mid-September of 2021 by Delta Survey Inc. (Delta), and a copy of the survey plan is provided on Figure 4 in Appendix A (all elevations geodetic), and in Appendix K.

Up until December 31, 2021 (closure date), the property was approved to receive municipal waste from the Municipality of Greenstone and two nearby First Nations. The approved landfilling/recycling area is irregularly shaped and covers an area of some 4.3 hectares, although waste had historically been deposited over an area of about 4.65 ha. The site generally consists of a historical borrow pit. According to the locals, it was subsequently used for several years as a stock car racetrack (probably some 50 years ago). Over the last three to four decades, the site was used as a landfill site.

The surrounding land tenure, as well as the lands acquired for the purposes of site expansion, are shown on Figure 8. In addition to obtaining outright ownership of the actual 4.3 ha waste disposal site (Location HM215) from the Crown (MNR), the Municipality acquired Crown lands adjacent to the site to the east and west to provide the necessary buffer/attenuation zone. The strip of buffer land immediately north of the waste footprint (identified as “Buffer Lands [Recently Acquired]” on Figure 8) was expropriated from a private owner on November 12, 2013. Also, municipally-owned property to the south and west was approved for incorporation in an expanded leachate attenuation zone. The approved total site area is some 30.65 ha (includes recently acquired buffer lands).

South of Highway 11 (southeast of the landfill) is MacLeod Provincial Park. West of the attenuation zone boundary (i.e., to Kenogamisis Lake) is land owned by Premier Gold.

3 Operational Information

3.1 Landfill Capacity

Historical calculations of landfill capacity and remaining lifespan were based on an estimated waste footprint (from site observations) of 4.65 ha. Waste has apparently been placed slightly beyond the limits of the expanded Land Use Permit (LUP) issued by MNR, which encompasses an area of 4.3 ha. Based on information presented/discussed in the Environmental Screening report (previously cited), the current ECA indicates/approves a 4.3 ha landfilling/recycling site within a total site area of about 30.65 ha. As discussed above, the Municipality acquired the strip of buffer land immediately north of the site from a private owner through expropriation. This allowed for the required minimum 30 m buffer beyond the limits of historical waste placement

The maximum approved waste/interim cover volume, excluding final cover, is 273,000 m^3. As previously discussed, the site exceeded the approved capacity (an updated volume estimate is provided below) but received approval to continue to operate and accept additional waste until December 31, 2021 (see ECA documents in Appendix B).

The refuse was typically placed in the landfill area using a bench/area fill method. A volume survey conducted in October 2009 determined that some 234,500 m^3 of waste and interim cover were present on the site. A subsequent survey conducted on May 29, 2012 determined that the volume was about 256,420 m^3, representing an increase of some 21,920 m^3 during that period (2 years and 7 months). The survey was repeated on May 14, 2014 and determined that the volume was some 273,828 m^3 (slightly in excess of the approved capacity), representing an increase of some 17,408 m^3 during that period (2 years). The survey was updated on August 18, 2015 and determined that the volume was about 277,902 m^3, representing an increase of about 4,074 m^3 during that period (1 year and 3 months). Several additional surveys have been conducted, showing reduced average annual volume increases since 2014 of about 2,960 m^3 (see Figure 4). The total estimated volume on site as of September 11, 2021 was 294,545 m^3.

Based on the Municipality's estimates, the volumes deposited on site during each year of the current reporting period were as follows:

- 2019 = 1,625 m^3
- 2020 = 1,895 m^3
- 2021 = 1,755 m^3.

The Municipality's figures are lower than the surveyed results, likely mainly because the survey results include cover material while the Municipality's volume estimates do not.

As indicated above, the total surveyed volume on site as of September 2021 was 294,545 m^3. The total volume of waste and interim cover present at the site, as of site closure on December

31, 2021, is estimated to be about 295,500 m^3. This is 22,500 m^3 more than the approved capacity.

3.2 Waste Types and Waste Diversion

Based on information provided by the client, the landfill only accepted solid, non-hazardous municipal waste. To minimize the volume of waste deposited at the Geraldton Landfill site, the Municipality accepted no construction debris since May 31, 2014. All construction debris is deposited at the Longlac Landfill.

The site had designated areas for batteries, concrete with rebar, electrical equipment and appliances, fluorescent bulbs, tires, and refrigeration equipment. For the past several years, the landfill accepted various materials for recycling, including electronic waste, tires and metal (includes appliances [refrigerant was removed appropriately]).

The site has never housed a recycling depot to handle blue box type domestic recyclables (e.g., paper, cardboard, cans, plastics, glass bottles).

From July 6 to September 7, 2019, July 4 to September 5, 2020 and June 5 to September 11, 2021, household hazardous wastes (HHW) were accepted at the Geraldton Landfill Site, in accordance with MECP requirements. The following wastes were generally collected:

- Antifreeze
- Oil containers and oil filters
- Paints and coatings
- Fertilizers and pesticides
- Pressurized containers (e.g., propane, aerosol cans, fire extinguishers)
- Single-use dry cell batteries and rechargeable batteries
- Solvents (e.g., paint thinners)
- Fluorescent light bulbs.

The HHW materials were stored at the depot until collection by GFL Environmental. Also, residents were invited to bring household hazardous wastes not included in the above list for collection by GFL Environmental during the final day of the HHW collection periods. HHW manifests are available for review upon request.

3.3 Operational Problems

Municipality of Greenstone personnel did not advise of the existence of any operational problems (other than occasional mechanical equipment issues) at the site during the monitoring period.

3.4 **Complaints**

Municipality of Greenstone personnel did not receive any complaints regarding the operation of the landfill site in 2019, 2020 or 2021. However, non-formal complaints were received about the upcoming closure of the landfill.

4 Methodology

4.1 Initial Site Reconnaissance

On May 26, 2003, prior to installation of any monitoring wells, EXP (then Trow) visited the subject property along with representatives from the Municipality of Greenstone and the MECP.

As shown on Figure 1, the disposal site and adjacent properties are hilly, with local relief of up to 20 metres. In general, areas to the south and east are elevated, while areas to the north and west are low-lying and in some cases are low-lying with some swampy areas. No surface discharge from the swampy areas was apparent. A small hill was also observed at the northwest corner of the site.

Beyond the cleared area of the landfill, generally dense vegetation with mature trees was noted toward the north, south and west, while long grass and minor brush was observed toward the east. Drainage at the site is controlled largely by site grading to low-lying areas near the north, east and west sides of the landfill. No streams were observed on or in the immediate vicinity of the landfill. The nearest surface water body is Kenogamisis Lake, located about 400 m south of the landfill, but also extends to the east and west, though at greater distance from the landfill.

During the site visit, the property limits and extents of waste were observed, and adjacent land uses were discussed. It was noted that the waste extends beyond the property line to the north, south and east. Efforts were previously made to push the garbage back onto the landfill site from the eastern adjacent property; however, some garbage still remains slightly beyond the property line.

During the preliminary site visit, no clear groundwater direction could be deduced from the topographical features observed. The MECP therefore recommended that an initial investigation of the groundwater flow patterns at the site be undertaken prior to the installation of groundwater monitoring wells. The information would better assist in the strategic planning of monitoring well locations.

4.2 Historical Investigation of Groundwater Flow Patterns

Based on the MECP recommendation during the initial site reconnaissance, the client approved a preliminary investigation of the groundwater flow patterns. This was accomplished by the installation of nine (9) observation wells, OB1 to OB9, located as shown on Figure C-1 in Appendix C.

The nine observation wells were installed in June 2003 using a CME 45B truck-mounted drill rig equipped with both solid and hollow stem continuous flight augers, soil testing and sampling equipment. Depths of the boreholes ranged from 3.1 m to 10.7 m below ground surface.

While the soils encountered within these boreholes were not sampled, a general log of soil characteristics was maintained. All fieldwork was conducted under the continuous supervision of experienced EXP (then Trow) geotechnical engineering staff.

To facilitate the measurement of stabilized groundwater elevations, temporary 19 mm (¾") hand-slotted PVC standpipes were installed in each of the boreholes upon completion of drilling. Elevations of the ground surface and 'top-of-pipe' were measured, and referenced to a benchmark located near the southeast corner of the site (see Figure C-1).

Upon installation of the monitoring wells during the subsequent field program, the temporary standpipes were removed. The boreholes were backfilled with the native sand soil.

No buried refuse was encountered below the groundwater table at any of the observation well locations.

4.3 Historical Monitoring Well Installations (2003)

To investigate the orientation and chemical character of the contaminant plume originating from the subject landfill, seven (7) monitoring wells were installed at the locations shown on Figure 3 through Figure 6 as MW1 to MW6, inclusive. This included a nested pair of wells at MW3. The monitoring wells' locations were selected based on the groundwater flow patterns deduced during the initial investigation and were agreed upon by the MECP.

In general, MW1 to MW4 are downgradient monitors, while MW5 is a source monitor located near the centre of the landfill. MW6 is a background monitor located northeast of the landfill. In order to access the MW1 and MW2 locations, a roadway was cleared using a bulldozer. Arrangements for the road clearing were made by the Municipality of Greenstone.

The monitoring wells were installed between June 24 and June 27, 2003, using a CME 45B truck-mounted drill rig equipped with both solid and hollow stem continuous flight augers, soil testing and sampling equipment. Borehole depths ranged from 3.8 m to 12.2 m. All fieldwork was conducted under the continuous supervision of EXP (then Trow) geotechnical engineering staff.

Soil samples from the top 1.5 m of the boreholes were taken from the auger cuttings. Below this depth, standard penetration tests (SPTs) were generally performed in the soil strata in order to assess the compactness or consistency of the underlying soils and to obtain representative samples. The recovered soil samples and stratigraphy were examined and logged in the field by EXP (then Trow) geotechnical engineering personnel.

Following the drilling of the boreholes, monitoring wells were installed. Details of the monitoring well installations are given on the Borehole Logs in Appendix D. Monitoring wells consisted of industry standard 50 mm PVC; screen sections were wrapped in filter sock and backfilled with silica sand and native sand soil (auger cuttings). The well annulus above the screen was sealed with bentonite to prevent infiltration of surface water. Following the

installation, steel well protectors were installed. All installations were conducted by an EXP (then Trow) MECP-licensed well technician.

Following installation, the monitoring wells were developed by pumping. Following the recovery of the wells, an attempt was made to estimate the *in situ* hydraulic conductivity of the screened zones using falling head permeability testing (slug testing). However, the generally high field permeability at the monitoring well locations precluded accurate measurements of changing groundwater levels versus time following the addition of the slug to the monitoring well. Therefore, it was decided to base determinations of groundwater flow velocities at the site on hydraulic conductivity estimated from the results of grain size distributions for selected samples recovered from screened sections of the monitoring wells.

Representative samples of the various soil strata encountered were taken to EXP's (then Trow's) laboratory in Thunder Bay for further examination by a geotechnical engineer.

It should be noted that no quantities of buried refuse were noted below the groundwater table at any of the monitoring well locations. At MW5 (source well), garbage was present to a depth of about 4.6 m; however, the groundwater table was at about 6.5 m depth.

4.4 Additional Monitoring Well Installations (2006)

To better investigate the orientation and chemical character of the contaminant plume originating from the subject landfill, four (4) additional monitoring wells were installed at the locations shown on Figure 3 through Figure 6 as MW8, MW9, MW10A and MW10B. The general monitoring well locations were approved by the MECP but were modified as required based on site conditions.

The drilling and well installations were undertaken by Landcore Drilling on July 25 and July 26, 2006, using a track-mounted drill rig equipped with hollow stem continuous flight augers, soil testing and sampling equipment. Borehole depths ranged from 4.6 m to 18.3 m. All fieldwork was conducted under the continuous supervision of experienced EXP (then Trow) environmental staff.

Soil samples from the top 1.5 m of the boreholes were generally taken from the auger cuttings. Below this depth, standard penetration tests (SPTs) were performed in the soil strata in order to assess the compactness or consistency of the underlying soils and to obtain representative samples. The recovered soil samples and stratigraphy were examined and logged.

Following the drilling of the boreholes, monitoring wells were installed. Details of the well installations are given on the Borehole Logs in Appendix D and are summarized below:

- MW8 – well installed to 18.3 m depth, screened in lower sand from 13.8 m to bottom.
- MW9 – well installed to 10.7 m depth (refusal on presumed bedrock), screened in sand/silt and silt from 6.1 m to bottom.
- MW10A – well installed to 4.6 m depth, screened in lower sand beneath muskeg from 2.8 m to bottom.
- MW10B – well installed to 6.1 m depth (hole drilled to 8.5 m depth), screened in lower sand layer from 4.0 m to 6.1 m (heaving sand prevented the well installation to bottom of hole).

Monitoring wells consisted of industry standard 50 mm PVC; screened sections were backfilled with silica sand and native sand (auger cuttings). The well annulus above the screen was sealed with bentonite to prevent infiltration of surface water. Above-ground steel well protectors were installed and fitted with locks.

Elevations of the ground surface and 'top-of-well' at each monitoring well were surveyed by Delta Survey Inc., and referenced to the base station having a geodetic elevation of 349.94 m. Ground surface elevations (updated based on most recent survey) are shown on Figures 5 and 6 (Appendix A). Well MW6 is located upgradient at the north end of the landfill, and is considered to indicate background conditions not influenced by landfill leachate. The remaining wells are generally considered to represent downgradient or cross-gradient monitors potentially impacted by landfill leachate.

Representative samples of the various soil strata encountered were taken to EXP's (then Trow's) laboratory in Thunder Bay for further examination by a geotechnical engineer. Recovered samples will be stored for three months beyond the date of this report at which time they may be discarded unless we are otherwise requested. Grain size analyses were conducted on selected soil samples from screened sections in order to estimate hydraulic conductivity, to enable calculation of groundwater flow velocity.

4.5 Additional Monitoring Well Installations (2008 and 2009)

To further investigate the orientation and chemical character of the contaminant plume originating from the subject landfill, and as required by the former C of A, two (2) additional monitoring wells were installed at the locations shown on Figure 3 through Figure 6 as MW7 (June 27, 2008) and MW11 (Sept. 23, 2009). Also, since the original MW5 was either buried or destroyed, a replacement monitoring well was installed at MW5 (Sept. 22, 2009). The general monitoring well locations were approved by MECP but were modified as required based on site conditions.

The drilling and well installations were undertaken using a subcontracted Speedstar SD100E all-terrain drill rig (MW7) and a CME750 rubber tire mounted drill rig (MW5 and MW11). Both rigs were equipped with hollow stem continuous flight augers, soil testing and sampling equipment. The borehole depths ranged between about 5.2 m and 9.8 m below ground surface. All fieldwork was conducted under the continuous supervision of experienced EXP (then Trow) environmental staff.

Soil samples collected in the upper 0.8 m of the boreholes were generally taken from the auger cuttings. Below this depth, standard penetration tests (SPTs) were performed in the soil strata in order to assess the compactness or consistency of the underlying soils and to obtain representative samples. The recovered soil samples and stratigraphy were examined and logged.

Following the drilling of the boreholes, monitoring wells were installed. Details of the well installations are given on the Borehole Logs in Appendix D and are summarized below:

- MW5 – well installed to 9.1 m depth, generally screened in lower sand from 5.8 m to bottom.
- MW7 – well installed to 7.0 m depth, screened in silty sand and sand from 3.9 m to bottom.
- MW11 – well installed to 4.6 m depth, screened in silt beneath peat and silty sand from 1.5 m to bottom.

Monitoring wells consisted of industry standard 50 mm PVC; screened sections were backfilled with silica sand and native sand (auger cuttings). The well annulus above the screen was sealed with bentonite to prevent infiltration of surface water. An above-ground steel well protector was installed at MW5.

Elevations of the ground surface and 'top-of-well' were initially surveyed by Delta Survey Inc. at MW7 and EXP (then Trow) at replacement well MW5 and MW11. Ground surface elevations (updated by Delta Survey in 2018) are shown on Figures 5 and 6. Well MW7 and MW11 are considered to represent downgradient monitors potentially impacted by landfill leachate.

Representative samples of the various soil strata encountered were taken to EXP's (then Trow's) laboratory in Thunder Bay for further examination by a geotechnical engineer. Grain size analyses were conducted on selected soil samples from screened sections in order to estimate hydraulic conductivity and enable calculation of groundwater flow velocity.

4.6 Groundwater and Surface Water Sampling

In accordance with the ECA, two sampling events were conducted annually in 2019, 2020 and 2021. Water samples were collected by EXP personnel on the following dates:

- 2019 – May 6 and October 27, 28 & 30
- 2020 – May 11 & 12 and September 28 & 29
- 2021 – May 18 & 19 and September 25 & 26.

During the most recent monitoring event (September 2021), all wells were confirmed to be in good condition and in compliance with O.Reg. 903.

During each event, static water levels were first measured in each well using an electric water level indicator. Field measurements of electrical conductivity, temperature and pH were made. The wells were then purged of at least 3 well volumes and allowed to recover to at least 80% of the static water level. Groundwater samples were then collected directly from the dedicated Waterra sampling equipment into bottles provided precleaned and with appropriate preservatives by the laboratory. Surface water samples were collected directly from the water body using the unpreserved bottles supplied by the laboratory. Sample bottles containing preservatives were then filled from unpreserved sampling bottles.

Groundwater samples for metals, including mercury, only were filtered in the field at the time of sample collection using in-line 0.45-micron filter cartridges. In accordance with standard MECP protocol, no field filtering was conducted on the surface water samples with the exception of mercury.

The water samples were placed in insulated coolers for transport to EXP's offices in Thunder Bay. The samples were then picked up by a representative of Bureau Veritas Laboratories (BV Labs), formerly Maxxam Analytics, in a secure cooler under chain of custody, and were ultimately sent via courier to their Standards Council of Canada certified and accredited laboratory in Mississauga, Ontario, for analysis of the required parameters.

4.7 Topographic Survey

As previously indicated, the topographic survey of the landfill site was most recently updated by Delta Survey Inc. on September 11, 2021. A copy of the survey plan is found in Appendix K. Top of pipe and ground surface elevations were re-surveyed at all monitoring well locations and are shown on the plan. Ground surface elevations are also shown on Figures 5 and 6.

5 Observations

5.1 Subsurface Conditions

Details of the subsurface conditions encountered at the preliminary observation well locations are presented in Appendix C; details of the conditions encountered at the monitoring well locations are presented on the Borehole Logs in Appendix D. Note that the borehole logs and related information depict subsurface conditions only at the specific locations and times indicated. Subsurface conditions at other locations may differ from conditions at the locations where sampling was conducted. The passage of time may also result in changes in the conditions interpreted to exist at the locations where sampling was conducted in response to various natural processes or human interventions.

5.1.1 Soil Conditions

The MW4 well location was surfaced with grass and shrubs, and encountered silty sand and organics to a depth of about 1.5 m.

The source well, MW5, was placed directly on the landfill. A stratum of garbage was encountered to a depth of about 4.5 m. Garbage was also encountered at OB1, OB2, OB8 and OB9, extending to depths ranging between about 1.5 m and 4.6 m. The garbage generally consisted of a mixture of plastics, steel and wood fragments and fabrics (carpet, clothes, etc.). Odours were also noted at these locations. The observations at replacement well MW5, installed in September 2009, were generally similar.

At MW7 and MW11 in the newly acquired attenuation zone, the well locations were surfaced with a thin stratum of organics and peat, respectively.

The native mineral soil encountered beneath the fill and organics at the locations noted above, and from the surface of the remaining boreholes, generally included a silty sand to gravelly sand glaciofluvial outwash stratum. The stratum was generally described as compact, brown to grey and moist (becoming wet with depth). Cobbles and possibly small boulders were also encountered at MW3 and MW4.

As an exception to the above, the native mineral soil encountered at OB4 (from 1.5 m depth), MW6 and MW9 (from 3.0 m depth) included sandy silt, described as compact, brown to grey and moist to wet. Also, underlying the silty sand layer at MW11, a silt stratum was encountered at a depth of about 1.5 m. The silt was described as loose to compact, brown to grey, wet and with traces of sand and clay.

Refusal to the auger was encountered at MW6 at a depth of about 3.8 m and at MW10B at a depth of about 8.5 m. While the refusal may be due to bedrock, the presence of bedrock was not proven by coring.

5.1.2 Groundwater Conditions

The soils encountered at the borehole locations were generally moist, becoming wet at or near groundwater depths. Current and historical static groundwater elevations are summarized in Table 2 in Appendix G, and groundwater levels encountered during the monitoring well installations are shown on the Borehole Logs in Appendix D. Based on recently re-surveyed top of pipe and ground surface elevations (as noted on Figure 6 in Appendix A and Table 2 in Appendix G), and depths to groundwater measured in September 2021, groundwater elevations were obtained and are shown on Figure 6 and Table 2. Interpolated groundwater contours were then generated and are also presented on Figure 6.

Generally similar to the findings in the previous report (based on October 2018 measurements), lateral groundwater flow is interpreted to be generally west-southwestward across the landfill at a gradient of about 0.006 m/m (MW6 to MW4). However, the groundwater elevation at MW9 (south of west end of landfill) is relatively high (lower only than the background well MW6). Also, the groundwater elevation at MW8 is higher than at wells located further north (MW1, MW2 and MW5). Current and historical elevations suggest that groundwater is mounded south of the landfill, which should help prevent off-site migration of leachate impacted groundwater to the south. In subsequent discussion, wells MW8 and MW9 will be referred to as “cross-gradient”, although it should be noted that they are apparently hydraulically upgradient of the adjacent landfill. Newer well MW11, about 270 m southwest of MW4, has the lowest groundwater elevation, generally consistent with a predominant west/southwest flow direction from the landfill.

Based on relative elevations in the nested wells, vertical gradients during the current monitoring period tended to be slightly downward near the fill area (MW3A/3B near the southwest corner) during both the spring and fall sampling. However, near the downgradient boundary of the attenuation zone (MW10A/10B), vertical gradients tended to be slightly downward in the spring, but upward in the fall. An upward gradient would serve to minimize downward plume migration and help protect the deeper aquifer from contamination.

It is noted that localized flow patterns may vary in response to subcropping features of low permeability material (i.e., dense till and/or bedrock). In addition, depending upon the weather (e.g., heavy precipitation and infiltration or drought) and/or time of year, groundwater conditions may vary from those encountered during this investigation.

5.1.3 Stratigraphic Prolife

Information from the historical and newer boreholes was combined with available information concerning surface topography to produce the stratigraphic profiles (geological cross-sections) shown in Figures 7A to 7E.

5.1.4 Grain Size Analyses

As discussed in the previous monitoring report, representative samples were selected for laboratory grain size analyses in order to estimate the hydraulic conductivity of native soils in the screened zones of the monitoring wells. Results of the grain size analyses are presented on Figures E-1, E-2 and E-3 in Appendix E.

Estimates of the saturated coefficient of hydraulic conductivity based on the grain size analyses were calculated using the method of Hazen, and are shown in Table 1 below:

Table 1: Saturated Coefficient of Permeability (*k*) Estimated from Grain Size Analysis

Well No.	Sample No.	Depth (m)	Soil Classification	*K* (cm/s)
MW1	S5	5.63	Fine Sand, trace silt	$6.9x10^{-3}$
MW3A	S4	4.88	Sand & Gravel, some silt	$9.0x10^{-4}$
MW3A	S6	7.92	Sand, some gravel, trace to some silt	$5.6x10^{-3}$
MW4	S5	3.35	Sand, trace silt	$7.0x10^{-3}$
MW5	S2	7.31	Sand & Gravel	$2.7x10^{-1}$
MW5 repl.	S3	7.90	Sand, trace gravel, trace silt	$2.3x10^{-3}$
MW8	S12	15.55	Silt & Sand, trace clay	$8.1x10^{-5}$
MW9	S8	9.45	Silt, some sand, trace clay	$6.4x10^{-5}$
MW10B	S3	7.93	Sand	$4.9x10^{-3}$
MW11	S4	3.30	Silt, trace sand, trace clay	$2.1x10^{-7}$

The geometric mean hydraulic conductivity based on the results of the grain size analyses is about $9.8x10^{-4}$ cm/s or 0.85 meters per day. Based on a hydraulic gradient of 0.006 and an assumed soil porosity of 0.3, the average groundwater flow velocity across the site is estimated to be about 0.017 m/day. This is lower than initial estimates of 0.05 m/day.

However, as pointed out in an MECP review memorandum dated March 10, 2017 (copy in Appendix A) dealing with a previous monitoring report for 2013, 2014 and 2015, the subsurface investigations and borehole logs reveal the presence of an apparent corridor of coarse subsurface soil material (sand to sand/gravel) running generally southwestward (transect E-E illustrated on Figure 7E) and downgradient from the site, as illustrated on Figure 5. This “high K corridor” could facilitate downgradient transport of a contaminant plume at a

relatively high velocity of up to perhaps 1.4 m/day (as suggested in the MECP's review memorandum). At this velocity, leachate-impacted groundwater could travel from the centre of the landfill to Kenogamisis Lake in about a year, although plume strength would be reduced through natural attenuation processes.

6 Chemical Analysis Results

Copies of laboratory Certificates of Analysis are given in Appendix F. Summary tables of analytical results are presented in Appendix G. Groundwater results were compared to the MECP Ontario Drinking Water Standards (ODWS, rev. January 2001), which can be either true standards (**Maximum Acceptable Concentrations** and **Interim Maximum Acceptable Concentrations**) or objectives (**Aesthetic Objectives** and **Operational Guidelines**). Because groundwater flowing though the waste disposal site likely eventually discharges to Kenogamisis Lake about 500 m west-southwest of the site, groundwater results for the nested monitoring wells furthest downgradient (MW10A/10B) were also compared to **Provincial Water Quality Objectives** (PWQOs) and to the MECP's **Aquatic Protection Values** (APVs), as recommended in the previously-cited review memorandum prepared by the MECP's regional hydrogeologist. Surface water results were compared to the PWQOs. Analytical results in excess of both criteria are highlighted in the summary tables. Graphs of concentrations versus time for selected parameters are found in Appendix I and Appendix J.

6.1.1 Groundwater Quality Results

Groundwater samples taken from each monitoring well were submitted for chemical analyses. Current and historical results are summarized on Table 3 in Appendix G. The results for the background well (MW6), the source wells (mainly MW5, but also potentially including MW1, MW2, MW3A, MW3B and MW4), additional downgradient monitors (MW7, MW10A/10B and MW11) and cross-gradient monitors (MW8, MW9) are discussed in the context of MECP (mainly ODWS) criteria, with some emphasis on the most recent (2021) results.

Elevated levels of **phenols** were historically reported in the primary source well MW5. However, since the spring 2010 event, a generally decreasing trend was apparent at MW5, and since the fall of 2012, phenol concentrations have been at or below detection limits (excluding May 2014). The maximum phenol level measured in 2021 was 0.0014 mg/L, in potential source well MW1. There is no ODWS criterion for phenols. The PWQO is 0.001 mg/L, while the Aquatic Protection Value (APV, which is a groundwater criterion established by MECP to be protective of nearby surface water) is 0.961 mg/L. The potential significance of exceedances of PWQOs and APVs is discussed in Section 6.1.2 below.

Historical and current values of laboratory **pH** were within ODWS (and PWQO) limits in all monitoring wells. Current results are generally similar to, although in some cases slightly higher than, historical levels.

Similar to historical results, levels of **chloride** (generally considered a good indicator of municipal landfill leachate) in 2018 through 2021 were below the ODWS criterion of 250 mg/L in all of the potential source wells (historical maximum of 180 mg/L in the spring 2019 sample from MW1, which is the source well nearest the highway). However, generally consistent with historical findings, markedly elevated chloride levels were again measured at MW8 (with a historical maximum of 1,900 mg/L in the fall 2021 sample, suggesting an increasing trend). Somewhat elevated levels (although below the OWDS criterion) were again measured at

MW9, MW10A and MW10B. Levels in MW10B exceeded the APV of 180 mg/L, with the historical maximum of 260 mg/L (spring 2021) also slightly exceeding the ODWS criterion. All four of these wells are considered to be susceptible to impact by road salting. At the MW8 location, groundwater appears to flow in a generally northwestward direction and therefore impact from the landfill seems unlikely.

In 2021, the **dissolved organic carbon (DOC)** levels in source wells MW1, MW2, MW3A, MW3B and MW5 again generally exceeded the ODWS criterion of 5 mg/L, with a maximum source level of 11.0 mg/L in MW1. However, the highest overall level of 17 mg/L was measured in attenuation zone boundary well MW10B, similar to historical results.

In 2021, the highest level of **total dissolved solids (TDS)** was again measured in MW8 (3,920 mg/L in the fall), suggestive of an increasing trend but considered likely attributable to road salt. Note that TDS is roughly equal to about one-half of the electrical conductivity value (measured in µS/cm), for which there are no applicable criteria. Generally consistent with historical findings, TDS levels above the ODWS criterion of 500 mg/L were also measured in wells MW1 (with the highest source well TDS level of 1,010 mg/L in the fall, representing an historical high), MW3A, MW3B, MW4, MW5 and MW10B. However, contrary to historical findings, TDS levels at both MW7 and MW9 were below the criterion in all samples from 2020 and 2021, suggesting possible decreasing trends.

Alkalinity levels in 2021 above the ODWS upper limit (500 mg/L) were noted at MW1 (with the highest overall level of 620 mg/L), MW3A, MW3B and MW4, generally similar to historical findings. However, the level at MW10B spiked to a historical high of 540 mg/L in the fall 2021 sample.

Nitrate and **nitrite** levels continued to be below the ODWS criteria (10 mg/L and 1 mg/L, respectively) in all monitoring wells. No significant influence of the privately-owned Sludge Drying Bed to the northwest of the landfill is apparent.

In 2021, levels of **organic nitrogen** (obtained as the difference between TKN and ammonia-N) above the ODWS criterion of 0.15 mg/L were reported in all wells. The highest level was 1.1 mg/L (MW3A).

Generally similar to historical findings, levels of **manganese** in excess of the ODWS criterion (0.05 mg/L) were measured in all wells (including background well MW6) in 2021, with the exception of MW8 and MW9. The highest overall manganese level was again measured in MW1 (2.7 mg/L).

Also similar to historical findings, **iron** levels in 2021 exceeded the ODWS criterion (0.3 mg/L) in several wells (excluding MW4, MW8, MW9 and MW11). In the 2021 samples from MW6, iron was detected for the first time (with an exceedance of the ODWS criterion in both samples). The highest iron concentration was measured at MW1, with a historical high of 32 mg/L, with the next highest value at MW3A and MW7 (both at 16 mg/L). A historical high of

6.7 mg/L was also reported in the spring 2021 sample from MW3B. An anomalously-low (non-detectable) level was reported in the fall 2021 sample from MW10B.

Similar to historical findings, other ODWS metals exceedances during the current reporting period include **arsenic** at MW7 (with the overall highest value of 0.046 mg/L, versus the ODWS criterion of 0.025 mg/L), MW10B and MW1, and **aluminum** at MW5, MW10A (historical high of 0.25 mg/L, versus criterion of 0.1 mg/L) and MW10B.

Volatile organic compounds (VOCs) are required to be measured only at the source well MW5, once annually. There were no ODWS criteria exceedances during the current monitoring period, with all VOCs non-detectable except for trace concentrations of chlorobenzene and 1,1-dichloroethane. Results are summarized on Table 4 (Appendix G).

Trends of parameter concentrations in groundwater are depicted on time series graphs in Appendix I and are evaluated statistically in Section 7.5.

6.1.2 Potential Impact to Surface Water

During the current monitoring period (2019-2021), at MW10A/10B and/or MW11 (the downgradient wells nearest Kenogamisis Lake), PWQO criteria exceedances were noted for the following:

- **Aluminum** - max. 0.25 mg/L (historical high) versus interim PWQO of 0.075 mg/L
- **Arsenic** – max. 0.044 mg/L (historical high) versus interim PWQO of 0.005 mg/L
- **Iron** – max. 8.1 mg/L (historical high) versus PWQO of 0.3 mg/L
- **Phosphorus** – max. 14 mg/L versus interim PWQO (average value) of 0.02 mg/L

The aluminum, arsenic and iron values were all reported at the MW10A/10B location. The maximum phosphorus level was reported in the fall 2019 sample from MW11, but this appears to be anomalous (MW11 has generally low levels of most parameters and appears to be relatively unimpacted). The maximum phosphorus level reported at the MW10A/10B location during the current monitoring period was 1.1 mg/L. In addition, a lone PWQO exceedance was noted for copper in May 2020 at MW10A.

At these same wells during this period, APV criteria exceedances were noted for the following:

- **Chloride** – max. 260 mg/L (historical high) versus APV of 180 mg/L
- **Sodium** – max 350 mg/L (historical high) versus APV of 180 mg/L.

The APV exceedances for sodium and chloride were reported at the MW10A/10B location and could be due to road salt. However, the PWQO criteria exceedances for the other four metals suggest potential leachate impact. These exceedances will be discussed further below.

6.1.3 Durov Plots

Durov plots of the major ion chemistry that have been provided in previous reports were updated to include data for the current monitoring period. The diagrams (Appendix H) generally continue to indicate a typical calcium bicarbonate dominated water type for all wells except MW8, which is distinct from all of the other wells. MW8 is clearly dominated by sodium chloride, suggesting road salt impact. In addition, MW10B and to a lesser degree MW10A and possibly MW9 appear to be trending towards sodium chloride dominance. The diagram for the primary source well MW5 has a higher magnesium cation component than any of the other wells.

6.1.4 Surface Water Quality Results

In 2019, 2020 and 2021, surface water samples were again collected from three locations in Kenogamisis Lake, west-southwest of the landfill. Location SW1 is approximately 115 m southeast of wells MW10A/10B, location SW2 is in Barton Bay approximately 35 m north of Highway 11, and SW3 is located about 330 m west of MW11, as shown on Figure 3. The analytical results are tabulated on Table 5 in Appendix G.

The following exceedances of PWQO criteria were reported in the six samples collected from each location during the current monitoring period (2019-2021):

- **Phenols** at SW1 (one occasion) - 0.0011 mg/L, versus criterion of 0.001 mg/L;
- **Arsenic** at SW1 (five occasions), SW2 (six occasions) and SW3 (six occasions) – max. 0.072 mg/L (SW3), versus interim criterion of 0.005 mg/L (no exceedances of 0.1 mg/L criterion);
- **Copper** at SW3 – (one occasion) - 0.0051 mg/L versus criterion of 0.005 mg/L
- **Iron** at SW1 (four occasions), SW2 (one occasion) and SW3 (three occasions) - max. 2.1 mg/L (SW1), versus criterion of 0.3 mg/L
- **Phosphorus** at SW1 (three occasions), SW2 (three occasions) and SW3 (five occasions) – max. 0.11 mg/L (SW1) versus interim criterion of 0.02 mg/L

Cobalt and copper PWQO exceedances occasionally reported historically were not found (cobalt) or were found in reduced numbers/concentration (one marginal exceedance for copper) during the current monitoring period. In general, however, with the exception of phosphorus at SW1 (apparent overall decrease since 2011), there are no appreciable long-term trends apparent in surface water, based on a visual examination of the time series graphs in Appendix J (see, however, Section 7.5.2).

6.1.5 Quality Assurance / Quality Control

The in-house laboratory QA/QC results are shown on the Laboratory Certificates of Analysis in Appendix F. In general, all of the lab QA/QC data, including laboratory duplicates, blanks, spikes and surrogate standard recoveries, appear to be acceptable.

Ion balances of within ±10% are generally considered to indicate acceptable data quality for groundwater. Ion balances (reported for groundwater only on Table 3) during the current monitoring period (2019-2021) were all below this value.

Blind duplicate groundwater samples were collected for analysis during each sampling event, from either MW3A or MW5, and were labelled as MW12 on the Chains of Custody. In May 2021, blind duplicate samples were collected from MW3A in the spring and from MW5 in the fall. The relative percent difference (RPD) between the results for the sample and the field duplicate sample for each analysed parameter was calculated as the absolute value of the following:

$$RPD = \frac{(\text{Sample Result} - \text{Duplicate Result}) \times 100}{(\text{Sample Result} + \text{Duplicate Result}) / 2}$$

The RPD calculation is not considered valid for parameters reported to be present in very low concentrations (i.e., where the average of the two duplicates is <5 times the laboratory detection limit). For most of the parameters in this report, the maximum RPD established by the MECP[4], based on laboratory duplicates (i.e., repeat analysis of the same sample), is 20%, with the notable exception of the following:

- Electrical conductivity – 10%
- pH – 0.3 pH units.

The MECP has not established maximum RPDs for field duplicates, which introduce another level of imprecision. However, EXP generally considers that RPDs for groundwater field duplicates in excess of 30% (again, for most of the parameters in this report) would represent a questionable degree of imprecision.

This exercise revealed generally good agreement between the field duplicate samples analyzed in 2021. No differences exceeding the recommended limits were reported for the main parameters of concern. The RPD for organic nitrogen, which is calculated as the difference between TKN and ammonia-N, was 166% for the May sample, but performance criteria are not applicable to results obtained by difference. In addition, the RPD for nitrate in the September sample was 175%, assuming a concentration of one-half of the detection limit for the non-detectable result. Based on historical results, the non-detectable value is correct,

[4] MECP (2011). *Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act*, July 1, 2011.

while the other duplicate result of 0.74 mg/L is clearly anomalous. Regardless, even the higher value is well below the ODWS (10 mg/L).

A review of the laboratory Quality Control information provided with the analytical reports did not suggest any significant discrepancies that might compromise the overall validity of the reported data.

In general, there are no implications regarding data validity from the QA/QC results that could affect the conclusions of this study.

7 Discussion

7.1 Estimated Leachate Generation Rates

From the Canadian Climate Normals (1971-2000), the Geraldton area receives an average of 790 mm of precipitation annually, including 546 mm of rain and 244 mm as snow.

The surveyed fill area is some 4.6 ha. This is slightly larger than the approved operating footprint of 4.3 ha (area of LUP parcel HM215 – see Figure 8). Based on a historical disposal area of 4.6 ha, a rate of precipitation of about 790 mm/yr., and an infiltration rate (based on current site conditions) estimated at 30% (i.e., about 237 mm/yr., as considered appropriate in previous consultation with MECP), the annual volume of leachate produced has previously been estimated (Trow 2004 report) to be about 10,420 m^3. Note, however, that EXP now considers the above method of leachate volume estimation to likely err on the high side. Other estimates we have encountered have incorporated an infiltration rate based on 30% (or less) of the water surplus (rather than total precipitation), with the remainder running off as stream flow or overland flow. Water surplus refers to the difference between total precipitation and evapotranspiration. For the Geraldton area, the water surplus is estimated to be about 40% of total precipitation.

7.2 Background and Reasonable Use Policy Criteria

MECP Guideline B-7, which incorporates the Reasonable Use Policy (RUP) into the MECP's groundwater management activities, allows off-site impacts from waste disposal sites within established guidelines based on the ODWSs in order to permit attenuation of impacts while protecting existing and potential downgradient groundwater users. The guideline allows for increases in concentrations up to 25 and 50 percent of the difference between background and ODWS concentrations for health-related and non-health-related ODWS parameters, respectively. The guideline applies only in groundwater at the property or attenuation zone boundary.

Guideline B-7 (RUP) criteria for all parameters were calculated using the arithmetic mean of the most recent two years results from the background monitor, MW6. Where the mean at MW6 exceeded ODWS criteria, the mean (background) is used as the B-7 criterion. The assessment is provided for all wells for reference purposes in the tables in Appendix G. The attenuation zone boundaries are indicated on Figure 5. Wells MW8, MW9, MW10A/10B and MW11 are located near the boundaries of the attenuation zone, and B-7 is therefore considered applicable only to these wells, which are the focus of the following discussion.

7.3 RUP Criteria Exceedances

Exceedances of RUP criteria during the current monitoring period were generally similar to historical exceedances. Significant exceptions are noted below.

7.3.1 General Parameters and Major Ions

The ODWS for **TDS** is 500 mg/L. Using a background value of 250 mg/L measured in upgradient well MW6, the B-7 criterion for 2021 has been calculated to be 375 mg/L (Table 6). In 2021, similar to historical findings, the B-7 criterion for TDS was exceeded in wells MW8, MW9, MW10A and MW10B. However, these wells have evidently been impacted by road salt, and the TDS criteria exceedances cannot be ascribed to leachate impact.

Similarly, exceedances of the B-7 criterion for **sodium** (102 mg/L) at MW8 and MW10B, and **chloride** (126 mg/L) at MW8, MW9 and MW10B are considered most likely due to road salt. The relatively high groundwater elevations (higher than in the adjacent landfill) at the MW8 location also would seem to preclude appreciable leachate impact.

Groundwater in the area is naturally hard (background well MW6 mean **hardness** concentration = 275 mg/L, versus ODWS of 100 mg/L). Therefore, the B-7 criterion for hardness defaults to the average background concentration. In 2021, exceedances of the B-7 criterion for hardness were measured in MW8 and MW9. However, hardness can be influenced by road salting (generally calcium chloride), and a finding of elevated hardness at these locations does not necessarily indicate unacceptable leachate impact (especially considering the relatively high groundwater table at MW8).

7.3.2 Organics

The ODWS for **DOC** is 5 mg/L. The average concentration of DOC in upgradient well MW6 in 2020-2021 was 2.5 mg/L (exhibiting an evident downward trend) and the B-7 criterion for 2021 has been calculated to be 3.8 mg/L. In 2021, again consistent with historical findings, exceedances of the B-7 criterion for DOC were measured in MW10A (14 mg/L) and MW10B (17 mg/L). The highest measured DOC level in any of the wells considered to be potentially indicative of source concentrations (i.e., MW1, MW2, MW3A, MW3B, MW4, MW5) in 2021 was 11 mg/L (MW1). Because the maximum source concentration is lower than the levels measured in MW10A/B, landfill leachate cannot alone be responsible for the elevated DOC level in MW10A/B, unless plume strength beneath the landfill has recently decreased significantly. In general, available monitoring data do not show an appreciable reduction in source well contaminant concentrations (refer to time series graphs in Appendix I). Also, the DOC level in upgradient well MW7 (4.8 mg/L) was much lower than in MW10A/10B, further suggesting that landfill leachate is not responsible for the high levels in the latter wells.

Organic nitrogen is not a reliable indicator of municipal landfill leachate impact, in EXP's opinion, primarily because it is not a directly measured parameter but is obtained as the difference between two other parameters, both of which are typically found in roughly equal concentrations, and therefore minor differences in their values (potentially due to natural variability or laboratory imprecision) can dramatically alter the organic nitrogen result. Therefore, organic nitrogen will not be considered further in this evaluation.

7.3.3 **Metals**

Similar to historical findings, wells MW10A and MW10B had exceedances of the B-7 criteria for **aluminum**, **arsenic and iron** in 2021. Note that the previous monitoring report mistakenly identified the presence of exceedances for manganese in these wells, which actually have levels considerably lower than in the background well MW6.

Based on the relatively lower levels of **arsenic** measured in the six potential source wells in 2021 (maximum 0.028 mg/L in MW1), exceedances of the B-7 criterion for arsenic in wells MW10A/10B are not ascribable to leachate impact, unless the impact were due to migration of a historical plume with characteristics that are no longer evident beneath or adjacent to the waste pile. This seems highly unlikely, given that the landfill has only recently stopped operating and no major changes in plume composition are apparent from the available monitoring data for the on-site wells. A possible increasing trend for arsenic at downgradient well MW10B (see Figure I-7 in Appendix I) noted in the previous monitoring report is no longer apparent.

Elevated **aluminum** also does not appear to be attributable to landfill leachate as the aluminum levels in the six potential source wells are also low (maximum 0.013 mg/L in MW3A).

However, based on elevated levels of **iron** (relative to the background well MW6) in the potential source wells (notably MW1 [max. 32 mg/L], MW3A/3B and MW5) and also in downgradient well MW7, leachate impact from the landfill appears to be present at the downgradient MW10A/10B location. There is therefore a concern that leachate containing iron levels in excess of the PWQO may be impacting Kenogamisis Lake. However, there is no APV for iron.

There is no ODWS criterion for **phosphorus** in groundwater. However, this parameter could be of significance where impacted groundwater discharges to surface water (due to the potential for this nutrient to foster undesirable plant growth). In 2021, similar to previous years, but in contrast with findings for the other potential leachate indicator parameters, the highest reported phosphorus level of 3.4 mg/L was found at MW11. This level was considerably higher than the maximum measured in any of the potential source wells (0.33 mg/L at MW4) and indicates that landfill leachate is a relatively minor contributor to phosphorus levels in groundwater in the area. The maximum 2021 phosphorus level in wells MW10A/10B was 0.11 mg/L, lower than the maximum source level and much lower than in MW11, while the maximum level in well MW7 was only 0.081 mg/L. The conclusion is that landfill leachate has the potential to be only a relatively minor contributor to elevated phosphorus in downgradient wells, and is not a significant concern for impact to Kenogamisis Lake.

7.4 Comparison of Paired Monitoring Well Results

The available data suggest that several parameters may be associated with the source (i.e., with concentrations elevated [relative to background well MW6] at MW5 and/or nearby wells MW1, MW2, MW3A/3B or MW4). These potential indicator parameters include conductivity, TDS, hardness, DOC, chloride, alkalinity, barium, boron, iron and manganese.

A comparison of the 2021 results for MW3A (well screened from 6 m to 9 m depth) and MW3B (well screened from 4.5 to 6 m depth) reveals that concentrations of these potential indicator parameters are generally similar in both wells, although levels of iron are significantly higher in the deeper well (possibly reflecting a natural condition). The plume impact at this location therefore appears to be fairly uniformly distributed throughout the depth of the aquifer profile investigated (i.e., there is no clear evidence of a sinking plume at this location).

At nested wells MW10A/10B, located further downgradient near the attenuation zone boundary, the deeper well (MW10B, screened from about 4 to 6 m depth) has higher levels of several potential parameters (notably conductivity, TDS, hardness, DOC, sodium, chloride and alkalinity) than the shallow well (MW10A, screened from about 2.6 to 4.6 m depth). However, in 2021, iron levels, which historically have also been higher in the deeper well, were higher in the shallow well. Indeed, iron was non-detectable in the fall 2021 sample from the deeper well, which appears to be an anomalous result. Also notable is that the levels of some of these parameters (excluding iron) in the deeper well are higher than in upgradient wells, including even the source well. Therefore, although there are indications of a sinking plume at this location, contaminants in the plume itself appear to originate from a source other than the landfill (e.g., road salting). A notable exception appears to be iron (discussed previously).

7.5 Statistical Trend Analysis

Mann-Kendall trend analysis was conducted for selected parameters in both groundwater and surface water, using the AquaChem software package from Waterloo Hydrogeologic. Concentration trends are based on the values of the test statistic S, the confidence in trend (1-p) and the coefficient of variation (COV) and are interpreted according to the following decision matrix.

Mann-Kendall Statistic (S)	Confidence in Trend (1-p)	Trend
S>0	>95%	Increasing (I)
S>0	90 – 95%	Probably Increasing (PI)
S>0	< 90%	No Trend (NT)
S≤0	<90% and COV≥1	No Trend (NT)
S≤0	<90% and COV<1	Stable (S)
S<0	90 - 95%	Probably Decreasing (PD)
S<0	>95%	Decreasing (D)

Aziz, J. J., Newell, C. J., Rifai, H. S., Ling, M., & Gonzales, J. R. (2007); "*Monitoring and Remediation Optimization System (MAROS): Software User's Guide Version 2.2*"; United States Air Force Centre for Environmental Excellence; Brooks AFB, San Antonio, TX.

The trend test requires a minimum of four data points. Also, at least 20% of sampling events must have detectable values. Where non-detectable values occur, a value equal to the detection limit is assumed. Results for sample duplicates are averaged for the purposes of the statistical analysis.

The Mann-Kendall analysis will reveal trends even if they are very small (i.e., minor changes) and not apparent from visual examination of time series graphs.

7.5.1 Groundwater Trends

The trend analysis results for groundwater (TDS, sodium, chloride, arsenic, iron, manganese, phosphorus), using data from 2006 to the present, are given on Table 6 in Appendix G.

Background Well

The background well MW-6 exhibits decreasing trends for TDS, sodium, chloride and phosphorus, but increasing trends for arsenic and manganese. There are too few detectable iron results to determine a trend.

Potential Source Wells

MW5, near the centre of the landfill, exhibits decreasing or probably decreasing trends for TDS, sodium, chloride, arsenic and phosphorus. Iron is stable.

MW3A, the deeper paired well immediately south of the west end of the landfill, reveals decreasing trends for TDS and manganese, but increasing trends for sodium and chloride. There is no trend for iron.

MW3B, the shallower paired well, reveals decreasing or probably decreasing trends for TDS and phosphorus, but increasing trends for sodium, arsenic and iron.

MW4, immediately west of the landfill, has a decreasing trend for manganese, but increasing trends for sodium and chloride. There are insufficient arsenic and iron detects to determine trends.

MW2, immediately south of the central part of the landfill, exhibits decreasing trends for TDS, sodium, manganese and phosphorus, but increasing trends for arsenic and iron.

MW1, immediately south of the east part of the landfill, has increasing trends for arsenic, iron and manganese.

Cross-Gradient Wells

MW8, south of the landfill and just north of the highway (attenuation zone boundary), exhibits a decreasing trend for manganese, but increasing trends for TDS, sodium and chloride. There are two few detectable values to determine a trend for iron.

MW9, south of the west end of the landfill and just north of the highway, exhibits increasing trends for sodium and chloride. There are insufficient detects to determine a trend for iron.

Downgradient Wells

MW7, the "trigger well" located within a high-K corridor (sand to sand/gravel zone) running southwest from the landfill, has decreasing or probably decreasing trends for TDS, arsenic, manganese and phosphorus, but increasing trends for sodium and chloride. The iron level is stable.

MW11, near the west boundary of the attenuation zone, reveals decreasing trends for TDS, arsenic, manganese and phosphorus. The iron level is stable.

MW10A, the shallow paired well near the southwest attenuation zone boundary, and the closest well to Kenogamisis Lake, exhibits increasing levels of sodium, chloride, arsenic and iron.

MW10B, the deeper paired well, also reveals increasing levels of sodium, chloride, arsenic and iron.

The trends reported by the Mann-Kendall statistical analysis are not always apparent from a visual evaluation of the charts in Appendix I, especially for those wells with relatively low concentrations of the parameter of interest.

The following table summarizes the number of Mann-Kendall trends of increasing and/or decreasing parameter concentrations ($p<0.05$), or of probably increasing and/or probably decreasing concentrations (p between 0.05 and 0.1), in the wells, based on 2006 to 2021 data.

	No. of Increasing or Probably Increasing Trends	**No. of Decreasing or Probably Decreasing Trends**
MW6 (background)	2	4
MW5 (source)	0	5
MW3A (potential source	2	2
MW3B (potential source)	3*	2
MW4 (potential source)	2	1
MW2 (potential source)	2*	4
MW1 (potential source)	3*	
MW8 (cross-gradient)	3	1
MW9 (cross-gradient)	2	
MW7 (downgradient)	2	4
MW11 (downgradient)		4
MW10A (downgradient)	4*	
MW10B (downgradient)	4*	
Totals for All Wells	**29**	**27**

Note: Asterisk (*) indicates that trends include iron.

The composition of municipal landfill leachate is generally complex and subject to considerable variation over time, and no attempt will be made here to offer a potential explanation for all of the apparent trends. However, a few observations are noted, as follows:

- Overall, the total number of increasing or probably increasing trends (29) is only slightly greater than the number of decreasing or probably decreasing trends (27).
- The maximum number of trends observed in a well is 6 (at MW6, MW2 and MW7 – all with 2 increasing and 4 decreasing), while the minimum is 2 (MW9 – both increasing).
- Background conditions (MW6) are evidently changing with time.
- The wells with the greatest number of increasing or probably increasing parameter concentrations are the nested pair MW10A/10B nearest Kenogamisis Lake.

- The well with the greatest number of decreasing or probably decreasing concentrations is the source well, MW5, which also has no increasing or probably increasing concentrations.

- The potential source wells (MW3A/3B, 4, 2 and 1) generally reveal both increasing and decreasing trends, with the exception of MW1 (increasing only).

- Iron levels are increasing in three (3) of the potential source wells and in the nested wells nearest Kenogamisis Lake (MW10A/10B).

- However, iron levels are not increasing in the intermediate trigger well (MW7), which reveals more decreasing than increasing trends.

The increasing trends, notably for iron, at MW10A/10B are of concern. However, the absence of any increasing trends in the upgradient source well MW5, and the presence of more decreasing than increasing trends in the intermediate trigger well MW7 (including no trend for iron), suggest an eventual decreasing risk of unacceptable leachate impact to the lake.

7.5.2 **Surface Water Trends**

The trend analysis results for surface water from Kenogamisis Lake, using total arsenic, iron and phosphorus data from 2006 to the present, are given on Table 7 in Appendix G.

SW1, in Kenogamisis Lake south of the southwest corner of the attenuation zone, reveals decreasing or probably decreasing trends for arsenic and phosphorus.

SW2, in West Narrows immediately north of the highway, reveals a probably decreasing trend for phosphorus, but a probably increasing trend for iron.

SW3, in Barton Bay west of the landfill, also reveals a probably decreasing trend for phosphorus and a probably increasing trend for iron.

The probably increasing levels of iron in surface water samples collected at SW2 and SW3 could suggest landfill leachate impact (see, however, Section 7.6.2).

7.6 **Trigger Values**

Trigger values for implementation of one or more aspects of a groundwater and surface water contingency plan (see below) would consist of predicted or actual exceedances of applicable criteria at or beyond the attenuation zone boundaries. The currently applicable criteria for protection of groundwater quality are those calculated according to Guideline B-7, while applicable criteria for surface water protection are the Provincial Water Quality Objectives (based on analysis of surface water) and Aquatic Protection Values (based on analysis of groundwater discharging directly to surface water).

Actual exceedances of B-7 criteria, PWQOs and APVs have been discussed above. Predicted exceedances of B-7 criteria for protection of groundwater quality have typically been based on concentrations of parameters in one or more upgradient monitoring wells (the "trigger wells") that could indicate landfill leachate impact of sufficient strength to result in eventual exceedances of B-7 criteria at the attenuation zone boundary.

Similarly, predicted exceedances of PWQOs or APVs for protection of surface water could be based on concentrations in one or more trigger wells that could potentially result in PWQO exceedances in surface water downgradient of the attenuation zone or on APV exceedances in groundwater in wells installed near a surface water receptor.

7.6.1 **Groundwater**

As required by the former C of A, recommended trigger values for groundwater, based on 2009 monitoring data, and using MW7 as the "trigger well", were provided in a letter to MECP dated November 23, 2009. Reception of these trigger values was acknowledged in a C of A amendment dated March 7, 2011 (see Appendix B). The trigger values were calculated as per the methodology described in previous monitoring reports prepared by Trow/EXP, which assumes a linear decrease in contaminant levels with distance from the source (landfill) through one or more selected trigger wells to the downgradient attenuation zone boundary. The trigger values represent the concentrations of indicator parameters in the trigger well(s) that could indicate a risk of exceedance of the B-7 criteria at the downgradient boundary. The theoretical calculated trigger values are compared with the actual values reported for the trigger well(s) to identify any exceedances that could indicate a need for follow-up.

The calculated trigger values for groundwater have been updated for 2021 in Table 8, in Appendix G. As indicated on the table, there was a single exceedance of the trigger values at MW7 in 2021, as follows:

- Arsenic – average measured concentration 0.039 mg/L versus trigger value of 0.022 mg/L

As previously discussed, the measured arsenic levels at MW7 in 2021 were higher than in any of the potential source wells (including MW1, MW2, MW3A, MW3B, MW4 and MW5). Therefore, the exceedance of the trigger value at MW7 cannot reasonably be ascribed to landfill leachate impact, unless plume strength beneath the landfill has recently decreased. As has been noted, this does not appear to be the case.

An historical exceedance of the trigger value for iron at MW7 had also been reported but was not observed in the present evaluation. This suggests that the current B-7 exceedances for iron at MW10A/10B could at least partly be attributable to natural conditions or other sources, in addition to some likely leachate impact.

7.6.2 **Surface Water**

Trigger values for surface water are measured or predicted exceedances of PWQO or APV criteria that cannot be ascribed to alternative sources (e.g., road salting, vehicle traffic) or natural or pre-existing conditions (e.g., former mine-related activities).

As reported previously, PWQO criteria exceedances in Kenogamisis Lake water samples were noted for the following parameters in 2021: phenols, arsenic, copper, iron and phosphorus.

Based on the groundwater results for MW10A/10B and MW11 discussed above, impact to the lake by iron in leachate (as measured at MW10A/10B) is of potential concern. However, given the relatively small size of the landfill, the generally low leachate strength (based on results for potential source wells), the distance between the landfill site and the lake (> 500 m along the apparent groundwater flow path), and the size of the lake (surface area in excess of 25 km^2), it would appear to be unlikely that the elevated iron levels in the leachate would significantly impact the lake. This is notwithstanding the shallowness of the lake (only about 1.5 m deep in Barton Bay and perhaps 3 m over the main part of the lake).

Previous calculations (presented in the 2007 monitoring report[5]), using iron as an indicator, suggested that there are adequate attenuation lands between the landfill and the lake to ensure that landfill leachate will not raise iron levels in groundwater to above the PWQO criterion at the point where groundwater discharges to the lake. However, the previous assessment did not consider the potential for preferential funneling of leachate along a high K corridor southwest of the landfill. Additional monitoring results, including those for the recommended new wells (see Section 7.6 below), should be incorporated in an updated assessment for inclusion in the next report, for possible incorporation in a formal risk assessment.

The MECP has historical monitoring data for Kenogamisis Lake which indicate that the lake has been impacted by historical gold mining and processing activities. Elevated arsenic levels, in particular, have been documented (average of 0.036 mg/L in Barton Bay samples and 0.025 mg/L in the lake south of the West Narrows, but typically <0.01 mg/L in the main part of the lake, based on unpublished MECP data generated between 1970 and 1981). Therefore, any additional arsenic loading to the lake would be undesirable. However, the arsenic concentrations in groundwater on and in the vicinity of the landfill (highest measured 2021 value in potential source wells = 0.028 mg/L [MW1], but mainly near or below the detection limit of 0.001 mg/L) could actually be dilutive.

The measured exceedances of APV criteria for sodium and chloride in wells MW10A/10B are also of potential concern regarding impact to Kenogamisis Lake. However, as shown on Table 8, the levels were higher than measured in any of the upgradient potential source wells and

[5] Trow Associates Inc. (2008) *2007 Environmental Quality Monitoring Report, Geraldton Landfill, Municipality of Greenstone, Ontario.* Ref. No. F-06189-C/E. February 15, 2008.

therefore are ascribable to other sources, notably road salting. The salt-related levels at MW8 are considerably higher still, but groundwater at MW8 appears to flow generally northwestward onto the downgradient attenuation zone of the landfill.

7.6.3 Attenuation Zone Requirements

Trow's 2004 monitoring report stated that the minimum required attenuation zone size, based on worst-case leachate concentrations for TDS and DOC, would be about 18 ha. However, this estimate was significantly decreased in the 2007 calculations, which suggested that only 2.5 ha of attenuation lands should be necessary, based on iron as the indicator parameter of concern, but which, as previously discussed, did not consider potential leachate funneling. Municipal lands west and southwest of the site, totalling about 21.7 ha, have been included in the attenuation zone approved in the ECA. The Municipality of Greenstone also expropriated a strip of land along the north side of the historical waste footprint (to provide the required buffer), and obtained additional buffer/attenuation lands both east and west of the site from the Crown (MNRF). The total approved site area (waste footprint plus buffer/attenuation lands) now totals some 30.65 ha.

As discussed above, elevated iron levels, likely attributable to leachate impact, are present in wells MW10A/10B, near the down-gradient limit of an apparent high K corridor. However, the calculated trigger value for iron, which is the value in the trigger well (MW7) that, if exceeded, could indicate a potential for landfill leachate to result in an exceedance of the B-7 criterion at the downgradient attenuation zone boundary, was not exceeded in 2021. It is noteworthy that the B-7 criterion (0.31 mg/L) was based on the background concentration measured in well MW6 and is nearly equal to the PWQO and ODWS criteria (0.3 mg/L).

7.7 Contingency Plan

The site has exceeded approved capacity and has ceased to receive waste as of December 31, 2021. In view of the concern regarding potentially-unacceptable iron impact to Kenogamisis Lake attributable to landfill leachate impact, EXP continues to recommend the installation of a nested pair of monitoring wells between MW10A/10B and MW7. A finding of elevated iron levels at this location, consistent with a plume extending downgradient from the landfill to (and beyond) MW10A/10B, would confirm the need for an in-depth review of the implications of the potential negative effects on water quality beyond the attenuation zone boundary, with emphasis on Kenogamisis Lake, and possible action to mitigate such effects. As previously discussed, there is no APV for iron, but there is a PWQO. The basis for the establishment of the PWQO should therefore be investigated. A formal risk assessment could be appropriate.

Following completion of the current site closure activities, should landfill leachate be confirmed as the source of unacceptable iron impact to the lake, the following measures to reduce leachate volumes and/or strength could be undertaken:

- Waste possibly buried below the groundwater table could be excavated and deposited above the water table, or alternatively moved to a different approved location.
- The groundwater table beneath the waste pile could be lowered through additional ditching to intercept upgradient surface water and possible shallow groundwater inflow and/or through other site drainage improvements.
- Additional lower permeability cover material (i.e., clay) could be placed.
- If necessary, active leachate control (e.g., interception via a “French drain” system and redirection or capture for recirculation or treatment) could be implemented.

Contingency plans dealing with potential identified environmental impacts at the site have been further discussed in an Updated Design and Operations (D & O) Plan (October 2012) and in the Updated Closure Plan (draft dated December 2021).

8 Summary and Recommendations

8.1 Waste Disposal and Buffer/Attenuation Lands

The site is currently governed by Amended Environmental Compliance Approval (ECA) No. A7004401, dated December 23, 2020 and issued by the Ontario Ministry of Environment, Conservation and Parks (MECP). Although the site had exceeded its approved capacity (i.e., 273,000 m^3), the amended ECA allowed the site to continue to receive waste until December 31, 2021. The site ceased receiving waste on that date and closure activities have commenced, as specified in the ECA. A draft Updated Closure Plan, dated December 7, 2021, was submitted to the MECP for review/approval, and acknowledgment of receipt was received from the MECP on December 22, 2021 (copy in Appendix B). The Municipality and EXP are awaiting MECP comments on the submission.

The currently approved boundaries of the landfill site (Parcel HM215 on Figures 3 and 8) incorporate a *de facto* waste disposal area of about 4.3 ha, as approved by the current ECA. In actuality, waste has in some locations been deposited outside of the boundaries of Parcel HM215, so that the current toe of the landfill surrounds an area of about 4.6 ha.

The Municipality has acquired all the necessary lands for the expanded disposal/buffer/attenuation areas. However, the actual available site area, including an expropriated strip along the north edge of the waste footprint and another strip along the east edge (obtained from the Crown/MNRF), that provide the necessary minimum 30 m buffer in these directions, as well as additional attenuation lands to the west (also obtained from MNRF), is somewhat larger than the approved 30.65 ha. This area is depicted on Figure 8 in Appendix A.

8.2 Site Compliance

The MECP's review of a previous monitoring report (for the years 2013-2015) confirmed that the site was in compliance with the ECA.

In general, the 2021 monitoring results are similar to previous years. Generally consistent with historical findings, parameters that exceeded B-7 criteria in 2021 at one or more perimeter monitoring wells (MW8, MW9, MW10A/10B and MW11) included TDS, sodium, chloride, hardness, DOC, aluminum, arsenic and iron.

However, many of these exceedances can potentially be attributed to other sources, such as road salting (TDS, sodium, chloride), naturally high and variable levels (DOC, aluminum, hardness), and historical gold mining activities (arsenic).

Iron levels are generally known to also be naturally high and variable in northern Ontario groundwater. Although iron was detected in the background well in 2021 for the first time since monitoring began, levels remain generally well below those measured in impacted

downgradient wells. The exceedances for iron at MW10A/10B appear to be attributable at least partly to leachate plume impact. Statistical trend analysis for data from 2006 to the present indicate that levels of iron, as well as sodium, chloride and arsenic, are increasing in these wells. Levels of iron in Kenogamisis Lake water samples collected at locations SW2 and SW3 also appear to be increasing. This situation should be investigated further and addressed, if deemed appropriate.

8.3 Monitoring and Reporting Program

Elevated iron levels downgradient of the site are a potential concern. In view of the findings of this report, and MECP's comments regarding off-site plume migration and potential impact to Kenogamisis Lake, EXP continues to recommend the installation of a new nested pair of wells along the high K corridor (sand to sand/gravel zone, as illustrated on Figure 5), approximately midway between MW10A/10B and MW7, in order to shed further light on whether landfill leachate is indeed responsible. It is understood that the Municipality is waiting for the MECP's concurrence before proceeding with the installation of these new wells.

In compliance with the current ECA, the existing monitoring wells (total 13), the newly-installed wells (2), as well as surface water in Kenogamisis Lake (three locations), should be sampled twice annually (i.e., spring and fall) in 2022, 2023 and 2024. Groundwater and surface water parameters outlined in the ECA should be analyzed as indicated. For QA/QC purposes, one blind duplicate sample should again be collected during each sampling event.

In addition to updated time series graphs for groundwater and surface water, trends of concentrations with time should be statistically re-evaluated (e.g., Mann-Kendall analysis). The results of the monitoring program, with interpretation and appropriate conclusions and recommendations, should be presented in the next monitoring report due March 31, 2025.

Should you have any questions regarding this report, please contact our office at your convenience.

Yours truly,

EXP Services Inc.

Ahileas Mitsopoulos, P.Eng.
Project Engineer

Robert J. Rinne, M.Sc., QEP
Senior Scientist

Demetri N. Georgiou, MASc., P.Eng.
Principal Engineer/Branch Manager

APPENDIX A-

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Figure 7-D: Section D-D

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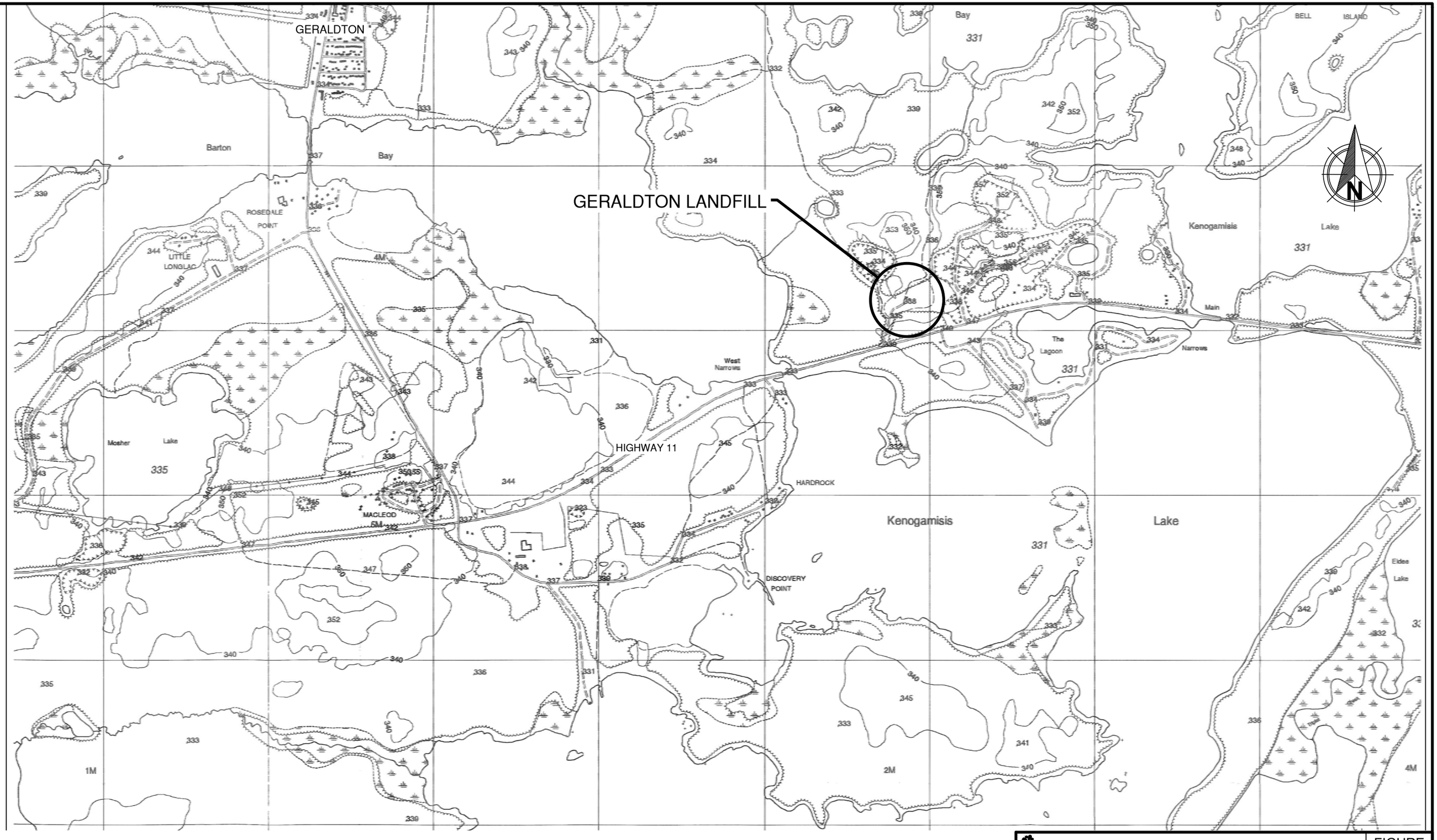
Figure 8: Surrounding Land Tenure and Attenuation Zone



Notes:

1) Reference: Ministry of Natural Resources 1:20,000 OBM Sheet No. 20 16 5000 5500

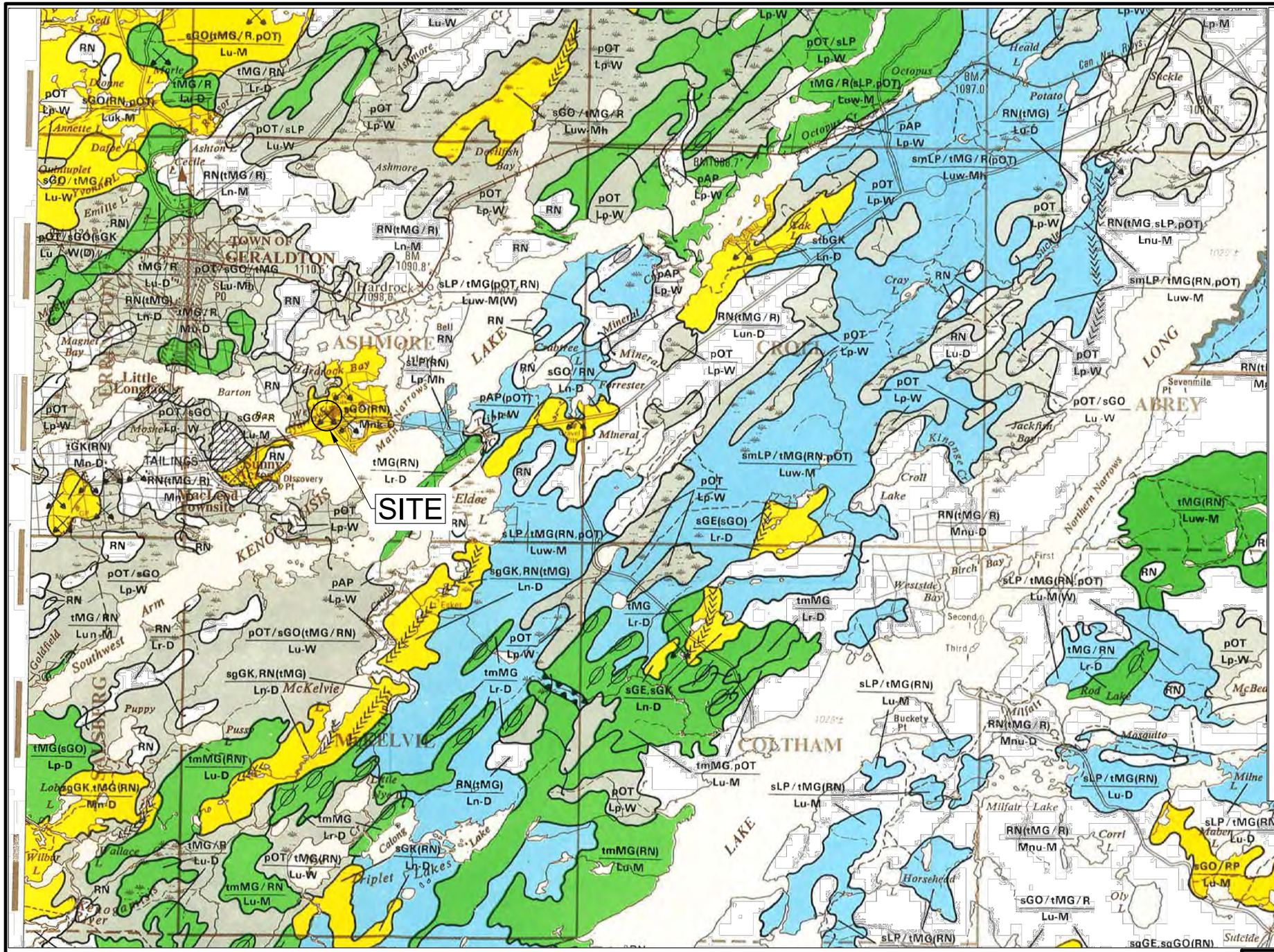
exp. Thunder Bay, Ontario

FIGURE 1

SITE LOCATION PLAN

2019, 2020 & 2021 Monitoring Report
Geraldton Landfill
Municipality of Greenstone

PROJECT NO.:	THB-00006189-RE
SCALE:	1:20,000
DRAWN BY:	SW
CHECKED BY:	AM
DATE:	March 16, 2022



LEGEND

LANDFORM

MORAINAL
- **ME** *End moraine*
- **MG** *Ground moraine*
- **MH** *Hummocky moraine*

GLACIOFLUVIAL
- **GD** *Ice contact delta, esker delta, kame delta, delta moraine*
- **GE** *Esker, esker complex, crevasse filling*
- **GK** *Kame, kame field, kame terrace, kame moraine*
- **GO** *Outwash plain, valley train*

GLACIOLACUSTRINE
- **LB** *Raised (abandoned) beach form*
- **LD** *Glaciolacustrine delta*
- **LP** *Glaciolacustrine plain*

ALLUVIAL
- **AP** *Alluvial plain*

COLLUVIAL
- **CS** *Slope failure*
- **CT** *Talus pile*
- **CW** *Slopewash and debris creep sheet, minor talus*

EOLIAN
- **ED** *Sand dunes*

ORGANIC
- **OT** *Organic terrain*

BEDROCK
- **RL** *Bedrock plateau*
- **RN** *Bedrock knob*
- **RP** *Bedrock plain*
- **RR** *Bedrock ridge*
- **/R** *Bedrock below a drift veneer*

MATERIAL
- **b** *boulders, bouldery*
- **c** *clay, clayey*
- **g** *gravel, gravelly*
- **p** *peat, muck*
- **r** *rubble*
- **s** *sand, sandy*
- **m** *silt, silty*
- **t** *till*

TOPOGRAPHY

LOCAL RELIEF
- **H** *Mainly high local relief*
- **M** *Mainly moderate local relief*
- **L** *Mainly low local relief*

VARIETY
- **c** *channelled*
- **d** *dissected, gullied*
- **j** *jagged, rugged, cliffed*
- **j*** *cliffed volcanic rock signature*
- **k** *kettled, pitted*
- **n** *knobby, hummocky*
- **p** *plain*
- **r** *ridged*
- **s** *sloping*
- **t** *terraced*
- **u** *undulating to rolling*
- **w** *washed, reworked*

DRAINAGE

SURFACE CONDITION
- **W** *Wet*
- **D** *Dry*
- **M** *Mixed wet and dry*
- **h** *Suspected high water table*

The letter codes describing the terrain units are made up of four components arranged as follows:–

MATERIAL	LANDFORM
TOPOGRAPHY	DRAINAGE

Examples:

1. dominant landform: tMG(RN); subordinate landform: Mu(Hj)-D; material: tMG(RN); drainage: D; local relief: H; relief of subordinate landform: j; topographic variety of dominant landform: u
2. pOT/sGO (Lp-W) — slash indicates a veneer of one landform overlying a second landform

Note:
1) Reference: Northern Ontario Engineering Geology Terrain Study, Ontario Geological Survey Map (5078 - Longlac).

1000 0 1000 2000
IN METRES

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FIGURE 2

LANDFORMS, TOPOGRAPHY & DRAINAGE
2019, 2020 & 2021 Monitoring Report
Geraldton Landfill
Municipality of Greenstone

PROJECT NO.:	THB-00006189-RE
SCALE:	1:100,000
DRAWN BY:	SW
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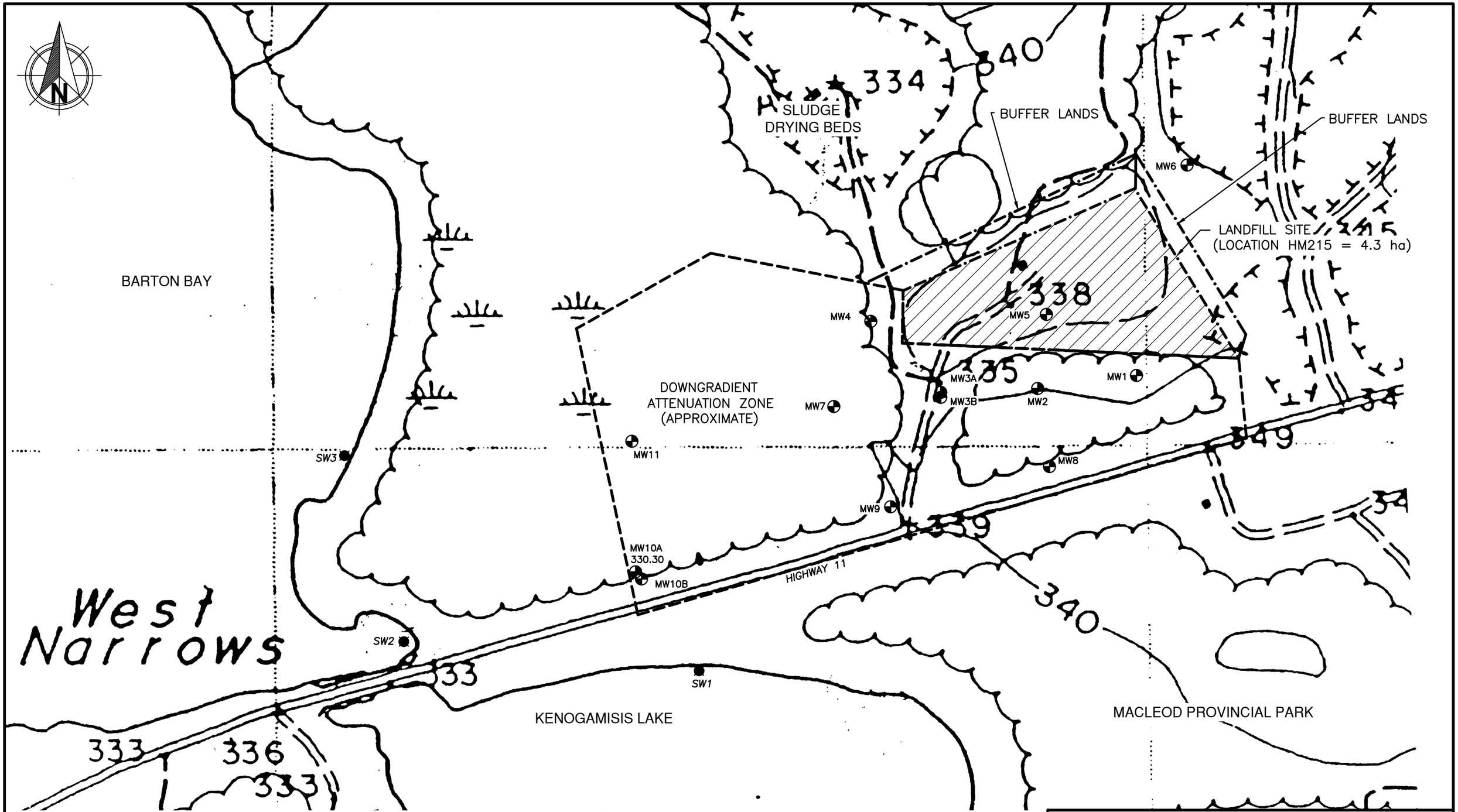
DATE:	March 16, 2022



Note:

1) Drawing based on 1:20,000 Ontario Base Map

Legend:

MW1	Monitoring Well Location
SW1	Surface water sampling location

40 0 40 80
IN METRES

exp. Thunder Bay, Ontario

FIGURE 3

SURROUNDING FEATURES AND SAMPLING LOCATIONS

2019, 2020 & 2021 Monitoring Report
Geraldton Landfill
Municipality of Greenstone

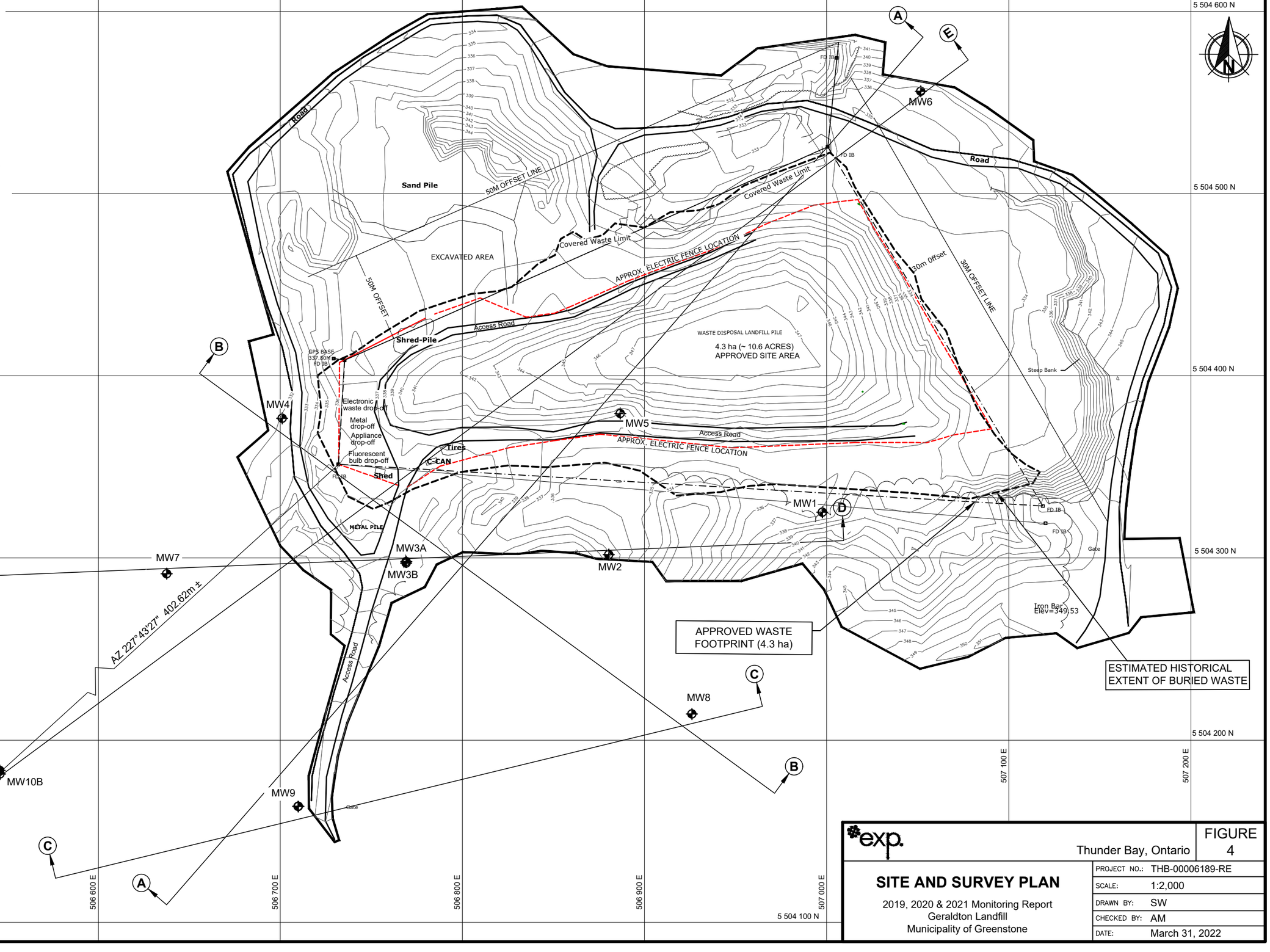
PROJECT NO.:	THB-00006189-RE
SCALE:	~1:4000
DRAWN BY:	SW
CHECKED BY:	AM
DATE:	March 16, 2022

Legend

- **MW4** - Monitoring Well Location
- ■ - Denotes Found Monument
- ◉ - Denotes Utility Pole
- —··— - Denotes Overhead Wire
- ~~~ - Denotes Treeline
- —·—·— - Denotes Approximate Property Line
- ▣ - Denotes Test Pit

Notes

1) Coordinates are metric, low order UTM control.
2) Elevations are referenced to the base station having a geodetic elevation of 337.80 m.
3) Topographic survey completed by Delta Survey Inc. on September 9 to 11, 2021.
4) Volume Increase of Waste Pile:
   - 2009 - 2012 = 21,920 m³
   - 2012 - 2014 = 17,408 m³
   - 2014 - 2015 = 4,074 m³
   - 2015 - 2016 = 4,978 m³
   - 2016 - 2018 = 3,277 m³
   - 2018 - 2019 = 2,588 m³
   - 2019 - 2020 = 2,100 m³
   - 2020 - 2021 = 3,700 m³
5) Contour Interval = 1 m



exp. Thunder Bay, Ontario

FIGURE 4

SITE AND SURVEY PLAN

2019, 2020 & 2021 Monitoring Report
Geraldton Landfill
Municipality of Greenstone

PROJECT NO.:	THB-00006189-RE
SCALE:	1:2,000
DRAWN BY:	SW
CHECKED BY:	AM
DATE:	March 31, 2022

Notes:

1) Drawing based on 1:20,000 Ontario Base Map
2) Historical observation wells (OB1 to OB9) were superimposed based on the 2003 investigation. The ground surface elevations were converted referencing the 2021 survey.
3) The approximated soil zones are based on the findings of the limited borehole logs, and are based on the "main" soils at and/or below the groundwater table. Relatively thin soil layers below the groundwater table were not considered as "main" soils.
4) Kenogamisis Lake water elevation was obtained from the Northern Ontario Engineering Geology Terrain Study, Ontario Geological Survey Map (5078 - Longlac), dated 1980. The water elevation is approximate.

BARTON BAY

SLUDGE DRYING BEDS

BUFFER LANDS

BUFFER LANDS

DOWNGRADIENT ATTENUATION ZONE BOUNDARY (APPROXIMATE)

LANDFILL SITE (LOCATION HM215 = 4.3 ha)

MW6 336.55 (333.23)

OB9 337.03 (330.15)

OB4 333.29 (331.89)

OB5 339.07 (331.61)

MW5 338.56 (331.10)

MW4 332.12 (330.86)

OB7 332.25 (331.25)

MW3A 335.44 (330.76)

OB8 337.75 (331.39)

OB1 336.63 (331.69)

OB2 336.56 (331.72)

OB3 334.96 (331.86)

OB6 335.35 (331.18)

MW3B 335.42 (330.80)

MW7 334.07 (330.56)

MW2 337.70 (331.10)

MW1 336.37 (330.29)

MW8 346.33 (331.18)

MW11 330.23 (330.04)

MW9 341.12 (331.99)

MW10A 330.43 (330.11)

MW10B 330.43 (330.11)

HIGHWAY 11

SW3

SW2

SW1

West Narrows

KENOGAMISIS LAKE
water elevation = 329.5 m

MACLEOD PROVINCIAL PARK

334 340 338 339 337 336 333

40 0 40 80
IN METRES

Legend:

- MW1 / 335.55 / (330.29) — Monitoring Well Location; Ground Surface Elevation in metres (measured September 2021); Groundwater Elevation in metres (measured September 2021)
- OB1 / 336.63 / (331.69) — Historical Observation Well Location (Removed); Ground Surface Elevation in metres (measured June 13, 2003); Groundwater Elevation in metres (measured June 13, 2003)
- SW1 — Surface water sampling location
- Sand to Sand/Gravel Zone
- Silt to Silt/Sand Zone

exp. Thunder Bay, Ontario

FIGURE 5

APPROXIMATE SUBSURFACE SOIL BOUNDARIES

2019, 2020 & 2021 Monitoring Report
Geraldton Landfill
Municipality of Greenstone

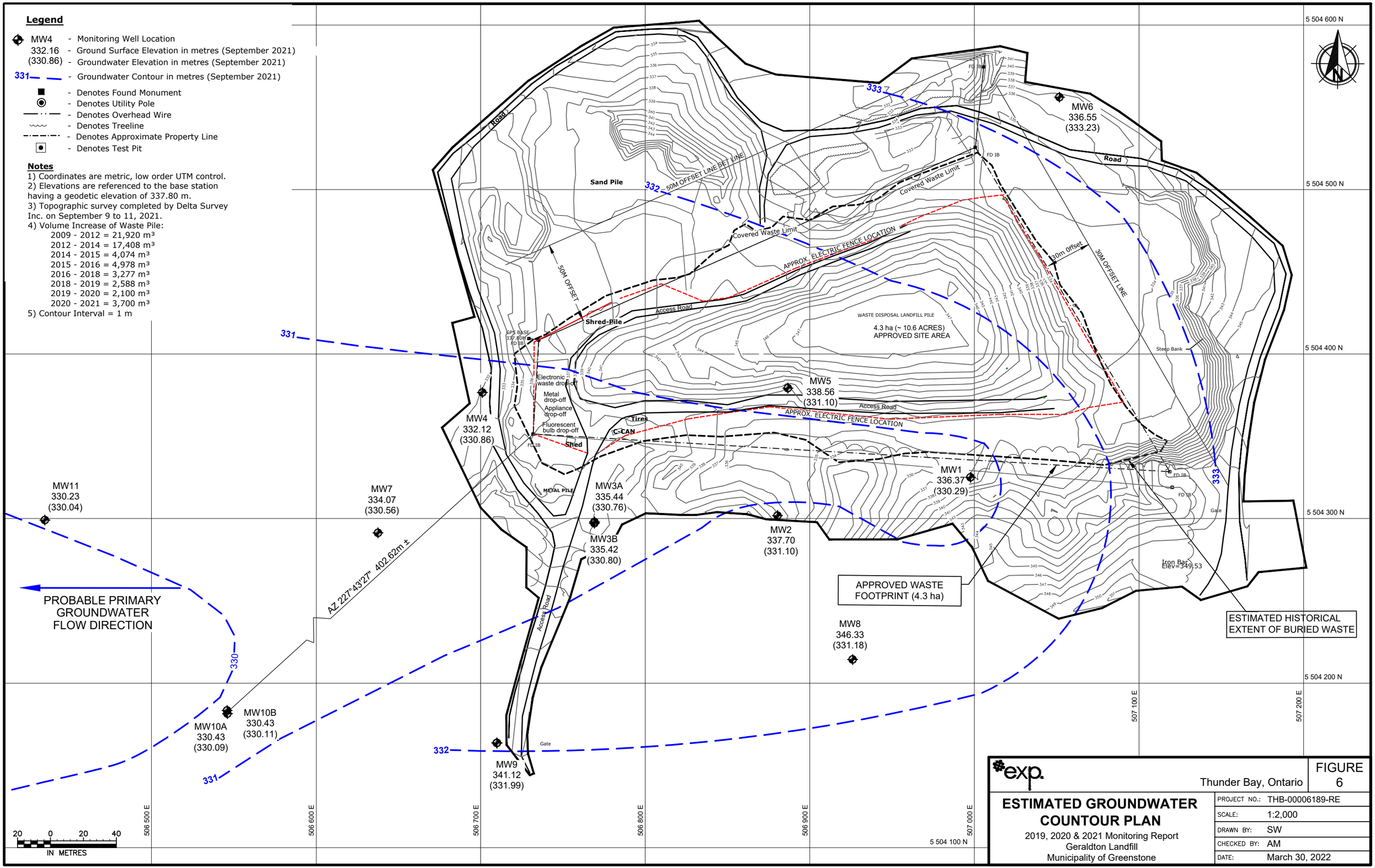
PROJECT NO.:	THB-00006189-RE
SCALE:	~1:4000
DRAWN BY:	SW
CHECKED BY:	AM
DATE:	March 16, 2022

Legend

- MW4 - Monitoring Well Location
- 332.16 - Ground Surface Elevation in metres (September 2021)
- (330.86) - Groundwater Elevation in metres (September 2021)
- 331 - Groundwater Contour in metres (September 2021)
- ■ - Denotes Found Monument
- ◉ - Denotes Utility Pole
- —·—·— - Denotes Overhead Wire
- ~~~ - Denotes Treeline
- —·—·— - Denotes Approximate Property Line
- ⊡ - Denotes Test Pit

Notes

1) Coordinates are metric, low order UTM control.
2) Elevations are referenced to the base station having a geodetic elevation of 337.80 m.
3) Topographic survey completed by Delta Survey Inc. on September 9 to 11, 2021.
4) Volume Increase of Waste Pile:
   - 2009 - 2012 = 21,920 m³
   - 2012 - 2014 = 17,408 m³
   - 2014 - 2015 = 4,074 m³
   - 2015 - 2016 = 4,978 m³
   - 2016 - 2018 = 3,277 m³
   - 2018 - 2019 = 2,588 m³
   - 2019 - 2020 = 2,100 m³
   - 2020 - 2021 = 3,700 m³
5) Contour Interval = 1 m



exp. Thunder Bay, Ontario

FIGURE 6

ESTIMATED GROUNDWATER COUNTOUR PLAN

2019, 2020 & 2021 Monitoring Report
Geraldton Landfill
Municipality of Greenstone

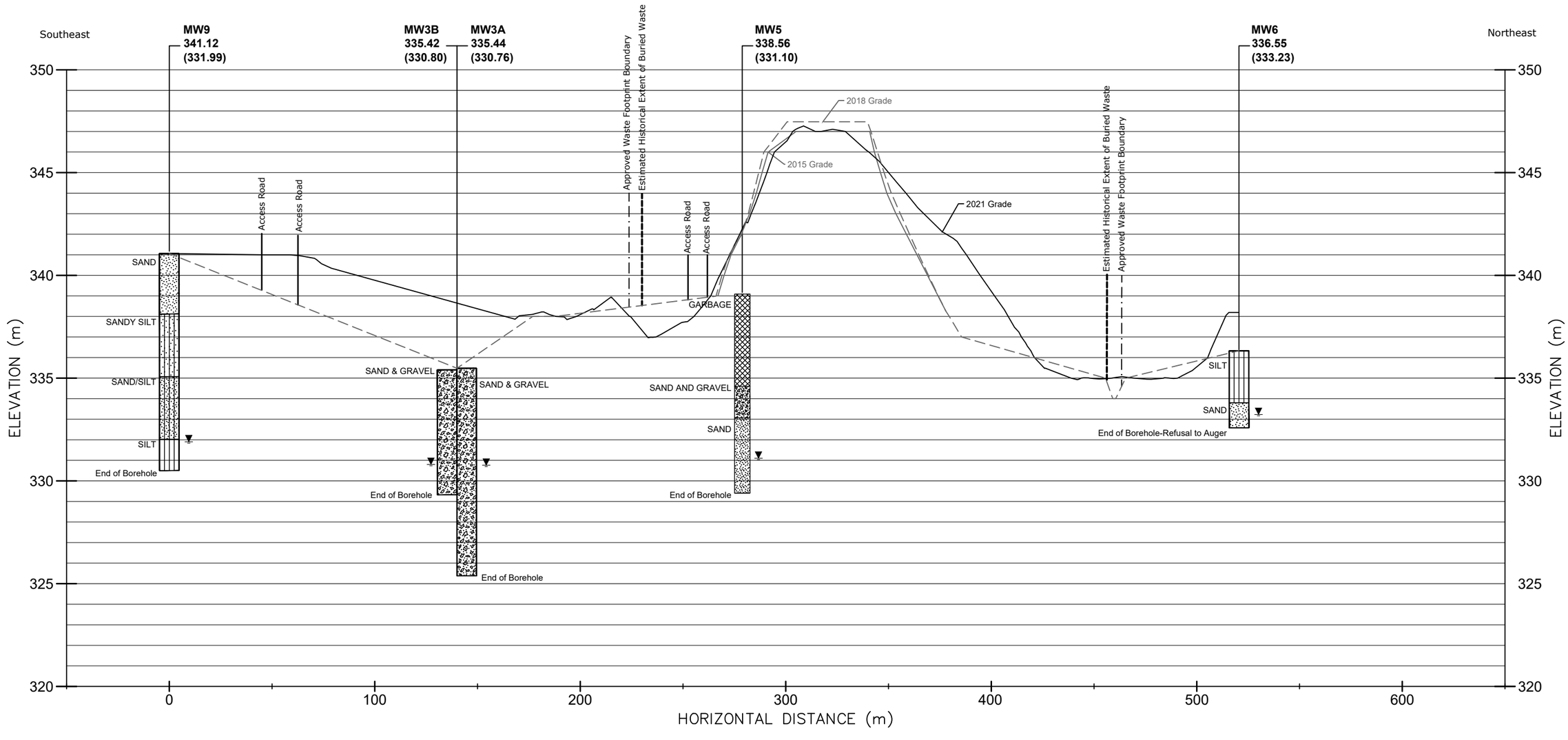
PROJECT NO.:	THB-00006189-RE
SCALE:	1:2,000
DRAWN BY:	SW
CHECKED BY:	AM
DATE:	March 30, 2022

Legend

MW5 - Monitoring Well Location
338.56 - Ground Surface Elevation in metres
(331.10) - Groundwater Elevation in metres (September 2021)

- Denotes Groundwater Table

Notes:
1) See Figure 4 for Section location.
2) Groundwater elevations measured September 2021.



exp. Thunder Bay, Ontario

FIGURE 7A

SECTION A-A

2019, 2020 & 2021 Monitoring Report
Geraldton Landfill
Municipality of Greenstone

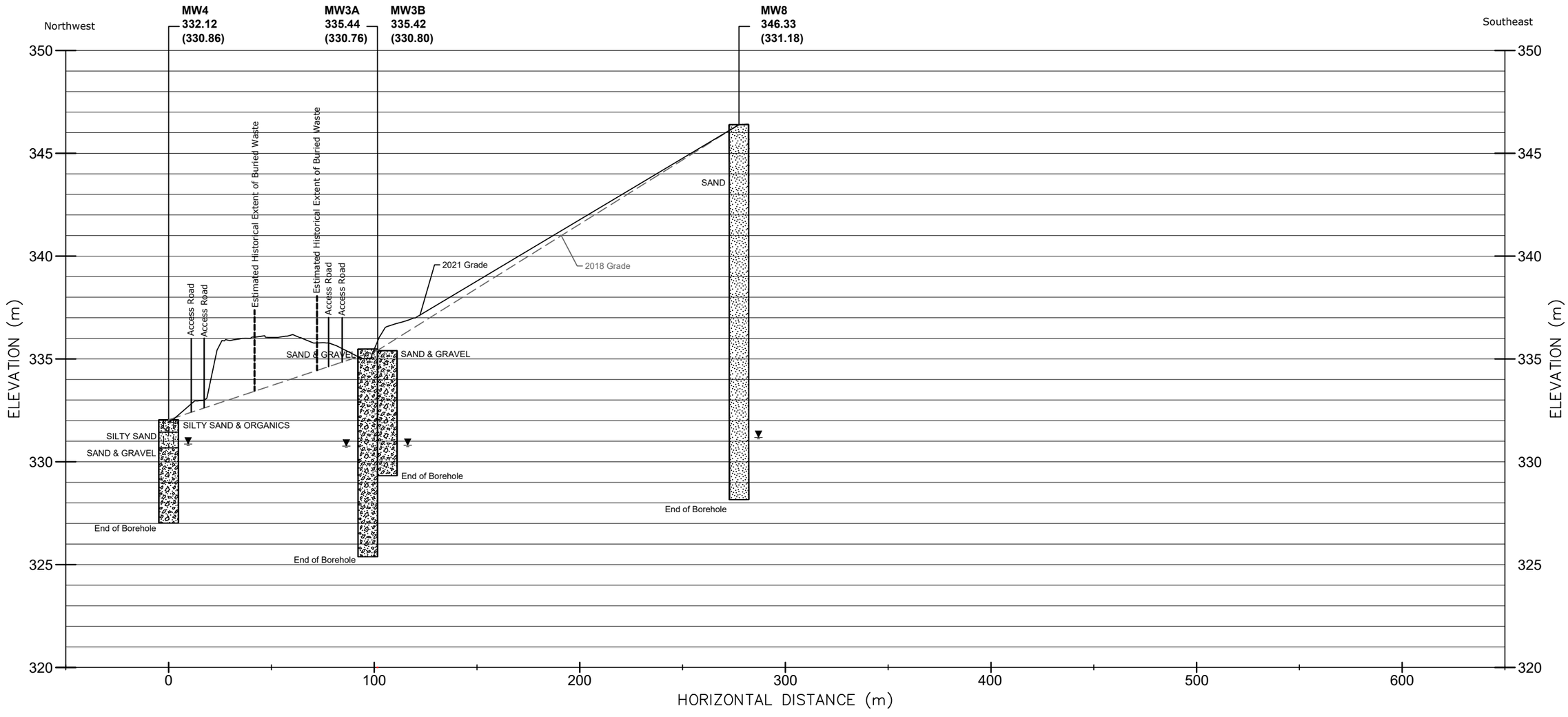
PROJECT NO.:	THB-00006189-RE
SCALE:	1:2000H / 1:200V
DRAWN BY:	SW
CHECKED BY:	AM
DATE:	March 16, 2022

Legend

MW4 - Monitoring Well Location
332.16 - Ground Surface Elevation in metres
(330.86) - Groundwater Elevation in metres (September 2021)

▼ - Denotes Groundwater Table

Notes:
1) See Figure 4 for Section location.
2) Groundwater elevations measured September 2021.



exp. Thunder Bay, Ontario

FIGURE 7B

SECTION B-B

2019, 2020 & 2021 Monitoring Report
Geraldton Landfill
Municipality of Greenstone

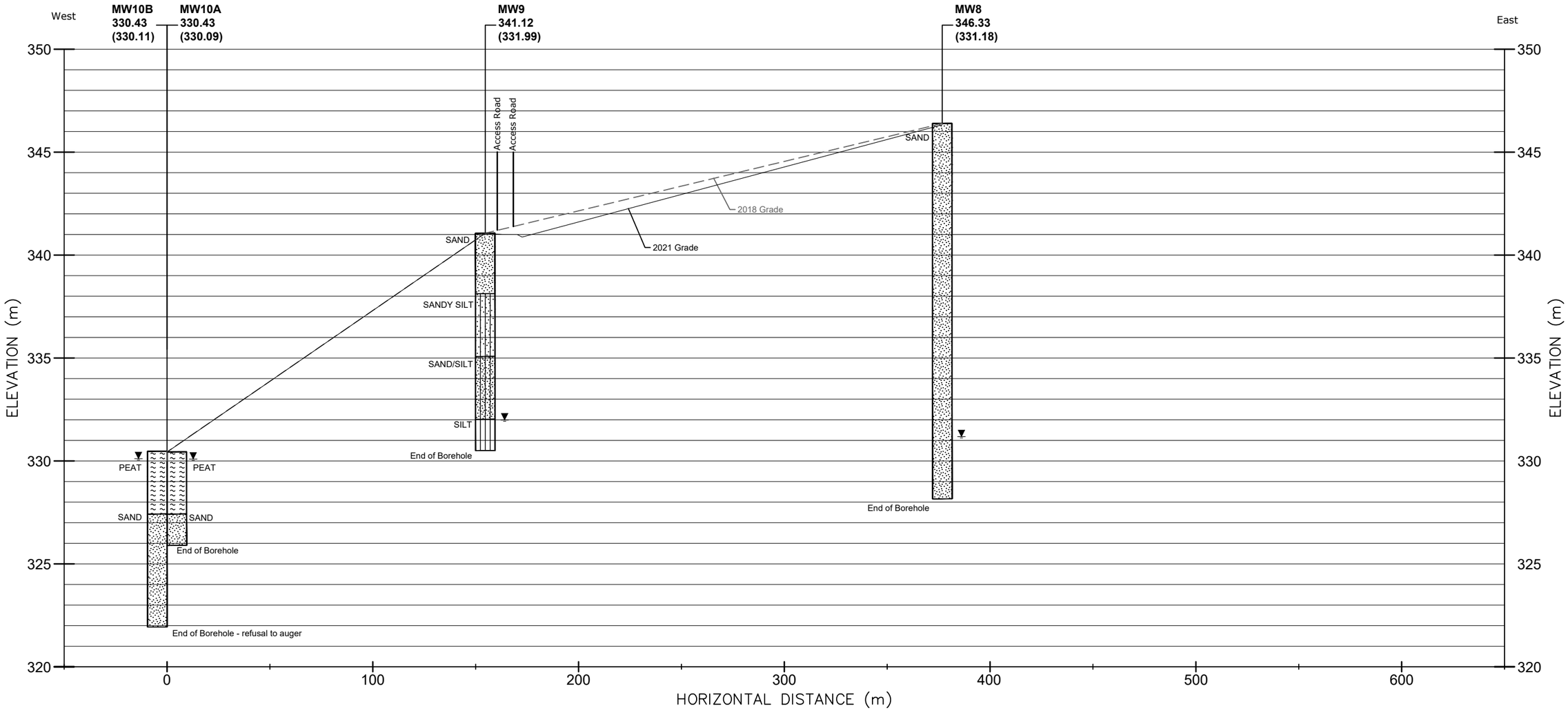
PROJECT NO.:	THB-00006189-RE
SCALE:	1:2000H / 1:200V
DRAWN BY:	SW
CHECKED BY:	AM
DATE:	March 16, 2022

Legend

MW9 - Monitoring Well Location
341.12 - Ground Surface Elevation in metres
(331.99) - Groundwater Elevation in metres (September 2021)

▼ - Denotes Groundwater Table

Notes:
1) See Figure 4 for Section location.
2) Groundwater elevations measured September 2021.



exp. Thunder Bay, Ontario

FIGURE 7C

SECTION C-C

2019, 2020 & 2021 Monitoring Report
Geraldton Landfill
Municipality of Greenstone

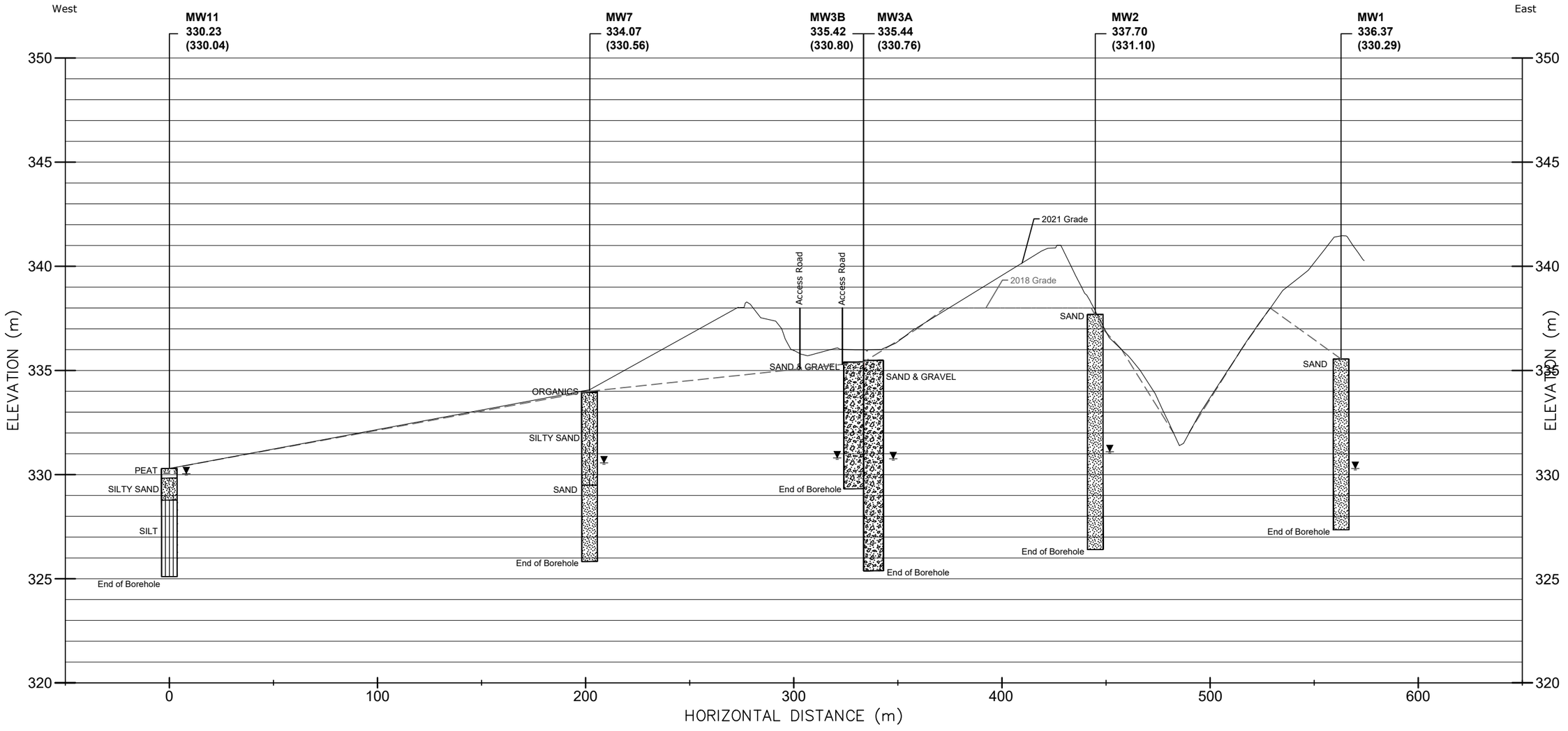
PROJECT NO.:	THB-00006189-RE
SCALE:	1:2000H / 1:200V
DRAWN BY:	SW
CHECKED BY:	AM
DATE:	March 16, 2022

Legend

MW7 - Monitoring Well Location
334.07 - Ground Surface Elevation in metres
(330.56) - Groundwater Elevation in metres (September 2021)

▼ - Denotes Groundwater Table

Notes:
1) See Figure 4 for Section location.
2) Groundwater elevations measured September 2021.



exp. Thunder Bay, Ontario

FIGURE 7D

SECTION D-D

2019, 2020 & 2021 Monitoring Report
Geraldton Landfill
Municipality of Greenstone

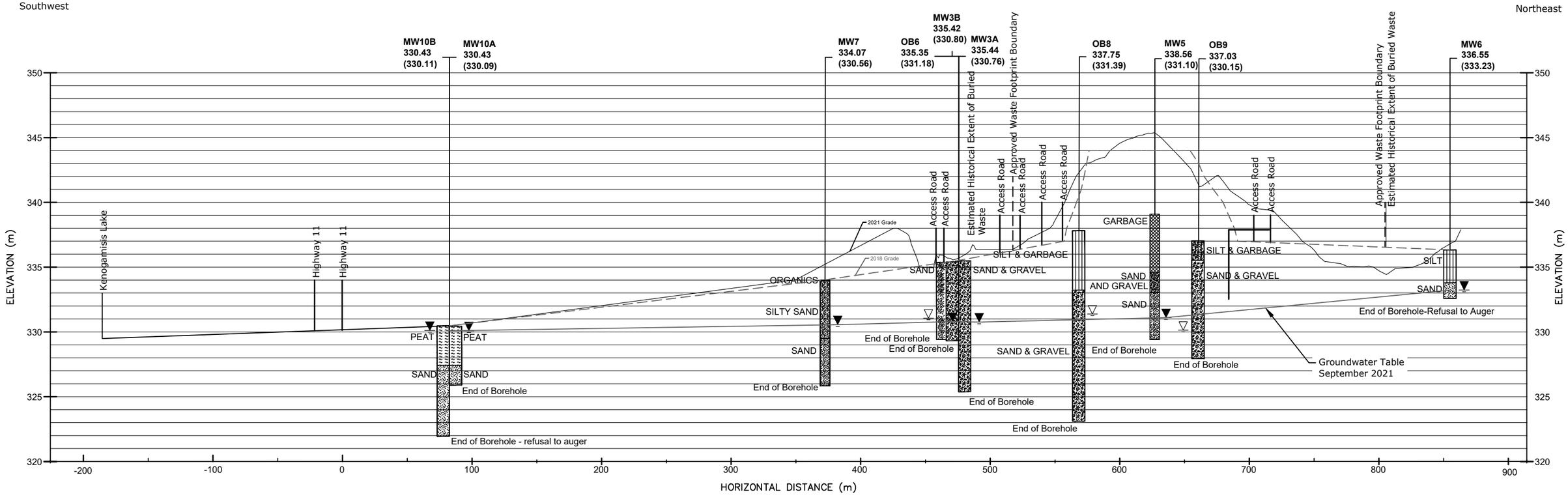
PROJECT NO.:	THB-00006189-RE
SCALE:	1:2000H / 1:200V
DRAWN BY:	SW
CHECKED BY:	AM
DATE:	March 16, 2022

Legend

- **MW7** - Monitoring Well Location
  334.07 - Ground Surface Elevation in metres
  (330.56) - Groundwater Elevation in metres (September 2021)
- **OB6** - Historical Observation Well Location (Removed)
  335.35 - Ground Surface Elevation in metres (June 13, 2003)
  (331.18) - Groundwater Elevation in metres (June 13, 2003)
- ▼ - Denotes Groundwater Table (September 2021)
- ▽ - Denotes Groundwater Table (June 2003)

Southwest

Northeast



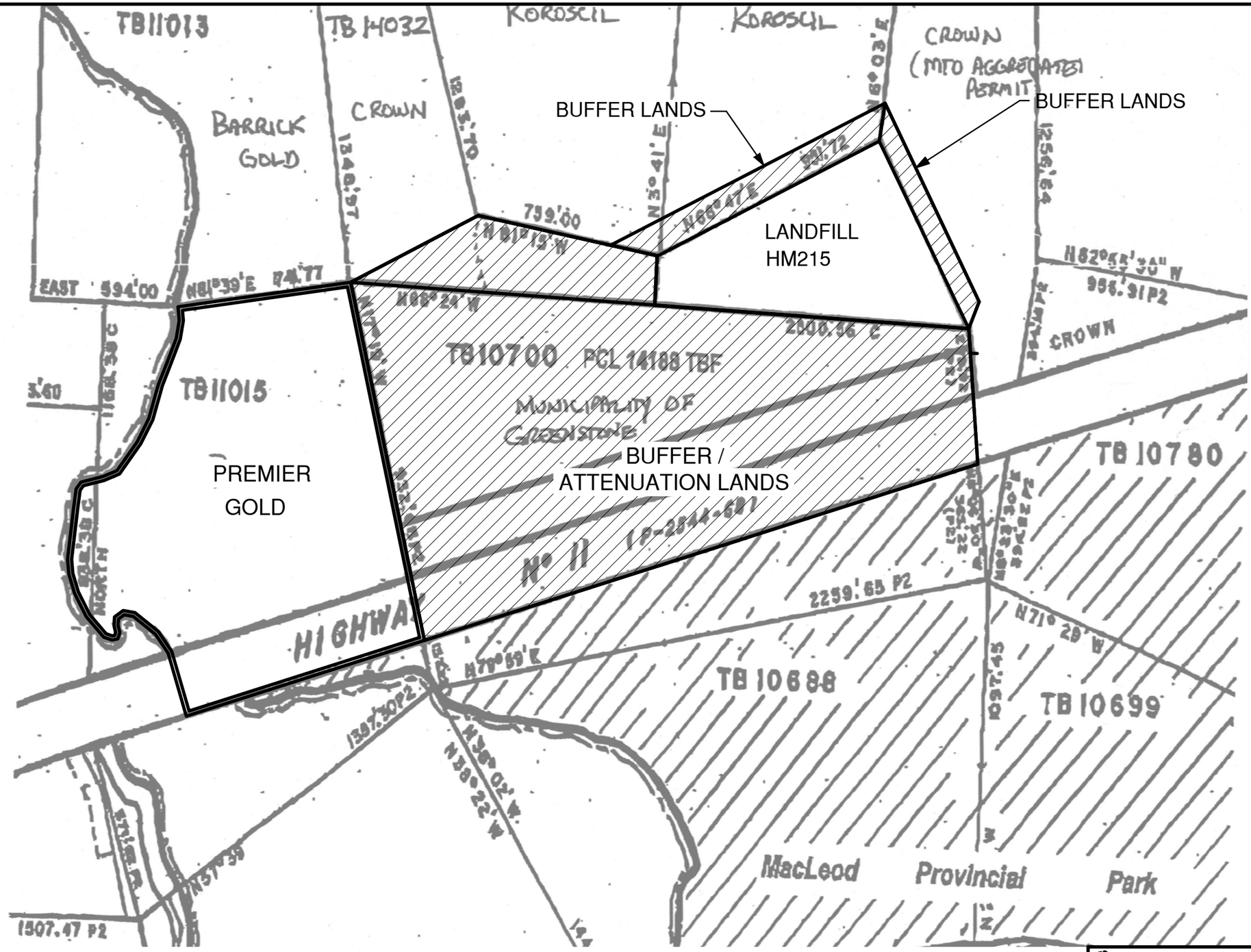
exp. Thunder Bay, Ontario

FIGURE 7E

SECTION E-E

2019, 2020 & 2021 Monitoring Report
Geraldton Landfill
Municipality of Greenstone

PROJECT NO.:	THB-00006189-RE
SCALE:	1:3000H / 1:300V
DRAWN BY:	SW
CHECKED BY:	AM
DATE:	March 16, 2022



Notes:

1) Base drawing provided by client
2) Drawing reproduced from 2004 Trow report on Design and Operation Plan, and 2012 EXP Updated Design and Operations Plan with Closure Plan.

50 0 50 100
IN METRES

exp. Thunder Bay, Ontario

FIGURE 8

SURROUNDING LAND TENURE AND ATTENUATION ZONE
2019, 2020 and 2021 Monitoring Report
Geraldton Landfill
Municipality of Greenstone

PROJECT NO.:	THB-00006189-RE
SCALE:	1:5,000
DRAWN BY:	SW
CHECKED BY:	AM
DATE:	March 16, 2022

APPENDIX B-

Environmental Compliance Approval (ECA), Certificate of Approval (C of A) and related MECP Correspondence and Documentation

Ministry of the Environment, Conservation and Parks
1st Floor
135 St Clair Ave W
Toronto ON M4V 1P5
Fax: (416) 314-8452
Telephone: (437) 882-2356

Ministère de l'Environnement, de la Protection de la nature et des Parcs
135 av St Clair O
Toronto ON M4V 1P5
Télécopieur : (416) 314-8452
Téléphone : (437) 882-2356

Ontario

December 22, 2021

The Corporation of the Municipality of Greenstone
1800 Main Street, P.O. Box 70
Geraldton, Ontario
P0T 1M0

To Whom It May Concern:

Re: Application for Approval of Waste Disposal Sites
Notice to ECA No. A7004401 - Updated Closure Plan for Geraldton Landfill
Municipality of Greenstone, District of Thunder Bay
Reference Number 6576-C9XQDT

We acknowledge receipt of your application for approval dated December 7, 2021 and received on December 22, 2021 for the following:

Approval Type:	Waste Disposal Sites
Project Description:	Updated Closure Plan submitted in compliance with Condition 13.3 of Environmental Compliance Approval No. A7004401 for the Geraldton Landfill site.
Site Location:	Geraldton Waste Disposal Site 2 miles east of Junction Hwy 11 and 584, 8272 Highway 11 Municipality of Greenstone, District of Thunder Bay

The Ministry's reference number for your application is 6576-C9XQDT. Please quote this number in any correspondence or enquiries regarding this application.

Please note that your submission has only been screened with respect to the presence of the supporting documentation normally required for this type of application, and did not include any technical analysis of the documentation, and therefore you may still be requested to provide some additional information during our detailed technical review of the application. In such a case, the Reviewer will contact you and/or your identified Project Technical Information Contact at this time.

Should you have any questions related to your application, please contact me at the above phone number.

Sincerely,

Shannon Williams
Processing Coordinator

c: District Manager, MECP Thunder Bay District Office
Ahileas Mitsopoulos, P. Eng., EXP (ahileas.mitsopoulos@exp.com)

AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER A7004401
Issue Date: December 23, 2020

The Corporation of the Municipality of Greenstone
1800 Main St
Post Office Box, No. 70
Geraldton, Ontario
P0T 1M0

Site Location: Geraldton Waste Disposal Site
2 miles east of Junction Hwy 11 and 584, 8272 Highway 11
Greenstone Municipality, District of Thunder Bay

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

the use and operation of a 4.3 hectare landfilling/recycling site within a total site area of 30.65 hectares.

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

"Adverse Effect" means the same as the definition in the EPA;

"Approval" or "ECA" means this entire provisional Environmental Compliance Approval document, issued in accordance with Section 20.2 of the EPA, and includes any schedules to it, the application and the supporting documentation listed in Schedule "A";

"CAZ" means the Contaminant Attenuation Zone;

"Director" means any Ministry employee appointed in writing by the Minister pursuant to section 5 of the EPA as a Director for the purposes of Part V of the EPA;

"District Manager" refers to the District Manager in the Ministry of the Environment's Thunder Bay District Office;

"District Office" refers to the Ministry of the Environment Thunder Bay District Office;

"EPA" means Environmental Protection Act, R.S.O. 1990, c. E. 19, as amended from time to time;

"FBAL" refers to Fill Beyond Approved Limits;

"HHW" means household hazardous waste;

"Ministry" refers to the Ontario Ministry of the Environment, Conservation and Parks;

"Operator" has the same meaning as "operator" as defined in s.25 of the EPA;

"Owner" means any person that is responsible for the establishment or operation of the Site being approved by this ECA, and includes The Corporation of the Municipality of Greenstone, its successors and assigns;

"OWRA" means Ontario Water Resources Act, R.S.O. 1990, c. O.40, as amended from time to time;

"PA" means the Pesticides Act, R.S.O. 1990, c. P-11, as amended from time to time;

"Provincial Officer" means any person designated in writing by the Minister as a provincial officer pursuant to Section 5 of the OWRA or section 5 of the EPA or section 17 of PA;

"Refrigerant Appliances" means household appliances which use, or may use refrigerants, and which include, but is not restricted to, refrigerators, freezers and air-conditioning systems;

"Regional Director" refers to the Director of the Ministry's Northern Regional Office;

"Regulation 347" or "Reg. 347" means Regulation 347, R.R.O. 1990, made under the EPA, as amended from time to time;

"Site" or "WDS" means the entire waste disposal site, including the buffer lands, and contaminant attenuation zone at Geraldton Waste Disposal Site, Part of Mining Claim T.B. 14031, 2 miles east of junction of Hwy 11 and 584, Township of Ashmore, District of Thunder Bay;

"Substantial Completion" has the same meaning as "substantial performance" in the Construction Lien Act; and

"Trained Personnel" means competent personnel that have been trained through instruction and/or practice in accordance with Condition 6.1 of this ECA.

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

TERMS AND CONDITIONS

1.0 GENERAL

Compliance

1.1 The Requirements specified in this ECA are the requirements under the Environmental Protection Act, R.S.O. 1990. The issuance of this Approval in no way abrogates the Owner's legal obligations to take all reasonable steps to avoid violating other applicable provisions of this legislation and other legislation and regulations.

1.2 The Owner shall ensure that all communications/correspondence made pursuant to this ECA includes reference to the Environmental Compliance Approval number A412306.

1.3 The obligations imposed by the terms and conditions of this ECA are obligations of due diligence.

1.4 The Owner shall ensure that any person authorized to carry out work on or operate any aspect of the Site is notified of the ECA and the conditions herein and shall take all reasonable measures to ensure the person complies with the same.

1.5 Any person authorized to carry out work on or operate any aspect of the Site shall comply with the conditions of this ECA.

In Accordance

1.6 Except as otherwise provided for in this ECA, the Site shall be designed, developed, built, operated and maintained in accordance with the applications for ECA dated May 8, 1972 and the supporting documentation listed in Schedule "A".

Other Legal Obligations

1.7 The issuance of, and compliance with, this ECA does not:

(a) relieve any person of any obligation to comply with any provision of the EPA or any other applicable statute, regulation or other legal requirement; or
(b) limit in any way the authority of the Ministry to require certain steps be taken or to request that any further information related to compliance with this ECA be provided to the Ministry;

unless a provision of this ECA specifically refers to the other requirement or authority and clearly states that the other requirement or authority is to be replaced or limited by this ECA.

Adverse Effect

1.8 The Owner or Operator remain responsible for any contravention of any other condition of this ECA or any applicable statute, regulation, or other legal requirement resulting from any act or omission that caused the Adverse Effect or impairment of air and/or water quality.

Furnish Information

1.9 Any information requested by the Director or a Provincial Officer concerning the Site and its operation under this ECA, including but not limited to any records required to be kept by this ECA shall be provided in a timely manner.

1.10 The receipt of any information by the Ministry or the failure of the Ministry to prosecute any person or to require any person to take any action, under this ECA or under any statute, regulation or subordinate legal instrument, in relation to the information, shall not be construed as:

(a) an approval, waiver, or justification by the Ministry of any act or omission of any person that contravenes any condition of this ECA or any statute, regulation or other subordinate legal requirement; or
(b) acceptance by the Ministry of the information's completeness or accuracy.

1.11 Any information related to this ECA and contained in Ministry files may be made available to the public in accordance with the provisions of the Freedom of Information and Protection of Privacy Act, RSO 1990, CF-31.

Interpretation

1.12 Where there is a conflict between a provision of any document, including the application, referred to in this ECA, and the conditions of this ECA, the conditions in this ECA shall take precedence.

1.13 Where there is a conflict between the application and a provision in any documents listed in Schedule "A", the application shall take precedence, unless it is clear that the purpose of the document was to amend the application and that the Ministry approved the amendment in writing**.**

1.14 Where there is a conflict between any two documents listed in Schedule "A", other than the application, the document bearing the most recent date shall take precedence.

1.15 The conditions of this ECA are severable. If any condition of this ECA, or the application of any condition of this ECA to any circumstance, is held invalid or unenforceable, the application of such condition to other circumstances and the remainder of this ECA shall not be affected thereby.

Certificate of Requirement

1.16 Pursuant to Section 197 of the EPA, no person having an interest in the Site shall deal with the Site in any way without first giving a copy of this ECA to each person acquiring an interest in the Site as a result of the dealing.

1.17 In the event any additional land is acquired for the Site, then two (2) copies of a completed Certificate of Requirement, containing a registerable description of the additional lands for the Site, shall be submitted to the Director for the Director’s signature within sixty (60) calendar days of any amendment to this ECA that incorporates the land into the ECA.

1.18 In the event any additional land is acquired for the Site, then the Certificate of Requirement shall be registered in the appropriate land registry office on title to the Site and a duplicate registered copy shall be submitted to the Director within ten (10) calendar days of receiving the Certificate of Requirement signed by the Director.

No Transfer or Encumbrance

1.19 No portion of this Site shall be transferred or encumbered prior to or after closing of the Site unless the Director is notified in advance and is satisfied with the arrangements made to ensure that all conditions of this ECA will be carried out and that sufficient financial assurance is deposited with the Ministry to ensure that these conditions will be carried out.

Change of Owner

1.20 The Owner shall notify the Director, in writing, and forward a copy of the notification to the District Manager, within 30 days of the occurrence of any changes in the following information:

(a) the ownership of the Site;
(b) the Operator of the Site;
(c) the address of the Owner or Operator;
(d) the partners, where the Owner or Operator is or at any time becomes a partnership and a copy of the most recent declaration filed under the Business Names Act , R. S. O. 1990, c. B.17, shall be included in the notification;
(e) the name of the corporation where the Owner or Operator is or at any time becomes a corporation, other than a municipal corporation, and a copy of the most current information filed under the Corporations Information Act , R. S. O. 1990, c. C.39, shall be included in the notification.

1.21 In the event of any change in the ownership of the Site, other than a change to a successor municipality, the Owner shall notify in writing the succeeding owner of the existence of this ECA, and a copy of such notice shall be forward to the Director and District Manager.

Inspections

1.22 No person shall hinder or obstruct a Provincial Officer from carrying out any and all inspections authorized by the EPA or the PA, of any place to which this ECA relates, and without limiting the foregoing:

(a) to enter upon the premises where the approved works are located, or the location where the records required by the conditions of this ECA are kept;
(b) to have access to, inspect, and copy any records required to be kept by the conditions of this ECA;
(c) to inspect the Site, related equipment and appurtenances;
(d) to inspect the practices, procedures, or operations required by the conditions of this ECA; and
(e) to sample and monitor for the purposes of assessing compliance with the terms and conditions of

this ECA or the EPA or the PA.

2.0 SITE OPERATIONS

Proper Operation

2.1 The Site shall be properly operated and maintained at all times. All waste shall be managed and disposed of in accordance with the EPA, Regulation 347, and the requirements of this ECA. At no time shall the discharge of a contaminant that causes or is likely to cause an Adverse Effect be permitted.

2.2 The Owner shall ensure that the Ministry's Guideline B-7, Reasonable Use Concept, is applied at the Site boundaries.

2.3 (a) The Owner shall ensure the operations, maintenance and procedures manual for the Site includes discussions on the following items:

- (i) health and safety;
- (ii) operation and maintenance of the Site;
- (iii) waste disposal area and development;
- (iv) nuisance management;
- (v) leachate management;
- (vi) landfill gas management;
- (vii) surface water/storm water management;
- (viii) inspections and monitoring;
- (ix) contingency plans and emergency procedures;
- (x) complaints; and,
- (xi) reporting and record keeping.

(b) The operations and procedures manual shall be:

- (i) retained at the Site;
- (ii) reviewed on an annual basis and updated by the Owner as required; and
- (iii) be available for inspection by Ministry staff.

Buffer

2.4 The Owner shall ensure that the buffer as described in Item 6 in Schedule "A" is maintained.

Signage

2.5 The Owner shall place a sign which complies with local by-laws at the main entrance and exit to the Site which is legible from a distance not less than 25 m and on which is displayed in prominent letters the following information:

(a) the name of the Site and Owner;
(b) the number of the ECA;
(c) the name of the Operator;

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

Hours of Operation

2.6 (a) (i) Waste may be received at the Site between the hours of 9:00 a.m. and 6:00 p.m., Monday to Friday.

(ii) Public access to the Site for waste drop off are permitted on Tuesday, Wednesday, Thursday and Saturday between the hours of 12:00 p.m. and 5:00 p.m.

(b) Amendment to the hours of operation require approval by the Director prior to implementation.

2.7 Notwithstanding Condition 2.6, with prior written approval of the District Manager, the time periods may be extended to accommodate seasonal or unusual quantities of waste, construction activities or such factors as determined to be reasonable to the District Manager.

2.8 Upon reasonable notice to the District Manager, contingency actions may take place outside normal hours of operation. Emergency response may occur at any time as required.

Site Security

2.9 During non-operating hours, the Site entrance and exit gates will be locked or otherwise secured against access by unauthorized persons.

2.10 The Owner shall ensure that no queuing of waste vehicles will occur on public roadways.

2.11 (a) No waste shall be accepted, landfilled or removed from the site unless a Site supervisor is present and supervises the operation.

(b) The Owner shall ensure that all Site operations employees have been adequately trained prior to acceptance of waste at the Site with respect to the following:
(i) terms, conditions and operating requirements of this ECA;
(ii) the operation and management of the Site with respect to the Operations and Maintenance Manual;
(iii) relevant waste management regulations and legislation;
(iv) environmental concerns related to the waste being handled at the Site;
(v) occupational health and safety concerns pertaining to the waste being handled at the Site; and
(vi) emergency procedures and contingency plans in cases of fire, off-site impacts and any other emergency situation.

(c) The Site is deemed to be closed when a Site supervisor is not present at the Site.

(d) To assist the Site operating personnel, the Owner shall ensure that the Maintenance and Operations Manual, required by Condition 2.3, and all revisions is kept on Site at all times following commencement of landfilling.

Site Access

2.12 Access to the Site shall be via the existing entrance from Highway 11.

Vermin, Dust, Litter, Odour, Noise, Traffic

2.13 The Site shall be operated and maintained such that vermin, vectors, dust, litter, odour, noise and traffic do not create a nuisance.

Litter Control

2.14 The Owner shall take all practical steps to prevent off-site litter impacts from Site operations and to minimize wind blown litter On-Site.

Noise

2.15 The landfill Site shall be required to operate within the noise level limits prescribed in the Ministry's document "Noise Guidelines for Landfill Sites".

Surface Water

2.16 The Owner shall take all appropriate measures to minimize surface water from coming in contact with waste. Temporary berms and ditches shall be constructed around active waste disposal areas to prevent extraneous surface water from coming in contact with the active working face.

Landfill Gas

2.17 All buildings are to be free of any landfill gas accumulation. The Owner shall provide adequate ventilation systems to relieve landfill gas accumulations in buildings if necessary.

3.0 LANDFILL OPERATIONS

Waste Type

3.1 The waste to be received at the Site for final disposal is restricted to solid non-hazardous waste.

Capacity

3.2 (a) The original maximum volume of waste and cover materials, excluding final cover for the Site was **173,000 m^3**.

(b) The maximum amount of waste approved for final disposal, excluding final cover at the Site based on the completed Environmental Screening Report Process, dated May 1, 2013, is **273,000 m^3**.

(c) (i) Notwithstanding Condition 3.2 (b), the landfill Site is approved for continued use for a maximum volume of **294,130 m^3** of waste and cover material, excluding final cover, in accordance with Item 9 of Schedule "A".

(ii) The Site is hereby permitted to continue to accept waste for final disposal until **December 31, 2021**. No further extensions will be entertained by the Ministry outside any future Environmental Assessment Act approval.

(iii) Condition 3.2 (c) (i) does not constitute an approved expansion from the volume currently approved by Condition 3.2 (b). Upon the issuance of any future Environmental Assessment Act approval, the volume of waste accepted under Condition 3.2 (c) (i) must be included as part of any expansion volume received.

Waste Placement

3.3 (a) No waste shall be landfilled outside of the limit of fill area for the Site as shown in Figure 2 of Item 6 in Schedule "A".

(b) The Owner shall ensure the limit of the landfill as shown in Figure 2 of Item 6 of Schedule "A" is clearly staked with permanent markers.

3.4 (a) No waste shall be landfilled at any time above the final waste grades and maximum elevation of 348.55 m excluding final cover, as shown in Figure 6 of Item 9 of Schedule "A".

(b) Final slopes above grade at the time of Site closure within the waste fill area shall be within the range of 4H:1V (25%) and 20H:1V (5%).

3.5 Waste placement in the year 2021 shall be limited to the North-eastern portion of the Site as indicated in Figure 1 of Item 14 of Schedule "A". The active face of this area shall be kept to a minimum to minimize wind blown litter and environmental nuisances.

3.6 Waste placement shall occur at a minimum 1 meter above the highest groundwater table elevation at the Site.

3.7 No waste shall be landfilled in the buffer area or additional waste be placed in the FBAL.

3.8 The Owner shall deposit waste in a manner that minimizes exposure area at the landfill working face and all waste shall be compacted before cover is applied.

Cover Material

3.9 (a) Daily Cover - By the end of each working week, the entire working face shall be compacted and covered with a minimum thickness of 150 mm of soil cover or an approved thickness of

alternative cover material.

(b) Intermediate Cover - In areas where landfilling has been temporarily discontinued for six (6) months or more, a minimum thickness of 300 mm of soil cover or an approved thickness of alternative cover material shall be placed.

Service Area

3.10 Only waste generated within the boundaries of the Municipality of Greenstone may be received for disposal at this Site.

Waste Inspection

3.11 All loads of waste must be properly inspected by Trained Personnel prior to disposal at the Site and waste vehicles must be diverted to appropriate areas for waste disposal.

Burning Waste Prohibited

3.12 Burning of waste at the Site is prohibited.

4.0 WASTE TRANSFER STATION

Waste Transfer Facility

4.1 The Owner shall ensure that:

(a) all bins and waste storage areas are clearly labelled;
(b) all lids or doors on bins shall be kept closed during non-operating hours and during the high wind events; and
(c) if necessary to prevent litter, waste storage areas shall be covered during the high winds events.

4.2 The Owner shall provide a segregated area for the storage of Refrigerant Appliances so that the following are ensured:

(a) all Refrigerant Appliances have been tagged to indicate that the refrigerant has been removed by a licensed technician. The tag number shall be recorded in the log book and shall remain affixed to the appliance until transferred from the Site; or
(b) all Refrigerant Appliances accepted at the Site, which have not been tagged by a licensed technician to verify that the equipment no longer contains refrigerants, are stored segregated, in a clearly marked area, in an upright position and in a manner which allows for the safe handling and transfer from the Site for removal of refrigerants as required by O. Reg. 189; and
(c) all Refrigerant Appliances received on-site shall either have the refrigerant removed prior to being transferred from the Site or shall be shipped off-site only to facilities where the refrigerants can be removed by a licensed technician in accordance with O. Reg. 189.

4.3 Propane cylinders shall be stored in a segregated area in a manner which prevents cylinders from being knocked over or cylinder valves from breaking.

4.4 The Owner shall transfer waste and recyclable materials from the Site as follows:

(a) recyclable materials shall be transferred off-site once their storage bins are full;
(b) scrap metal shall be transferred off-site at least twice a year;
(c) tires shall be transferred off-site as soon as a load for the contractor hired by the Owner has accumulated or as soon as the accumulated volume exceeds the storage capacity of its bunker; and
(d) immediately, in the event that waste is creating an odour or vector problem.

4.5 The Owner shall notify the appropriate contractors that waste and recyclable wastes that are to be transferred off the Site are ready for removal. Appropriate notice time, as determined by the contract shall be accommodated in the notification procedure.

5.0 HOUSEHOLD HAZARDOUS WASTE DEPOT

HHW Facility Operations

5.1 The HHW depot shall not receive more than 5 cubic metres of HHW per day.

5.2 The HHW depot shall not store in excess of 10 cubic metres of HHW on Site.

5.3 HHW shall not be stored at the Site for longer than one hundred eighty (180) days, unless the consent of the District Manager has been obtained, with the exception of waste oil which shall be stored on Site in accordance with Condition 5.2.

5.4 All household hazardous waste received and stored must be managed in accordance with Regulation 347, and with the Ministry's document entitled "Household Hazardous Waste Collection and Facility Guidelines" dated May 1993.

5.5 All storage of liquid wastes shall be in accordance with this Ministry's publication "Guidelines of Environmental Protection Measures at Chemical Storage Facilities", dated October 1978 as amended.

5.6 All HHW shall be stored in secondary containment that is adequate to contain any spills or leaks. Segregated secondary containment shall be provided for incompatible types of waste.

5.7 Incoming HHW shall be inspected by Trained Personnel, prior to being accepted at the Site, to ensure that the Site is approved to accept that type of waste.

5.8 All containers shall be clearly labelled indicating the type and nature of the hazardous waste stored as required by regulation. All points of access to the Site shall be posted to warn that the area contains hazardous materials.

5.9 No radioactive wastes shall be accepted at this Site.

5.10 Oil and oil-based paints which have been manufactured prior to 1972; or whose manufacturing date cannot be determined, may contain PCBs and shall be handled as follows:

(a) The oil and oil-based paints shall not be mixed (bulked) with other paints prior to testing. Paints which are lab-packed are not considered to be mixed under this ECA;
(b) The oil and oil-based paints shall be tested by a certified laboratory for PCB content and shall be handled in the manner outlined in Condition 5.10 (c) if found to contain PCBs;
(c) If the oil and oil-based paints are found to have PCBs at or above levels identified in Condition 5.10 (d), it shall be forthwith reported to the District Manager and shall be managed in accordance with Regulation 362 and stored or removed from the Site to an approved PCB storage site, in accordance with written instructions from the District Manager; and
(d) The oil and oil-based paints shall not be distributed for reuse if they have any measurable PCB content. The oil and oil-based paint is considered to be a PCB waste, if measured levels are equal to or greater than 50 parts per million.

5.11 Except for oil based paints that become classified as PCB Waste, paints may be offered for reuse to the public. Records shall be kept of the type, volume and recipient of paint returned to the public.

5.12 The Owner shall maintain, at the Site, a log book which records daily, the following information:

(a) date of record;
(b) types, quantities and source of HHW received;
(c) quantities of HHW stored at the Site;
(d) quantities and destination of HHW shipped from the Site; and
(e) quantities of waste returned to the public as noted in Condition 5.11.

6.0 TRAINING

Employees and Training

6.1 A training plan for all employees that operate any aspect of the site shall be developed and implemented by the Operator. Only Trained Personnel shall operate any aspect of the Site or carry out any activity required under this ECA. For the purpose of this ECA "trained" means knowledgeable either through instruction or practice in:

(a) the relevant waste management legislation including EPA, Reg. 347, regulations and guidelines;
(b) major environmental and occupational health and safety concerns pertaining to the waste to be handled;
(c) the proper handling of wastes;
(d) the management procedures including the use and operation of equipment for the processes and wastes to be handled;
(e) the emergency response procedures;
(f) the specific written procedures for the control of nuisance conditions;
(g) the terms, conditions and operating requirements of this ECA and,

(h) proper inspection, receiving and recording procedures and the activities to be undertaken during and after a load rejection.

7.0 INSPECTIONS AND RECORD KEEPING

Daily Inspections and Log Book

7.1 An inspection of the entire Site and all equipment on the Site shall be conducted each day the Site is in operation to ensure that the site is being operated in compliance with this ECA. Any deficiencies discovered as a result of the inspection shall be remedied immediately, including temporarily ceasing operations at the Site if needed.

7.2 A record of the inspections shall be kept in a daily log book or a dedicated electronic file that includes:

(a) the name and signature of person that conducted the inspection;
(b) the date and time of the inspection;
(c) the list of any deficiencies discovered;
(d) the recommendations for remedial action; and
(e) the date, time and description of actions taken.

7.3 A record shall be kept in the daily log book of all the following:

(a) the type, date and time of arrival, hauler, and estimated quantity (i.e. cubic metres) of all waste received at the Site; and,
(b) a list of the refusal of waste shipments, the reason(s) for refusal, and the origin of the waste, if known.

Site Inspections

7.4 During Site operations, the Owner shall inspect the Site monthly for the following items but not limited to these items:

(a) general settlement areas or depressions on the waste mound;
(b) shear and tension cracks on the waste mound;
(c) condition of surface water drainage works;
(d) erosion and sedimentation in surface water drainage system;
(e) presence of any ponded water on the waste mound;
(f) evidence of vegetative stress, distressed poplars or side slope plantings on or adjacent to the waste mound; and
(g) condition of fence surrounding the Site.

7.5 The Owner shall inspect the waste mound and surrounding areas weekly for presence of leachate seeps. Any leachate seeps that are discovered shall be repaired within 48 hours of notice by the Owner.

Record Retention

7.6 Except as authorized in writing by the Director, all records required by this ECA shall be retained at the Site for a minimum of two (2) years from their date of creation.

7.7 The Owner shall retain all documentation listed in Schedule "A" for as long as this ECA is valid.

7.8 All monthly summary reports are to be kept at the Site until they are included in the Annual Report.

7.9 The Owner shall retain employee training records as long as the employee is working at the Site.

7.10 The Owner shall make all of the above documents available for inspection upon request of Ministry staff.

8.0 MONITORING

8.1 The Owner shall monitor surface water and ground water as follows:

(a) Ground water and surface water sampling is to be carried out twice per year, and the two sampling events must be a minimum of 60 days apart.
(b) Groundwater samples are to be collected from monitoring wells MW1, MW2, MW3A, MW3B, MW4, MW5, MW6, MW7, MW8, MW9, MW10A, MW10B and MW 11, (at the locations indicated in Item 6).
(c) Surface water samples are to be collected at existing locations SW1, SW2, and SW3.
(d) Ground water and surface water samples are to be analyzed for: pH (lab and field), conductivity (lab and field), temperature (field only), total dissolved solids, hardness, dissolved organic carbon (DOC), phenols, total Kjeldahl nitrogen (TKN), ammonia-N, organic nitrogen, sodium, potassium, calcium, magnesium, chloride, nitrate, nitrite, orthophosphate, sulphate, alkalinity (as CaCO3), aluminum, antimony, arsenic, barium, beryllium, bismuth, boron, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, molybdenum, nickel, total phosphorous, selenium, silicon, silver, strontium, thallium, tin, titanium, vanadium, and zinc.
(e) For the ground water samples, the ion balance must be calculated for each well for quality control purposes, and an ion balance exceeding 10% should be investigated and explained.
(f) Surface water samples are to also be analyzed for total suspended solids, chemical oxygen demand and biological oxygen demand.
(g) A sample from the source well MW5 is to be analyzed annually for volatile organic compounds (VOC's) – acetone, benzene, bromodichloromethane, chloroform, 1,4-dichlorobenzene, ethylbenzene, methylene chloride (dichloromethane), methyl ethyl ketone (MEK), toluene, trichloroethene (trichloroethylene), vinyl chloride, m-xylene, p-xylene, and o-xylene.
(h) All analysis must use detection limits suitable for comparison with Ontario Drinking Water Standards and/or Provincial Water Quality Objectives.

8.2 A certified Professional Geoscientist or Engineer possessing appropriate hydrogeologic training and experience shall execute or directly supervise the execution of the groundwater monitoring and reporting program.

Groundwater Wells and Monitors

8.3 The Owner shall ensure that all groundwater monitoring wells which form part of the monitoring program are properly capped, locked and protected from damage.

8.4 Where landfilling is to proceed around monitoring wells, suitable extensions shall be added to the wells and the wells shall be properly re-secured.

8.5 Any groundwater monitoring wells included in the on-going monitoring program that are damaged shall be assessed, repaired, replaced or decommissioned by the Owner, as required.

(a) The Owner shall repair or replace any monitoring well which is destroyed or in any way made to be inoperable for sampling such that no more than one regular sampling event is missed.

(b) All monitoring wells which are no longer required as part of the groundwater monitoring program, and have been approved by the District Manager for abandonment, shall be decommissioned by the Owner, as required, in accordance with O.Reg. 903, that will prevent contamination through the abandoned well. A report on the decommissioning of the well shall be included in the Annual Report for the period during which the well was decommissioned.

Changes to the Monitoring Plan

8.6 (a) The Owner may request to make changes to the monitoring program(s) to the District Manager in accordance with the recommendations of the annual report. The Owner shall make clear reference to the proposed changes in separate letter that shall accompany the annual report.

(b) Within fourteen (14) days of receiving the written correspondence from the District Manager confirming that the District Manager is in agreement with the proposed changes to the environmental monitoring program, the Owner shall forward a letter identifying the proposed changes and a copy of the correspondences from the District Manager and all other correspondences and responses related to the changes to the monitoring program, to the Director requesting the ECA be amended to approve the proposed changes to the environmental monitoring plan prior to implementation.

(c) In the event any other changes to the environmental monitoring program are proposed outside of the recommendation of the annual report, the Owner shall follow current ministry procedures for seeking approval for amending the ECA.

Compliance Criteria

8.7 The Owner shall ensure the Site is in compliance with Ministry Guideline B-7 Reasonable Use Concept is applied and met at all points on the property line which are impacted by leachate from the Site.

9.0 TRIGGER MECHANISMS AND CONTINGENCY PLANS

9.1 The Trigger Mechanism Plan shall be carried out by the Owner in accordance with Item 6 set out in

Schedule "A".

9.2 In the event of a confirmed exceedence of a site-specific trigger level relating to leachate mounding or groundwater or surface water impacts due to leachate at the Site's CAZ limit, the Owner shall immediately notify the District Manager, and an investigation into the cause and the need for implementation of remedial or contingency actions shall be carried out by the Owner in accordance with the approved trigger mechanisms and associated contingency plans.

9.3 If monitoring results, investigative activities and/or trigger mechanisms indicate the need to implement contingency measures, the Owner shall ensure that the following steps are taken:

(a) The Owner shall notify the District Manager, in writing of the need to implement contingency measures, no later than 30 days after confirmation of the exceedences;
(b) Detailed plans, specifications and descriptions for the design, operation and maintenance of the contingency measures shall be prepared and submitted by the Owner to the District Manager for approval; and
(c) The contingency measures shall be implemented by the Owner upon approval by the District Manager.

9.4 The Owner shall ensure that any proposed changes to the site-specific trigger levels for leachate impacts to the surface water or groundwater, are approved in advance by the Director via an amendment to this ECA.

9.5 (a) If expanding the contaminant attenuation zone is required as a remedial measure necessary for proper operation of a landfilling site, the Owner of the landfilling site must own property rights respecting the contaminant attenuation zone, unless,
(i) the contaminant attenuation zone is on Crown land and the Crown has agreed in writing to the use of the land for that purpose; or
(ii) the contaminant attenuation zone is on a public road and the road authority has agreed in writing to the use of the land for that purpose.

(b) The holder of the ECA must continue to own the property rights for all of the contaminating life span of the Site.

(c) The ownership of the property rights must include the right to,
(i) discharge contaminants from the landfilling site into the contaminant attenuation zone;
(ii) enter into the contaminant attenuation zone and onto the surface above the contaminant attenuation zone for purposes of testing, monitoring, intercepting contaminants and carrying out remedial work;
(iii) install, operate and maintain works, for the purposes mentioned in clause (b), in or above the contaminant attenuation zone, including on the surface above the contaminant attenuation zone; and
(iv) prevent the owner of the land in which the contaminant attenuation zone is located from paving, erecting a structure or making any use of land above or in the vicinity of the contaminant attenuation zone that would interfere with the functioning of the contaminant attenuation zone or with the exercise of any of the rights mentioned in this subsection.

10.0 COMPLAINTS PROCEDURE

10.1 If at any time, the Owner receives complaints regarding the operation of the Site, the Owner shall respond to these complaints according to the following procedure:

(a) The Owner shall record and number each complaint, either electronically or in a log book, and shall include the following information: the nature of the complaint, the name, address and the telephone number of the complainant if the complainant will provide this information and the time and date of the complaint;

(b) The Owner, upon notification of the complaint, shall initiate appropriate steps to determine all possible causes of the complaint, proceed to take the necessary actions to eliminate the cause of the complaint and forward a formal reply to the complainant; and

(c) The Owner shall complete a report written within one (1) week of the complaint date, listing the actions taken to resolve the complaint and any recommendations for remedial measures, and managerial or operational changes to reasonably avoid the recurrence of similar incidents. A copy of the report shall be retained on-site.

10.2 The Owner shall post site complaints procedure at site entrance along with the name and phone number of a suitable, local contact to receive complaints or questions related to the Site. All complaints and the Owner's actions taken to remedy the complaints must be summarized in the Annual Report.

11.0 EMERGENCY SITUATIONS

11.1 In the event of a fire or discharge of a contaminant to the environment, Site staff shall contact the Ministry's Spills Action Centre (1-800-268-6060) and the District Office of the Ministry.

11.2 The Owner shall submit to the District Manager a written report within 3 days of the spill or incident, outlining the nature of the incident, remedial measures taken and measures taken to prevent future occurrences at the Site.

11.3 The Owner shall prepare an Emergency Response Manual for the Site and submit to the District Manager within 60 days of the issuance of this amendment, in consultation with local emergency response agencies. The Emergency Response Manual should indicate the responsibility of each of the stakeholders with respect to handling possible emergency situations.

11.4 The Emergency Response Manual shall be updated on a regular basis and be provided to the District Manager within one month of the revision date.

11.5 The Owner shall ensure that adequate fire fighting and contingency spill clean up equipment is available and that emergency response personnel are familiar with its use and location.

12.0 ANNUAL REPORTING

12.1 A written report on the development, operation, monitoring and closure of the Site, shall be completed annually (the "Annual Report"). The Annual Report shall be submitted to the Regional Director and the District Manager by **March 31st**, **2022** and submitted every three years by March 31 thereafter and shall cover the three years ending the preceding December 31st.

12.2 The Annual Report shall include the following:

(a) the results and an interpretive analysis of the results of environmental monitoring program, including an assessment of the need to amend the monitoring program;
(b) an assessment with regards to compliance of the groundwater quality at the property boundary and compliance point with regards to Guideline B-7 - Reasonable Use Concept;
(c) an assessment of the operation and performance of all engineered facilities, the need to amend the design or operation of the Site, and the adequacy of and need to implement the contingency plans;
(d) an assessment of the efficiency of the leachate management at the Site;
(e) site plans showing the existing contours of the Site;
(f) areas of landfilling operation during the reporting period;
(g) areas of intended operation during the next reporting period;
(h) areas of excavation during the reporting period;
(i) the progress of final cover, vegetative cover, and any intermediate cover application;
(j) previously existing site facilities;
(k) facilities installed during the reporting period;
(l) Site preparations and facilities planned for installation during the next reporting period;
(m) calculations of the volume of waste, daily and intermediate cover, and final cover deposited or placed at the Site during the reporting period and a calculation of the total volume of Site capacity used during the reporting period;
(n) a summary of the quantity of any leachate or pre-treated leachate removed from the Site during each operating week;
(o) a summary of the weekly, maximum daily and total annual quantity (tonnes) of waste received at the Site;
(p) a summary of type and quantity of all wastes received and transferred from the Site (from both the Waste Transfer Facility and Household Hazardous Waste Depot) and the destination the wastes were being shipped to;
(q) a summary of any complaints received and the responses made;
(r) a discussion of any operational problems encountered at the Site and corrective action taken;
(s) a summary of the amount of wastes refused for acceptance at the Site, the reasons for refusal and the carrier who brought the waste to the Site;
(t) a report on the status of all monitoring wells and a statement as to compliance with Ontario Regulation 903;
(u) any other information with respect to the site which the District Manager or Regional Director may require from time to time;
(v) a statement of compliance with all conditions of this ECA and other relevant Ministry groundwater and surface water requirements;
(w) a confirmation that the site inspection program as required by this ECA has been complied with by the Owner;

(x) any changes in operations, equipment or procedures employed at the Site; and
(y) recommendations regarding any proposed changes in operations of the Site.

13.0 SITE CLOSURE

13.1 By September 30, 2021, the Owner shall place a minimum of 300 mm of cover on all areas of the site, except on the active portion of the landfill as specified in Condition 3.5 of the Approval.

13.2 By December 31, 2021, the Owner shall place a minimum of 300 mm of cover on the portion of the landfill outlined in Condition 3.5 (the portion of the landfill that will be used until December 31, 2021).

13.3 By December 31, 2021, the owner shall provide an updated Closure Plan to the Director for approval.

13.4 By December 31, 2022, the owner shall complete all closure activities outlined in the approved Closure Plan for the entire site, including final cover and the establishment of vegetative cover.

Schedule "A" forms part of this Environmental Compliance Approval.

SCHEDULE "A"

1. Application for a Certificate of Approval for a Waste Disposal Site dated Letter dated May 8, 1972.

2. Letter dated March 29, 1989 from Mr. J. de Bakker of the Ministry of the Environment to Mr. R. Sinclair, Clerk-Administrator for the Township of Geraldton.

3. Report titled "Updated Design and Operations Plan, Geraldton Landfill, Municipality of Greenstone, Ontario" dated May 1, 2007 prepared by Trow Associates Inc.

4. Report titled "2007 Environmental Quality Monitoring Report, Geraldton Landfill, Municipality of Greenstone, Ontario" dated February 15, 2008 prepared by Trow Associates Inc.

5. Letter dated November 23, 2009, Regarding Revised Trigger Values for Groundwater, Geraldton Landfill, from R. Rinnie and D. Georgiou, Trow Associates Inc., to Tes. Gebrezghi, Ministry of Environment.

6. Report Entitled "Municipality of Greenstone - Updated Design and Operations Plan with Closure Plan - Geraldton Landfill, Municipality of Greenstone, Ontario" prepared by exp Services (Project Number THB-00006189-IE-THB-200) dated October 16, 2012.

7. Letter dated June 20, 2014 addressed to Mr. Dale Gable, Ministry of the Environment from Mr. Demetri Georgiou and Mr. Ahileas Mitsopoulous, exp. Services Inc, requesting and providing the rationale for the continued use of the Site while undertaking the EA for the long-term waste management strategy for the the Municipality.

8. Report Entitled "Amendment to ECA No. A7004401 - Geraldton Landfill Site, Greenstone Municipality, District of Thunder Bay" prepared by exp Services (Project Number THB-00006189-LE) dated September 9, 2015.

9. Report titled "Updated Closure Plan Geraldton Landfill, Municipality of Greenstone, Ontario" prepared by exp Services Inc. dated December 2, 2016.

10. Letter dated October 12, 2018, and signed by Ahileas Mitsopoulos and Demetri N. Georgiou, EXP Services Inc., addressed to Dale Gable and Matthew Wilson, Ministry of the Environment, including all figures.

11. Letter from EXP Services Inc. dated October 28, 2019, signed by Ahileas Mitsopoulos and Demetri N. Georgiou to the Ministry of the Environment, re: Amendment to ECA no. A7004401, including all attachments.

12. Email dated December 10, 2019 from Ahileas Mitsopoulos, EXP addressed to Maliha Tariq, MECP re: most updated volume landfilled on-site and final cover details.

13. Environmental Compliance Approval Application. Amendment to ECA No. A7004401 - Emergency Use for Geraldton Waste Disposal Site. Signed by Brian Aaltonen, dated November 9, 2020.

14. Figure 1, Updated Survey Plan (2020) Geraldton Landfill, Municipality of Greenstone. Exp Services Inc. November 3, 2020.

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

1. *The reason for Condition 1.1, 1.2, 1.3, 1.4 and 1.5 is to ensure that the Site is designed, operated, monitored and maintained in accordance with the application and supporting documentation submitted by the Owner, and not in a manner which the Director has not been asked to consider.*

2. *The reason for Conditions 1.6, 1.7, 1.8, 1.12, 1.13, 1.14, 1.15 and 5.1 is to clarify the legal rights and responsibilities of the Owner under this ECA.*

3. *Conditions 1.9, 1.10 and 1.11 are included to ensure that the appropriate Ministry staff have ready access to information and the operations of the Site, which are approved under this ECA.*

4. *Conditions 1.16, 1.17 and 1.18 are included, pursuant to subsection 197(1) of the EPA, to provide that any persons having an interest in the Site are aware that the land has been approved and used for the purposes of waste disposal.*

5. *The reasons for Condition 1.19 are to restrict potential transfer or encumbrance of the Site without the approval of the Director and to ensure that any transfer of encumbrance can be made only on the basis that it will not endanger compliance with this ECA.*

6. *The reasons for Condition 1.20 and 1.21 are to ensure that the Site is operated under the corporate name which appears on the application form submitted for this approval and to ensure that the Director is informed of any changes.*

7. *The reason for Condition 1.22 is to ensure that appropriate Ministry staff have ready access to the Site for inspection of facilities, equipment, practices and operations required by the conditions in this ECA. This condition is supplementary to the powers of entry afforded a Provincial Officer pursuant to the EPA and OWRA.*

8. *Conditions 2.1, 2.2, 3.1, 4.1, 4.2, 4.3 and 4.4 are included in order to ensure that waste disposal, waste transfer operations at the site is undertaken in accordance with applicable Ministry of the Environment regulations and guidelines. Compliance with these regulations and guidelines will ensure that the site does not cause and adverse effect on the environment.*

9. *Condition 2.3 is to ensure the Owner has a operations plans for the site that details all current operations at the site and that a copy is kept on site for the Owner, the Owner's staff and/or operator. This is to ensure the site is operating is a safe manner and the environment and human health are protected.*

10. *The reason for Condition 2.4 is to ensure the Owner maintains a buffer area around the waste mound*

to ensure adequate space is available for potential contingency plan implementation.

11. *The reason for Conditions 2.5 inclusive is to ensure that users of the Site are fully aware of important information and restrictions related to Site operations under this ECA.*

12. *The reasons for Conditions 2.6, 2.7, and 2.8 are to specify the normal hours of operation for the landfill Site and a mechanism for amendment of the hours of operation.*

13. *The reasons for Conditions 2.9, 2.10, 2.11 and 2.12 are to specify site access to/from the Site and to ensure the controlled access and integrity of the Site by preventing unauthorized access when the Site is closed and no site attendant is on duty.*

14. *The reasons for Conditions 2.13, 2.14 and 2.15 are to ensure that the Site is operated, inspected and maintained in an environmentally acceptable manner and does not result in a hazard or nuisance to the natural environment or any person.*

15. *The reason Condition 2.16 is to prevent ponding in on site ditches and any adverse impact on the environment and human health.*

16. *The reason for Condition 2.17 is to ensure steps are taken to ensure landfill gas does not pose a risk to humans or the environmental within buildings at the Site.*

17. *The reason for Condition 3.1 and 3.9 is to specify the types of waste and service area that may be accepted for disposal at the Site.*

18. *Condition 3.2 specifies the maximum amount of waste that may be received at the site based on the completed Environmental Screening Process report for the Site, and allows the Site to operate while the Municipality of Greenstone decides on a long-term waste management strategy.*

19. *The reason for Condition 3.3, 3.4, 3.5, 3.6, 3.7 and 3.8 is to specify restrictions on the extent of landfilling at this Site based on the Owner's application and supporting documentation. These limits define the approved volumetric capacity of the site. Approval to landfill beyond these limits would require an application with supporting documentation submitted to the Director.*

20. *The reason for Condition 3.9 is to ensure that landfilling operations are conducted in an environmentally acceptable manner. Daily and intermediate cover is used to control potential nuisance effects, to facilitate vehicle access on the site, and to ensure an acceptable site appearance is maintained. The proper closure of a landfill site requires the application of a final cover which is aesthetically pleasing, controls infiltration, and is suitable for the end use planned for the site.*

21. *Condition 3.11 is necessary in order to ensure that all waste loads are inspected and waste that is disposed of at the site is in accordance with the terms and conditions in this ECA.*

22. *The reason for Condition 3.12 is that open burning of municipal waste is unacceptable because of concerns with air emissions, smoke and other nuisance affects, and the potential fire hazard.*

23. Conditions 4.1, 4.2, 4.3, 4.4 and 4.5 are included to ensure that the recyclable materials are stored in their temporary storage location in a manner as to minimize a likelihood of an adverse effect or a hazard the natural environment or any person.

24. The reasons for the Conditions 5.1 through 5.12 are to approve the establishment and operation of a household hazardous waste collection depot and to ensure that the wastes are managed in a manner that protects the environment and the health and safety of the public.

25. The reason for Condition 6.1 is to ensure that the Site is supervised and operated by properly trained staff in a manner which does not result in a hazard or nuisance to the natural environment or any person.

26. The reasons for Conditions 7.1, 7.2, 7.3, 7.5 and 7.6 are to provide for the proper assessment of effectiveness and efficiency of site design and operation, their effect or relationship to any nuisance or environmental impacts, and the occurrence of any public complaints or concerns. Record keeping is necessary to determine compliance with this ECA, the EPA and its regulations.

27. The reason for Conditions 7.4, 7.7 and 12.1 and 12.2 are to ensure that accurate waste records are maintained to ensure compliance with the conditions in this ECA (such as fill rate, site capacity, record keeping, annual reporting, and financial assurance requirements), the EPA and its regulations.

28. The reason for Conditions 8.3 through 8.5 inclusive is to ensure protection of the natural environment and the integrity of the groundwater monitoring network.

29. The reason for Conditions 8.1, 8.2, 8.6 and 8.7 and are to demonstrate that the landfill site is performing as designed and the impacts on the natural environment are acceptable. Regular monitoring allows for the analysis of trends over time and ensures that there is an early warning of potential problems so that any necessary remedial/contingency action can be taken.

30. The reason for Conditions 9.1 through 9.5 is to ensure that the Owner follows a plan with an organized set of procedures for identifying and responding to unexpected but possible problems at the Site. A remedial action / contingency plan is necessary to ensure protection of the natural environment.

31. The reason for Conditions 11.1 through 11.5 is to ensure that the Municipality immediately notifies the Ministry of any spills as required in Part X of the Act so that appropriate spills response can be determined.

32. The reason for Conditions 10.1 and 10.2 is to establish a forum for the exchange of information and public dialogue on activities carried out at the landfill Site. Open communication with the public and local authorities is important in helping to maintain high standards for site operation and environmental protection.

33. The reasons for Conditions 12.1 and 12.2 are to ensure that regular review of site development, operations and monitoring data is documented and any possible improvements to site design, operations or monitoring programs are identified. An annual report is an important tool used in reviewing site activities and for determining the effectiveness of site design.

34. The reason for Conditions 13.1 through 13.4 are to ensure that final closure of the Site is completed in an aesthetically pleasing manner and to ensure the long-term protection of the natural environment.

Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). A7004401 issued on December 20, 2019

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

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

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

The Notice should also include:

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

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

This Notice must be served upon:

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

AND

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

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

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

DATED AT TORONTO this 23rd day of December, 2020

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

CM/

c: District Manager, MECP Thunder Bay - District
Ahileas Mitsopoulos, EXP Services Inc.

Ontario

Ministry of the Environment, Conservation and Parks
Ministère de l'Environnement, de la Protection de la nature et des Parcs

AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER A7004401
Issue Date: December 20, 2019

The Corporation of the Municipality of Greenstone
1800 Main St
Post Office Box, No. 70
Geraldton, Ontario
P0T 1M0

Site Location: Geraldton Waste Disposal Site
2 miles east of Junction Hwy 11 and 584, 8272 Highway 11
Greenstone Municipality, District of Thunder Bay

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

the use and operation of a 4.3 hectare landfilling/recycling site within a total site area of 30.65 hectares.

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

"Adverse Effect" means the same as the definition in the EPA;

"Approval" or "ECA" means this entire provisional Environmental Compliance Approval document, issued in accordance with Section 20.2 of the EPA, and includes any schedules to it, the application and the supporting documentation listed in Schedule "A";

"CAZ" means the Contaminant Attenuation Zone;

"Director" means any Ministry employee appointed in writing by the Minister pursuant to section 5 of the EPA as a Director for the purposes of Part V of the EPA;

"District Manager" refers to the District Manager in the Ministry of the Environment's Thunder Bay District Office;

"District Office" refers to the Ministry of the Environment Thunder Bay District Office;

"EPA" means Environmental Protection Act, R.S.O. 1990, c. E. 19, as amended from time to time;

"FBAL" refers to Fill Beyond Approved Limits;

"HHW" means household hazardous waste;

"Ministry" refers to the Ontario Ministry of the Environment, Conservation and Parks;

"Operator" has the same meaning as "operator" as defined in s.25 of the EPA;

"Owner" means any person that is responsible for the establishment or operation of the Site being approved by this ECA, and includes The Corporation of the Municipality of Greenstone, its successors and assigns;

"OWRA" means Ontario Water Resources Act, R.S.O. 1990, c. O.40, as amended from time to time;

"PA" means the Pesticides Act, R.S.O. 1990, c. P-11, as amended from time to time;

"Provincial Officer" means any person designated in writing by the Minister as a provincial officer pursuant to Section 5 of the OWRA or section 5 of the EPA or section 17 of PA;

"Refrigerant Appliances" means household appliances which use, or may use refrigerants, and which include, but is not restricted to, refrigerators, freezers and air-conditioning systems;

"Regional Director" refers to the Director of the Ministry's Northern Regional Office;

"Regulation 347" or "Reg. 347" means Regulation 347, R.R.O. 1990, made under the EPA, as amended from time to time;

"Site" or "WDS" means the entire waste disposal site, including the buffer lands, and contaminant attenuation zone at Geraldton Waste Disposal Site, Part of Mining Claim T.B. 14031, 2 miles east of junction of Hwy 11 and 584, Township of Ashmore, District of Thunder Bay;

"Substantial Completion" has the same meaning as "substantial performance" in the Construction Lien Act; and

"Trained Personnel" means competent personnel that have been trained through instruction and/or practice in accordance with Condition 6.1 of this ECA.

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

TERMS AND CONDITIONS

1.0 GENERAL

Compliance

1.1 The Requirements specified in this ECA are the requirements under the Environmental Protection Act, R.S.O. 1990. The issuance of this Approval in no way abrogates the Owner's legal obligations to take all reasonable steps to avoid violating other applicable provisions of this legislation and other legislation and regulations.

1.2 The Owner shall ensure that all communications/correspondence made pursuant to this ECA includes reference to the Environmental Compliance Approval number A412306.

1.3 The obligations imposed by the terms and conditions of this ECA are obligations of due diligence.

1.4 The Owner shall ensure that any person authorized to carry out work on or operate any aspect of the Site is notified of the ECA and the conditions herein and shall take all reasonable measures to ensure the person complies with the same.

1.5 Any person authorized to carry out work on or operate any aspect of the Site shall comply with the conditions of this ECA.

In Accordance

1.6 Except as otherwise provided for in this ECA, the Site shall be designed, developed, built, operated and maintained in accordance with the applications for ECA dated May 8, 1972 and the supporting documentation listed in Schedule "A".

Other Legal Obligations

1.7 The issuance of, and compliance with, this ECA does not:

(a) relieve any person of any obligation to comply with any provision of the EPA or any other applicable statute, regulation or other legal requirement; or
(b) limit in any way the authority of the Ministry to require certain steps be taken or to request that any further information related to compliance with this ECA be provided to the Ministry;

unless a provision of this ECA specifically refers to the other requirement or authority and clearly states that the other requirement or authority is to be replaced or limited by this ECA.

Adverse Effect

1.8 The Owner or Operator remain responsible for any contravention of any other condition of this ECA or any applicable statute, regulation, or other legal requirement resulting from any act or omission that caused the Adverse Effect or impairment of air and/or water quality.

Furnish Information

1.9 Any information requested by the Director or a Provincial Officer concerning the Site and its operation under this ECA, including but not limited to any records required to be kept by this ECA shall be provided in a timely manner.

1.10 The receipt of any information by the Ministry or the failure of the Ministry to prosecute any person or to require any person to take any action, under this ECA or under any statute, regulation or subordinate legal instrument, in relation to the information, shall not be construed as:

(a) an approval, waiver, or justification by the Ministry of any act or omission of any person that contravenes any condition of this ECA or any statute, regulation or other subordinate legal requirement; or
(b) acceptance by the Ministry of the information's completeness or accuracy.

1.11 Any information related to this ECA and contained in Ministry files may be made available to the public in accordance with the provisions of the Freedom of Information and Protection of Privacy Act, RSO 1990, CF-31.

Interpretation

1.12 Where there is a conflict between a provision of any document, including the application, referred to in this ECA, and the conditions of this ECA, the conditions in this ECA shall take precedence.

1.13 Where there is a conflict between the application and a provision in any documents listed in Schedule "A", the application shall take precedence, unless it is clear that the purpose of the document was to amend the application and that the Ministry approved the amendment in writing**.**

1.14 Where there is a conflict between any two documents listed in Schedule "A", other than the application, the document bearing the most recent date shall take precedence.

1.15 The conditions of this ECA are severable. If any condition of this ECA, or the application of any condition of this ECA to any circumstance, is held invalid or unenforceable, the application of such condition to other circumstances and the remainder of this ECA shall not be affected thereby.

Certificate of Requirement

1.16 Pursuant to Section 197 of the EPA, no person having an interest in the Site shall deal with the Site in any way without first giving a copy of this ECA to each person acquiring an interest in the Site as a result of the dealing.

1.17 In the event any additional land is acquired for the Site, then two (2) copies of a completed Certificate of Requirement, containing a registerable description of the additional lands for the Site, shall be submitted to the Director for the Director’s signature within sixty (60) calendar days of any amendment to this ECA that incorporates the land into the ECA.

1.18 In the event any additional land is acquired for the Site, then the Certificate of Requirement shall be

registered in the appropriate land registry office on title to the Site and a duplicate registered copy shall be submitted to the Director within ten (10) calendar days of receiving the Certificate of Requirement signed by the Director.

No Transfer or Encumbrance

1.19 No portion of this Site shall be transferred or encumbered prior to or after closing of the Site unless the Director is notified in advance and is satisfied with the arrangements made to ensure that all conditions of this ECA will be carried out and that sufficient financial assurance is deposited with the Ministry to ensure that these conditions will be carried out.

Change of Owner

1.20 The Owner shall notify the Director, in writing, and forward a copy of the notification to the District Manager, within 30 days of the occurrence of any changes in the following information:

(a) the ownership of the Site;
(b) the Operator of the Site;
(c) the address of the Owner or Operator;
(d) the partners, where the Owner or Operator is or at any time becomes a partnership and a copy of the most recent declaration filed under the Business Names Act , R. S. O. 1990, c. B.17, shall be included in the notification;
(e) the name of the corporation where the Owner or Operator is or at any time becomes a corporation, other than a municipal corporation, and a copy of the most current information filed under the Corporations Information Act , R. S. O. 1990, c. C.39, shall be included in the notification.

1.21 In the event of any change in the ownership of the Site, other than a change to a successor municipality, the Owner shall notify in writing the succeeding owner of the existence of this ECA, and a copy of such notice shall be forward to the Director and District Manager.

Inspections

1.22 No person shall hinder or obstruct a Provincial Officer from carrying out any and all inspections authorized by the EPA or the PA, of any place to which this ECA relates, and without limiting the foregoing:

(a) to enter upon the premises where the approved works are located, or the location where the records required by the conditions of this ECA are kept;
(b) to have access to, inspect, and copy any records required to be kept by the conditions of this ECA;
(c) to inspect the Site, related equipment and appurtenances;
(d) to inspect the practices, procedures, or operations required by the conditions of this ECA; and
(e) to sample and monitor for the purposes of assessing compliance with the terms and conditions of this ECA or the EPA or the PA.

2.0 SITE OPERATIONS

Proper Operation

2.1 The Site shall be properly operated and maintained at all times. All waste shall be managed and disposed of in accordance with the EPA, Regulation 347, and the requirements of this ECA. At no time shall the discharge of a contaminant that causes or is likely to cause an Adverse Effect be permitted.

2.2 The Owner shall ensure that the Ministry's Guideline B-7, Reasonable Use Concept, is applied at the Site boundaries.

2.3 (a) The Owner shall ensure the operations, maintenance and procedures manual for the Site includes discussions on the following items:

- (i) health and safety;
- (ii) operation and maintenance of the Site;
- (iii) waste disposal area and development;
- (iv) nuisance management;
- (v) leachate management;
- (vi) landfill gas management;
- (vii) surface water/storm water management;
- (viii) inspections and monitoring;
- (ix) contingency plans and emergency procedures;
- (x) complaints; and,
- (xi) reporting and record keeping.

(b) The operations and procedures manual shall be:

- (i) retained at the Site;
- (ii) reviewed on an annual basis and updated by the Owner as required; and
- (iii) be available for inspection by Ministry staff.

Buffer

2.4 The Owner shall ensure that the buffer as described in Item 6 in Schedule "A" is maintained.

Signage

2.5 The Owner shall place a sign which complies with local by-laws at the main entrance and exit to the Site which is legible from a distance not less than 25 m and on which is displayed in prominent letters the following information:

(a) the name of the Site and Owner;
(b) the number of the ECA;
(c) the name of the Operator;

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

Hours of Operation

2.6 (a) (i) Waste may be received at the Site between the hours of 9:00 a.m. and 6:00 p.m., Monday to Friday.

(ii) Public access to the Site for waste drop off are permitted on Tuesday, Wednesday, Thursday and Saturday between the hours of 12:00 p.m. and 5:00 p.m.

(b) Amendment to the hours of operation require approval by the Director prior to implementation.

2.7 Notwithstanding Condition 2.6, with prior written approval of the District Manager, the time periods may be extended to accommodate seasonal or unusual quantities of waste, construction activities or such factors as determined to be reasonable to the District Manager.

2.8 Upon reasonable notice to the District Manager, contingency actions may take place outside normal hours of operation. Emergency response may occur at any time as required.

Site Security

2.9 During non-operating hours, the Site entrance and exit gates will be locked or otherwise secured against access by unauthorized persons.

2.10 The Owner shall ensure that no queuing of waste vehicles will occur on public roadways.

2.11 (a) No waste shall be accepted, landfilled or removed from the site unless a Site supervisor is present and supervises the operation.

(b) The Owner shall ensure that all Site operations employees have been adequately trained prior to acceptance of waste at the Site with respect to the following:
(i) terms, conditions and operating requirements of this ECA;
(ii) the operation and management of the Site with respect to the Operations and Maintenance Manual;
(iii) relevant waste management regulations and legislation;
(iv) environmental concerns related to the waste being handled at the Site;
(v) occupational health and safety concerns pertaining to the waste being handled at the Site; and
(vi) emergency procedures and contingency plans in cases of fire, off-site impacts and any other emergency situation.

(c) The Site is deemed to be closed when a Site supervisor is not present at the Site.

(d) To assist the Site operating personnel, the Owner shall ensure that the Maintenance and Operations Manual, required by Condition 2.3, and all revisions is kept on Site at all times following commencement of landfilling.

Site Access

2.12 Access to the Site shall be via the existing entrance from Highway 11.

Vermin, Dust, Litter, Odour, Noise, Traffic

2.13 The Site shall be operated and maintained such that vermin, vectors, dust, litter, odour, noise and traffic do not create a nuisance.

Litter Control

2.14 The Owner shall take all practical steps to prevent off-site litter impacts from Site operations.

Noise

2.15 The landfill Site shall be required to operate within the noise level limits prescribed in the Ministry's document "Noise Guidelines for Landfill Sites".

Surface Water

2.16 The Owner shall take all appropriate measures to minimize surface water from coming in contact with waste. Temporary berms and ditches shall be constructed around active waste disposal areas to prevent extraneous surface water from coming in contact with the active working face.

Landfill Gas

2.17 All buildings are to be free of any landfill gas accumulation. The Owner shall provide adequate ventilation systems to relieve landfill gas accumulations in buildings if necessary.

3.0 LANDFILL OPERATIONS

Waste Type

3.1 The waste to be received at the Site for final disposal is restricted to solid non-hazardous waste.

Capacity

3.2 (a) The original maximum volume of waste and cover materials, excluding final cover for the Site was **173,000 m^3**.

(b) The maximum amount of waste approved for final disposal, excluding final cover at the Site based on the completed Environmental Screening Report Process, dated May 1, 2013, is **273,000 m^3**.

(c) (i) Notwithstanding Condition 3.2 (b), the landfill Site is approved for continued use for a maximum volume of **294,130 m^3** of waste and cover material, excluding final cover, in accordance with Item 9 of Schedule "A".

(ii) The Site is hereby permitted to continue to accept waste for final disposal until **December 31, 2020**.

(iii) Condition 3.2 (c) (i) does not constitute an approved expansion from the volume currently approved by Condition 3.2 (b). Upon the issuance of any future Environmental Assessment Act approval, the volume of waste accepted under Condition 3.2 (c) (i) must be included as part of any expansion volume received.

(d) In the event that the Owner has not completed the Environment Assessment Act process by the date in which the Site is permitted to receive waste for final disposal as stated in Condition 3.2 (c) (ii) and would like to continue to receive waste at the Site for final disposal past that date, the Owner shall submit an application to the Director at least **thirty (30) days** prior to the end date for accepting waste for final disposal in Condition 3.2 (c) (ii) requesting that an extension to the date for final disposal be extended. To support the request, the Owner include but not be limited to following to submit the request:

(i) A drawing showing the proposed location where the waste will be placed;

(ii) A summary of the environmental conditions/compliance at the Site; and

(iii) A current status of the Environmental Assessment Act process for the long-term waste management strategy for the Municipality of Greenstone.

Waste Placement

3.3 (a) No waste shall be landfilled outside of the limit of fill area for the Site as shown in Figure 2 of Item 6 in Schedule "A".

(b) The Owner shall ensure the limit of the landfill as shown in Figure 2 of Item 6 of Schedule "A" is clearly staked with permanent markers.

3.4 (a) No waste shall be landfilled at any time above the final waste grades and maximum elevation of 348.55 m excluding final cover, as shown in Figure 6 of Item 9 of Schedule "A".

(b) Final slopes above grade at the time of Site closure within the waste fill area shall be within the range of 4H:1V (25%) and 20H:1V (5%).

3.5 Waste placement shall occur at a minimum 1 meter above the highest groundwater table elevation at the Site.

3.6 No waste shall be landfilled in the buffer area or additional waste be placed in the FBAL.

3.7 The Owner shall deposit waste in a manner that minimizes exposure area at the landfill working face and all waste shall be compacted before cover is applied.

Cover Material

3.8 (a) Daily Cover - By the end of each working week, the entire working face shall be compacted and covered with a minimum thickness of 150 mm of soil cover or an approved thickness of alternative cover material.

(b) Intermediate Cover - In areas where landfilling has been temporarily discontinued for six (6) months or more, a minimum thickness of 300 mm of soil cover or an approved thickness of alternative cover material shall be placed.

Service Area

3.9 Only waste generated within the boundaries of the Municipality of Greenstone may be received for disposal at this Site.

Waste Inspection

3.10 All loads of waste must be properly inspected by Trained Personnel prior to disposal at the Site and waste vehicles must be diverted to appropriate areas for waste disposal.

Burning Waste Prohibited

3.11 Burning of waste at the Site is prohibited.

4.0 WASTE TRANSFER STATION

Waste Transfer Facility

4.1 The Owner shall ensure that:

(a) all bins and waste storage areas are clearly labelled;
(b) all lids or doors on bins shall be kept closed during non-operating hours and during the high wind events; and
(c) if necessary to prevent litter, waste storage areas shall be covered during the high winds events.

4.2 The Owner shall provide a segregated area for the storage of Refrigerant Appliances so that the following are ensured:

(a) all Refrigerant Appliances have been tagged to indicate that the refrigerant has been removed by a licensed technician. The tag number shall be recorded in the log book and shall remain affixed to the appliance until transferred from the Site; or

(b) all Refrigerant Appliances accepted at the Site, which have not been tagged by a licensed technician to verify that the equipment no longer contains refrigerants, are stored segregated, in a clearly marked area, in an upright position and in a manner which allows for the safe handling and transfer from the Site for removal of refrigerants as required by O. Reg. 189; and

(c) all Refrigerant Appliances received on-site shall either have the refrigerant removed prior to being transferred from the Site or shall be shipped off-site only to facilities where the refrigerants can be removed by a licensed technician in accordance with O. Reg. 189.

4.3 Propane cylinders shall be stored in a segregated area in a manner which prevents cylinders from being knocked over or cylinder valves from breaking.

4.4 The Owner shall transfer waste and recyclable materials from the Site as follows:

(a) recyclable materials shall be transferred off-site once their storage bins are full;
(b) scrap metal shall be transferred off-site at least twice a year;
(c) tires shall be transferred off-site as soon as a load for the contractor hired by the Owner has accumulated or as soon as the accumulated volume exceeds the storage capacity of its bunker; and
(d) immediately, in the event that waste is creating an odour or vector problem.

4.5 The Owner shall notify the appropriate contractors that waste and recyclable wastes that are to be transferred off the Site are ready for removal. Appropriate notice time, as determined by the contract shall be accommodated in the notification procedure.

5.0 HOUSEHOLD HAZARDOUS WASTE DEPOT

HHW Facility Operations

5.1 The HHW depot shall not receive more than 5 cubic metres of HHW per day.

5.2 The HHW depot shall not store in excess of 10 cubic metres of HHW on Site.

5.3 HHW shall not be stored at the Site for longer than one hundred eighty (180) days, unless the consent of the District Manager has been obtained, with the exception of waste oil which shall be stored on Site in accordance with Condition 5.2.

5.4 All household hazardous waste received and stored must be managed in accordance with Regulation 347, and with the Ministry's document entitled "Household Hazardous Waste Collection and Facility Guidelines" dated May 1993.

5.5 All storage of liquid wastes shall be in accordance with this Ministry's publication "Guidelines of

Environmental Protection Measures at Chemical Storage Facilities", dated October 1978 as amended.

5.6 All HHW shall be stored in secondary containment that is adequate to contain any spills or leaks. Segregated secondary containment shall be provided for incompatible types of waste.

5.7 Incoming HHW shall be inspected by Trained Personnel, prior to being accepted at the Site, to ensure that the Site is approved to accept that type of waste.

5.8 All containers shall be clearly labelled indicating the type and nature of the hazardous waste stored as required by regulation. All points of access to the Site shall be posted to warn that the area contains hazardous materials.

5.9 No radioactive wastes shall be accepted at this Site.

5.10 Oil and oil-based paints which have been manufactured prior to 1972; or whose manufacturing date cannot be determined, may contain PCBs and shall be handled as follows:

(a) The oil and oil-based paints shall not be mixed (bulked) with other paints prior to testing. Paints which are lab-packed are not considered to be mixed under this ECA;
(b) The oil and oil-based paints shall be tested by a certified laboratory for PCB content and shall be handled in the manner outlined in Condition 5.10 (c) if found to contain PCBs;
(c) If the oil and oil-based paints are found to have PCBs at or above levels identified in Condition 5.10 (d), it shall be forthwith reported to the District Manager and shall be managed in accordance with Regulation 362 and stored or removed from the Site to an approved PCB storage site, in accordance with written instructions from the District Manager; and
(d) The oil and oil-based paints shall not be distributed for reuse if they have any measurable PCB content. The oil and oil-based paint is considered to be a PCB waste, if measured levels are equal to or greater than 50 parts per million.

5.11 Except for oil based paints that become classified as PCB Waste, paints may be offered for reuse to the public. Records shall be kept of the type, volume and recipient of paint returned to the public.

5.12 The Owner shall maintain, at the Site, a log book which records daily, the following information:

(a) date of record;
(b) types, quantities and source of HHW received;
(c) quantities of HHW stored at the Site;
(d) quantities and destination of HHW shipped from the Site; and
(e) quantities of waste returned to the public as noted in Condition 5.11.

6.0 TRAINING

Employees and Training

6.1 A training plan for all employees that operate any aspect of the site shall be developed and implemented by the Operator. Only Trained Personnel shall operate any aspect of the Site or carry out any activity required under this ECA. For the purpose of this ECA "trained" means knowledgeable either through instruction or practice in:

(a) the relevant waste management legislation including EPA, Reg. 347, regulations and guidelines;
(b) major environmental and occupational health and safety concerns pertaining to the waste to be handled;
(c) the proper handling of wastes;
(d) the management procedures including the use and operation of equipment for the processes and wastes to be handled;
(e) the emergency response procedures;
(f) the specific written procedures for the control of nuisance conditions;
(g) the terms, conditions and operating requirements of this ECA and,
(h) proper inspection, receiving and recording procedures and the activities to be undertaken during and after a load rejection.

7.0 INSPECTIONS AND RECORD KEEPING

Daily Inspections and Log Book

7.1 An inspection of the entire Site and all equipment on the Site shall be conducted each day the Site is in operation to ensure that the site is being operated in compliance with this ECA. Any deficiencies discovered as a result of the inspection shall be remedied immediately, including temporarily ceasing operations at the Site if needed.

7.2 A record of the inspections shall be kept in a daily log book or a dedicated electronic file that includes:

(a) the name and signature of person that conducted the inspection;
(b) the date and time of the inspection;
(c) the list of any deficiencies discovered;
(d) the recommendations for remedial action; and
(e) the date, time and description of actions taken.

7.3 A record shall be kept in the daily log book of all the following:

(a) the type, date and time of arrival, hauler, and estimated quantity (i.e. cubic metres) of all waste received at the Site; and,
(b) a list of the refusal of waste shipments, the reason(s) for refusal, and the origin of the waste, if known.

Site Inspections

7.4 During Site operations, the Owner shall inspect the Site monthly for the following items but not limited

to these items:

(a) general settlement areas or depressions on the waste mound;
(b) shear and tension cracks on the waste mound;
(c) condition of surface water drainage works;
(d) erosion and sedimentation in surface water drainage system;
(e) presence of any ponded water on the waste mound;
(f) evidence of vegetative stress, distressed poplars or side slope plantings on or adjacent to the waste mound; and
(g) condition of fence surrounding the Site.

7.5 The Owner shall inspect the waste mound and surrounding areas weekly for presence of leachate seeps. Any leachate seeps that are discovered shall be repaired within 48 hours of notice by the Owner.

Record Retention

7.6 Except as authorized in writing by the Director, all records required by this ECA shall be retained at the Site for a minimum of two (2) years from their date of creation.

7.7 The Owner shall retain all documentation listed in Schedule "A" for as long as this ECA is valid.

7.8 All monthly summary reports are to be kept at the Site until they are included in the Annual Report.

7.9 The Owner shall retain employee training records as long as the employee is working at the Site.

7.10 The Owner shall make all of the above documents available for inspection upon request of Ministry staff.

8.0 MONITORING

8.1 The Owner shall monitor surface water and ground water as follows:

(a) Ground water and surface water sampling is to be carried out twice per year, and the two sampling events must be a minimum of 60 days apart.
(b) Groundwater samples are to be collected from monitoring wells MW1, MW2, MW3A, MW3B, MW4, MW5, MW6, MW7, MW8, MW9, MW10A, MW10B and MW 11, (at the locations indicated in Item 6).
(c) Surface water samples are to be collected at existing locations SW1, SW2, and SW3.
(d) Ground water and surface water samples are to be analyzed for: pH (lab and field), conductivity (lab and field), temperature (field only), total dissolved solids, hardness, dissolved organic carbon (DOC), phenols, total Kjeldahl nitrogen (TKN), ammonia-N, organic nitrogen, sodium, potassium, calcium, magnesium, chloride, nitrate, nitrite, orthophosphate, sulphate, alkalinity (as CaCO3), aluminum, antimony, arsenic, barium, beryllium, bismuth, boron, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, molybdenum, nickel, total phosphorous,

selenium, silicon, silver, strontium, thallium, tin, titanium, vanadium, and zinc.

(e) For the ground water samples, the ion balance must be calculated for each well for quality control purposes, and an ion balance exceeding 10% should be investigated and explained.

(f) Surface water samples are to also be analyzed for total suspended solids, chemical oxygen demand and biological oxygen demand.

(g) A sample from the source well MW5 is to be analyzed annually for volatile organic compounds (VOC's) – acetone, benzene, bromodichloromethane, chloroform, 1,4-dichlorobenzene, ethylbenzene, methylene chloride (dichloromethane), methyl ethyl ketone (MEK), toluene, trichloroethene (trichloroethylene), vinyl chloride, m-xylene, p-xylene, and o-xylene.

(h) All analysis must use detection limits suitable for comparison with Ontario Drinking Water Standards and/or Provincial Water Quality Objectives.

8.2 A certified Professional Geoscientist or Engineer possessing appropriate hydrogeologic training and experience shall execute or directly supervise the execution of the groundwater monitoring and reporting program.

Groundwater Wells and Monitors

8.3 The Owner shall ensure that all groundwater monitoring wells which form part of the monitoring program are properly capped, locked and protected from damage.

8.4 Where landfilling is to proceed around monitoring wells, suitable extensions shall be added to the wells and the wells shall be properly re-secured.

8.5 Any groundwater monitoring wells included in the on-going monitoring program that are damaged shall be assessed, repaired, replaced or decommissioned by the Owner, as required.

(a) The Owner shall repair or replace any monitoring well which is destroyed or in any way made to be inoperable for sampling such that no more than one regular sampling event is missed.

(b) All monitoring wells which are no longer required as part of the groundwater monitoring program, and have been approved by the District Manager for abandonment, shall be decommissioned by the Owner, as required, in accordance with O.Reg. 903, that will prevent contamination through the abandoned well. A report on the decommissioning of the well shall be included in the Annual Report for the period during which the well was decommissioned.

Changes to the Monitoring Plan

8.6 (a) The Owner may request to make changes to the monitoring program(s) to the District Manager in accordance with the recommendations of the annual report. The Owner shall make clear reference to the proposed changes in separate letter that shall accompany the annual report.

(b) Within fourteen (14) days of receiving the written correspondence from the District Manager confirming that the District Manager is in agreement with the proposed changes to the environmental monitoring program, the Owner shall forward a letter identifying the proposed changes and a copy of the correspondences from the District Manager and all other

correspondences and responses related to the changes to the monitoring program, to the Director requesting the ECA be amended to approve the proposed changes to the environmental monitoring plan prior to implementation.

(c) In the event any other changes to the environmental monitoring program are proposed outside of the recommendation of the annual report, the Owner shall follow current ministry procedures for seeking approval for amending the ECA.

Compliance Criteria

8.7 The Owner shall ensure the Site is in compliance with Ministry Guideline B-7 Reasonable Use Concept is applied and met at all points on the property line which are impacted by leachate from the Site.

9.0 TRIGGER MECHANISMS AND CONTINGENCY PLANS

9.1 The Trigger Mechanism Plan shall be carried out by the Owner in accordance with Item 6 set out in Schedule "A".

9.2 In the event of a confirmed exceedence of a site-specific trigger level relating to leachate mounding or groundwater or surface water impacts due to leachate at the Site's CAZ limit, the Owner shall immediately notify the District Manager, and an investigation into the cause and the need for implementation of remedial or contingency actions shall be carried out by the Owner in accordance with the approved trigger mechanisms and associated contingency plans.

9.3 If monitoring results, investigative activities and/or trigger mechanisms indicate the need to implement contingency measures, the Owner shall ensure that the following steps are taken:

(a) The Owner shall notify the District Manager, in writing of the need to implement contingency measures, no later than 30 days after confirmation of the exceedences;
(b) Detailed plans, specifications and descriptions for the design, operation and maintenance of the contingency measures shall be prepared and submitted by the Owner to the District Manager for approval; and
(c) The contingency measures shall be implemented by the Owner upon approval by the District Manager.

9.4 The Owner shall ensure that any proposed changes to the site-specific trigger levels for leachate impacts to the surface water or groundwater, are approved in advance by the Director via an amendment to this ECA.

9.5 (a) If expanding the contaminant attenuation zone is required as a remedial measure necessary for proper operation of a landfilling site, the Owner of the landfilling site must own property rights respecting the contaminant attenuation zone, unless,
(i) the contaminant attenuation zone is on Crown land and the Crown has agreed in writing to the use of the land for that purpose; or

(ii) the contaminant attenuation zone is on a public road and the road authority has agreed in writing to the use of the land for that purpose.

(b) The holder of the ECA must continue to own the property rights for all of the contaminating life span of the Site.

(c) The ownership of the property rights must include the right to,
(i) discharge contaminants from the landfilling site into the contaminant attenuation zone;
(ii) enter into the contaminant attenuation zone and onto the surface above the contaminant attenuation zone for purposes of testing, monitoring, intercepting contaminants and carrying out remedial work;
(iii) install, operate and maintain works, for the purposes mentioned in clause (b), in or above the contaminant attenuation zone, including on the surface above the contaminant attenuation zone; and
(iv) prevent the owner of the land in which the contaminant attenuation zone is located from paving, erecting a structure or making any use of land above or in the vicinity of the contaminant attenuation zone that would interfere with the functioning of the contaminant attenuation zone or with the exercise of any of the rights mentioned in this subsection.

10.0 COMPLAINTS PROCEDURE

10.1 If at any time, the Owner receives complaints regarding the operation of the Site, the Owner shall respond to these complaints according to the following procedure:

(a) The Owner shall record and number each complaint, either electronically or in a log book, and shall include the following information: the nature of the complaint, the name, address and the telephone number of the complainant if the complainant will provide this information and the time and date of the complaint;
(b) The Owner, upon notification of the complaint, shall initiate appropriate steps to determine all possible causes of the complaint, proceed to take the necessary actions to eliminate the cause of the complaint and forward a formal reply to the complainant; and
(c) The Owner shall complete a report written within one (1) week of the complaint date, listing the actions taken to resolve the complaint and any recommendations for remedial measures, and managerial or operational changes to reasonably avoid the recurrence of similar incidents. A copy of the report shall be retained on-site.

10.2 The Owner shall post site complaints procedure at site entrance along with the name and phone number of a suitable, local contact to receive complaints or questions related to the Site. All complaints and the Owner's actions taken to remedy the complaints must be summarized in the Annual Report.

11.0 EMERGENCY SITUATIONS

11.1 In the event of a fire or discharge of a contaminant to the environment, Site staff shall contact the

Ministry's Spills Action Centre (1-800-268-6060) and the District Office of the Ministry.

11.2 The Owner shall submit to the District Manager a written report within 3 days of the spill or incident, outlining the nature of the incident, remedial measures taken and measures taken to prevent future occurrences at the Site.

11.3 The Owner shall prepare an Emergency Response Manual for the Site and submit to the District Manager within 60 days of the issuance of this amendment, in consultation with local emergency response agencies. The Emergency Response Manual should indicate the responsibility of each of the stakeholders with respect to handling possible emergency situations.

11.4 The Emergency Response Manual shall be updated on a regular basis and be provided to the District Manager within one month of the revision date.

11.5 The Owner shall ensure that adequate fire fighting and contingency spill clean up equipment is available and that emergency response personnel are familiar with its use and location.

12.0 ANNUAL REPORTING

12.1 A written report on the development, operation, monitoring and closure of the Site, shall be completed annually (the "Annual Report"). The Annual Report shall be submitted to the Regional Director and the District Manager by **March 31st**, **2022** and submitted every three years by March 31 thereafter and shall cover the three years ending the preceding December 31st.

12.2 The Annual Report shall include the following:

(a) the results and an interpretive analysis of the results of environmental monitoring program, including an assessment of the need to amend the monitoring program;
(b) an assessment with regards to compliance of the groundwater quality at the property boundary and compliance point with regards to Guideline B-7 - Reasonable Use Concept;
(c) an assessment of the operation and performance of all engineered facilities, the need to amend the design or operation of the Site, and the adequacy of and need to implement the contingency plans;
(d) an assessment of the efficiency of the leachate management at the Site;
(e) site plans showing the existing contours of the Site;
(f) areas of landfilling operation during the reporting period;
(g) areas of intended operation during the next reporting period;
(h) areas of excavation during the reporting period;
(i) the progress of final cover, vegetative cover, and any intermediate cover application;
(j) previously existing site facilities;
(k) facilities installed during the reporting period;
(l) Site preparations and facilities planned for installation during the next reporting period;
(m) calculations of the volume of waste, daily and intermediate cover, and final cover deposited or placed at the Site during the reporting period and a calculation of the total volume of Site capacity used during the reporting period;

(n) a summary of the quantity of any leachate or pre-treated leachate removed from the Site during each operating week;
(o) a summary of the weekly, maximum daily and total annual quantity (tonnes) of waste received at the Site.
(p) a summary of any complaints received and the responses made;
(q) a discussion of any operational problems encountered at the Site and corrective action taken;
(r) a summary of the amount of wastes refused for acceptance at the Site, the reasons for refusal and the carrier who brought the waste to the Site;
(s) a report on the status of all monitoring wells and a statement as to compliance with Ontario Regulation 903;
(t) any other information with respect to the site which the District Manager or Regional Director may require from time to time;
(u) a statement of compliance with all conditions of this ECA and other relevant Ministry groundwater and surface water requirements;
(v) a confirmation that the site inspection program as required by this ECA has been complied with by the Owner;
(w) any changes in operations, equipment or procedures employed at the Site; and
(x) recommendations regarding any proposed changes in operations of the Site.

13.0 SITE CLOSURE

13.1 Closure activities including placement of final cover, and post-closure maintenance at the Site shall be in accordance with Schedule "A".

13.2 The Owner shall complete Substantial Completion of the final cover construction within one year of reaching final contours.

Schedule "A" forms part of this Environmental Compliance Approval.

SCHEDULE "A"

1. Application for a Certificate of Approval for a Waste Disposal Site dated Letter dated May 8, 1972.

2. Letter dated March 29, 1989 from Mr. J. de Bakker of the Ministry of the Environment to Mr. R. Sinclair, Clerk-Administrator for the Township of Geraldton.

3. Report titled "Updated Design and Operations Plan, Geraldton Landfill, Municipality of Greenstone, Ontario" dated May 1, 2007 prepared by Trow Associates Inc.

4. Report titled "2007 Environmental Quality Monitoring Report, Geraldton Landfill, Municipality of Greenstone, Ontario" dated February 15, 2008 prepared by Trow Associates Inc.

5. Letter dated November 23, 2009, Regarding Revised Trigger Values for Groundwater, Geraldton Landfill, from R. Rinnie and D. Georgiou, Trow Associates Inc., to Tes. Gebrezghi, Ministry of Environment.

6. Report Entitled "Municipality of Greenstone - Updated Design and Operations Plan with Closure Plan - Geraldton Landfill, Municipality of Greenstone, Ontario" prepared by exp Services (Project Number THB-00006189-IE-THB-200) dated October 16, 2012.

7. Letter dated June 20, 2014 addressed to Mr. Dale Gable, Ministry of the Environment from Mr. Demetri Georgiou and Mr. Ahileas Mitsopoulous, exp. Services Inc, requesting and providing the rationale for the continued use of the Site while undertaking the EA for the long-term waste management strategy for the the Municipality.

8. Report Entitled "Amendment to ECA No. A7004401 - Geraldton Landfill Site, Greenstone Municipality, District of Thunder Bay" prepared by exp Services (Project Number THB-00006189-LE) dated September 9, 2015.

9. Report titled "Updated Closure Plan Geraldton Landfill, Municipality of Greenstone, Ontario" prepared by exp Services Inc. dated December 2, 2016.

10. Letter dated October 12, 2018, and signed by Ahileas Mitsopoulos and Demetri N. Georgiou, EXP Services Inc., addressed to Dale Gable and Matthew Wilson, Ministry of the Environment, including all figures.

11. Letter from EXP Services Inc. dated October 28, 2019, signed by Ahileas Mitsopoulos and Demetri N. Georgiou to the Ministry of the Environment, re: Amendment to ECA no. A7004401, including all attachments.

12. Email dated December 10, 2019 from Ahileas Mitsopoulos, EXP addressed to Maliha Tariq, MECP re: most updated volume landfilled on-site and final cover details.

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

1. *The reason for Condition 1.1, 1.2, 1.3, 1.4 and 1.5 is to ensure that the Site is designed, operated, monitored and maintained in accordance with the application and supporting documentation submitted by the Owner, and not in a manner which the Director has not been asked to consider.*

2. *The reason for Conditions 1.6, 1.7, 1.8, 1.12, 1.13, 1.14, 1.15 and 5.1 is to clarify the legal rights and responsibilities of the Owner under this ECA.*

3. *Conditions 1.9, 1.10 and 1.11 are included to ensure that the appropriate Ministry staff have ready access to information and the operations of the Site, which are approved under this ECA.*

4. *Conditions 1.16, 1.17 and 1.18 are included, pursuant to subsection 197(1) of the EPA, to provide that any persons having an interest in the Site are aware that the land has been approved and used for the purposes of waste disposal.*

5. *The reasons for Condition 1.19 are to restrict potential transfer or encumbrance of the Site without the approval of the Director and to ensure that any transfer of encumbrance can be made only on the basis that it will not endanger compliance with this ECA.*

6. *The reasons for Condition 1.20 and 1.21 are to ensure that the Site is operated under the corporate name which appears on the application form submitted for this approval and to ensure that the Director is informed of any changes.*

7. *The reason for Condition 1.22 is to ensure that appropriate Ministry staff have ready access to the Site for inspection of facilities, equipment, practices and operations required by the conditions in this ECA. This condition is supplementary to the powers of entry afforded a Provincial Officer pursuant to the EPA and OWRA.*

8. *Conditions 2.1, 2.2, 3.1, 4.1, 4.2, 4.3 and 4.4 are included in order to ensure that waste disposal, waste transfer operations at the site is undertaken in accordance with applicable Ministry of the Environment regulations and guidelines. Compliance with these regulations and guidelines will ensure that the site does not cause and adverse effect on the environment.*

9. *Condition 2.3 is to ensure the Owner has a operations plans for the site that details all current operations at the site and that a copy is kept on site for the Owner, the Owner's staff and/or operator. This is to ensure the site is operating is a safe manner and the environment and human health are protected.*

10. *The reason for Condition 2.4 is to ensure the Owner maintains a buffer area around the waste mound to ensure adequate space is available for potential contingency plan implementation.*

11. *The reason for Conditions 2.5 inclusive is to ensure that users of the Site are fully aware of important*

information and restrictions related to Site operations under this ECA.

12. *The reasons for Conditions 2.6, 2.7, and 2.8 are to specify the normal hours of operation for the landfill Site and a mechanism for amendment of the hours of operation.*

13. *The reasons for Conditions 2.9, 2.10, 2.11 and 2.12 are to specify site access to/from the Site and to ensure the controlled access and integrity of the Site by preventing unauthorized access when the Site is closed and no site attendant is on duty.*

14. *The reasons for Conditions 2.13, 2.14 and 2.15 are to ensure that the Site is operated, inspected and maintained in an environmentally acceptable manner and does not result in a hazard or nuisance to the natural environment or any person.*

15. *The reason Condition 2.16 is to prevent ponding in on site ditches and any adverse impact on the environment and human health.*

16. *The reason for Condition 2.17 is to ensure steps are taken to ensure landfill gas does not pose a risk to humans or the environmental within buildings at the Site.*

17. *The reason for Condition 3.1 and 3.9 is to specify the types of waste and service area that may be accepted for disposal at the Site.*

18. *Condition 3.2 specifies the maximum amount of waste that may be received at the site based on the completed Environmental Screening Process report for the Site, and allows the Site to operate while the Municipality of Greenstone decides on a long-term waste management strategy.*

19. *The reason for Condition 3.3, 3.4, 3.5, 3.6, and 3.7 is to specify restrictions on the extent of landfilling at this Site based on the Owner's application and supporting documentation. These limits define the approved volumetric capacity of the site. Approval to landfill beyond these limits would require an application with supporting documentation submitted to the Director.*

20. *The reason for Condition 3.8 is to ensure that landfilling operations are conducted in an environmentally acceptable manner. Daily and intermediate cover is used to control potential nuisance effects, to facilitate vehicle access on the site, and to ensure an acceptable site appearance is maintained. The proper closure of a landfill site requires the application of a final cover which is aesthetically pleasing, controls infiltration, and is suitable for the end use planned for the site.*

21. *Condition 3.10 is necessary in order to ensure that all waste loads are inspected and waste that is disposed of at the site is in accordance with the terms and conditions in this ECA.*

22. *The reason for Condition 3.11 is that open burning of municipal waste is unacceptable because of concerns with air emissions, smoke and other nuisance affects, and the potential fire hazard.*

23. *Conditions 4.1, 4.2, 4.3, 4.4 and 4.5 are included to ensure that the recyclable materials are stored in their temporary storage location in a manner as to minimize a likelihood of an adverse effect or a*

hazard the natural environment or any person.

24. *The reasons for the Conditions 5.1 through 5.12 are to approve the establishment and operation of a household hazardous waste collection depot and to ensure that the wastes are managed in a manner that protects the environment and the health and safety of the public.*

25. *The reason for Condition 6.1 is to ensure that the Site is supervised and operated by properly trained staff in a manner which does not result in a hazard or nuisance to the natural environment or any person.*

26. *The reasons for Conditions 7.1, 7.2, 7.3, 7.5 and 7.6 are to provide for the proper assessment of effectiveness and efficiency of site design and operation, their effect or relationship to any nuisance or environmental impacts, and the occurrence of any public complaints or concerns. Record keeping is necessary to determine compliance with this ECA, the EPA and its regulations.*

27. *The reason for Conditions 7.4, 7.7 and 12.1 and 12.2 are to ensure that accurate waste records are maintained to ensure compliance with the conditions in this ECA (such as fill rate, site capacity, record keeping, annual reporting, and financial assurance requirements), the EPA and its regulations.*

28. *The reason for Conditions 8.3 through 8.5 inclusive is to ensure protection of the natural environment and the integrity of the groundwater monitoring network.*

29. *The reason for Conditions 8.1, 8.2, 8.6 and 8.7 and are to demonstrate that the landfill site is performing as designed and the impacts on the natural environment are acceptable. Regular monitoring allows for the analysis of trends over time and ensures that there is an early warning of potential problems so that any necessary remedial/contingency action can be taken.*

30. *The reason for Conditions 9.1 through 9.5 is to ensure that the Owner follows a plan with an organized set of procedures for identifying and responding to unexpected but possible problems at the Site. A remedial action / contingency plan is necessary to ensure protection of the natural environment.*

31. *The reason for Conditions 11.1 through 11.5 is to ensure that the Municipality immediately notifies the Ministry of any spills as required in Part X of the Act so that appropriate spills response can be determined.*

32. *The reason for Conditions 10.1 and 10.2 is to establish a forum for the exchange of information and public dialogue on activities carried out at the landfill Site. Open communication with the public and local authorities is important in helping to maintain high standards for site operation and environmental protection.*

33. *The reasons for Conditions 12.1 and 12.2 are to ensure that regular review of site development, operations and monitoring data is documented and any possible improvements to site design, operations or monitoring programs are identified. An annual report is an important tool used in reviewing site activities and for determining the effectiveness of site design.*

34. The reason for Conditions 13.1 and 13.2 are to ensure that final closure of the Site is completed in an aesthetically pleasing manner and to ensure the long-term protection of the natural environment.

Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). A7004401 issued on August 7, 2014

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

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

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

The Notice should also include:

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

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

This Notice must be served upon:

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

AND

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

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

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

DATED AT TORONTO this 20th day of December, 2019

Mohsen Keyvani, P.Eng.
Director
appointed for the purposes of Part II.1 of the

MT/

c: District Manager, MECP Thunder Bay - District
Ahileas Mitsopoulos, EXP Services Inc.

Ontario

Ministry of the Environment, Conservation and Parks
Ministère de l'Environnement, de la Protection de la nature et des Parcs

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER A7004401
Notice No. 3
Issue Date. December 14, 2018

The Corporation of the Municipality of Greenstone
1800 Main St
Post Office Box, No. 70
Geraldton, Ontario
P0T 1M0

Site Location: Geraldton Waste Disposal Site
2 miles east of Junction Hwy 11 and 584, 8272 Highway 11
Greenstone Municipality, District of Thunder Bay

You are hereby notified that I have amended Approval No. A7004401 issued on August 7, 2014 and amended on November 2, 2015 and December 19, 2016 for the use and operation of a 4.3 hectare landfilling/recycling site within a total site area of 30.65 hectares , as follows:

1. Condition 3.2 of this Approval is hereby amended as follows:

3.2 (1) The original maximum volume of waste and cover materials, excluding final cover for the *Site* was **173,000 m³**.

(2) The maximum amount of waste approved for final disposal, excluding final cover at the *Site* based on the completed Environmental Screening Report Process is **273,000 m³**.

(3) (i) Notwithstanding Condition 3.2 (2), the *Site* is hereby permitted to continue to accept waste for final disposal until **December 31, 2019.**

(ii) Condition 3.2 (3) (i) does not constitute an approved expansion from the volume currently approved by Condition 3.2 (2). Upon the issuance of any future Environmental Assessment Act approval, the volume of waste accepted under Condition 3.2 (3) (i) must be included as part of any expansion volume received.

(4) In the event, the *Owner* has not completed the Environment Assessment Act process by the date in which the Site is permitted to receive waste for final disposal as stated in Condition 3.2 (3) (i) and would like to continue to receive waste at the *Site* for final disposal past that date, the

Owner shall submit an application to the *Director* at least **thirty (30) days** prior to the end date for accepting waste for final disposal in Condition 3.2 (3) (i) requesting that an extension to the date for final disposal be extended. To support the request, the *Owner* include but not be limited to following to submit the request:

(i) A drawing showing the proposed location where the waste will be placed;
(ii) A summary of the environmental conditions/compliance at the Site; and
(iii) A current status of the Environmental Assessment Act process for the long-term waste management strategy for the Municipality.

II. The following item is hereby added to Schedule "A" of this Approval:

10. Letter dated October 12, 2018, and signed by Ahilcas Mitsopoulos and Demetri N. Georgiou, EXP Services Inc., addressed to Dale Gable and Matthew Wilson, Ministry of the Environment, including all figures.

III. The reason for this amendment to the Approval is as follows:

To allow the site to operate while the EA is completed.

This Notice shall constitute part of the approval issued under Approval No. A7004401 dated August 7, 2014

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

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

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

The Notice should also include:

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

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

This Notice must be served upon:

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

AND

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

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

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

DATED AT TORONTO this 14th day of December, 2018

[illegible] ON JAN 08 2019

(signature)

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

MT/

c: District Manager, MECP Thunder Bay - District
Ahileas Mitsopoulos, P. Eng., EXP

Ontario

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

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER A7004401
Notice No. 2
Issue Date. December 19, 2016

The Corporation of the Municipality of Greenstone
1800 Main St
Post Office Box, No. 70
Geraldton, Ontario
P0T 1M0

Site Location: Geraldton Waste Disposal Site
2 miles east of Junction Hwy 11 and 584, 8272 Highway 11
Greenstone Municipality, District of Thunder Bay

You are hereby notified that I have amended Approval No. A7004401 issued on August 7, 2014 and amended on November 2, 2015 for the use and operation of a 4.3 hectare landfilling/recycling site within a total site area of 30.65 hectares , as follows:

Condition 3.2 and 13.1 is hereby amended to read as follows:

3.2 **(1)** The original maximum volume of waste and cover materials, excluding final cover for the *Site* was **173,000 m^3**.

(2) The maximum amount of waste approved for final disposal, excluding final cover at the *Site* based on the completed Environmental Screen Report Process is **273,000 m^3**.

(3) (i) Notwithstanding Condition 3.2(2), the *Site* is hereby permitted to continue to accept waste for final disposal until **December 31, 2018**.

(ii) Condition 3.2 (3)(i) does not constitute an approved expansion from the volume currently approved by Condition 3.2 (2) Upon the issuance of any future Environmental Assessment Act approval, the volume of waste accepted under Condition 3.2 (3)(i) must be included as part of any expansion volume received.

(4) In the event, the *Owner* has not completed the Environment Assessment Act process by the date in which the Site is permitted to receive waste for final disposal as stated in Condition

3.2(3)(i) and would like to continue to receive waste at the *Site* for final disposal past that date, the *Owner* shall submit an application to the *Director* at least **thirty (30) days** prior to the end date for accepting waste for final disposal in Condition 3.2 (3)(i) requesting that an extension to the date for final disposal be extended. To support the request, the *Owner* include but not be limited to following to submit the request:

i. A drawing showing the proposed location where the waste will be placed;
ii. A summary of the environmental conditions/compliance at the Site; and
iii. A current status of the Environmental Assessment Act process for the long-term waste management strategy for the Municipality.

13.1 The Site shall be closed, final cover placed and post-closure maintenance completed in accordance with Schedule "A".

The following item is hereby added to Schedule "A":

9. Report titled "Updated Closure Plan Geraldton Landfill, Municipality of Greenstone, Ontario" prepared by exp Services Inc. dated December 2, 2016.

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

The reason for the amendment to Condition No. (3.2) and (13.1) is to allow the site to operate while the EA is completed.

This Notice shall constitute part of the approval issued under Approval No. A7004401 dated November 24, 2008 as amended.

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

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

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

The Notice should also include:

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

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

This Notice must be served upon:

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

AND

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

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

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

DATED AT TORONTO this 19th day of December, 2016

THIS APPROVAL WAS MAILED
ON JAN 10 2017
(Signed)

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

MW/

c: District Manager, MOECC Thunder Bay - District
Ahileas Mitsopoulos, Exp Services Inc.

Ontario

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

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER A7004401
Notice No. 1
Issue Date: November 2, 2015

The Corporation of the Municipality of Greenstone
1800 Main St
Post Office Box. No. 70
Geraldton, Ontario
P0T 1M0

Site Location: Geraldton Waste Disposal Site
2 miles east of Junction Hwy 11 and 584
Greenstone Municipality, District of Thunder Bay

You are hereby notified that I have amended Approval No. A7004401 issued on August 7, 2014 for the use and operation of a 4.3 hectare landfilling/recycling site within a total site area of 30.65 hectares , as follows:

Condition 3.2 is hereby amended to read as follows:

3.2 (1) The original maximum volume of waste and cover materials, excluding final cover for the *Site* was **173,000 m³**.

(2) The maximum amount of waste approved for final disposal, excluding final cover at the *Site* based on the completed Environmental Screen Report Process is **273,000 m³**.

(3) (i) Notwithstanding Condition 3.2(2), the *Site* is hereby permitted to continue to accept waste for final disposal until **December 31, 2016**.

(ii) Condition 3.2 (3)(i) does not constitute an approved expansion from the volume currently approved by Condition 3.2 (2). Upon the issuance of any future Environmental Assessment Act approval, the volume of waste accepted under Condition 3.2 (3)(i) must be included as part of any expansion volume received.

(4) In the event, the *Owner* has not completed the Environment Assessment Act process by the date in which the Site is permitted to receive waste for final disposal as stated in Condition 3.2(3)(i) and would like to continue to receive waste at the *Site* for final disposal past that date, the *Owner* shall submit an application to the *Director* at least **thirty (30)** days prior to the end date for

accepting waste for final disposal in Condition 3.2 (3)(i) requesting that an extension to the date for final disposal be extended. To support the request, the *Owner* include but not be limited to following to submit the request:

i. A drawing showing the proposed location where the waste will be placed;
ii. A summary of the environmental conditions/compliance at the Site; and
iii. A current status of the Environmental Assessment Act process for the long-term waste management strategy for the Municipality.

The following item is hereby added to Schedule "A":

8. Report Entitled "Amendment to ECA No. A7004401 - Geraldton Landfill Site, Greenstone Municipality, District of Thunder Bay" prepared by exp Services (Project Number THB-00006189-LE) dated September 9, 2015.

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

1. The reason for the amendment to Condition No. (3.2) is to allow the site to operate while the EA is completed.

This Notice shall constitute part of the approval issued under Approval No. A7004401 dated August 7, 2014

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

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

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

The Notice should also include:

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

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

This Notice must be served upon:

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

AND

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

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

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

DATED AT TORONTO this 2nd day of November, 2015

THIS NOTICE WAS MAILED
ON NOV. 3, 2015
DC
(Signed)

Dale D. Gable

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

AV/

c: District Manager, MOECC Thunder Bay - District
Ahileas Mitsopoulos, exp. Service Inc. ✓

Ontario

Ministry of the Environment
Ministère de l'Environnement

AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER A7004401
Issue Date: August 7, 2014

The Corporation of the Municipality of Greenstone
1800 Main St
Post Office Box. No. 70
Geraldton, Ontario
P0T 1M0

Site Location: Geraldton Waste Disposal Site
2 miles east of Junction Hwy 11 and 584
Greenstone Municipality, District of Thunder Bay

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

the use and operation of a 4.3 hectare landfilling/recycling site within a total site area of 30.65 hectares

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

"Act" and **"EPA"** means the *Environmental Protection Act, R.S.O. 1990, C.E-19* as amended;

"Adverse Effect" means the same as the definition in the EPA;

"CAZ" means the Contaminant Attenuation Zone;

"Director" means any *Ministry* employee appointed in writing by the Minister pursuant to section 5 of the EPA as a Director for the purposes of Part V of the EPA;

"District Manager" refers to the District Manager in the Ministry of the Environment's Thunder Bay District Office;

"*District Office*" refers to the Ministry of the Environment Thunder Bay District Office;

"EAB" refers to the *Environmental Approvals Branch* of the *Ministry of the Environment;*

"Environmental Compliance Approval" or "ECA" or ***"Approval"*** means this entire provisional

Environmental Compliance Approval document, issued in accordance with *Section 20.2* of the *EPA* , and includes any schedules to it, the application and the supporting documentation listed in Schedule "A";

"EPA" means *Environmental Protection Act* , *R.S.O. 1990* , c. E. 19, as amended from time to time;

"FBAL" refers to Fill Beyond Approved Limits;

"*HHW* " means household hazardous waste;

"*MOE* " or **"*Ministry* "** refers to the Ontario Ministry of the Environment;

"*Operator* " has the same meaning as "operator" as defined in *s.25* of the *EPA* ;

"*Owner* " means the Municipality of Greenstone;

"*PA* " means the *Pesticides Act* , R.S.O. 1990, c. P-11, as amended from time to time;

"Provincial Officer " means any person designated in writing by the Minister as a provincial officer pursuant to *Section 5* of the *OWRA* or section 5 of the *EPA* or section 17 of *PA;*

"Refrigerant Appliances" means household appliances which use, or may use refrigerants, and which include, but is not restricted to, refrigerators, freezers and air-conditioning systems,

"Regional Director" refers to the Director of the *Ministry of the Environment* 's Northern Regional Office;

"*Regulation 347* " or "*Reg. 347* " or "O. Reg. 347" means Regulation 347, R.R.O. 1990, made under the *EPA* , as amended from time to time;

"Site" or ***"WDS"*** means the entire waste disposal site, including the buffer lands, and contaminant attenuation zone at Geraldton Waste Disposal Site, Part of Mining Claim T.B. 14031, 2 miles east of junction of Hwy 11 and 584, Township of Ashmore, District of Thunder Bay;

"*Substantial Completion* " has the same meaning as "substantial performance" in the Construction Lien Act; and

"Trained personnel" means knowledgeable in the following through instruction and/or practice:

a. relevant waste management legislation, regulations and guidelines;
b. major environmental concerns pertaining to the waste to be handled;
c. occupational health and safety concerns pertaining to the processes and wastes to be handled;
d. management procedures including the use and operation of equipment for the processes and wastes to be handled;
e. emergency response procedures;
f. specific written procedures for the control of nuisance conditions;
g. specific written procedures for refusal of unacceptable waste loads; and

h. the requirements of this *Certificate*.

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

TERMS AND CONDITIONS

1.0 TERMS AND CONDITIONS

General

1.1 The Requirements specified in this ECA are the requirements under the *Environmental Protection Act, R.S.O. 1990* . The issuance of this Approval in no way abrogates the Applicant's legal obligations to take all reasonable steps to avoid violating other applicable provisions of this legislation and other legislation and regulations.

1.2 The *Owner* shall ensure that all communications/correspondence made pursuant to this ECA includes reference to the ECA approval number A 412306.

1.3 The obligations imposed by the terms and conditions of this ECA are obligations of due diligence.

Compliance

1.4 The *Owner* shall ensure that any person authorized to carry out work on or operate any aspect of the *Site* is notified of the *ECA* and the conditions herein and shall take all reasonable measures to ensure the person complies with the same.

1.5 Any person authorized to carry out work on or operate any aspect of the *Site* shall comply with the conditions of this *ECA* .

In Accordance

1.6 Except as otherwise provided for in this *ECA* , the *Site* shall be designed, developed, built, operated and maintained in accordance with the applications for ECA dated May 8, 1972 and the supporting documentation listed in Schedule "A".

Other Legal Obligations

1.7 The issuance of, and compliance with, this *ECA* does not:

(a) relieve any person of any obligation to comply with any provision of the *EPA* or any other applicable statute, regulation or other legal requirement; or
(b) limit in any way the authority of the *Ministry* to require certain steps be taken or to

request that any further information related to compliance with this *ECA* be provided to the *Ministry* ;

unless a provision of this *ECA* specifically refers to the other requirement or authority and clearly states that the other requirement or authority is to be replaced or limited by this *ECA* .

Adverse Effect

1.8 The *Owner* or *Operator* remain responsible for any contravention of any other condition of this *ECA* or any applicable statute, regulation, or other legal requirement resulting from any act or omission that caused the adverse effect or impairment of air and/or water quality.

Furnish Information

1.9 Any information requested by the *Director* or a *Provincial Officer* concerning the *Site* and its operation under this *ECA* , including but not limited to any records required to be kept by this *ECA* shall be provided in a timely manner.

1.10 The receipt of any information by the *Ministry* or the failure of the *Ministry* to prosecute any person or to require any person to take any action, under this *ECA* or under any statute, regulation or subordinate legal instrument, in relation to the information, shall not be construed as:

i. an approval, waiver, or justification by the *Ministry* of any act or omission of any person that contravenes any condition of this *ECA* or any statute, regulation or other subordinate legal requirement; or
ii. acceptance by the *Ministry* of the information's completeness or accuracy.

1.11 Any information related to this *ECA* and contained in *Ministry* files may be made available to the public in accordance with the provisions of the Freedom of Information and Protection of Privacy Act, RSO 1990, CF-31.

Interpretation

1.12 Where there is a conflict between a provision of any document, including the application, referred to in this *ECA* , and the conditions of this *ECA*, the conditions in this *ECA* shall take precedence.

1.13 Where there is a conflict between the application and a provision in any documents listed in Schedule "A", the application shall take precedence, unless it is clear that the purpose of the document was to amend the application and that the *Ministry* approved the amendment in writing.

1.14 Where there is a conflict between any two documents listed in Schedule "A", other than the application, the document bearing the most recent date shall take precedence.

1.15 The conditions of this *ECA* are severable. If any condition of this *ECA*, or the application of any condition of this *ECA* to any circumstance, is held invalid or unenforceable, the application of such condition to other circumstances and the remainder of this *ECA* shall not be affected thereby.

Certificate of Requirement

1.16 Pursuant to Section 197 of the *EPA*, no person having an interest in the *Site* shall deal with the *Site* in any way without first giving a copy of this *ECA* to each person acquiring an interest in the *Site* as a result of the dealing.

1.17 In the event any additional land is acquired for the *Site*, then two (2) copies of a completed Certificate of Requirement, containing a registerable description of the additional lands for the *Site*, shall be submitted to the Director for the Director's signature within sixty (60) calendar days of any amendment to this *ECA* that incorporates the land into the *ECA*.

1.18 In the event any additional land is acquired for the *Site*, then the Certificate of Requirement shall be registered in the appropriate land registry office on title to the *Site* and a duplicate registered copy shall be submitted to the *Director* within ten (10) calendar days of receiving the Certificate of Requirement signed by the *Director*.

No Transfer or Encumbrance

1.19 No portion of this *Site* shall be transferred or encumbered prior to or after closing of the *Site* unless the *Director* is notified in advance and is satisfied with the arrangements made to ensure that all conditions of this *ECA* will be carried out and that sufficient financial assurance is deposited with the *Ministry* to ensure that these conditions will be carried out.

Change of Owner

1.20 The *Owner* shall notify the *Director*, in writing, and forward a copy of the notification to the *District Manager*, within 30 days of the occurrence of any changes in the following information:

i. the ownership of the *Site*;
ii. the Operator of the *Site*;
iii. the address of the *Owner* or *Operator*;
iv. the partners, where the *Owner* or *Operator* is or at any time becomes a partnership and a copy of the most recent declaration filed under the *Business Names Act*, R. S. O. 1990, c. B.17, shall be included in the notification;
v. the name of the corporation where the *Owner* or *Operator* is or at any time becomes a corporation, other than a municipal corporation, and a copy of the most current information filed under the *Corporations Information Act*, R. S. O. 1990, c. C.39, shall be included in the notification.

1.21 In the event of any change in the ownership of the *Site* , other than a change to a successor municipality, the *Owner* shall notify in writing the succeeding owner of the existence of this *ECA* , and a copy of such notice shall be forward to the *Director* and *District Manager* .

Inspections

1.22 No person shall hinder or obstruct a *Provincial Officer* from carrying out any and all inspections authorized by the *EPA* or the *PA* , of any place to which this *ECA* relates, and without limiting the foregoing:

i. to enter upon the premises where the approved works are located, or the location where the records required by the conditions of this *ECA* are kept;
ii. to have access to, inspect, and copy any records required to be kept by the conditions of this *ECA* ;
iii. to inspect the *Site*, related equipment and appurtenances;
iv. to inspect the practices, procedures, or operations required by the conditions of this *ECA* ; and
v to sample and monitor for the purposes of assessing compliance with the terms and conditions of this *ECA* or the *EPA* or the *PA* .

2.0 SITE OPERATIONS

Proper Operation

2.1 The *Site* shall be properly operated and maintained at all times. All waste shall be managed and disposed of in accordance with the *EPA* , *Regulation 347* , and the requirements of this *ECA*. At no time shall the discharge of a contaminant that causes or is likely to cause an adverse effect be permitted.

2.2 The *Owner* shall ensure that the *MOE* 's Guideline B-7, Reasonable Use Concept, is applied at the *Site* boundaries.

2.3 (1) The *Owner* shall ensure the operations, maintenance and procedures manual for the *Site* includes discussions on the following items.:

a. Health and safety;
b. Operation and maintenance of the *Site* ;
c. Waste disposal area and development;
d. Nuisance management;
e. Leachate management;
f. Landfill gas management;
g. Surface water/Storm water management;
h. Inspections and monitoring;

i. Contingency plans and emergency procedures;
j. Complaints; and.
k. Reporting and record keeping.

(2) The operations and procedures manual shall be:

a. retained at the *Site* ;
b. reviewed on an annual basis and updated by the *Owner* as required; and
c. be available for inspection by *Ministry* staff.

Buffer

2.4 The Owner shall ensure that the buffer as described in Item 6 in Schedule "A" is maintained.

Signage

2.5 The *Owner* shall place a sign which complies with local by-laws at the main entrance and exit to the *Site* which is legible from a distance not less than 25 m and on which is displayed in prominent letters the following information:

a. the name of the *Site* and *Owner* ;
b. the number of the *ECA* ;
c. the name of the *Operator;*
d. the normal hours of operation;
e. a warning against unauthorized access;
f. the telephone number to which complaints may be directed;
g. a twenty-four (24) hour emergency telephone number (if different from above); and
h. a warning against dumping outside the *Site* .

Hours of Operation

2.6 (1) (i) Waste may be received at the *Site* between the hours of 9:00 a.m. and 6:00 p.m., Monday to Friday.

(ii) Public access to the Site for waste drop off are permitted on Tuesday, Wednesday, Thursday and Saturday between the hours of 12:00 p.m. and 5:00 p.m.

(2) Amendment to the hours of operation require approval by the *Director* prior to implementation.

2.7 Notwithstanding Condition 2.6, with prior written approval of the *District Manager* , the time periods may be extended to accommodate seasonal or unusual quantities of waste, construction activities or such factors as determined to be reasonable to the *District Manager* .

2.8 Upon reasonable notice to the *District Manager* , contingency actions may take place outside normal hours of operation. Emergency response may occur at any time as required.

Site Security

2.9 During non-operating hours, the *Site* entrance and exit gates will be locked or otherwise secured against access by unauthorized persons.

2.10 The *Owner* shall ensure that no queuing of waste vehicles will occur on public roadways.

2.11 a. No waste shall be accepted, landfilled or removed from the site unless a *Site* supervisor is present and supervises the operation.

b. The *Owner* shall ensure that all *Site* operations employees have been adequately trained prior to acceptance of waste at the *Site* with respect to the following:

i. terms, conditions and operating requirements of this *ECA* ;
ii. the operation and management of the *Site* with respect to the Operations and Maintenance Manual;
iii. relevant waste management regulations and legislation;
iv. environmental concerns related to the waste being handled at the *Site* ;
v. occupational health and safety concerns pertaining to the waste being handled at the *Site* ; and
vi. emergency procedures and contingency plans in cases of fire, off-site impacts and any other emergency situation.

c. The *Site* is deemed to be closed when a *Site* supervisor is not present at the *Site* .

d. To assist the *Site* operating personnel, the *Owner* shall ensure that the Maintenance and Operations Manual, required by Condition No. 2.3, and all revisions is kept on *Site* at all times following commencement of landfilling.

Site Access

2.12 Access to the *Site* shall be via the existing entrance from Highway 11.

Vermin, Dust, Litter, Odour, Noise, Traffic

2.13 The *Site* shall be operated and maintained such that vermin, vectors, dust, litter, odour, noise and traffic do not create a nuisance.

Litter Control

2.14 The *Owner* shall take all practical steps to prevent off-site litter impacts from *Site* operations.

Noise

2.15 The landfill *Site* shall be required to operate within the noise level limits prescribed in the Ministry's document "Noise Guidelines for Landfill Sites".

Surface Water

2.16 The *Owner* shall take all appropriate measures to minimize surface water from coming in contact with waste. Temporary berms and ditches shall be constructed around active waste disposal areas to prevent extraneous surface water from coming in contact with the active working face.

Landfill Gas

2.17 All buildings are to be free of any landfill gas accumulation. The *Owner* shall provide adequate ventilation systems to relieve landfill gas accumulations in buildings if necessary.

3.0 LANDFILL OPERATIONS

Waste Type

3.1 The waste to be received at the *Site* for final disposal is restricted to solid non-hazardous waste.

Capacity

3.2 (1) The original maximum volume of waste and cover materials, excluding final cover for the *Site* was **173,000 m^3**.

(2) The maximum amount of waste approved for final disposal, excluding final cover at the *Site* based on the completed Environmental Screening Report Process is **273,000 m^3**.

(3) (i) Notwithstanding Condition 3.2(2), the *Site* is hereby permitted to continue to accept waste for final disposal until **December 31, 2015**.

(ii) Condition 3.2 (3)(i) does not constitute an approved expansion from the volume currently approved by Condition 3.2 (2). Upon the issuance of any future Environmental Assessment Act approval, the volume of waste accepted under Condition 3.2 (3)(i) must be included as part of any expansion volume received.

(4) In the event, the *Owner* has not completed the Environment Assessment Act process by the date in which the Site is permitted to receive waste for final disposal as stated in Condition 3.2(3)(i) and would like to continue to receive waste at the *Site* for final disposal past that date, the *Owner*

shall submit an application to the *Director* at least **thirty (30) days** prior to the end date for accepting waste for final disposal in Condition 3.2 (3)(i) requesting that an extension to the date for final disposal be extended. To support the request, the *Owner* include but not be limited to following to submit the request:

i. A drawing showing the proposed location where the waste will be placed;
ii. A summary of the environmental conditions/compliance at the Site; and
iii. A current status of the Environmental Assessment Act process for the long-term waste management strategy for the Municipality.

Waste Placement

3.3 (1) No waste shall be landfilled outside of the **limit of fill area** for the *Site* as shown in Item 6 - Figure 2 in Schedule "A" attached to this *ECA* .

(2) The *Owner* shall ensure the limit of the landfill and top contours of final waste contours as show in Item 6 - Figures 2 and 9 in Schedule "A" is clearly staked with permanent markers.

3.4 (1) No waste shall be landfilled at any time above the **final waste grades (347.8 m which is Final Cover Elevations less final cover thickness)** as shown in Item 6 - Figure 9 in Schedule "A" attached to this *ECA* ; and

(2) Final slopes above grade at the time of *Site* closure within the waste fill area shall be within the range of 4H:1V (25%) and 20H:1V (5%).

(3) Notwithinstanding Condition 3.4 (1), the *Owner* shall ensure that any waste placed at the *Site* in accordance with Condition 3.2 (2) will not exceed a maximum elevation of 347.8 m. (the highest proposed waste elevation at the *Site*).

3.5 Waste placement shall occur at a minimum 1 meter above the highest groundwater table elevation at the *Site* .

3.6 No waste shall be landfilled in the buffer area or additional waste be placed in the *FBAL* .

3.7 The *Owner* shall deposit waste in a manner that minimizes exposure area at the landfill working face and all waste shall be compacted before cover is applied.

Cover Material

3.8 (1) Daily Cover - By the end of each working week, the entire working face shall be compacted and covered with a minimum thickness of 150 mm of soil cover or an approved thickness of alternative cover material.

(2) Intermediate Cover - In areas where landfilling has been temporarily discontinued for six

(6) months or more, a minimum thickness of 300 mm of soil cover or an approved thickness of alternative cover material shall be placed.

Service Area

3.9 Only waste generated within the boundaries of the Municipality of Greenstone may be received for disposal at this Site.

Waste Inspection

3.10 All loads of waste must be properly inspected by trained *Site* personnel prior to disposal at the *Site* and waste vehicles must be diverted to appropriate areas for waste disposal.

Burning Waste Prohibited

3.11 Burning of waste at the *Site* is prohibited.

4.0 WASTE TRANSFER STATION

Waste Transfer Facility

4.1 The *Owner* shall ensure that:

(a) all bins and waste storage areas are clearly labelled;
(b) all lids or doors on bins shall be kept closed during non-operating hours and during the high wind events; and
(c) if necessary to prevent litter, waste storage areas shall be covered during the high winds events.

4.2 The *Owner* shall provide a segregated area for the storage of *Refrigerant Appliances* so that the following are ensured:

(a) all *Refrigerant Appliances* have been tagged to indicate that the refrigerant has been removed by a licensed technician. The tag number shall be recorded in the log book and shall remain affixed to the appliance until transferred from the *Site;* or
(b) all *Refrigerant Appliances* accepted at the *Site,* which have not been tagged by a licensed technician to verify that the equipment no longer contains refrigerants, are stored segregated, in a clearly marked area, in an upright position and in a manner which allows for the safe handling and transfer from the *Site* for removal of refrigerants as required by O.Reg. 189; and
(c) all *Refrigerant Appliances* received on-site shall either have the refrigerant removed prior to being transferred from the *Site* or shall be shipped off-site only to facilities where the refrigerants can be removed by a licensed technician in accordance with O.Reg. 189.

4.3 Propane cylinders shall be stored in a segregated area in a manner which prevents cylinders from being knocked over or cylinder valves from breaking.

4.4 The *Owner* shall transfer waste and recyclable materials from the *Site* as follows:

(a) recyclable materials shall be transferred off-site once their storage bins are full;
(b) scrap metal shall be transferred off-site at least twice a year;
(c) tires shall be transferred off-site as soon as a load for the contractor hired by the *Owner* has accumulated or as soon as the accumulated volume exceeds the storage capacity of its bunker; and
(d) immediately, in the event that waste is creating an odour or vector problem.

4.5 The *Owner* shall notify the appropriate contractors that waste and recyclable wastes that are to be transferred off the *Site* are ready for removal. Appropriate notice time, as determined by the contract shall be accommodated in the notification procedure.

5.0 HOUSEHOLD HAZARDOUS WASTE DEPOT

HHW Facility Operations

5.1 The *HHW* depot shall not receive more than 5 cubic metres of *HHW* per day.

5.2 The *HHW* depot shall not store in excess of 10 cubic metres of *HHW* on *Site*.

5.3 *HHW* shall not be stored at the *Site* for longer than one hundred eighty (180) days, unless the consent of the *District Manager* has been obtained, with the exception of waste oil which shall be stored on *Site* in accordance with Condition 11(2).

5.4 All household hazardous waste received and stored must be managed in accordance with *Ontario Regulation 347, R.R.O. 1990,* as amended, and with the Ministry of Environment document entitled "Household Hazardous Waste Collection and Facility Guidelines" dated May 1993.

5.5 All storage of liquid wastes shall be in accordance with this *Ministry's* publication "Guidelines of Environmental Protection Measures at Chemical Storage Facilities", dated October 1978 as amended.

5.6 All *HHW* shall be stored in secondary containment that is adequate to contain any spills or leaks. Segregated secondary containment shall be provided for incompatible types of waste.

5.7 Incoming *HHW* shall be inspected by *Trained Personnel* , prior to being accepted at the *Site*, to ensure that the *Site* is approved to accept that type of waste.

5.8 All containers shall be clearly labelled indicating the type and nature of the hazardous waste stored as required by regulation. All points of access to the *Site* shall be posted to warn that the area contains hazardous materials.

5.9 No radioactive wastes shall be accepted at this *Site*.

5.10 Oil and oil-based paints which have been manufactured prior to 1972; or whose manufacturing date cannot be determined, may contain PCBs and shall be handled as follows:

(a) The oil and oil-based paints shall not be mixed (bulked) with other paints prior to testing. Paints which are lab-packed are not considered to be mixed under this *Certificate*;
(b) The oil and oil-based paints shall be tested by a certified laboratory for PCB content and shall be handled in the manner outlined in Condition 11.10 (c) if found to contain PCBs;
(c) If the oil and oil-based paints are found to have PCBs at or above levels identified in Condition 11.10 (d), it shall be forthwith reported to the *District Manager* and shall be managed in accordance with Regulation 362 and stored or removed from the *Site* to an approved PCB storage site, in accordance with written instructions from the *District Manager*; and
(d) The oil and oil-based paints shall not be distributed for reuse if they have any measurable PCB content. The oil and oil-based paint is considered to be a PCB waste, if measured levels are equal to or greater than 50 parts per million.

5.11 Except for oil based paints that become classified as PCB Waste, paints may be offered for reuse to the public. Records shall be kept of the type, volume and recipient of paint returned to the public.

5.12 The *Owner* shall maintain, at the *Site*, a log book which records daily, the following information:

(a) date of record;
(b) types, quantities and source of *HHW* received;
(c) quantities of *HHW* stored at the *Site*;
(d) quantities and destination of *HHW* shipped from the *Site*; and
(e) quantities of waste returned to the public as noted in Condition 12 (2).

6.0 TRAINING

Employees and Training

6.1 A training plan for all employees that operate any aspect of the site shall be developed and implemented by the *Operator*. Only trained employees shall operate any aspect of the *Site* or carry out any activity required under this *ECA* . For the purpose of this *ECA* "trained" means knowledgeable either through instruction or practice in:

i. the relevant waste management legislation *including EPA, O. Reg 347* , regulations and guidelines;
ii. major environmental *and occupational health and safety* concerns pertaining to the waste to be handled;
iii. the proper handling of wastes;
iv. the management procedures including the use and operation of equipment for the

processes and wastes to be handled;

v. the emergency response procedures;
vi. the specific written procedures for the control of nuisance conditions;
vii. the *terms, conditions and operating* requirements of this *ECA* and,
viii. proper inspection, receiving and recording procedures and the activities to be undertaken during and after a load rejection.

7.0 INSPECTIONS AND RECORD KEEPING

Daily Inspections and Log Book

7.1 An inspection of the entire *Site* and all equipment on the *Site* shall be conducted each day the *Site* is in operation to ensure that the site is being operated in compliance with this *ECA* . Any deficiencies discovered as a result of the inspection shall be remedied immediately, including temporarily ceasing operations at the *Site* if needed.

7.2 A record of the inspections shall be kept in a daily log book *or a dedicated electronic file* that includes:

i. the name and signature of person that conducted the inspection;
ii. the date and time of the inspection;
iii. the list of any deficiencies discovered;
iv. the recommendations for remedial action; and
v. the date, time and description of actions taken.

7.3 A record shall be kept in the daily log book of all the following:

i. the type, date and time of arrival, hauler, and estimated quantity (i.e. cubic metres) of all waste received at the *Site* ; and,
ii. a list of the refusal of waste shipments, the reason(s) for refusal, and the origin of the waste, if known.

Site Inspections

7.4 During *Site* operations, the *Owner* shall inspect the *Site* monthly for the following items but not limited to these items:

i. General settlement areas or depressions on the waste mound;
ii. Shear and tension cracks on the waste mound;
iii. Condition of surface water drainage works;
iv. Erosion and sedimentation in surface water drainage system;
v. Presence of any ponded water on the waste mound;
vi. Evidence of vegetative stress, distressed poplars or side slope plantings on or adjacent to the waste mound; and

vii. Condition of fence surrounding the *Site*.

7.5 The *Owner* shall inspect the waste mound and surrounding areas weekly for presence of leachate seeps. Any leachate seeps that are discovered shall be repaired within 48 hours of notice by the *Owner* .

Record Retention

7.6 Except as authorized in writing by the *Director* , all records required by this *ECA* shall be retained at the *Site* for a minimum of two (2) years from their date of creation.

7.7 The *Owner* shall retain all documentation listed in Schedule "A" for as long as this *ECA* is valid.

7.8 All monthly summary reports are to be kept at the *Site* until they are included in the Annual Report.

7.9 The *Owner* shall retain employee training records as long as the employee is working at the *Site* .

7.10 The *Owner* shall make all of the above documents available for inspection upon request of *Ministry* staff.

8.0 MONITORING

8.1 The *Owner* shall monitor surface water and ground water as follows:

(a) Ground water and surface water sampling is to be carried out twice per year, and the two sampling events must be a minimum of 60 days apart;

(b) Groundwater samples are to be collected from monitoring wells MW1, MW2, MW3A, MW3B, MW4, MW5, MW6, MW7, MW8, MW9, MW10A, MW10B and MW 11, (at the locations indicated in Item 6);

(c) Surface water samples are to be collected at existing locations SW1, SW2, and SW3.

(d) Ground water and surface water samples are to be analyzed for: pH (lab and field), conductivity (lab and field), temperature (field only), total dissolved solids, hardness, dissolved organic carbon (DOC), phenols, total Kjeldahl nitrogen (TKN), ammonia-N, organic nitrogen, sodium, potassium, calcium, magnesium, chloride, nitrate, nitrite, orthophosphate, sulphate, alkalinity (as CaCO3), aluminum, antimony, arsenic, barium, beryllium, bismuth, boron, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, molybdenum, nickel, total phosphorous, selenium, silicon, silver, strontium, thallium, tin, titanium, vanadium, and zinc.

(e) For the ground water samples, the ion balance must be calculated for each well for quality control purposes, and an ion balance exceeding 10% should be investigated and explained.

(f) Surface water samples are to also be analyzed for total suspended solids, chemical oxygen demand and biological oxygen demand.

(g) A sample from the source well MW5 is to be analyzed annually for volatile organic compounds (VOC's) – acetone, benzene, bromodichloromethane, chloroform, 1,4-dichlorobenzene, ethylbenzene, methylene chloride (dichloromethane), methyl ethyl ketone (MEK), toluene, trichloroethene (trichloroethylene), vinyl chloride, m-xylene, p-xylene, and o-xylene.

(h) All analysis must use detection limits suitable for comparison with Ontario Drinking Water Standards and/or Provincial Water Quality Objectives.

8.2 A certified Professional Geoscientist or Engineer possessing appropriate hydrogeologic training and experience shall execute or directly supervise the execution of the groundwater monitoring and reporting program.

Groundwater Wells and Monitors

8.3 The *Owner* shall ensure that all groundwater monitoring wells which form part of the monitoring program are properly capped, locked and protected from damage.

8.4 Where landfilling is to proceed around monitoring wells, suitable extensions shall be added to the wells and the wells shall be properly re-secured.

8.5 Any groundwater monitoring wells included in the on-going monitoring program that are damaged shall be assessed, repaired, replaced or decommissioned by the *Owner*, as required.

(a) The *Owner* shall repair or replace any monitoring well which is destroyed or in any way made to be inoperable for sampling such that no more than one regular sampling event is missed.

(b) All monitoring wells which are no longer required as part of the groundwater monitoring program, and have been approved by the *District Manager* for abandonment, shall be decommissioned by the *Owner*, as required, in accordance with *O.Reg. 903*, that will prevent contamination through the abandoned well. A report on the decommissioning of the well shall be included in the Annual Report for the period during which the well was decommissioned.

Changes to the Monitoring Plan

8.6 (1) The *Owner* may request to make changes to the monitoring program(s) to the *District Manager* in accordance with the recommendations of the annual report. The *Owner* shall make clear reference to the proposed changes in separate letter that shall accompany the annual report.

(2) Within fourteen (14) days of receiving the written correspondence from the *District Manager*

confirming that the *District Manager* is in agreement with the proposed changes to the environmental monitoring program, the *Owner* shall forward a letter identifying the proposed changes and a copy of the correspondences from the *District Manager* and all other correspondences and responses related to the changes to the monitoring program, to the *Director* requesting the *Certificate* be amended to approve the proposed changes to the environmental monitoring plan prior to implementation.

(3) In the event any other changes to the environmental monitoring program are proposed outside of the recommendation of the annual report, the *Owner* shall follow current ministry procedures for seeking approval for amending the *ECA*.

Compliance Criteria

8.7 The *Owner* shall ensure the *Site* is in compliance with MOE Guideline B-7 Reasonable Use Concept is applied and met at all points on the property line which are impacted by leachate from the *Site*.

9.0 TRIGGER MECHANISMS AND CONTINGENCY PLANS

9.1 The Trigger Mechanism Plan shall be carried out by the Owner in accordance with Item 6 set out in Schedule "A".

9.2 In the event of a confirmed exceedence of a site-specific trigger level relating to leachate mounding or groundwater or surface water impacts due to leachate at the site's *CAZ* limit, the *Owner* shall immediately notify the *District Manager*, and an investigation into the cause and the need for implementation of remedial or contingency actions shall be carried out by the *Owner* in accordance with the approved trigger mechanisms and associated contingency plans.

9.3 If monitoring results, investigative activities and/or trigger mechanisms indicate the need to implement contingency measures, the *Owner* shall ensure that the following steps are taken:

(a) The *Owner* shall notify the *District Manager*, in writing of the need to implement contingency measures, no later than 30 days after confirmation of the exceedences;
(b) Detailed plans, specifications and descriptions for the design, operation and maintenance of the contingency measures shall be prepared and submitted by the *Owner* to the *District Manager* for approval; and
(c) The contingency measures shall be implemented by the *Owner* upon approval by the *District Manager* .

9.4 The *Owner* shall ensure that any proposed changes to the site-specific trigger levels for leachate impacts to the surface water or groundwater, are approved in advance by the *Director* via an amendment to this *Certificate*.

9.5 (a) If expanding the contaminant attenuation zone is required as a remedial measure necessary for

proper operation of a landfilling site, the *Owner* of the landfilling site must own property rights respecting the contaminant attenuation zone, unless,

(i) the contaminant attenuation zone is on Crown land and the Crown has agreed in writing to the use of the land for that purpose; or

(ii) the contaminant attenuation zone is on a public road and the road authority has agreed in writing to the use of the land for that purpose.

(b) The holder of the *EC4* must continue to own the property rights for all of the contaminating life span of the *Site*.

(c) The ownership of the property rights must include the right to,

(i) discharge contaminants from the landfilling site into the contaminant attenuation zone;

(ii) enter into the contaminant attenuation zone and onto the surface above the contaminant attenuation zone for purposes of testing, monitoring, intercepting contaminants and carrying out remedial work;

(iii) install, operate and maintain works, for the purposes mentioned in clause (b), in or above the contaminant attenuation zone, including on the surface above the contaminant attenuation zone; and

(iv) prevent the owner of the land in which the contaminant attenuation zone is located from paving, erecting a structure or making any use of land above or in the vicinity of the contaminant attenuation zone that would interfere with the functioning of the contaminant attenuation zone or with the exercise of any of the rights mentioned in this subsection.

10.0 COMPLAINTS PROCEDURE

10.1 If at any time, the *Owner* receives complaints regarding the operation of the *Site* , the *Owner* shall respond to these complaints according to the following procedure:

(a) The *Owner* shall record and number each complaint, either electronically or in a log book, and shall include the following information: the nature of the complaint, the name, address and the telephone number of the complainant if the complainant will provide this information and the time and date of the complaint;

(b) The *Owner* , upon notification of the complaint, shall initiate appropriate steps to determine all possible causes of the complaint, proceed to take the necessary actions to eliminate the cause of the complaint and forward a formal reply to the complainant; and

(c) The *Owner* shall complete a report written within one (1) week of the complaint date, listing the actions taken to resolve the complaint and any recommendations

for remedial measures, and managerial or operational changes to reasonably avoid the recurrence of similar incidents. A copy of the report shall be retained on-site.

10.2 The *Owner* shall post site complaints procedure at site entrance along with the name and phone number of a suitable, local contact to receive complaints or questions related to the *Site* . All complaints and the *Owner* 's actions taken to remedy the complaints must be summarized in the Annual Report.

11.0 EMERGENCY SITUATIONS

11.1 In the event of a fire or discharge of a contaminant to the environment, *Site* staff shall contact the *MOE* Spills Action Centre (1-800-268-6060) and the *District Office* of the *MOE* .

11.2 The *Owner* shall submit to the *District Manager* a written report within 3 days of the spill or incident, outlining the nature of the incident, remedial measures taken and measures taken to prevent future occurrences at the Site.

11.3 The *Owner* shall prepare an Emergency Response Manual for the *Site* and submit to the *District Manager* within 60 days of the issuance of this amendment, in consultation with local emergency response agencies. The Emergency Response Manual should indicate the responsibility of each of the stakeholders with respect to handling possible emergency situations.

11.4 The Emergency Response Manual shall be updated on a regular basis and be provided to the *District Manager* within one month of the revision date.

11.5 The *Owner* shall ensure that adequate fire fighting and contingency spill clean up equipment is available and that emergency response personnel are familiar with its use and location.

12.0 ANNUAL REPORTING

11.1 A written report on the development, operation, monitoring and closure of the *Site* , shall be completed annually (the "Annual Report"). The Annual Report shall be submitted to the *Regional Director* and the *District Manager* by **March 31st. 2017** and submitted every three years by March 31 thereafter and shall cover the three years ending the preceding December 31st.

11.2 The Annual Report shall include the following:

i. the results and an interpretive analysis of the results of environmental monitoring program, including an assessment of the need to amend the monitoring program;

ii. an assessment with regards to compliance of the groundwater quality at the property boundary and compliance point with regards to Guideline B-7 - Reasonable

Use Concept;

iii. an assessment of the operation and performance of all engineered facilities, the need to amend the design or operation of the *Site* , and the adequacy of and need to implement the contingency plans;

iv. an assessment of the efficiency of the leachate management at the *Site* ;

v. site plans showing the existing contours of the *Site;*

vi areas of landfilling operation during the reporting period;

vii. areas of intended operation during the next reporting period;

viii. areas of excavation during the reporting period;

ix. the progress of final cover, vegetative cover, and any intermediate cover application;

x. previously existing site facilities;

xi. facilities installed during the reporting period;

xii. *Site* preparations and facilities planned for installation during the next reporting period;

xiii. calculations of the volume of waste, daily and intermediate cover, and final cover deposited or placed at the *Site* during the reporting period and a calculation of the total volume of Site capacity used during the reporting period;

xiv. a summary of the quantity of any leachate or pre-treated leachate removed from the *Site* during each operating week;

xv. a summary of the weekly, maximum daily and total annual quantity (tonnes) of waste received at the Site.

xvi. a summary of any complaints received and the responses made;

xvii. a discussion of any operational problems encountered at the *Site* and corrective action taken;

xviii. a summary of the amount of wastes refused for acceptance at the *Site* , the reasons for refusal and the carrier who brought the waste to the *Site* ;

xix. a report on the status of all monitoring wells and a statement as to compliance with Ontario Regulation 903;

xx. any other information with respect to the site which the *District Manager or Regional Director may require from time to time;*

xxi. a statement of compliance with all conditions of this *ECA* and other relevant *Ministry* groundwater and surface water requirements;

xxii. a confirmation that the site inspection program as required by this *ECA* has been complied with by the *Owner* ;

xxiii. any changes in operations, equipment or procedures employed at the *Site* ; and

xxiv. recommendations regarding any proposed changes in operations of the *Site* .

13.0 SITE CLOSURE

13.1 The Site shall be closed, final cover placed and post-closure maintenance completed in accordance with Item 6 in Schedule "A".

13.2 The Owner shall complete *Substantial Completion* of the final cover construction within one year of reaching final contours

SCHEDULE "A"

1. Application for a Certificate of Approval for a Waste Disposal Site dated Letter dated May 8, 1972.
2. Letter dated March 29, 1989 from Mr. J. de Bakker of the Ministry of the Environment to Mr. R. Sinclair, Clerk-Administrator for the Township of Geraldton.
3. Report titled "Updated Design and Operations Plan, Geraldton Landfill, Municipality of Greenstone, Ontario" dated May 1, 2007 prepared by Trow Associates Inc.
4. Report titled "2007 Environmental Quality Monitoring Report, Geraldton Landfill, Municipality of Greenstone, Ontario" dated February 15, 2008 prepared by Trow Associates Inc.
5. Letter dated November 23, 2009, Regarding Revised Trigger Values for Groundwater, Geraldton Landfill, from R. Rinnie and D. Georgiou, Trow Associates Inc., to Tes. Gebrezghi, Ministry of Environment.
6. Report Entitled "Municipality of Greenstone - Updated Design and Operations Plan with Closure Plan - Geraldton Landfill, Municipality of Greenstone, Ontario" prepared by exp Services (Project Number THB-00006189-(E-THB-200) dated October 16, 2012.
7. Letter dated June 20, 2014 addressed to Mr. Dale Gable, Ministry of the Environment from Mr. Demetri Georgiou and Mr. Ahileas Mitsopoulous, exp. Services Inc, requesting and providing the rationale for the continued use of the Site while undertaking the EA for the long-term waste management strategy for the the Municipality.

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

1. *The reason for Condition 1.1, 1.2, 1.3, 1.4 and 1.5 is to ensure that the Site is designed, operated, monitored and maintained in accordance with the application and supporting documentation submitted by the Owner, and not in a manner which the Director has not been asked to consider.*

2. *The reason for Conditions 1.6, 1.7, 1.8, 1.12, 1.13, 1.14, 1.15 and 5.1 is to clarify the legal rights and responsibilities of the Owner under this ECA.*

3. *Conditions 1.9, 1.10 and 1.11 are included to ensure that the appropriate Ministry staff have ready access to information and the operations of the Site, which are approved under this ECA.*

4. *Conditions 1.16, 1.17 and 1.18 are included, pursuant to subsection 197(1) of the EPA, to provide that any persons having an interest in the Site are aware that the land has been approved and used for the purposes of waste disposal.*

5. *The reasons for Condition 1.19 are to restrict potential transfer or encumbrance of the Site without the approval of the Director and to ensure that any transfer of encumbrance can be made only on the basis that it will not endanger compliance with this ECA.*

6. *The reasons for Condition 1.20 and 1.21 are to ensure that the Site is operated under the corporate name which appears on the application form submitted for this approval and to ensure that the Director is informed of any changes.*

7. *The reason for Condition 1.22 is to ensure that appropriate Ministry staff have ready access to the Site for inspection of facilities equipment, practices and operations required by the conditions in this ECA. This condition is supplementary to the powers of entry afforded a Provincial Officer pursuant to the EPA and OWRA.*

8. *Conditions 2.1, 2.2, 3.1, 4.1, 4.2, 4.3 and 4.4 are included in order to ensure that waste disposal, waste transfer operations at the site is undertaken in accordance with applicable Ministry of the Environment regulations and guidelines. Compliance with these regulations and guidelines will ensure that the site does not cause and adverse effect on the environment.*

9. *Condition 2.3 is to ensure the Owner has a operations plans for the site that details all current operations at the site and that a copy is kept on site for the Owner, the Owner's staff and/or operator. This is to ensure the site is operating is a safe manner and the environment and human health are protected.*

10. *The reason for Condition 2.4 is to ensure the Owner maintains a buffer area around the*

waste mound to ensure adequate space is available for potential contingency plan implementation.

11. *The reason for Conditions 2.5 inclusive is to ensure that users of the Site are fully aware of important information and restrictions related to Site operations under this ECA.*

12. *The reasons for Conditions 2.6, 2.7, and 2.8 are to specify the normal hours of operation for the landfill Site and a mechanism for amendment of the hours of operation.*

13. *The reasons for Conditions 2.9, 2.10, 2.11 and 2.12 are to specify site access to/from the Site and to ensure the controlled access and integrity of the Site by preventing unauthorized access when the Site is closed and no site attendant is on duty.*

14. *The reasons for Conditions 2.13, 2.14 and 2.15 are to ensure that the Site is operated, inspected and maintained in an environmentally acceptable manner and does not result in a hazard or nuisance to the natural environment or any person.*

15. *The reason Condition 2.16 is to prevent ponding in on site ditches and any adverse impact on the environment and human health.*

16. *The reason for Condition 2.17 is to ensure steps are taken to ensure landfill gas does not pose a risk to humans or the environmental within buildings at the Site.*

17. *The reason for Condition 3.1 and 3.9 is to specify the types of waste and service area that may be accepted for disposal at the Site.*

18. *Condition 3.2 specifies the maximum amount of waste that may be received at the site based on the completed Environmental Screening Process report for the Site.*

19. *The reason for Condition 3.3, 3.4, 3.5, 3.6, and 3.7 is to specify restrictions on the extent of landfilling at this Site based on the Owner's application and supporting documentation. These limits define the approved volumetric capacity of the site. Approval to landfill beyond these limits would require an application with supporting documentation submitted to the Director.*

20. *The reason for Condition 3.8 is to ensure that landfilling operations are conducted in an environmentally acceptable manner. Daily and intermediate cover is used to control potential nuisance effects, to facilitate vehicle access on the site, and to ensure an acceptable site appearance is maintained. The proper closure of a landfill site requires the application of a final cover which is aesthetically pleasing, controls infiltration, and is suitable for the end use planned for the site.*

21. *Condition 3.10 is necessary in order to ensure that all waste loads are inspected and waste that is disposed of at the site is in accordance with the terms and conditions in this ECA.*

22. *The reason for Condition 3.11 is that open burning of municipal waste is unacceptable because of concerns with air emissions, smoke and other nuisance affects, and the potential fire hazard.*

23. *Conditions 4.1, 4.2, 4.3, 4.4 and 4.5 are included to ensure that the recyclable materials are stored in their temporary storage location in a manner as to minimize a likelihood of an adverse effect or a hazard the natural environment or any person.*

24. *The reasons for the Conditions 5.1 through 5.12 are to approve the establishment and operation of a household hazardous waste collection depot and to ensure that the wastes are managed in a manner that protects the environment and the health and safety of the public.*

25. *The reason for Condition 6.1 is to ensure that the Site is supervised and operated by properly trained staff in a manner which does not result in a hazard or nuisance to the natural environment or any person.*

26. *The reasons for Conditions 7.1, 7.2, 7.3, 7.5 and 7.6 are to provide for the proper assessment of effectiveness and efficiency of site design and operation, their effect or relationship to any nuisance or environmental impacts, and the occurrence of any public complaints or concerns. Record keeping is necessary to determine compliance with this ECA, the EPA and its regulations.*

27. *The reason for Conditions 7.4, 7.7 and 12.1 and 12.2 are to ensure that accurate waste records are maintained to ensure compliance with the conditions in this ECA (such as fill rate, site capacity, record keeping, annual reporting, and financial assurance requirements), the EPA and its regulations.*

28. *The reason for Conditions 8.3 through 8.5 inclusive is to ensure protection of the natural environment and the integrity of the groundwater monitoring network.*

29. *The reason for Conditions 8.1, 8.2, 8.6 and 8.7 and are to demonstrate that the landfill site is performing as designed and the impacts on the natural environment are acceptable. Regular monitoring allows for the analysis of trends over time and ensures that there is an early warning of potential problems so that any necessary remedial/contingency action can be taken.*

30. *The reason for Conditions 9.1 through 9.5 is to ensure that the Owner follows a plan with an organized set of procedures for identifying and responding to unexpected but possible problems at the Site. A remedial action / contingency plan is necessary to ensure protection of the natural environment.*

31. *The reason for Conditions 11.1 through 11.3 is to ensure that the Municipality immediately notifies the Ministry of any spills as required in Part X of the Act so that appropriate spills response can be determined.*

32. *The reason for Conditions 10.1 and 10.2 is to establish a forum for the exchange of information and public dialogue on activities carried out at the landfill Site. Open communication with the public and local authorities is important in helping to maintain high standards for site operation and environmental protection.*

33. *The reasons for Conditions 12.1 and 12.2 are to ensure that regular review of site development, operations and monitoring data is documented and any possible improvements to site design, operations or monitoring programs are identified. An annual report is an important tool used in reviewing site activities and for determining the effectiveness of site design.*

34 *The reason for Conditions 13.1 and 13.2 are to ensure that final closure of the Site is completed in an aesthetically pleasing manner and to ensure the long-term protection of the natural environment.*

Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). A7004401 issued on November 24, 2008

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

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

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

The Notice should also include:

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

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

This Notice must be served upon:

The Secretary*

The Director appointed for the purposes of

Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

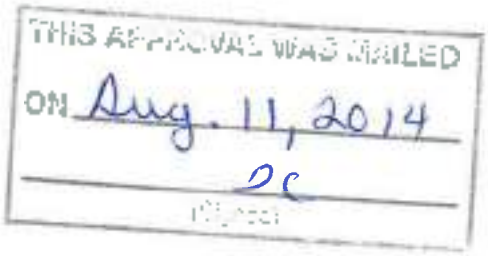
AND

Part II.1 of the Environmental Protection Act
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 314-3717 or www.ert.gov.on.ca**

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

DATED AT TORONTO this 7th day of August, 2014



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

DG/

c: District Manager, MOE Thunder Bay - District
Demetri Georgiou, exp Services Inc. ✓

Ontario

Ministry of the Environment
Ministère de l'Environnement

AMENDMENT TO PROVISIONAL CERTIFICATE OF APPROVAL
WASTE DISPOSAL SITE
NUMBER A7004401
Notice No. 1
Issue Date. March 7, 2011

The Corporation of the Municipality of Greenstone
301 East St
Post Office Box, No. 70
Geraldton, Ontario
P0T 1M0

Site Location: Geraldton Waste Disposal Site
2 miles east of Junction Hwy 11 and 584
Greenstone Municipality, District of Thunder Bay

You are hereby notified that I have amended Provisional Certificate of Approval No. A7004401 issued on November 24, 2008 for the use and operation of a 1.9 hectare landfilling/recycling site within a total site area of 26.35 hectares , as follows:

This Notice is to acknowledge receipt of proposed groundwater trigger values in accordance with Condition 8(8).

The following Item is hereby added to Schedule "A".

5. Letter dated November 23, 2009, Regarding Revised Trigger Values for Groundwater, Geraldton Landfill, from R. Rinnie and D. Georgiou, Trow Associates Inc., to Tes. Gebrezghi, Ministry of Environment.

The reason for this amendment to the Certificate of Approval is to document the receipt of the proposed groundwater trigger values.

This Notice shall constitute part of the approval issued under Provisional Certificate of Approval No. A7004401 dated November 24, 2008

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

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

The Notice should also include:

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

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

This Notice must be served upon:

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

AND

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

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

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

DATED AT TORONTO this 7th day of March, 2011

THIS NOTICE WAS MAILED
ON March 9, 2011
(Signed)

Tes'faye Gebrezghi, P.Eng.
Director
Section 39, *Environmental Protection Act*

I.M/

c: District Manager, MOE Thunder Bay - District
Robert J. Rinne/Demetert N. Georgiou, Trow Associates Inc.

Ontario

Ministry of the Environment
Ministère de l'Environnement

AMENDED PROVISIONAL CERTIFICATE OF APPROVAL
WASTE DISPOSAL SITE
NUMBER A7004401
Issue Date: November 24, 2008

The Corporation of the Municipality of Greenstone
301 East Street, P.O. Box 70
Greenstone, Ontario
P0T 1M0

Site Location: Geraldton Waste Disposal Site
2 miles east of Junction Hwy 11 and 584
Greenstone Municipality, District of Thunder Bay

You have applied in accordance with Section 27 of the Environmental Protection Act for approval of:

the use and operation of a 1.9 hectare landfilling/recycling site within the total site area of 26.35 hectares.

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

"*CAZ*" means the Contaminant Attenuation Zone;

"*Certificate* " means this entire provisional Certificate of Approval document, issued in accordance with section 39 of the *EPA*, and includes any schedules to it, the application and the supporting documentation listed in Schedule "A";

"*Director*" means any *Ministry* employee appointed in writing by the Minister pursuant to section 5 of the EPA as a Director for the purposes of Part V of the *EPA;*

"*District Manager*" means the District Manager of the local district office of the *Ministry* in which the *Site* is geographically located;

"*EPA* " means *Environmental Protection Act* , R.S.O. 1990, c. E. 19, as amended;

"*HHW* " means household hazardous waste;

"*NMA* " means *Nutrient Management Act* , 2002, S.O. 2002, c. 4, as amended from time to time;

"*Operator*" means any person, other than the Owner's employees, authorized by the *Owner* as having

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

"*Owner*" means any person that is responsible for the establishment or operation of the *Site* being approved by this *Certificate*, and includes the Corporation of the Municipality of Greenstone, its successors and assigns;

"*OWRA* " means the *Ontario Water Resources Act* , R.S.O. 1990, c. O.40, as amended;

"*PA* " means the *Pesticides Act* , R.S.O. 1990, c. P-11, as amended from time to time;

"*Provincial Officer*" means any person designated in writing by the Minister as a provincial officer pursuant to Section 5 of the *OWRA* or Section 5 of the *EPA* or Section 17 of *PA* or Section 4 of *NMA* or Section 8 of *SDWA* .

"*Refrigerant Appliances*" means household appliances which use, or may use refrigerants, and which include, but is not restricted to, refrigerators, freezers and air-conditioning systems;

"*Regional Director* " means the Regional Director of the local Regional Office of the *Ministry* in which the *Site* is located.

"*Regulation 347* " or "*Reg. 347* " means Regulation 347, R.R.O. 1990, made under the EPA, as amended from time to time;

"*SDWA*" means *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32, as amended from time to time;

"*Site* " means the entire waste disposal site, including the buffer lands, and contaminant attenuation zone at Geraldton Waste Disposal Site, Part of Mining Claim T.B. 14031, 2 miles east of junction of Hwy 11 and 584, Township of Ashmore, District of Thunder Bay; and

"*Trained personnel*" means knowledgeable in the following through instruction and/or practice:

a. relevant waste management legislation, regulations and guidelines;
b. major environmental concerns pertaining to the waste to be handled;
c. occupational health and safety concerns pertaining to the processes and wastes to be handled;
d. management procedures including the use and operation of equipment for the processes and wastes to be handled;
e. emergency response procedures;
f. specific written procedures for the control of nuisance conditions;
g. specific written procedures for refusal of unacceptable waste loads; and
h. the requirements of this *Certificate*.

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

TERMS AND CONDITIONS

1. GENERAL

Compliance

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

(2) Any person authorized to carry out work on or operate any aspect of the *Site* shall comply with the conditions of this *Certificate* .

In Accordance

(3) Except as otherwise provided for in this *Certificate* , the *Site* shall be designed, developed, built, operated and maintained in accordance with the applications for *Certificate* s of Approval, dated May 8, 1972 and the supporting documentation listed in Schedule "A".

Interpretation

(4) Where there is a conflict between a provision of any document, including the application, referred to in this *Certificate*, and the conditions of this *Certificate*, the conditions in this *Certificate* shall take precedence.

(5) Where there is a conflict between the application and a provision in any documents listed in Schedule "A", the application shall take precedence, unless it is clear that the purpose of the document was to amend the application and that the *Ministry* approved the amendment.

(6) Where there is a conflict between any two documents listed in Schedule "A", other than the application, the document bearing the most recent date shall take precedence.

(7) The conditions of this *Certificate* are severable. If any condition of this *Certificate*, or the application of any condition of this *Certificate* to any circumstance, is held invalid or unenforceable, the application of such condition to other circumstances and the remainder of this *Certificate* shall not be affected thereby.

Other Legal Obligations

(8) The issuance of, and compliance with, this *Certificate* does not:

(a) relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement; or

(b) limit in any way the authority of the *Ministry* to require certain steps be taken or to require the *Owner* and *Operator* to furnish any further information related to compliance with this *Certificate* .

Adverse Effect

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

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

Change of Ownership

(11) The *Owner* shall notify the *Director*, in writing, and forward a copy of the notification to the *District Manager*, within 30 days of the occurrence of any changes in the following information:

(a) the ownership of the *Site*;

(b) the *Operator* of the *Site*;

(c) the address of the *Owner or Operator*; and

(d) the partners, where the *Owner or Operator* is or at any time becomes a partnership and a copy of the most recent declaration filed under the *Business Names Act* , R. S. O. 1990, c. B.17, shall be included in the notification.

(12) No portion of this *Site* shall be transferred or encumbered prior to or after closing of the *Site* unless the *Director* is notified in advance and sufficient financial assurance is deposited with the *Ministry* to ensure that these conditions will be carried out.

(13) In the event of any change in *Ownership* of the works, other than change to a successor Owner, the *Owner* shall notify the successor of and provide the successor with a copy of this *Certificate*, and the *Owner* shall provide a copy of the notification to the *District Manager* and the *Director*.

Certificate of Requirement/Registration on Title - Site

(14) The Owner shall:

(a) Within two (2) years of the date of the issuance of this *Certificate*, submit to the *Director* for review, two copies of a completed Certificate of Requirement with a registerable description of the *Site*; and

(b) Within 10 calendar days of receiving the Certificate of Requirement authorized by the *Director*, register the Certificate of Requirement in the appropriate Land Registry Office on title to the *Site* and submit to the Director the duplicate registered copy immediately following registration.

(15) Pursuant to Section 197 of the Environmental Protection Act, neither the *Owner* nor any person having an interest in the *Site* shall deal with the *Site* in any way without first giving a copy of this *Certificate* to each person acquiring an interest in the *Site* as a result of the dealing.

Certificate of Requirement/Registration on Title - CAZ

(16) The Owner shall:

(a) Within two (2) years from the date of the issuance of this *Certificate*, submit to the *Director* for review, two copies of a completed Certificate of Requirement with a registerable description of the CAZ; and

(b) Within 10 calendar days of receiving the Certificate of Requirement authorized by the *Director*, register the Certificate of Requirement in the appropriate Land Registry Office on title to the CAZ and submit to the Director the duplicate registered copy immediately following registration.

Inspections by the Ministry

(17) No person shall hinder or obstruct a *Provincial Officer* from carrying out any and all inspections authorized by the *OWRA*, *the EPA*, the *PA*, the *SDWA* or the *NMA*, of any place to which this *Certificate* relates, and without limiting the foregoing:

(a) to enter upon the premises where the approved works are located, or the location where the records required by the conditions of this *Certificate* are kept;

(b) to have access to, inspect, and copy any records required to be kept by the conditions of this *Certificate*;

(c) to inspect the *Site*, related equipment and appurtenances;

(d) to inspect the practices, procedures, or operations required by the conditions of this *Certificate*; and

(e) to sample and monitor for the purposes of assessing compliance with the terms

and conditions of this Certificate or the *EPA*, the *OWRA*, the *PA*, the *SDWA* or the *NMA*.

Information and Record Retention

(18) Any information requested, by the *Ministry*, concerning the *Site* and its operation under this *Certificate*, including but not limited to any records required to be kept by this *Certificate* shall be provided to the *Ministry*, upon request, in a timely manner. Records shall be retained for contaminating life span of the *Site* except for as otherwise authorized in writing by the *Director*.

(19) The receipt of any information by the *Ministry* or the failure of the *Ministry* to prosecute any person or to require any person to take any action, under this *Certificate* or under any statute, regulation or other legal requirement, in relation to the information, shall not be construed as:

(a) an approval, waiver, or justification by the *Ministry* of any act or omission of any person that contravenes any term or condition of this *Certificate* or any statute, regulation or other legal requirement; or

(b) acceptance by the *Ministry* of the information's completeness or accuracy.

(20) The Owner shall ensure that a copy of this Certificate, in its entirety and including all its Notices of Amendment, and documentation listed in Schedule "A", are retained at the Site at all times.

2. SITE OPERATION

Operation

(1) The *Site* shall be operated and maintained at all time including management and disposal of all waste in accordance with the *EPA*, *Regulation 347*, and the conditions of this *Certificate*. At no time shall the discharge of a contaminant that causes or is likely to cause an adverse effect be permitted

Signs

(2) A sign shall be installed and maintained at the main entrance/exit to the *Site* on which is legibly displayed the following information:

(a) the name of the *Site* and *Owner*;
(b) the number of the *Certificate*;
(c) the name of the *Operator*;
(d) the normal hours of operation;
(e) the allowable and prohibited waste types;
(f) the telephone number to which complaints may be directed;
(g) a warning against unauthorized access;
(h) a twenty-four (24) hour emergency telephone number (if different from above); and

(i) a warning against dumping outside the *Site* .

(3) The Owner shall install and maintain signs to direct vehicles to working face and recycling areas.

(4) The Owner shall provide signs at recycling depot informing users what materials are acceptable and directing users to appropriate storage area.

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

(5) The *Site* shall be operated and maintained such that the vermin, vectors, dust, litter, odour, noise and traffic do not create a nuisance.

Burning Waste Prohibited

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

Site Access

(7) Waste shall only be accepted at the *Site* from 9:00 a.m. to 6:00 p.m.

(8) On-site equipment used for daily site preparation and closing activities shall be operated one (1) hour before and one (1) hour after the hours of operation approved by this *Certificate*.

(9) With the prior written approval from the *District Manager*, the time periods may be extended to accommodate seasonal or unusual quantities of waste.

Site Security

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

(11) The *Site* shall be operated and maintained in a safe and secure manner. During non-operating hours, the *Site* entrance and exit gates shall be locked and the *Site* shall be secured against access by unauthorized persons.

3. EMPLOYEE TRAINING

(1) A training plan for all employees that operate any aspect of the *Site* shall be developed and implemented by the *Operator*. Only *Trained Personnel* shall operate any aspect of the *Site* or carry out any activity required under this *Certificate* .

4. COMPLAINTS RESPONSE PROCEDURE

(1) If at any time the *Owner* receives complaints regarding the operation of the *Site*, the *Owner* shall respond to these complaints according to the following procedure:

(a) The *Owner* shall record and number each complaint, either electronically or in a log book, and shall include the following information: the nature of the complaint, the name, address and the telephone number of the complainant if the complainant will provide this information and the time and date of the complaint;

(b) The *Owner*, upon notification of the complaint, shall initiate appropriate steps to determine all possible causes of the complaint, proceed to take the necessary actions to eliminate the cause of the complaint and forward a formal reply to the complainant; and

(c) The *Owner* shall complete and retain on-site a report written within one (1) week of the complaint date, listing the actions taken to resolve the complaint and any recommendations for remedial measures, and managerial or operational changes to reasonably avoid the recurrence of similar incidents.

5. EMERGENCY RESPONSE

(1) Any spills, fires or other emergency situations shall be forthwith reported directly to the *Ministry's* Spills Action Centre (1-800-268-6060) and shall be cleaned up immediately.

(2) In addition, the *Owner* shall submit, to the *District Manager* a written report within three (3) business days of the emergency situation, outlining the nature of the incident, remedial measures taken, handling of waste generated as a result of the emergency situation and the measures taken to prevent future occurrences at the *Site*.

(3) All wastes resulting from an emergency situation shall be managed and disposed of in accordance with *O.Reg. 347*.

(4) All equipment and materials required to handle the emergency situations shall be:
(a) kept on hand at all times that waste landfilling and/or handling is undertaken at the *Site*; and
(b) adequately maintained and kept in good repair.

(5) The *Owner* shall ensure that the emergency response personnel are familiar with the use of such equipment and its location(s).

6. RECORD KEEPING AND REPORTING

Daily Log Book

(1) A daily log shall be maintained in written format and shall include the following information:

(a) the type, date and time of arrival, hauler, and quantity (tonnes) of all industrial and commercial waste and cover material received at the *Site;*
(b) the area of the *Site* in which waste disposal operations are taking place;
(c) a record of litter collection activities and the application of any dust suppressants;
(d) a record of the daily inspections; and
(e) a description of any out-of-service period of any control, treatment, disposal or monitoring facilities, the reasons for the loss of service, and action taken to restore and maintain service.

(2) Any information requested, by the *Director* or a *Provincial Officer,* concerning the *Site* and its operation under this *Certificate,* including but not limited to any records required to be kept by this *Certificate* shall be provided to the *Ministry,* upon request.

Daily Inspections and Log Book

(3) An inspection of the entire *Site* and all equipment on the *Site* shall be conducted each day the *Site* is in operation to ensure that: the *Site* is secure; that the operation of the *Site* is not causing any nuisances; that the operation of the *Site* is not causing any adverse effects on the environment and that the *Site* is being operated in compliance with this *Certificate.* Any deficiencies discovered as a result of the inspection shall be remedied immediately, including temporarily ceasing operations at the *Site* if needed.

(4) A record of the inspections shall be kept in a daily log book that includes:
(a) the name and signature of person that conducted the inspection;
(b) the date and time of the inspection;
(c) the list of any deficiencies discovered;
(d) the recommendations for remedial action; and
(e) the date, time and description of actions taken.

(5) A record shall be kept in the daily log book of all refusals of waste shipments, the reason(s) for refusal, and the origin of the waste, if known.

Annual Operations Report

(6) A written report on the development, operation and monitoring of the *Site,* shall be completed annually (the "Annual Report"). The Annual Report shall be submitted to the *District Manager,* by April 30th of the year following the period being reported upon.

(7) The Annual Report shall include the following:

(a) an assessment of the operation and performance of all engineered facilities, the need to amend the design or operation of the *Site,* and the adequacy of and need to implement the contingency plans;
(b) site plans showing the existing contours of the *Site;* areas of landfilling operation during the reporting period; areas of intended operation during the next reporting

period; areas of excavation during the reporting period; the progress of final cover, vegetative cover, and any intermediate cover application; previously existing site facilities; facilities installed during the reporting period; and site preparations and facilities planned for installation during the next reporting period;

(c) calculations of the volume of waste, daily and intermediate cover, and final cover deposited or placed at the *Site* during the reporting period and a calculation of the total volume of *Site* capacity used during the reporting period;

(d) a calculation of the remaining capacity of the *Site* and an estimate of the remaining *Site* life;

(e) a summary of the weekly, maximum daily and total annual quantity (tonnes) of waste received at the *Site*,

(f) a summary of any complaints received and the responses made;

(g) a discussion of any operational problems encountered at the *Site* and corrective action taken;

(h) any changes to the Design and Operations Report and the Closure Plan that have been approved by the *Director* since the last *Annual Report*;

(i) a report on the status of all monitoring wells and a statement as to compliance with *Ontario Regulation 903*; and

(j) any other information with respect to the *Site* which the *Regional Director* may require from time to time.

(8) A written report on groundwater and surface water monitoring of the *Site*, shall be completed every three years starting 2009 (the "Monitoring Report"). The Monitoring Report shall be submitted to the *District Manager*, by April 30th of the year following the period being reported upon. The first report shall be submitted upon completion of the 2009 monitoring season by April 30, 2010.

(9) The Monitoring Report shall include the following:

(a) An accurately scaled site plan illustrating the location of all buried wastes, the site boundaries, monitoring well locations, surface water sampling locations, and the location of the contaminant attenuation zone.

(b) An accurately scaled location map illustrating topography and the site relative to nearby potentially sensitive groundwater/surface water features (i.e. lakes, streams wells).

(c) A water table contour map based on current data.

(d) A discussion indicating the landfill capacity, current fill volume, volume filled in the last year, and the status of any control measures such as interim and final or progressive cover.

(e) Stratigraphic cross sections which clearly illustrate the subsurface distribution of geological materials.

(f) Borehole logs for all monitoring wells.

(g) Tables illustrating historical water chemistry and water level data.

(h) Graphs illustrating historical water quality trends with time for key leachate indicator parameters (as a minimum these should include alkalinity, hardness, Fe,

Mn, Zn and DOC).

(i) Durov plots for all well locations.

(j) An assessment of monitoring data to evaluate compliance with the requirements of MOE Guideline B-7 and the PWQOs.

(k) Recommendations for future monitoring and/or remedial actions.

(l) A section detailing the field sampling protocols and QA/QC measures.

7. LANDFILL DESIGN AND DEVELOPMENT

Approved Waste Types

(1) Only solid non-hazardous municipal waste as defined under *Reg. 347* shall be accepted at the *Site* for landfilling.

(2) No liquid industrial waste or hazardous wastes as defined under *Reg. 347* shall be received at the *Site*.

(3) The *Owner* shall develop and implement a program to inspect waste to ensure that the waste received at the *Site* is of a type approved for acceptance under this *Certificate*.

(4) The *Owner* shall ensure that all loads of waste are properly inspected by trained site personnel prior to acceptance at the *Site* and that the waste vehicles are directed to the appropriate areas for disposal or transfer of the waste. The *Owner* shall notify the *District Manager*, in writing, of load rejections at the *Site* within one (1) business day from their occurrence.

Capacity

(5) The maximum amount of waste, daily cover and intermediate cover excluding final cover placed within the 1.9 hectare foot print shall not exceed 173,000 cubic metres.

Service Area

(6) Only waste that is generated within the boundaries of the Municipality of Greenstone shall be accepted at the *Site*.

Cover

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

(a) Control of blowing litter, odours, dust, landfill gas, gulls, vectors, vermin and

fires;

(b) Provision for an aesthetic condition of the landfill during the active life of the *Site;*

(c) Provision for vehicle access to the active tipping face; and

(d) Compatibility with the design of the *Site* for groundwater protection, leachate management and landfill gas management.

(8) Cover material shall be applied as follows:

(a) Daily Cover - Weather permitting, deposited waste shall be covered weekly in a manner acceptable to the *District Manager* so that no waste is exposed to the atmosphere;

(b) Intermediate Cover - In areas where landfilling has been temporarily discontinued for six (6) months or more, a minimum thickness of 300 millimetre of soil cover or an approved thickness of alternative cover material shall be placed; and

(c) Final Cover - In areas where landfilling has been completed to final contours, a minimum 600 millimetre thick layer of clay and 150 millimetres of top soil (final cover) shall be placed. Fill areas shall be progressively completed and rehabilitated as landfill development reaches final contours.

8. LANDFILL MONITORING

Landfill Gas

(1) The *Owner* shall ensure that any buildings or structures at the *Site* contain adequate ventilation systems to relieve any possible landfill gas accumulation. Routine monitoring for explosive methane gas levels shall be conducted in all buildings or structures at the *Site*, especially enclosed structures which at times are occupied by people.

Compliance Limits

(2) The *Site* shall be operated in such a way as to ensure compliance with the following:

(a) Reasonable Use Guideline B-7 for the protection of the groundwater at the *Site;* and

(b) Provincial Water Quality Objectives included in the July 1994 publication entitled *Water Management Policies, Guidelines, Provincial Water Quality Objectives,* as amended from time to time or limits set by the *Regional Director,* for the protection of the surface water at and off the *Site.*

Surface Water and Ground Water

(3) The *Owner* shall monitor surface water and ground water as follows:

(a) Ground water and surface water sampling is to be carried out twice per year, and the two sampling events must be a minimum of 60 days apart;

(b) A new monitoring well shall be installed prior to the 2009 monitoring season, to be located at the down gradient boundary of the current 21.7 ha attenuation zone, directly down gradient of MW3A and the new well MW7, and due north of MW10;

(c) Groundwater samples are to be collected from monitoring wells MW1, MW2, MW3A, MW3B, MW4, MW5, MW6, MW7, MW8, MW9, MW10A, and MW10B, (at the locations indicated on Figure 3 of the Updated Design and Operations Plan) and from the new well described above;

(d) Surface water samples are to be collected at existing locations SW1 and SW2, and a new location to be located in Barton Bay, up gradient and north of the SW2 location.

(e) Ground water and surface water samples are to be analyzed for: pH (lab and field), conductivity (lab and field), temperature (field only), total dissolved solids, hardness, dissolved organic carbon (DOC), phenols, total Kjeldahl nitrogen (TKN), ammonia-N, organic nitrogen, sodium, potassium, calcium, magnesium, chloride, nitrate, nitrite, orthophosphate, sulphate, alkalinity (as CaCO3), aluminum, antimony, arsenic, barium, beryllium, bismuth, boron, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, molybdenum, nickel, total phosphorous, selenium, silicon, silver, strontium, thallium, tin, titanium, vanadium, and zinc.

(f) For the ground water samples, the ion balance must be calculated for each well for quality control purposes, and an ion balance exceeding 10% should be investigated and explained.

(g) Surface water samples are to also be analyzed for total suspended solids, chemical oxygen demand and biological oxygen demand.

(h) A sample from the source well MW5 is to be analyzed annually for volatile organic compounds (VOC's) – acetone, benzene, bromodichloromethane, chloroform, 1,4-dichlorobenzene, ethylbenzene, methylene chloride (dichloromethane), methyl ethyl ketone (MEK), toluene, trichloroethene (trichloroethylene), vinyl chloride, m-xylene, p-xylene, and o-xylene.

(i) All analysis must use detection limits suitable for comparison with Ontario Drinking Water Standards and/or Provincial Water Quality Objectives.

(4) A certified Professional Geoscientist or Engineer possessing appropriate hydrogeologic training and experience shall execute or directly supervise the execution of the groundwater monitoring and reporting program.

Groundwater Wells and Monitors

(5) The *Owner* shall ensure that all groundwater monitoring wells which form part of the monitoring program are properly capped, locked and protected from damage.

(6) Where landfilling is to proceed around monitoring wells, suitable extensions shall be added to the wells and the wells shall be properly re-secured.

(7) Any groundwater monitoring wells included in the on-going monitoring program that are damaged shall be assessed, repaired, replaced or decommissioned by the *Owner*, as required.

(a) The *Owner* shall repair or replace any monitoring well which is destroyed or in any way made to be inoperable for sampling such that no more than one regular sampling event is missed.

(b) All monitoring wells which are no longer required as part of the groundwater monitoring program, and have been approved by the *District Manager* for abandonment, shall be decommissioned by the *Owner*, as required, in accordance with *O.Reg. 903*, that will prevent contamination through the abandoned well. A report on the decommissioning of the well shall be included in the Annual Report for the period during which the well was decommissioned.

Trigger Mechanisms and Contingency Plans

(8) Within one (1) year from the date of this *Certificate*, the *Owner* shall submit to the *Director*, for approval, and copies to the *District Manager*, revised trigger values for groundwater as per the contingency plan provided in Item number 4 in Schedule "A", but reflecting the newly expanded CAZ and Provincial Water Quality Objectives for the purpose of initiating investigative activities into the cause of increased contaminant concentrations at the Contaminant Attenuation Zone (*CAZ*) limit.

(9) In the event of a confirmed exceedence of a site-specific trigger level relating to leachate mounding or groundwater or surface water impacts due to leachate at the site's *CAZ* limit, the *Owner* shall immediately notify the *District Manager*, and an investigation into the cause and the need for implementation of remedial or contingency actions shall be carried out by the *Owner* in accordance with the approved trigger mechanisms and associated contingency plans.

(10) If monitoring results, investigative activities and/or trigger mechanisms indicate the need to implement contingency measures, the *Owner* shall ensure that the following steps are taken:

(a) The *Owner* shall notify the *District Manager*, in writing of the need to implement contingency measures, no later than 30 days after confirmation of the exceedences;

(b) Detailed plans, specifications and descriptions for the design, operation and maintenance of the contingency measures shall be prepared and submitted by the *Owner* to the *District Manager* for approval; and

(c) The contingency measures shall be implemented by the *Owner* upon approval by the *District Manager*.

(11) The *Owner* shall ensure that any proposed changes to the site-specific trigger levels for

leachate impacts to the surface water or groundwater, are approved in advance by the *Director* via an amendment to this *Certificate*.

(12) (a) If expanding the contaminant attenuation zone is required as a remedial measure necessary for proper operation of a landfilling site, the *Owner* of the landfilling site must own property rights respecting the contaminant attenuation zone, unless,

(i) the contaminant attenuation zone is on Crown land and the Crown has agreed in writing to the use of the land for that purpose; or

(ii) the contaminant attenuation zone is on a public road and the road authority has agreed in writing to the use of the land for that purpose.

(b) The holder of the certificate of approval must continue to own the property rights for all of the contaminating life span of the *Site*.

(c) The ownership of the property rights must include the right to,

(i) discharge contaminants from the landfilling site into the contaminant attenuation zone;

(ii) enter into the contaminant attenuation zone and onto the surface above the contaminant attenuation zone for purposes of testing, monitoring, intercepting contaminants and carrying out remedial work;

(iii) install, operate and maintain works, for the purposes mentioned in clause (b), in or above the contaminant attenuation zone, including on the surface above the contaminant attenuation zone; and

(iv) prevent the owner of the land in which the contaminant attenuation zone is located from paving, erecting a structure or making any use of land above or in the vicinity of the contaminant attenuation zone that would interfere with the functioning of the contaminant attenuation zone or with the exercise of any of the rights mentioned in this subsection.

Changes to the Monitoring Plan

(13) The *Owner* may request to make changes to the monitoring program(s) to the *District Manager* in accordance with the recommendations of the annual report. The *Owner* shall make clear reference to the proposed changes in separate letter that shall accompany the annual report.

(14) Within fourteen (14) days of receiving the written correspondence from the *District Manager* confirming that the *District Manager* is in agreement with the proposed changes to the environmental monitoring program, the *Owner* shall forward a letter identifying the proposed changes and a copy of the correspondences from the *District Manager* and all other correspondences and responses related to the changes to the monitoring program, to the *Director* requesting the *Certificate* be amended to approve the proposed changes to the environmental monitoring plan prior to implementation.

(15) In the event any other changes to the environmental monitoring program are proposed outside of the recommendation of the annual report, the *Owner* shall follow current ministry procedures for seeking approval for amending the *Certificate*.

9. CLOSURE PLAN

(1) At least 3 years prior to the anticipated date of closure of this *Site*, the *Owner* shall submit to the *Director* for approval, with copies to the *District Manager*, a detailed *Site* closure plan pertaining to the termination of landfilling operations at this *Site*, post-closure inspection, maintenance and monitoring, and end use. The plan shall include the following:

(a) a plan showing *Site* appearance after closure;
(b) a description of the proposed end use of the *Site*;
(c) a descriptions of the procedures for closure of the *Site*, including:
  (i) advance notification of the public of the landfill closure;
  (ii) posting of a sign at the *Site* entrance indicating the landfill is closed and identifying any alternative waste disposal arrangements;
  (iii) completion, inspection and maintenance of the final cover and landscaping;
  (iv) *Site* security;
  (v) removal of unnecessary landfill-related structures, buildings and facilities;
  (vi) final construction of any control, treatment, disposal and monitoring facilities for leachate, groundwater, surface water and landfill gas; and
  (vii) a schedule indicating the time-period for implementing sub-conditions (i) to (vi) above;
(d) descriptions of the procedures for post-closure care of the *Site*, including:
  (i) operation, inspection and maintenance of the control, treatment, disposal and monitoring facilities for leachate, groundwater, surface water and landfill gas;
  (ii) record keeping and reporting; and
  (iii) complaint contact and response procedures;
(e) an assessment of the adequacy of and need to implement the contingency plans for leachate and methane gas; and
(f) an updated estimate of the contaminating life span of the *Site*, based on the results of the monitoring programs to date.

(2) The *Site* shall be closed in accordance with the closure plan as approved by the *Director*.

10. WASTE DIVERSION

(1) The Owner shall ensure that:
(a) all bins and waste storage areas are clearly labelled;
(b) all lids or doors on bins shall be kept closed during non-operating hours and

during the high wind events; and

(c) if necessary to prevent litter, waste storage areas shall be covered during the high winds events.

(2) The Owner shall provide a segregated area for the storage of *Refrigerant Appliances* so that the following are ensured:

(a) all *Refrigerant Appliances* have been tagged to indicate that the refrigerant has been removed by a licensed technician. The tag number shall be recorded in the log book and shall remain affixed to the appliance until transferred from the *Site*; or

(b) all *Refrigerant Appliances* accepted at the *Site*, which have not been tagged by a licensed technician to verify that the equipment no longer contains refrigerants, are stored segregated, in a clearly marked area, in an upright position and in a manner which allows for the safe handling and transfer from the *Site* for removal of refrigerants as required by O.Reg. 189; and

(c) all *Refrigerant Appliances* received on-site shall either have the refrigerant removed prior to being transferred from the *Site* or shall be shipped off-site only to facilities where the refrigerants can be removed by a licensed technician in accordance with O.Reg. 189.

(3) Propane cylinders shall be stored in a segregated area in a manner which prevents cylinders from being knocked over or cylinder valves from breaking.

(4) The Owner shall transfer waste and recyclable materials from the *Site* as follows:

(a) recyclable materials shall be transferred off-site once their storage bins are full;

(b) scrap metal shall be transferred off-site at least twice a year;

(c) tires shall be transferred off-site as soon as a load for the contractor hired by the Owner has accumulated or as soon as the accumulated volume exceeds the storage capacity of its bunker; and

(d) immediately, in the event that waste is creating an odour or vector problem.

(5) The Owner shall notify the appropriate contractors that waste and recyclable wastes that are to be transferred off the *Site* are ready for removal. Appropriate notice time, as determined by the contract shall be accommodated in the notification procedure.

11. HOUSEHOLD HAZARDOUS WASTE DEPOT

HHW Facility Operations

(1) The *HHW* depot shall not receive more than 5 cubic metres of *HHW* per day.

(2) The *HHW* depot shall not store in excess of 10 cubic metres of *HHW* on *Site*.

(3) *HHW* shall not be stored at the *Site* for longer than one hundred eighty (180) days, unless the consent of the *District Manager* has been obtained, with the exception of waste oil

which shall be stored on *Site* in accordance with Condition 11(2).

(4) All household hazardous waste received and stored must be managed in accordance with *Ontario Regulation 347, R.R.O. 1990,* as amended, and with the Ministry of Environment document entitled "Household Hazardous Waste Collection and Facility Guidelines" dated May 1993.

(5) All storage of liquid wastes shall be in accordance with this *Ministry's* publication "Guidelines of Environmental Protection Measures at Chemical Storage Facilities", dated October 1978 as amended.

(6) All *HHW* shall be stored in secondary containment that is adequate to contain any spills or leaks. Segregated secondary containment shall be provided for incompatible types of waste.

(7) Incoming *HHW* shall be inspected by *Trained Personnel* , prior to being accepted at the *Site*, to ensure that the *Site* is approved to accept that type of waste.

(8) All containers shall be clearly labelled indicating the type and nature of the hazardous waste stored as required by regulation. All points of access to the *Site* shall be posted to warn that the area contains hazardous materials.

(9) No radioactive wastes shall be accepted at this *Site*.

(10) Oil and oil-based paints which have been manufactured prior to 1972; or whose manufacturing date cannot be determined, may contain PCBs and shall be handled as follows:

(a) The oil and oil-based paints shall not be mixed (bulked) with other paints prior to testing. Paints which are lab-packed are not considered to be mixed under this *Certificate;*

(b) The oil and oil-based paints shall be tested by a certified laboratory for PCB content and shall be handled in the manner outlined in Condition 11.10 (c) if found to contain PCBs;

(c) If the oil and oil-based paints are found to have PCBs at or above levels identified in Condition 11.10 (*b*), it shall be forthwith reported to the *District Manager* and shall be managed in accordance with Regulation 362 and stored or removed from the *Site* to an approved PCB storage site, in accordance with written instructions from the *District Manager;* and

(d) The oil and oil-based paints shall not be distributed for reuse if they have any measurable PCB content. The oil and oil-based paint is considered to be a PCB waste, if measured levels are equal to or greater than 50 parts per million.

(11) Except for oil based paints that become classified as PCB Waste, paints may be offered for reuse to the public. Records shall be kept of the type, volume and recipient of paint returned to the public.

(12) The *Owner* shall maintain, at the *Site*, a log book which records daily, the following information:

(a) date of record;
(b) types, quantities and source of *HHW* received;
(c) quantities of *HHW* stored at the *Site;*
(d) quantities and destination of *HHW* shipped from the *Site;* and
(e) quantities of waste returned to the public as noted in Condition 11(11).

SCHEDULE "A"

1. Application for a Certificate of Approval for a Waste Disposal Site dated Letter dated May 8, 1972.
2. Letter dated March 29, 1989 from Mr. J. de Bakker of the Ministry of the Environment to Mr. R. Sinclair, Clerk-Administrator for the Township of Geraldton.
3. Report titled "Updated Design and Operations Plan, Geraldton Landfill, Municipality of Greenstone, Ontario" dated May 1, 2007 prepared by Trow Associates Inc.
4. Report titled "2007 Environmental Quality Monitoring Report, Geraldton Landfill, Municipality of Greenstone, Ontario" dated February 15, 2008 prepared by Trow Associates Inc.

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

GENERAL

1. The reason for Conditions 1(1), (2), (4), (5), (6), (7), (8), (9), (10), (18), (19) and (20) is to clarify the legal rights and responsibilities of the *Owner* and *Operator* under this Certificate of Approval.
2. The reasons for Condition 1(3) is to ensure that the *Site* is designed, operated, monitored and maintained in accordance with the application and supporting documentation submitted by the *Owner*, and not in a manner which the *Director* has not been asked to consider.
3. The reasons for Condition 1(11) are to ensure that the *Site* is operated under the corporate name which appears on the application form submitted for this approval and to ensure that the *Director* is informed of any changes.
4. The reasons for Condition 1(12) are to restrict potential transfer or encumbrance of the *Site* without the approval of the *Director* and to ensure that any transfer of encumbrance can be made only on the basis that it will not endanger compliance with this Certificate of Approval.
5. The reason for Condition 1(13) is to ensure that the successor is aware of its legal responsibilities.

6. Conditions 1 (14), (15) and (16) are included, pursuant to subsection 197(1) of the *EPA* , to provide that any persons having an interest in the *Site* are aware that the land has been approved and used for the purposes of waste disposal.

7. The reason for Condition 1(17) is to ensure that appropriate Ministry staff has ready access to the Site for inspection of facilities, equipment, practices and operations required by the conditions in this Certificate of Approval. This Condition is supplementary to the powers of entry afforded a Provincial Officer pursuant to the *Act* , the *OWRA* , the *PA* , the *NMA* and the *SDWA* .

SITE OPERATION

8. The reasons for Conditions 2(1), 2(5) and 6(3) are to ensure that the *Site* is operated, inspected and maintained in an environmentally acceptable manner and does not result in a hazard or nuisance to the natural environment or any person.

9. The reason for Conditions 2 (2), 2(3) and 2(4) is to ensure that users of the *Site* are fully aware of important information and restrictions related to *Site* operations and access under this *Certificate*.

10. The reason for Condition 2(6) is that open burning of municipal waste is unacceptable because of concerns with air emissions, smoke and other nuisance affects, and the potential fire hazard.

11. The reasons for Condition 2(7), 2(8) and 2(9) are to specify the hours of operation for the landfill site and a mechanism for amendment of the hours of operation, as required.

12. The reasons for Condition 2(10) and 2(11) are to ensure that the *Site* is supervised by properly trained staff in a manner which does not result in a hazard or nuisance to the natural environment or any person and to ensure the controlled access and integrity of the *Site* by preventing unauthorized access when the Site is closed and no site attendant is on duty.

EMPLOYEE TRAINING

13. The reason for Condition 3(1) is to ensure that the *Site* is supervised and operated by properly trained staff in a manner which does not result in a hazard or nuisance to the natural environment or any person.

COMPLAINTS RESPONSE PROCEDURE

14. The reason for Condition 4(1) is to ensure that any complaints regarding landfill operations at this *Site* are responded to in a timely and efficient manner.

EMERGENCY RESPONSE

15. Conditions 5(1) and 5(2) are included to ensure that emergency situations are reported to the

Ministry to ensure public health and safety and environmental protection.

16. Conditions 5(3), 5(4) and 5(5) are included to ensure that emergency situations are handled in a manner to minimize the likelihood of an adverse effect and to ensure public health and safety and environmental protection.

RECORD KEEPING AND REPORTING

17. The reason for Conditions 6(1) and 6(2) is to ensure that accurate waste records are maintained to ensure compliance with the conditions in this Certificate of Approval (such as fill rate, site capacity, record keeping, annual reporting, and financial assurance requirements), the *EPA* and its regulations.

18. The reason for Conditions 6(4) and 6(5) is to ensure that detailed records of *Site* inspections are recorded and maintained for inspection and information purposes.

19. The reasons for Conditions 6(6) and 6(7) are to ensure that regular review of site development, operations and monitoring data is documented and any possible improvements to site design, operations or monitoring programs are identified. An annual report is an important tool used in reviewing site activities and for determining the effectiveness of site design.

LANDFILL DESIGN AND DEVELOPMENT

20. The reason for Conditions 7(1) to 7(6) inclusive is to specify the approved areas from which waste may be accepted at the *Site* and the types and amounts of waste that may be accepted for disposal at the *Site*, based on the *Owner* 's application and supporting documentation.

21. The reason for Condition 7 (7) is to specify the approved alternative cover material and to specify requirements for use of alternative cover material at the *Site* .

22. The reasons for Condition 7(8) are to ensure that daily and intermediate cover is used to control potential nuisance effects, to facilitate vehicle access on the *Site*, and to ensure an acceptable site appearance is maintained. The proper closure of a landfill site requires the application of a final cover which is aesthetically pleasing, controls infiltration, and is suitable for the end use planned for the *Site*.

LANDFILL MONITORING

23. Reasons for Condition 8(1) are to ensure that off site migration of landfill gas is monitored and all buildings at the *Site* are free of any landfill gas accumulation, which due to a methane gas component may be explosive and thus create a danger to any persons at the *Site*.

24. Condition 8(2) is included to provide the groundwater and surface water limits to prevent water pollution at the *Site*.

25 Conditions 8(3) and 8(4) are included to require the Owner to demonstrate that the *Site* is performing as designed and the impacts on the natural environment are acceptable. Regular monitoring allows for the analysis of trends over time and ensures that there is an early warning of potential problems so that any necessary remedial/contingency action can be taken.

26. Conditions 8(5), 8(6) and 8(7) are included to ensure the integrity of the groundwater monitoring network so that accurate monitoring results are achieved and the natural environment is protected.

27. Conditions 8(8) to 8(12) inclusive are added to ensure the *Owner* has a plan with an organized set of procedures for identifying and responding to potential issues relating to groundwater and surface water contamination near or at the *Site's* compliance point.

28. Reasons for conditions 8(13), 8(14) and 8(15) are included to streamline the approval of the changes to the monitoring plan.

CLOSURE PLAN

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

WASTE DIVERSION

30. Condition 10 is included to ensure that the recyclable materials are stored in their temporary storage location in a manner as to minimize a likelihood of an adverse effect or a hazard the natural environment or any person.

HOUSEHOLD HAZARDOUS WASTE DEPOT

31. The reasons for the condition 11 are to approve the establishment and operation of a household hazardous waste collection depot and to ensure that the wastes are managed in a manner that protects the environment and the health and safety of the public.

This Provisional Certificate of Approval revokes and replaces Certificate(s) of Approval No. A7004401 issued on August 25, 1992

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

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

The Notice should also include:

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

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

This Notice must be served upon:

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

AND

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

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

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

DATED AT TORONTO this 24th day of November, 2008

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

RM/

c: District Manager, MOE Thunder Bay - District
Vance A. Czerwinski, The Corporation of the Municipality of Greenstone

Ministry of the Environment and Climate Change

Thunder Bay/Kenora District
435 James Street South
Suite 331
Thunder Bay, ON P7E 6S7

Ministère de l'Environnement et de l'Action en Matière de Changement Climatique

District de Thunder Bay/Kenora
435 rue James sud
Bureau 331
Thunder Bay, ON P7E 6S7

Ontario

Fax (807) 475-1754
Phone: (807) 475-1428

March 10, 2017

MEMORANDUM

To: Monika Holenstein
Senior Environmental Officer
Thunder Bay Regional Office

From: Jason Arnold, P.Geo.
Regional Hydrogeologist
Technical Support Section, Northern Region

Re: 2013, 2014, & 2015 Triennial Monitoring Report, Geraldton Landfill, Municipality of Greenstone, Ontario

1 Introduction

As requested, I have reviewed the groundwater related portions of the triennial groundwater monitoring report entitled *"2013, 2014, & 2015 Environmental Quality Monitoring Report, Geraldton Landfill, Municipality of Greenstone, Ontario"* dated April 13, 2016, prepared by exp Services Incorporated ("Consultant").

This report has been reviewed in conjunction with the report entitled *"2010, 2011, & 2012 Environmental Quality Monitoring Report, Geraldton Landfill, Municipality of Greenstone, Ontario"* dated April 25, 2013. The purpose of this review is to evaluate the on-site and off-site leachate impacts from the landfill, and compliance with provincial regulations.

The landfill is currently in compliance with the site ECA. The landfill is currently over the approved capacity of the ECA but is operating under provisional approval. The landfill has also failed the reasonable use guideline (RUG) limits at the contaminant attenuation zone (CAZ) boundary. Piper or Durov plots should be prepared for the site, as they would likely aid in differentiating the source of elevated contaminants such as chloride, sodium, and magnesium. Recommendations for mitigation measures such as expanding the CAZ or leachate collection should be provided. Potential impacts on Kenogamisis Lake should also be considered when developing mitigation measures and trigger levels should be revised to reflect the preferred mitigation strategy. It is understood the ECA will not be amended, and site closure should be initiated in compliance with Section 13.0 of the ECA. The next triennial monitoring report is due

March 31, 2019, presenting data for the three year period from 2016 through 2018.

2 Background Information

The MOECC previously provided comment on the Geraldton WDS terms of reference, for the Amended Environmental Compliance Approval (ECA), which was issued August 7, 2014 (No. A7004401). The site C of A required triennial reporting, due March 31st to cover the three years ending the preceding December 31st.

The MOECC previously provided comment on the Geraldton WDS revised trigger values and 2009 annual monitoring report in a memorandum dated January 28, 2011. The MOECC reviewer reiterated their previous recommendation (Memo, Oct 30, 2008) that actions are required to prevent the ongoing leachate impacts beyond the down gradient boundary of the CAZ. Suggested mitigation measures included expanding the CAZ, leachate collection, site closure or progressive closure. It was recommended that potential impacts on Kenogamisis Lake be considered when developing mitigation measures, and that trigger levels would have to be revised to reflect the preferred mitigation strategy.

3 Report Summary

The consultant reports that based on an August 18, 2016 topographic survey, and deposited volume estimates provided by the Municipality, the total volume of waste in the landfill is estimated to be 279,700 m^3, approximately 6,700 m^3 more than the approved capacity, as of December 31, 2016.

3.1 Site Conditions

The consultant reports that the landfill is underlain by a variable subsurface stratigraphy that ranges from clean sand and gravel in well MW5, to sand or sand and gravel with variable silt content, to silt and sand with trace clay, and finally silt and trace clay. Hydraulic conductivity ("K") analyses are provided, which range from $2.7x10^{-1}$ cm/s in well MW5, to $2.1x10^{-7}$ cm/s in well MW11. The consultant reports that the geometric mean K value is $9.8x10^{-4}$ cm/s, or 0.85 m/day. Based on a hydraulic gradient of 0.005 m/m, and an assumed soil porosity of 0.3, the average groundwater flow velocity across the site is estimated to be 0.014 m/day. The consultant reports that this is lower than initial estimates of 0.05 m/day.

3.2 Chemical Analysis Results

The consultant reports that groundwater quality results were compared to Ontario Drinking Water Quality Objectives ("ODWS") for all wells. Since groundwater flowing through the waste disposal site eventually discharges to Kenogamisis Lake, approximately 500 m southwest of the site, wells MW10A & MW10B were also compared to the Provincial Water Quality Objectives ("PWQO").

The consultant reports that parameters potentially associated with the source well (MW5),

based on their concentrations relative to background well (MW6), include conductivity, TDS, hardness, DOC, chloride, ammonia, alkalinity, barium, boron, iron, and manganese. The consultant suggests that plume impact at well MW3A & MW3B are similar in both wells, and that plume impact is uniform with depth, with the exception of higher iron concentrations in the deeper well (i.e. MW3A). At nested wells MW10A/10B, located at the southwest CAZ boundary, the deeper well (i.e. MW10B), has relatively higher concentrations of potential indicator parameters including conductivity, TDS, hardness, sodium, chloride, and alkalinity. The consultant suggests that although there are indications of a sinking plume in these wells, the plume itself appears to originate from a source other than the landfill because indicator parameter concentrations are higher than observed at the source well; the consultant suggests highway salting as a cause for elevated concentrations of leachate plume parameters.

3.3 Report Summary and Recommendations

The consultant reports that waste has been deposited outside of the boundaries of Parcel HM215, and the current toe of the landfill comprises an area of 4.6 ha, 0.3 ha greater than the approved 4.3 ha landfill footprint expansion. The consultant reports that the Municipality of Greenstone has acquired all necessary lands for the expanded CAZ, and monitoring results from down gradient wells MW7 and MW11 do not indicate a need for any additional down gradient expansion of the attenuation zone.

The consultant reports that 2015 monitoring results are similar to previous years, and parameters exceeding the reasonable use guideline ("RUG") limits in down gradient wells MW8, MW9, MW10A/10B, and MW11 include TDS, sodium, chloride, hardness, DOC, organic nitrogen, aluminium, arsenic, iron, and manganese. The consultant suggests that parameters exceeding the RUG limits can potentially be attributed to the following:

- TDS, sodium, and chloride to road salting;
- DOC, aluminium, iron, and manganese are variable and naturally occurring;
- Arsenic impacts are a result of historic gold mining.

The consultant made the following recommendations:

1) continued groundwater and surface water quality monitoring at the 13 existing monitoring wells, and 3 surface water monitoring locations on Kenogamisis Lake should continue, sampled twice annual in compliance with the current ECA;
2) Groundwater and surface water parameters outlined in the ECA should be analysed as indicated, including annual VOC monitoring at well MW5;
3) One blind duplicate sample should be collected each sampling event for QA/QC purposes;
4) The next triennial monitoring report is due March 31, 2019, presenting data for the three year period of 2016 through 2018.

4 MOECC Review Conclusions & Recommendations

Based on review of the data provided in the monitoring report, I generally disagree with the consultant's conclusions. Based on review of the monitoring report, I have made the following conclusions:

- The landfill is currently 6,700 m^3 over its approved capacity of 273,000 m^3, and recommendations to regain compliance with the ECA, and for closure and final rehabilitation should be provided;
- Based on subsurface stratigraphy observed in the monitoring wells, Northern Ontario Engineering Geology Terrain Study ("NOEGTS") data, active aggregate pit operations near the site, and K values for representative samples of subsurface material provided in the report, the landfill overlies sand and gravel deposits that trend to the southwest, and down gradient, from the landfill site. The relatively high K corridor is delineated from well MW6, through wells MW5, MW3A/3B, and MW10A/10B;
- Hydraulic conductivity values suggest the southwest trending sand and gravel deposits form a "bottle neck" flanked by lower K materials to the northwest and southeast. Hydraulic conductivity values of the sand and gravel corridor range from a high at the source well (i.e. MW5) of 2.7×10^{-1}, to a low of 9.0×10^{-4} from the shallow horizon in well MW3A. The flanking horizons have higher silt and clay contents reported, with corresponding lower K values ranging from a high of 8.1×10^{-5} at well MW8, to a low of 2.1×10^{-7} at well MW11. Due to the variable hydraulic conductivity values reported for the site, the geometric mean K value does not estimate a representative groundwater flow velocity for the site, and a range should be used. The high K corridor will likely cause contaminant transport from the landfill at a rate closer to 1.4 m/day, as opposed to the reported 0.014 m/day;
- The site is not currently in compliance with the RUG. The consultant's conclusion that groundwater quality observed in well MW10A & MW10B is more likely related to road salt or other local phenomenon, and not related to landfill leachate because "they also exceeded the concentrations of the source well (i.e. MW5)" is misleading. Based on the high K values reported at the source well (i.e. MW5), the landfill leachate plume would migrate quickly from the landfill area, potentially resulting in unreliable parameter concentrations and well MW3A/3B should be considered when comparing down gradient wells;
- Although well MW7 is the "trigger well", the conclusion that RUG limits exceeded in down gradient monitoring wells, and PWQO limits exceeded at surface water sampling locations, are not attributable to landfill leachate impacted groundwater is misleading. In addition to boundary wells MW10A/10B exceeding the calculated phosphorous limit of 0.04 mg/L, landfill leachate impacted well MW3A/3B also exceeded this limit, suggesting phosphorus levels can be attributed to landfill leachate.

The following recommendations are provided for future reports:

1) The landfill is currently over the approved capacity under the existing ECA and recommendations to meet the approved capacity, and final closure and rehabilitation should be provided;
2) As recommended by the Consultant, continued groundwater and surface water quality monitoring at the 13 existing monitoring wells, and 3 surface water monitoring locations on Kenogamisis Lake should continue, sampled twice annual in compliance with the current ECA;
3) As recommended by the Consultant, groundwater and surface water parameters outlined in the ECA should be analysed as indicated, including annual VOC monitoring at well MW5;
4) As recommended by the Consultant, one blind duplicate sample should be collected each sampling event for QA/QC purposes;
5) Piper or Durov plots should be prepared for the site, as they would likely aid in differentiating the source of elevated contaminants such as chloride, sodium, and magnesium;
6) A review of the conceptual groundwater model should be completed with this information, including:
    i) Cross sections of the site, including a long section between wells MW6 and MW10A/10B and Kenogamisis Lake;
    ii) An analysis of preferential pathways for plume migration;
    iii) A review of the trigger mechanism outlined in Section 9.0 of the amended ECA dated August 7, 2014 should be completed;
    iv) A review of monitoring well locations and their suitability as boundary wells to characterize site conditions;
7) Assuming an expanded CAZ, and groundwater reporting to Kenogamisis Lake, trigger values should be revised to reflect either the Provincial Water Quality Objectives (PWQO) or the Aquatic Protection Values (APV's) as established in the MOE document *"Rationale for the Development and Application of Generic Soil, Groundwater and Sediment Criteria for Use at Contaminated Sites in Ontario"*, dated July, 1996.

The site is currently in compliance with the ECA. The site has failed the RUG at the CAZ boundary and recommendations for mitigation measures such as expanding the CAZ or leachate collection should be provided. Potential impacts on Kenogamisis Lake should also be considered when developing mitigation measures and trigger levels should be revised to reflect the preferred mitigation strategy. It is understood the ECA will not be amended, and site closure should be initiated in compliance with Section 13.0 of the ECA. The next triennial

monitoring report is due March 31, 2019, presenting data for the three year period from 2016 through 2018.

5 Closure

If you have any questions regarding the above comments and recommendations, do not hesitate to contact the undersigned.

The purpose of the preceding review is to provide advice to the Ministry of Environment regarding groundwater conditions based on the information provided in the above referenced documents. The conclusions, opinions and recommendations of the reviewer are based on the information provided by others, except where otherwise specifically noted. The Ministry can not guarantee that the information that has been provided by others is accurate or complete. A lack of specific comment by the reviewer is not to be construed as an endorsing the content or views expressed in the reviewed material.

Prepared by:

Jason Arnold, P.Geo.
Regional Hydrogeologist

Ministry of the Environment and Climate Change
Investigations and Enforcement Branch
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Ministère de l'Environnement et de l'Action en matière de changement climatique
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Télécopieur. (807) 475-1777
Tél: 807 475 1418

Ontario

September 5, 2017

The Corporation of the Municipality of Greenstone
1800 Main St
Geraldton, Ontario, P0T 1M0
Canada

Dear Sir/Madam

RE: 2 miles east of Junction Hwy 11 and 584 8272 Highway 11
Greenstone, District of Thunder Bay

Reference Number 4144-AN3QQW

Please see attached Solid Non Hazadous Waste Inspection report of the Geradlton Waste Disposal site that was conducted on July 17, 2017.

If you have any further question please do not hesitate to call.
Yours truly,

Mike Landers
Investigations Officer
IEB Thunder Bay District

RECEIVED
SEP 08 2017
The Corporation of the Municipality of Greenstone

File Storage Number: TB AS MI 610

Ontario

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

Solid Non-Hazardous Waste Disposal Site Inspection Report

Client:	The Corporation of the Municipality of Greenstone Mailing Address: 1800 Main St, Post Office Box, 70, Geraldton, Ontario, Canada, P0T 1M0 Physical Address: 1800 Main St Geraldton, Greenstone, Municipality, District of Thunder Bay, Ontario, Canada, P0T 1M0 Telephone: (807)854-1100, Extension: 2060, FAX: (807)854-1150, email: brian.aaltonen@greenstone.ca Client #: 0380-4TKQAV, Client Type: Municipal Government, NAICS: 913910 Additional Address Info: Geraldton		
Inspection Site Address:	Geraldton Waste Disposal Site Address: 2 miles east of Junction Hwy 11 and 584 8272 Highway 11, Greenstone, Municipality, District of Thunder Bay District Office: Thunder Bay - District GeoReference: Zone: 16, UTM Easting: 504160, UTM Northing: 5503056, UTM Location Description: Other - GIS Software, Site #: 6647-5V6NYY		
Contact Name:	Brian Aaltonen	Title:	Director of Public Services
Contact Telephone:	(807)854-1100 ext2060	Contact Fax:	
Last Inspection Date:			
Inspection Start Date:	2017/07/17	Inspection Finish Date:	2017/07/24
Region:	Northern		

1.0 INTRODUCTION

The Geraldton Waste Disposal Site is operated by the Municipality of Greenstone and is located on Highway 11, approximately 3 kilometres east of Michael Power Boulevard. It is part of Mining Claim TB14031. The landfill site is located in a historical borrow pit. The site continues to serve most of the waste disposal needs of the Geraldton Ward with a population of approximately 2,600. Building demolition waste is no longer accepted at the site.The site was established in the 1970's, with the earliest approval found in the files issued in 1972. An updated Certificate of Approval issued in November, 2008, with numerous conditions. A Notice to Amend the Certificate of Approval was issued in 2011 to approve revised groundwater triggers. In 2014, an Amended Certificate of Approval was issued to address the fill beyond approved limits situation and to increase capacity (as well as to allow continued use until December 2015). In November, 2015, a Notice was issued to allow for use in 2016 while the process to establish a new site continued. "Notice No. 2" has been issued to allow for use until December 31, 2018.

This inspection focused on the main site (A7004401). There are three separate Certificates of Approval (municipal waste disposal, scrap metal and sludge drying beds) at this location.

The Municipality completed an Environmental Assessment Process to support the expansion of the site to address the "fill beyond approved limits" and capacity issues at this site. In 2014, an amended Certificate of Approval was issued to allow for an increase of capacity to 273,000 cubic metres and subsequent amendments (2016) to allow more time to fill the site to the approved 273,000 cubic metres. The Municipality continues to explore and investigate further sites for managing the waste generated within the Municipality.

The purpose of this inspection was to assess compliance with Ministry of Environment legislation, specifically the Certificate of Approval, Regulation 347 and the waste management provisions of the Environmental Protection Act. The inspection consisted of a review of files and reports, as well as a site visit and discussions with Brian Aaltonen, Director of Public Services and Bob Gendreau, Manager of Public Works of Greenstone.

2.0 INSPECTION OBSERVATIONS

Certificate of Approval Number(s):
A7004401

The original Certificate of Approval A7004401 was issued in 1974. A revised Certificate of Approval was issued on April 1, 1980, identified that the type of waste that could be deposited at this site was "domestic, commercial, and 5% non-hazardous solid industrial waste, limited to miscellaneous containers and packaging materials."

A third Certificate of Approval, issued on August 25, 1992, contained additional conditions such as; that waste be compacted and covered at least once per week or more frequently depending on use, that no burning of waste shall take place at the landfill site, and that a detailed design and operation report (showing among other items a 30 m buffer zone) be submitted by the Town to the Ministry.

In 2006, the municipality applied for an amended Certificate of Approval and submitted the required Design and Operating Plan. A review of the application by Environmental Assessment and Approvals Branch (EAAB) found that the site had been filled beyond the approved limits of the Certificate with respect to landfill foot print and volumetric capacity, violating the Environmental Protection Act. After extensive discussions between the Municipality, EAAB and District Staff, it was decided to proceed with an amended Certificate of Approval (issued November 2008) to provide a better reflection of current conditions, with the Municipality's commitment to proceed through the Environmental Assessment (EA) screening process to bring the site into compliance. The Municipality intended to complete the Screening Process and apply for an amended Certificate of Approval in 2009, but ran into problems acquiring the additional lands needed to address the FBAL situation, and have therefore not completed the EA Screening Process.

The Municipality completed an Environmental Assessment Process to support the expansion of the site to address the "fill beyond approved limits" and capacity issues at this site. In 2014, an amended Certificate of Approval was issued to allow for an increase of capacity to 273,000 cubic metres.

In November, 2015, Notice No. 1 was issued to allow for use in 2016 while the process to establish a new site continued. On December 19, 2016, Notice No. 2 was issued allowing the Municipality to continue the use of the site until December 31, 2018.

2.1 FINANCIAL ASSURANCE:

Specifics:
The Ministry of Environment and Climate Change does not require Financial Assurance for Municipal Waste Sites.

2.2 APPROVED AREA OF THE SITE:

Specifics:
The Certificate of Approval specifies: *"the use and operation of a 4.3 hectare landfilling/recycling site within a total site area of 30.65 hectares".*

The Municipality has indicated and located the boundary marking by the Surveyor JD Barns.

2.3 APPROVED CAPACITY:

Specifics:

The Environmental Compliance Approval (and notices) issued in 2014, 2015 and 2016 specifies the following Capacity:

Capacity

3.2(1) The original maximum volume of waste and cover materials, excluding final cover for the *Site* was **173,000 m³**.

(2) The maximum amount of waste approved for final disposal, excluding final cover at the *Site* based on the completed Environmental Screening Report Process is **273,000 m³**.

(3)(i) Notwithstanding Condition 3.2(2), the *Site* is hereby permitted to continue to accept waste for final disposal until **December 31, 2018** (last updated in Notice No. 2).

(ii) Condition 3.2 (3)(i) does not constitute an approved expansion from the volume currently approved by Condition 3.2 (2). Upon the issuance of any future Environmental Assessment Act approval, the volume of waste accepted under Condition 3.2 (3)(i) must be included as part of any expansion volume received.

(4) In the event, the *Owner* has not completed the Environment Assessment Act process by the date in which the Site is permitted to receive waste for final disposal as stated in Condition 3.2(3)(i) and would like to continue to receive waste at the *Site* for final disposal past that date, the *Owner* shall submit an application to the *Director* at least thirty (30) days prior to the end date for accepting waste for final disposal in Condition 3.2 (3)(i) requesting that an extension to the date for final disposal be extended. To support the request, the *Owner* include but not be limited to following to submit the request:

i. A drawing showing the proposed location where the waste will be placed;
ii. A summary of the environmental conditions/compliance at the Site; and
iii. A current status of the Environmental Assessment Act process for the long-term waste management strategy for the Municipality.

The Municipality of Greenstone applied for and received approval to operate the site until the end of 2018 as per accordance with Section 3.2 (4) above

The Certificate of Approval contains specific requirements for identifying the fill area:

3.3(1) No waste shall be landfilled outside of the limit of fill area for the *Site* as shown in Item

6 - Figure 2 in Schedule "A" attached to this *ECA* .

(2) The *Owner* shall ensure the limit of the landfill and top contours of final waste contours as show in Item 6 - Figures 2 and 9 in Schedule "A" is clearly staked with permanent markers.

3.4 (1) No waste shall be landfilled at any time above the **final waste grades (347.8 m which is Final Cover Elevations less final cover thickness)** as shown in Item 6 - Figure 9 in Schedule "A" attached to this *ECA* ; and

(2) Final slopes above grade at the time of *Site* closure within the waste fill area shall be within the range of 4H:1V (25%) and 20H:1V (5%).

(3) Notwithstanding Condition 3.4 (1), the *Owner* shall ensure that any waste placed at the *Site* in accordance with Condition 3.2 (2) will not exceed a maximum elevation of 347.8 m. (the highest proposed waste elevation at the *Site*).

The Municipality must ensure that the limit of landfill and top contours of final waste contours are clearly staked with permanent markers.

Currently there are two locations within the waste site that can still accept waste to meet the Municipalities commitment to the final elevations and contour requirements.

A consultant is in the process of preparing an EA for a waste site for the Municipality. The Municipality is aware of the tight timelines that they are left with

2.4 ACCESS CONTROL:

Specifics:

Access to the site is controlled by a locked gate and signed as required.

An attendant is on duty at any time the site is open to receive wastes.
One of the duties of the attendant is to monitor and record volumes and types of waste being brought to the site.

It is noted that no Household Hazardous Waste has been recorded/received in 2017.

Section 3 of the Certificate of Approval requires that a training plan be developed and that any employees working at the site be a Trained Personnel. "Trained Personnel" is defined in the Certificate of Approval as knowledgeable in the following through instruction and/or practice:

- relevant waste management legislation, regulations and guidelines
- major environmental concerns pertaining to the waste to be handled
- occupational health and safety concerns pertaining to the processes and wastes to be handled

management procedures including the use and operation of equipment for the processes and wastes to be handled

- emergency response procedures
- specific written procedures for the control of nuisance conditions
- specific written procedures for the refusal of unacceptable waste loads and,
- the requirements of the Certificate of Approval.

At the time of the inspection, municipal officials indicated that all employees working at the site have now been trained as required by the Environmental Compliance Approval. The employees at the site at the time of inspection appeared to be familiar with the Environmental Compliance Approval requirements and showed the log books where activities are logged.

Training should be reviewed with all staff on a regular basis so that all operators understand the requirements of the Environmental Compliance Approval and the Design and Operating Plan (as updated to allow for continued usage at the site).

2.5 COVER MATERIAL:

Specifics:
The Certificate of Approval contains a number of requirements for adequate covering of waste, including

3.7 The *Owner* shall deposit waste in a manner that minimizes exposure area at the landfill working face and all waste shall be compacted before cover is applied.

3.8(1) Daily Cover - By the end of each working week, the entire working face shall be compacted and covered with a minimum thickness of 150 mm of soil cover or an approved thickness of alternative cover material.

(2) Intermediate Cover - In areas where landfilling has been temporarily discontinued for six (6) months or more, a minimum thickness of 300 mm of soil cover or an approved thickness of alternative cover material shall be placed.

On March 11, 2015, April 27, 2015, and June 18, 2015 the MOECC advised the Municipality that there were unacceptable amounts of windblown litter from the site being deposited along Highway 11 and at the entrance to MacLeod Provincial Park. On June 18, 2015, I observed that much of the east end of the fill area was not covered, and plastic bags and litter was being blown all over the site and adjacent properties. The adjacent property owner also complained about the litter from the site.

The Municipality has responded to previous inspections and complaints regarding wind blown bags. They are currently covering the waste daily in an effort to improve off site impacts. It was noted that some plastic bags are located within the boundary of the entire site but no bags noted off site at the time of inspection. Continuous improvements can still me made regarding this issue.

2.6 **WASTE BURNING:**

Specifics:

At the time of inspection there was no evidence of waste being burned at the site.

2.7 **GROUNDWATER/SURFACEWATER IMPACT:**

Specifics:

The Certificate of Approval specifies extensive groundwater and surface monitoring and reporting requirements for this site. The Certificate of Approval also required the development of Trigger Mechanisms and a Contingency Plan.

Greenstone continues to complete required environmental monitoring and reporting for this site.

The last Environmental quality Monitoring Report submitted to the MOECC was submitted on May 1, 2013 which represented the findings for the years 2010-2012. The report concluded that the 2012 monitoring results suggest that Guideline B-7 (Reasonable Use) criteria exceedances for iron, organic nitrogen and manganese at the MW11 location potentially reflect leachate impact near the downgradient attenuation zone boundary.

In 2013, as part of an amendment to the Certificate of Approval to increase the waste fill area, Greenstone applied for approval of a larger attenuation zone and completed (2014) which Greenstone believes will result in compliance with Guideline B-7. The MOECC is awaiting the report scheduled to be submitted in 2017.

The site is scheduled to close in the near future. Closure in accordance with the Closure Plan (with improved site drainage, low permeability cover and vegetation) should further reduce leachate generation.

At the time of inspection there was no obvious evidence of groundwater or surface water impacts.

2.8 LEACHATE CONTROL SYSTEM:

Specifics:
The Geraldton site does not have a leachate control system as it is considered to be naturally attenuating.

2.9 METHANE GAS CONTROL SYSTEM:

Specifics:
There is no requirement for a methane gas control system at this site.

2.10 OTHER WASTES:

Specifics:
The site is approved for, and accepts, only 100% solid non hazardous wastes and does not receive any treated hazardous wastes. Due to the fact that the site is at capacity, Greenstone no longer allows for building demolition waste to be deposited a the site.

Adjacent to the waste disposal site is an approved metal recycling site and sludge de-watering site. These sites have their own Certificates of Approval and are inspected separately. The sludge de-watering site is no longer in use and was fully decommissioned in 2016.

There are depots for fluorescent lights and electronics as well as metal recycling.

There were a few fridges at the site - awaiting to be drained of CFC's and tagged by the Municipality to monitor and arrange to drain the units on site prior to disposal/recycling.

There were a number of tires at the site which were awaiting removal as part of the tire stewardship program.






3.0 REVIEW OF PREVIOUS NON-COMPLIANCE ISSUES

The November 1, 2010 inspection a number of required actions. The required actions were completed as outlined below.

By April 30, 2012, provide a report to the District Manager as to the progress and expected timeframe to complete the Environmental Assessment Screening process and apply for an amended Environmental Compliance Approval to address the Fill Beyond Approved Limits situation. **The MOECC met with Greenstone representative and their consultant on April 4, 2012 and discussed the path forward. The Environmental Screening process for the waste site was completed and an amended Certificate of Approval obtained in 2014 and subsequent notices issued in 2015 and 2016.**

By April 30, 2012, provide a report to the District Manager as to the progress and expected timeframe to complete the Environmental Assessment (EA) process for a new waste disposal site (or option). **The Municipality continues with efforts to locate a new Waste Disposal Site. The Terms of Reference for the EA were approved in April, 2014. Greenstone is currently investigating the possibility of converting an existing woodwaste site to a municipal was site and has temporarily put the EA process on hold.**

The Woodwaste site may not be an option going forward. Therefore the Municipality has reopened/started back up the EA process for a new site but will keep the woodwaste site for consideration during the EA process.

The non compliance issues listed below are listed in the Incident Report (IR) # 2318-A5USFB - the

identifies the non compliance as "still pending" - Inspection required for abatement purposes.

1. By January 30, 2016, review procedures for ensuring adequate cover material is placed on all exposed waste and provide a report to the Thunder Bay District Office on how procedures will be improved.

2. By May 1, 2016, ensure adequate cover is placed on all exposed waste and the access road has been upgraded to allow year-round access to the fill area.

3. By May 1, 2016, ensure approved waste area is clearly flagged with markers indicating both approved fill lateral limits and final contour levels.

4. By May 31, 2016, ensure all wind blown litter is cleaned up from the area outside the fill area and from adjacent properties.

After the inspecting of the site, the 4 items in the IR can be signed off as completed by the Municipality.

4.0 SUMMARY OF INSPECTION FINDINGS (HEALTH/ENVIRONMENTAL IMPACT)

Was there any indication of a known or anticipated human health impact during the inspection and/or review of relevant material, related to this Ministry's mandate?
No

Specifics:

Was there any indication of a known or anticipated environmental impact during the inspection and/or review of relevant material ?
No

Specifics:

Was there any indication of a known or suspected violation of a legal requirement during the inspection and/or review of relevant material which could cause a human health impact or environmental impairment ?
No

Specifics:

Was there any indication of a potential for environmental impairment during the inspection and/or the review of relevant material ?
No

Specifics:

Was there any indication of minor administrative non-compliance?
No

Specifics:
Due to the lack of documentation in the Household hazardous waste for 2017, compared to 2016, ensure that attendants are recording the required information in the log books assigned to the site

to maintain compliance.

5.0 ACTION(S) REQUIRED

6.0 OTHER INSPECTION FINDINGS

1. Greenstone should move towards final closure of this site. Where possible, final contours should be established and final cover applied in accordance with the approved Closure Plan. This would assist in minimizing the production of leachate and may result in improved groundwater quality.

2. Due to the lack of documentation in the Household hazardous waste for 2017, compared to 2016, ensure that attendants are recording the required information in the log books assigned to the site to maintain compliance. The site is schedule to be attended by GFL for their House Hold Hazardous waste day on September 9, 2017.

7.0 INCIDENT REPORT

Not Applicable

8.0 ATTACHMENTS

PREPARED BY:
Environmental Officer:
Name: Mike Landers
District Office: IEB Thunder Bay District
Date: 2017/08/11
Signature

REVIEWED BY:

District Supervisor:
Name: Drew Stajkowski
District Office: Thunder Bay District Office
Date: 2017/08/16

Signature:

File Storage Number: TB GT 610

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

Trow

Since 1957

1142 Roland Street
Thunder Bay, ON
P7B 5M4

Tel: (807) 623-9495
Fax: (807) 623-8070

November 23, 2009

Ref. TBEN00006189

MINISTRY OF THE ENVIRONMENT
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

Attention: Tesfaye Gebreeghi, P.Eng.

Revised Trigger Values for Groundwater Geraldton Landfill

Dear Ms. Gebreeghi:

In accordance with Clause 8(8) of amended provisional Certificate of Approval No. A700440l for the Geraldton Waste Disposal Site, issued on November 24, 2008, Trow Associates Inc. (Trow) is pleased to provide revised trigger values for groundwater. The revised values are shown on the attached table.

The revised trigger values were calculated as per the methodology described in Trow report ref: T-06189-C/E, dated February 15, 2008, but incorporating recent monitoring data, including data for new well MW11 installed near the downgradient (west) boundary of the expanded attenuation zone (north of MW10) and data for the "trigger well" MW7 within the attenuation zone immediately downgradient of the landfill (see attached figure).

As indicated on the attached table, there were three exceedances of the calculated trigger values at MW7 in 2009, as follows:

- Arsenic - measured concentration 0.044 mg/L versus trigger value of 0.017 mg/L.
- Iron - measured concentration of 20 mg/L versus trigger value of 10.6 mg/L.
- Manganese – measured concentration of 1.9 mg/L versus trigger value of 1.5 mg/L.

However, neither the arsenic nor the iron exceedances can be attributed to landfill leachate, because concentrations of both of these parameters at MW7 exceeded the maximum measured source (leachate) concentration. Although this does not rule out landfill leachate impact, it does suggest that the elevated values are attributable to another source. Arsenic and iron are known to be naturally elevated in the rock of the area, and have been subject to wider dissemination by historical gold mining activities.

Buildings

Environment

Geotechnical

Infrastructure

Materials & Quality

The elevated manganese level, relative to the trigger value, could suggest leachate impact. Again, however, manganese is known to be highly variable and naturally elevated in many northern Ontario groundwaters, and one can not conclude that leachate impact is responsible for the exceedance of the calculated trigger concentration at MW7.

In general, concentrations of most potential leachate indicator parameters in new well MW11, located downgradient of MW7 near the attenuation zone west boundary, were not elevated. The only parameters whose concentration exceeded the calculated B-7 (Reasonable Use Policy) criterion at MW11 were organic nitrogen and manganese. Both of these parameters are known to be naturally highly variable in northern Ontario groundwaters. The generally low levels of other parameters do not suggest leachate impact at this location.

Concentrations of potential leachate indicator parameters in the paired wells MW10A/10B, near the southwest corner of the attenuation zone, were generally similar to historical values in these wells. Several parameters exceeded B-7 criteria, including TDS, hardness, DOC, chloride, organic nitrogen, aluminum, arsenic, iron and manganese. However, of these parameters, concentrations of DOC, chloride and aluminum also exceeded the source concentrations, which is indicative of additional sources (e.g., highway salting). The apparently elevated levels, relative to background (MW6), of TDS, hardness, organic nitrogen, arsenic, iron and manganese could also be due to natural variation or other sources (as discussed above for arsenic and iron). The observation that only arsenic, iron and manganese exceeded calculated trigger values at MW7 suggests that the exceedances of B-7 criteria for the remaining parameters (TDS, hardness, organic nitrogen) at MW10A/10B are not landfill related.

Yet a further indication that the elevated levels of various parameters measured in MW10A/10B are not attributable to landfill leachate impact is evident from the interpolated groundwater contours shown on the attached figure. Groundwater mounding south of the landfill (most apparent at MW9 near the highway) is suggested, and the primary leachate pathway from the landfill appears to be westward (toward MW11) rather than south-westward (toward MW10A/10B).

Considering all available information, the parameter that appears to have the highest likelihood of reflecting actual leachate impact at the attenuation zone boundary is manganese. However, even if leachate impact were indeed present, there are no groundwater wells between the downgradient boundary of the attenuation zone and Kenogamisis Lake, and there is no Provincial Water Quality Objective for manganese.

We trust that this letter report is sufficient for your current requirements. Raw data, historical summary tables and additional discussion will be presented in the groundwater and surface water monitoring report due by April 30, 2010.

Should you have any questions or concerns regarding the foregoing, please contact this office at your convenience.

Yours truly,

Trow Associates Inc.

Robert J. Rinne, M.Sc., QEP
Senior Scientist / Environmental Manager

Demetri N. Georgiou, MASc., P.Eng.
Principal Engineer / Branch Manager

cc: MOE Thunder Bay District (Monika Holenstein)
Municipality of Greenstone (Vance Czerwinski)

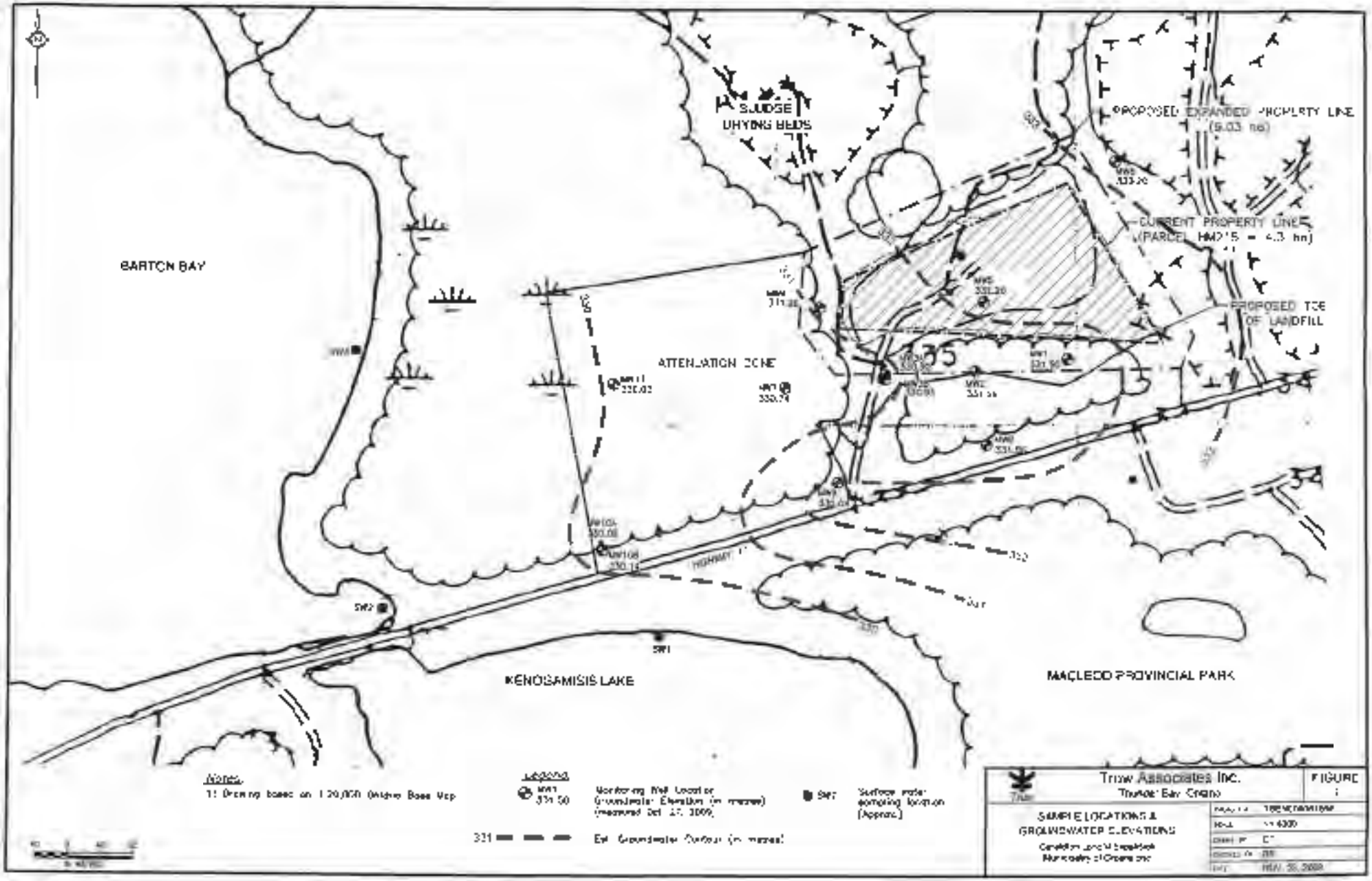
Attachments: Table - 2009 Trigger Concentrations
Figure – Sample Locations and Groundwater Elevations

Table 7 - 2009 Trigger Concentrations (mg/L)

PARAMETER	[illegible]	[illegible]	[illegible]	[illegible]	2009 MW7	[illegible]	[illegible]	[illegible]	[illegible]
TDS		500	1000	488	488	488	600	305	[illegible] (MW-7)
[illegible]		100	424	345	340**	[illegible]	[illegible]	340	[illegible] (MW-7)
DOC		5	[illegible]	[illegible]	[illegible]	8.6	[illegible]	[illegible]	[illegible]
[illegible]		200	68	42	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]		250	[illegible]	12	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]		[illegible]	[illegible]	[illegible]	5.6	[illegible]	[illegible]	2	[illegible]
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	<0.01
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	22.2	3.8	[illegible]	[illegible]
[illegible]		[illegible]	[illegible]	83	229	[illegible]	32	7	[illegible]
[illegible]		500	[illegible]	351	445	[illegible]	[illegible]	266	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.051	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	n.a.	<0.0005	[illegible]	<0.0005
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.044 (resource)[1]	0.007	[illegible]
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	n.a.	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.28	n.a.	0.15	0.012	<0.01
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.001	n.a.	[illegible]	[illegible]	<0.0001
[illegible]	[illegible]	[illegible]	[illegible]	0.002	[illegible]	n.a.	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	1	[illegible]	[illegible]	[illegible]	n.a.	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.18	[illegible]	[illegible] (resource)[1]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	n.a.	[illegible]	[illegible]	[illegible]
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	0.001	[illegible]	n.a.	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	5	[illegible]	[illegible]	[illegible]	n.a.	[illegible]	[illegible]	[illegible]
[illegible]						120			
[illegible]						n/a			

Notes:

[illegible]


SLUDGE DRYING BEDS
PROPOSED EXPANDED PROPERTY LINE (5.03 ha)
CURRENT PROPERTY LINE (PARCEL HMD'S = 4.3 ha)
PROPOSED TOE OF LANDFILL
BARTON BAY
ATTENUATION ZONE
KENOSAMISIS LAKE
MACLEOD PROVINCIAL PARK
HIGHWAY
SW1
SW2
Notes:
1) Drawing based on 1:20,000 Digital Base Map
Legend
Monitoring Well Location
Groundwater Elevation (in metres)
(measured Oct 27, 2009)
Surface water sampling location (Approx.)
Est. Groundwater Contour (in metres)
Tetra Tech
Trow Associates Inc.
Thunder Bay Ontario
FIGURE
SAMPLE LOCATIONS &
GROUNDWATER ELEVATIONS
Canadian Land Stockpile
Municipality of Oliver Paipoonge
NOV. 25, 2009

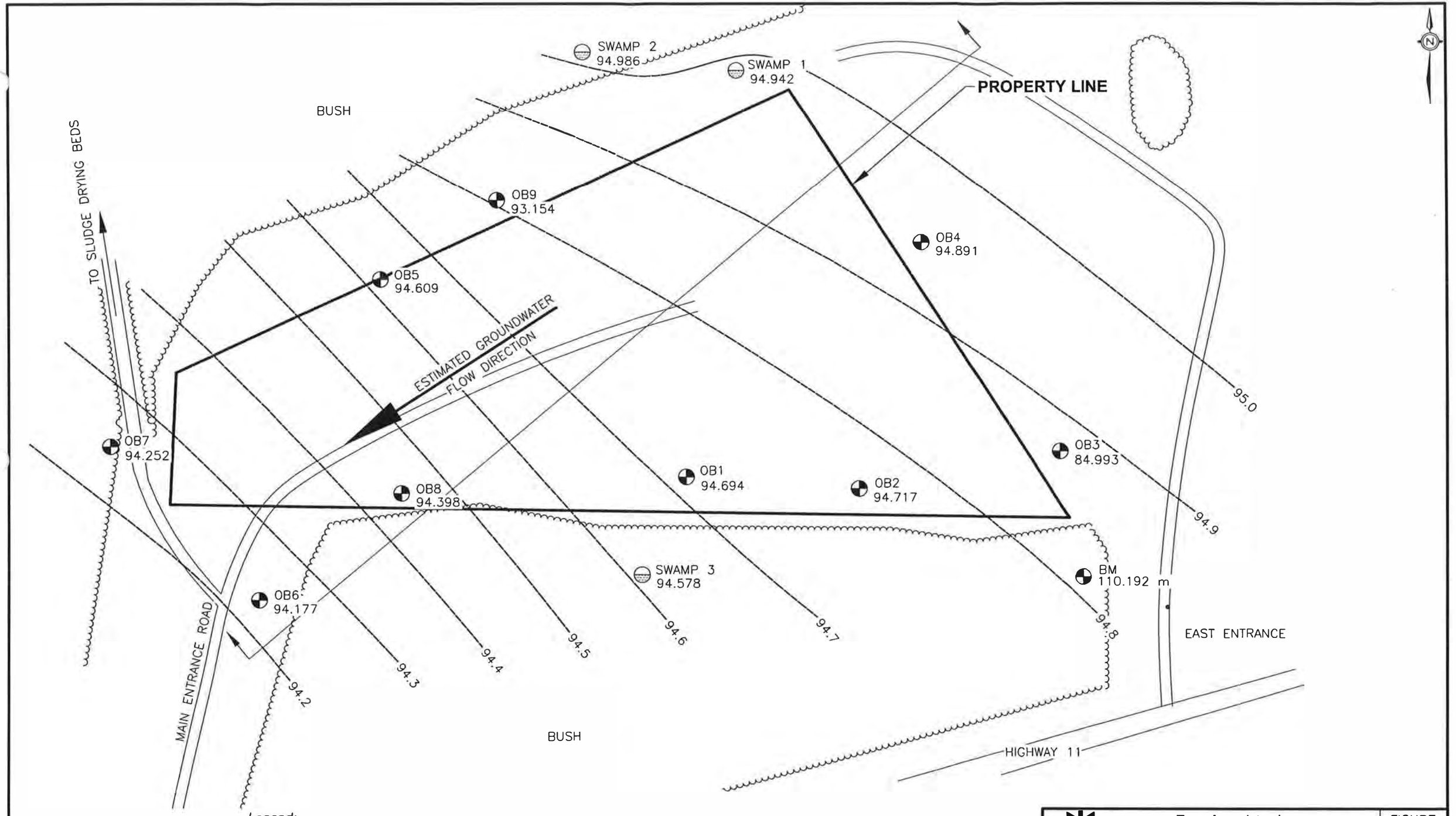
APPENDIX C-

Historical Soil Conditions And Estimated Groundwater Flow Patterns

SOIL CONDITIONS, INITIAL GROUNDWATER INVESTIGATION – JUNE 13, 2003

BH No:	OB1	OB2	OB3	OB4	OB5
Grnd Elev (m):	99.634	99.557	97.964	96.291	102.069
GW Depth (m)	4.94	4.84	3.10	1.40	7.46
GW Elev (m):	94.694	94.717	94.864	94.891	94.609
Soil Conditions:	*Surface to ~3.7 m:* **SILT & GARBAGE**, brown to dk grey, plastics, fabrics, some sand and gravel from 0.6 m depth, strong odours *~3.7 m to 7.6 m:* **SAND**, loose to compact, grey, moist to wet, coarse grained, strong odours *End of BH at 7.6 m.* - ¾" PVC standpipe, handslotted, installed upon completion. Annulus backfilled with cuttings.	*Surface to ~4.6 m:* **SILT & GARBAGE**, brown to dk grey, plastics, steel, wood, wire, some sand, strong odours *~4.6 m to 7.6 m:* **SAND**, loose to compact, grey, moist to wet, coarse grained, strong odours *End of BH at 7.6 m.* - ¾" PVC standpipe, handslotted, installed upon completion. Annulus backfilled with cuttings.	*Surface to 4.6 m:* **SILT/SAND**, light brown, damp to wet, some gravel *End of BH at 4.6 m.* - ¾" PVC standpipe, handslotted, installed upon completion. Annulus backfilled with cuttings.	*Surface to ~1.5 m:* **SILT/SAND**, light brown, damp to moist, some gravel, occasional cobble *~1.5 m to 3.1 m* **SILT**, brown, compact, moist to wet *End of BH at 3.1 m.* - ¾" PVC standpipe, handslotted, installed upon completion. Annulus backfilled with cuttings.	*Surface to ~0.6 m:* **SAND (FILL)**, brown, loose, damp some garbage *~0.6 m to 10.7 m* SILTY SAND, grey/brown, loose to compact, moist to wet, occasional cobbles *End of BH at 10.7 m.* - ¾" PVC standpipe, handslotted, installed upon completion. Annulus backfilled with cuttings.

BH No:	OB6	OB7	OB8	OB9
Grnd Elev (m):	98.346	95.252	100.752	100.034
GW Depth (m)	4.04	1.00	6.36	6.88
GW Elev (m):	94.177	94.252	94.392	93.154
Soil Conditions:	*Surface to 6.1 m:* **SAND**, light brown, damp to wet, loose to compact, medium grained -silty from to 0.6 m depth *End of BH at 6.1 m.* - ¾" PVC standpipe, handslotted, installed upon completion. Annulus backfilled with cuttings.	*Surface to 1.5 m:* **SILTY SAND**, light brown, moist to wet, loose to compact, medium grained *End of BH at 1.5 m.* - ¾" PVC standpipe, handslotted, installed upon completion. Annulus backfilled with cuttings.	*Surface to ~4.6 m:* **SILT & GARBAGE**, brown to dk grey, plastics, fabrics, some sand, strong odours *~4.6 m to 10.7 m:* **SAND & GRAVEL**, loose to compact, grey, moist to wet, odourous *End of BH at 10.7 m.* - ¾" PVC standpipe, handslotted, installed upon completion. Annulus backfilled with cuttings.	*Surface to ~1.5 m:* **SANDY SILT & GARBAGE**, brown/grey, odourous, loose, damp *~1.5 m to 9.1 m:* **SAND**, compact, grey, moist to wet, slight odour - trace to some gravel, occ cobbles from ~3.1 m depth *End of BH at 9.1 m.* - ¾" PVC standpipe, handslotted, installed upon completion (to 7.6 m dpth). Annulus backfilled with cuttings.



Legend:

- SWAMP 3 / 84.707 — Swamp Location, Elevation of Standing Water (in metres) (measured June 13, 2003)
- OB6 / 84.306 — Observation Well Location, Groundwater Elevation (in metres) (measured June 13, 2003)
- 94.4 — Estimated Groundwater Contours
- BM / 110.192 m — Benchmark Location, Elevation in Metres

Trow Associates Inc.
Thunder Boy, Ontario

FIGURE C-1

GROUNDWATER FLOW PATTERNS

Hydrogeological Evaluation
Geraldton Landfill
Municipality of Greenstone

PROJECT NO.:	F-03144-A/E (rev)
SCALE:	1:1500
DRAWN BY:	DT
CHECKED BY:	JL
DATE:	SEPT. 24, 2004

APPENDIX D-

Borehole Logs

SYMBOLS AND TERMS USED ON THE BOREHOLE AND TEST PIT RECORDS

SOIL DESCRIPTION

Behavioural properties (i.e. plasticity, permeability) take precedence over particle gradation in describing soils.

Terminology describing soil structure:

Desiccated	-	having visible signs of weathering by oxidization of clay minerals, shrinkage cracks, etc.
Fissured	-	having cracks, and hence a blocky structure
Varved	-	composed of regular alternating layers of silt and clay
Stratified	-	composed of alternating layers of different soil types, e.g. silt and sand or slit and clay
Well Graded	-	having wide range in grain sizes and substantial amounts of all intermediate particle sizes.
Uniformly Graded	-	predominantly of one grain size.

Terminology used for describing soil strata based upon the proportion of individual particle sizes present:

Trace, or occasional	less than 10%
Some	10-20%
Adjective (e.g. silty or sandy)	20-35%
And (e.g. silt and sand)	35-50%

The standard terminology to describe cohesionless soils includes the relative density, as determined by laboratory test or by the Standard Penetration Test 'N' – value: the number of blows of 140 pound (64kg) hammer falling 30 inches (760mm), required to drive a 2 inch (50.8mm) O.D. split spoon sample one foot (305mm) into the soil.

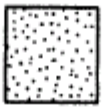
Relative Density	'N' Value	Relative Density %
Very Loose	<4	<15
Loose	4-10	15-35
Compact	10-30	35-65
Dense	30-50	65-85
Very Dense	>50	>85

The standard terminology to describe cohesive soils includes the consistency, which is based on undrained shear strength as measured by insitu vane tests, penetrometer tests, unconfined compression tests, or occasionally by standard penetration tests.

Consistency	Undrained Shear Strength		'N' Value
	kips/sq.ft.	kPa	
Very Soft	<0.25	<12.5	<2
Soft	0.25-0.5	12.5-25	2-4
Firm	0.5-1.0	25-50	4-8
Stiff	1.0-2.0	50-100	8-15
Very Stiff	2.0-4.0	100-200	15-30
Hard	>4.0	>200	>30

STRATA PLOT


Gravel & Boulders

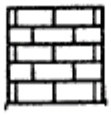

Sand


Silt


Clay


Fill

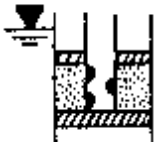

Igneous Bedrock


Sedimentary Bedrock


Metamorphic Bedrock

WATER LEVEL MEASUREMENT


Borehole or Standpipe


Piezometer

SAMPLES

SS…	Split spoon sample (obtained by performing the standard penetration test)
ST…	Shelby tube or thin wall tube
PS…	Piston sample
BS…	Bulk sample
WS…	Wash sample
RC…	Rock core AXT, BXL. etc… Rock core samples obtained with the use of standard diamond drilling bits.

OTHER TESTS

G…	Specific gravity
H…	Hydrometer analysis
S…	Sieve analysis
γ	Unit weight
C….	Consolidation
CD…	Consolidated drained triaxial
CU…	Consolidated undrained triaxial with pore pressure measurements
UU…	Unconsolidated undrained triaxial
DS…	Direct shear
P….	Field permeability

ROCK DESCRIPTION

The description of bedrock is based on the rock quality designation (RQD). The classification is based on a modified core recovery percentage in which all pieces of sound core over 100mm long are counted as recovery. The smaller pieces are considered to be due to close shearing, jointing, faulting, or weathering in the rock mass and are not counted. In most cases RQD is run on NXL core; however, it can be used on different core sizes if the bulk of the fractures caused by drilling stresses are easily distinguishable from normal insitu fractures.

RQD	ROCK QUALITY
90-100	Excellent, intact, very sound
75-90	Good, massive, moderately jointed or sound
50-75	Fair, blocky and seamy, fractured
25-50	Poor, shattered and very seamy or blocky, severely fractured
0-25	Very poor, crushed, very severely fractured

BOREHOLE LOG

MW1

Sheet 1 of 1

Trow Thunder Bay Branch

PROJECT **Hydrogeological Study-Geraldton Landfill** PROJECT NO. **F-03144-A/E (rev.)**

CLIENT **Municipality of Greenstone** DATUM **Geodetic**

DRILL TYPE/METHOD **CME 45B Drill** DATES: Boring **June 25/03** Water Level **June 25/03**

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	HCVL (ppm)
0	335.58	SAND- loose, grey, moist, trace silt					
			AS	1			
			SS	2	330	8	
		- compact from 3.0m depth	SS	3	380	23	
		- wet from 4.6m depth	SS	4	535	27	
		- compact to dense from 5.2m depth	SS	5	560	33	S
			SS	0	0	10	
8	327.35		SS	6	430	19	
		End of Borehole					

HEADSPACE COMBUSTIBLE VAPOUR LEVEL

▲ HCVL

40 80 ppm

W_P W W_L

● SPT N Value × Dynamic Cone

20 40 60 80

NOTES

1) For definition of symbols & terms used on logs, see sheets prior to logs.

2) 50mm PVC monitoring well installed to 7.62m depth (as shown).

3) MW1 caved to 2.74m depth.

4) MW1 located at 506 996 E and 5 504 318 N. Top of MW1 elevation 336.50m referenced to the base station having a geodetic elevation of 349.94m.

SAMPLE LEGEND

☒ AS Auger Sample ▨ SS Split Spoon ■ ST Shelby Tube

▥ Rock Core (eg. BQ, NQ, etc.) ▣ VN Vane Sample

OTHER TESTS

G Specific Gravity	C Consolidation
H Hydrometer	CD Consolidated Drained Triaxial
S Sieve Analysis	CU Consolidated Undrained Triaxial
γ Unit Weight	UU Unconsolidated Undrained Triaxial
P Field Permeability	UC Unconfined Compression
K Lab Permeability	DS Direct Shear

WATER LEVELS

▽ Apparent ▼ Measured ▲ Artesian (see Notes)

BOREHOLE LOG

MW2

Sheet 1 of 1

Trow Thunder Bay Branch

PROJECT Hydrogeological Study-Geraldton Landfill — PROJECT NO. F-03144-A/E (rev.)

CLIENT Municipality of Greenstone — DATUM Geodetic

DRILL TYPE/METHOD CME 45B Drill — DATES: Boring June 25/03 — Water Level June 25/03

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	HCVL (ppm)	HEADSPACE COMBUSTIBLE VAPOUR LEVEL
0	337.68	SAND- loose to compact, brown, moist, trace silt			AS	1				▲ HCVL 40 80 ppm; W_P W W_L; ● SPT N Value × Dynamic Cone 20 40 60 80
1		- compact, light brown from 0.6m depth			AS	2				
2		- grey, trace silt from 1.5m depth			SS	3	305	10		
3					SS	4	455	18		
4										
5					SS	5	355	19		
6										
7					SS	6	305	22		
8		- wet from 7.6m depth			SS	7	230	27		
9										
10					SS	8	510	19		
11	326.40				SS	9	150	25		
12		End of Borehole								
13										
14										
15										

NOTES

1) For definition of symbols & terms used on logs, see sheets prior to logs.

2) 50mm PVC monitoring well installed to 10.67m depth (as shown).

3) MW2 caved to 5.94m depth.

4) MW2 located at 506 883 E and 5 504 303 N. Top of MW2 elevation 337.68m referenced to the base station having a geodetic elevation of 349.94m.

SAMPLE LEGEND

☒ AS Auger Sample ▨ SS Split Spoon ■ ST Shelby Tube
▥ Rock Core (eg. BQ, NQ, etc.) ▣ VN Vane Sample

OTHER TESTS

G Specific Gravity	C Consolidation
H Hydrometer	CD Consolidated Drained Triaxial
S Sieve Analysis	CU Consolidated Undrained Triaxial
γ Unit Weight	UU Unconsolidated Undrained Triaxial
P Field Permeability	UC Unconfined Compression
K Lab Permeability	DS Direct Shear

WATER LEVELS

▽ Apparent ▼ Measured ▲ Artesian (see Notes)

Trow Thunder Bay Branch

BOREHOLE LOG

MW3A

Sheet 1 of 1

PROJECT Hydrogeological Study-Geraldton Landfill — PROJECT NO. F-03144-A/E (rev.)

CLIENT Municipality of Greenstone — DATUM Geodetic

DRILL TYPE/METHOD CME 45B Drill — DATES: Boring June 26/03 — Water Level June 26/03

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	HCVL (ppm)
0	335.13	**SAND & GRAVEL**- compact, light grey, damp, trace silt, occ. cobbles & boulders			AS	1			
2		- dense to very dense from 2.1m depth			SS	2	50	84	
3		- moist from 3.0m depth			SS	3	330	92	
5		- wet from 4.6m depth			SS	4	180	34	S
6					SS	5	50	18	
8					SS	6	430	50	S
9	325.38				SS	7		31	
10		**End of Borehole**							

HEADSPACE COMBUSTIBLE VAPOUR LEVEL

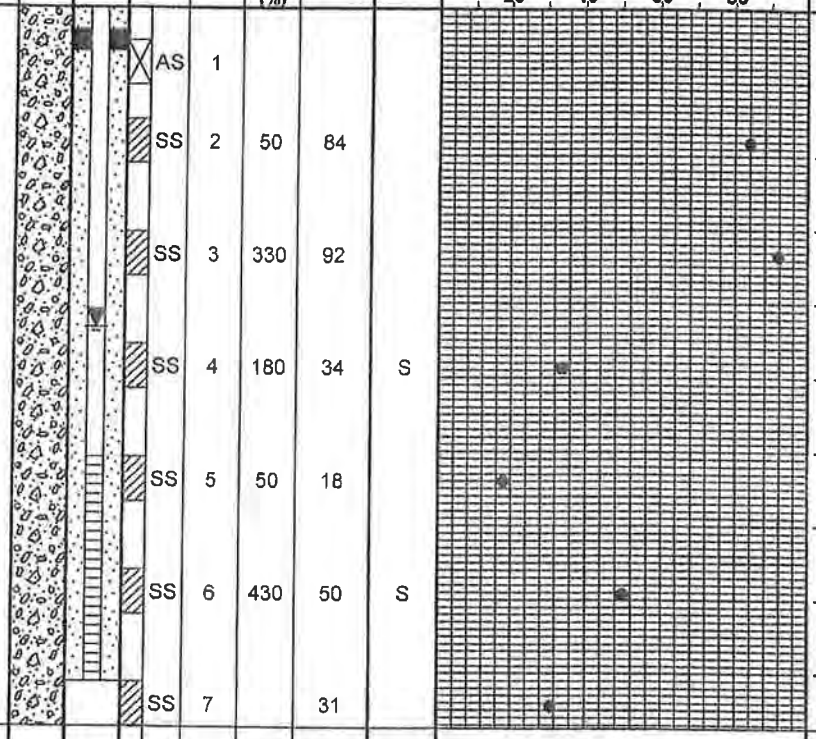
▲ HCVL

40 — 80 ppm

W_P W W_L

● SPT N Value × Dynamic Cone

20 — 40 — 60 — 80



NOTES

1) For definition of symbols & terms used on logs, see sheets prior to logs.

2) 50mm PVC monitoring well installed to 9.14m depth (as shown).

3) MW3A caved to 0.6m depth.

4) MW3A located at 506 772 E and 5 504 293 N. Top of MW3A elevation 336.27m referenced to the base station having a geodetic elevation of 349.94m.

SAMPLE LEGEND

☒ AS Auger Sample ▨ SS Split Spoon ■ ST Shelby Tube

▣ Rock Core (eg. BQ, NQ, etc.) ▣ VN Vane Sample

OTHER TESTS

G Specific Gravity	C Consolidation
H Hydrometer	CD Consolidated Drained Triaxial
S Sieve Analysis	CU Consolidated Undrained Triaxial
γ Unit Weight	UU Unconsolidated Undrained Triaxial
P Field Permeability	UC Unconfined Compression
K Lab Permeability	DS Direct Shear

WATER LEVELS

▽ Apparent ▼ Measured ▲ Artesian (see Notes)

BOREHOLE LOG

MW3B

Sheet 1 of 1

Trow Thunder Bay Branch

PROJECT Hydrogeological Study-Geraldton Landfill — PROJECT NO. F-03144-A/E (rev.)

CLIENT Municipality of Greenstone — DATUM Geodetic

DRILL TYPE/METHOD CME 45B Drill — DATES: Boring June 26-27/03 — Water Level June 27/03

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES: TYPE	SAMPLES: NUMBER	SAMPLES: RECOVERY (mm) or (%)	SAMPLES: N VALUE (blows) or RQD (%)	HCVL (ppm)	HEADSPACE COMBUSTIBLE VAPOUR LEVEL
0	335.42	SAND & GRAVEL								
6	329.32	End of Borehole								

HEADSPACE COMBUSTIBLE VAPOUR LEVEL: ▲ HCVL; 40; 80 ppm; W_P W W_L; ● SPT N Value × Dynamic Cone; 20 40 60 80

NOTES

1) For definition of symbols & terms used on logs, see sheets prior to logs.

2) 50mm PVC monitoring well installed to 6.1m depth (as shown).

3) MW3B located at 506 772 E and 5 504 293 N. Top of MW3B elevation 336.38m referenced to the base station having a geodetic elevation of 349.94m.

SAMPLE LEGEND

☒ AS Auger Sample ▨ SS Split Spoon ■ ST Shelby Tube
▯ Rock Core (eg. BQ, NQ, etc.) ▯ VN Vane Sample

OTHER TESTS

G Specific Gravity — C Consolidation
H Hydrometer — CD Consolidated Drained Triaxial
S Sieve Analysis — CU Consolidated Undrained Triaxial
γ Unit Weight — UU Unconsolidated Undrained Triaxial
P Field Permeability — UC Unconfined Compression
K Lab Permeability — DS Direct Shear

WATER LEVELS

▽ Apparent ▼ Measured ▲ Artesian (see Notes)

BOREHOLE LOG

MW4

Sheet 1 of 1

Trow Thunder Bay Branch

PROJECT Hydrogeological Study-Geraldton Landfill — PROJECT NO. F-03144-A/E (rev.)

CLIENT Municipality of Greenstone — DATUM Geodetic

DRILL TYPE/METHOD CME 45B Drill — DATES: Boring June 27/03 — Water Level June 27/03

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	HCVL (ppm)	HEADSPACE COMBUSTIBLE VAPOUR LEVEL
0	332.20									▲ HCVL; 40; 80 ppm; W_P W W_L; ● SPT N Value × Dynamic Cone; 20 40 60 80
	331.44	**SILTY SAND & ORGANICS-** loose, dark brown, wet			AS	1				
1	330.68	**SILTY SAND-** loose, brown, wet, some organics to 1.1m depth			AS	2				
					AS	3				
2		**SAND & GRAVEL-** compact, brown, wet, some silt			SS	4	230	24		
3		- compact to dense from 3.0m depth			SS	5	560	89	S	
4										
5	327.02				SS	6	25	19		
		End of Borehole								
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										

NOTES

1) For definition of symbols & terms used on logs, see sheets prior to logs.

2) 50mm PVC monitoring well installed to 4.57m depth (as shown).

3) MW4 caved to 2.13m depth.

4) MW4 located at 506 696 E and 5 504 380 N. Top of MW4 elevation 333.11m referenced to the base station having a geodetic elevation of 349.94m.

SAMPLE LEGEND

☒ AS Auger Sample ▨ SS Split Spoon ■ ST Shelby Tube
▥ Rock Core (eg. BQ, NQ, etc.) ▣ VN Vane Sample

OTHER TESTS

G Specific Gravity	C Consolidation
H Hydrometer	CD Consolidated Drained Triaxial
S Sieve Analysis	CU Consolidated Undrained Triaxial
γ Unit Weight	UU Unconsolidated Undrained Triaxial
P Field Permeability	UC Unconfined Compression
K Lab Permeability	DS Direct Shear

WATER LEVELS

▽ Apparent ▼ Measured ▲ Artesian (see Notes)

Trow Thunder Bay Branch

BOREHOLE LOG

MW5

Sheet 1 of 1

PROJECT Hydrogeological Study-Geraldton Landfill | PROJECT NO. F-03144-A/E (rev.)

CLIENT Municipality of Greenstone | DATUM Geodetic

DRILL TYPE/METHOD CME 45B Drill | DATES: Boring June 27/03 | Water Level June 27/03

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	HCVL (ppm)	HEADSPACE COMBUSTIBLE VAPOUR LEVEL
0	337.92	GARBAGE								▲ HCVL 40 80 ppm; W_P W W_L; ● SPT N Value × Dynamic Cone 20 40 60 80
4	333.35									
5		SAND & GRAVEL (TILL)- dense, grey, moist, trace silt, trace garbage to 5.2m depth			AS	1				
7		- compact, wet from 6.4m depth			AS	2			S	
11					AS	3				
12	325.73				AS	4				
		End of Borehole								

NOTES

1) For definition of symbols & terms used on logs, see sheets prior to logs.

2) 50mm PVC monitoring well installed to 9.45m depth (As shown).

3) MW5 caved to 6.1m depth.

4) MW5 located at 506 893 E and 5 504 388 N. Top of MW5 elevation 339.00m referenced to the base station having a geodetic elevation of 349.94m.

SAMPLE LEGEND

☒ AS Auger Sample ▨ SS Split Spoon ■ ST Shelby Tube
▥ Rock Core (eg. BQ, NQ, etc.) ▥ VN Vane Sample

OTHER TESTS

G Specific Gravity	C Consolidation
H Hydrometer	CD Consolidated Drained Triaxial
S Sieve Analysis	CU Consolidated Undrained Triaxial
γ Unit Weight	UU Unconsolidated Undrained Triaxial
P Field Permeability	UC Unconfined Compression
K Lab Permeability	DS Direct Shear

WATER LEVELS

▽ Apparent ▼ Measured ⏃ Artesian (see Notes)

BOREHOLE LOG

MW5 (repl.)

Sheet 1 of 1

Trow Thunder Bay Branch

PROJECT **Hydrogeological Study-Geraldton Landfill** PROJECT NO. **F-06189 D/E**

CLIENT **Municipality of Greenstone** DATUM **Geodetic**

DRILL TYPE/METHOD **HSA / CME 750 - Rubber Tire** DATES: Boring **Sept. 22/09** Water Level **Sept. 22/09**

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	HCVL (ppm)
0	339.17	**GARBAGE**							
	334.60	**SAND AND GRAVEL** - dense, grey, moist, trace silt			SS	S1	360	38	
6	333.07	**SAND** - compact, grey, moist, trace gravel, trace silt, coarse grained			SS	S2	250	24	
7		- becoming dark grey, wet, metallic odour at about 7.6 m depth			SS	S3	310	28	H
9					SS	S4	310	29	
	329.41	**End of Borehole**							
10									

HEADSPACE COMBUSTIBLE VAPOUR LEVEL

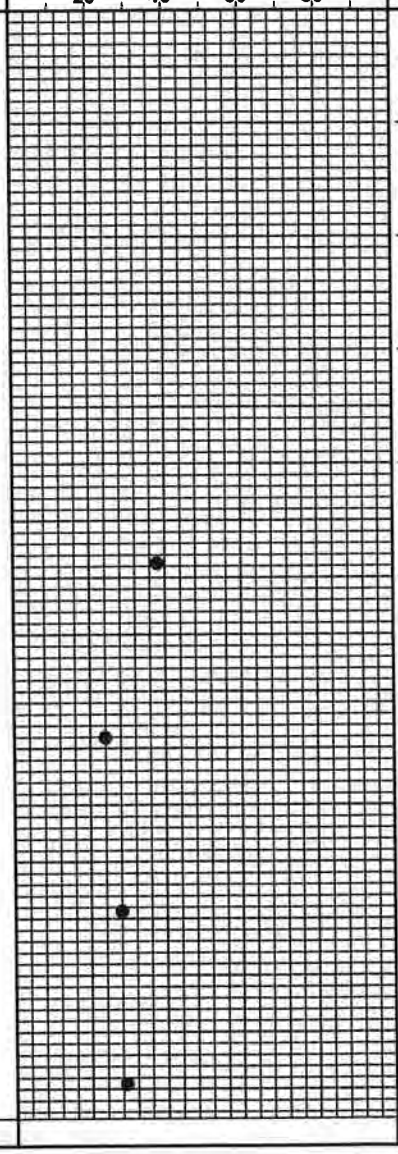
▲ HCVL

40 80 ppm

W_P W W_L

● SPT N Value × Dynamic Cone

20 40 60 80



NOTES

1) For definition of symbols & terms used on logs, see sheets prior to logs.

2) 50mm PVC monitoring well installed to 9.15m depth (as shown).

3) MW9 located at 506 889 E and 5 504 379 N. Top of MW5 (repl.) elevation 340.59m referenced to the base station having a geodetic elevation of 349.94m.

SAMPLE LEGEND

☒ AS Auger Sample ▨ SS Split Spoon ■ ST Shelby Tube

▣ Rock Core (eg. BQ, NQ, etc.) ▣ VN Vane Sample

OTHER TESTS

G Specific Gravity	C Consolidation
H Hydrometer	CD Consolidated Drained Triaxial
S Sieve Analysis	CU Consolidated Undrained Triaxial
γ Unit Weight	UU Unconsolidated Undrained Triaxial
P Field Permeability	UC Unconfined Compression
K Lab Permeability	DS Direct Shear

WATER LEVELS

▽ Apparent ▼ Measured ▲ Artesian (see Notes)

Trow Thunder Bay Branch

BOREHOLE LOG

MW6

Sheet 1 of 1

PROJECT Hydrogeological Study-Geraldton Landfill | PROJECT NO. F-03144-A/E (rev.)

CLIENT Municipality of Greenstone | DATUM Geodetic

DRILL TYPE/METHOD CME 45B Drill | DATES: Boring June 24/03 | Water Level June 27/03

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	HCVL (ppm)	HEADSPACE COMBUSTIBLE VAPOUR LEVEL
0	336.39	**SILT**- loose, light brown, moist, trace sand			AS	1				▲ HCVL 40 80 ppm; W_P W W_L; ● SPT N Value × Dynamic Cone 20 40 60 80
1										
2	333.80	- compact, moist to wet, trace gravel from 2.0m depth			SS	2	280	17		
3	332.58	**SAND**- compact, light brown, wet, some silt, trace to some gravel			SS	3	160	11		
4		**End of Borehole-Refusal to Auger**								
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										

NOTES

1) For definition of symbols & terms used on logs, see sheets prior to logs.

2) 50mm PVC monitoring well installed to 3.81m depth (As shown).

3) MW6 caved to 2.29m depth.

4) MW6 located at 507 054 E and 5 504 559 N. Top of MW6 elevation 337.24m referenced to the base station having a geodetic elevation of 349.94m.

SAMPLE LEGEND

☒ AS Auger Sample ▨ SS Split Spoon ■ ST Shelby Tube

▥ Rock Core (eg. BQ, NQ, etc.) ▣ VN Vane Sample

OTHER TESTS

G Specific Gravity	C Consolidation
H Hydrometer	CD Consolidated Drained Triaxial
S Sieve Analysis	CU Consolidated Undrained Triaxial
γ Unit Weight	UU Unconsolidated Undrained Triaxial
P Field Permeability	UC Unconfined Compression
K Lab Permeability	DS Direct Shear

WATER LEVELS

▽ Apparent ▼ Measured ▲ Artesian (see Notes)

BOREHOLE LOG

MW7

Sheet 1 of 1

Trow Thunder Bay Branch

PROJECT **Hydrogeological Study-Geraldton Landfill** PROJECT NO. **F-06189 D/E**

CLIENT **Municipality of Greenstone** DATUM **Geodetic**

DRILL TYPE/METHOD **HSA / Speedstar SD100E** DATES: Boring **June 27/08** Water Level **June 27/08**

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	HCVL (ppm)
0	334.06								
0	333.93	**ORGANICS** - rootmat, brown, damp, some decaying wood			AS	S-1			
		SILTY SAND - loose, brown, moist, trace fine gravel			AS	S-2			
1					SS	S-3	305	2	
2					SS	S-4	360	16	
		- becoming wet at about 2.4 m			SS	S-5	360	12	
3					SS	S-6	410	18	
4	329.49								
		SAND - compact, brown, medium to coarse grained, trace silt, blowing sands into augers at about 8.23m			SS	S-7	510	24	
6					SS	S-8	480	15	
7									
8	325.83				SS	S-9	510	29	
		End of Borehole							
9									
10									

HEADSPACE COMBUSTIBLE VAPOUR LEVEL

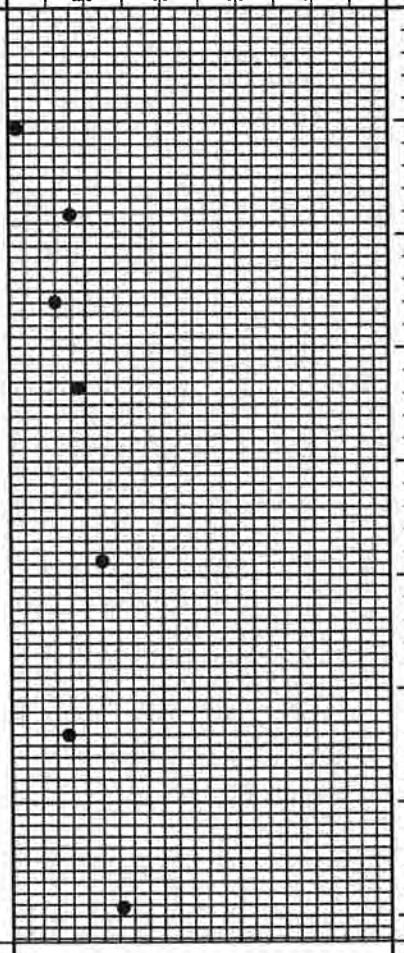
▲ HCVL

40 80 ppm

W_P W W_L

● SPT N Value × Dynamic Cone

20 40 60 80



NOTES

1) For definition of symbols & terms used on logs, see sheets prior to logs.

2) 50mm PVC monitoring well installed to 7.01m depth (as shown).

3) MW7 located at 506 638 E and 5 504 291 N. Top of MW7 elevation 335.01m referenced to the base station having a geodetic elevation of 349.94m.

SAMPLE LEGEND

⊠ AS Auger Sample ▨ SS Split Spoon ■ ST Shelby Tube

◫ Rock Core (eg. BQ, NQ, etc.) ◫ VN Vane Sample

OTHER TESTS

G Specific Gravity	C Consolidation
H Hydrometer	CD Consolidated Drained Triaxial
S Sieve Analysis	CU Consolidated Undrained Triaxial
γ Unit Weight	UU Unconsolidated Undrained Triaxial
P Field Permeability	UC Unconfined Compression
K Lab Permeability	DS Direct Shear

WATER LEVELS

▽ Apparent ▼ Measured ▲ Artesian (see Notes)

BOREHOLE LOG

MW8

Sheet 1 of 2

Trow Thunder Bay Branch

PROJECT **Hydrogeological Study-Geraldton Landfill** PROJECT NO. **F-06189 D/E**

CLIENT **Municipality of Greenstone** DATUM **Geodetic**

DRILL TYPE/METHOD **HSA / CME 55 - Trackmounted** DATES: Boring **July 25/06** Water Level **Aug 18/06**

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	HCVL (ppm)
0	346.45	**SAND** - loose, brown, moist, fine grained	AS	1			
		- trace gravel from about 1.5m to 9.1m depth	SS	2	406	9	
		- becoming coarser grained at about 3.1m depth	SS	3	203	4	
			SS	4	330	8	
		- becoming compact at about 6.1m depth	SS	5	178	10	
			SS	6	203	17	
			SS	7	305	10	
			SS	8	229	22	
10							

HEADSPACE COMBUSTIBLE VAPOUR LEVEL
▲ HCVL
40 80 ppm
W_P W W_L
● SPT N Value × Dynamic Cone
20 40 60 80

Continued Next Page

NOTES

1) For definition of symbols & terms used on logs, see sheets prior to logs.

2) 50mm PVC monitoring well installed to 18.29m depth (as shown).

3) MW8 located at 506 930 E and 5 504 217 N. Top of MW8 elevation 347.38m referenced to the base station having a geodetic elevation of 349.94m.

SAMPLE LEGEND
- ⊠ AS Auger Sample
- ▨ SS Split Spoon
- ■ ST Shelby Tube
- ▣ Rock Core (eg. BQ, NQ, etc.)
- ▣ VN Vane Sample

OTHER TESTS
- G Specific Gravity
- H Hydrometer
- S Sieve Analysis
- γ Unit Weight
- P Field Permeability
- K Lab Permeability
- C Consolidation
- CD Consolidated Drained Triaxial
- CU Consolidated Undrained Triaxial
- UU Unconsolidated Undrained Triaxial
- UC Unconfined Compression
- DS Direct Shear

WATER LEVELS
- ▽ Apparent
- ▼ Measured
- ▲ Artesian (see Notes)

BOREHOLE LOG

MW8

Sheet 2 of 2

Trow Thunder Bay Branch

PROJECT Hydrogeological Study-Geraldton Landfill — PROJECT NO. F-06189 D/E

CLIENT Municipality of Greenstone — DATUM Geodetic

DRILL TYPE/METHOD HSA / CME 55 - Trackmounted — DATES: Boring July 25/06 — Water Level Aug 18/06

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	HCVL (ppm)
10	346.45								
11					SS	9	330		
12		- becoming moist to wet at about 12.2m depth			SS	10	305	19	
13									
14					SS	11	356	20	
15		- becoming wet at about 15.2m depth			SS	12	254		H
16									
17									
18	328.16								
		End of Borehole							
19									
20									

HEADSPACE COMBUSTIBLE VAPOUR LEVEL

▲ HCVL

40 80 ppm

W_P W W_L

● SPT N Value × Dynamic Cone

20 40 60 80

NOTES

1) For definition of symbols & terms used on logs, see sheets prior to logs.

2) 50mm PVC monitoring well installed to 18.29m depth (as shown).

3) MW8 located at 506 930 E and 5 504 217 N. Top of MW8 elevation 347.38m referenced to the base station having a geodetic elevation of 349.94m.

SAMPLE LEGEND

☒ AS Auger Sample ▨ SS Split Spoon ■ ST Shelby Tube

▥ Rock Core (eg. BQ, NQ, etc.) ▣ VN Vane Sample

OTHER TESTS

G Specific Gravity	C Consolidation
H Hydrometer	CD Consolidated Drained Triaxial
S Sieve Analysis	CU Consolidated Undrained Triaxial
γ Unit Weight	UU Unconsolidated Undrained Triaxial
P Field Permeability	UC Unconfined Compression
K Lab Permeability	DS Direct Shear

WATER LEVELS

▽ Apparent ▼ Measured ▲ Artesian (see Notes)

BOREHOLE LOG

MW9

Sheet 1 of 2

Trow Thunder Bay Branch

PROJECT **Hydrogeological Study-Geraldton Landfill** PROJECT NO. **F-06189 D/E**

CLIENT **Municipality of Greenstone** DATUM **Geodetic**

DRILL TYPE/METHOD **HSA / CME 55 - Trackmounted** DATES: Boring **July 25/06** Water Level **Aug 18/06**

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	HCVL (ppm)
0	341.17	**SAND** - loose, brown, moist			AS	1			
1									
2		- becoming dense at about 1.5m depth			SS	2	432	38	
3	338.12								
3		**SANDY SILT** - very dense, brown, moist			SS	3	508	61	
4					SS	4	559	62	
5					SS	5	406	60	
6	335.07								
6		**SAND/SILT** - compact, brown, moist, fine-grained			SS	6	406	22	
7									
8					SS	7	305	21	
9	332.03								
9		**SILT** - compact, brown, wet, some sand			SS	8	356	15	H
10									

HEADSPACE COMBUSTIBLE VAPOUR LEVEL

▲ HCVL

40 80 ppm

W_P W W_L

● SPT N Value × Dynamic Cone

20 40 60 80

Continued Next Page

NOTES

1) For definition of symbols & terms used on logs, see sheets prior to logs.

2) 50mm PVC monitoring well installed to 10.67m depth (as shown).

3) MW9 located at 506 708 E and 5 504 163 N. Top of MW9 elevation 342.14m referenced to the base station having a geodetic elevation of 349.94m.

SAMPLE LEGEND

- ⊠ AS Auger Sample
- ▨ SS Split Spoon
- ■ ST Shelby Tube
- ▣ Rock Core (eg. BQ, NQ, etc.)
- ▣ VN Vane Sample

OTHER TESTS

G Specific Gravity	C Consolidation
H Hydrometer	CD Consolidated Drained Triaxial
S Sieve Analysis	CU Consolidated Undrained Triaxial
γ Unit Weight	UU Unconsolidated Undrained Triaxial
P Field Permeability	UC Unconfined Compression
K Lab Permeability	DS Direct Shear

WATER LEVELS

▽ Apparent ▼ Measured ▲ Artesian (see Notes)

BOREHOLE LOG

MW9

Sheet 2 of 2

Trow Thunder Bay Branch

PROJECT **Hydrogeological Study-Geraldton Landfill** PROJECT NO. **F-06189 D/E**

CLIENT **Municipality of Greenstone** DATUM **Geodetic**

DRILL TYPE/METHOD **HSA / CME 55 - Trackmounted** DATES: Boring **July 25/06** Water Level **Aug 18/06**

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	HCVL (ppm)	HEADSPACE COMBUSTIBLE VAPOUR LEVEL
10	341.17									▲ HCVL 40 80 ppm; W_P W W_L; ● SPT N Value × Dynamic Cone 20 40 60 80
	330.50	**End of Borehole**								
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										

NOTES

1) For definition of symbols & terms used on logs, see sheets prior to logs.

2) 50mm PVC monitoring well installed to 10.67m depth (as shown).

3) MW9 located at 506 708 E and 5 504 163 N. Top of MW9 elevation 342.14m referenced to the base station having a geodetic elevation of 349.94m.

SAMPLE LEGEND

☒ AS Auger Sample ▨ SS Split Spoon ■ ST Shelby Tube
▣ Rock Core (eg. BQ, NQ, etc.) ◘ VN Vane Sample

OTHER TESTS

G Specific Gravity	C Consolidation
H Hydrometer	CD Consolidated Drained Triaxial
S Sieve Analysis	CU Consolidated Undrained Triaxial
γ Unit Weight	UU Unconsolidated Undrained Triaxial
P Field Permeability	UC Unconfined Compression
K Lab Permeability	DS Direct Shear

WATER LEVELS

▽ Apparent ▼ Measured ▲ Artesian (see Notes)

BOREHOLE LOG

MW10A

Sheet 1 of 1

Trow Thunder Bay Branch

PROJECT **Hydrogeological Study-Geraldton Landfill** PROJECT NO. **F-06189 D/E**

CLIENT **Municipality of Greenstone** DATUM **Geodetic**

DRILL TYPE/METHOD **HSA / CME 55 - Trackmounted** DATES: Boring **July 26/06** Water Level **Aug 18/06**

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	HCVL (ppm)
0	330.43	**MUSKEG** - very loose, brown, wet			AS	1			
1									
2					SS	2	0	1	
3	327.38	**SAND** - very loose, grey, wet			AS	3			
4	325.86								
5		**End of Borehole**							
6									
7									
8									
9									
10									

HEADSPACE COMBUSTIBLE VAPOUR LEVEL

▲ HCVL

40 80 ppm

W_P W W_L

● SPT N Value × Dynamic Cone

20 40 60 80

NOTES

1) For definition of symbols & terms used on logs, see sheets prior to logs.

2) 50mm PVC monitoring well installed to 6.1m depth (as shown).

3) MW10A located at 506 434 E and 5 504 083 N. Top of MW elevation 331.28m referenced to the base station having a geodetic elevation of 349.94m.

SAMPLE LEGEND

☒ AS Auger Sample ▨ SS Split Spoon ■ ST Shelby Tube

▥ Rock Core (eg. BQ, NQ, etc.) ▥ VN Vane Sample

OTHER TESTS

G Specific Gravity	C Consolidation
H Hydrometer	CD Consolidated Drained Triaxial
S Sieve Analysis	CU Consolidated Undrained Triaxial
γ Unit Weight	UU Unconsolidated Undrained Triaxial
P Field Permeability	UC Unconfined Compression
K Lab Permeability	DS Direct Shear

WATER LEVELS

▽ Apparent ▼ Measured ▲ Artesian (see Notes)

BOREHOLE LOG

MW10B

Sheet 1 of 1

Trow Thunder Bay Branch

PROJECT **Hydrogeological Study-Geraldton Landfill** PROJECT NO. **F-06189 D/E**

CLIENT **Municipality of Greenstone** DATUM **Geodetic**

DRILL TYPE/METHOD **HSA / CME 55 - Trackmounted** DATES: Boring **July 26/06** Water Level **Aug 18/06**

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	HCVL (ppm)
0	330.46	**MUSKEG** - very loose, grey, wet							
3	327.41	**SAND** - very loose, grey, wet							
5					SS	1	76	1	
6					SS	2	152	2	
8					SS	3	203	3	S
	321.93								
9		**End of Borehole** - refusal to auger							
10									

HEADSPACE COMBUSTIBLE VAPOUR LEVEL

▲ HCVL

40 80 ppm

W_P W W_L

● SPT N Value × Dynamic Cone

20 40 60 80

NOTES

1) For definition of symbols & terms used on logs, see sheets prior to logs.

2) 50mm PVC monitoring well installed to 4.57m depth (as shown).

3) MW10B located at 506 435 E and 5 504 079 N. Top of MW10A elevation 331.27m referenced to the base station having a geodetic elevation of 349.94m.

4) Heaving sands prevented installation at the depth of refusal (8.54m).

SAMPLE LEGEND

☒ AS Auger Sample ▨ SS Split Spoon ■ ST Shelby Tube

▣ Rock Core (eg. BQ, NQ, etc.) ▣ VN Vane Sample

OTHER TESTS

G Specific Gravity	C Consolidation
H Hydrometer	CD Consolidated Drained Triaxial
S Sieve Analysis	CU Consolidated Undrained Triaxial
γ Unit Weight	UU Unconsolidated Undrained Triaxial
P Field Permeability	UC Unconfined Compression
K Lab Permeability	DS Direct Shear

WATER LEVELS

▽ Apparent ▼ Measured ▲ Artesian (see Notes)

BOREHOLE LOG

MW11

Sheet 1 of 1

Trow Thunder Bay Branch

PROJECT **Hydrogeological Study-Geraldton Landfill** PROJECT NO. **F-06189 D/E**

CLIENT **Municipality of Greenstone** DATUM **Geodetic**

DRILL TYPE/METHOD **HSA / CME 750 - Rubber Tire** DATES: Boring **Sept. 23/09** Water Level **Sept. 23/09**

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	HCVL (ppm)
0	330.29								
	329.83	**PEAT** - soft, dark brown, wet, roots and rootlets			AS	S1			
1		**SILTY SAND** - very loose to loose, brown, wet			SS	S2	130	4	
	328.77								
2		**SILT** - compact, brown, wet, trace sand, trace clay			SS	S3	310	11	
3		- becoming compact to loose, grey at about 3.0 m depth			SS	S4	230	10	H
4									
5	325.10				SS	S	230	7	
		End of Borehole							
6									
7									
8									
9									
10									

HEADSPACE COMBUSTIBLE VAPOUR LEVEL

▲ HCVL

40 80 ppm

W_P W W_L

● SPT N Value × Dynamic Cone

20 40 60 80

NOTES

1) For definition of symbols & terms used on logs, see sheets prior to logs.

2) 50mm PVC monitoring well installed to 4.57m depth (as shown).

3) MW11 located at 506 435 E and 5 504 299 N. Top of MW11 elevation 331.13m referenced to the base station having a geodetic elevation of 349.94m.

SAMPLE LEGEND

☒ AS Auger Sample ▨ SS Split Spoon ■ ST Shelby Tube

▥ Rock Core (eg. BQ, NQ, etc.) ▥ VN Vane Sample

OTHER TESTS

G Specific Gravity	C Consolidation
H Hydrometer	CD Consolidated Drained Triaxial
S Sieve Analysis	CU Consolidated Undrained Triaxial
γ Unit Weight	UU Unconsolidated Undrained Triaxial
P Field Permeability	UC Unconfined Compression
K Lab Permeability	DS Direct Shear

WATER LEVELS

▽ Apparent ▼ Measured ▲ Artesian (see Notes)

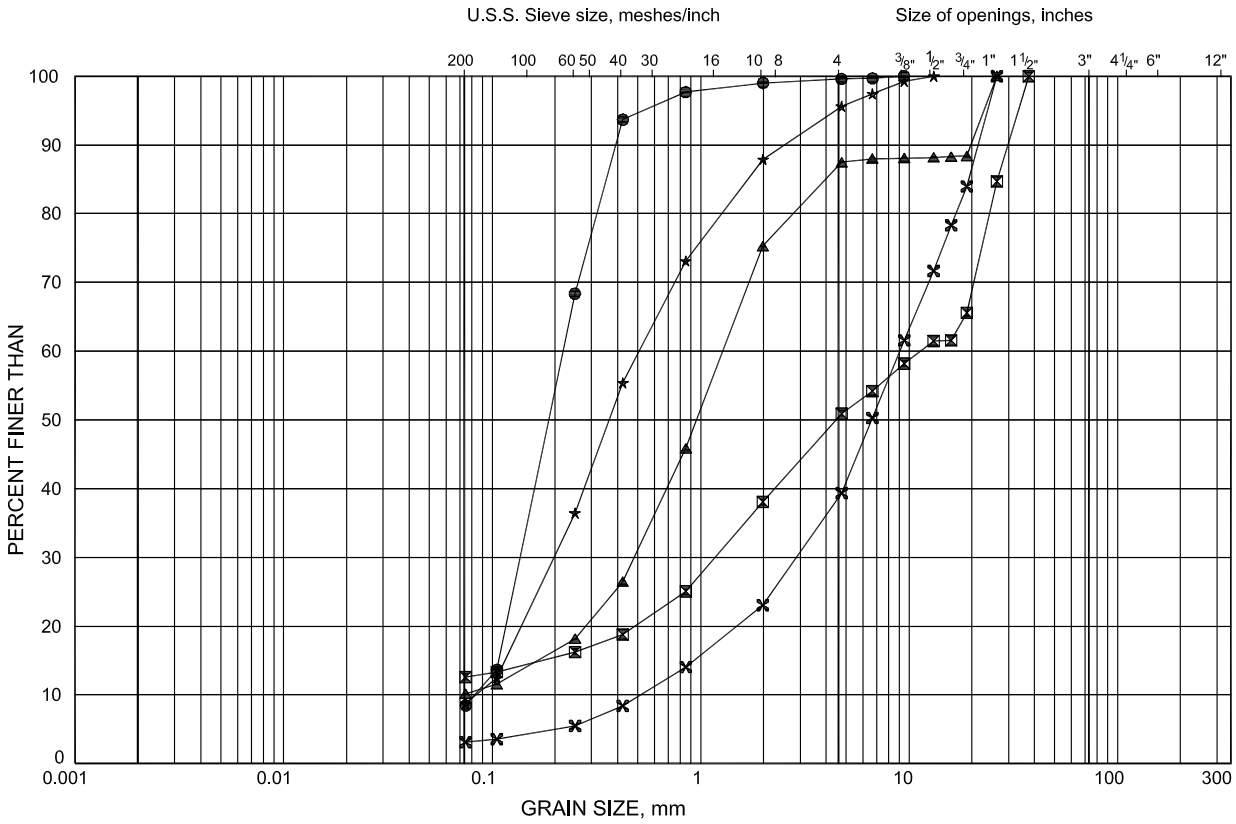
APPENDIX E-

Grain Size Distribution Curves

Grain Size Distribution

Figure E-1

Trow Thunder Bay Branch



Unified Soil Classification System

SILT or CLAY			FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
			SAND			GRAVEL		

CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	COBBLE SIZE
	SILT			SAND			GRAVEL			

Modified M.I.T. Classification System

Symbol	Location	Sample No.	Mid-Sample Depth (m)	Elevation (m)	D_{10} (mm)	C_u	C_c
●	MW1	5	5.63	329.94	0.083	2.6	1.0
⊠	MW3A	4	4.88	330.45			
▲	MW3A	6	7.92	327.41		18.3	2.6
★	MW4	5	3.35	328.77	0.084	6.1	0.9
✕	MW5	2	7.31	330.66	0.516	17.5	1.8

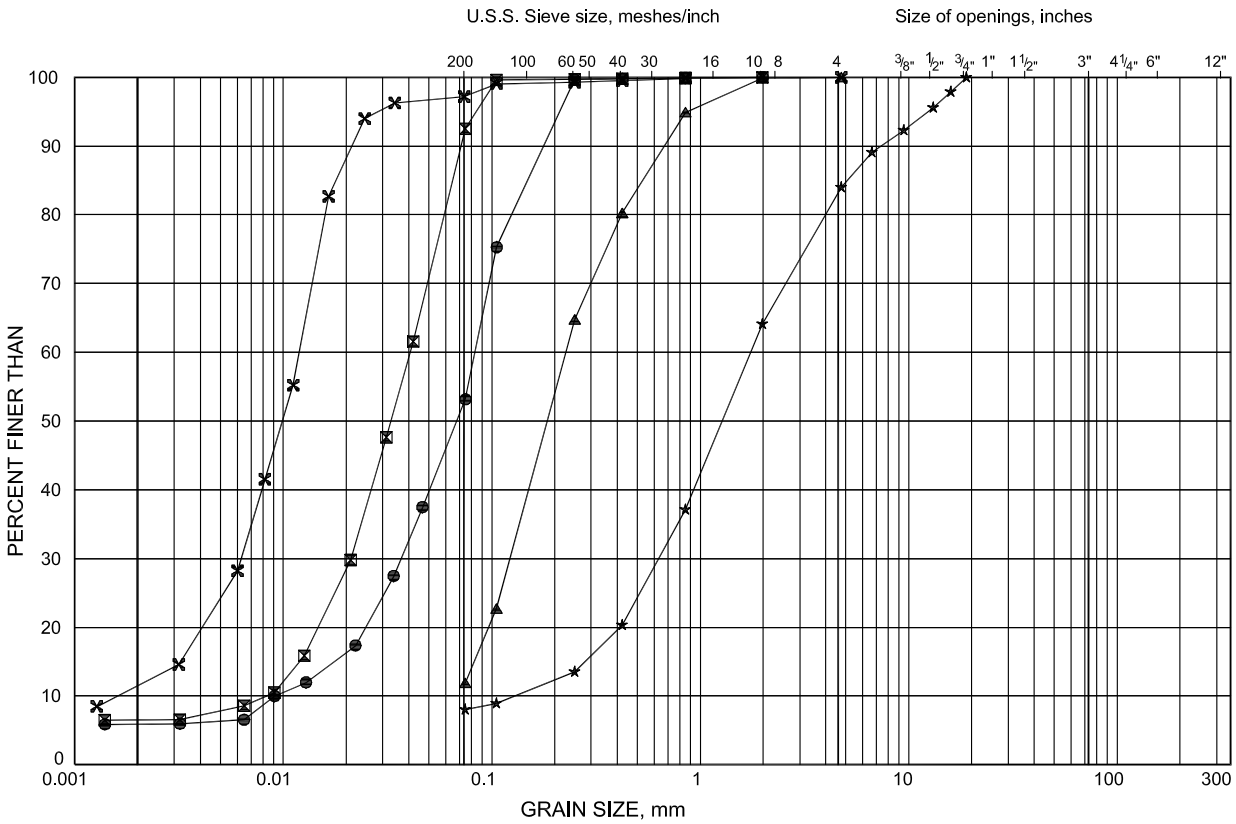
Project Hydrogeological Evaluation-Geraldton Landfill

Project No. F-03144-A/G (rev)

Grain Size Distribution

Figure E-2

Trow Thunder Bay Branch



Unified Soil Classification System

SILT or CLAY			FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
			SAND			GRAVEL		

CLAY										
FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	COBBLE SIZE
SILT			SAND			GRAVEL			

Modified M.I.T. Classification System

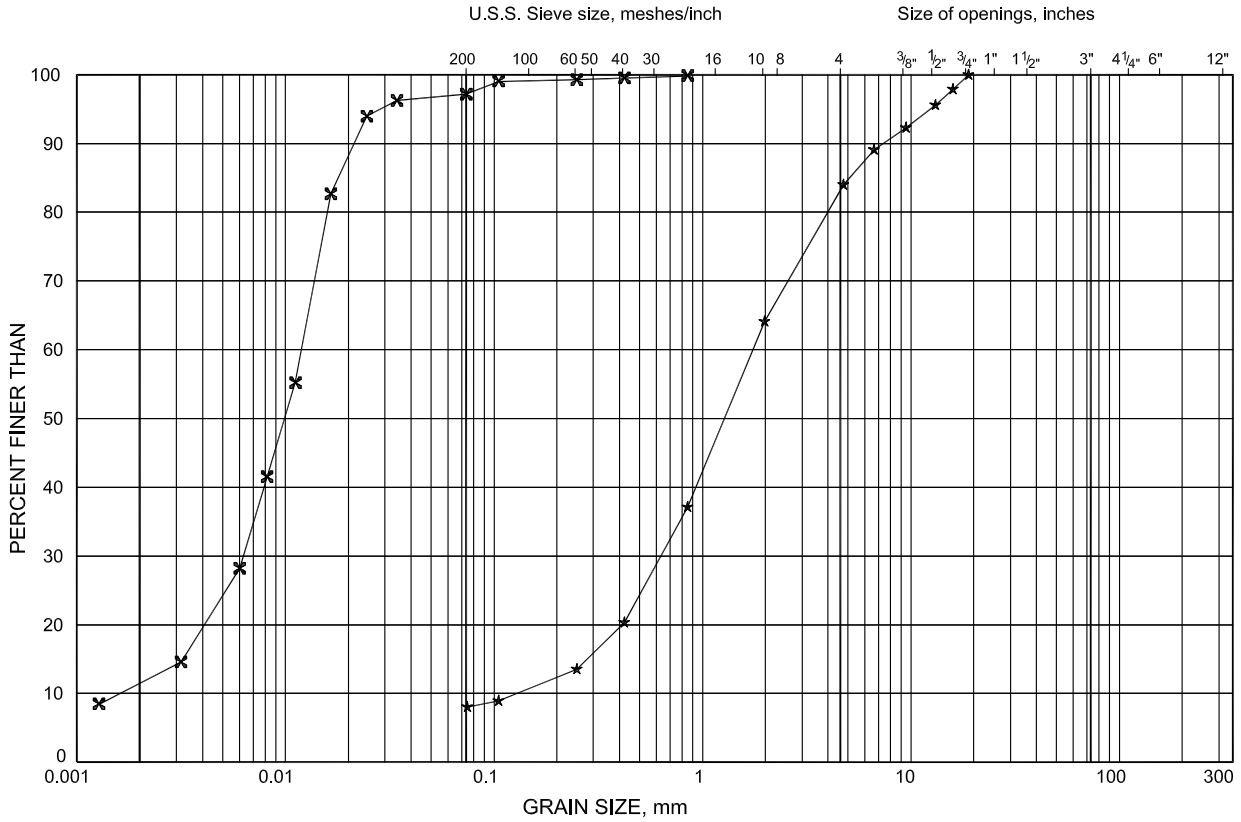
Symbol	Location	Sample No.	Mid-Sample Depth (m)	Elevation (m)	D_{10} (mm)	C_u	C_c
●	MW08	12	15.55	330.90	0.009		
⊠	MW09	8	9.45	331.72	0.008		
▲	MW10B	3	7.93	322.53		3.2	1.0
★	MW5 (repl.)	3	7.93	331.24	0.13	13.9	1.7
✖	MW11	4	3.35	326.94	0.0017	7.35	1.8

Project Environmental Quality Monitoring -Geraldton Landfill, Geraldton, Ontario Project No. TBEN00006189F

Grain Size Distribution

Figure E-3

Trow Thunder Bay Branch



Unified Soil Classification System

SILT or CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
	SAND			GRAVEL		

CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	COBBLE SIZE
	SILT			SAND			GRAVEL			

Modified M.I.T. Classification System

Symbol	Location	Sample No.	Mid-Sample Depth (M)	Elevation (M)	D_{10} (mm)	C_u	C_c
*	MW5	3	7.93	331.24			
×	MW11	4	3.35	326.94			

Project Hydrogeological Evaluation-Geraldton Landfill Project No. F-06189-A/E

APPENDIX F-

Laboratory Certificates of Analysis

Your Project #: THB-00006189-PE
Site#: Geraldton Landfill

Attention: Kristof Karpiuk

exp Services Inc
Thunder Bay Branch
1142 Roland St
Thunder Bay, ON
CANADA P7B 5M4

Your C.O.C. #: 715290-02-01, 715290-01-01, 715289-01-01

Report Date: 2019/05/16
Report #: R5714553
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B9C5153
Received: 2019/05/09, 14:10

Sample Matrix: Water
Samples Received: 17

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Dissolved Aluminum (0.2 u, clay free)	3	N/A	2019/05/15	CAM SOP-00447	EPA 6020B m
Alkalinity	17	N/A	2019/05/12	CAM SOP-00448	SM 23 2320 B m
Biochemical Oxygen Demand (BOD)	3	2019/05/10	2019/05/15	CAM SOP-00427	SM 23 5210B m
Chloride by Automated Colourimetry	3	N/A	2019/05/13	CAM SOP-00463	SM 4500-Cl E m
Chloride by Automated Colourimetry	14	N/A	2019/05/14	CAM SOP-00463	SM 4500-Cl E m
Chemical Oxygen Demand	17	N/A	2019/05/14	CAM SOP-00416	SM 23 5220 D m
Conductivity	17	N/A	2019/05/12	CAM SOP-00414	SM 23 2510 m
Dissolved Organic Carbon (DOC) (1)	4	N/A	2019/05/10	CAM SOP-00446	SM 23 5310 B m
Dissolved Organic Carbon (DOC) (1)	9	N/A	2019/05/11	CAM SOP-00446	SM 23 5310 B m
Dissolved Organic Carbon (DOC) (1)	3	N/A	2019/05/13	CAM SOP-00446	SM 23 5310 B m
Dissolved Organic Carbon (DOC) (1)	1	N/A	2019/05/14	CAM SOP-00446	SM 23 5310 B m
Hardness (calculated as CaCO3)	14	N/A	2019/05/15	CAM SOP 00102/00408/00447	SM 2340 B
Hardness (calculated as CaCO3)	3	N/A	2019/05/16	CAM SOP 00102/00408/00447	SM 2340 B
Mercury in Water by CVAA	17	2019/05/15	2019/05/15	CAM SOP-00453	EPA 7470A m
Dissolved Metals by ICPMS	13	N/A	2019/05/14	CAM SOP-00447	EPA 6020B m
Dissolved Metals by ICPMS	1	N/A	2019/05/15	CAM SOP-00447	EPA 6020B m
Total Metals Analysis by ICPMS	3	N/A	2019/05/15	CAM SOP-00447	EPA 6020B m
Ion Balance (% Difference)	14	N/A	2019/05/15		
Total Ammonia-N	17	N/A	2019/05/14	CAM SOP-00441	EPA GS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (2)	17	N/A	2019/05/14	CAM SOP-00440	SM 23 4500-NO3I/NO2B
Organic Nitrogen	17	N/A	2019/05/15		
pH	17	2019/05/11	2019/05/12	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	17	N/A	2019/05/13	CAM SOP-00444	OMOE E3179 m
Field pH (3)	14	N/A	2019/05/09		Field pH Meter
Orthophosphate	14	N/A	2019/05/13	CAM SOP-00461	EPA 365.1 m
Sulphate by Automated Colourimetry	17	N/A	2019/05/13	CAM SOP-00464	EPA 375.4 m

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

Your Project #: THB-00006189-PE
Site#: Geraldton Landfill

Attention: Kristof Karpiuk

exp Services Inc
Thunder Bay Branch
1142 Roland St
Thunder Bay, ON
CANADA P7B 5M4

Your C.O.C. #: 715290-02-01, 715290-01-01, 715289-01-01

Report Date: 2019/05/16
Report #: R5714553
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B9C5153
Received: 2019/05/09, 14:10

Sample Matrix: Water
Samples Received: 17

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Total Dissolved Solids	3	2019/05/11	2019/05/13	CAM SOP-00428	SM 23 2540C m
Total Dissolved Solids	13	2019/05/13	2019/05/14	CAM SOP-00428	SM 23 2540C m
Total Dissolved Solids	1	2019/05/14	2019/05/15	CAM SOP-00428	SM 23 2540C m
Total Kjeldahl Nitrogen in Water	13	2019/05/13	2019/05/14	CAM SOP-00938	OMOE E3516 m
Total Kjeldahl Nitrogen in Water	4	2019/05/13	2019/05/15	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	3	2019/05/13	2019/05/14	CAM SOP-00407	SM 23 4500 P B H m
Total Phosphorus (Colourimetric)	14	2019/05/13	2019/05/15	CAM SOP-00407	SM 23 4500 P B H m
Low Level Total Suspended Solids	3	2019/05/10	2019/05/13	CAM SOP-00428	SM 23 2540D m

Remarks:

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

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

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

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Maxxam, results relate to the supplied samples tested.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
(1) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.

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

Your Project #: THB-00006189-PE
Site#: Geraldton Landfill

Attention: Kristof Karpiuk

exp Services Inc
Thunder Bay Branch
1142 Roland St
Thunder Bay, ON
CANADA P7B 5M4

Your C.O.C. #: 715290-02-01, 715290-01-01, 715289-01-01

Report Date: 2019/05/16
Report #: R5714553
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B9C5153
Received: 2019/05/09, 14:10

(2) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.
(3) This is a field test, therefore, the results relate to items that were not analysed at Maxxam Analytics Inc.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Michelle Brescacin, Project Manager Assistant
Email: MBrescacin@maxxam.ca
Phone# (807)344-4220

==========

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

Maxxam Job #: B9C5153
Report Date: 2019/05/16

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

Maxxam ID		JRH283			JRH284			JRH284		
Sampling Date		2019/05/06 20:40			2019/05/06 21:38			2019/05/06 21:38		
COC Number		715290-02-01			715290-02-01			715290-02-01		
	UNITS	**MW1**	**RDL**	**QC Batch**	**MW2**	**RDL**	**QC Batch**	**MW2 Lab-Dup**	**RDL**	**QC Batch**
Inorganics										
Total Ammonia-N	mg/L	5.8	0.050	6119255	0.43	0.050	6119255			
Total Chemical Oxygen Demand (COD)	mg/L	30	4.0	6118291	8.3	4.0	6118291			
Conductivity	umho/cm	1700	1.0	6117060	470	1.0	6117101			
Total Dissolved Solids	mg/L	965	10	6117295	295	10	6117207	295	10	6117207
Total Kjeldahl Nitrogen (TKN)	mg/L	6.3	0.20	6118294	0.63	0.10	6118294			
Dissolved Organic Carbon	mg/L	10	0.50	6115917	5.5	0.50	6115917			
pH	pH	7.85		6117061	7.89		6117103			
Phenols-4AAP	mg/L	<0.0010	0.0010	6117992	<0.0010	0.0010	6117989			
Total Phosphorus	mg/L	0.064	0.020	6118410	<0.020	0.020	6118410			
Dissolved Sulphate (SO4)	mg/L	43	1.0	6117145	<1.0	1.0	6117145			
Alkalinity (Total as CaCO3)	mg/L	570	1.0	6117056	250	1.0	6117071			
Dissolved Chloride (Cl-)	mg/L	180	2.0	6117143	6.3	1.0	6117143			
Nitrite (N)	mg/L	<0.010	0.010	6117029	<0.010	0.010	6117029			
Nitrate (N)	mg/L	<0.10	0.10	6117029	<0.10	0.10	6117029			
Metals										
Mercury (Hg)	mg/L	<0.0001	0.0001	6122456	<0.0001	0.0001	6122456			
Dissolved Aluminum (Al)	ug/L	<5.0	5.0	6118813	8.1	5.0	6118813	9.3	5.0	6118813
Dissolved Antimony (Sb)	ug/L	<0.50	0.50	6118813	<0.50	0.50	6118813	<0.50	0.50	6118813
Dissolved Arsenic (As)	ug/L	10	1.0	6118813	2.6	1.0	6118813	2.7	1.0	6118813
Dissolved Barium (Ba)	ug/L	140	2.0	6118813	16	2.0	6118813	16	2.0	6118813
Dissolved Beryllium (Be)	ug/L	<0.50	0.50	6118813	<0.50	0.50	6118813	<0.50	0.50	6118813
Dissolved Bismuth (Bi)	ug/L	<1.0	1.0	6118813	<1.0	1.0	6118813	<1.0	1.0	6118813
Dissolved Boron (B)	ug/L	220	10	6118813	30	10	6118813	30	10	6118813
Dissolved Cadmium (Cd)	ug/L	<0.10	0.10	6118813	<0.10	0.10	6118813	<0.10	0.10	6118813
Dissolved Calcium (Ca)	ug/L	200000	200	6118813	83000	200	6118813	82000	200	6118813
Dissolved Chromium (Cr)	ug/L	<5.0	5.0	6118813	<5.0	5.0	6118813	<5.0	5.0	6118813
Dissolved Cobalt (Co)	ug/L	20	0.50	6118813	2.3	0.50	6118813	2.3	0.50	6118813
Dissolved Copper (Cu)	ug/L	1.3	1.0	6118813	1.5	1.0	6118813	1.5	1.0	6118813
Dissolved Iron (Fe)	ug/L	11000	100	6118813	200	100	6118813	200	100	6118813
Dissolved Lead (Pb)	ug/L	<0.50	0.50	6118813	<0.50	0.50	6118813	<0.50	0.50	6118813
Dissolved Magnesium (Mg)	ug/L	19000	50	6118813	9800	50	6118813	9800	50	6118813
Dissolved Manganese (Mn)	ug/L	2600	2.0	6118813	1500	2.0	6118813	1500	2.0	6118813
Dissolved Molybdenum (Mo)	ug/L	1.3	0.50	6118813	0.51	0.50	6118813	0.54	0.50	6118813

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

Maxxam Job #: B9C5153
Report Date: 2019/05/16

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

Maxxam ID		JRH283			JRH284			JRH284		
Sampling Date		2019/05/06 20:40			2019/05/06 21:38			2019/05/06 21:38		
COC Number		715290-02-01			715290-02-01			715290-02-01		
	UNITS	**MW1**	**RDL**	**QC Batch**	**MW2**	**RDL**	**QC Batch**	**MW2 Lab-Dup**	**RDL**	**QC Batch**
Dissolved Nickel (Ni)	ug/L	8.7	1.0	6118813	2.9	1.0	6118813	3.0	1.0	6118813
Dissolved Potassium (K)	ug/L	24000	200	6118813	1700	200	6118813	1700	200	6118813
Dissolved Selenium (Se)	ug/L	<2.0	2.0	6118813	<2.0	2.0	6118813	<2.0	2.0	6118813
Dissolved Silicon (Si)	ug/L	9200	50	6118813	4000	50	6118813	4000	50	6118813
Dissolved Sodium (Na)	ug/L	130000	100	6118813	4900	100	6118813	4900	100	6118813
Dissolved Strontium (Sr)	ug/L	330	1.0	6118813	68	1.0	6118813	68	1.0	6118813
Dissolved Thallium (Tl)	ug/L	0.17	0.050	6118813	0.052	0.050	6118813	0.054	0.050	6118813
Dissolved Tin (Sn)	ug/L	<1.0	1.0	6118813	<1.0	1.0	6118813	<1.0	1.0	6118813
Dissolved Vanadium (V)	ug/L	0.62	0.50	6118813	0.84	0.50	6118813	0.83	0.50	6118813
Dissolved Zinc (Zn)	ug/L	<5.0	5.0	6118813	<5.0	5.0	6118813	<5.0	5.0	6118813

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Maxxam Job #: B9C5153
Report Date: 2019/05/16

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

Maxxam ID		JRH285			JRH285			JRH286		
Sampling Date		2019/05/06 21:10			2019/05/06 21:10			2019/05/06 22:10		
COC Number		715290-02-01			715290-02-01			715290-02-01		
	UNITS	**MW3A**	**RDL**	**QC Batch**	**MW3A Lab-Dup**	**RDL**	**QC Batch**	**MW3B**	**RDL**	**QC Batch**
Inorganics										
Total Ammonia-N	mg/L	9.1	0.050	6119255				4.5	0.050	6119255
Total Chemical Oxygen Demand (COD)	mg/L	17	4.0	6118291				13	4.0	6118291
Conductivity	umho/cm	1200	1.0	6117060				780	1.0	6117060
Total Dissolved Solids	mg/L	650	10	6117207				435	10	6117295
Total Kjeldahl Nitrogen (TKN)	mg/L	9.4	0.50	6118294	9.2	0.50	6118294	4.5	0.10	6118294
Dissolved Organic Carbon	mg/L	7.0	0.50	6115917				5.1	0.50	6117015
pH	pH	7.81		6117061				7.88		6117061
Phenols-4AAP	mg/L	0.0010	0.0010	6117989				<0.0010	0.0010	6117984
Total Phosphorus	mg/L	0.040	0.020	6118410				0.12	0.10	6118410
Dissolved Sulphate (SO4)	mg/L	20	1.0	6117145				12	1.0	6117145
Alkalinity (Total as CaCO3)	mg/L	490	1.0	6117056				340	1.0	6117056
Dissolved Chloride (Cl-)	mg/L	100	1.0	6117143				37	1.0	6117143
Nitrite (N)	mg/L	<0.010	0.010	6117035				0.027	0.010	6117035
Nitrate (N)	mg/L	<0.10	0.10	6117035				<0.10	0.10	6117035
Metals										
Mercury (Hg)	mg/L	<0.0001	0.0001	6122456				<0.0001	0.0001	6122456
Dissolved Aluminum (Al)	ug/L	<5.0	5.0	6118813				<5.0	5.0	6118813
Dissolved Antimony (Sb)	ug/L	<0.50	0.50	6118813				<0.50	0.50	6118813
Dissolved Arsenic (As)	ug/L	10	1.0	6118813				4.6	1.0	6118813
Dissolved Barium (Ba)	ug/L	120	2.0	6118813				89	2.0	6118813
Dissolved Beryllium (Be)	ug/L	<0.50	0.50	6118813				<0.50	0.50	6118813
Dissolved Bismuth (Bi)	ug/L	<1.0	1.0	6118813				<1.0	1.0	6118813
Dissolved Boron (B)	ug/L	260	10	6118813				200	10	6118813
Dissolved Cadmium (Cd)	ug/L	<0.10	0.10	6118813				<0.10	0.10	6118813
Dissolved Calcium (Ca)	ug/L	150000	200	6118813				110000	200	6118813
Dissolved Chromium (Cr)	ug/L	<5.0	5.0	6118813				<5.0	5.0	6118813
Dissolved Cobalt (Co)	ug/L	5.0	0.50	6118813				6.1	0.50	6118813
Dissolved Copper (Cu)	ug/L	<1.0	1.0	6118813				3.0	1.0	6118813
Dissolved Iron (Fe)	ug/L	9200	100	6118813				2800	100	6118813
Dissolved Lead (Pb)	ug/L	<0.50	0.50	6118813				<0.50	0.50	6118813
Dissolved Magnesium (Mg)	ug/L	23000	50	6118813				17000	50	6118813
Dissolved Manganese (Mn)	ug/L	1100	2.0	6118813				880	2.0	6118813
Dissolved Molybdenum (Mo)	ug/L	<0.50	0.50	6118813				0.84	0.50	6118813

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Maxxam Job #: B9C5153
Report Date: 2019/05/16

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

Maxxam ID		JRH285			JRH285			JRH286		
Sampling Date		2019/05/06 21:10			2019/05/06 21:10			2019/05/06 22:10		
COC Number		715290-02-01			715290-02-01			715290-02-01		
	UNITS	**MW3A**	**RDL**	**QC Batch**	**MW3A Lab-Dup**	**RDL**	**QC Batch**	**MW3B**	**RDL**	**QC Batch**
Dissolved Nickel (Ni)	ug/L	5.1	1.0	6118813				5.6	1.0	6118813
Dissolved Potassium (K)	ug/L	12000	200	6118813				10000	200	6118813
Dissolved Selenium (Se)	ug/L	<2.0	2.0	6118813				<2.0	2.0	6118813
Dissolved Silicon (Si)	ug/L	7100	50	6118813				5200	50	6118813
Dissolved Sodium (Na)	ug/L	64000	100	6118813				33000	100	6118813
Dissolved Strontium (Sr)	ug/L	230	1.0	6118813				180	1.0	6118813
Dissolved Thallium (Tl)	ug/L	<0.050	0.050	6118813				0.056	0.050	6118813
Dissolved Tin (Sn)	ug/L	<1.0	1.0	6118813				<1.0	1.0	6118813
Dissolved Vanadium (V)	ug/L	<0.50	0.50	6118813				<0.50	0.50	6118813
Dissolved Zinc (Zn)	ug/L	<5.0	5.0	6118813				<5.0	5.0	6118813

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QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

Maxxam Job #: B9C5153
Report Date: 2019/05/16

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

Maxxam ID		JRH287			JRH287			JRH288		
Sampling Date		2019/05/06 17:20			2019/05/06 17:20			2019/05/06 19:30		
COC Number		715290-02-01			715290-02-01			715290-02-01		
	UNITS	**MW4**	**RDL**	**QC Batch**	**MW4 Lab-Dup**	**RDL**	**QC Batch**	**MW5**	**RDL**	**QC Batch**
Inorganics										
Total Ammonia-N	mg/L	<0.050	0.050	6119255				3.3	0.050	6119255
Total Chemical Oxygen Demand (COD)	mg/L	<4.0	4.0	6118291				9.0	4.0	6118291
Conductivity	umho/cm	890	1.0	6117060				960	1.0	6117060
Total Dissolved Solids	mg/L	520	10	6117295				560	10	6117295
Total Kjeldahl Nitrogen (TKN)	mg/L	0.15	0.10	6118294				3.3	0.10	6118294
Dissolved Organic Carbon	mg/L	1.9	0.50	6115922	1.8	0.50	6115922	3.9	0.50	6115917
pH	pH	7.82		6117061				7.88		6117061
Phenols-4AAP	mg/L	<0.0010	0.0010	6117989				<0.0010	0.0010	6117989
Total Phosphorus	mg/L	0.34	0.10	6118410				0.16	0.10	6118410
Dissolved Sulphate (SO4)	mg/L	31	1.0	6117145				95	1.0	6117428
Alkalinity (Total as CaCO3)	mg/L	450	1.0	6117056				380	1.0	6117056
Dissolved Chloride (Cl-)	mg/L	5.7	1.0	6117143				27	1.0	6117427
Nitrite (N)	mg/L	<0.010	0.010	6117035				<0.010	0.010	6117029
Nitrate (N)	mg/L	0.26	0.10	6117035				<0.10	0.10	6117029
Metals										
Mercury (Hg)	mg/L	<0.0001	0.0001	6122452				<0.0001	0.0001	6122456
Dissolved Aluminum (Al)	ug/L	<5.0	5.0	6118813				<5.0	5.0	6118813
Dissolved Antimony (Sb)	ug/L	<0.50	0.50	6118813				<0.50	0.50	6118813
Dissolved Arsenic (As)	ug/L	<1.0	1.0	6118813				3.0	1.0	6118813
Dissolved Barium (Ba)	ug/L	40	2.0	6118813				97	2.0	6118813
Dissolved Beryllium (Be)	ug/L	<0.50	0.50	6118813				<0.50	0.50	6118813
Dissolved Bismuth (Bi)	ug/L	<1.0	1.0	6118813				<1.0	1.0	6118813
Dissolved Boron (B)	ug/L	110	10	6118813				720	10	6118813
Dissolved Cadmium (Cd)	ug/L	<0.10	0.10	6118813				<0.10	0.10	6118813
Dissolved Calcium (Ca)	ug/L	180000	200	6118813				120000	200	6118813
Dissolved Chromium (Cr)	ug/L	<5.0	5.0	6118813				<5.0	5.0	6118813
Dissolved Cobalt (Co)	ug/L	2.2	0.50	6118813				<0.50	0.50	6118813
Dissolved Copper (Cu)	ug/L	1.2	1.0	6118813				2.3	1.0	6118813
Dissolved Iron (Fe)	ug/L	<100	100	6118813				5600	100	6118813
Dissolved Lead (Pb)	ug/L	<0.50	0.50	6118813				<0.50	0.50	6118813
Dissolved Magnesium (Mg)	ug/L	16000	50	6118813				33000	50	6118813
Dissolved Manganese (Mn)	ug/L	360	2.0	6118813				770	2.0	6118813
Dissolved Molybdenum (Mo)	ug/L	<0.50	0.50	6118813				<0.50	0.50	6118813

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Maxxam Job #: B9C5153
Report Date: 2019/05/16

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

Maxxam ID		JRH287			JRH287			JRH288		
Sampling Date		2019/05/06 17:20			2019/05/06 17:20			2019/05/06 19:30		
COC Number		715290-02-01			715290-02-01			715290-02-01		
	UNITS	**MW4**	**RDL**	**QC Batch**	**MW4 Lab-Dup**	**RDL**	**QC Batch**	**MW5**	**RDL**	**QC Batch**
Dissolved Nickel (Ni)	ug/L	3.6	1.0	6118813				2.3	1.0	6118813
Dissolved Potassium (K)	ug/L	1600	200	6118813				13000	200	6118813
Dissolved Selenium (Se)	ug/L	<2.0	2.0	6118813				<2.0	2.0	6118813
Dissolved Silicon (Si)	ug/L	5100	50	6118813				5300	50	6118813
Dissolved Sodium (Na)	ug/L	5800	100	6118813				33000	100	6118813
Dissolved Strontium (Sr)	ug/L	140	1.0	6118813				240	1.0	6118813
Dissolved Thallium (Tl)	ug/L	0.081	0.050	6118813				<0.050	0.050	6118813
Dissolved Tin (Sn)	ug/L	<1.0	1.0	6118813				<1.0	1.0	6118813
Dissolved Vanadium (V)	ug/L	<0.50	0.50	6118813				<0.50	0.50	6118813
Dissolved Zinc (Zn)	ug/L	<5.0	5.0	6118813				<5.0	5.0	6118813

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exp Services Inc
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Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

Maxxam ID		JRH288			JRH289			JRH290		
Sampling Date		2019/05/06 19:30			2019/05/06 18:40			2019/05/06 16:15		
COC Number		715290-02-01			715290-02-01			715290-02-01		
	UNITS	**MW5 Lab-Dup**	**RDL**	**QC Batch**	**MW6**	**RDL**	**QC Batch**	**MW7**	**RDL**	**QC Batch**
Inorganics										
Total Ammonia-N	mg/L				<0.050	0.050	6119265	7.3	0.050	6119255
Total Chemical Oxygen Demand (COD)	mg/L				6.7	4.0	6118291	21	4.0	6118291
Conductivity	umho/cm				490	1.0	6117060	1000	1.0	6117060
Total Dissolved Solids	mg/L				340	10	6117207	585	10	6117207
Total Kjeldahl Nitrogen (TKN)	mg/L				0.15	0.10	6118294	7.4	0.20	6118294
Dissolved Organic Carbon	mg/L				3.5	0.50	6115917	6.1	0.50	6115917
pH	pH				8.04		6117061	7.72		6117061
Phenols-4AAP	mg/L				<0.0010	0.0010	6117989	<0.0010	0.0010	6117989
Total Phosphorus	mg/L				0.30	0.10	6118410	0.21	0.10	6118410
Dissolved Sulphate (SO4)	mg/L	96	1.0	6117428	19	1.0	6117145	36	1.0	6117145
Alkalinity (Total as CaCO3)	mg/L				250	1.0	6117056	480	1.0	6117056
Dissolved Chloride (Cl-)	mg/L	27	1.0	6117427	1.2	1.0	6117143	26	1.0	6117143
Nitrite (N)	mg/L				<0.010	0.010	6117035	<0.010	0.010	6117029
Nitrate (N)	mg/L				<0.10	0.10	6117035	<0.10	0.10	6117029
Metals										
Mercury (Hg)	mg/L				<0.0001	0.0001	6122456	<0.0001	0.0001	6122452
Dissolved Aluminum (Al)	ug/L				<5.0	5.0	6118813	11	5.0	6118813
Dissolved Antimony (Sb)	ug/L				<0.50	0.50	6118813	<0.50	0.50	6118813
Dissolved Arsenic (As)	ug/L				<1.0	1.0	6118813	42	1.0	6118813
Dissolved Barium (Ba)	ug/L				21	2.0	6118813	210	2.0	6118813
Dissolved Beryllium (Be)	ug/L				<0.50	0.50	6118813	<0.50	0.50	6118813
Dissolved Bismuth (Bi)	ug/L				<1.0	1.0	6118813	<1.0	1.0	6118813
Dissolved Boron (B)	ug/L				15	10	6118813	250	10	6118813
Dissolved Cadmium (Cd)	ug/L				<0.10	0.10	6118813	<0.10	0.10	6118813
Dissolved Calcium (Ca)	ug/L				97000	200	6118813	160000	200	6118813
Dissolved Chromium (Cr)	ug/L				<5.0	5.0	6118813	<5.0	5.0	6118813
Dissolved Cobalt (Co)	ug/L				<0.50	0.50	6118813	15	0.50	6118813
Dissolved Copper (Cu)	ug/L				1.7	1.0	6118813	<1.0	1.0	6118813
Dissolved Iron (Fe)	ug/L				<100	100	6118813	23000	100	6118813
Dissolved Lead (Pb)	ug/L				<0.50	0.50	6118813	<0.50	0.50	6118813
Dissolved Magnesium (Mg)	ug/L				16000	50	6118813	21000	50	6118813
Dissolved Manganese (Mn)	ug/L				25	2.0	6118813	1900	2.0	6118813
Dissolved Molybdenum (Mo)	ug/L				<0.50	0.50	6118813	0.50	0.50	6118813

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Maxxam Job #: B9C5153
Report Date: 2019/05/16

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

Maxxam ID		JRH288			JRH289			JRH290		
Sampling Date		2019/05/06 19:30			2019/05/06 18:40			2019/05/06 16:15		
COC Number		715290-02-01			715290-02-01			715290-02-01		
	UNITS	**MW5 Lab-Dup**	**RDL**	**QC Batch**	**MW6**	**RDL**	**QC Batch**	**MW7**	**RDL**	**QC Batch**
Dissolved Nickel (Ni)	ug/L				2.1	1.0	6118813	9.5	1.0	6118813
Dissolved Potassium (K)	ug/L				1400	200	6118813	10000	200	6118813
Dissolved Selenium (Se)	ug/L				<2.0	2.0	6118813	<2.0	2.0	6118813
Dissolved Silicon (Si)	ug/L				5000	50	6118813	10000	50	6118813
Dissolved Sodium (Na)	ug/L				4400	100	6118813	24000	100	6118813
Dissolved Strontium (Sr)	ug/L				88	1.0	6118813	220	1.0	6118813
Dissolved Thallium (Tl)	ug/L				0.099	0.050	6118813	<0.050	0.050	6118813
Dissolved Tin (Sn)	ug/L				<1.0	1.0	6118813	<1.0	1.0	6118813
Dissolved Vanadium (V)	ug/L				<0.50	0.50	6118813	1.1	0.50	6118813
Dissolved Zinc (Zn)	ug/L				<5.0	5.0	6118813	<5.0	5.0	6118813

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Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

Maxxam ID		JRH290			JRH291			JRH292		
Sampling Date		2019/05/06 16:15			2019/05/06 11:05			2019/05/06 13:30		
COC Number		715290-02-01			715290-02-01			715290-02-01		
	UNITS	**MW7 Lab-Dup**	**RDL**	**QC Batch**	**MW8**	**RDL**	**QC Batch**	**MW9**	**RDL**	**QC Batch**
Inorganics										
Total Ammonia-N	mg/L	7.3	0.050	6119255	<0.050	0.050	6119265	<0.050	0.050	6119255
Total Chemical Oxygen Demand (COD)	mg/L				9.3	4.0	6118291	<4.0	4.0	6118291
Conductivity	umho/cm				5900	1.0	6117060	1100	1.0	6117101
Total Dissolved Solids	mg/L				3390	20	6117295	605	10	6121361
Total Kjeldahl Nitrogen (TKN)	mg/L				0.65	0.10	6118294	0.25	0.10	6118294
Dissolved Organic Carbon	mg/L				2.7	0.50	6115922	0.97	0.50	6115917
pH	pH				7.81		6117061	8.04		6117103
Phenols-4AAP	mg/L				<0.0010	0.0010	6117984	<0.0010	0.0010	6117984
Total Phosphorus	mg/L				1.6	0.20	6118410	2.1	0.20	6118410
Dissolved Sulphate (SO4)	mg/L				37	1.0	6117145	8.1	1.0	6117145
Alkalinity (Total as CaCO3)	mg/L				330	1.0	6117056	230	1.0	6117071
Dissolved Chloride (Cl-)	mg/L				1700	25	6117143	180	2.0	6117143
Nitrite (N)	mg/L				<0.010	0.010	6117035	<0.010	0.010	6117029
Nitrate (N)	mg/L				1.64	0.10	6117035	0.16	0.10	6117029
Metals										
Mercury (Hg)	mg/L				<0.0001	0.0001	6122456	<0.0001	0.0001	6122557
Dissolved Aluminum (Al)	ug/L				<5.0	5.0	6118813	<5.0	5.0	6118813
Dissolved Antimony (Sb)	ug/L				<0.50	0.50	6118813	<0.50	0.50	6118813
Dissolved Arsenic (As)	ug/L				<1.0	1.0	6118813	<1.0	1.0	6118813
Dissolved Barium (Ba)	ug/L				130	2.0	6118813	25	2.0	6118813
Dissolved Beryllium (Be)	ug/L				<0.50	0.50	6118813	<0.50	0.50	6118813
Dissolved Bismuth (Bi)	ug/L				<1.0	1.0	6118813	<1.0	1.0	6118813
Dissolved Boron (B)	ug/L				13	10	6118813	<10	10	6118813
Dissolved Cadmium (Cd)	ug/L				<0.10	0.10	6118813	<0.10	0.10	6118813
Dissolved Calcium (Ca)	ug/L				310000	200	6118813	120000	200	6118813
Dissolved Chromium (Cr)	ug/L				<5.0	5.0	6118813	<5.0	5.0	6118813
Dissolved Cobalt (Co)	ug/L				<0.50	0.50	6118813	<0.50	0.50	6118813
Dissolved Copper (Cu)	ug/L				1.6	1.0	6118813	9.9	1.0	6118813
Dissolved Iron (Fe)	ug/L				<100	100	6118813	<100	100	6118813
Dissolved Lead (Pb)	ug/L				<0.50	0.50	6118813	<0.50	0.50	6118813
Dissolved Magnesium (Mg)	ug/L				26000	50	6118813	21000	50	6118813
Dissolved Manganese (Mn)	ug/L				<2.0	2.0	6118813	<2.0	2.0	6118813
Dissolved Molybdenum (Mo)	ug/L				<0.50	0.50	6118813	<0.50	0.50	6118813

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

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Maxxam Job #: B9C5153
Report Date: 2019/05/16

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

Maxxam ID		JRH290			JRH291			JRH292		
Sampling Date		2019/05/06 16:15			2019/05/06 11:05			2019/05/06 13:30		
COC Number		715290-02-01			715290-02-01			715290-02-01		
	UNITS	**MW7 Lab-Dup**	**RDL**	**QC Batch**	**MW8**	**RDL**	**QC Batch**	**MW9**	**RDL**	**QC Batch**
Dissolved Nickel (Ni)	ug/L				<1.0	1.0	6118813	<1.0	1.0	6118813
Dissolved Potassium (K)	ug/L				3700	200	6118813	1200	200	6118813
Dissolved Selenium (Se)	ug/L				<2.0	2.0	6118813	<2.0	2.0	6118813
Dissolved Silicon (Si)	ug/L				2800	50	6118813	4700	50	6118813
Dissolved Sodium (Na)	ug/L				890000	500	6118813	45000	100	6118813
Dissolved Strontium (Sr)	ug/L				370	1.0	6118813	99	1.0	6118813
Dissolved Thallium (Tl)	ug/L				<0.050	0.050	6118813	<0.050	0.050	6118813
Dissolved Tin (Sn)	ug/L				<1.0	1.0	6118813	<1.0	1.0	6118813
Dissolved Vanadium (V)	ug/L				<0.50	0.50	6118813	<0.50	0.50	6118813
Dissolved Zinc (Zn)	ug/L				<5.0	5.0	6118813	9.3	5.0	6118813

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Maxxam Job #: B9C5153
Report Date: 2019/05/16

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

Maxxam ID		JRH293			JRH294		
Sampling Date		2019/05/06 08:10			2019/05/06 07:59		
COC Number		715290-01-01			715290-01-01		
	UNITS	**MW10A**	**RDL**	**QC Batch**	**MW10B**	**RDL**	**QC Batch**
Inorganics							
Total Ammonia-N	mg/L	0.39	0.050	6119255	0.14	0.050	6119255
Total Chemical Oxygen Demand (COD)	mg/L	36	4.0	6118291	39	4.0	6118291
Conductivity	umho/cm	750	1.0	6117060	1200	1.0	6117101
Total Dissolved Solids	mg/L	450	10	6117295	710	10	6117207
Total Kjeldahl Nitrogen (TKN)	mg/L	0.62	0.10	6118294	0.52	0.10	6118294
Dissolved Organic Carbon	mg/L	12	0.50	6115922	16	0.50	6115922
pH	pH	7.61		6117061	7.49		6117103
Phenols-4AAP	mg/L	<0.0010	0.0010	6117984	<0.0010	0.0010	6117984
Total Phosphorus	mg/L	0.39	0.10	6118410	<0.10 (1)	0.10	6118410
Dissolved Sulphate (SO4)	mg/L	5.2	1.0	6117145	<1.0	1.0	6117145
Alkalinity (Total as CaCO3)	mg/L	230	1.0	6117056	300	1.0	6117071
Dissolved Chloride (Cl-)	mg/L	94	1.0	6117143	190	3.0	6117143
Nitrite (N)	mg/L	<0.010	0.010	6117029	<0.010	0.010	6117029
Nitrate (N)	mg/L	<0.10	0.10	6117029	<0.10	0.10	6117029
Metals							
Mercury (Hg)	mg/L	<0.0001	0.0001	6122452	<0.0001	0.0001	6122456
Dissolved Aluminum (Al)	ug/L	110	5.0	6118813	110	5.0	6118813
Dissolved Antimony (Sb)	ug/L	<0.50	0.50	6118813	<0.50	0.50	6118813
Dissolved Arsenic (As)	ug/L	20	1.0	6118813	44	1.0	6118813
Dissolved Barium (Ba)	ug/L	30	2.0	6118813	31	2.0	6118813
Dissolved Beryllium (Be)	ug/L	<0.50	0.50	6118813	<0.50	0.50	6118813
Dissolved Bismuth (Bi)	ug/L	<1.0	1.0	6118813	<1.0	1.0	6118813
Dissolved Boron (B)	ug/L	<10	10	6118813	<10	10	6118813
Dissolved Cadmium (Cd)	ug/L	<0.10	0.10	6118813	<0.10	0.10	6118813
Dissolved Calcium (Ca)	ug/L	96000	200	6118813	140000	200	6118813
Dissolved Chromium (Cr)	ug/L	<5.0	5.0	6118813	<5.0	5.0	6118813
Dissolved Cobalt (Co)	ug/L	<0.50	0.50	6118813	<0.50	0.50	6118813
Dissolved Copper (Cu)	ug/L	1.9	1.0	6118813	<1.0	1.0	6118813
Dissolved Iron (Fe)	ug/L	2300	100	6118813	5600	100	6118813
Dissolved Lead (Pb)	ug/L	<0.50	0.50	6118813	<0.50	0.50	6118813
Dissolved Magnesium (Mg)	ug/L	18000	50	6118813	12000	50	6118813
Dissolved Manganese (Mn)	ug/L	87	2.0	6118813	150	2.0	6118813
Dissolved Molybdenum (Mo)	ug/L	<0.50	0.50	6118813	<0.50	0.50	6118813

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Maxxam Job #: B9C5153
Report Date: 2019/05/16

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

Maxxam ID		JRH293			JRH294		
Sampling Date		2019/05/06 08:10			2019/05/06 07:59		
COC Number		715290-01-01			715290-01-01		
	UNITS	**MW10A**	**RDL**	**QC Batch**	**MW10B**	**RDL**	**QC Batch**
Dissolved Nickel (Ni)	ug/L	1.6	1.0	6118813	<1.0	1.0	6118813
Dissolved Potassium (K)	ug/L	380	200	6118813	<200	200	6118813
Dissolved Selenium (Se)	ug/L	<2.0	2.0	6118813	<2.0	2.0	6118813
Dissolved Silicon (Si)	ug/L	2600	50	6118813	1900	50	6118813
Dissolved Sodium (Na)	ug/L	44000	100	6118813	120000	100	6118813
Dissolved Strontium (Sr)	ug/L	84	1.0	6118813	100	1.0	6118813
Dissolved Thallium (Tl)	ug/L	<0.050	0.050	6118813	<0.050	0.050	6118813
Dissolved Tin (Sn)	ug/L	<1.0	1.0	6118813	<1.0	1.0	6118813
Dissolved Vanadium (V)	ug/L	2.0	0.50	6118813	1.1	0.50	6118813
Dissolved Zinc (Zn)	ug/L	<5.0	5.0	6118813	<5.0	5.0	6118813

RDL = Reportable Detection Limit
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Maxxam Job #: B9C5153
Report Date: 2019/05/16

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

Maxxam ID		JRH295			JRH295		
Sampling Date		2019/05/06 15:30			2019/05/06 15:30		
COC Number		715290-01-01			715290-01-01		
	UNITS	**MW11**	**RDL**	**QC Batch**	**MW11 Lab-Dup**	**RDL**	**QC Batch**
Inorganics							
Total Ammonia-N	mg/L	0.11	0.050	6119255			
Total Chemical Oxygen Demand (COD)	mg/L	<4.0	4.0	6118291			
Conductivity	umho/cm	460	1.0	6117060			
Total Dissolved Solids	mg/L	295	10	6117207			
Total Kjeldahl Nitrogen (TKN)	mg/L	0.26	0.10	6118294			
Dissolved Organic Carbon	mg/L	1.6	0.50	6115922			
pH	pH	8.19		6117061			
Phenols-4AAP	mg/L	<0.0010	0.0010	6117984			
Total Phosphorus	mg/L	1.9	0.20	6118410			
Dissolved Sulphate (SO4)	mg/L	<1.0	1.0	6117145			
Alkalinity (Total as CaCO3)	mg/L	250	1.0	6117056			
Dissolved Chloride (Cl-)	mg/L	<1.0	1.0	6117143			
Nitrite (N)	mg/L	<0.010	0.010	6117029			
Nitrate (N)	mg/L	<0.10	0.10	6117029			
Metals							
Mercury (Hg)	mg/L	<0.0001	0.0001	6122456	<0.0001	0.0001	6122456
Dissolved Aluminum (Al)	ug/L	<5.0	5.0	6118813			
Dissolved Antimony (Sb)	ug/L	<0.50	0.50	6118813			
Dissolved Arsenic (As)	ug/L	1.0	1.0	6118813			
Dissolved Barium (Ba)	ug/L	31	2.0	6118813			
Dissolved Beryllium (Be)	ug/L	<0.50	0.50	6118813			
Dissolved Bismuth (Bi)	ug/L	<1.0	1.0	6118813			
Dissolved Boron (B)	ug/L	12	10	6118813			
Dissolved Cadmium (Cd)	ug/L	<0.10	0.10	6118813			
Dissolved Calcium (Ca)	ug/L	72000	200	6118813			
Dissolved Chromium (Cr)	ug/L	<5.0	5.0	6118813			
Dissolved Cobalt (Co)	ug/L	<0.50	0.50	6118813			
Dissolved Copper (Cu)	ug/L	2.7	1.0	6118813			
Dissolved Iron (Fe)	ug/L	100	100	6118813			
Dissolved Lead (Pb)	ug/L	<0.50	0.50	6118813			
Dissolved Magnesium (Mg)	ug/L	15000	50	6118813			
Dissolved Manganese (Mn)	ug/L	97	2.0	6118813			
Dissolved Molybdenum (Mo)	ug/L	0.95	0.50	6118813			

RDL = Reportable Detection Limit
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Lab-Dup = Laboratory Initiated Duplicate

Maxxam Job #: B9C5153
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exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

Maxxam ID		JRH295			JRH295		
Sampling Date		2019/05/06 15:30			2019/05/06 15:30		
COC Number		715290-01-01			715290-01-01		
	UNITS	**MW11**	**RDL**	**QC Batch**	**MW11 Lab-Dup**	**RDL**	**QC Batch**
Dissolved Nickel (Ni)	ug/L	<1.0	1.0	6118813			
Dissolved Potassium (K)	ug/L	1000	200	6118813			
Dissolved Selenium (Se)	ug/L	<2.0	2.0	6118813			
Dissolved Silicon (Si)	ug/L	7100	50	6118813			
Dissolved Sodium (Na)	ug/L	6500	100	6118813			
Dissolved Strontium (Sr)	ug/L	91	1.0	6118813			
Dissolved Thallium (Tl)	ug/L	<0.050	0.050	6118813			
Dissolved Tin (Sn)	ug/L	<1.0	1.0	6118813			
Dissolved Vanadium (V)	ug/L	<0.50	0.50	6118813			
Dissolved Zinc (Zn)	ug/L	<5.0	5.0	6118813			

RDL = Reportable Detection Limit
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Lab-Dup = Laboratory Initiated Duplicate

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Maxxam Job #: B9C5153
Report Date: 2019/05/16

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

Maxxam ID		JRH296			JRH296		
Sampling Date		2019/05/06 08:35			2019/05/06 08:35		
COC Number		715290-01-01			715290-01-01		
	UNITS	**MW12**	**RDL**	**QC Batch**	**MW12 Lab-Dup**	**RDL**	**QC Batch**
Inorganics							
Total Ammonia-N	mg/L	3.3	0.050	6119255			
Total Chemical Oxygen Demand (COD)	mg/L	10	4.0	6118291			
Conductivity	umho/cm	960	1.0	6117060			
Total Dissolved Solids	mg/L	555	10	6117207			
Total Kjeldahl Nitrogen (TKN)	mg/L	3.4	0.10	6118294			
Dissolved Organic Carbon	mg/L	4.0	0.50	6115922			
pH	pH	7.95		6117061			
Phenols-4AAP	mg/L	<0.0010	0.0010	6117989			
Total Phosphorus	mg/L	0.20	0.10	6118410			
Dissolved Sulphate (SO4)	mg/L	93	1.0	6117145			
Alkalinity (Total as CaCO3)	mg/L	390	1.0	6117056			
Dissolved Chloride (Cl-)	mg/L	27	1.0	6117143			
Nitrite (N)	mg/L	<0.010	0.010	6117029			
Nitrate (N)	mg/L	<0.10	0.10	6117029			
Metals							
Mercury (Hg)	mg/L	<0.0001	0.0001	6122227	<0.0001	0.0001	6122227
Dissolved Aluminum (Al)	ug/L	<5.0	5.0	6118813			
Dissolved Antimony (Sb)	ug/L	<0.50	0.50	6118813			
Dissolved Arsenic (As)	ug/L	3.2	1.0	6118813			
Dissolved Barium (Ba)	ug/L	95	2.0	6118813			
Dissolved Beryllium (Be)	ug/L	<0.50	0.50	6118813			
Dissolved Bismuth (Bi)	ug/L	<1.0	1.0	6118813			
Dissolved Boron (B)	ug/L	720	10	6118813			
Dissolved Cadmium (Cd)	ug/L	<0.10	0.10	6118813			
Dissolved Calcium (Ca)	ug/L	120000	200	6118813			
Dissolved Chromium (Cr)	ug/L	<5.0	5.0	6118813			
Dissolved Cobalt (Co)	ug/L	<0.50	0.50	6118813			
Dissolved Copper (Cu)	ug/L	2.1	1.0	6118813			
Dissolved Iron (Fe)	ug/L	5500	100	6118813			
Dissolved Lead (Pb)	ug/L	<0.50	0.50	6118813			
Dissolved Magnesium (Mg)	ug/L	32000	50	6118813			
Dissolved Manganese (Mn)	ug/L	760	2.0	6118813			
Dissolved Molybdenum (Mo)	ug/L	<0.50	0.50	6118813			

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

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Maxxam Job #: B9C5153
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exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

Maxxam ID		JRH296			JRH296		
Sampling Date		2019/05/06 08:35			2019/05/06 08:35		
COC Number		715290-01-01			715290-01-01		
	UNITS	**MW12**	**RDL**	**QC Batch**	**MW12 Lab-Dup**	**RDL**	**QC Batch**
Dissolved Nickel (Ni)	ug/L	2.3	1.0	6118813			
Dissolved Potassium (K)	ug/L	13000	200	6118813			
Dissolved Selenium (Se)	ug/L	<2.0	2.0	6118813			
Dissolved Silicon (Si)	ug/L	5300	50	6118813			
Dissolved Sodium (Na)	ug/L	33000	100	6118813			
Dissolved Strontium (Sr)	ug/L	240	1.0	6118813			
Dissolved Thallium (Tl)	ug/L	<0.050	0.050	6118813			
Dissolved Tin (Sn)	ug/L	<1.0	1.0	6118813			
Dissolved Vanadium (V)	ug/L	<0.50	0.50	6118813			
Dissolved Zinc (Zn)	ug/L	<5.0	5.0	6118813			

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

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Maxxam Job #: B9C5153
Report Date: 2019/05/16

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - SW COMP. LIST (WATER)

Maxxam ID		JRH297			JRH297			JRH298		
Sampling Date		2019/05/06 08:55			2019/05/06 08:55			2019/05/06 09:55		
COC Number		715289-01-01			715289-01-01			715289-01-01		
	UNITS	**SW1**	**RDL**	**QC Batch**	**SW1 Lab-Dup**	**RDL**	**QC Batch**	**SW2**	**RDL**	**QC Batch**
Inorganics										
Total Ammonia-N	mg/L	<0.050	0.050	6119255				<0.050	0.050	6119255
Total BOD	mg/L	<2	2	6115659				<2	2	6115659
Total Chemical Oxygen Demand (COD)	mg/L	<4.0	4.0	6118291	<4.0	4.0	6118291	27	4.0	6118291
Conductivity	umho/cm	53	1.0	6117060				140	1.0	6117127
Total Dissolved Solids	mg/L	60	10	6117337				145	10	6117337
Total Kjeldahl Nitrogen (TKN)	mg/L	0.16	0.10	6118294				0.31	0.10	6118294
pH	pH	7.52		6117061				7.75		6117128
Phenols-4AAP	mg/L	<0.0010	0.0010	6117984				<0.0010	0.0010	6117984
Total Phosphorus	mg/L	0.015	0.004	6118646				0.020	0.004	6118646
Total Suspended Solids	mg/L	37	1	6116274				3	1	6116274
Dissolved Sulphate (SO4)	mg/L	<1.0	1.0	6117142				<1.0	1.0	6117142
Alkalinity (Total as CaCO3)	mg/L	17	1.0	6117056				52	1.0	6117125
Dissolved Chloride (Cl-)	mg/L	4.6	1.0	6117140				11	1.0	6117140
Nitrite (N)	mg/L	<0.010	0.010	6117035				<0.010	0.010	6117035
Nitrate (N)	mg/L	<0.10	0.10	6117035				<0.10	0.10	6117035
Metals										
Mercury (Hg)	mg/L	<0.0001	0.0001	6122456				<0.0001	0.0001	6122227
Total Antimony (Sb)	ug/L	<0.50	0.50	6120708				<0.50	0.50	6120708
Total Arsenic (As)	ug/L	4.5	1.0	6120708				17	1.0	6120708
Total Barium (Ba)	ug/L	3.0	2.0	6120708				5.1	2.0	6120708
Total Beryllium (Be)	ug/L	<0.50	0.50	6120708				<0.50	0.50	6120708
Total Bismuth (Bi)	ug/L	<1.0	1.0	6120708				<1.0	1.0	6120708
Total Boron (B)	ug/L	<10	10	6120708				<10	10	6120708
Total Cadmium (Cd)	ug/L	<0.10	0.10	6120708				<0.10	0.10	6120708
Total Calcium (Ca)	ug/L	6700	200	6120708				18000	200	6120708
Total Chromium (Cr)	ug/L	<5.0	5.0	6120708				<5.0	5.0	6120708
Total Cobalt (Co)	ug/L	<0.50	0.50	6120708				<0.50	0.50	6120708
Total Copper (Cu)	ug/L	<1.0	1.0	6120708				<1.0	1.0	6120708
Total Iron (Fe)	ug/L	140	100	6120708				280	100	6120708
Total Lead (Pb)	ug/L	<0.50	0.50	6120708				<0.50	0.50	6120708
Total Magnesium (Mg)	ug/L	1000	50	6120708				3700	50	6120708
Total Manganese (Mn)	ug/L	9.8	2.0	6120708				36	2.0	6120708
Total Molybdenum (Mo)	ug/L	<0.50	0.50	6120708				<0.50	0.50	6120708
Total Nickel (Ni)	ug/L	<1.0	1.0	6120708				<1.0	1.0	6120708

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

Maxxam Job #: B9C5153
Report Date: 2019/05/16

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - SW COMP. LIST (WATER)

Maxxam ID		JRH297			JRH297			JRH298		
Sampling Date		2019/05/06 08:55			2019/05/06 08:55			2019/05/06 09:55		
COC Number		715289-01-01			715289-01-01			715289-01-01		
	UNITS	**SW1**	**RDL**	**QC Batch**	**SW1 Lab-Dup**	**RDL**	**QC Batch**	**SW2**	**RDL**	**QC Batch**
Total Potassium (K)	ug/L	<200	200	6120708				660	200	6120708
Total Selenium (Se)	ug/L	<2.0	2.0	6120708				<2.0	2.0	6120708
Total Silicon (Si)	ug/L	440	50	6120708				1500	50	6120708
Total Silver (Ag)	ug/L	<0.10	0.10	6120708				<0.10	0.10	6120708
Total Sodium (Na)	ug/L	2300	100	6120708				6600	100	6120708
Total Strontium (Sr)	ug/L	7.2	1.0	6120708				22	1.0	6120708
Total Thallium (Tl)	ug/L	<0.050	0.050	6120708				<0.050	0.050	6120708
Total Vanadium (V)	ug/L	<0.50	0.50	6120708				<0.50	0.50	6120708
Total Zinc (Zn)	ug/L	<5.0	5.0	6120708				<5.0	5.0	6120708

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LANDFILL STANDARDS SCH 5 - SW COMP. LIST (WATER)

Maxxam ID		JRH299			JRH299		
Sampling Date		2019/05/06 10:45			2019/05/06 10:45		
COC Number		715289-01-01			715289-01-01		
	UNITS	**SW3**	**RDL**	**QC Batch**	**SW3 Lab-Dup**	**RDL**	**QC Batch**
Inorganics							
Total Ammonia-N	mg/L	<0.050	0.050	6119278			
Total BOD	mg/L	<2	2	6115659			
Total Chemical Oxygen Demand (COD)	mg/L	34	4.0	6118291			
Conductivity	umho/cm	140	1.0	6117127			
Total Dissolved Solids	mg/L	130	10	6117337			
Total Kjeldahl Nitrogen (TKN)	mg/L	0.33	0.10	6118294			
pH	pH	7.72		6117128			
Phenols-4AAP	mg/L	<0.0010	0.0010	6117984			
Total Phosphorus	mg/L	0.023	0.004	6118646			
Total Suspended Solids	mg/L	4	1	6116274			
Dissolved Sulphate (SO4)	mg/L	<1.0	1.0	6117142			
Alkalinity (Total as CaCO3)	mg/L	49	1.0	6117125			
Dissolved Chloride (Cl-)	mg/L	11	1.0	6117140			
Nitrite (N)	mg/L	<0.010	0.010	6117035			
Nitrate (N)	mg/L	<0.10	0.10	6117035			
Metals							
Mercury (Hg)	mg/L	<0.0001	0.0001	6122452	<0.0001	0.0001	6122452
Total Antimony (Sb)	ug/L	<0.50	0.50	6120708			
Total Arsenic (As)	ug/L	15	1.0	6120708			
Total Barium (Ba)	ug/L	5.0	2.0	6120708			
Total Beryllium (Be)	ug/L	<0.50	0.50	6120708			
Total Bismuth (Bi)	ug/L	<1.0	1.0	6120708			
Total Boron (B)	ug/L	<10	10	6120708			
Total Cadmium (Cd)	ug/L	<0.10	0.10	6120708			
Total Calcium (Ca)	ug/L	19000	200	6120708			
Total Chromium (Cr)	ug/L	<5.0	5.0	6120708			
Total Cobalt (Co)	ug/L	<0.50	0.50	6120708			
Total Copper (Cu)	ug/L	<1.0	1.0	6120708			
Total Iron (Fe)	ug/L	200	100	6120708			
Total Lead (Pb)	ug/L	<0.50	0.50	6120708			
Total Magnesium (Mg)	ug/L	3600	50	6120708			
Total Manganese (Mn)	ug/L	29	2.0	6120708			
Total Molybdenum (Mo)	ug/L	<0.50	0.50	6120708			
Total Nickel (Ni)	ug/L	<1.0	1.0	6120708			

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

Maxxam Job #: B9C5153
Report Date: 2019/05/16

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - SW COMP. LIST (WATER)

Maxxam ID		JRH299			JRH299		
Sampling Date		2019/05/06 10:45			2019/05/06 10:45		
COC Number		715289-01-01			715289-01-01		
	UNITS	**SW3**	**RDL**	**QC Batch**	**SW3 Lab-Dup**	**RDL**	**QC Batch**
Total Potassium (K)	ug/L	630	200	6120708			
Total Selenium (Se)	ug/L	<2.0	2.0	6120708			
Total Silicon (Si)	ug/L	1600	50	6120708			
Total Silver (Ag)	ug/L	<0.10	0.10	6120708			
Total Sodium (Na)	ug/L	6200	100	6120708			
Total Strontium (Sr)	ug/L	22	1.0	6120708			
Total Thallium (Tl)	ug/L	<0.050	0.050	6120708			
Total Vanadium (V)	ug/L	<0.50	0.50	6120708			
Total Zinc (Zn)	ug/L	<5.0	5.0	6120708			

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

Maxxam Job #: B9C5153
Report Date: 2019/05/16

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: EF

RESULTS OF ANALYSES OF WATER

Maxxam ID		JRH283	JRH284	JRH285	JRH286	JRH287		
Sampling Date		2019/05/06 20:40	2019/05/06 21:38	2019/05/06 21:10	2019/05/06 22:10	2019/05/06 17:20		
COC Number		715290-02-01	715290-02-01	715290-02-01	715290-02-01	715290-02-01		
	UNITS	**MW1**	**MW2**	**MW3A**	**MW3B**	**MW4**	**RDL**	**QC Batch**
Calculated Parameters								
Hardness (CaCO3)	mg/L	570	250	470	360	510	1.0	6115047
Ion Balance (% Difference)	%	2.77	0.950	1.39	6.15	3.26	N/A	6115262
Total Organic Nitrogen	mg/L	0.46	0.20	0.25	<0.10	0.15	0.10	6115264
Inorganics								
Orthophosphate (P)	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	6117146

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

Maxxam ID		JRH288			JRH288			JRH289	JRH290		
Sampling Date		2019/05/06 19:30			2019/05/06 19:30			2019/05/06 18:40	2019/05/06 16:15		
COC Number		715290-02-01			715290-02-01			715290-02-01	715290-02-01		
	UNITS	**MW5**	**RDL**	**QC Batch**	**MW5 Lab-Dup**	**RDL**	**QC Batch**	**MW6**	**MW7**	**RDL**	**QC Batch**
Calculated Parameters											
Hardness (CaCO3)	mg/L	420	1.0	6115047				310	480	1.0	6115047
Ion Balance (% Difference)	%	1.53	N/A	6115262				9.23	4.63	N/A	6115262
Total Organic Nitrogen	mg/L	<0.10	0.10	6115264				0.15	<0.10	0.10	6115264
Inorganics											
Orthophosphate (P)	mg/L	<0.010	0.010	6117429	<0.010	0.010	6117429	<0.010	<0.010	0.010	6117146

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

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Maxxam Job #: B9C5153
Report Date: 2019/05/16

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: EF

RESULTS OF ANALYSES OF WATER

Maxxam ID		JRH291	JRH292	JRH293	JRH294	JRH295	JRH296		
Sampling Date		2019/05/06 11:05	2019/05/06 13:30	2019/05/06 08:10	2019/05/06 07:59	2019/05/06 15:30	2019/05/06 08:35		
COC Number		715290-02-01	715290-02-01	715290-01-01	715290-01-01	715290-01-01	715290-01-01		
	UNITS	**MW8**	**MW9**	**MW10A**	**MW10B**	**MW11**	**MW12**	**RDL**	**QC Batch**
Calculated Parameters									
Hardness (CaCO3)	mg/L	890	380	320	390	240	420	1.0	6115047
Ion Balance (% Difference)	%	0.390	0.600	5.95	6.43	1.43	1.04	N/A	6115262
Total Organic Nitrogen	mg/L	0.65	0.25	0.23	0.38	0.15	<0.10	0.10	6115264
Inorganics									
Orthophosphate (P)	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	6117146

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

Maxxam ID		JRH297	JRH298		JRH299		
Sampling Date		2019/05/06 08:55	2019/05/06 09:55		2019/05/06 10:45		
COC Number		715289-01-01	715289-01-01		715289-01-01		
	UNITS	**SW1**	**SW2**	**QC Batch**	**SW3**	**RDL**	**QC Batch**
Calculated Parameters							
Hardness (CaCO3)	mg/L	21	62	6115047	61	1.0	6115047
Total Organic Nitrogen	mg/L	0.16	0.31	6115264	0.33	0.10	6115264
Inorganics							
Dissolved Organic Carbon	mg/L	2.2	11	6117013	12	0.50	6117009

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B9C5153
Report Date: 2019/05/16

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: EF

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		JRH297	JRH298	JRH299	JRH299		
Sampling Date		2019/05/06 08:55	2019/05/06 09:55	2019/05/06 10:45	2019/05/06 10:45		
COC Number		715289-01-01	715289-01-01	715289-01-01	715289-01-01		
	UNITS	**SW1**	**SW2**	**SW3**	**SW3 Lab-Dup**	**RDL**	**QC Batch**
Metals							
Dissolved (0.2u) Aluminum (Al)	ug/L	<5	8	10	10	5	6120574

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

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Maxxam Job #: B9C5153
Report Date: 2019/05/16

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: EF

TEST SUMMARY

Maxxam ID: JRH283
Sample ID: MW1
Matrix: Water

Collected: 2019/05/06
Shipped:
Received: 2019/05/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6117056	N/A	2019/05/12	Yogesh Patel
Chloride by Automated Colourimetry	KONE	6117143	N/A	2019/05/14	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6118291	N/A	2019/05/14	Viorica Rotaru
Conductivity	AT	6117060	N/A	2019/05/12	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6115917	N/A	2019/05/11	Mandeep Kaur
Hardness (calculated as CaCO3)		6115047	N/A	2019/05/15	Automated Statchk
Mercury in Water by CVAA	CV/AA	6122456	2019/05/15	2019/05/15	Ron Morrison
Dissolved Metals by ICPMS	ICP/MS	6118813	N/A	2019/05/14	Matthew Ritenburg
Ion Balance (% Difference)	CALC	6115262	N/A	2019/05/15	Automated Statchk
Total Ammonia-N	LACH/NH4	6119255	N/A	2019/05/14	Chandra Nandlal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6117029	N/A	2019/05/14	Chandra Nandlal
Organic Nitrogen	CALC	6115264	N/A	2019/05/15	Automated Statchk
pH	AT	6117061	2019/05/11	2019/05/12	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6117992	N/A	2019/05/13	Bramdeo Motiram
Field pH	PH	0	N/A		Michelle Brescacin
Orthophosphate	KONE	6117146	N/A	2019/05/13	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	6117145	N/A	2019/05/13	Alina Dobreanu
Total Dissolved Solids	BAL	6117295	2019/05/13	2019/05/14	Xinyue (Sarah) Hou
Total Kjeldahl Nitrogen in Water	SKAL	6118294	2019/05/13	2019/05/15	Shivani Shivani
Total Phosphorus (Colourimetric)	LACH/P	6118410	2019/05/13	2019/05/15	Louise Harding

Maxxam ID: JRH284
Sample ID: MW2
Matrix: Water

Collected: 2019/05/06
Shipped:
Received: 2019/05/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6117071	N/A	2019/05/12	Yogesh Patel
Chloride by Automated Colourimetry	KONE	6117143	N/A	2019/05/14	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6118291	N/A	2019/05/14	Viorica Rotaru
Conductivity	AT	6117101	N/A	2019/05/12	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6115917	N/A	2019/05/11	Mandeep Kaur
Hardness (calculated as CaCO3)		6115047	N/A	2019/05/15	Automated Statchk
Mercury in Water by CVAA	CV/AA	6122456	2019/05/15	2019/05/15	Ron Morrison
Dissolved Metals by ICPMS	ICP/MS	6118813	N/A	2019/05/14	Matthew Ritenburg
Ion Balance (% Difference)	CALC	6115262	N/A	2019/05/15	Automated Statchk
Total Ammonia-N	LACH/NH4	6119255	N/A	2019/05/14	Chandra Nandlal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6117029	N/A	2019/05/14	Chandra Nandlal
Organic Nitrogen	CALC	6115264	N/A	2019/05/15	Automated Statchk
pH	AT	6117103	2019/05/11	2019/05/12	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6117989	N/A	2019/05/13	Bramdeo Motiram
Field pH	PH	0	N/A		Michelle Brescacin
Orthophosphate	KONE	6117146	N/A	2019/05/13	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	6117145	N/A	2019/05/13	Alina Dobreanu
Total Dissolved Solids	BAL	6117207	2019/05/13	2019/05/14	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	6118294	2019/05/13	2019/05/15	Shivani Shivani
Total Phosphorus (Colourimetric)	LACH/P	6118410	2019/05/13	2019/05/15	Louise Harding

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Maxxam Job #: B9C5153
Report Date: 2019/05/16

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Client Project #: THB-00006189-PE
Sampler Initials: EF

TEST SUMMARY

Maxxam ID: JRH284 Dup
Sample ID: MW2
Matrix: Water

Collected: 2019/05/06
Shipped:
Received: 2019/05/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Metals by ICPMS	ICP/MS	6118813	N/A	2019/05/14	Matthew Ritenburg
Total Dissolved Solids	BAL	6117207	2019/05/13	2019/05/14	Massarat Jan

Maxxam ID: JRH285
Sample ID: MW3A
Matrix: Water

Collected: 2019/05/06
Shipped:
Received: 2019/05/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6117056	N/A	2019/05/12	Yogesh Patel
Chloride by Automated Colourimetry	KONE	6117143	N/A	2019/05/14	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6118291	N/A	2019/05/14	Viorica Rotaru
Conductivity	AT	6117060	N/A	2019/05/12	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6115917	N/A	2019/05/11	Mandeep Kaur
Hardness (calculated as CaCO3)		6115047	N/A	2019/05/15	Automated Statchk
Mercury in Water by CVAA	CV/AA	6122456	2019/05/15	2019/05/15	Ron Morrison
Dissolved Metals by ICPMS	ICP/MS	6118813	N/A	2019/05/14	Matthew Ritenburg
Ion Balance (% Difference)	CALC	6115262	N/A	2019/05/15	Automated Statchk
Total Ammonia-N	LACH/NH4	6119255	N/A	2019/05/14	Chandra Nandlal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6117035	N/A	2019/05/14	Chandra Nandlal
Organic Nitrogen	CALC	6115264	N/A	2019/05/15	Anastassia Hamanov
pH	AT	6117061	2019/05/11	2019/05/12	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6117989	N/A	2019/05/13	Bramdeo Motiram
Field pH	PH	0	N/A		Michelle Brescacin
Orthophosphate	KONE	6117146	N/A	2019/05/13	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	6117145	N/A	2019/05/13	Alina Dobreanu
Total Dissolved Solids	BAL	6117207	2019/05/13	2019/05/14	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	6118294	2019/05/13	2019/05/15	Shivani Shivani
Total Phosphorus (Colourimetric)	LACH/P	6118410	2019/05/13	2019/05/15	Louise Harding

Maxxam ID: JRH285 Dup
Sample ID: MW3A
Matrix: Water

Collected: 2019/05/06
Shipped:
Received: 2019/05/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Kjeldahl Nitrogen in Water	SKAL	6118294	2019/05/13	2019/05/15	Shivani Shivani

Maxxam ID: JRH286
Sample ID: MW3B
Matrix: Water

Collected: 2019/05/06
Shipped:
Received: 2019/05/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6117056	N/A	2019/05/12	Yogesh Patel
Chloride by Automated Colourimetry	KONE	6117143	N/A	2019/05/14	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6118291	N/A	2019/05/14	Viorica Rotaru
Conductivity	AT	6117060	N/A	2019/05/12	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6117015	N/A	2019/05/14	Mandeep Kaur

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Maxxam Job #: B9C5153
Report Date: 2019/05/16

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: EF

TEST SUMMARY

Maxxam ID: JRH286
Sample ID: MW3B
Matrix: Water

Collected: 2019/05/06
Shipped:
Received: 2019/05/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hardness (calculated as CaCO3)		6115047	N/A	2019/05/15	Automated Statchk
Mercury in Water by CVAA	CV/AA	6122456	2019/05/15	2019/05/15	Ron Morrison
Dissolved Metals by ICPMS	ICP/MS	6118813	N/A	2019/05/14	Matthew Ritenburg
Ion Balance (% Difference)	CALC	6115262	N/A	2019/05/15	Automated Statchk
Total Ammonia-N	LACH/NH4	6119255	N/A	2019/05/14	Chandra Nandlal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6117035	N/A	2019/05/14	Chandra Nandlal
Organic Nitrogen	CALC	6115264	N/A	2019/05/15	Anastassia Hamanov
pH	AT	6117061	2019/05/11	2019/05/12	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6117984	N/A	2019/05/13	Bramdeo Motiram
Field pH	PH	0	N/A		Michelle Brescacin
Orthophosphate	KONE	6117146	N/A	2019/05/13	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	6117145	N/A	2019/05/13	Alina Dobreanu
Total Dissolved Solids	BAL	6117295	2019/05/13	2019/05/14	Xinyue (Sarah) Hou
Total Kjeldahl Nitrogen in Water	SKAL	6118294	2019/05/13	2019/05/14	Shivani Shivani
Total Phosphorus (Colourimetric)	LACH/P	6118410	2019/05/13	2019/05/15	Louise Harding

Maxxam ID: JRH287
Sample ID: MW4
Matrix: Water

Collected: 2019/05/06
Shipped:
Received: 2019/05/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6117056	N/A	2019/05/12	Yogesh Patel
Chloride by Automated Colourimetry	KONE	6117143	N/A	2019/05/14	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6118291	N/A	2019/05/14	Viorica Rotaru
Conductivity	AT	6117060	N/A	2019/05/12	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6115922	N/A	2019/05/11	Mandeep Kaur
Hardness (calculated as CaCO3)		6115047	N/A	2019/05/15	Automated Statchk
Mercury in Water by CVAA	CV/AA	6122452	2019/05/15	2019/05/15	Ron Morrison
Dissolved Metals by ICPMS	ICP/MS	6118813	N/A	2019/05/14	Matthew Ritenburg
Ion Balance (% Difference)	CALC	6115262	N/A	2019/05/15	Automated Statchk
Total Ammonia-N	LACH/NH4	6119255	N/A	2019/05/14	Chandra Nandlal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6117035	N/A	2019/05/14	Chandra Nandlal
Organic Nitrogen	CALC	6115264	N/A	2019/05/15	Automated Statchk
pH	AT	6117061	2019/05/11	2019/05/12	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6117989	N/A	2019/05/13	Bramdeo Motiram
Field pH	PH	0	N/A		Michelle Brescacin
Orthophosphate	KONE	6117146	N/A	2019/05/13	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	6117145	N/A	2019/05/13	Alina Dobreanu
Total Dissolved Solids	BAL	6117295	2019/05/13	2019/05/14	Xinyue (Sarah) Hou
Total Kjeldahl Nitrogen in Water	SKAL	6118294	2019/05/13	2019/05/14	Shivani Shivani
Total Phosphorus (Colourimetric)	LACH/P	6118410	2019/05/13	2019/05/15	Louise Harding

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Maxxam Job #: B9C5153
Report Date: 2019/05/16

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: EF

TEST SUMMARY

Maxxam ID: JRH287 Dup
Sample ID: MW4
Matrix: Water

Collected: 2019/05/06
Shipped:
Received: 2019/05/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6115922	N/A	2019/05/11	Mandeep Kaur

Maxxam ID: JRH288
Sample ID: MW5
Matrix: Water

Collected: 2019/05/06
Shipped:
Received: 2019/05/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6117056	N/A	2019/05/12	Yogesh Patel
Chloride by Automated Colourimetry	KONE	6117427	N/A	2019/05/14	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6118291	N/A	2019/05/14	Viorica Rotaru
Conductivity	AT	6117060	N/A	2019/05/12	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6115917	N/A	2019/05/10	Mandeep Kaur
Hardness (calculated as CaCO3)		6115047	N/A	2019/05/15	Automated Statchk
Mercury in Water by CVAA	CV/AA	6122456	2019/05/15	2019/05/15	Ron Morrison
Dissolved Metals by ICPMS	ICP/MS	6118813	N/A	2019/05/14	Matthew Ritenburg
Ion Balance (% Difference)	CALC	6115262	N/A	2019/05/15	Automated Statchk
Total Ammonia-N	LACH/NH4	6119255	N/A	2019/05/14	Chandra Nandlal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6117029	N/A	2019/05/14	Chandra Nandlal
Organic Nitrogen	CALC	6115264	N/A	2019/05/15	Automated Statchk
pH	AT	6117061	2019/05/11	2019/05/12	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6117989	N/A	2019/05/13	Bramdeo Motiram
Field pH	PH	0	N/A		Michelle Brescacin
Orthophosphate	KONE	6117429	N/A	2019/05/13	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	6117428	N/A	2019/05/13	Alina Dobreanu
Total Dissolved Solids	BAL	6117295	2019/05/13	2019/05/14	Xinyue (Sarah) Hou
Total Kjeldahl Nitrogen in Water	SKAL	6118294	2019/05/13	2019/05/14	Shivani Shivani
Total Phosphorus (Colourimetric)	LACH/P	6118410	2019/05/13	2019/05/15	Louise Harding

Maxxam ID: JRH288 Dup
Sample ID: MW5
Matrix: Water

Collected: 2019/05/06
Shipped:
Received: 2019/05/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	KONE	6117427	N/A	2019/05/14	Deonarine Ramnarine
Orthophosphate	KONE	6117429	N/A	2019/05/13	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	6117428	N/A	2019/05/13	Alina Dobreanu

Maxxam ID: JRH289
Sample ID: MW6
Matrix: Water

Collected: 2019/05/06
Shipped:
Received: 2019/05/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6117056	N/A	2019/05/12	Yogesh Patel
Chloride by Automated Colourimetry	KONE	6117143	N/A	2019/05/14	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6118291	N/A	2019/05/14	Viorica Rotaru
Conductivity	AT	6117060	N/A	2019/05/12	Yogesh Patel

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Maxxam Job #: B9C5153
Report Date: 2019/05/16

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: EF

TEST SUMMARY

Maxxam ID: JRH289
Sample ID: MW6
Matrix: Water

Collected: 2019/05/06
Shipped:
Received: 2019/05/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6115917	N/A	2019/05/10	Mandeep Kaur
Hardness (calculated as CaCO3)		6115047	N/A	2019/05/15	Automated Statchk
Mercury in Water by CVAA	CV/AA	6122456	2019/05/15	2019/05/15	Ron Morrison
Dissolved Metals by ICPMS	ICP/MS	6118813	N/A	2019/05/14	Matthew Ritenburg
Ion Balance (% Difference)	CALC	6115262	N/A	2019/05/15	Automated Statchk
Total Ammonia-N	LACH/NH4	6119265	N/A	2019/05/14	Bernard Antwi
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6117035	N/A	2019/05/14	Chandra Nandlal
Organic Nitrogen	CALC	6115264	N/A	2019/05/15	Automated Statchk
pH	AT	6117061	2019/05/11	2019/05/12	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6117989	N/A	2019/05/13	Bramdeo Motiram
Field pH	PH	0	N/A		Michelle Brescacin
Orthophosphate	KONE	6117146	N/A	2019/05/13	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	6117145	N/A	2019/05/13	Alina Dobreanu
Total Dissolved Solids	BAL	6117207	2019/05/13	2019/05/14	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	6118294	2019/05/13	2019/05/14	Shivani Shivani
Total Phosphorus (Colourimetric)	LACH/P	6118410	2019/05/13	2019/05/15	Louise Harding

Maxxam ID: JRH290
Sample ID: MW7
Matrix: Water

Collected: 2019/05/06
Shipped:
Received: 2019/05/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6117056	N/A	2019/05/12	Yogesh Patel
Chloride by Automated Colourimetry	KONE	6117143	N/A	2019/05/14	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6118291	N/A	2019/05/14	Viorica Rotaru
Conductivity	AT	6117060	N/A	2019/05/12	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6115917	N/A	2019/05/10	Mandeep Kaur
Hardness (calculated as CaCO3)		6115047	N/A	2019/05/15	Automated Statchk
Mercury in Water by CVAA	CV/AA	6122452	2019/05/15	2019/05/15	Ron Morrison
Dissolved Metals by ICPMS	ICP/MS	6118813	N/A	2019/05/14	Matthew Ritenburg
Ion Balance (% Difference)	CALC	6115262	N/A	2019/05/15	Automated Statchk
Total Ammonia-N	LACH/NH4	6119255	N/A	2019/05/14	Chandra Nandlal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6117029	N/A	2019/05/14	Chandra Nandlal
Organic Nitrogen	CALC	6115264	N/A	2019/05/15	Automated Statchk
pH	AT	6117061	2019/05/11	2019/05/12	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6117989	N/A	2019/05/13	Bramdeo Motiram
Field pH	PH	0	N/A		Michelle Brescacin
Orthophosphate	KONE	6117146	N/A	2019/05/13	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	6117145	N/A	2019/05/13	Alina Dobreanu
Total Dissolved Solids	BAL	6117207	2019/05/13	2019/05/14	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	6118294	2019/05/13	2019/05/15	Shivani Shivani
Total Phosphorus (Colourimetric)	LACH/P	6118410	2019/05/13	2019/05/15	Louise Harding

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Maxxam Job #: B9C5153
Report Date: 2019/05/16

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: EF

TEST SUMMARY

Maxxam ID: JRH290 Dup
Sample ID: MW7
Matrix: Water

Collected: 2019/05/06
Shipped:
Received: 2019/05/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Ammonia-N	LACH/NH4	6119255	N/A	2019/05/14	Chandra Nandlal

Maxxam ID: JRH291
Sample ID: MW8
Matrix: Water

Collected: 2019/05/06
Shipped:
Received: 2019/05/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6117056	N/A	2019/05/12	Yogesh Patel
Chloride by Automated Colourimetry	KONE	6117143	N/A	2019/05/14	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6118291	N/A	2019/05/14	Viorica Rotaru
Conductivity	AT	6117060	N/A	2019/05/12	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6115922	N/A	2019/05/11	Mandeep Kaur
Hardness (calculated as CaCO3)		6115047	N/A	2019/05/15	Automated Statchk
Mercury in Water by CVAA	CV/AA	6122456	2019/05/15	2019/05/15	Ron Morrison
Dissolved Metals by ICPMS	ICP/MS	6118813	N/A	2019/05/15	Matthew Ritenburg
Ion Balance (% Difference)	CALC	6115262	N/A	2019/05/15	Automated Statchk
Total Ammonia-N	LACH/NH4	6119265	N/A	2019/05/14	Bernard Antwi
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6117035	N/A	2019/05/14	Chandra Nandlal
Organic Nitrogen	CALC	6115264	N/A	2019/05/15	Automated Statchk
pH	AT	6117061	2019/05/11	2019/05/12	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6117984	N/A	2019/05/13	Bramdeo Motiram
Field pH	PH	0	N/A		Michelle Brescacin
Orthophosphate	KONE	6117146	N/A	2019/05/13	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	6117145	N/A	2019/05/13	Alina Dobreanu
Total Dissolved Solids	BAL	6117295	2019/05/13	2019/05/14	Xinyue (Sarah) Hou
Total Kjeldahl Nitrogen in Water	SKAL	6118294	2019/05/13	2019/05/14	Shivani Shivani
Total Phosphorus (Colourimetric)	LACH/P	6118410	2019/05/13	2019/05/15	Louise Harding

Maxxam ID: JRH292
Sample ID: MW9
Matrix: Water

Collected: 2019/05/06
Shipped:
Received: 2019/05/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6117071	N/A	2019/05/12	Yogesh Patel
Chloride by Automated Colourimetry	KONE	6117143	N/A	2019/05/14	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6118291	N/A	2019/05/14	Viorica Rotaru
Conductivity	AT	6117101	N/A	2019/05/12	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6115917	N/A	2019/05/10	Mandeep Kaur
Hardness (calculated as CaCO3)		6115047	N/A	2019/05/15	Automated Statchk
Mercury in Water by CVAA	CV/AA	6122557	2019/05/15	2019/05/15	Ron Morrison
Dissolved Metals by ICPMS	ICP/MS	6118813	N/A	2019/05/14	Matthew Ritenburg
Ion Balance (% Difference)	CALC	6115262	N/A	2019/05/15	Automated Statchk
Total Ammonia-N	LACH/NH4	6119255	N/A	2019/05/14	Chandra Nandlal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6117029	N/A	2019/05/14	Chandra Nandlal
Organic Nitrogen	CALC	6115264	N/A	2019/05/15	Automated Statchk
pH	AT	6117103	2019/05/11	2019/05/12	Yogesh Patel

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Maxxam Job #: B9C5153
Report Date: 2019/05/16

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: EF

TEST SUMMARY

Maxxam ID: JRH292
Sample ID: MW9
Matrix: Water

Collected: 2019/05/06
Shipped:
Received: 2019/05/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Phenols (4AAP)	TECH/PHEN	6117984	N/A	2019/05/13	Bramdeo Motiram
Field pH	PH	0	N/A		Michelle Brescacin
Orthophosphate	KONE	6117146	N/A	2019/05/13	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	6117145	N/A	2019/05/13	Alina Dobreanu
Total Dissolved Solids	BAL	6121361	2019/05/14	2019/05/15	Nilam Borole
Total Kjeldahl Nitrogen in Water	SKAL	6118294	2019/05/13	2019/05/14	Shivani Shivani
Total Phosphorus (Colourimetric)	LACH/P	6118410	2019/05/13	2019/05/15	Louise Harding

Maxxam ID: JRH293
Sample ID: MW10A
Matrix: Water

Collected: 2019/05/06
Shipped:
Received: 2019/05/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6117056	N/A	2019/05/12	Yogesh Patel
Chloride by Automated Colourimetry	KONE	6117143	N/A	2019/05/14	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6118291	N/A	2019/05/14	Viorica Rotaru
Conductivity	AT	6117060	N/A	2019/05/12	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6115922	N/A	2019/05/11	Mandeep Kaur
Hardness (calculated as CaCO3)		6115047	N/A	2019/05/15	Automated Statchk
Mercury in Water by CVAA	CV/AA	6122452	2019/05/15	2019/05/15	Ron Morrison
Dissolved Metals by ICPMS	ICP/MS	6118813	N/A	2019/05/14	Matthew Ritenburg
Ion Balance (% Difference)	CALC	6115262	N/A	2019/05/15	Automated Statchk
Total Ammonia-N	LACH/NH4	6119255	N/A	2019/05/14	Chandra Nandlal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6117029	N/A	2019/05/14	Chandra Nandlal
Organic Nitrogen	CALC	6115264	N/A	2019/05/15	Automated Statchk
pH	AT	6117061	2019/05/11	2019/05/12	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6117984	N/A	2019/05/13	Bramdeo Motiram
Field pH	PH	0	N/A		Michelle Brescacin
Orthophosphate	KONE	6117146	N/A	2019/05/13	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	6117145	N/A	2019/05/13	Alina Dobreanu
Total Dissolved Solids	BAL	6117295	2019/05/13	2019/05/14	Xinyue (Sarah) Hou
Total Kjeldahl Nitrogen in Water	SKAL	6118294	2019/05/13	2019/05/14	Shivani Shivani
Total Phosphorus (Colourimetric)	LACH/P	6118410	2019/05/13	2019/05/15	Louise Harding

Maxxam ID: JRH294
Sample ID: MW10B
Matrix: Water

Collected: 2019/05/06
Shipped:
Received: 2019/05/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6117071	N/A	2019/05/12	Yogesh Patel
Chloride by Automated Colourimetry	KONE	6117143	N/A	2019/05/14	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6118291	N/A	2019/05/14	Viorica Rotaru
Conductivity	AT	6117101	N/A	2019/05/12	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6115922	N/A	2019/05/11	Mandeep Kaur
Hardness (calculated as CaCO3)		6115047	N/A	2019/05/15	Automated Statchk
Mercury in Water by CVAA	CV/AA	6122456	2019/05/15	2019/05/15	Ron Morrison

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TEST SUMMARY

Maxxam ID: JRH294
Sample ID: MW10B
Matrix: Water

Collected: 2019/05/06
Shipped:
Received: 2019/05/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Metals by ICPMS	ICP/MS	6118813	N/A	2019/05/14	Matthew Ritenburg
Ion Balance (% Difference)	CALC	6115262	N/A	2019/05/15	Automated Statchk
Total Ammonia-N	LACH/NH4	6119255	N/A	2019/05/14	Chandra Nandlal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6117029	N/A	2019/05/14	Chandra Nandlal
Organic Nitrogen	CALC	6115264	N/A	2019/05/15	Automated Statchk
pH	AT	6117103	2019/05/11	2019/05/12	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6117984	N/A	2019/05/13	Bramdeo Motiram
Field pH	PH	0	N/A		Michelle Brescacin
Orthophosphate	KONE	6117146	N/A	2019/05/13	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	6117145	N/A	2019/05/13	Alina Dobreanu
Total Dissolved Solids	BAL	6117207	2019/05/13	2019/05/14	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	6118294	2019/05/13	2019/05/14	Shivani Shivani
Total Phosphorus (Colourimetric)	LACH/P	6118410	2019/05/13	2019/05/15	Louise Harding

Maxxam ID: JRH295
Sample ID: MW11
Matrix: Water

Collected: 2019/05/06
Shipped:
Received: 2019/05/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6117056	N/A	2019/05/12	Yogesh Patel
Chloride by Automated Colourimetry	KONE	6117143	N/A	2019/05/14	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6118291	N/A	2019/05/14	Viorica Rotaru
Conductivity	AT	6117060	N/A	2019/05/12	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6115922	N/A	2019/05/11	Mandeep Kaur
Hardness (calculated as CaCO3)		6115047	N/A	2019/05/15	Automated Statchk
Mercury in Water by CVAA	CV/AA	6122456	2019/05/15	2019/05/15	Ron Morrison
Dissolved Metals by ICPMS	ICP/MS	6118813	N/A	2019/05/14	Matthew Ritenburg
Ion Balance (% Difference)	CALC	6115262	N/A	2019/05/15	Automated Statchk
Total Ammonia-N	LACH/NH4	6119255	N/A	2019/05/14	Chandra Nandlal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6117029	N/A	2019/05/14	Chandra Nandlal
Organic Nitrogen	CALC	6115264	N/A	2019/05/15	Automated Statchk
pH	AT	6117061	2019/05/11	2019/05/12	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6117984	N/A	2019/05/13	Bramdeo Motiram
Field pH	PH	0	N/A		Michelle Brescacin
Orthophosphate	KONE	6117146	N/A	2019/05/13	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	6117145	N/A	2019/05/13	Alina Dobreanu
Total Dissolved Solids	BAL	6117207	2019/05/13	2019/05/14	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	6118294	2019/05/13	2019/05/14	Shivani Shivani
Total Phosphorus (Colourimetric)	LACH/P	6118410	2019/05/13	2019/05/15	Louise Harding

Maxxam ID: JRH295 Dup
Sample ID: MW11
Matrix: Water

Collected: 2019/05/06
Shipped:
Received: 2019/05/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Water by CVAA	CV/AA	6122456	2019/05/15	2019/05/15	Ron Morrison

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Maxxam Job #: B9C5153
Report Date: 2019/05/16

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: EF

TEST SUMMARY

Maxxam ID: JRH296
Sample ID: MW12
Matrix: Water

Collected: 2019/05/06
Shipped:
Received: 2019/05/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6117056	N/A	2019/05/12	Yogesh Patel
Chloride by Automated Colourimetry	KONE	6117143	N/A	2019/05/14	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6118291	N/A	2019/05/14	Viorica Rotaru
Conductivity	AT	6117060	N/A	2019/05/12	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6115922	N/A	2019/05/11	Mandeep Kaur
Hardness (calculated as CaCO3)		6115047	N/A	2019/05/15	Automated Statchk
Mercury in Water by CVAA	CV/AA	6122227	2019/05/15	2019/05/15	Ron Morrison
Dissolved Metals by ICPMS	ICP/MS	6118813	N/A	2019/05/14	Matthew Ritenburg
Ion Balance (% Difference)	CALC	6115262	N/A	2019/05/15	Automated Statchk
Total Ammonia-N	LACH/NH4	6119255	N/A	2019/05/14	Chandra Nandlal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6117029	N/A	2019/05/14	Chandra Nandlal
Organic Nitrogen	CALC	6115264	N/A	2019/05/15	Anastassia Hamanov
pH	AT	6117061	2019/05/11	2019/05/12	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6117989	N/A	2019/05/13	Bramdeo Motiram
Field pH	PH	0	N/A		Michelle Brescacin
Orthophosphate	KONE	6117146	N/A	2019/05/13	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	6117145	N/A	2019/05/13	Alina Dobreanu
Total Dissolved Solids	BAL	6117207	2019/05/13	2019/05/14	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	6118294	2019/05/13	2019/05/14	Shivani Shivani
Total Phosphorus (Colourimetric)	LACH/P	6118410	2019/05/13	2019/05/15	Louise Harding

Maxxam ID: JRH296 Dup
Sample ID: MW12
Matrix: Water

Collected: 2019/05/06
Shipped:
Received: 2019/05/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Water by CVAA	CV/AA	6122227	2019/05/15	2019/05/15	Ron Morrison

Maxxam ID: JRH297
Sample ID: SW1
Matrix: Water

Collected: 2019/05/06
Shipped:
Received: 2019/05/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Aluminum (0.2 u, clay free)	ICP/MS	6120574	N/A	2019/05/15	Prempal Bhatti
Alkalinity	AT	6117056	N/A	2019/05/12	Yogesh Patel
Biochemical Oxygen Demand (BOD)	DO	6115659	2019/05/10	2019/05/15	Althea Gonzalez
Chloride by Automated Colourimetry	KONE	6117140	N/A	2019/05/13	Alina Dobreanu
Chemical Oxygen Demand	SPEC	6118291	N/A	2019/05/14	Viorica Rotaru
Conductivity	AT	6117060	N/A	2019/05/12	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6117013	N/A	2019/05/13	Mandeep Kaur
Hardness (calculated as CaCO3)		6115047	N/A	2019/05/16	Automated Statchk
Mercury in Water by CVAA	CV/AA	6122456	2019/05/15	2019/05/15	Ron Morrison
Total Metals Analysis by ICPMS	ICP/MS	6120708	N/A	2019/05/15	Arefa Dabhad
Total Ammonia-N	LACH/NH4	6119255	N/A	2019/05/14	Chandra Nandlal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6117035	N/A	2019/05/14	Chandra Nandlal
Organic Nitrogen	CALC	6115264	N/A	2019/05/15	Automated Statchk

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Maxxam Job #: B9C5153
Report Date: 2019/05/16

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: EF

TEST SUMMARY

Maxxam ID: JRH297
Sample ID: SW1
Matrix: Water

Collected: 2019/05/06
Shipped:
Received: 2019/05/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH	AT	6117061	2019/05/11	2019/05/12	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6117984	N/A	2019/05/13	Bramdeo Motiram
Sulphate by Automated Colourimetry	KONE	6117142	N/A	2019/05/13	Deonarine Ramnarine
Total Dissolved Solids	BAL	6117337	2019/05/11	2019/05/13	Nilam Borole
Total Kjeldahl Nitrogen in Water	SKAL	6118294	2019/05/13	2019/05/14	Shivani Shivani
Total Phosphorus (Colourimetric)	LACH/P	6118646	2019/05/13	2019/05/14	Louise Harding
Low Level Total Suspended Solids	BAL	6116274	2019/05/10	2019/05/13	Nilam Borole

Maxxam ID: JRH297 Dup
Sample ID: SW1
Matrix: Water

Collected: 2019/05/06
Shipped:
Received: 2019/05/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chemical Oxygen Demand	SPEC	6118291	N/A	2019/05/14	Viorica Rotaru

Maxxam ID: JRH298
Sample ID: SW2
Matrix: Water

Collected: 2019/05/06
Shipped:
Received: 2019/05/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Aluminum (0.2 u, clay free)	ICP/MS	6120574	N/A	2019/05/15	Prempal Bhatti
Alkalinity	AT	6117125	N/A	2019/05/12	Yogesh Patel
Biochemical Oxygen Demand (BOD)	DO	6115659	2019/05/10	2019/05/15	Althea Gonzalez
Chloride by Automated Colourimetry	KONE	6117140	N/A	2019/05/13	Alina Dobreanu
Chemical Oxygen Demand	SPEC	6118291	N/A	2019/05/14	Viorica Rotaru
Conductivity	AT	6117127	N/A	2019/05/12	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6117013	N/A	2019/05/13	Mandeep Kaur
Hardness (calculated as CaCO3)		6115047	N/A	2019/05/16	Automated Statchk
Mercury in Water by CVAA	CV/AA	6122227	2019/05/15	2019/05/15	Ron Morrison
Total Metals Analysis by ICPMS	ICP/MS	6120708	N/A	2019/05/15	Arefa Dabhad
Total Ammonia-N	LACH/NH4	6119255	N/A	2019/05/14	Chandra Nandlal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6117035	N/A	2019/05/14	Chandra Nandlal
Organic Nitrogen	CALC	6115264	N/A	2019/05/15	Automated Statchk
pH	AT	6117128	2019/05/11	2019/05/12	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6117984	N/A	2019/05/13	Bramdeo Motiram
Sulphate by Automated Colourimetry	KONE	6117142	N/A	2019/05/13	Deonarine Ramnarine
Total Dissolved Solids	BAL	6117337	2019/05/11	2019/05/13	Nilam Borole
Total Kjeldahl Nitrogen in Water	SKAL	6118294	2019/05/13	2019/05/14	Shivani Shivani
Total Phosphorus (Colourimetric)	LACH/P	6118646	2019/05/13	2019/05/14	Louise Harding
Low Level Total Suspended Solids	BAL	6116274	2019/05/10	2019/05/13	Nilam Borole

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Maxxam Job #: B9C5153
Report Date: 2019/05/16

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: EF

TEST SUMMARY

Maxxam ID: JRH299
Sample ID: SW3
Matrix: Water

Collected: 2019/05/06
Shipped:
Received: 2019/05/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Aluminum (0.2 u, clay free)	ICP/MS	6120574	N/A	2019/05/15	Prempal Bhatti
Alkalinity	AT	6117125	N/A	2019/05/12	Yogesh Patel
Biochemical Oxygen Demand (BOD)	DO	6115659	2019/05/10	2019/05/15	Althea Gonzalez
Chloride by Automated Colourimetry	KONE	6117140	N/A	2019/05/13	Alina Dobreanu
Chemical Oxygen Demand	SPEC	6118291	N/A	2019/05/14	Viorica Rotaru
Conductivity	AT	6117127	N/A	2019/05/12	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6117009	N/A	2019/05/13	Mandeep Kaur
Hardness (calculated as CaCO3)		6115047	N/A	2019/05/16	Automated Statchk
Mercury in Water by CVAA	CV/AA	6122452	2019/05/15	2019/05/15	Ron Morrison
Total Metals Analysis by ICPMS	ICP/MS	6120708	N/A	2019/05/15	Arefa Dabhad
Total Ammonia-N	LACH/NH4	6119278	N/A	2019/05/14	Bernard Antwi
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6117035	N/A	2019/05/14	Chandra Nandlal
Organic Nitrogen	CALC	6115264	N/A	2019/05/15	Automated Statchk
pH	AT	6117128	2019/05/11	2019/05/12	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6117984	N/A	2019/05/13	Bramdeo Motiram
Sulphate by Automated Colourimetry	KONE	6117142	N/A	2019/05/13	Deonarine Ramnarine
Total Dissolved Solids	BAL	6117337	2019/05/11	2019/05/13	Nilam Borole
Total Kjeldahl Nitrogen in Water	SKAL	6118294	2019/05/13	2019/05/14	Shivani Shivani
Total Phosphorus (Colourimetric)	LACH/P	6118646	2019/05/13	2019/05/14	Louise Harding
Low Level Total Suspended Solids	BAL	6116274	2019/05/10	2019/05/13	Nilam Borole

Maxxam ID: JRH299 Dup
Sample ID: SW3
Matrix: Water

Collected: 2019/05/06
Shipped:
Received: 2019/05/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Aluminum (0.2 u, clay free)	ICP/MS	6120574	N/A	2019/05/15	Prempal Bhatti
Mercury in Water by CVAA	CV/AA	6122452	2019/05/15	2019/05/15	Ron Morrison

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Maxxam Job #: B9C5153
Report Date: 2019/05/16

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: EF

GENERAL COMMENTS

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

Package 1	0.3°C
Package 2	1.7°C
Package 3	0.7°C
Package 4	1.3°C

Results relate only to the items tested.

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Maxxam Job #: B9C5153
Report Date: 2019/05/16

QUALITY ASSURANCE REPORT

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: EF

			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
6115659	Total BOD	2019/05/15					<2	mg/L	NC	30	92	80 - 120
6115917	Dissolved Organic Carbon	2019/05/10	96	80 - 120	98	80 - 120	<0.50	mg/L	1.5	20		
6115922	Dissolved Organic Carbon	2019/05/11	93	80 - 120	97	80 - 120	<0.50	mg/L	1.5	20		
6116274	Total Suspended Solids	2019/05/13					<1	mg/L	25	25	101	85 - 115
6117009	Dissolved Organic Carbon	2019/05/13	91	80 - 120	95	80 - 120	<0.50	mg/L	0.16	20		
6117013	Dissolved Organic Carbon	2019/05/13	90	80 - 120	94	80 - 120	<0.50	mg/L	2.0	20		
6117015	Dissolved Organic Carbon	2019/05/14	96	80 - 120	100	80 - 120	<0.50	mg/L	1.6	20		
6117029	Nitrate (N)	2019/05/14	102	80 - 120	104	80 - 120	<0.10	mg/L	NC	20		
6117029	Nitrite (N)	2019/05/14	103	80 - 120	101	80 - 120	<0.010	mg/L	NC	20		
6117035	Nitrate (N)	2019/05/14	121 (1)	80 - 120	104	80 - 120	<0.10	mg/L	NC	20		
6117035	Nitrite (N)	2019/05/14	123 (1)	80 - 120	99	80 - 120	<0.010	mg/L	NC	20		
6117056	Alkalinity (Total as CaCO3)	2019/05/12			95	85 - 115	<1.0	mg/L	0.36	20		
6117060	Conductivity	2019/05/12			102	85 - 115	<1.0	umho/cm	0.26	25		
6117061	pH	2019/05/12			102	98 - 103			0.0012	N/A		
6117071	Alkalinity (Total as CaCO3)	2019/05/12			95	85 - 115	<1.0	mg/L	0.43	20		
6117101	Conductivity	2019/05/12			102	85 - 115	<1.0	umho/cm	0.27	25		
6117103	pH	2019/05/12			102	98 - 103			0.40	N/A		
6117125	Alkalinity (Total as CaCO3)	2019/05/12			96	85 - 115	<1.0	mg/L	0.68	20		
6117127	Conductivity	2019/05/12			102	85 - 115	<1.0	umho/cm	0.076	25		
6117128	pH	2019/05/12			102	98 - 103			0.78	N/A		
6117140	Dissolved Chloride (Cl-)	2019/05/13	110	80 - 120	104	80 - 120	<1.0	mg/L	3.7	20		
6117142	Dissolved Sulphate (SO4)	2019/05/13	107	75 - 125	104	80 - 120	<1.0	mg/L	NC	20		
6117143	Dissolved Chloride (Cl-)	2019/05/14	NC	80 - 120	103	80 - 120	<1.0	mg/L	0.25	20		
6117145	Dissolved Sulphate (SO4)	2019/05/13	NC	75 - 125	105	80 - 120	<1.0	mg/L	2.3	20		
6117146	Orthophosphate (P)	2019/05/13	110	75 - 125	101	80 - 120	<0.010	mg/L	NC	25		
6117207	Total Dissolved Solids	2019/05/14					<10	mg/L	0	25	98	90 - 110
6117295	Total Dissolved Solids	2019/05/14					<10	mg/L	1.0	25	98	90 - 110
6117337	Total Dissolved Solids	2019/05/13					<10	mg/L	3.8	25	100	90 - 110
6117427	Dissolved Chloride (Cl-)	2019/05/14	NC	80 - 120	102	80 - 120	<1.0	mg/L	0.44	20		

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Maxxam Job #: B9C5153
Report Date: 2019/05/16

QUALITY ASSURANCE REPORT(CONT'D)

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: EF

			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
6117428	Dissolved Sulphate (SO4)	2019/05/13	NC	75 - 125	101	80 - 120	<1.0	mg/L	0.68	20		
6117429	Orthophosphate (P)	2019/05/13	101	75 - 125	100	80 - 120	<0.010	mg/L	NC	25		
6117984	Phenols-4AAP	2019/05/13	97	80 - 120	96	80 - 120	<0.0010	mg/L	NC	20		
6117989	Phenols-4AAP	2019/05/13	96	80 - 120	96	80 - 120	<0.0010	mg/L	NC	20		
6117992	Phenols-4AAP	2019/05/13	96	80 - 120	97	80 - 120	<0.0010	mg/L	NC	20		
6118291	Total Chemical Oxygen Demand (COD)	2019/05/14	98	80 - 120	97	80 - 120	<4.0	mg/L	NC	20		
6118294	Total Kjeldahl Nitrogen (TKN)	2019/05/15	NC	80 - 120	95	80 - 120	<0.10	mg/L	1.7	20	93	80 - 120
6118410	Total Phosphorus	2019/05/15	97	80 - 120	101	80 - 120	<0.020	mg/L	0.38	20	98	80 - 120
6118646	Total Phosphorus	2019/05/14	122 (1)	80 - 120	115	80 - 120	<0.004	mg/L	2.1	20	110	80 - 120
6118813	Dissolved Aluminum (Al)	2019/05/14	99	80 - 120	102	80 - 120	<5.0	ug/L	14	20		
6118813	Dissolved Antimony (Sb)	2019/05/14	102	80 - 120	99	80 - 120	<0.50	ug/L	NC	20		
6118813	Dissolved Arsenic (As)	2019/05/14	100	80 - 120	97	80 - 120	<1.0	ug/L	3.9	20		
6118813	Dissolved Barium (Ba)	2019/05/14	100	80 - 120	99	80 - 120	<2.0	ug/L	0.85	20		
6118813	Dissolved Beryllium (Be)	2019/05/14	100	80 - 120	96	80 - 120	<0.50	ug/L	NC	20		
6118813	Dissolved Bismuth (Bi)	2019/05/14	96	80 - 120	95	80 - 120	<1.0	ug/L	NC	20		
6118813	Dissolved Boron (B)	2019/05/14	99	80 - 120	97	80 - 120	<10	ug/L	1.1	20		
6118813	Dissolved Cadmium (Cd)	2019/05/14	102	80 - 120	99	80 - 120	<0.10	ug/L	NC	20		
6118813	Dissolved Calcium (Ca)	2019/05/14	NC	80 - 120	104	80 - 120	<200	ug/L	0.51	20		
6118813	Dissolved Chromium (Cr)	2019/05/14	98	80 - 120	97	80 - 120	<5.0	ug/L	NC	20		
6118813	Dissolved Cobalt (Co)	2019/05/14	98	80 - 120	98	80 - 120	<0.50	ug/L	1.3	20		
6118813	Dissolved Copper (Cu)	2019/05/14	101	80 - 120	98	80 - 120	<1.0	ug/L	3.0	20		
6118813	Dissolved Iron (Fe)	2019/05/14	99	80 - 120	98	80 - 120	<100	ug/L	0.11	20		
6118813	Dissolved Lead (Pb)	2019/05/14	98	80 - 120	96	80 - 120	<0.50	ug/L	NC	20		
6118813	Dissolved Magnesium (Mg)	2019/05/14	96	80 - 120	96	80 - 120	<50	ug/L	0.19	20		
6118813	Dissolved Manganese (Mn)	2019/05/14	NC	80 - 120	98	80 - 120	<2.0	ug/L	0.34	20		
6118813	Dissolved Molybdenum (Mo)	2019/05/14	106	80 - 120	99	80 - 120	<0.50	ug/L	5.7	20		
6118813	Dissolved Nickel (Ni)	2019/05/14	96	80 - 120	96	80 - 120	<1.0	ug/L	3.7	20		
6118813	Dissolved Potassium (K)	2019/05/14	100	80 - 120	97	80 - 120	<200	ug/L	0.52	20		
6118813	Dissolved Selenium (Se)	2019/05/14	102	80 - 120	100	80 - 120	<2.0	ug/L	NC	20		
6118813	Dissolved Silicon (Si)	2019/05/14	101	80 - 120	99	80 - 120	<50	ug/L	0.33	20		
6118813	Dissolved Sodium (Na)	2019/05/14	95	80 - 120	93	80 - 120	<100	ug/L	0.35	20		
6118813	Dissolved Strontium (Sr)	2019/05/14	100	80 - 120	99	80 - 120	<1.0	ug/L	0.075	20		

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6118813	Dissolved Thallium (Tl)	2019/05/14	97	80 - 120	96	80 - 120	<0.050	ug/L	3.8	20		
6118813	Dissolved Tin (Sn)	2019/05/14	102	80 - 120	99	80 - 120	<1.0	ug/L	NC	20		
6118813	Dissolved Vanadium (V)	2019/05/14	100	80 - 120	99	80 - 120	<0.50	ug/L	1.1	20		
6118813	Dissolved Zinc (Zn)	2019/05/14	100	80 - 120	99	80 - 120	<5.0	ug/L	NC	20		
6119255	Total Ammonia-N	2019/05/14	89	75 - 125	100	80 - 120	<0.050	mg/L	0.45	20		
6119265	Total Ammonia-N	2019/05/14	97	75 - 125	95	80 - 120	<0.050	mg/L	NC	20		
6119278	Total Ammonia-N	2019/05/14	NC	75 - 125	100	80 - 120	<0.050	mg/L	0.53 (2)	20		
6120574	Dissolved (0.2u) Aluminum (Al)	2019/05/15	102	80 - 120	99	80 - 120	<5	ug/L	2.5	20		
6120708	Total Antimony (Sb)	2019/05/15	106	80 - 120	103	80 - 120	<0.50	ug/L				
6120708	Total Arsenic (As)	2019/05/15	101	80 - 120	100	80 - 120	<1.0	ug/L				
6120708	Total Barium (Ba)	2019/05/15	98	80 - 120	97	80 - 120	<2.0	ug/L				
6120708	Total Beryllium (Be)	2019/05/15	100	80 - 120	101	80 - 120	<0.50	ug/L				
6120708	Total Bismuth (Bi)	2019/05/15	101	80 - 120	100	80 - 120	<1.0	ug/L				
6120708	Total Boron (B)	2019/05/15	91	80 - 120	91	80 - 120	<10	ug/L				
6120708	Total Cadmium (Cd)	2019/05/15	102	80 - 120	103	80 - 120	<0.10	ug/L				
6120708	Total Calcium (Ca)	2019/05/15	NC	80 - 120	101	80 - 120	<200	ug/L				
6120708	Total Chromium (Cr)	2019/05/15	96	80 - 120	95	80 - 120	<5.0	ug/L				
6120708	Total Cobalt (Co)	2019/05/15	98	80 - 120	99	80 - 120	<0.50	ug/L				
6120708	Total Copper (Cu)	2019/05/15	104	80 - 120	101	80 - 120	<1.0	ug/L				
6120708	Total Iron (Fe)	2019/05/15	99	80 - 120	101	80 - 120	<100	ug/L				
6120708	Total Lead (Pb)	2019/05/15	102	80 - 120	101	80 - 120	<0.50	ug/L				
6120708	Total Magnesium (Mg)	2019/05/15	101	80 - 120	101	80 - 120	<50	ug/L				
6120708	Total Manganese (Mn)	2019/05/15	98	80 - 120	99	80 - 120	<2.0	ug/L				
6120708	Total Molybdenum (Mo)	2019/05/15	98	80 - 120	98	80 - 120	<0.50	ug/L				
6120708	Total Nickel (Ni)	2019/05/15	96	80 - 120	97	80 - 120	<1.0	ug/L				
6120708	Total Potassium (K)	2019/05/15	100	80 - 120	98	80 - 120	<200	ug/L				
6120708	Total Selenium (Se)	2019/05/15	106	80 - 120	106	80 - 120	<2.0	ug/L				
6120708	Total Silicon (Si)	2019/05/15	101	80 - 120	98	80 - 120	<50	ug/L				
6120708	Total Silver (Ag)	2019/05/15	99	80 - 120	99	80 - 120	<0.10	ug/L				
6120708	Total Sodium (Na)	2019/05/15	NC	80 - 120	100	80 - 120	<100	ug/L				
6120708	Total Strontium (Sr)	2019/05/15	98	80 - 120	98	80 - 120	<1.0	ug/L				
6120708	Total Thallium (Tl)	2019/05/15	103	80 - 120	100	80 - 120	<0.050	ug/L				

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6120708	Total Vanadium (V)	2019/05/15	96	80 - 120	96	80 - 120	<0.50	ug/L				
6120708	Total Zinc (Zn)	2019/05/15	100	80 - 120	101	80 - 120	<5.0	ug/L				
6121361	Total Dissolved Solids	2019/05/15					<10	mg/L	0	25	98	90 - 110
6122227	Mercury (Hg)	2019/05/15	102	75 - 125	96	80 - 120	<0.0001	mg/L	NC	20		
6122452	Mercury (Hg)	2019/05/15	102	75 - 125	95	80 - 120	<0.0001	mg/L	NC	20		
6122456	Mercury (Hg)	2019/05/15	92	75 - 125	89	80 - 120	<0.0001	mg/L	NC	20		
6122557	Mercury (Hg)	2019/05/15	89	75 - 125	94	80 - 120	<0.0001	mg/L	NC	20		

N/A = Not Applicable

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

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

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

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

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

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

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

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

(2) TKN < NH4: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.

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

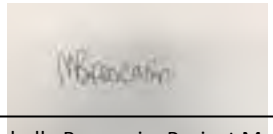
Maxxam Job #: B9C5153
Report Date: 2019/05/16

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: EF

VALIDATION SIGNATURE PAGE

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

Anastassia Hamanov, Scientific Specialist



Michelle Brescacin, Project Manager Assistant

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

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

BOD

Maxxam

INVOICE TO:	
Company Name	#17031 exp Services Inc
Attention	accounts payable
Address	1142 Roland St
	Thunder Bay ON P7B 5M4
Tel	(807) 623-9495 Fax (807) 623-8070
Email	thunderbay@exp.com, Karen.Burke@exp.com, AP@exp

REPORT TO:	
Attention	Kristof Karpiak / Aikos Mitsopoulos
	Aikos.Mitsopoulos@exp.com
Email	Kristof.Karpiak@exp.com

PROJECT INFORMATION:	
Quotation #	B90505
Project	THB-00006189-OE
Site #	Geraldton Landfill
Sampled By	Elwin Fortes

09-May-19 14:10
Michelle Brescacin
B9C5153
JCC ENV-807

Page 1 of 3

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Other Regulations: ☒ Other: ODWS

Regular (Standard) TAT: ☒

	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered					# of Bottles	Comments
1	MW 1	MAY 6 2019	8:40PM	GW	Yes	X	X	X	X	9	
2	MW 2	MAY 6 2019	9:38PM	GW	Yes	X	X	X	X	9	
3	MW3A	MAY 6 2019	9:10PM	GW	Yes	X	X	X	X	9	
4	MW3B	MAY 6 2019	10:10PM	GW	Yes	X	X	X	X	9	
5	MW 4	MAY 6 2019	5:20PM	GW	Yes	X	X	X	X	9	
6	MW 5	MAY 6 2019	7:30PM	GW	Yes	X	X	X	X	9	
7	MW 6	MAY 6 2019	6:40PM	GW	Yes	X	X	X	X	9	
8	MW 7	MAY 6 2019	4:15PM	GW	Yes	X	X	X	X	9	
9	MW 8	MAY 6 2019	11:05AM	GW	Yes	X	X	X	X	9	
10	MW 9	MAY 6 2019	1:30PM	GW	Yes	X	X	X	X	9	RECEIVED

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time
Kristof Karpiak	19/05/09	14:10	Michelle Brescacin	19/05/09	14:10
			TRUSHNA PATEL	19/05/10	11:12

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

REFER ACOR

Maxxam

CHAIN OF CUSTODY RECORD

Page 2 of 3

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only
Company Name	#17501 exp Services Inc	Company Name		Quotation #	B90585	Maxxam Job #
Attention	accounts payable	Attention	Kristof Karpuk (Ahilleas Mitsopoulos	P.O. #		Bottle Order #
Address	1142 Roland St	Address	Ahilleas Mitsopoulos @ exp.com	Project	THB-00026139-CE	
	Thunder Bay ON P7B 5M4			Project Name		COC #
Tel	(807) 623-9495 Fax (807) 623-8070	Tel		Site #	Geraldton Landfill	Project Manager
Email	thunderbay@exp.com; Karen.Burke@exp.com; AP@ex	Email	Kristof.Karpuk@exp.com	Sampled By	Elwin Fasken	

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Other Regulations: ☒ Other: ODWS

Include Criteria on Certificate of Analysis (Y/N)?

Regular (Standard) TAT: ☒

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered					# of Bottles	Comments
1		MW 10 A	May 6 2019	8:10 AM	GW	✓	x	x	x	x	9	
2		MW 10 B	May 6 2019	7:59 AM	GW	✓	x	x	x	x	9	
3		MW 11	May 6 2019	5:30 Pm	GW	✓	x	x	x	x	9	
4		MW 12	May 6 2019	8:35 am	GW	✓	x	x	x	x	9	
5					GW		x	x	x	x		
6					GW		x	x	x	x		
7					GW		x	x	x	x		
8					GW		x	x	x	x		
9					GW		x	x	x	x		
10					GW		x	x	x	x		

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time
Kristof Karpuk	19/05/09		[illegible]		

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam

CHAIN OF CUSTODY RECORD

3 of 3

INVOICE TO:	REPORT TO:	PROJECT INFORMATION:	Laboratory Use Only:
Company Name: #17501 exp Services Inc.	Company Name:	Quotation #: 090365	Maxxam Job #:
Attention: accounts payable	Attention: Kristof Karpiuk; Alisha Mclaughlin	P.O. #:	Bottle Order #:
Address: 1142 Rosand St	Address:	Project: THS-00009189-PE	
Thunder Bay ON P7B 5M4		Project Name:	COC #:
Tel: (807) 623-9469 Fax: (807) 623-6070	Tel:	Site #: Dorotitos Landfill	Project Manager:
Email: thunderbay@exp.com; Karen.Burke@exp.com;AP@ex	Email: Kristof.Karpiuk@exp.com	Sampled By: Elwin Fontes	

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): Table 1 / Table 2 / Table 3 / Table ___ / Sewer Use / Storm Sewer Use / Municipality: ___ / PWQO / Other: ___

Include Criteria on Certificate of Analysis (Y/N)? ___

Special Instructions:

Field Filtered (please circle): Metals (HG) / CrVI

	Sample Barcode Label	Sample Location Identification	Date Sampled	Time Sampled	Matrix	Field Filtered	Metals	CrVI									# of Bottles	Comments
1		SW 1	May 6 - 2019	8:50AM	SW	Yes	X	X									9	
2		SW 2	May 6 - 2019	9:55AM	SW	Yes	X	X									9	
3		SW 3	May 6 - 2019	10:45AM	SW	Yes	X	X									9	
4																		
5																		
6																		
7																		
8																		
9																		
10																		

Regular (Standard) TAT:

Job Specific Rush TAT (if applies to entire submission)

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
Kristof Karpiuk	19/05/09								Present		
									Intact		

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGEMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

† IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

‡ SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.MAXXAM.CA/EPP/CONTAINERS/DRINKING-WATER.PDF

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Your Project #: THB-00006189-PE
Site#: Geraldton Landfill

Attention: Ahileas Mitsopoulos

exp Services Inc
Thunder Bay Branch
1142 Roland St
Thunder Bay, ON
CANADA P7B 5M4

Your C.O.C. #: 741920-01-01, 741920-02-01, 741919-01-01, N/A

Report Date: 2019/11/11
Report #: R5960299
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B9U7662
Received: 2019/10/31, 11:40

Sample Matrix: Water
Samples Received: 17

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Dissolved Aluminum (0.2 u, clay free)	3	N/A	2019/11/04	CAM SOP-00447	EPA 6020B m
Alkalinity	17	N/A	2019/11/02	CAM SOP-00448	SM 23 2320 B m
Biochemical Oxygen Demand (BOD)	3	2019/11/01	2019/11/06	CAM SOP-00427	SM 23 5210B m
Chloride by Automated Colourimetry	5	N/A	2019/11/04	CAM SOP-00463	SM 23 4500-Cl E m
Chloride by Automated Colourimetry	3	N/A	2019/11/05	CAM SOP-00463	SM 23 4500-Cl E m
Chloride by Automated Colourimetry	9	N/A	2019/11/06	CAM SOP-00463	SM 23 4500-Cl E m
Chemical Oxygen Demand	17	N/A	2019/11/05	CAM SOP-00416	SM 23 5220 D m
Conductivity	17	N/A	2019/11/02	CAM SOP-00414	SM 23 2510 m
Dissolved Organic Carbon (DOC) (1)	17	N/A	2019/11/02	CAM SOP-00446	SM 23 5310 B m
Hardness (calculated as CaCO3)	3	N/A	2019/11/04	CAM SOP 00102/00408/00447	SM 2340 B
Hardness (calculated as CaCO3)	14	N/A	2019/11/07	CAM SOP 00102/00408/00447	SM 2340 B
Mercury in Water by CVAA	14	2019/11/04	2019/11/06	CAM SOP-00453	EPA 7470A m
Mercury in Water by CVAA	2	2019/11/05	2019/11/05	CAM SOP-00453	EPA 7470A m
Mercury in Water by CVAA	1	2019/11/05	2019/11/06	CAM SOP-00453	EPA 7470A m
Dissolved Metals by ICPMS	14	N/A	2019/11/07	CAM SOP-00447	EPA 6020B m
Total Metals Analysis by ICPMS	2	N/A	2019/11/06	CAM SOP-00447	EPA 6020B m
Total Metals Analysis by ICPMS	1	N/A	2019/11/08	CAM SOP-00447	EPA 6020B m
Ion Balance (% Difference)	14	N/A	2019/11/07		
Total Ammonia-N	17	N/A	2019/11/05	CAM SOP-00441	USGS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (2)	7	N/A	2019/11/05	CAM SOP-00440	SM 23 4500-NO3I/NO2B
Nitrate (NO3) and Nitrite (NO2) in Water (2)	10	N/A	2019/11/07	CAM SOP-00440	SM 23 4500-NO3I/NO2B
Organic Nitrogen	1	N/A	2019/11/07		
Organic Nitrogen	9	N/A	2019/11/08		
Organic Nitrogen	7	N/A	2019/11/11		
pH	17	2019/11/01	2019/11/02	CAM SOP-00413	SM 4500H+ B m

Your Project #: THB-00006189-PE
Site#: Geraldton Landfill

Attention: Ahileas Mitsopoulos

exp Services Inc
Thunder Bay Branch
1142 Roland St
Thunder Bay, ON
CANADA P7B 5M4

Your C.O.C. #: 741920-01-01, 741920-02-01, 741919-01-01, N/A

Report Date: 2019/11/11
Report #: R5960299
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B9U7662
Received: 2019/10/31, 11:40

Sample Matrix: Water
Samples Received: 17

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Phenols (4AAP)	2	N/A	2019/11/04	CAM SOP-00444	OMOE E3179 m
Phenols (4AAP)	15	N/A	2019/11/05	CAM SOP-00444	OMOE E3179 m
Orthophosphate	14	N/A	2019/11/05	CAM SOP-00461	EPA 365.1 m
Sulphate by Automated Colourimetry	5	N/A	2019/11/04	CAM SOP-00464	EPA 375.4 m
Sulphate by Automated Colourimetry	3	N/A	2019/11/05	CAM SOP-00464	EPA 375.4 m
Sulphate by Automated Colourimetry	9	N/A	2019/11/06	CAM SOP-00464	EPA 375.4 m
Total Dissolved Solids	14	2019/11/02	2019/11/05	CAM SOP-00428	SM 23 2540C m
Total Dissolved Solids	3	2019/11/04	2019/11/05	CAM SOP-00428	SM 23 2540C m
Total Kjeldahl Nitrogen in Water	1	2019/11/04	2019/11/06	CAM SOP-00938	OMOE E3516 m
Total Kjeldahl Nitrogen in Water	16	2019/11/04	2019/11/08	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	3	2019/11/05	2019/11/07	CAM SOP-00407	SM 23 4500 P B H m
Total Phosphorus (Colourimetric)	7	2019/11/04	2019/11/05	CAM SOP-00407	SM 23 4500 P B H m
Total Phosphorus (Colourimetric)	6	2019/11/05	2019/11/05	CAM SOP-00407	SM 23 4500 P B H m
Total Phosphorus (Colourimetric)	1	2019/11/05	2019/11/06	CAM SOP-00407	SM 23 4500 P B H m
Low Level Total Suspended Solids	3	2019/11/04	2019/11/05	CAM SOP-00428	SM 23 2540D m
Volatile Organic Compounds in Water	1	N/A	2019/11/06	CAM SOP-00226	EPA 8260C m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and

Your Project #: THB-00006189-PE
Site#: Geraldton Landfill

Attention: Ahileas Mitsopoulos

exp Services Inc
Thunder Bay Branch
1142 Roland St
Thunder Bay, ON
CANADA P7B 5M4

Your C.O.C. #: 741920-01-01, 741920-02-01, 741919-01-01, N/A

Report Date: 2019/11/11
Report #: R5960299
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B9U7662
Received: 2019/10/31, 11:40

use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
(1) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.
(2) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Michelle Huth, Project Manager Assistant
Email: Michelle.Huth@bvlabs.com
Phone# (807)344-4220
==========
This report has been generated and distributed using a secure automated process.
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

BV Labs Job #: B9U7662
Report Date: 2019/11/11

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: CP

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID		LES405			LES406			LES406		
Sampling Date		2019/10/27 13:55			2019/10/27 13:05			2019/10/27 13:05		
COC Number		741920-01-01			741920-01-01			741920-01-01		
	UNITS	**MW1**	**RDL**	**QC Batch**	**MW2**	**RDL**	**QC Batch**	**MW2 Lab-Dup**	**RDL**	**QC Batch**
Inorganics										
Total Ammonia-N	mg/L	5.7	0.050	6423037	0.44	0.050	6423031			
Total Chemical Oxygen Demand (COD)	mg/L	33	4.0	6423353	17	4.0	6423353			
Conductivity	umho/cm	1600	1.0	6420727	420	1.0	6420641			
Total Dissolved Solids	mg/L	835	10	6421901	250	10	6421901			
Total Kjeldahl Nitrogen (TKN)	mg/L	5.9	0.20	6423363	0.53	0.10	6423363			
Dissolved Organic Carbon	mg/L	8.9	0.50	6421499	5.2	0.50	6421499			
pH	pH	7.30		6420728	7.77		6420646			
Phenols-4AAP	mg/L	<0.0010	0.0010	6422303	<0.0010	0.0010	6422303			
Total Phosphorus	mg/L	0.035	0.020	6423146	<0.020	0.020	6424954	<0.020	0.020	6424954
Dissolved Sulphate (SO4)	mg/L	35	1.0	6420802	<1.0	1.0	6421669	<1.0	1.0	6421669
Alkalinity (Total as CaCO3)	mg/L	540	1.0	6420722	210	1.0	6420639			
Dissolved Chloride (Cl-)	mg/L	150	2.0	6420795	5.1	1.0	6421667	5.2	1.0	6421667
Nitrite (N)	mg/L	0.014	0.010	6420662	<0.010	0.010	6420662			
Nitrate (N)	mg/L	0.47	0.10	6420662	<0.10	0.10	6420662			
Metals										
Mercury (Hg)	mg/L	<0.0001	0.0001	6422981	<0.0001	0.0001	6422981			
Dissolved Aluminum (Al)	ug/L	8.4	5.0	6421811	11	5.0	6421811			
Dissolved Antimony (Sb)	ug/L	<0.50	0.50	6421811	<0.50	0.50	6421811			
Dissolved Arsenic (As)	ug/L	21	1.0	6421811	2.8	1.0	6421811			
Dissolved Barium (Ba)	ug/L	170	2.0	6421811	14	2.0	6421811			
Dissolved Beryllium (Be)	ug/L	<0.50	0.50	6421811	<0.50	0.50	6421811			
Dissolved Bismuth (Bi)	ug/L	<1.0	1.0	6421811	<1.0	1.0	6421811			
Dissolved Boron (B)	ug/L	180	10	6421811	29	10	6421811			
Dissolved Cadmium (Cd)	ug/L	<0.10	0.10	6421811	<0.10	0.10	6421811			
Dissolved Calcium (Ca)	ug/L	180000	200	6421811	72000	200	6421811			
Dissolved Chromium (Cr)	ug/L	<5.0	5.0	6421811	<5.0	5.0	6421811			
Dissolved Cobalt (Co)	ug/L	19	0.50	6421811	1.8	0.50	6421811			
Dissolved Copper (Cu)	ug/L	1.2	1.0	6421811	11	1.0	6421811			
Dissolved Iron (Fe)	ug/L	23000	100	6421811	220	100	6421811			
Dissolved Lead (Pb)	ug/L	<0.50	0.50	6421811	<0.50	0.50	6421811			
Dissolved Magnesium (Mg)	ug/L	20000	50	6421811	9200	50	6421811			
Dissolved Manganese (Mn)	ug/L	2400	2.0	6421811	1300	2.0	6421811			
Dissolved Molybdenum (Mo)	ug/L	1.3	0.50	6421811	<0.50	0.50	6421811			
Dissolved Nickel (Ni)	ug/L	7.8	1.0	6421811	2.2	1.0	6421811			

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

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BV Labs Job #: B9U7662
Report Date: 2019/11/11

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: CP

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID		LES405			LES406			LES406		
Sampling Date		2019/10/27 13:55			2019/10/27 13:05			2019/10/27 13:05		
COC Number		741920-01-01			741920-01-01			741920-01-01		
	UNITS	**MW1**	**RDL**	**QC Batch**	**MW2**	**RDL**	**QC Batch**	**MW2 Lab-Dup**	**RDL**	**QC Batch**
Dissolved Potassium (K)	ug/L	21000	200	6421811	1500	200	6421811			
Dissolved Selenium (Se)	ug/L	<2.0	2.0	6421811	<2.0	2.0	6421811			
Dissolved Silicon (Si)	ug/L	9700	50	6421811	4000	50	6421811			
Dissolved Sodium (Na)	ug/L	110000	100	6421811	3700	100	6421811			
Dissolved Strontium (Sr)	ug/L	320	1.0	6421811	57	1.0	6421811			
Dissolved Thallium (Tl)	ug/L	0.15	0.050	6421811	<0.050	0.050	6421811			
Dissolved Tin (Sn)	ug/L	<1.0	1.0	6421811	<1.0	1.0	6421811			
Dissolved Vanadium (V)	ug/L	1.3	0.50	6421811	0.98	0.50	6421811			
Dissolved Zinc (Zn)	ug/L	<5.0	5.0	6421811	9.2	5.0	6421811			

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

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BV Labs Job #: B9U7662
Report Date: 2019/11/11

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: CP

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID		LES407		LES408			LES408		
Sampling Date		2019/10/27 11:35		2019/10/27 11:35			2019/10/27 11:35		
COC Number		741920-01-01		741920-01-01			741920-01-01		
	UNITS	**MW3A**	**QC Batch**	**MW3B**	**RDL**	**QC Batch**	**MW3B Lab-Dup**	**RDL**	**QC Batch**
Inorganics									
Total Ammonia-N	mg/L	10	6423031	8.8	0.050	6423037			
Total Chemical Oxygen Demand (COD)	mg/L	32	6423160	26	4.0	6423160			
Conductivity	umho/cm	1200	6420727	1200	1.0	6420727			
Total Dissolved Solids	mg/L	570	6421977	710	10	6421901			
Total Kjeldahl Nitrogen (TKN)	mg/L	11	6423177	9.3	0.50	6423177			
Dissolved Organic Carbon	mg/L	7.1	6421499	9.1	0.50	6421499			
pH	pH	7.36	6420728	7.49		6420728			
Phenols-4AAP	mg/L	<0.0010	6422307	0.0011	0.0010	6422307	0.0012	0.0010	6422307
Total Phosphorus	mg/L	0.022	6424954	0.13	0.020	6423146			
Dissolved Sulphate (SO4)	mg/L	20	6421676	27	1.0	6421676			
Alkalinity (Total as CaCO3)	mg/L	500	6420722	540	1.0	6420722			
Dissolved Chloride (Cl-)	mg/L	82	6421674	69	1.0	6421674			
Nitrite (N)	mg/L	<0.010	6420758	0.020	0.010	6421546	0.021	0.010	6421546
Nitrate (N)	mg/L	<0.10	6420758	0.52	0.10	6421546	0.51	0.10	6421546
Metals									
Mercury (Hg)	mg/L	<0.0001	6422981	<0.0001	0.0001	6422981			
Dissolved Aluminum (Al)	ug/L	5.3	6421811	5.3	5.0	6421811			
Dissolved Antimony (Sb)	ug/L	<0.50	6421811	<0.50	0.50	6421811			
Dissolved Arsenic (As)	ug/L	17	6421811	6.6	1.0	6421811			
Dissolved Barium (Ba)	ug/L	140	6421811	140	2.0	6421811			
Dissolved Beryllium (Be)	ug/L	<0.50	6421811	<0.50	0.50	6421811			
Dissolved Bismuth (Bi)	ug/L	<1.0	6421811	<1.0	1.0	6421811			
Dissolved Boron (B)	ug/L	290	6421811	370	10	6421811			
Dissolved Cadmium (Cd)	ug/L	<0.10	6421811	<0.10	0.10	6421811			
Dissolved Calcium (Ca)	ug/L	140000	6421811	170000	200	6421811			
Dissolved Chromium (Cr)	ug/L	<5.0	6421811	<5.0	5.0	6421811			
Dissolved Cobalt (Co)	ug/L	5.1	6421811	7.0	0.50	6421811			
Dissolved Copper (Cu)	ug/L	<1.0	6421811	2.4	1.0	6421811			
Dissolved Iron (Fe)	ug/L	16000	6421811	5600	100	6421811			
Dissolved Lead (Pb)	ug/L	<0.50	6421811	<0.50	0.50	6421811			
Dissolved Magnesium (Mg)	ug/L	24000	6421811	28000	50	6421811			
Dissolved Manganese (Mn)	ug/L	1200	6421811	1200	2.0	6421811			
Dissolved Molybdenum (Mo)	ug/L	<0.50	6421811	<0.50	0.50	6421811			
Dissolved Nickel (Ni)	ug/L	5.1	6421811	8.3	1.0	6421811			

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

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LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID		LES407		LES408			LES408		
Sampling Date		2019/10/27 11:35		2019/10/27 11:35			2019/10/27 11:35		
COC Number		741920-01-01		741920-01-01			741920-01-01		
	UNITS	**MW3A**	**QC Batch**	**MW3B**	**RDL**	**QC Batch**	**MW3B Lab-Dup**	**RDL**	**QC Batch**
Dissolved Potassium (K)	ug/L	13000	6421811	16000	200	6421811			
Dissolved Selenium (Se)	ug/L	<2.0	6421811	<2.0	2.0	6421811			
Dissolved Silicon (Si)	ug/L	7600	6421811	8000	50	6421811			
Dissolved Sodium (Na)	ug/L	59000	6421811	55000	100	6421811			
Dissolved Strontium (Sr)	ug/L	220	6421811	280	1.0	6421811			
Dissolved Thallium (Tl)	ug/L	<0.050	6421811	0.052	0.050	6421811			
Dissolved Tin (Sn)	ug/L	<1.0	6421811	<1.0	1.0	6421811			
Dissolved Vanadium (V)	ug/L	0.58	6421811	<0.50	0.50	6421811			
Dissolved Zinc (Zn)	ug/L	<5.0	6421811	<5.0	5.0	6421811			

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

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID		LES409		LES410		LES411		
Sampling Date		2019/10/27 15:10		2019/10/27 13:05		2019/10/27 14:10		
COC Number		741920-01-01		741920-01-01		741920-01-01		
	UNITS	**MW4**	**QC Batch**	**MW5**	**QC Batch**	**MW6**	**RDL**	**QC Batch**
Inorganics								
Total Ammonia-N	mg/L	<0.050	6423037	2.9	6423037	<0.050	0.050	6423031
Total Chemical Oxygen Demand (COD)	mg/L	4.4	6423353	9.6	6423353	8.9	4.0	6423353
Conductivity	umho/cm	900	6420727	1100	6420641	520	1.0	6420727
Total Dissolved Solids	mg/L	500	6421977	565	6421977	265	10	6421977
Total Kjeldahl Nitrogen (TKN)	mg/L	0.20	6423363	2.9	6423172	0.22	0.10	6423177
Dissolved Organic Carbon	mg/L	1.8	6421499	4.1	6421499	3.0	0.50	6421499
pH	pH	7.61	6420728	7.57	6420646	7.99		6420728
Phenols-4AAP	mg/L	<0.0010	6422303	<0.0010	6422303	<0.0010	0.0010	6422303
Total Phosphorus	mg/L	0.20	6423146	0.049	6423146	<0.020	0.020	6424954
Dissolved Sulphate (SO4)	mg/L	50	6420802	120	6421676	13	1.0	6421676
Alkalinity (Total as CaCO3)	mg/L	420	6420722	420	6420639	260	1.0	6420722
Dissolved Chloride (Cl-)	mg/L	14	6420795	33	6421674	1.2	1.0	6421674
Nitrite (N)	mg/L	<0.010	6420662	<0.010	6420674	<0.010	0.010	6420758
Nitrate (N)	mg/L	0.20	6420662	<0.10	6420674	<0.10	0.10	6420758
Metals								
Mercury (Hg)	mg/L	<0.0001	6422981	<0.0001	6422981	<0.0001	0.0001	6422981
Dissolved Aluminum (Al)	ug/L	<5.0	6421811	6.4	6421811	9.0	5.0	6421811
Dissolved Antimony (Sb)	ug/L	<0.50	6421811	<0.50	6421811	<0.50	0.50	6421811
Dissolved Arsenic (As)	ug/L	<1.0	6421811	2.6	6421811	2.8	1.0	6421811
Dissolved Barium (Ba)	ug/L	46	6421811	99	6421811	19	2.0	6421811
Dissolved Beryllium (Be)	ug/L	<0.50	6421811	<0.50	6421811	<0.50	0.50	6421811
Dissolved Bismuth (Bi)	ug/L	<1.0	6421811	<1.0	6421811	<1.0	1.0	6421811
Dissolved Boron (B)	ug/L	230	6421811	840	6421811	17	10	6421811
Dissolved Cadmium (Cd)	ug/L	<0.10	6421811	<0.10	6421811	<0.10	0.10	6421811
Dissolved Calcium (Ca)	ug/L	170000	6421811	130000	6421811	88000	200	6421811
Dissolved Chromium (Cr)	ug/L	<5.0	6421811	<5.0	6421811	<5.0	5.0	6421811
Dissolved Cobalt (Co)	ug/L	2.5	6421811	<0.50	6421811	2.1	0.50	6421811
Dissolved Copper (Cu)	ug/L	1.6	6421811	<1.0	6421811	<1.0	1.0	6421811
Dissolved Iron (Fe)	ug/L	<100	6421811	5900	6421811	<100	100	6421811
Dissolved Lead (Pb)	ug/L	<0.50	6421811	<0.50	6421811	<0.50	0.50	6421811
Dissolved Magnesium (Mg)	ug/L	17000	6421811	42000	6421811	14000	50	6421811
Dissolved Manganese (Mn)	ug/L	340	6421811	930	6421811	500	2.0	6421811
Dissolved Molybdenum (Mo)	ug/L	<0.50	6421811	<0.50	6421811	0.59	0.50	6421811
Dissolved Nickel (Ni)	ug/L	4.1	6421811	3.1	6421811	4.1	1.0	6421811
Dissolved Potassium (K)	ug/L	1900	6421811	14000	6421811	1000	200	6421811

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID		LES409		LES410		LES411		
Sampling Date		2019/10/27 15:10		2019/10/27 13:05		2019/10/27 14:10		
COC Number		741920-01-01		741920-01-01		741920-01-01		
	UNITS	**MW4**	**QC Batch**	**MW5**	**QC Batch**	**MW6**	**RDL**	**QC Batch**
Dissolved Selenium (Se)	ug/L	<2.0	6421811	<2.0	6421811	<2.0	2.0	6421811
Dissolved Silicon (Si)	ug/L	6000	6421811	5700	6421811	6400	50	6421811
Dissolved Sodium (Na)	ug/L	7300	6421811	39000	6421811	4500	100	6421811
Dissolved Strontium (Sr)	ug/L	130	6421811	250	6421811	73	1.0	6421811
Dissolved Thallium (Tl)	ug/L	0.14	6421811	<0.050	6421811	0.13	0.050	6421811
Dissolved Tin (Sn)	ug/L	<1.0	6421811	<1.0	6421811	<1.0	1.0	6421811
Dissolved Vanadium (V)	ug/L	<0.50	6421811	<0.50	6421811	<0.50	0.50	6421811
Dissolved Zinc (Zn)	ug/L	<5.0	6421811	<5.0	6421811	<5.0	5.0	6421811

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs Job #: B9U7662
Report Date: 2019/11/11

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: CP

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID		LES411			LES412			LES412		
Sampling Date		2019/10/27 14:10			2019/10/27 15:00			2019/10/27 15:00		
COC Number		741920-01-01			741920-01-01			741920-01-01		
	UNITS	**MW6 Lab-Dup**	**RDL**	**QC Batch**	**MW7**	**RDL**	**QC Batch**	**MW7 Lab-Dup**	**RDL**	**QC Batch**
Inorganics										
Total Ammonia-N	mg/L				6.6	0.050	6423031			
Total Chemical Oxygen Demand (COD)	mg/L	9.2	4.0	6423353	16	4.0	6423353			
Conductivity	umho/cm				940	1.0	6420641			
Total Dissolved Solids	mg/L				495	10	6421901			
Total Kjeldahl Nitrogen (TKN)	mg/L				6.9	0.20	6423177			
Dissolved Organic Carbon	mg/L	3.1	0.50	6421499	5.7	0.50	6421499			
pH	pH				7.28		6420646			
Phenols-4AAP	mg/L				<0.0010	0.0010	6422303			
Total Phosphorus	mg/L				0.060	0.020	6423146	0.047	0.020	6423146
Dissolved Sulphate (SO4)	mg/L				30	1.0	6421676	30	1.0	6421676
Alkalinity (Total as CaCO3)	mg/L				440	1.0	6420639			
Dissolved Chloride (Cl-)	mg/L				25	1.0	6421674	25	1.0	6421674
Nitrite (N)	mg/L				<0.010	0.010	6420662			
Nitrate (N)	mg/L				<0.10	0.10	6420662			
Metals										
Mercury (Hg)	mg/L				<0.0001	0.0001	6422981			
Dissolved Aluminum (Al)	ug/L				9.9	5.0	6421811			
Dissolved Antimony (Sb)	ug/L				<0.50	0.50	6421811			
Dissolved Arsenic (As)	ug/L				46	1.0	6421811			
Dissolved Barium (Ba)	ug/L				180	2.0	6421811			
Dissolved Beryllium (Be)	ug/L				<0.50	0.50	6421811			
Dissolved Bismuth (Bi)	ug/L				<1.0	1.0	6421811			
Dissolved Boron (B)	ug/L				260	10	6421811			
Dissolved Cadmium (Cd)	ug/L				<0.10	0.10	6421811			
Dissolved Calcium (Ca)	ug/L				140000	200	6421811			
Dissolved Chromium (Cr)	ug/L				<5.0	5.0	6421811			
Dissolved Cobalt (Co)	ug/L				13	0.50	6421811			
Dissolved Copper (Cu)	ug/L				<1.0	1.0	6421811			
Dissolved Iron (Fe)	ug/L				21000	100	6421811			
Dissolved Lead (Pb)	ug/L				<0.50	0.50	6421811			
Dissolved Magnesium (Mg)	ug/L				20000	50	6421811			
Dissolved Manganese (Mn)	ug/L				1700	2.0	6421811			
Dissolved Molybdenum (Mo)	ug/L				0.50	0.50	6421811			
Dissolved Nickel (Ni)	ug/L				7.7	1.0	6421811			

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LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID		LES411			LES412			LES412		
Sampling Date		2019/10/27 14:10			2019/10/27 15:00			2019/10/27 15:00		
COC Number		741920-01-01			741920-01-01			741920-01-01		
	UNITS	**MW6 Lab-Dup**	**RDL**	**QC Batch**	**MW7**	**RDL**	**QC Batch**	**MW7 Lab-Dup**	**RDL**	**QC Batch**
Dissolved Potassium (K)	ug/L				11000	200	6421811			
Dissolved Selenium (Se)	ug/L				<2.0	2.0	6421811			
Dissolved Silicon (Si)	ug/L				10000	50	6421811			
Dissolved Sodium (Na)	ug/L				27000	100	6421811			
Dissolved Strontium (Sr)	ug/L				190	1.0	6421811			
Dissolved Thallium (Tl)	ug/L				<0.050	0.050	6421811			
Dissolved Tin (Sn)	ug/L				<1.0	1.0	6421811			
Dissolved Vanadium (V)	ug/L				0.90	0.50	6421811			
Dissolved Zinc (Zn)	ug/L				<5.0	5.0	6421811			

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QC Batch = Quality Control Batch
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BV Labs Job #: B9U7662
Report Date: 2019/11/11

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: CP

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID		LES413			LES414			LES414		
Sampling Date		2019/10/30 11:05			2019/10/27 16:20			2019/10/27 16:20		
COC Number		741920-01-01			741920-01-01			741920-01-01		
	UNITS	**MW8**	**RDL**	**QC Batch**	**MW9**	**RDL**	**QC Batch**	**MW9 Lab-Dup**	**RDL**	**QC Batch**
Inorganics										
Total Ammonia-N	mg/L	<0.050	0.050	6423037	<0.050	0.050	6423031	<0.050	0.050	6423031
Total Chemical Oxygen Demand (COD)	mg/L	12	4.0	6423353	<4.0	4.0	6423353			
Conductivity	umho/cm	5000	1.0	6420727	720	1.0	6420727			
Total Dissolved Solids	mg/L	2550	10	6421901	415	10	6421977			
Total Kjeldahl Nitrogen (TKN)	mg/L	0.67	0.10	6423363	<0.10	0.10	6423363	0.14	0.10	6423363
Dissolved Organic Carbon	mg/L	2.8	0.50	6421499	0.83	0.50	6421499			
pH	pH	7.95		6420728	8.07		6420728			
Phenols-4AAP	mg/L	<0.0010	0.0010	6422303	<0.0010	0.0010	6422303			
Total Phosphorus	mg/L	1.5	0.040	6424954	<0.020	0.020	6423146			
Dissolved Sulphate (SO4)	mg/L	38	1.0	6421676	5.0	1.0	6421676			
Alkalinity (Total as CaCO3)	mg/L	420	1.0	6420722	260	1.0	6420722			
Dissolved Chloride (Cl-)	mg/L	1300	15	6421674	73	1.0	6421674			
Nitrite (N)	mg/L	<0.010	0.010	6420758	<0.010	0.010	6420758			
Nitrate (N)	mg/L	1.64	0.10	6420758	0.10	0.10	6420758			
Metals										
Mercury (Hg)	mg/L	<0.0001	0.0001	6422981	<0.0001	0.0001	6424887			
Dissolved Aluminum (Al)	ug/L	<5.0	5.0	6421811	6.1	5.0	6421811			
Dissolved Antimony (Sb)	ug/L	<0.50	0.50	6421811	<0.50	0.50	6421811			
Dissolved Arsenic (As)	ug/L	<1.0	1.0	6421811	<1.0	1.0	6421811			
Dissolved Barium (Ba)	ug/L	90	2.0	6421811	18	2.0	6421811			
Dissolved Beryllium (Be)	ug/L	<0.50	0.50	6421811	<0.50	0.50	6421811			
Dissolved Bismuth (Bi)	ug/L	<1.0	1.0	6421811	<1.0	1.0	6421811			
Dissolved Boron (B)	ug/L	11	10	6421811	<10	10	6421811			
Dissolved Cadmium (Cd)	ug/L	<0.10	0.10	6421811	<0.10	0.10	6421811			
Dissolved Calcium (Ca)	ug/L	200000	200	6421811	88000	200	6421811			
Dissolved Chromium (Cr)	ug/L	<5.0	5.0	6421811	<5.0	5.0	6421811			
Dissolved Cobalt (Co)	ug/L	<0.50	0.50	6421811	<0.50	0.50	6421811			
Dissolved Copper (Cu)	ug/L	1.5	1.0	6421811	<1.0	1.0	6421811			
Dissolved Iron (Fe)	ug/L	<100	100	6421811	<100	100	6421811			
Dissolved Lead (Pb)	ug/L	<0.50	0.50	6421811	<0.50	0.50	6421811			
Dissolved Magnesium (Mg)	ug/L	18000	50	6421811	17000	50	6421811			
Dissolved Manganese (Mn)	ug/L	<2.0	2.0	6421811	<2.0	2.0	6421811			
Dissolved Molybdenum (Mo)	ug/L	<0.50	0.50	6421811	<0.50	0.50	6421811			
Dissolved Nickel (Ni)	ug/L	<1.0	1.0	6421811	<1.0	1.0	6421811			

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

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LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID		LES413			LES414			LES414		
Sampling Date		2019/10/30 11:05			2019/10/27 16:20			2019/10/27 16:20		
COC Number		741920-01-01			741920-01-01			741920-01-01		
	UNITS	**MW8**	**RDL**	**QC Batch**	**MW9**	**RDL**	**QC Batch**	**MW9 Lab-Dup**	**RDL**	**QC Batch**
Dissolved Potassium (K)	ug/L	3000	200	6421811	970	200	6421811			
Dissolved Selenium (Se)	ug/L	<2.0	2.0	6421811	<2.0	2.0	6421811			
Dissolved Silicon (Si)	ug/L	2800	50	6421811	4700	50	6421811			
Dissolved Sodium (Na)	ug/L	820000	500	6421811	35000	100	6421811			
Dissolved Strontium (Sr)	ug/L	240	1.0	6421811	77	1.0	6421811			
Dissolved Thallium (Tl)	ug/L	<0.050	0.050	6421811	<0.050	0.050	6421811			
Dissolved Tin (Sn)	ug/L	<1.0	1.0	6421811	<1.0	1.0	6421811			
Dissolved Vanadium (V)	ug/L	<0.50	0.50	6421811	<0.50	0.50	6421811			
Dissolved Zinc (Zn)	ug/L	<5.0	5.0	6421811	<5.0	5.0	6421811			

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

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID		LES415			LES416		
Sampling Date		2019/10/27 17:40			2019/10/27 18:15		
COC Number		741920-02-01			741920-02-01		
	UNITS	**MW10A**	**RDL**	**QC Batch**	**MW10B**	**RDL**	**QC Batch**
Inorganics							
Total Ammonia-N	mg/L	0.33	0.050	6423031	0.21	0.050	6423037
Total Chemical Oxygen Demand (COD)	mg/L	31	4.0	6423353	41	4.0	6423353
Conductivity	umho/cm	750	1.0	6420641	1300	1.0	6420641
Total Dissolved Solids	mg/L	390	10	6421977	615	10	6421977
Total Kjeldahl Nitrogen (TKN)	mg/L	0.66	0.10	6423363	0.53	0.10	6423363
Dissolved Organic Carbon	mg/L	14	0.50	6421499	17	0.50	6421499
pH	pH	7.02		6420646	7.46		6420646
Phenols-4AAP	mg/L	<0.0010	0.0010	6422303	<0.0010	0.0010	6422303
Total Phosphorus	mg/L	0.14	0.020	6423146	0.029	0.020	6424954
Dissolved Sulphate (SO4)	mg/L	<1.0	1.0	6420802	<1.0	1.0	6420802
Alkalinity (Total as CaCO3)	mg/L	220	1.0	6420639	330	1.0	6420639
Dissolved Chloride (Cl-)	mg/L	100	1.0	6420795	190	2.0	6420795
Nitrite (N)	mg/L	<0.010	0.010	6420758	<0.010	0.010	6420662
Nitrate (N)	mg/L	<0.10	0.10	6420758	<0.10	0.10	6420662
Metals							
Mercury (Hg)	mg/L	<0.0001	0.0001	6422981	<0.0001	0.0001	6422981
Dissolved Aluminum (Al)	ug/L	130	5.0	6421811	66	5.0	6421811
Dissolved Antimony (Sb)	ug/L	<0.50	0.50	6421811	<0.50	0.50	6421811
Dissolved Arsenic (As)	ug/L	23	1.0	6421811	35	1.0	6421811
Dissolved Barium (Ba)	ug/L	29	2.0	6421811	28	2.0	6421811
Dissolved Beryllium (Be)	ug/L	<0.50	0.50	6421811	<0.50	0.50	6421811
Dissolved Bismuth (Bi)	ug/L	<1.0	1.0	6421811	<1.0	1.0	6421811
Dissolved Boron (B)	ug/L	<10	10	6421811	<10	10	6421811
Dissolved Cadmium (Cd)	ug/L	<0.10	0.10	6421811	<0.10	0.10	6421811
Dissolved Calcium (Ca)	ug/L	82000	200	6421811	140000	200	6421811
Dissolved Chromium (Cr)	ug/L	<5.0	5.0	6421811	<5.0	5.0	6421811
Dissolved Cobalt (Co)	ug/L	<0.50	0.50	6421811	<0.50	0.50	6421811
Dissolved Copper (Cu)	ug/L	<1.0	1.0	6421811	<1.0	1.0	6421811
Dissolved Iron (Fe)	ug/L	2400	100	6421811	3500	100	6421811
Dissolved Lead (Pb)	ug/L	<0.50	0.50	6421811	<0.50	0.50	6421811
Dissolved Magnesium (Mg)	ug/L	17000	50	6421811	12000	50	6421811
Dissolved Manganese (Mn)	ug/L	84	2.0	6421811	91	2.0	6421811
Dissolved Molybdenum (Mo)	ug/L	<0.50	0.50	6421811	<0.50	0.50	6421811
Dissolved Nickel (Ni)	ug/L	1.5	1.0	6421811	<1.0	1.0	6421811
Dissolved Potassium (K)	ug/L	410	200	6421811	<200	200	6421811

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID		LES415			LES416		
Sampling Date		2019/10/27 17:40			2019/10/27 18:15		
COC Number		741920-02-01			741920-02-01		
	UNITS	**MW10A**	**RDL**	**QC Batch**	**MW10B**	**RDL**	**QC Batch**
Dissolved Selenium (Se)	ug/L	<2.0	2.0	6421811	<2.0	2.0	6421811
Dissolved Silicon (Si)	ug/L	2700	50	6421811	1600	50	6421811
Dissolved Sodium (Na)	ug/L	46000	100	6421811	110000	100	6421811
Dissolved Strontium (Sr)	ug/L	76	1.0	6421811	100	1.0	6421811
Dissolved Thallium (Tl)	ug/L	<0.050	0.050	6421811	<0.050	0.050	6421811
Dissolved Tin (Sn)	ug/L	<1.0	1.0	6421811	<1.0	1.0	6421811
Dissolved Vanadium (V)	ug/L	2.0	0.50	6421811	0.98	0.50	6421811
Dissolved Zinc (Zn)	ug/L	<5.0	5.0	6421811	<5.0	5.0	6421811

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs Job #: B9U7662
Report Date: 2019/11/11

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: CP

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID		LES417			LES417			LES421		
Sampling Date		2019/10/27 15:50			2019/10/27 15:50			2019/10/27 10:00		
COC Number		741920-02-01			741920-02-01			N/A		
	UNITS	**MW11**	**RDL**	**QC Batch**	**MW11 Lab-Dup**	**RDL**	**QC Batch**	**MW-12**	**RDL**	**QC Batch**
Inorganics										
Total Ammonia-N	mg/L	0.098	0.050	6422724				10	0.050	6423031
Total Chemical Oxygen Demand (COD)	mg/L	5.0	4.0	6423353				19	4.0	6423353
Conductivity	umho/cm	470	1.0	6420727				1200	1.0	6420727
Total Dissolved Solids	mg/L	240	10	6421977				615	10	6421901
Total Kjeldahl Nitrogen (TKN)	mg/L	0.50	0.10	6423177				11	0.50	6423177
Dissolved Organic Carbon	mg/L	1.8	0.50	6421519	2.1	0.50	6421519	7.7	0.50	6421499
pH	pH	7.99		6420728				7.40		6420728
Phenols-4AAP	mg/L	<0.0010	0.0010	6422303				<0.0010	0.0010	6422303
Total Phosphorus	mg/L	14	0.10	6424954				0.14	0.020	6424954
Dissolved Sulphate (SO4)	mg/L	1.3	1.0	6421676				20	1.0	6421676
Alkalinity (Total as CaCO3)	mg/L	250	1.0	6420722				490	1.0	6420722
Dissolved Chloride (Cl-)	mg/L	1.0	1.0	6421674				83	1.0	6421674
Nitrite (N)	mg/L	<0.010	0.010	6420758				<0.010	0.010	6420758
Nitrate (N)	mg/L	<0.10	0.10	6420758				<0.10	0.10	6420758
Metals										
Mercury (Hg)	mg/L	<0.0001	0.0001	6424887				<0.0001	0.0001	6424902
Dissolved Aluminum (Al)	ug/L	<5.0	5.0	6421811				<5.0	5.0	6421811
Dissolved Antimony (Sb)	ug/L	<0.50	0.50	6421811				<0.50	0.50	6421811
Dissolved Arsenic (As)	ug/L	1.2	1.0	6421811				18	1.0	6421811
Dissolved Barium (Ba)	ug/L	32	2.0	6421811				140	2.0	6421811
Dissolved Beryllium (Be)	ug/L	<0.50	0.50	6421811				<0.50	0.50	6421811
Dissolved Bismuth (Bi)	ug/L	<1.0	1.0	6421811				<1.0	1.0	6421811
Dissolved Boron (B)	ug/L	15	10	6421811				280	10	6421811
Dissolved Cadmium (Cd)	ug/L	<0.10	0.10	6421811				<0.10	0.10	6421811
Dissolved Calcium (Ca)	ug/L	73000	200	6421811				150000	200	6421811
Dissolved Chromium (Cr)	ug/L	<5.0	5.0	6421811				<5.0	5.0	6421811
Dissolved Cobalt (Co)	ug/L	<0.50	0.50	6421811				5.8	0.50	6421811
Dissolved Copper (Cu)	ug/L	<1.0	1.0	6421811				<1.0	1.0	6421811
Dissolved Iron (Fe)	ug/L	100	100	6421811				15000	100	6421811
Dissolved Lead (Pb)	ug/L	<0.50	0.50	6421811				<0.50	0.50	6421811
Dissolved Magnesium (Mg)	ug/L	15000	50	6421811				23000	50	6421811
Dissolved Manganese (Mn)	ug/L	120	2.0	6421811				1200	2.0	6421811
Dissolved Molybdenum (Mo)	ug/L	0.91	0.50	6421811				0.51	0.50	6421811
Dissolved Nickel (Ni)	ug/L	<1.0	1.0	6421811				6.3	1.0	6421811

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

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID		LES417			LES417			LES421		
Sampling Date		2019/10/27 15:50			2019/10/27 15:50			2019/10/27 10:00		
COC Number		741920-02-01			741920-02-01			N/A		
	UNITS	**MW11**	**RDL**	**QC Batch**	**MW11 Lab-Dup**	**RDL**	**QC Batch**	**MW-12**	**RDL**	**QC Batch**
Dissolved Potassium (K)	ug/L	860	200	6421811				13000	200	6421811
Dissolved Selenium (Se)	ug/L	<2.0	2.0	6421811				<2.0	2.0	6421811
Dissolved Silicon (Si)	ug/L	6900	50	6421811				7600	50	6421811
Dissolved Sodium (Na)	ug/L	7400	100	6421811				60000	100	6421811
Dissolved Strontium (Sr)	ug/L	79	1.0	6421811				220	1.0	6421811
Dissolved Thallium (Tl)	ug/L	<0.050	0.050	6421811				<0.050	0.050	6421811
Dissolved Tin (Sn)	ug/L	<1.0	1.0	6421811				<1.0	1.0	6421811
Dissolved Vanadium (V)	ug/L	0.75	0.50	6421811				0.62	0.50	6421811
Dissolved Zinc (Zn)	ug/L	<5.0	5.0	6421811				<5.0	5.0	6421811

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

BV Labs ID		LES421		
Sampling Date		2019/10/27 10:00		
COC Number		N/A		
	UNITS	**MW-12 Lab-Dup**	**RDL**	**QC Batch**
Metals				
Dissolved Arsenic (As)	ug/L	18	1.0	6421811
Dissolved Barium (Ba)	ug/L	140	2.0	6421811
Dissolved Boron (B)	ug/L	290	10	6421811
Dissolved Cadmium (Cd)	ug/L	<0.10	0.10	6421811
Dissolved Calcium (Ca)	ug/L	140000	200	6421811
Dissolved Chromium (Cr)	ug/L	<5.0	5.0	6421811
Dissolved Copper (Cu)	ug/L	<1.0	1.0	6421811
Dissolved Iron (Fe)	ug/L	16000	100	6421811
Dissolved Lead (Pb)	ug/L	<0.50	0.50	6421811
Dissolved Magnesium (Mg)	ug/L	23000	50	6421811
Dissolved Manganese (Mn)	ug/L	1200	2.0	6421811
Dissolved Potassium (K)	ug/L	13000	200	6421811
Dissolved Sodium (Na)	ug/L	60000	100	6421811
Dissolved Zinc (Zn)	ug/L	<5.0	5.0	6421811

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

BV Labs Job #: B9U7662
Report Date: 2019/11/11

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: CP

LANDFILL STANDARDS SCH 5 - SW COMP. LIST (WATER)

BV Labs ID		LES418			LES418			LES419		
Sampling Date		2019/10/30 11:55			2019/10/30 11:55			2019/10/28 18:35		
COC Number		741919-01-01			741919-01-01			741919-01-01		
	UNITS	**SW1**	**RDL**	**QC Batch**	**SW1 Lab-Dup**	**RDL**	**QC Batch**	**SW2**	**RDL**	**QC Batch**
Inorganics										
Total Ammonia-N	mg/L	<0.050	0.050	6423037				<0.050	0.050	6423037
Total BOD	mg/L	2	2	6419461				2	2	6419461
Total Chemical Oxygen Demand (COD)	mg/L	34	4.0	6423353				42	4.0	6423353
Conductivity	umho/cm	450	1.0	6420641				200	1.0	6420641
Total Dissolved Solids	mg/L	205	10	6423054				165	10	6423054
Total Kjeldahl Nitrogen (TKN)	mg/L	0.43	0.10	6423363				0.42	0.10	6423363
pH	pH	7.95		6420646				7.93		6420646
Phenols-4AAP	mg/L	<0.0010	0.0010	6422303				<0.0010	0.0010	6422303
Total Phosphorus	mg/L	0.035	0.004	6425186				0.030	0.004	6425186
Total Suspended Solids	mg/L	10	1	6422683				13	1	6422683
Dissolved Sulphate (SO4)	mg/L	9.0	1.0	6421067				<1.0	1.0	6421067
Alkalinity (Total as CaCO3)	mg/L	110	1.0	6420639				74	1.0	6420639
Dissolved Chloride (Cl-)	mg/L	64	1.0	6421059				13	1.0	6421059
Nitrite (N)	mg/L	<0.010	0.010	6420674				<0.010	0.010	6420662
Nitrate (N)	mg/L	<0.10	0.10	6420674				<0.10	0.10	6420662
Metals										
Mercury (Hg)	mg/L	<0.0001	0.0001	6422981				<0.0001	0.0001	6422981
Total Antimony (Sb)	ug/L	<0.50	0.50	6425265	<0.50	0.50	6425265	<0.50	0.50	6424640
Total Arsenic (As)	ug/L	28	1.0	6425265	28	1.0	6425265	34	1.0	6424640
Total Barium (Ba)	ug/L	20	2.0	6425265	21	2.0	6425265	7.5	2.0	6424640
Total Beryllium (Be)	ug/L	<0.50	0.50	6425265	<0.50	0.50	6425265	<0.50	0.50	6424640
Total Bismuth (Bi)	ug/L	<1.0	1.0	6425265	<1.0	1.0	6425265	<1.0	1.0	6424640
Total Boron (B)	ug/L	<10	10	6425265	<10	10	6425265	<10	10	6424640
Total Cadmium (Cd)	ug/L	<0.10	0.10	6425265	<0.10	0.10	6425265	<0.10	0.10	6424640
Total Calcium (Ca)	ug/L	44000	200	6425265	44000	200	6425265	29000	200	6424640
Total Chromium (Cr)	ug/L	<5.0	5.0	6425265	<5.0	5.0	6425265	<5.0	5.0	6424640
Total Copper (Cu)	ug/L	3.0	1.0	6425265	3.0	1.0	6425265	3.1	1.0	6424640
Total Iron (Fe)	ug/L	920	100	6425265	920	100	6425265	460	100	6424640
Total Lead (Pb)	ug/L	<0.50	0.50	6425265	<0.50	0.50	6425265	<0.50	0.50	6424640
Total Magnesium (Mg)	ug/L	8100	50	6425265	8200	50	6425265	5900	50	6424640
Total Manganese (Mn)	ug/L	57	2.0	6425265	56	2.0	6425265	17	2.0	6424640
Total Molybdenum (Mo)	ug/L	<0.50	0.50	6425265	<0.50	0.50	6425265	<0.50	0.50	6424640
Total Nickel (Ni)	ug/L	1.2	1.0	6425265	1.4	1.0	6425265	1.1	1.0	6424640
Total Potassium (K)	ug/L	770	200	6425265	760	200	6425265	520	200	6424640

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

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BV Labs Job #: B9U7662
Report Date: 2019/11/11

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: CP

LANDFILL STANDARDS SCH 5 - SW COMP. LIST (WATER)

BV Labs ID		LES418			LES418			LES419		
Sampling Date		2019/10/30 11:55			2019/10/30 11:55			2019/10/28 18:35		
COC Number		741919-01-01			741919-01-01			741919-01-01		
	UNITS	**SW1**	**RDL**	**QC Batch**	**SW1 Lab-Dup**	**RDL**	**QC Batch**	**SW2**	**RDL**	**QC Batch**
Total Selenium (Se)	ug/L	<2.0	2.0	6425265	<2.0	2.0	6425265	<2.0	2.0	6424640
Total Silicon (Si)	ug/L	2600	50	6425265	2500	50	6425265	2400	50	6424640
Total Silver (Ag)	ug/L	<0.10	0.10	6425265	<0.10	0.10	6425265	<0.10	0.10	6424640
Total Sodium (Na)	ug/L	36000	100	6425265	36000	100	6425265	7800	100	6424640
Total Strontium (Sr)	ug/L	54	1.0	6425265	54	1.0	6425265	37	1.0	6424640
Total Thallium (Tl)	ug/L	<0.050	0.050	6425265	<0.050	0.050	6425265	<0.050	0.050	6424640
Total Vanadium (V)	ug/L	0.66	0.50	6425265	0.71	0.50	6425265	0.86	0.50	6424640
Total Zinc (Zn)	ug/L	<5.0	5.0	6425265	<5.0	5.0	6425265	<5.0	5.0	6424640

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

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LANDFILL STANDARDS SCH 5 - SW COMP. LIST (WATER)

BV Labs ID		LES419			LES420		
Sampling Date		2019/10/28 18:35			2019/10/28 18:10		
COC Number		741919-01-01			741919-01-01		
	UNITS	**SW2 Lab-Dup**	**RDL**	**QC Batch**	**SW3**	**RDL**	**QC Batch**
Inorganics							
Total Ammonia-N	mg/L				<0.050	0.050	6423037
Total BOD	mg/L				<2	2	6419461
Total Chemical Oxygen Demand (COD)	mg/L				39	4.0	6423353
Conductivity	umho/cm				220	1.0	6420641
Total Dissolved Solids	mg/L				130	10	6423054
Total Kjeldahl Nitrogen (TKN)	mg/L				0.43	0.10	6423177
pH	pH				7.94		6420646
Phenols-4AAP	mg/L	<0.0010	0.0010	6422303	<0.0010	0.0010	6422303
Total Phosphorus	mg/L				0.021	0.004	6425186
Total Suspended Solids	mg/L				6	1	6422683
Dissolved Sulphate (SO4)	mg/L				<1.0	1.0	6421067
Alkalinity (Total as CaCO3)	mg/L				79	1.0	6420639
Dissolved Chloride (Cl-)	mg/L				14	1.0	6421059
Nitrite (N)	mg/L	<0.010	0.010	6420662	<0.010	0.010	6420674
Nitrate (N)	mg/L	<0.10	0.10	6420662	<0.10	0.10	6420674
Metals							
Mercury (Hg)	mg/L				<0.0001	0.0001	6422981
Total Antimony (Sb)	ug/L				<0.50	0.50	6424640
Total Arsenic (As)	ug/L				33	1.0	6424640
Total Barium (Ba)	ug/L				7.6	2.0	6424640
Total Beryllium (Be)	ug/L				<0.50	0.50	6424640
Total Bismuth (Bi)	ug/L				<1.0	1.0	6424640
Total Boron (B)	ug/L				<10	10	6424640
Total Cadmium (Cd)	ug/L				<0.10	0.10	6424640
Total Calcium (Ca)	ug/L				30000	200	6424640
Total Chromium (Cr)	ug/L				<5.0	5.0	6424640
Total Copper (Cu)	ug/L				3.0	1.0	6424640
Total Iron (Fe)	ug/L				430	100	6424640
Total Lead (Pb)	ug/L				<0.50	0.50	6424640
Total Magnesium (Mg)	ug/L				6100	50	6424640
Total Manganese (Mn)	ug/L				23	2.0	6424640
Total Molybdenum (Mo)	ug/L				<0.50	0.50	6424640
Total Nickel (Ni)	ug/L				1.2	1.0	6424640
Total Potassium (K)	ug/L				550	200	6424640

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

LANDFILL STANDARDS SCH 5 - SW COMP. LIST (WATER)

BV Labs ID		LES419			LES420		
Sampling Date		2019/10/28 18:35			2019/10/28 18:10		
COC Number		741919-01-01			741919-01-01		
	UNITS	**SW2 Lab-Dup**	**RDL**	**QC Batch**	**SW3**	**RDL**	**QC Batch**
Total Selenium (Se)	ug/L				<2.0	2.0	6424640
Total Silicon (Si)	ug/L				2400	50	6424640
Total Silver (Ag)	ug/L				<0.10	0.10	6424640
Total Sodium (Na)	ug/L				7900	100	6424640
Total Strontium (Sr)	ug/L				39	1.0	6424640
Total Thallium (Tl)	ug/L				<0.050	0.050	6424640
Total Vanadium (V)	ug/L				0.83	0.50	6424640
Total Zinc (Zn)	ug/L				<5.0	5.0	6424640

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

BV Labs Job #: B9U7662
Report Date: 2019/11/11

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: CP

RESULTS OF ANALYSES OF WATER

BV Labs ID		LES405		LES406			LES406		
Sampling Date		2019/10/27 13:55		2019/10/27 13:05			2019/10/27 13:05		
COC Number		741920-01-01		741920-01-01			741920-01-01		
	UNITS	**MW1**	**QC Batch**	**MW2**	**RDL**	**QC Batch**	**MW2 Lab-Dup**	**RDL**	**QC Batch**
Calculated Parameters									
Hardness (CaCO3)	mg/L	540	6419733	220	1.0	6419733			
Ion Balance (% Difference)	%	3.83	6419734	2.01	N/A	6419734			
Total Organic Nitrogen	mg/L	0.13	6419866	<0.10	0.10	6419866			
Inorganics									
Orthophosphate (P)	mg/L	<0.010	6420805	<0.010	0.010	6421670	<0.010	0.010	6421670

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

BV Labs ID		LES407	LES408		LES409		LES410	LES411		
Sampling Date		2019/10/27 11:35	2019/10/27 11:35		2019/10/27 15:10		2019/10/27 13:05	2019/10/27 14:10		
COC Number		741920-01-01	741920-01-01		741920-01-01		741920-01-01	741920-01-01		
	UNITS	**MW3A**	**MW3B**	**QC Batch**	**MW4**	**QC Batch**	**MW5**	**MW6**	**RDL**	**QC Batch**
Calculated Parameters										
Hardness (CaCO3)	mg/L	450	530	6419733	500	6419733	480	280	1.0	6419733
Ion Balance (% Difference)	%	2.27	2.86	6419734	2.40	6419734	1.87	1.97	N/A	6419734
Total Organic Nitrogen	mg/L	0.70	0.52	6419866	0.20	6419866	<0.10	0.22	0.10	6419866
Inorganics										
Orthophosphate (P)	mg/L	<0.010	<0.010	6421677	<0.010	6420805	<0.010	<0.010	0.010	6421677

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

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BV Labs Job #: B9U7662
Report Date: 2019/11/11

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: CP

RESULTS OF ANALYSES OF WATER

BV Labs ID		LES412			LES412			LES413	LES414		
Sampling Date		2019/10/27 15:00			2019/10/27 15:00			2019/10/30 11:05	2019/10/27 16:20		
COC Number		741920-01-01			741920-01-01			741920-01-01	741920-01-01		
	UNITS	**MW7**	**RDL**	**QC Batch**	**MW7 Lab-Dup**	**RDL**	**QC Batch**	**MW8**	**MW9**	**RDL**	**QC Batch**
Calculated Parameters											
Hardness (CaCO3)	mg/L	430	1.0	6419733				580	290	1.0	6419733
Ion Balance (% Difference)	%	4.68	N/A	6419734				2.39	0.310	N/A	6419734
Total Organic Nitrogen	mg/L	0.27	0.10	6419866				0.67	<0.10	0.10	6419866
Inorganics											
Orthophosphate (P)	mg/L	<0.010	0.010	6421677	<0.010	0.010	6421677	<0.010	<0.010	0.010	6421677

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

BV Labs ID		LES415	LES416		LES417			LES418		
Sampling Date		2019/10/27 17:40	2019/10/27 18:15		2019/10/27 15:50			2019/10/30 11:55		
COC Number		741920-02-01	741920-02-01		741920-02-01			741919-01-01		
	UNITS	**MW10A**	**MW10B**	**QC Batch**	**MW11**	**RDL**	**QC Batch**	**SW1**	**RDL**	**QC Batch**
Calculated Parameters										
Hardness (CaCO3)	mg/L	280	410	6419733	240	1.0	6419733	150	1.0	6419733
Ion Balance (% Difference)	%	2.21	4.27	6419734	1.39	N/A	6419734			
Total Organic Nitrogen	mg/L	0.33	0.32	6419866	0.40	0.10	6419866	0.43	0.10	6419866
Inorganics										
Dissolved Organic Carbon	mg/L							14	0.50	6421499
Orthophosphate (P)	mg/L	<0.010	<0.010	6420805	<0.010	0.010	6421677			

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

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BV Labs Job #: B9U7662
Report Date: 2019/11/11

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: CP

RESULTS OF ANALYSES OF WATER

BV Labs ID		LES419	LES420			LES421		
Sampling Date		2019/10/28 18:35	2019/10/28 18:10			2019/10/27 10:00		
COC Number		741919-01-01	741919-01-01			N/A		
	UNITS	**SW2**	**SW3**	**RDL**	**QC Batch**	**MW-12**	**RDL**	**QC Batch**
Calculated Parameters								
Hardness (CaCO3)	mg/L	98	100	1.0	6419733	460	1.0	6419733
Ion Balance (% Difference)	%					3.37	N/A	6419734
Total Organic Nitrogen	mg/L	0.42	0.43	0.10	6419866	0.36	0.10	6419866
Inorganics								
Dissolved Organic Carbon	mg/L	17	17	0.50	6421499			
Orthophosphate (P)	mg/L					<0.010	0.010	6421677

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

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ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

BV Labs ID		LES418	LES419	LES420		
Sampling Date		2019/10/30 11:55	2019/10/28 18:35	2019/10/28 18:10		
COC Number		741919-01-01	741919-01-01	741919-01-01		
	UNITS	**SW1**	**SW2**	**SW3**	**RDL**	**QC Batch**
Metals						
Dissolved (0.2u) Aluminum (Al)	ug/L	7	10	9	5	6421607

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

VOLATILE ORGANICS BY GC/MS (WATER)

BV Labs ID		LES410		
Sampling Date		2019/10/27 13:05		
COC Number		741920-01-01		
	UNITS	**MW5**	**RDL**	**QC Batch**
Volatile Organics				
Acetone (2-Propanone)	ug/L	<10	10	6422136
Benzene	ug/L	<0.10	0.10	6422136
Bromodichloromethane	ug/L	<0.10	0.10	6422136
Bromoform	ug/L	<0.20	0.20	6422136
Bromomethane	ug/L	<0.50	0.50	6422136
Carbon Tetrachloride	ug/L	<0.10	0.10	6422136
Chlorobenzene	ug/L	0.28	0.10	6422136
Chloroform	ug/L	<0.10	0.10	6422136
Dibromochloromethane	ug/L	<0.20	0.20	6422136
1,2-Dichlorobenzene	ug/L	<0.20	0.20	6422136
1,3-Dichlorobenzene	ug/L	<0.20	0.20	6422136
1,4-Dichlorobenzene	ug/L	<0.20	0.20	6422136
Dichlorodifluoromethane (FREON 12)	ug/L	<0.50	0.50	6422136
1,1-Dichloroethane	ug/L	0.13	0.10	6422136
1,2-Dichloroethane	ug/L	<0.20	0.20	6422136
1,1-Dichloroethylene	ug/L	<0.10	0.10	6422136
cis-1,2-Dichloroethylene	ug/L	<0.10	0.10	6422136
trans-1,2-Dichloroethylene	ug/L	<0.10	0.10	6422136
1,2-Dichloropropane	ug/L	<0.10	0.10	6422136
cis-1,3-Dichloropropene	ug/L	<0.20	0.20	6422136
trans-1,3-Dichloropropene	ug/L	<0.20	0.20	6422136
Ethylbenzene	ug/L	<0.10	0.10	6422136
Ethylene Dibromide	ug/L	<0.20	0.20	6422136
Hexane	ug/L	<0.50	0.50	6422136
Methylene Chloride(Dichloromethane)	ug/L	<0.50	0.50	6422136
Methyl Ethyl Ketone (2-Butanone)	ug/L	<5.0	5.0	6422136
Methyl Isobutyl Ketone	ug/L	<5.0	5.0	6422136
Methyl t-butyl ether (MTBE)	ug/L	<0.20	0.20	6422136
Styrene	ug/L	<0.20	0.20	6422136
1,1,1,2-Tetrachloroethane	ug/L	<0.20	0.20	6422136
1,1,2,2-Tetrachloroethane	ug/L	<0.20	0.20	6422136
Tetrachloroethylene	ug/L	<0.10	0.10	6422136
Toluene	ug/L	<0.20	0.20	6422136
1,1,1-Trichloroethane	ug/L	<0.10	0.10	6422136
1,1,2-Trichloroethane	ug/L	<0.20	0.20	6422136

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

VOLATILE ORGANICS BY GC/MS (WATER)

BV Labs ID		LES410		
Sampling Date		2019/10/27 13:05		
COC Number		741920-01-01		
	UNITS	**MW5**	**RDL**	**QC Batch**
Trichloroethylene	ug/L	<0.10	0.10	6422136
Trichlorofluoromethane (FREON 11)	ug/L	<0.20	0.20	6422136
Vinyl Chloride	ug/L	<0.20	0.20	6422136
p+m-Xylene	ug/L	<0.10	0.10	6422136
o-Xylene	ug/L	<0.10	0.10	6422136
Total Xylenes	ug/L	<0.10	0.10	6422136
Surrogate Recovery (%)				
4-Bromofluorobenzene	%	97		6422136
D4-1,2-Dichloroethane	%	105		6422136
D8-Toluene	%	101		6422136

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

TEST SUMMARY

BV Labs ID: LES405
Sample ID: MW1
Matrix: Water

Collected: 2019/10/27
Shipped:
Received: 2019/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6420722	N/A	2019/11/02	Yogesh Patel
Chloride by Automated Colourimetry	KONE	6420795	N/A	2019/11/04	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6423353	N/A	2019/11/05	Viorica Rotaru
Conductivity	AT	6420727	N/A	2019/11/02	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6421499	N/A	2019/11/02	Nimarta Singh
Hardness (calculated as CaCO3)		6419733	N/A	2019/11/07	Automated Statchk
Mercury in Water by CVAA	CV/AA	6422981	2019/11/04	2019/11/06	Medhat Nasr
Dissolved Metals by ICPMS	ICP/MS	6421811	N/A	2019/11/07	Prempal Bhatti
Ion Balance (% Difference)	CALC	6419734	N/A	2019/11/07	Automated Statchk
Total Ammonia-N	LACH/NH4	6423037	N/A	2019/11/05	Mazin Wakai
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6420662	N/A	2019/11/07	Chandra Nandlal
Organic Nitrogen	CALC	6419866	N/A	2019/11/08	Automated Statchk
pH	AT	6420728	2019/11/01	2019/11/02	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6422303	N/A	2019/11/05	Bramdeo Motiram
Orthophosphate	KONE	6420805	N/A	2019/11/05	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6420802	N/A	2019/11/04	Deonarine Ramnarine
Total Dissolved Solids	BAL	6421901	2019/11/02	2019/11/05	Xinyue (Sarah) Hou
Total Kjeldahl Nitrogen in Water	SKAL	6423363	2019/11/04	2019/11/08	Shivani Shivani
Total Phosphorus (Colourimetric)	LACH/P	6423146	2019/11/04	2019/11/05	Shivani Shivani

BV Labs ID: LES406
Sample ID: MW2
Matrix: Water

Collected: 2019/10/27
Shipped:
Received: 2019/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6420639	N/A	2019/11/02	Yogesh Patel
Chloride by Automated Colourimetry	KONE	6421667	N/A	2019/11/04	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6423353	N/A	2019/11/05	Viorica Rotaru
Conductivity	AT	6420641	N/A	2019/11/02	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6421499	N/A	2019/11/02	Nimarta Singh
Hardness (calculated as CaCO3)		6419733	N/A	2019/11/07	Automated Statchk
Mercury in Water by CVAA	CV/AA	6422981	2019/11/04	2019/11/06	Medhat Nasr
Dissolved Metals by ICPMS	ICP/MS	6421811	N/A	2019/11/07	Prempal Bhatti
Ion Balance (% Difference)	CALC	6419734	N/A	2019/11/07	Automated Statchk
Total Ammonia-N	LACH/NH4	6423031	N/A	2019/11/05	Mazin Wakai
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6420662	N/A	2019/11/07	Chandra Nandlal
Organic Nitrogen	CALC	6419866	N/A	2019/11/08	Automated Statchk
pH	AT	6420646	2019/11/01	2019/11/02	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6422303	N/A	2019/11/05	Bramdeo Motiram
Orthophosphate	KONE	6421670	N/A	2019/11/05	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6421669	N/A	2019/11/04	Deonarine Ramnarine
Total Dissolved Solids	BAL	6421901	2019/11/02	2019/11/05	Xinyue (Sarah) Hou
Total Kjeldahl Nitrogen in Water	SKAL	6423363	2019/11/04	2019/11/08	Shivani Shivani
Total Phosphorus (Colourimetric)	LACH/P	6424954	2019/11/05	2019/11/06	Shivani Shivani

TEST SUMMARY

BV Labs ID: LES406 Dup
Sample ID: MW2
Matrix: Water

Collected: 2019/10/27
Shipped:
Received: 2019/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	KONE	6421667	N/A	2019/11/04	Deonarine Ramnarine
Orthophosphate	KONE	6421670	N/A	2019/11/05	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6421669	N/A	2019/11/04	Deonarine Ramnarine
Total Phosphorus (Colourimetric)	LACH/P	6424954	2019/11/05	2019/11/06	Shivani Shivani

BV Labs ID: LES407
Sample ID: MW3A
Matrix: Water

Collected: 2019/10/27
Shipped:
Received: 2019/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6420722	N/A	2019/11/02	Yogesh Patel
Chloride by Automated Colourimetry	KONE	6421674	N/A	2019/11/06	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6423160	N/A	2019/11/05	Viorica Rotaru
Conductivity	AT	6420727	N/A	2019/11/02	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6421499	N/A	2019/11/02	Nimarta Singh
Hardness (calculated as CaCO3)		6419733	N/A	2019/11/07	Automated Statchk
Mercury in Water by CVAA	CV/AA	6422981	2019/11/04	2019/11/06	Medhat Nasr
Dissolved Metals by ICPMS	ICP/MS	6421811	N/A	2019/11/07	Prempal Bhatti
Ion Balance (% Difference)	CALC	6419734	N/A	2019/11/07	Automated Statchk
Total Ammonia-N	LACH/NH4	6423031	N/A	2019/11/05	Mazin Wakai
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6420758	N/A	2019/11/05	Chandra Nandlal
Organic Nitrogen	CALC	6419866	N/A	2019/11/11	Automated Statchk
pH	AT	6420728	2019/11/01	2019/11/02	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6422307	N/A	2019/11/04	Bramdeo Motiram
Orthophosphate	KONE	6421677	N/A	2019/11/05	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6421676	N/A	2019/11/06	Deonarine Ramnarine
Total Dissolved Solids	BAL	6421977	2019/11/02	2019/11/05	Shivani Desai
Total Kjeldahl Nitrogen in Water	SKAL	6423177	2019/11/04	2019/11/08	Shivani Shivani
Total Phosphorus (Colourimetric)	LACH/P	6424954	2019/11/05	2019/11/05	Shivani Shivani

BV Labs ID: LES408
Sample ID: MW3B
Matrix: Water

Collected: 2019/10/27
Shipped:
Received: 2019/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6420722	N/A	2019/11/02	Yogesh Patel
Chloride by Automated Colourimetry	KONE	6421674	N/A	2019/11/06	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6423160	N/A	2019/11/05	Viorica Rotaru
Conductivity	AT	6420727	N/A	2019/11/02	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6421499	N/A	2019/11/02	Nimarta Singh
Hardness (calculated as CaCO3)		6419733	N/A	2019/11/07	Automated Statchk
Mercury in Water by CVAA	CV/AA	6422981	2019/11/04	2019/11/06	Medhat Nasr
Dissolved Metals by ICPMS	ICP/MS	6421811	N/A	2019/11/07	Prempal Bhatti
Ion Balance (% Difference)	CALC	6419734	N/A	2019/11/07	Automated Statchk
Total Ammonia-N	LACH/NH4	6423037	N/A	2019/11/05	Mazin Wakai

TEST SUMMARY

BV Labs ID: LES408
Sample ID: MW3B
Matrix: Water

Collected: 2019/10/27
Shipped:
Received: 2019/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6421546	N/A	2019/11/07	Chandra Nandlal
Organic Nitrogen	CALC	6419866	N/A	2019/11/11	Automated Statchk
pH	AT	6420728	2019/11/01	2019/11/02	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6422307	N/A	2019/11/04	Bramdeo Motiram
Orthophosphate	KONE	6421677	N/A	2019/11/05	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6421676	N/A	2019/11/06	Deonarine Ramnarine
Total Dissolved Solids	BAL	6421901	2019/11/02	2019/11/05	Xinyue (Sarah) Hou
Total Kjeldahl Nitrogen in Water	SKAL	6423177	2019/11/04	2019/11/08	Shivani Shivani
Total Phosphorus (Colourimetric)	LACH/P	6423146	2019/11/04	2019/11/05	Shivani Shivani

BV Labs ID: LES408 Dup
Sample ID: MW3B
Matrix: Water

Collected: 2019/10/27
Shipped:
Received: 2019/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6421546	N/A	2019/11/07	Chandra Nandlal
Phenols (4AAP)	TECH/PHEN	6422307	N/A	2019/11/04	Bramdeo Motiram

BV Labs ID: LES409
Sample ID: MW4
Matrix: Water

Collected: 2019/10/27
Shipped:
Received: 2019/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6420722	N/A	2019/11/02	Yogesh Patel
Chloride by Automated Colourimetry	KONE	6420795	N/A	2019/11/04	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6423353	N/A	2019/11/05	Viorica Rotaru
Conductivity	AT	6420727	N/A	2019/11/02	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6421499	N/A	2019/11/02	Nimarta Singh
Hardness (calculated as CaCO3)		6419733	N/A	2019/11/07	Automated Statchk
Mercury in Water by CVAA	CV/AA	6422981	2019/11/04	2019/11/06	Medhat Nasr
Dissolved Metals by ICPMS	ICP/MS	6421811	N/A	2019/11/07	Prempal Bhatti
Ion Balance (% Difference)	CALC	6419734	N/A	2019/11/07	Automated Statchk
Total Ammonia-N	LACH/NH4	6423037	N/A	2019/11/05	Mazin Wakai
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6420662	N/A	2019/11/07	Chandra Nandlal
Organic Nitrogen	CALC	6419866	N/A	2019/11/08	Automated Statchk
pH	AT	6420728	2019/11/01	2019/11/02	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6422303	N/A	2019/11/05	Bramdeo Motiram
Orthophosphate	KONE	6420805	N/A	2019/11/05	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6420802	N/A	2019/11/04	Deonarine Ramnarine
Total Dissolved Solids	BAL	6421977	2019/11/02	2019/11/05	Shivani Desai
Total Kjeldahl Nitrogen in Water	SKAL	6423363	2019/11/04	2019/11/08	Shivani Shivani
Total Phosphorus (Colourimetric)	LACH/P	6423146	2019/11/04	2019/11/05	Shivani Shivani

TEST SUMMARY

BV Labs ID: LES410
Sample ID: MW5
Matrix: Water

Collected: 2019/10/27
Shipped:
Received: 2019/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6420639	N/A	2019/11/02	Yogesh Patel
Chloride by Automated Colourimetry	KONE	6421674	N/A	2019/11/06	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6423353	N/A	2019/11/05	Viorica Rotaru
Conductivity	AT	6420641	N/A	2019/11/02	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6421499	N/A	2019/11/02	Nimarta Singh
Hardness (calculated as CaCO3)		6419733	N/A	2019/11/07	Automated Statchk
Mercury in Water by CVAA	CV/AA	6422981	2019/11/04	2019/11/06	Medhat Nasr
Dissolved Metals by ICPMS	ICP/MS	6421811	N/A	2019/11/07	Prempal Bhatti
Ion Balance (% Difference)	CALC	6419734	N/A	2019/11/07	Automated Statchk
Total Ammonia-N	LACH/NH4	6423037	N/A	2019/11/05	Mazin Wakai
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6420674	N/A	2019/11/07	Chandra Nandlal
Organic Nitrogen	CALC	6419866	N/A	2019/11/07	Automated Statchk
pH	AT	6420646	2019/11/01	2019/11/02	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6422303	N/A	2019/11/05	Bramdeo Motiram
Orthophosphate	KONE	6421677	N/A	2019/11/05	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6421676	N/A	2019/11/06	Deonarine Ramnarine
Total Dissolved Solids	BAL	6421977	2019/11/02	2019/11/05	Shivani Desai
Total Kjeldahl Nitrogen in Water	SKAL	6423172	2019/11/04	2019/11/06	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	6423146	2019/11/04	2019/11/05	Shivani Shivani
Volatile Organic Compounds in Water	P&T/MS	6422136	N/A	2019/11/06	Gladys Guerrero

BV Labs ID: LES411
Sample ID: MW6
Matrix: Water

Collected: 2019/10/27
Shipped:
Received: 2019/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6420722	N/A	2019/11/02	Yogesh Patel
Chloride by Automated Colourimetry	KONE	6421674	N/A	2019/11/06	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6423353	N/A	2019/11/05	Viorica Rotaru
Conductivity	AT	6420727	N/A	2019/11/02	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6421499	N/A	2019/11/02	Nimarta Singh
Hardness (calculated as CaCO3)		6419733	N/A	2019/11/07	Automated Statchk
Mercury in Water by CVAA	CV/AA	6422981	2019/11/04	2019/11/06	Medhat Nasr
Dissolved Metals by ICPMS	ICP/MS	6421811	N/A	2019/11/07	Prempal Bhatti
Ion Balance (% Difference)	CALC	6419734	N/A	2019/11/07	Automated Statchk
Total Ammonia-N	LACH/NH4	6423031	N/A	2019/11/05	Mazin Wakai
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6420758	N/A	2019/11/05	Chandra Nandlal
Organic Nitrogen	CALC	6419866	N/A	2019/11/11	Automated Statchk
pH	AT	6420728	2019/11/01	2019/11/02	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6422303	N/A	2019/11/05	Bramdeo Motiram
Orthophosphate	KONE	6421677	N/A	2019/11/05	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6421676	N/A	2019/11/06	Deonarine Ramnarine
Total Dissolved Solids	BAL	6421977	2019/11/02	2019/11/05	Shivani Desai
Total Kjeldahl Nitrogen in Water	SKAL	6423177	2019/11/04	2019/11/08	Shivani Shivani
Total Phosphorus (Colourimetric)	LACH/P	6424954	2019/11/05	2019/11/05	Shivani Shivani

TEST SUMMARY

BV Labs ID: LES411 Dup
Sample ID: MW6
Matrix: Water

Collected: 2019/10/27
Shipped:
Received: 2019/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chemical Oxygen Demand	SPEC	6423353	N/A	2019/11/05	Viorica Rotaru
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6421499	N/A	2019/11/02	Nimarta Singh

BV Labs ID: LES412
Sample ID: MW7
Matrix: Water

Collected: 2019/10/27
Shipped:
Received: 2019/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6420639	N/A	2019/11/02	Yogesh Patel
Chloride by Automated Colourimetry	KONE	6421674	N/A	2019/11/06	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6423353	N/A	2019/11/05	Viorica Rotaru
Conductivity	AT	6420641	N/A	2019/11/02	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6421499	N/A	2019/11/02	Nimarta Singh
Hardness (calculated as CaCO3)		6419733	N/A	2019/11/07	Automated Statchk
Mercury in Water by CVAA	CV/AA	6422981	2019/11/04	2019/11/06	Medhat Nasr
Dissolved Metals by ICPMS	ICP/MS	6421811	N/A	2019/11/07	Prempal Bhatti
Ion Balance (% Difference)	CALC	6419734	N/A	2019/11/07	Automated Statchk
Total Ammonia-N	LACH/NH4	6423031	N/A	2019/11/05	Mazin Wakai
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6420662	N/A	2019/11/07	Chandra Nandlal
Organic Nitrogen	CALC	6419866	N/A	2019/11/11	Automated Statchk
pH	AT	6420646	2019/11/01	2019/11/02	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6422303	N/A	2019/11/05	Bramdeo Motiram
Orthophosphate	KONE	6421677	N/A	2019/11/05	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6421676	N/A	2019/11/06	Deonarine Ramnarine
Total Dissolved Solids	BAL	6421901	2019/11/02	2019/11/05	Xinyue (Sarah) Hou
Total Kjeldahl Nitrogen in Water	SKAL	6423177	2019/11/04	2019/11/08	Shivani Shivani
Total Phosphorus (Colourimetric)	LACH/P	6423146	2019/11/04	2019/11/05	Shivani Shivani

BV Labs ID: LES412 Dup
Sample ID: MW7
Matrix: Water

Collected: 2019/10/27
Shipped:
Received: 2019/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	KONE	6421674	N/A	2019/11/06	Deonarine Ramnarine
Orthophosphate	KONE	6421677	N/A	2019/11/05	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6421676	N/A	2019/11/06	Deonarine Ramnarine
Total Phosphorus (Colourimetric)	LACH/P	6423146	2019/11/04	2019/11/05	Shivani Shivani

BV Labs ID: LES413
Sample ID: MW8
Matrix: Water

Collected: 2019/10/30
Shipped:
Received: 2019/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6420722	N/A	2019/11/02	Yogesh Patel
Chloride by Automated Colourimetry	KONE	6421674	N/A	2019/11/06	Deonarine Ramnarine

TEST SUMMARY

BV Labs ID: LES413
Sample ID: MW8
Matrix: Water

Collected: 2019/10/30
Shipped:
Received: 2019/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chemical Oxygen Demand	SPEC	6423353	N/A	2019/11/05	Viorica Rotaru
Conductivity	AT	6420727	N/A	2019/11/02	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6421499	N/A	2019/11/02	Nimarta Singh
Hardness (calculated as CaCO3)		6419733	N/A	2019/11/07	Automated Statchk
Mercury in Water by CVAA	CV/AA	6422981	2019/11/04	2019/11/06	Medhat Nasr
Dissolved Metals by ICPMS	ICP/MS	6421811	N/A	2019/11/07	Prempal Bhatti
Ion Balance (% Difference)	CALC	6419734	N/A	2019/11/07	Automated Statchk
Total Ammonia-N	LACH/NH4	6423037	N/A	2019/11/05	Mazin Wakai
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6420758	N/A	2019/11/05	Chandra Nandlal
Organic Nitrogen	CALC	6419866	N/A	2019/11/08	Automated Statchk
pH	AT	6420728	2019/11/01	2019/11/02	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6422303	N/A	2019/11/05	Bramdeo Motiram
Orthophosphate	KONE	6421677	N/A	2019/11/05	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6421676	N/A	2019/11/06	Deonarine Ramnarine
Total Dissolved Solids	BAL	6421901	2019/11/02	2019/11/05	Xinyue (Sarah) Hou
Total Kjeldahl Nitrogen in Water	SKAL	6423363	2019/11/04	2019/11/08	Shivani Shivani
Total Phosphorus (Colourimetric)	LACH/P	6424954	2019/11/05	2019/11/05	Shivani Shivani

BV Labs ID: LES414
Sample ID: MW9
Matrix: Water

Collected: 2019/10/27
Shipped:
Received: 2019/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6420722	N/A	2019/11/02	Yogesh Patel
Chloride by Automated Colourimetry	KONE	6421674	N/A	2019/11/06	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6423353	N/A	2019/11/05	Viorica Rotaru
Conductivity	AT	6420727	N/A	2019/11/02	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6421499	N/A	2019/11/02	Nimarta Singh
Hardness (calculated as CaCO3)		6419733	N/A	2019/11/07	Automated Statchk
Mercury in Water by CVAA	CV/AA	6424887	2019/11/05	2019/11/05	Medhat Nasr
Dissolved Metals by ICPMS	ICP/MS	6421811	N/A	2019/11/07	Prempal Bhatti
Ion Balance (% Difference)	CALC	6419734	N/A	2019/11/07	Automated Statchk
Total Ammonia-N	LACH/NH4	6423031	N/A	2019/11/05	Mazin Wakai
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6420758	N/A	2019/11/05	Chandra Nandlal
Organic Nitrogen	CALC	6419866	N/A	2019/11/08	Automated Statchk
pH	AT	6420728	2019/11/01	2019/11/02	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6422303	N/A	2019/11/05	Bramdeo Motiram
Orthophosphate	KONE	6421677	N/A	2019/11/05	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6421676	N/A	2019/11/06	Deonarine Ramnarine
Total Dissolved Solids	BAL	6421977	2019/11/02	2019/11/05	Shivani Desai
Total Kjeldahl Nitrogen in Water	SKAL	6423363	2019/11/04	2019/11/08	Shivani Shivani
Total Phosphorus (Colourimetric)	LACH/P	6423146	2019/11/04	2019/11/05	Shivani Shivani

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TEST SUMMARY

BV Labs ID: LES414 Dup
Sample ID: MW9
Matrix: Water

Collected: 2019/10/27
Shipped:
Received: 2019/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Ammonia-N	LACH/NH4	6423031	N/A	2019/11/05	Mazin Wakai
Total Kjeldahl Nitrogen in Water	SKAL	6423363	2019/11/04	2019/11/08	Shivani Shivani

BV Labs ID: LES415
Sample ID: MW10A
Matrix: Water

Collected: 2019/10/27
Shipped:
Received: 2019/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6420639	N/A	2019/11/02	Yogesh Patel
Chloride by Automated Colourimetry	KONE	6420795	N/A	2019/11/04	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6423353	N/A	2019/11/05	Viorica Rotaru
Conductivity	AT	6420641	N/A	2019/11/02	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6421499	N/A	2019/11/02	Nimarta Singh
Hardness (calculated as CaCO3)		6419733	N/A	2019/11/07	Automated Statchk
Mercury in Water by CVAA	CV/AA	6422981	2019/11/04	2019/11/06	Medhat Nasr
Dissolved Metals by ICPMS	ICP/MS	6421811	N/A	2019/11/07	Prempal Bhatti
Ion Balance (% Difference)	CALC	6419734	N/A	2019/11/07	Automated Statchk
Total Ammonia-N	LACH/NH4	6423031	N/A	2019/11/05	Mazin Wakai
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6420758	N/A	2019/11/05	Chandra Nandlal
Organic Nitrogen	CALC	6419866	N/A	2019/11/08	Automated Statchk
pH	AT	6420646	2019/11/01	2019/11/02	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6422303	N/A	2019/11/05	Bramdeo Motiram
Orthophosphate	KONE	6420805	N/A	2019/11/05	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6420802	N/A	2019/11/04	Deonarine Ramnarine
Total Dissolved Solids	BAL	6421977	2019/11/02	2019/11/05	Shivani Desai
Total Kjeldahl Nitrogen in Water	SKAL	6423363	2019/11/04	2019/11/08	Shivani Shivani
Total Phosphorus (Colourimetric)	LACH/P	6423146	2019/11/04	2019/11/05	Shivani Shivani

BV Labs ID: LES416
Sample ID: MW10B
Matrix: Water

Collected: 2019/10/27
Shipped:
Received: 2019/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6420639	N/A	2019/11/02	Yogesh Patel
Chloride by Automated Colourimetry	KONE	6420795	N/A	2019/11/04	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6423353	N/A	2019/11/05	Viorica Rotaru
Conductivity	AT	6420641	N/A	2019/11/02	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6421499	N/A	2019/11/02	Nimarta Singh
Hardness (calculated as CaCO3)		6419733	N/A	2019/11/07	Automated Statchk
Mercury in Water by CVAA	CV/AA	6422981	2019/11/04	2019/11/06	Medhat Nasr
Dissolved Metals by ICPMS	ICP/MS	6421811	N/A	2019/11/07	Prempal Bhatti
Ion Balance (% Difference)	CALC	6419734	N/A	2019/11/07	Automated Statchk
Total Ammonia-N	LACH/NH4	6423037	N/A	2019/11/05	Mazin Wakai
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6420662	N/A	2019/11/07	Chandra Nandlal
Organic Nitrogen	CALC	6419866	N/A	2019/11/08	Automated Statchk

TEST SUMMARY

BV Labs ID: LES416
Sample ID: MW10B
Matrix: Water

Collected: 2019/10/27
Shipped:
Received: 2019/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH	AT	6420646	2019/11/01	2019/11/02	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6422303	N/A	2019/11/05	Bramdeo Motiram
Orthophosphate	KONE	6420805	N/A	2019/11/05	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6420802	N/A	2019/11/04	Deonarine Ramnarine
Total Dissolved Solids	BAL	6421977	2019/11/02	2019/11/05	Shivani Desai
Total Kjeldahl Nitrogen in Water	SKAL	6423363	2019/11/04	2019/11/08	Shivani Shivani
Total Phosphorus (Colourimetric)	LACH/P	6424954	2019/11/05	2019/11/05	Shivani Shivani

BV Labs ID: LES417
Sample ID: MW11
Matrix: Water

Collected: 2019/10/27
Shipped:
Received: 2019/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6420722	N/A	2019/11/02	Yogesh Patel
Chloride by Automated Colourimetry	KONE	6421674	N/A	2019/11/06	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6423353	N/A	2019/11/05	Viorica Rotaru
Conductivity	AT	6420727	N/A	2019/11/02	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6421519	N/A	2019/11/02	Nimarta Singh
Hardness (calculated as CaCO3)		6419733	N/A	2019/11/07	Automated Statchk
Mercury in Water by CVAA	CV/AA	6424887	2019/11/05	2019/11/05	Medhat Nasr
Dissolved Metals by ICPMS	ICP/MS	6421811	N/A	2019/11/07	Prempal Bhatti
Ion Balance (% Difference)	CALC	6419734	N/A	2019/11/07	Automated Statchk
Total Ammonia-N	LACH/NH4	6422724	N/A	2019/11/05	Mazin Wakai
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6420758	N/A	2019/11/05	Chandra Nandlal
Organic Nitrogen	CALC	6419866	N/A	2019/11/11	Automated Statchk
pH	AT	6420728	2019/11/01	2019/11/02	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6422303	N/A	2019/11/05	Bramdeo Motiram
Orthophosphate	KONE	6421677	N/A	2019/11/05	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6421676	N/A	2019/11/06	Deonarine Ramnarine
Total Dissolved Solids	BAL	6421977	2019/11/02	2019/11/05	Shivani Desai
Total Kjeldahl Nitrogen in Water	SKAL	6423177	2019/11/04	2019/11/08	Shivani Shivani
Total Phosphorus (Colourimetric)	LACH/P	6424954	2019/11/05	2019/11/05	Shivani Shivani

BV Labs ID: LES417 Dup
Sample ID: MW11
Matrix: Water

Collected: 2019/10/27
Shipped:
Received: 2019/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6421519	N/A	2019/11/02	Nimarta Singh

TEST SUMMARY

BV Labs ID: LES418
Sample ID: SW1
Matrix: Water

Collected: 2019/10/30
Shipped:
Received: 2019/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Aluminum (0.2 u, clay free)	ICP/MS	6421607	N/A	2019/11/04	Arefa Dabhad
Alkalinity	AT	6420639	N/A	2019/11/02	Yogesh Patel
Biochemical Oxygen Demand (BOD)	DO	6419461	2019/11/01	2019/11/06	Navjot Kaur Gill
Chloride by Automated Colourimetry	KONE	6421059	N/A	2019/11/05	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6423353	N/A	2019/11/05	Viorica Rotaru
Conductivity	AT	6420641	N/A	2019/11/02	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6421499	N/A	2019/11/02	Nimarta Singh
Hardness (calculated as CaCO3)		6419733	N/A	2019/11/04	Automated Statchk
Mercury in Water by CVAA	CV/AA	6422981	2019/11/04	2019/11/06	Medhat Nasr
Total Metals Analysis by ICPMS	ICP/MS	6425265	N/A	2019/11/08	Prempal Bhatti
Total Ammonia-N	LACH/NH4	6423037	N/A	2019/11/05	Mazin Wakai
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6420674	N/A	2019/11/07	Chandra Nandlal
Organic Nitrogen	CALC	6419866	N/A	2019/11/08	Automated Statchk
pH	AT	6420646	2019/11/01	2019/11/02	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6422303	N/A	2019/11/05	Bramdeo Motiram
Sulphate by Automated Colourimetry	KONE	6421067	N/A	2019/11/05	Deonarine Ramnarine
Total Dissolved Solids	BAL	6423054	2019/11/04	2019/11/05	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	6423363	2019/11/04	2019/11/08	Shivani Shivani
Total Phosphorus (Colourimetric)	LACH/P	6425186	2019/11/05	2019/11/07	Shivani Shivani
Low Level Total Suspended Solids	BAL	6422683	2019/11/04	2019/11/05	Massarat Jan

BV Labs ID: LES418 Dup
Sample ID: SW1
Matrix: Water

Collected: 2019/10/30
Shipped:
Received: 2019/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Metals Analysis by ICPMS	ICP/MS	6425265	N/A	2019/11/08	Prempal Bhatti

BV Labs ID: LES419
Sample ID: SW2
Matrix: Water

Collected: 2019/10/28
Shipped:
Received: 2019/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Aluminum (0.2 u, clay free)	ICP/MS	6421607	N/A	2019/11/04	Arefa Dabhad
Alkalinity	AT	6420639	N/A	2019/11/02	Yogesh Patel
Biochemical Oxygen Demand (BOD)	DO	6419461	2019/11/01	2019/11/06	Navjot Kaur Gill
Chloride by Automated Colourimetry	KONE	6421059	N/A	2019/11/05	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6423353	N/A	2019/11/05	Viorica Rotaru
Conductivity	AT	6420641	N/A	2019/11/02	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6421499	N/A	2019/11/02	Nimarta Singh
Hardness (calculated as CaCO3)		6419733	N/A	2019/11/04	Automated Statchk
Mercury in Water by CVAA	CV/AA	6422981	2019/11/04	2019/11/06	Medhat Nasr
Total Metals Analysis by ICPMS	ICP/MS	6424640	N/A	2019/11/06	Prempal Bhatti
Total Ammonia-N	LACH/NH4	6423037	N/A	2019/11/05	Mazin Wakai
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6420662	N/A	2019/11/07	Chandra Nandlal

TEST SUMMARY

BV Labs ID: LES419
Sample ID: SW2
Matrix: Water

Collected: 2019/10/28
Shipped:
Received: 2019/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Organic Nitrogen	CALC	6419866	N/A	2019/11/08	Automated Statchk
pH	AT	6420646	2019/11/01	2019/11/02	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6422303	N/A	2019/11/05	Bramdeo Motiram
Sulphate by Automated Colourimetry	KONE	6421067	N/A	2019/11/05	Deonarine Ramnarine
Total Dissolved Solids	BAL	6423054	2019/11/04	2019/11/05	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	6423363	2019/11/04	2019/11/08	Shivani Shivani
Total Phosphorus (Colourimetric)	LACH/P	6425186	2019/11/05	2019/11/07	Shivani Shivani
Low Level Total Suspended Solids	BAL	6422683	2019/11/04	2019/11/05	Massarat Jan

BV Labs ID: LES419 Dup
Sample ID: SW2
Matrix: Water

Collected: 2019/10/28
Shipped:
Received: 2019/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6420662	N/A	2019/11/07	Chandra Nandlal
Phenols (4AAP)	TECH/PHEN	6422303	N/A	2019/11/05	Bramdeo Motiram

BV Labs ID: LES420
Sample ID: SW3
Matrix: Water

Collected: 2019/10/28
Shipped:
Received: 2019/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Aluminum (0.2 u, clay free)	ICP/MS	6421607	N/A	2019/11/04	Arefa Dabhad
Alkalinity	AT	6420639	N/A	2019/11/02	Yogesh Patel
Biochemical Oxygen Demand (BOD)	DO	6419461	2019/11/01	2019/11/06	Navjot Kaur Gill
Chloride by Automated Colourimetry	KONE	6421059	N/A	2019/11/05	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6423353	N/A	2019/11/05	Viorica Rotaru
Conductivity	AT	6420641	N/A	2019/11/02	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6421499	N/A	2019/11/02	Nimarta Singh
Hardness (calculated as CaCO3)		6419733	N/A	2019/11/04	Automated Statchk
Mercury in Water by CVAA	CV/AA	6422981	2019/11/04	2019/11/06	Medhat Nasr
Total Metals Analysis by ICPMS	ICP/MS	6424640	N/A	2019/11/06	Prempal Bhatti
Total Ammonia-N	LACH/NH4	6423037	N/A	2019/11/05	Mazin Wakai
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6420674	N/A	2019/11/07	Chandra Nandlal
Organic Nitrogen	CALC	6419866	N/A	2019/11/11	Automated Statchk
pH	AT	6420646	2019/11/01	2019/11/02	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6422303	N/A	2019/11/05	Bramdeo Motiram
Sulphate by Automated Colourimetry	KONE	6421067	N/A	2019/11/05	Deonarine Ramnarine
Total Dissolved Solids	BAL	6423054	2019/11/04	2019/11/05	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	6423177	2019/11/04	2019/11/08	Shivani Shivani
Total Phosphorus (Colourimetric)	LACH/P	6425186	2019/11/05	2019/11/07	Shivani Shivani
Low Level Total Suspended Solids	BAL	6422683	2019/11/04	2019/11/05	Massarat Jan

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BV Labs Job #: B9U7662
Report Date: 2019/11/11

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: CP

TEST SUMMARY

BV Labs ID: LES421
Sample ID: MW-12
Matrix: Water

Collected: 2019/10/27
Shipped:
Received: 2019/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6420722	N/A	2019/11/02	Yogesh Patel
Chloride by Automated Colourimetry	KONE	6421674	N/A	2019/11/06	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6423353	N/A	2019/11/05	Viorica Rotaru
Conductivity	AT	6420727	N/A	2019/11/02	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6421499	N/A	2019/11/02	Nimarta Singh
Hardness (calculated as CaCO3)		6419733	N/A	2019/11/07	Automated Statchk
Mercury in Water by CVAA	CV/AA	6424902	2019/11/05	2019/11/06	Medhat Nasr
Dissolved Metals by ICPMS	ICP/MS	6421811	N/A	2019/11/07	Prempal Bhatti
Ion Balance (% Difference)	CALC	6419734	N/A	2019/11/07	Automated Statchk
Total Ammonia-N	LACH/NH4	6423031	N/A	2019/11/05	Mazin Wakai
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6420758	N/A	2019/11/05	Chandra Nandlal
Organic Nitrogen	CALC	6419866	N/A	2019/11/11	Automated Statchk
pH	AT	6420728	2019/11/01	2019/11/02	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6422303	N/A	2019/11/05	Bramdeo Motiram
Orthophosphate	KONE	6421677	N/A	2019/11/05	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6421676	N/A	2019/11/06	Deonarine Ramnarine
Total Dissolved Solids	BAL	6421901	2019/11/02	2019/11/05	Xinyue (Sarah) Hou
Total Kjeldahl Nitrogen in Water	SKAL	6423177	2019/11/04	2019/11/08	Shivani Shivani
Total Phosphorus (Colourimetric)	LACH/P	6424954	2019/11/05	2019/11/05	Shivani Shivani

BV Labs ID: LES421 Dup
Sample ID: MW-12
Matrix: Water

Collected: 2019/10/27
Shipped:
Received: 2019/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Metals by ICPMS	ICP/MS	6421811	N/A	2019/11/07	Prempal Bhatti

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GENERAL COMMENTS

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

Package 1	-2.0°C
Package 2	-1.0°C
Package 3	0.0°C
Package 4	0.3°C
Package 5	-1.0°C
Package 6	-3.3°C
Package 7	-3.0°C
Package 8	-3.7°C
Package 9	-5.7°C
Package 10	-2.0°C

Results relate only to the items tested.

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BV Labs Job #: B9U7662
Report Date: 2019/11/11

QUALITY ASSURANCE REPORT

exp Services Inc
Client Project #: THB-00006189-PE
Sampler Initials: CP

			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
6422136	4-Bromofluorobenzene	2019/11/06	99	70 - 130	100	70 - 130	98	%				
6422136	D4-1,2-Dichloroethane	2019/11/06	105	70 - 130	106	70 - 130	106	%				
6422136	D8-Toluene	2019/11/06	101	70 - 130	100	70 - 130	101	%				
6419461	Total BOD	2019/11/06					<2	mg/L	NC	30	101	80 - 120
6420639	Alkalinity (Total as CaCO3)	2019/11/02			95	85 - 115	<1.0	mg/L	0.35	20		
6420641	Conductivity	2019/11/02			100	85 - 115	<1.0	umho/cm	0.32	25		
6420646	pH	2019/11/02			102	98 - 103			0.26	N/A		
6420662	Nitrate (N)	2019/11/07	101	80 - 120	102	80 - 120	<0.10	mg/L	NC	20		
6420662	Nitrite (N)	2019/11/07	106	80 - 120	104	80 - 120	<0.010	mg/L	NC	20		
6420674	Nitrate (N)	2019/11/07	99	80 - 120	100	80 - 120	<0.10	mg/L	NC	20		
6420674	Nitrite (N)	2019/11/07	104	80 - 120	103	80 - 120	<0.010	mg/L	NC	20		
6420722	Alkalinity (Total as CaCO3)	2019/11/02			96	85 - 115	<1.0	mg/L	0.28	20		
6420727	Conductivity	2019/11/02			100	85 - 115	<1.0	umho/cm	0.38	25		
6420728	pH	2019/11/02			102	98 - 103			0.31	N/A		
6420758	Nitrate (N)	2019/11/05	101	80 - 120	99	80 - 120	<0.10	mg/L	1.7	20		
6420758	Nitrite (N)	2019/11/05	104	80 - 120	103	80 - 120	<0.010	mg/L	NC	20		
6420795	Dissolved Chloride (Cl-)	2019/11/04	NC	80 - 120	103	80 - 120	<1.0	mg/L	0.044	20		
6420802	Dissolved Sulphate (SO4)	2019/11/04	NC	75 - 125	101	80 - 120	<1.0	mg/L	1.3	20		
6420805	Orthophosphate (P)	2019/11/05	111	75 - 125	101	80 - 120	<0.010	mg/L	11	25		
6421059	Dissolved Chloride (Cl-)	2019/11/05	NC	80 - 120	102	80 - 120	<1.0	mg/L	1.0	20		
6421067	Dissolved Sulphate (SO4)	2019/11/05	NC	75 - 125	104	80 - 120	<1.0	mg/L	2.0	20		
6421499	Dissolved Organic Carbon	2019/11/02	95	80 - 120	96	80 - 120	<0.50	mg/L	0.92	20		
6421519	Dissolved Organic Carbon	2019/11/02	95	80 - 120	96	80 - 120	<0.50	mg/L	13	20		
6421546	Nitrate (N)	2019/11/07	101	80 - 120	101	80 - 120	<0.10	mg/L	0.76	20		
6421546	Nitrite (N)	2019/11/07	104	80 - 120	103	80 - 120	<0.010	mg/L	6.9	20		
6421607	Dissolved (0.2u) Aluminum (Al)	2019/11/04	98	80 - 120	97	80 - 120	<5	ug/L	2.4	20		
6421667	Dissolved Chloride (Cl-)	2019/11/04	119	80 - 120	104	80 - 120	<1.0	mg/L	2.3	20		
6421669	Dissolved Sulphate (SO4)	2019/11/04	136 (1)	75 - 125	102	80 - 120	<1.0	mg/L	NC	20		
6421670	Orthophosphate (P)	2019/11/05	114	75 - 125	100	80 - 120	<0.010	mg/L	NC	25		

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6421674	Dissolved Chloride (Cl-)	2019/11/06	NC	80 - 120	101	80 - 120	<1.0	mg/L	0.26	20		
6421676	Dissolved Sulphate (SO4)	2019/11/06	NC	75 - 125	103	80 - 120	<1.0	mg/L	1.4	20		
6421677	Orthophosphate (P)	2019/11/05	101	75 - 125	101	80 - 120	<0.010	mg/L	NC	25		
6421811	Dissolved Aluminum (Al)	2019/11/07	99	80 - 120	102	80 - 120	<5.0	ug/L				
6421811	Dissolved Antimony (Sb)	2019/11/07	102	80 - 120	98	80 - 120	<0.50	ug/L				
6421811	Dissolved Arsenic (As)	2019/11/07	98	80 - 120	99	80 - 120	<1.0	ug/L	0.38	20		
6421811	Dissolved Barium (Ba)	2019/11/07	96	80 - 120	99	80 - 120	<2.0	ug/L	0.45	20		
6421811	Dissolved Beryllium (Be)	2019/11/07	96	80 - 120	98	80 - 120	<0.50	ug/L				
6421811	Dissolved Bismuth (Bi)	2019/11/07	99	80 - 120	101	80 - 120	<1.0	ug/L				
6421811	Dissolved Boron (B)	2019/11/07	94	80 - 120	99	80 - 120	<10	ug/L	5.1	20		
6421811	Dissolved Cadmium (Cd)	2019/11/07	101	80 - 120	100	80 - 120	<0.10	ug/L	NC	20		
6421811	Dissolved Calcium (Ca)	2019/11/07	NC	80 - 120	99	80 - 120	<200	ug/L	3.9	20		
6421811	Dissolved Chromium (Cr)	2019/11/07	99	80 - 120	99	80 - 120	<5.0	ug/L	NC	20		
6421811	Dissolved Cobalt (Co)	2019/11/07	100	80 - 120	101	80 - 120	<0.50	ug/L				
6421811	Dissolved Copper (Cu)	2019/11/07	100	80 - 120	99	80 - 120	<1.0	ug/L	NC	20		
6421811	Dissolved Iron (Fe)	2019/11/07	98	80 - 120	100	80 - 120	<100	ug/L	1.4	20		
6421811	Dissolved Lead (Pb)	2019/11/07	100	80 - 120	102	80 - 120	<0.50	ug/L	NC	20		
6421811	Dissolved Magnesium (Mg)	2019/11/07	99	80 - 120	102	80 - 120	<50	ug/L	0.31	20		
6421811	Dissolved Manganese (Mn)	2019/11/07	NC	80 - 120	95	80 - 120	<2.0	ug/L	2.3	20		
6421811	Dissolved Molybdenum (Mo)	2019/11/07	105	80 - 120	101	80 - 120	<0.50	ug/L				
6421811	Dissolved Nickel (Ni)	2019/11/07	92	80 - 120	95	80 - 120	<1.0	ug/L				
6421811	Dissolved Potassium (K)	2019/11/07	93	80 - 120	98	80 - 120	<200	ug/L	1.4	20		
6421811	Dissolved Selenium (Se)	2019/11/07	98	80 - 120	97	80 - 120	<2.0	ug/L				
6421811	Dissolved Silicon (Si)	2019/11/07	99	80 - 120	107	80 - 120	<50	ug/L				
6421811	Dissolved Sodium (Na)	2019/11/07	NC	80 - 120	101	80 - 120	<100	ug/L	0.27	20		
6421811	Dissolved Strontium (Sr)	2019/11/07	91	80 - 120	93	80 - 120	<1.0	ug/L				
6421811	Dissolved Thallium (Tl)	2019/11/07	99	80 - 120	102	80 - 120	<0.050	ug/L				
6421811	Dissolved Tin (Sn)	2019/11/07	103	80 - 120	101	80 - 120	<1.0	ug/L				
6421811	Dissolved Vanadium (V)	2019/11/07	96	80 - 120	96	80 - 120	<0.50	ug/L				
6421811	Dissolved Zinc (Zn)	2019/11/07	97	80 - 120	100	80 - 120	<5.0	ug/L	NC	20		
6421901	Total Dissolved Solids	2019/11/05					<10	mg/L	2.7	25	102	90 - 110

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6421977	Total Dissolved Solids	2019/11/05					<10	mg/L	8.9	25	98	90 - 110
6422136	1,1,1,2-Tetrachloroethane	2019/11/06	100	70 - 130	105	70 - 130	<0.20	ug/L	NC	30		
6422136	1,1,1-Trichloroethane	2019/11/06	NC	70 - 130	106	70 - 130	<0.10	ug/L	NC	30		
6422136	1,1,2,2-Tetrachloroethane	2019/11/06	93	70 - 130	102	70 - 130	<0.20	ug/L	NC	30		
6422136	1,1,2-Trichloroethane	2019/11/06	92	70 - 130	100	70 - 130	<0.20	ug/L	NC	30		
6422136	1,1-Dichloroethane	2019/11/06	101	70 - 130	103	70 - 130	<0.10	ug/L	NC	30		
6422136	1,1-Dichloroethylene	2019/11/06	95	70 - 130	98	70 - 130	<0.10	ug/L	NC	30		
6422136	1,2-Dichlorobenzene	2019/11/06	97	70 - 130	102	70 - 130	<0.20	ug/L	NC	30		
6422136	1,2-Dichloroethane	2019/11/06	102	70 - 130	108	70 - 130	<0.20	ug/L	NC	30		
6422136	1,2-Dichloropropane	2019/11/06	97	70 - 130	101	70 - 130	<0.10	ug/L	NC	30		
6422136	1,3-Dichlorobenzene	2019/11/06	101	70 - 130	105	70 - 130	<0.20	ug/L	NC	30		
6422136	1,4-Dichlorobenzene	2019/11/06	101	70 - 130	105	70 - 130	<0.20	ug/L	NC	30		
6422136	Acetone (2-Propanone)	2019/11/06	110	60 - 140	114	60 - 140	<10	ug/L	NC	30		
6422136	Benzene	2019/11/06	99	70 - 130	99	70 - 130	<0.10	ug/L	NC	30		
6422136	Bromodichloromethane	2019/11/06	101	70 - 130	107	70 - 130	<0.10	ug/L	NC	30		
6422136	Bromoform	2019/11/06	99	70 - 130	107	70 - 130	<0.20	ug/L	NC	30		
6422136	Bromomethane	2019/11/06	103	60 - 140	97	60 - 140	<0.50	ug/L	NC	30		
6422136	Carbon Tetrachloride	2019/11/06	108	70 - 130	108	70 - 130	<0.10	ug/L	NC	30		
6422136	Chlorobenzene	2019/11/06	96	70 - 130	100	70 - 130	<0.10	ug/L	NC	30		
6422136	Chloroform	2019/11/06	102	70 - 130	104	70 - 130	<0.10	ug/L	NC	30		
6422136	cis-1,2-Dichloroethylene	2019/11/06	100	70 - 130	101	70 - 130	<0.10	ug/L	NC	30		
6422136	cis-1,3-Dichloropropene	2019/11/06	101	70 - 130	106	70 - 130	<0.20	ug/L	NC	30		
6422136	Dibromochloromethane	2019/11/06	100	70 - 130	108	70 - 130	<0.20	ug/L	NC	30		
6422136	Dichlorodifluoromethane (FREON 12)	2019/11/06	86	60 - 140	90	60 - 140	<0.50	ug/L	NC	30		
6422136	Ethylbenzene	2019/11/06	101	70 - 130	103	70 - 130	<0.10	ug/L	NC	30		
6422136	Ethylene Dibromide	2019/11/06	94	70 - 130	103	70 - 130	<0.20	ug/L	NC	30		
6422136	Hexane	2019/11/06	108	70 - 130	107	70 - 130	<0.50	ug/L	NC	30		
6422136	Methyl Ethyl Ketone (2-Butanone)	2019/11/06	96	60 - 140	104	60 - 140	<5.0	ug/L	NC	30		
6422136	Methyl Isobutyl Ketone	2019/11/06	95	70 - 130	106	70 - 130	<5.0	ug/L	NC	30		
6422136	Methyl t-butyl ether (MTBE)	2019/11/06	94	70 - 130	105	70 - 130	<0.20	ug/L	NC	30		
6422136	Methylene Chloride(Dichloromethane)	2019/11/06	94	70 - 130	98	70 - 130	<0.50	ug/L	NC	30		

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6422136	o-Xylene	2019/11/06	100	70 - 130	103	70 - 130	<0.10	ug/L	5.9	30		
6422136	p+m-Xylene	2019/11/06	103	70 - 130	104	70 - 130	<0.10	ug/L	15	30		
6422136	Styrene	2019/11/06	99	70 - 130	104	70 - 130	<0.20	ug/L	NC	30		
6422136	Tetrachloroethylene	2019/11/06	99	70 - 130	101	70 - 130	<0.10	ug/L	NC	30		
6422136	Toluene	2019/11/06	97	70 - 130	97	70 - 130	<0.20	ug/L	NC	30		
6422136	Total Xylenes	2019/11/06					<0.10	ug/L	12	30		
6422136	trans-1,2-Dichloroethylene	2019/11/06	101	70 - 130	100	70 - 130	<0.10	ug/L	NC	30		
6422136	trans-1,3-Dichloropropene	2019/11/06	103	70 - 130	108	70 - 130	<0.20	ug/L	NC	30		
6422136	Trichloroethylene	2019/11/06	NC	70 - 130	100	70 - 130	<0.10	ug/L	1.7	30		
6422136	Trichlorofluoromethane (FREON 11)	2019/11/06	94	70 - 130	98	70 - 130	<0.20	ug/L	NC	30		
6422136	Vinyl Chloride	2019/11/06	87	70 - 130	90	70 - 130	<0.20	ug/L	NC	30		
6422303	Phenols-4AAP	2019/11/05	101	80 - 120	100	80 - 120	<0.0010	mg/L	NC	20		
6422307	Phenols-4AAP	2019/11/04	97	80 - 120	97	80 - 120	<0.0010	mg/L	8.7	20		
6422683	Total Suspended Solids	2019/11/05					<1	mg/L	NC	25	100	85 - 115
6422724	Total Ammonia-N	2019/11/05	101	75 - 125	101	80 - 120	<0.050	mg/L	NC	20		
6422981	Mercury (Hg)	2019/11/06	90	75 - 125	94	80 - 120	<0.0001	mg/L	NC	20		
6423031	Total Ammonia-N	2019/11/05	98	75 - 125	101	80 - 120	<0.050	mg/L	NC	20		
6423037	Total Ammonia-N	2019/11/05	102	75 - 125	101	80 - 120	<0.050	mg/L	6.2	20		
6423054	Total Dissolved Solids	2019/11/05					<10	mg/L	3.5	25	98	90 - 110
6423146	Total Phosphorus	2019/11/05	95	80 - 120	95	80 - 120	<0.020	mg/L	NC	20	95	80 - 120
6423160	Total Chemical Oxygen Demand (COD)	2019/11/05	103	80 - 120	104	80 - 120	<4.0	mg/L	NC	20		
6423172	Total Kjeldahl Nitrogen (TKN)	2019/11/06	96	80 - 120	103	80 - 120	<0.10	mg/L	NC (2)	20	103	80 - 120
6423177	Total Kjeldahl Nitrogen (TKN)	2019/11/08	100	80 - 120	102	80 - 120	<0.10	mg/L	8.0	20	94	80 - 120
6423353	Total Chemical Oxygen Demand (COD)	2019/11/05	105	80 - 120	96	80 - 120	<4.0	mg/L	3.9	20		
6423363	Total Kjeldahl Nitrogen (TKN)	2019/11/08	94	80 - 120	94	80 - 120	<0.10	mg/L	NC	20	88	80 - 120
6424640	Total Antimony (Sb)	2019/11/06	101	80 - 120	96	80 - 120	<0.50	ug/L				
6424640	Total Arsenic (As)	2019/11/06	99	80 - 120	98	80 - 120	<1.0	ug/L				
6424640	Total Barium (Ba)	2019/11/06	99	80 - 120	96	80 - 120	<2.0	ug/L				
6424640	Total Beryllium (Be)	2019/11/06	91	80 - 120	86	80 - 120	<0.50	ug/L				
6424640	Total Bismuth (Bi)	2019/11/06	93	80 - 120	94	80 - 120	<1.0	ug/L				
6424640	Total Boron (B)	2019/11/06	89	80 - 120	87	80 - 120	<10	ug/L				

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6424640	Total Cadmium (Cd)	2019/11/06	97	80 - 120	95	80 - 120	<0.10	ug/L	NC	20		
6424640	Total Calcium (Ca)	2019/11/06	NC	80 - 120	102	80 - 120	<200	ug/L				
6424640	Total Chromium (Cr)	2019/11/06	96	80 - 120	97	80 - 120	<5.0	ug/L	7.7	20		
6424640	Total Copper (Cu)	2019/11/06	109	80 - 120	102	80 - 120	<1.0	ug/L	16	20		
6424640	Total Iron (Fe)	2019/11/06	98	80 - 120	98	80 - 120	<100	ug/L	7.3	20		
6424640	Total Lead (Pb)	2019/11/06	96	80 - 120	95	80 - 120	<0.50	ug/L	4.8	20		
6424640	Total Magnesium (Mg)	2019/11/06	95	80 - 120	100	80 - 120	<50	ug/L				
6424640	Total Manganese (Mn)	2019/11/06	91	80 - 120	93	80 - 120	<2.0	ug/L				
6424640	Total Molybdenum (Mo)	2019/11/06	107	80 - 120	96	80 - 120	<0.50	ug/L				
6424640	Total Nickel (Ni)	2019/11/06	96	80 - 120	98	80 - 120	<1.0	ug/L	2.6	20		
6424640	Total Potassium (K)	2019/11/06	101	80 - 120	103	80 - 120	<200	ug/L				
6424640	Total Selenium (Se)	2019/11/06	95	80 - 120	99	80 - 120	<2.0	ug/L				
6424640	Total Silicon (Si)	2019/11/06	101	80 - 120	99	80 - 120	<50	ug/L				
6424640	Total Silver (Ag)	2019/11/06	98	80 - 120	97	80 - 120	<0.10	ug/L				
6424640	Total Sodium (Na)	2019/11/06	NC	80 - 120	103	80 - 120	<100	ug/L				
6424640	Total Strontium (Sr)	2019/11/06	NC	80 - 120	92	80 - 120	<1.0	ug/L				
6424640	Total Thallium (Tl)	2019/11/06	97	80 - 120	98	80 - 120	<0.050	ug/L				
6424640	Total Vanadium (V)	2019/11/06	97	80 - 120	96	80 - 120	<0.50	ug/L				
6424640	Total Zinc (Zn)	2019/11/06	98	80 - 120	99	80 - 120	<5.0	ug/L	4.1	20		
6424887	Mercury (Hg)	2019/11/05	94	75 - 125	91	80 - 120	<0.0001	mg/L	NC	20		
6424902	Mercury (Hg)	2019/11/06	91	75 - 125	92	80 - 120	<0.0001	mg/L	NC	20		
6424954	Total Phosphorus	2019/11/06	89	80 - 120	97	80 - 120	<0.020	mg/L	NC	20	95	80 - 120
6425186	Total Phosphorus	2019/11/07	89	80 - 120	94	80 - 120	<0.004	mg/L	2.7	20	86	80 - 120
6425265	Total Antimony (Sb)	2019/11/08	101	80 - 120	98	80 - 120	<0.50	ug/L	NC	20		
6425265	Total Arsenic (As)	2019/11/08	100	80 - 120	98	80 - 120	<1.0	ug/L	1.1	20		
6425265	Total Barium (Ba)	2019/11/08	98	80 - 120	96	80 - 120	<2.0	ug/L	4.0	20		
6425265	Total Beryllium (Be)	2019/11/08	99	80 - 120	93	80 - 120	<0.50	ug/L	NC	20		
6425265	Total Bismuth (Bi)	2019/11/08	94	80 - 120	95	80 - 120	<1.0	ug/L	NC	20		
6425265	Total Boron (B)	2019/11/08	95	80 - 120	89	80 - 120	<10	ug/L	NC	20		
6425265	Total Cadmium (Cd)	2019/11/08	99	80 - 120	97	80 - 120	<0.10	ug/L	NC	20		
6425265	Total Calcium (Ca)	2019/11/08	NC	80 - 120	100	80 - 120	<200	ug/L	0.69	20		

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6425265	Total Chromium (Cr)	2019/11/08	101	80 - 120	100	80 - 120	<5.0	ug/L	NC	20		
6425265	Total Copper (Cu)	2019/11/08	104	80 - 120	103	80 - 120	<1.0	ug/L	0.63	20		
6425265	Total Iron (Fe)	2019/11/08	99	80 - 120	97	80 - 120	<100	ug/L	0.24	20		
6425265	Total Lead (Pb)	2019/11/08	97	80 - 120	94	80 - 120	<0.50	ug/L	NC	20		
6425265	Total Magnesium (Mg)	2019/11/08	95	80 - 120	99	80 - 120	<50	ug/L	0.76	20		
6425265	Total Manganese (Mn)	2019/11/08	94	80 - 120	92	80 - 120	<2.0	ug/L	1.2	20		
6425265	Total Molybdenum (Mo)	2019/11/08	105	80 - 120	102	80 - 120	<0.50	ug/L	NC	20		
6425265	Total Nickel (Ni)	2019/11/08	96	80 - 120	94	80 - 120	<1.0	ug/L	14	20		
6425265	Total Potassium (K)	2019/11/08	98	80 - 120	98	80 - 120	<200	ug/L	2.1	20		
6425265	Total Selenium (Se)	2019/11/08	101	80 - 120	99	80 - 120	<2.0	ug/L	NC	20		
6425265	Total Silicon (Si)	2019/11/08	100	80 - 120	97	80 - 120	<50	ug/L	2.9	20		
6425265	Total Silver (Ag)	2019/11/08	97	80 - 120	95	80 - 120	<0.10	ug/L	NC	20		
6425265	Total Sodium (Na)	2019/11/08	NC	80 - 120	100	80 - 120	<100	ug/L	1.9	20		
6425265	Total Strontium (Sr)	2019/11/08	95	80 - 120	93	80 - 120	<1.0	ug/L	0.10	20		
6425265	Total Thallium (Tl)	2019/11/08	98	80 - 120	96	80 - 120	<0.050	ug/L	NC	20		
6425265	Total Vanadium (V)	2019/11/08	103	80 - 120	98	80 - 120	<0.50	ug/L	7.5	20		
6425265	Total Zinc (Zn)	2019/11/08	100	80 - 120	98	80 - 120	<5.0	ug/L	NC	20		

N/A = Not Applicable

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

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

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

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

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

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

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

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

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

(2) Due to a high concentration of NOx, the sample required dilution. The detection limit was adjusted accordingly.

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

VALIDATION SIGNATURE PAGE

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

Anastassia Hamanov, Scientific Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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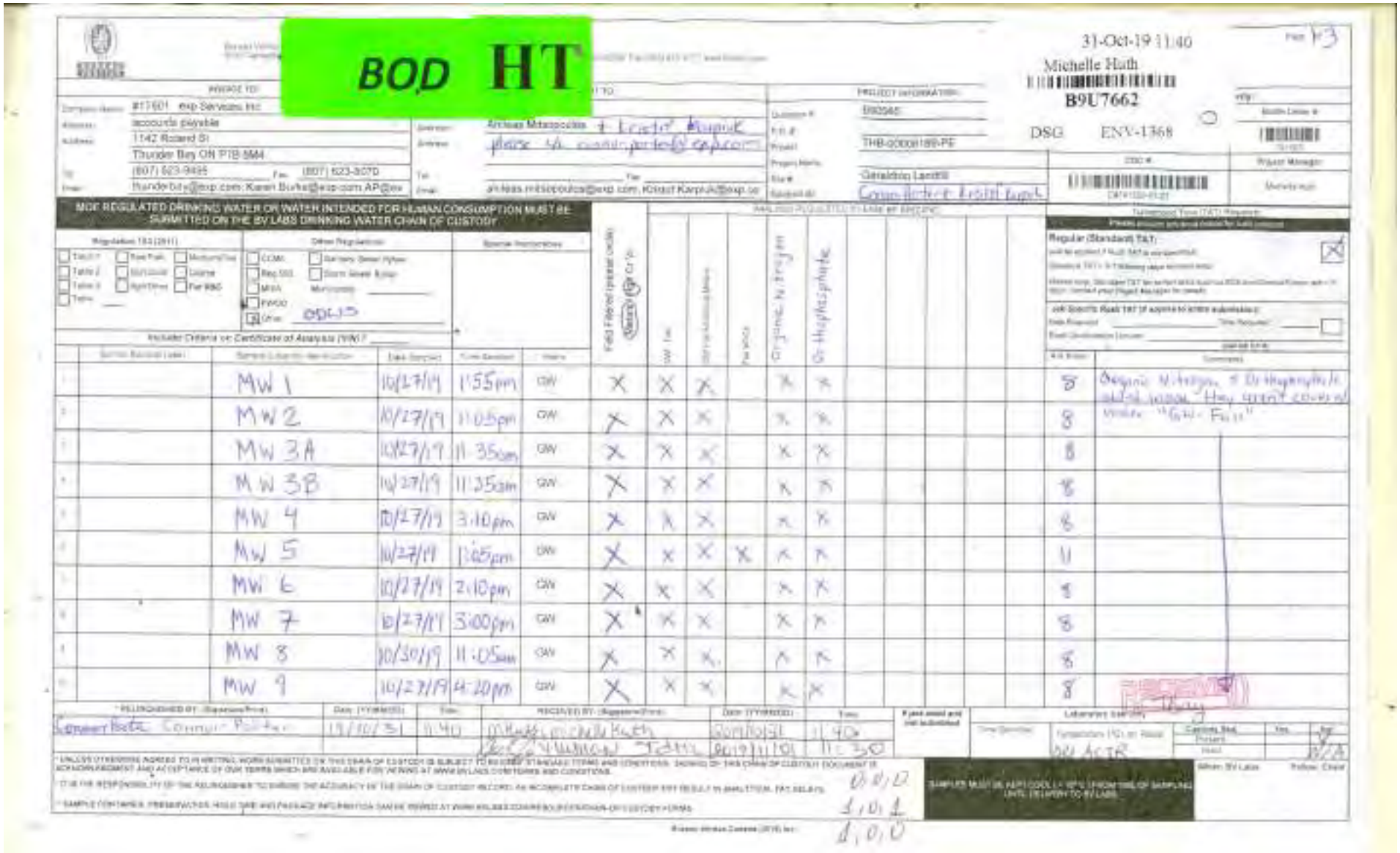
BOD
HT
31-Oct-19 11:40
Michelle Huth
B9U7662
DSG
ENV-1368
MW 1
MW 2
MW 3A
MW 3B
MW 4
MW 5
MW 6
MW 7
MW 8
MW 9

Bureau Veritas [illegible]

CHAIN OF CUSTODY RECORD

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only
Company Name	#17501 exp Services Inc	Company Name		Quotation #	B90565	BV Labs Job # / Bottle Order #
Attention	accounts payable	Attention	Athleas Mitsopoulos	P.O. #		
Address	1142 Roland St	Address		Project	THB-00006109-PE	COC # / Project Manager
	Thunder Bay ON P7B 5M4			Project Name		
Tel	(807) 623-9495 Fax (807) 623-8070	Tel		Site #	Dorion Landfill	
Email	thunderbay@exp.com; Karen.Burke@exp.com; AP@ex	Email	athleas.mitsopoulos@exp.com; Kristof.Kaspak@exp.co	Sampled By	Connor Becker & Kristof Kaspak	

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BV LABS DRINKING WATER CHAIN OF CUSTODY

Other: D Plus

Regular (Standard) TAT: ☒

#	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered	[illegible]	[illegible]	[illegible]	[illegible]	Organic Nitrogen	Ortho-phosphate	# of Bottles	Comments
1		MW10A	10/27/19	5:40pm	GW	X	X	X		X	X		8	Organic N + ortho-phosphate added (though they aren't under "GW-Full")
2		MW10B	10/27/19	6:15pm	GW	X	X	X		X	X		8	↓
3		MW11	10/27/19	3:50pm	GW	X	X	X		X	X		8	↓
4					GW									
5					GW									
6		~~SW 1~~	~~10/30/19~~	~~11:55am~~	~~SW~~	~~X~~								~~Dissolved metals not filtered~~
7		~~SW 2~~	~~10/28/19~~	~~6:35pm~~	~~SW~~	~~X~~								~~Dissolved metals not filtered~~
8		~~SW 3~~	~~10/29/19~~	~~6:10pm~~	~~SW~~	~~X~~								~~Dissolved metals not filtered~~
9														
10														

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time
Connor Becker / Connor Becker	19/10/31		[illegible] (see above)		

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

[illegible fine print]

Bureau Veritas Canada (2019) Inc.

CHAIN OF CUSTODY RECORD

Page 3 of 3

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only	
Company Name	#17001 wsp Services Inc	Company Name		Quotation #	B92569	BV Labs Job #	Bottle Order #
Attention	accounts payable	Attention	Alexas Mitsopoulos + Kristof Karpick	P.O. #			
Address	1142 Roland St	Address	please cc Kristof Karpick	Project	THG-00000189-PE	COC #	Project Manager
	Thunder Bay ON P7B 5M4			Project Name			
Tel	(807) 623-9495 Fax (807) 623-8070	Tel		Site #	Geraldton Landfill		
Email	thunderbay@wsp.com; Karen.Burke@wsp.com AP@wsp	Email	alexas.mitsopoulos@wsp.com; Kristof.Karpick@wsp.co	Sampled By	Cuvan Porter + Kristof Karpick		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BV LABS DRINKING WATER CHAIN OF CUSTODY

Regular (Standard) TAT: [X]

Other Regulations: [X] PWQO

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered / Metals / Hg / Cr VI			# of Bottles	Comments
1		SW 1	10/30/19	11:55am	SW	X	x	x	9	
2		SW 2	10/28/19	6:35pm	SW	X	x	x	9	
3		SW 3	10/28/19	6:10pm	SW	X	x	x	9	
4										
5										
6										
7										
8										
9										
10										

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time
Cuvan Porter Cuvan Porter	19/10/31		[illegible]		

Your Project #: THB-00006189-QE
Site Location: GERALDTON LANDFILL

Attention: Ahileas Mitsopoulos

exp Services Inc
Thunder Bay Branch
1142 Roland St
Thunder Bay, ON
CANADA P7B 5M4

Your C.O.C. #: 770937-01-01, 770937-02-01, C#770940-01-01

Report Date: 2020/05/25
Report #: R6185728
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0C0212
Received: 2020/05/14, 14:13

Sample Matrix: Water
Samples Received: 17

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Dissolved Aluminum (0.2 u, clay free)	3	N/A	2020/05/21	CAM SOP-00447	EPA 6020B m
Alkalinity	1	N/A	2020/05/21	CAM SOP-00448	SM 23 2320 B m
Alkalinity	16	N/A	2020/05/22	CAM SOP-00448	SM 23 2320 B m
Biochemical Oxygen Demand (BOD)	3	2020/05/16	2020/05/21	CAM SOP-00427	SM 23 5210B m
Chloride by Automated Colourimetry	17	N/A	2020/05/21	CAM SOP-00463	SM 23 4500-Cl E m
Chemical Oxygen Demand	17	N/A	2020/05/22	CAM SOP-00416	SM 23 5220 D m
Conductivity	1	N/A	2020/05/21	CAM SOP-00414	SM 23 2510 m
Conductivity	16	N/A	2020/05/22	CAM SOP-00414	SM 23 2510 m
Dissolved Organic Carbon (DOC) (1)	5	N/A	2020/05/21	CAM SOP-00446	SM 23 5310 B m
Dissolved Organic Carbon (DOC) (1)	8	N/A	2020/05/22	CAM SOP-00446	SM 23 5310 B m
Dissolved Organic Carbon (DOC) (1)	4	N/A	2020/05/23	CAM SOP-00446	SM 23 5310 B m
Field Measured Conductivity (2)	14	N/A	2020/05/14		Field Meter
Hardness (calculated as CaCO3)	3	N/A	2020/05/21	CAM SOP 00102/00408/00447	SM 2340 B
Hardness (calculated as CaCO3)	7	N/A	2020/05/22	CAM SOP 00102/00408/00447	SM 2340 B
Hardness (calculated as CaCO3)	7	N/A	2020/05/25	CAM SOP 00102/00408/00447	SM 2340 B
Mercury in Water by CVAA	1	2020/05/20	2020/05/20	CAM SOP-00453	EPA 7470A m
Mercury in Water by CVAA	16	2020/05/20	2020/05/21	CAM SOP-00453	EPA 7470A m
Dissolved Metals by ICPMS	6	N/A	2020/05/21	CAM SOP-00447	EPA 6020B m
Dissolved Metals by ICPMS	5	N/A	2020/05/22	CAM SOP-00447	EPA 6020B m
Dissolved Metals by ICPMS	3	N/A	2020/05/25	CAM SOP-00447	EPA 6020B m
Total Metals Analysis by ICPMS	3	N/A	2020/05/21	CAM SOP-00447	EPA 6020B m
Ion Balance (% Difference)	14	N/A	2020/05/25		
Total Ammonia-N	17	N/A	2020/05/22	CAM SOP-00441	USGS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (3)	12	N/A	2020/05/21	CAM SOP-00440	SM 23 4500-NO3I/NO2B

Your Project #: THB-00006189-QE
Site Location: GERALDTON LANDFILL

Attention: Ahileas Mitsopoulos

exp Services Inc
Thunder Bay Branch
1142 Roland St
Thunder Bay, ON
CANADA P7B 5M4

Your C.O.C. #: 770937-01-01, 770937-02-01, C#770940-01-01

Report Date: 2020/05/25
Report #: R6185728
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0C0212
Received: 2020/05/14, 14:13

Sample Matrix: Water
Samples Received: 17

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Nitrate (NO3) and Nitrite (NO2) in Water (3)	5	N/A	2020/05/22	CAM SOP-00440	SM 23 4500-NO3I/NO2B
Organic Nitrogen	17	N/A	2020/05/22		
pH	1	2020/05/20	2020/05/21	CAM SOP-00413	SM 4500H+ B m
pH	16	2020/05/21	2020/05/22	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	17	N/A	2020/05/20	CAM SOP-00444	OMOE E3179 m
Field Measured pH (2)	14	N/A	2020/05/14		Field pH Meter
Orthophosphate	14	N/A	2020/05/22	CAM SOP-00461	EPA 365.1 m
Sulphate by Automated Colourimetry	17	N/A	2020/05/21	CAM SOP-00464	EPA 375.4 m
Total Dissolved Solids	17	2020/05/20	2020/05/21	CAM SOP-00428	SM 23 2540C m
Total Kjeldahl Nitrogen in Water	4	2020/05/21	2020/05/22	CAM SOP-00938	OMOE E3516 m
Total Kjeldahl Nitrogen in Water	13	2020/05/22	2020/05/22	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	3	2020/05/22	2020/05/25	CAM SOP-00407	SM 23 4500 P B H m
Total Phosphorus (Colourimetric)	14	2020/05/22	2020/05/25	CAM SOP-00407	SM 23 4500 P B H m
Low Level Total Suspended Solids	2	2020/05/20	2020/05/21	CAM SOP-00428	SM 23 2540D m
Low Level Total Suspended Solids	1	2020/05/21	2020/05/21	CAM SOP-00428	SM 23 2540D m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

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

Your Project #: THB-00006189-QE
Site Location: GERALDTON LANDFILL

Attention: Ahileas Mitsopoulos

exp Services Inc
Thunder Bay Branch
1142 Roland St
Thunder Bay, ON
CANADA P7B 5M4

Your C.O.C. #: 770937-01-01, 770937-02-01, C#770940-01-01

Report Date: 2020/05/25
Report #: R6185728
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0C0212
Received: 2020/05/14, 14:13

BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
(1) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.
(2) This is a field test, therefore, the results relate to items that were not analysed at Bureau Veritas Laboratories.
(3) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Julie Clement, Technical Account Manager
Email: Julie.CLEMENT@bvlabs.com
Phone# (613)868-6079
==========
This report has been generated and distributed using a secure automated process.
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

BV Labs Job #: C0C0212
Report Date: 2020/05/25

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: GERALDTON LANDFILL
Sampler Initials: FF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					MQO373			MQO373		
Sampling Date					2020/05/11 10:55			2020/05/11 10:55		
COC Number					770937-01-01			770937-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW1**	**RDL**	**QC Batch**	**MW1 Lab-Dup**	**RDL**	**QC Batch**
Inorganics										
Total Ammonia-N	mg/L	-	-	-	6.5	0.050	6737502			
Total Chemical Oxygen Demand (COD)	mg/L	-	-	-	33	4.0	6734360	33	4.0	6734360
Conductivity	umho/cm	-	-	-	1600	1.0	6733842			
Total Dissolved Solids	mg/L	-	-	500	870	10	6731200			
Total Kjeldahl Nitrogen (TKN)	mg/L	-	-	-	7.2	0.50	6734357			
Dissolved Organic Carbon	mg/L	-	-	5	9.2	0.40	6734717			
pH	pH	6.5:8.5	-	6.5:8.5	7.55		6733843			
Phenols-4AAP	mg/L	0.001	-	-	0.0010	0.0010	6732043			
Total Phosphorus	mg/L	0.01	-	-	0.055	0.020	6738064			
Dissolved Sulphate (SO4)	mg/L	-	-	500	27	1.0	6732587			
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500	600	1.0	6733839			
Dissolved Chloride (Cl-)	mg/L	-	-	250	150	2.0	6732582			
Nitrite (N)	mg/L	-	1	-	<0.010	0.010	6733860			
Nitrate (N)	mg/L	-	10	-	<0.10	0.10	6733860			
Metals										
Mercury (Hg)	mg/L	0.0002	0.001	-	<0.00010	0.00010	6732008			
Dissolved Aluminum (Al)	ug/L	-	-	100	7.3	5.0	6731720			
Dissolved Antimony (Sb)	ug/L	20	6	-	<0.50	0.50	6731720			
Dissolved Arsenic (As)	ug/L	100	10	-	18	1.0	6731720			
Dissolved Barium (Ba)	ug/L	-	1000	-	120	2.0	6731720			
Dissolved Beryllium (Be)	ug/L	11	-	-	<0.50	0.50	6731720			
Dissolved Bismuth (Bi)	ug/L	-	-	-	<1.0	1.0	6731720			
Dissolved Boron (B)	ug/L	200	5000	-	170	10	6731720			
Dissolved Cadmium (Cd)	ug/L	0.2	5	-	<0.10	0.10	6731720			
Dissolved Calcium (Ca)	ug/L	-	-	-	160000	200	6731720			
Dissolved Chromium (Cr)	ug/L	-	50	-	<5.0	5.0	6731720			
Dissolved Cobalt (Co)	ug/L	0.9	-	-	14	0.50	6731720			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

BV Labs Job #: C0C0212
Report Date: 2020/05/25

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: GERALDTON LANDFILL
Sampler Initials: FF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					MQO373			MQO373		
Sampling Date					2020/05/11 10:55			2020/05/11 10:55		
COC Number					770937-01-01			770937-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW1**	**RDL**	**QC Batch**	**MW1 Lab-Dup**	**RDL**	**QC Batch**
Dissolved Copper (Cu)	ug/L	5	-	1000	1.0	1.0	6731720			
Dissolved Iron (Fe)	ug/L	300	-	300	18000	100	6731720			
Dissolved Lead (Pb)	ug/L	5	10	-	<0.50	0.50	6731720			
Dissolved Magnesium (Mg)	ug/L	-	-	-	15000	50	6731720			
Dissolved Manganese (Mn)	ug/L	-	-	50	1900	2.0	6731720			
Dissolved Molybdenum (Mo)	ug/L	40	-	-	1.4	0.50	6731720			
Dissolved Nickel (Ni)	ug/L	25	-	-	5.6	1.0	6731720			
Dissolved Potassium (K)	ug/L	-	-	-	17000	200	6731720			
Dissolved Selenium (Se)	ug/L	100	50	-	<2.0	2.0	6731720			
Dissolved Silicon (Si)	ug/L	-	-	-	8900	50	6731720			
Dissolved Sodium (Na)	ug/L	-	-	200000	97000	100	6731720			
Dissolved Strontium (Sr)	ug/L	-	-	-	270	1.0	6731720			
Dissolved Thallium (Tl)	ug/L	0.3	-	-	0.10	0.050	6731720			
Dissolved Tin (Sn)	ug/L	-	-	-	<1.0	1.0	6731720			
Dissolved Vanadium (V)	ug/L	6	-	-	1.3	0.50	6731720			
Dissolved Zinc (Zn)	ug/L	30	-	5000	<5.0	5.0	6731720			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

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BV Labs Job #: C0C0212
Report Date: 2020/05/25

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: GERALDTON LANDFILL
Sampler Initials: FF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					MQO374			MQO374		
Sampling Date					2020/05/11 16:15			2020/05/11 16:15		
COC Number					770937-01-01			770937-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW2**	**RDL**	**QC Batch**	**MW2 Lab-Dup**	**RDL**	**QC Batch**
Inorganics										
Total Ammonia-N	mg/L	-	-	-	0.43	0.050	6737502			
Total Chemical Oxygen Demand (COD)	mg/L	-	-	-	14	4.0	6734360			
Conductivity	umho/cm	-	-	-	440	1.0	6733842			
Total Dissolved Solids	mg/L	-	-	500	215	10	6732141			
Total Kjeldahl Nitrogen (TKN)	mg/L	-	-	-	0.51	0.10	6737235	0.52	0.10	6737235
Dissolved Organic Carbon	mg/L	-	-	5	5.7	0.40	6732269			
pH	pH	6.5:8.5	-	6.5:8.5	7.87		6733843			
Phenols-4AAP	mg/L	0.001	-	-	<0.0010	0.0010	6732043			
Total Phosphorus	mg/L	0.01	-	-	**<0.020 (1)**	0.020	6738064			
Dissolved Sulphate (SO4)	mg/L	-	-	500	<1.0	1.0	6732566	<1.0	1.0	6732566
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500	220	1.0	6733839			
Dissolved Chloride (Cl-)	mg/L	-	-	250	4.9	1.0	6732560	5.0	1.0	6732560
Nitrite (N)	mg/L	-	1	-	0.011	0.010	6733860	<0.010	0.010	6733860
Nitrate (N)	mg/L	-	10	-	<0.10	0.10	6733860	<0.10	0.10	6733860
Metals										
Mercury (Hg)	mg/L	0.0002	0.001	-	<0.00010	0.00010	6732008			
Dissolved Aluminum (Al)	ug/L	-	-	100	10	5.0	6731731			
Dissolved Antimony (Sb)	ug/L	20	6	-	<0.50	0.50	6731731			
Dissolved Arsenic (As)	ug/L	100	10	-	2.6	1.0	6731731			
Dissolved Barium (Ba)	ug/L	-	1000	-	15	2.0	6731731			
Dissolved Beryllium (Be)	ug/L	11	-	-	<0.50	0.50	6731731			
Dissolved Bismuth (Bi)	ug/L	-	-	-	<1.0	1.0	6731731			
Dissolved Boron (B)	ug/L	200	5000	-	26	10	6731731			
Dissolved Cadmium (Cd)	ug/L	0.2	5	-	<0.10	0.10	6731731			
Dissolved Calcium (Ca)	ug/L	-	-	-	71000	200	6731731			
Dissolved Chromium (Cr)	ug/L	-	50	-	<5.0	5.0	6731731			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
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(1) RDL exceeds criteria

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BV Labs Job #: C0C0212
Report Date: 2020/05/25

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: GERALDTON LANDFILL
Sampler Initials: FF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					MQO374			MQO374		
Sampling Date					2020/05/11 16:15			2020/05/11 16:15		
COC Number					770937-01-01			770937-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW2**	**RDL**	**QC Batch**	**MW2 Lab-Dup**	**RDL**	**QC Batch**
Dissolved Cobalt (Co)	ug/L	0.9	-	-	1.8	0.50	6731731			
Dissolved Copper (Cu)	ug/L	5	-	1000	4.4	1.0	6731731			
Dissolved Iron (Fe)	ug/L	300	-	300	260	100	6731731			
Dissolved Lead (Pb)	ug/L	5	10	-	<0.50	0.50	6731731			
Dissolved Magnesium (Mg)	ug/L	-	-	-	9800	50	6731731			
Dissolved Manganese (Mn)	ug/L	-	-	50	1400	2.0	6731731			
Dissolved Molybdenum (Mo)	ug/L	40	-	-	0.55	0.50	6731731			
Dissolved Nickel (Ni)	ug/L	25	-	-	2.1	1.0	6731731			
Dissolved Potassium (K)	ug/L	-	-	-	1800	200	6731731			
Dissolved Selenium (Se)	ug/L	100	50	-	<2.0	2.0	6731731			
Dissolved Silicon (Si)	ug/L	-	-	-	4200	50	6731731			
Dissolved Sodium (Na)	ug/L	-	-	200000	4500	100	6731731			
Dissolved Strontium (Sr)	ug/L	-	-	-	63	1.0	6731731			
Dissolved Thallium (Tl)	ug/L	0.3	-	-	0.062	0.050	6731731			
Dissolved Tin (Sn)	ug/L	-	-	-	<1.0	1.0	6731731			
Dissolved Vanadium (V)	ug/L	6	-	-	0.99	0.50	6731731			
Dissolved Zinc (Zn)	ug/L	30	-	5000	<5.0	5.0	6731731			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

BV Labs Job #: C0C0212
Report Date: 2020/05/25

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: GERALDTON LANDFILL
Sampler Initials: FF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					MQO375			MQO375		
Sampling Date					2020/05/12 09:45			2020/05/12 09:45		
COC Number					770937-01-01			770937-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW3A**	**RDL**	**QC Batch**	**MW3A Lab-Dup**	**RDL**	**QC Batch**
Inorganics										
Total Ammonia-N	mg/L	-	-	-	10	0.050	6737502			
Total Chemical Oxygen Demand (COD)	mg/L	-	-	-	21	4.0	6734360			
Conductivity	umho/cm	-	-	-	1200	1.0	6733842			
Total Dissolved Solids	mg/L	-	-	500	595	10	6731200			
Total Kjeldahl Nitrogen (TKN)	mg/L	-	-	-	11	0.50	6734357			
Dissolved Organic Carbon	mg/L	-	-	5	7.2	0.40	6732269			
pH	pH	6.5:8.5	-	6.5:8.5	7.54		6733843			
Phenols-4AAP	mg/L	0.001	-	-	<0.0010	0.0010	6732033			
Total Phosphorus	mg/L	0.01	-	-	0.052	0.020	6738064			
Dissolved Sulphate (SO4)	mg/L	-	-	500	20	1.0	6732587			
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500	510	1.0	6733839			
Dissolved Chloride (Cl-)	mg/L	-	-	250	86	1.0	6732582			
Nitrite (N)	mg/L	-	1	-	<0.010	0.010	6733853			
Nitrate (N)	mg/L	-	10	-	<0.10	0.10	6733853			
Metals										
Mercury (Hg)	mg/L	0.0002	0.001	-	<0.00010	0.00010	6732008	<0.00010	0.00010	6732008
Dissolved Aluminum (Al)	ug/L	-	-	100	5.1	5.0	6731731			
Dissolved Antimony (Sb)	ug/L	20	6	-	<0.50	0.50	6731731			
Dissolved Arsenic (As)	ug/L	100	10	-	18	1.0	6731731			
Dissolved Barium (Ba)	ug/L	-	1000	-	160	2.0	6731731			
Dissolved Beryllium (Be)	ug/L	11	-	-	<0.50	0.50	6731731			
Dissolved Bismuth (Bi)	ug/L	-	-	-	<1.0	1.0	6731731			
Dissolved Boron (B)	ug/L	200	5000	-	270	10	6731731			
Dissolved Cadmium (Cd)	ug/L	0.2	5	-	<0.10	0.10	6731731			
Dissolved Calcium (Ca)	ug/L	-	-	-	150000	200	6731731			
Dissolved Chromium (Cr)	ug/L	-	50	-	<5.0	5.0	6731731			
Dissolved Cobalt (Co)	ug/L	0.9	-	-	5.5	0.50	6731731			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
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BV Labs Job #: C0C0212
Report Date: 2020/05/25

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: GERALDTON LANDFILL
Sampler Initials: FF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					MQO375			MQO375		
Sampling Date					2020/05/12 09:45			2020/05/12 09:45		
COC Number					770937-01-01			770937-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW3A**	**RDL**	**QC Batch**	**MW3A Lab-Dup**	**RDL**	**QC Batch**
Dissolved Copper (Cu)	ug/L	5	-	1000	<1.0	1.0	6731731			
Dissolved Iron (Fe)	ug/L	300	-	300	15000	100	6731731			
Dissolved Lead (Pb)	ug/L	5	10	-	<0.50	0.50	6731731			
Dissolved Magnesium (Mg)	ug/L	-	-	-	24000	50	6731731			
Dissolved Manganese (Mn)	ug/L	-	-	50	1300	2.0	6731731			
Dissolved Molybdenum (Mo)	ug/L	40	-	-	0.56	0.50	6731731			
Dissolved Nickel (Ni)	ug/L	25	-	-	5.5	1.0	6731731			
Dissolved Potassium (K)	ug/L	-	-	-	14000	200	6731731			
Dissolved Selenium (Se)	ug/L	100	50	-	<2.0	2.0	6731731			
Dissolved Silicon (Si)	ug/L	-	-	-	8100	50	6731731			
Dissolved Sodium (Na)	ug/L	-	-	200000	59000	100	6731731			
Dissolved Strontium (Sr)	ug/L	-	-	-	240	1.0	6731731			
Dissolved Thallium (Tl)	ug/L	0.3	-	-	<0.050	0.050	6731731			
Dissolved Tin (Sn)	ug/L	-	-	-	<1.0	1.0	6731731			
Dissolved Vanadium (V)	ug/L	6	-	-	0.60	0.50	6731731			
Dissolved Zinc (Zn)	ug/L	30	-	5000	<5.0	5.0	6731731			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
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BV Labs Job #: C0C0212
Report Date: 2020/05/25

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: GERALDTON LANDFILL
Sampler Initials: FF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					MQO376			MQO376		
Sampling Date					2020/05/12 09:25			2020/05/12 09:25		
COC Number					770937-01-01			770937-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW3B**	**RDL**	**QC Batch**	**MW3B Lab-Dup**	**RDL**	**QC Batch**
Inorganics										
Total Ammonia-N	mg/L	-	-	-	8.9	0.050	6737502			
Total Chemical Oxygen Demand (COD)	mg/L	-	-	-	27	4.0	6734360			
Conductivity	umho/cm	-	-	-	1200	1.0	6732609	1200	1.0	6732609
Total Dissolved Solids	mg/L	-	-	500	630	10	6731200			
Total Kjeldahl Nitrogen (TKN)	mg/L	-	-	-	9.4	0.50	6737235			
Dissolved Organic Carbon	mg/L	-	-	5	9.0	0.40	6740975			
pH	pH	6.5:8.5	-	6.5:8.5	7.94		6732612	7.94		6732612
Phenols-4AAP	mg/L	0.001	-	-	0.0011	0.0010	6732043			
Total Phosphorus	mg/L	0.01	-	-	0.13	0.020	6738064			
Dissolved Sulphate (SO4)	mg/L	-	-	500	23	1.0	6732587			
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500	540	1.0	6732608	550	1.0	6732608
Dissolved Chloride (Cl-)	mg/L	-	-	250	71	1.0	6732582			
Nitrite (N)	mg/L	-	1	-	0.019	0.010	6733853			
Nitrate (N)	mg/L	-	10	-	1.09	0.10	6733853			
Metals										
Mercury (Hg)	mg/L	0.0002	0.001	-	<0.00010	0.00010	6732008			
Dissolved Aluminum (Al)	ug/L	-	-	100	<5.0	5.0	6731731			
Dissolved Antimony (Sb)	ug/L	20	6	-	<0.50	0.50	6731731			
Dissolved Arsenic (As)	ug/L	100	10	-	7.6	1.0	6731731			
Dissolved Barium (Ba)	ug/L	-	1000	-	130	2.0	6731731			
Dissolved Beryllium (Be)	ug/L	11	-	-	<0.50	0.50	6731731			
Dissolved Bismuth (Bi)	ug/L	-	-	-	<1.0	1.0	6731731			
Dissolved Boron (B)	ug/L	200	5000	-	360	10	6731731			
Dissolved Cadmium (Cd)	ug/L	0.2	5	-	<0.10	0.10	6731731			
Dissolved Calcium (Ca)	ug/L	-	-	-	170000	200	6731731			
Dissolved Chromium (Cr)	ug/L	-	50	-	<5.0	5.0	6731731			
Dissolved Cobalt (Co)	ug/L	0.9	-	-	8.0	0.50	6731731			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

BV Labs Job #: C0C0212
Report Date: 2020/05/25

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: GERALDTON LANDFILL
Sampler Initials: FF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					MQO376			MQO376		
Sampling Date					2020/05/12 09:25			2020/05/12 09:25		
COC Number					770937-01-01			770937-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW3B**	**RDL**	**QC Batch**	**MW3B Lab-Dup**	**RDL**	**QC Batch**
Dissolved Copper (Cu)	ug/L	5	-	1000	3.9	1.0	6731731			
Dissolved Iron (Fe)	ug/L	300	-	300	6200	100	6731731			
Dissolved Lead (Pb)	ug/L	5	10	-	<0.50	0.50	6731731			
Dissolved Magnesium (Mg)	ug/L	-	-	-	28000	50	6731731			
Dissolved Manganese (Mn)	ug/L	-	-	50	1400	2.0	6731731			
Dissolved Molybdenum (Mo)	ug/L	40	-	-	0.52	0.50	6731731			
Dissolved Nickel (Ni)	ug/L	25	-	-	8.2	1.0	6731731			
Dissolved Potassium (K)	ug/L	-	-	-	17000	200	6731731			
Dissolved Selenium (Se)	ug/L	100	50	-	<2.0	2.0	6731731			
Dissolved Silicon (Si)	ug/L	-	-	-	8300	50	6731731			
Dissolved Sodium (Na)	ug/L	-	-	200000	53000	100	6731731			
Dissolved Strontium (Sr)	ug/L	-	-	-	290	1.0	6731731			
Dissolved Thallium (Tl)	ug/L	0.3	-	-	<0.050	0.050	6731731			
Dissolved Tin (Sn)	ug/L	-	-	-	<1.0	1.0	6731731			
Dissolved Vanadium (V)	ug/L	6	-	-	<0.50	0.50	6731731			
Dissolved Zinc (Zn)	ug/L	30	-	5000	<5.0	5.0	6731731			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
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BV Labs Job #: C0C0212
Report Date: 2020/05/25

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: GERALDTON LANDFILL
Sampler Initials: FF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					MQO377			MQO378		
Sampling Date					2020/05/11 15:00			2020/05/11 18:20		
COC Number					770937-01-01			770937-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW4**	**RDL**	**QC Batch**	**MW5**	**RDL**	**QC Batch**
Inorganics										
Total Ammonia-N	mg/L	-	-	-	<0.050	0.050	6737502	4.5	0.050	6737502
Total Chemical Oxygen Demand (COD)	mg/L	-	-	-	<4.0	4.0	6734360	15	4.0	6734360
Conductivity	umho/cm	-	-	-	980	1.0	6733842	1100	1.0	6733842
Total Dissolved Solids	mg/L	-	-	500	510	10	6732141	585	10	6732141
Total Kjeldahl Nitrogen (TKN)	mg/L	-	-	-	0.29	0.10	6734357	4.9	0.10	6737235
Dissolved Organic Carbon	mg/L	-	-	5	1.6	0.40	6740975	4.7	0.40	6734717
pH	pH	6.5:8.5	-	6.5:8.5	7.56		6733843	7.61		6733843
Phenols-4AAP	mg/L	0.001	-	-	<0.0010	0.0010	6732033	<0.0010	0.0010	6732033
Total Phosphorus	mg/L	0.01	-	-	0.30	0.020	6738064	0.21	0.040	6738064
Dissolved Sulphate (SO4)	mg/L	-	-	500	36	1.0	6732587	110	1.0	6732587
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500	490	1.0	6733839	420	1.0	6733839
Dissolved Chloride (Cl-)	mg/L	-	-	250	13	1.0	6732582	32	1.0	6732582
Nitrite (N)	mg/L	-	1	-	<0.010	0.010	6733860	<0.010	0.010	6733860
Nitrate (N)	mg/L	-	10	-	0.72	0.10	6733860	<0.10	0.10	6733860
Metals										
Mercury (Hg)	mg/L	0.0002	0.001	-	<0.00010	0.00010	6732008	<0.00010	0.00010	6732008
Dissolved Aluminum (Al)	ug/L	-	-	100	58	5.0	6731731	19	5.0	6731720
Dissolved Antimony (Sb)	ug/L	20	6	-	<0.50	0.50	6731731	<0.50	0.50	6731720
Dissolved Arsenic (As)	ug/L	100	10	-	<1.0	1.0	6731731	3.0	1.0	6731720
Dissolved Barium (Ba)	ug/L	-	1000	-	45	2.0	6731731	95	2.0	6731720
Dissolved Beryllium (Be)	ug/L	11	-	-	<0.50	0.50	6731731	<0.50	0.50	6731720
Dissolved Bismuth (Bi)	ug/L	-	-	-	<1.0	1.0	6731731	<1.0	1.0	6731720
Dissolved Boron (B)	ug/L	200	5000	-	200	10	6731731	820	10	6731720
Dissolved Cadmium (Cd)	ug/L	0.2	5	-	<0.10	0.10	6731731	<0.10	0.10	6731720
Dissolved Calcium (Ca)	ug/L	-	-	-	180000	200	6731731	130000	200	6731720
Dissolved Chromium (Cr)	ug/L	-	50	-	<5.0	5.0	6731731	<5.0	5.0	6731720
Dissolved Cobalt (Co)	ug/L	0.9	-	-	2.7	0.50	6731731	<0.50	0.50	6731720
Dissolved Copper (Cu)	ug/L	5	-	1000	3.3	1.0	6731731	<1.0	1.0	6731720

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

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BV Labs Job #: C0C0212
Report Date: 2020/05/25

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: GERALDTON LANDFILL
Sampler Initials: FF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					MQO377			MQO378		
Sampling Date					2020/05/11 15:00			2020/05/11 18:20		
COC Number					770937-01-01			770937-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW4**	**RDL**	**QC Batch**	**MW5**	**RDL**	**QC Batch**
Dissolved Iron (Fe)	ug/L	300	-	300	150	100	6731731	6400	100	6731720
Dissolved Lead (Pb)	ug/L	5	10	-	<0.50	0.50	6731731	<0.50	0.50	6731720
Dissolved Magnesium (Mg)	ug/L	-	-	-	19000	50	6731731	34000	50	6731720
Dissolved Manganese (Mn)	ug/L	-	-	50	390	2.0	6731731	890	2.0	6731720
Dissolved Molybdenum (Mo)	ug/L	40	-	-	<0.50	0.50	6731731	<0.50	0.50	6731720
Dissolved Nickel (Ni)	ug/L	25	-	-	4.7	1.0	6731731	3.4	1.0	6731720
Dissolved Potassium (K)	ug/L	-	-	-	1900	200	6731731	13000	200	6731720
Dissolved Selenium (Se)	ug/L	100	50	-	<2.0	2.0	6731731	<2.0	2.0	6731720
Dissolved Silicon (Si)	ug/L	-	-	-	5800	50	6731731	5200	50	6731720
Dissolved Sodium (Na)	ug/L	-	-	200000	11000	100	6731731	38000	100	6731720
Dissolved Strontium (Sr)	ug/L	-	-	-	150	1.0	6731731	240	1.0	6731720
Dissolved Thallium (Tl)	ug/L	0.3	-	-	0.12	0.050	6731731	<0.050	0.050	6731720
Dissolved Tin (Sn)	ug/L	-	-	-	<1.0	1.0	6731731	<1.0	1.0	6731720
Dissolved Vanadium (V)	ug/L	6	-	-	<0.50	0.50	6731731	<0.50	0.50	6731720
Dissolved Zinc (Zn)	ug/L	30	-	5000	<5.0	5.0	6731731	<5.0	5.0	6731720

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

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BV Labs Job #: C0C0212
Report Date: 2020/05/25

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: GERALDTON LANDFILL
Sampler Initials: FF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					MQO379			MQO379		
Sampling Date					2020/05/11 15:30			2020/05/11 15:30		
COC Number					770937-01-01			770937-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW6**	**RDL**	**QC Batch**	**MW6 Lab-Dup**	**RDL**	**QC Batch**
Inorganics										
Total Ammonia-N	mg/L	-	-	-	<0.050	0.050	6737502			
Total Chemical Oxygen Demand (COD)	mg/L	-	-	-	9.4	4.0	6734360			
Conductivity	umho/cm	-	-	-	540	1.0	6733842			
Total Dissolved Solids	mg/L	-	-	500	255	10	6732141			
Total Kjeldahl Nitrogen (TKN)	mg/L	-	-	-	0.40	0.10	6737235			
Dissolved Organic Carbon	mg/L	-	-	5	2.6	0.40	6734717			
pH	pH	6.5:8.5	-	6.5:8.5	7.92		6733843			
Phenols-4AAP	mg/L	0.001	-	-	<0.0010	0.0010	6732043			
Total Phosphorus	mg/L	0.01	-	-	0.10	0.020	6738064			
Dissolved Sulphate (SO4)	mg/L	-	-	500	16	1.0	6732587			
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500	280	1.0	6733839			
Dissolved Chloride (Cl-)	mg/L	-	-	250	2.4	1.0	6732582			
Nitrite (N)	mg/L	-	1	-	<0.010	0.010	6733853			
Nitrate (N)	mg/L	-	10	-	<0.10	0.10	6733853			
Metals										
Mercury (Hg)	mg/L	0.0002	0.001	-	<0.00010	0.00010	6732008			
Dissolved Aluminum (Al)	ug/L	-	-	100	<5.0	5.0	6731720	<5.0	5.0	6731720
Dissolved Antimony (Sb)	ug/L	20	6	-	<0.50	0.50	6731720	<0.50	0.50	6731720
Dissolved Arsenic (As)	ug/L	100	10	-	1.5	1.0	6731720	1.5	1.0	6731720
Dissolved Barium (Ba)	ug/L	-	1000	-	17	2.0	6731720	16	2.0	6731720
Dissolved Beryllium (Be)	ug/L	11	-	-	<0.50	0.50	6731720	<0.50	0.50	6731720
Dissolved Bismuth (Bi)	ug/L	-	-	-	<1.0	1.0	6731720	<1.0	1.0	6731720
Dissolved Boron (B)	ug/L	200	5000	-	13	10	6731720	13	10	6731720
Dissolved Cadmium (Cd)	ug/L	0.2	5	-	0.26	0.10	6731720	0.20	0.10	6731720
Dissolved Calcium (Ca)	ug/L	-	-	-	89000	200	6731720	89000	200	6731720
Dissolved Chromium (Cr)	ug/L	-	50	-	<5.0	5.0	6731720	<5.0	5.0	6731720
Dissolved Cobalt (Co)	ug/L	0.9	-	-	<0.50	0.50	6731720	<0.50	0.50	6731720

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

BV Labs Job #: C0C0212
Report Date: 2020/05/25

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: GERALDTON LANDFILL
Sampler Initials: FF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					MQO379			MQO379		
Sampling Date					2020/05/11 15:30			2020/05/11 15:30		
COC Number					770937-01-01			770937-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW6**	**RDL**	**QC Batch**	**MW6 Lab-Dup**	**RDL**	**QC Batch**
Dissolved Copper (Cu)	ug/L	5	-	1000	4.5	1.0	6731720	4.6	1.0	6731720
Dissolved Iron (Fe)	ug/L	300	-	300	<100	100	6731720	<100	100	6731720
Dissolved Lead (Pb)	ug/L	5	10	-	<0.50	0.50	6731720	<0.50	0.50	6731720
Dissolved Magnesium (Mg)	ug/L	-	-	-	16000	50	6731720	16000	50	6731720
Dissolved Manganese (Mn)	ug/L	-	-	50	39	2.0	6731720	37	2.0	6731720
Dissolved Molybdenum (Mo)	ug/L	40	-	-	<0.50	0.50	6731720	<0.50	0.50	6731720
Dissolved Nickel (Ni)	ug/L	25	-	-	2.7	1.0	6731720	2.7	1.0	6731720
Dissolved Potassium (K)	ug/L	-	-	-	1400	200	6731720	1400	200	6731720
Dissolved Selenium (Se)	ug/L	100	50	-	<2.0	2.0	6731720	<2.0	2.0	6731720
Dissolved Silicon (Si)	ug/L	-	-	-	4700	50	6731720	4600	50	6731720
Dissolved Sodium (Na)	ug/L	-	-	200000	4000	100	6731720	4100	100	6731720
Dissolved Strontium (Sr)	ug/L	-	-	-	80	1.0	6731720	80	1.0	6731720
Dissolved Thallium (Tl)	ug/L	0.3	-	-	0.089	0.050	6731720	0.091	0.050	6731720
Dissolved Tin (Sn)	ug/L	-	-	-	<1.0	1.0	6731720	<1.0	1.0	6731720
Dissolved Vanadium (V)	ug/L	6	-	-	<0.50	0.50	6731720	<0.50	0.50	6731720
Dissolved Zinc (Zn)	ug/L	30	-	5000	6.7	5.0	6731720	6.4	5.0	6731720

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

BV Labs Job #: C0C0212
Report Date: 2020/05/25

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: GERALDTON LANDFILL
Sampler Initials: FF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					MQO380			MQO381		
Sampling Date					2020/05/11 13:45			2020/05/11 11:45		
COC Number					770937-01-01			770937-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW7**	**RDL**	**QC Batch**	**MW8**	**RDL**	**QC Batch**
Inorganics										
Total Ammonia-N	mg/L	-	-	-	6.8	0.050	6737502	<0.050	0.050	6737502
Total Chemical Oxygen Demand (COD)	mg/L	-	-	-	17	4.0	6734360	22	4.0	6734360
Conductivity	umho/cm	-	-	-	890	1.0	6733842	6100	1.0	6733842
Total Dissolved Solids	mg/L	-	-	500	420	10	6732141	3030	10	6732141
Total Kjeldahl Nitrogen (TKN)	mg/L	-	-	-	7.5	0.50	6737235	0.76	0.10	6737235
Dissolved Organic Carbon	mg/L	-	-	5	4.8	0.40	6734717	2.4	0.40	6734717
pH	pH	6.5:8.5	-	6.5:8.5	7.47		6733843	7.86		6733843
Phenols-4AAP	mg/L	0.001	-	-	0.0010	0.0010	6732043	<0.0010	0.0010	6732033
Total Phosphorus	mg/L	0.01	-	-	0.22	0.020	6738064	1.4	0.040	6738064
Dissolved Sulphate (SO4)	mg/L	-	-	500	25	1.0	6732587	39	1.0	6732587
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500	440	1.0	6733839	390	1.0	6733839
Dissolved Chloride (Cl-)	mg/L	-	-	250	17	1.0	6732582	1700	20	6732582
Nitrite (N)	mg/L	-	1	-	<0.010	0.010	6733860	<0.010	0.010	6733860
Nitrate (N)	mg/L	-	10	-	<0.10	0.10	6733860	1.93	0.10	6733860
Metals										
Mercury (Hg)	mg/L	0.0002	0.001	-	<0.00010	0.00010	6732008	<0.00010	0.00010	6731929
Dissolved Aluminum (Al)	ug/L	-	-	100	<5.0	5.0	6731720	6.2	5.0	6731720
Dissolved Antimony (Sb)	ug/L	20	6	-	<0.50	0.50	6731720	<0.50	0.50	6731720
Dissolved Arsenic (As)	ug/L	100	10	-	41	1.0	6731720	<1.0	1.0	6731720
Dissolved Barium (Ba)	ug/L	-	1000	-	170	2.0	6731720	100	2.0	6731720
Dissolved Beryllium (Be)	ug/L	11	-	-	<0.50	0.50	6731720	<0.50	0.50	6731720
Dissolved Bismuth (Bi)	ug/L	-	-	-	<1.0	1.0	6731720	<1.0	1.0	6731720
Dissolved Boron (B)	ug/L	200	5000	-	230	10	6731720	13	10	6731720
Dissolved Cadmium (Cd)	ug/L	0.2	5	-	<0.10	0.10	6731720	<0.10	0.10	6731720
Dissolved Calcium (Ca)	ug/L	-	-	-	130000	200	6731720	230000	200	6731720
Dissolved Chromium (Cr)	ug/L	-	50	-	<5.0	5.0	6731720	<5.0	5.0	6731720
Dissolved Cobalt (Co)	ug/L	0.9	-	-	12	0.50	6731720	<0.50	0.50	6731720
Dissolved Copper (Cu)	ug/L	5	-	1000	<1.0	1.0	6731720	1.6	1.0	6731720

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
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BV Labs Job #: C0C0212
Report Date: 2020/05/25

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: GERALDTON LANDFILL
Sampler Initials: FF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					MQO380			MQO381		
Sampling Date					2020/05/11 13:45			2020/05/11 11:45		
COC Number					770937-01-01			770937-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW7**	**RDL**	**QC Batch**	**MW8**	**RDL**	**QC Batch**
Dissolved Iron (Fe)	ug/L	300	-	300	21000	100	6731720	<100	100	6731720
Dissolved Lead (Pb)	ug/L	5	10	-	<0.50	0.50	6731720	<0.50	0.50	6731720
Dissolved Magnesium (Mg)	ug/L	-	-	-	19000	50	6731720	18000	50	6731720
Dissolved Manganese (Mn)	ug/L	-	-	50	1600	2.0	6731720	<2.0	2.0	6731720
Dissolved Molybdenum (Mo)	ug/L	40	-	-	<0.50	0.50	6731720	1.3	0.50	6731720
Dissolved Nickel (Ni)	ug/L	25	-	-	7.3	1.0	6731720	<1.0	1.0	6731720
Dissolved Potassium (K)	ug/L	-	-	-	9700	200	6731720	3400	200	6731720
Dissolved Selenium (Se)	ug/L	100	50	-	<2.0	2.0	6731720	<2.0	2.0	6731720
Dissolved Silicon (Si)	ug/L	-	-	-	9500	50	6731720	2700	50	6731720
Dissolved Sodium (Na)	ug/L	-	-	200000	19000	100	6731720	1000000	500	6731720
Dissolved Strontium (Sr)	ug/L	-	-	-	180	1.0	6731720	280	1.0	6731720
Dissolved Thallium (Tl)	ug/L	0.3	-	-	<0.050	0.050	6731720	<0.050	0.050	6731720
Dissolved Tin (Sn)	ug/L	-	-	-	<1.0	1.0	6731720	<1.0	1.0	6731720
Dissolved Vanadium (V)	ug/L	6	-	-	0.76	0.50	6731720	<0.50	0.50	6731720
Dissolved Zinc (Zn)	ug/L	30	-	5000	<5.0	5.0	6731720	5.5	5.0	6731720

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
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BV Labs Job #: C0C0212
Report Date: 2020/05/25

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: GERALDTON LANDFILL
Sampler Initials: FF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					MQO382			MQO388		
Sampling Date					2020/05/11 21:55			2020/05/11 19:20		
COC Number					770937-01-01			770937-02-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW9**	**RDL**	**QC Batch**	**MW10A**	**RDL**	**QC Batch**
Inorganics										
Total Ammonia-N	mg/L	-	-	-	<0.050	0.050	6737502	0.36	0.050	6737502
Total Chemical Oxygen Demand (COD)	mg/L	-	-	-	<4.0	4.0	6734360	37	4.0	6734360
Conductivity	umho/cm	-	-	-	690	1.0	6733842	760	1.0	6733842
Total Dissolved Solids	mg/L	-	-	500	345	10	6731200	385	10	6731200
Total Kjeldahl Nitrogen (TKN)	mg/L	-	-	-	0.18	0.10	6737235	0.65	0.10	6737235
Dissolved Organic Carbon	mg/L	-	-	5	0.67	0.40	6734717	12	0.40	6732269
pH	pH	6.5:8.5	-	6.5:8.5	8.01		6733843	7.30		6733843
Phenols-4AAP	mg/L	0.001	-	-	<0.0010	0.0010	6732043	<0.0010	0.0010	6732043
Total Phosphorus	mg/L	0.01	-	-	8.3	0.20	6738064	1.1	0.10	6738064
Dissolved Sulphate (SO4)	mg/L	-	-	500	5.4	1.0	6732587	<1.0	1.0	6732587
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500	260	1.0	6733839	230	1.0	6733839
Dissolved Chloride (Cl-)	mg/L	-	-	250	68	1.0	6732582	100	1.0	6732582
Nitrite (N)	mg/L	-	1	-	<0.010	0.010	6733860	<0.010	0.010	6733860
Nitrate (N)	mg/L	-	10	-	0.10	0.10	6733860	<0.10	0.10	6733860
Metals										
Mercury (Hg)	mg/L	0.0002	0.001	-	<0.00010	0.00010	6732008	<0.00010	0.00010	6732008
Dissolved Aluminum (Al)	ug/L	-	-	100	<5.0	5.0	6731720	130	5.0	6731731
Dissolved Antimony (Sb)	ug/L	20	6	-	<0.50	0.50	6731720	<0.50	0.50	6731731
Dissolved Arsenic (As)	ug/L	100	10	-	<1.0	1.0	6731720	20	1.0	6731731
Dissolved Barium (Ba)	ug/L	-	1000	-	18	2.0	6731720	27	2.0	6731731
Dissolved Beryllium (Be)	ug/L	11	-	-	<0.50	0.50	6731720	<0.50	0.50	6731731
Dissolved Bismuth (Bi)	ug/L	-	-	-	<1.0	1.0	6731720	<1.0	1.0	6731731
Dissolved Boron (B)	ug/L	200	5000	-	<10	10	6731720	<10	10	6731731
Dissolved Cadmium (Cd)	ug/L	0.2	5	-	<0.10	0.10	6731720	<0.10	0.10	6731731
Dissolved Calcium (Ca)	ug/L	-	-	-	89000	200	6731720	76000	200	6731731
Dissolved Chromium (Cr)	ug/L	-	50	-	<5.0	5.0	6731720	<5.0	5.0	6731731
Dissolved Cobalt (Co)	ug/L	0.9	-	-	<0.50	0.50	6731720	<0.50	0.50	6731731
Dissolved Copper (Cu)	ug/L	5	-	1000	2.7	1.0	6731720	6.7	1.0	6731731

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

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BV Labs Job #: C0C0212
Report Date: 2020/05/25

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: GERALDTON LANDFILL
Sampler Initials: FF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					MQO382			MQO388		
Sampling Date					2020/05/11 21:55			2020/05/11 19:20		
COC Number					770937-01-01			770937-02-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW9**	**RDL**	**QC Batch**	**MW10A**	**RDL**	**QC Batch**
Dissolved Iron (Fe)	ug/L	300	-	300	<100	100	6731720	1900	100	6731731
Dissolved Lead (Pb)	ug/L	5	10	-	<0.50	0.50	6731720	<0.50	0.50	6731731
Dissolved Magnesium (Mg)	ug/L	-	-	-	17000	50	6731720	14000	50	6731731
Dissolved Manganese (Mn)	ug/L	-	-	50	<2.0	2.0	6731720	78	2.0	6731731
Dissolved Molybdenum (Mo)	ug/L	40	-	-	<0.50	0.50	6731720	<0.50	0.50	6731731
Dissolved Nickel (Ni)	ug/L	25	-	-	<1.0	1.0	6731720	1.4	1.0	6731731
Dissolved Potassium (K)	ug/L	-	-	-	960	200	6731720	400	200	6731731
Dissolved Selenium (Se)	ug/L	100	50	-	<2.0	2.0	6731720	<2.0	2.0	6731731
Dissolved Silicon (Si)	ug/L	-	-	-	4500	50	6731720	2700	50	6731731
Dissolved Sodium (Na)	ug/L	-	-	200000	33000	100	6731720	50000	100	6731731
Dissolved Strontium (Sr)	ug/L	-	-	-	77	1.0	6731720	75	1.0	6731731
Dissolved Thallium (Tl)	ug/L	0.3	-	-	<0.050	0.050	6731720	<0.050	0.050	6731731
Dissolved Tin (Sn)	ug/L	-	-	-	<1.0	1.0	6731720	<1.0	1.0	6731731
Dissolved Vanadium (V)	ug/L	6	-	-	<0.50	0.50	6731720	1.7	0.50	6731731
Dissolved Zinc (Zn)	ug/L	30	-	5000	<5.0	5.0	6731720	<5.0	5.0	6731731

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

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BV Labs Job #: C0C0212
Report Date: 2020/05/25

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: GERALDTON LANDFILL
Sampler Initials: FF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					MQO389			MQO390		
Sampling Date					2020/05/11 19:45			2020/05/11 12:45		
COC Number					770937-02-01			770937-02-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW10B**	**RDL**	**QC Batch**	**MW11**	**RDL**	**QC Batch**
Inorganics										
Total Ammonia-N	mg/L	-	-	-	0.094	0.050	6737502	0.057	0.050	6737502
Total Chemical Oxygen Demand (COD)	mg/L	-	-	-	44	4.0	6734360	<4.0	4.0	6734360
Conductivity	umho/cm	-	-	-	1300	1.0	6733842	470	1.0	6733842
Total Dissolved Solids	mg/L	-	-	500	650	10	6731200	215	10	6731200
Total Kjeldahl Nitrogen (TKN)	mg/L	-	-	-	0.57	0.10	6734357	<0.10	0.10	6737235
Dissolved Organic Carbon	mg/L	-	-	5	14	0.40	6740975	1.4	0.40	6732269
pH	pH	6.5:8.5	-	6.5:8.5	7.36		6733843	7.98		6733843
Phenols-4AAP	mg/L	0.001	-	-	<0.0010	0.0010	6732043	<0.0010	0.0010	6732043
Total Phosphorus	mg/L	0.01	-	-	0.38	0.10	6738064	5.2	0.20	6738064
Dissolved Sulphate (SO4)	mg/L	-	-	500	<1.0	1.0	6732587	<1.0	1.0	6732587
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500	270	1.0	6733839	260	1.0	6733839
Dissolved Chloride (Cl-)	mg/L	-	-	250	230	3.0	6732582	<1.0	1.0	6732582
Nitrite (N)	mg/L	-	1	-	<0.010	0.010	6733853	<0.010	0.010	6733860
Nitrate (N)	mg/L	-	10	-	<0.10	0.10	6733853	<0.10	0.10	6733860
Metals										
Mercury (Hg)	mg/L	0.0002	0.001	-	<0.00010	0.00010	6732008	<0.00010	0.00010	6732008
Dissolved Aluminum (Al)	ug/L	-	-	100	230	5.0	6731731	5.2	5.0	6731731
Dissolved Antimony (Sb)	ug/L	20	6	-	<0.50	0.50	6731731	<0.50	0.50	6731731
Dissolved Arsenic (As)	ug/L	100	10	-	29	1.0	6731731	<1.0	1.0	6731731
Dissolved Barium (Ba)	ug/L	-	1000	-	22	2.0	6731731	24	2.0	6731731
Dissolved Beryllium (Be)	ug/L	11	-	-	<0.50	0.50	6731731	<0.50	0.50	6731731
Dissolved Bismuth (Bi)	ug/L	-	-	-	<1.0	1.0	6731731	<1.0	1.0	6731731
Dissolved Boron (B)	ug/L	200	5000	-	<10	10	6731731	<10	10	6731731
Dissolved Cadmium (Cd)	ug/L	0.2	5	-	<0.10	0.10	6731731	<0.10	0.10	6731731
Dissolved Calcium (Ca)	ug/L	-	-	-	76000	200	6731731	72000	200	6731731
Dissolved Chromium (Cr)	ug/L	-	50	-	<5.0	5.0	6731731	<5.0	5.0	6731731
Dissolved Cobalt (Co)	ug/L	0.9	-	-	<0.50	0.50	6731731	<0.50	0.50	6731731
Dissolved Copper (Cu)	ug/L	5	-	1000	2.2	1.0	6731731	1.5	1.0	6731731

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
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BV Labs Job #: C0C0212
Report Date: 2020/05/25

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: GERALDTON LANDFILL
Sampler Initials: FF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					MQO389			MQO390		
Sampling Date					2020/05/11 19:45			2020/05/11 12:45		
COC Number					770937-02-01			770937-02-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW10B**	**RDL**	**QC Batch**	**MW11**	**RDL**	**QC Batch**
Dissolved Iron (Fe)	ug/L	300	-	300	8100	100	6731731	<100	100	6731731
Dissolved Lead (Pb)	ug/L	5	10	-	<0.50	0.50	6731731	<0.50	0.50	6731731
Dissolved Magnesium (Mg)	ug/L	-	-	-	12000	50	6731731	15000	50	6731731
Dissolved Manganese (Mn)	ug/L	-	-	50	190	2.0	6731731	140	2.0	6731731
Dissolved Molybdenum (Mo)	ug/L	40	-	-	<0.50	0.50	6731731	0.94	0.50	6731731
Dissolved Nickel (Ni)	ug/L	25	-	-	1.4	1.0	6731731	<1.0	1.0	6731731
Dissolved Potassium (K)	ug/L	-	-	-	270	200	6731731	820	200	6731731
Dissolved Selenium (Se)	ug/L	100	50	-	<2.0	2.0	6731731	<2.0	2.0	6731731
Dissolved Silicon (Si)	ug/L	-	-	-	1600	50	6731731	7400	50	6731731
Dissolved Sodium (Na)	ug/L	-	-	200000	120000	100	6731731	6800	100	6731731
Dissolved Strontium (Sr)	ug/L	-	-	-	63	1.0	6731731	84	1.0	6731731
Dissolved Thallium (Tl)	ug/L	0.3	-	-	<0.050	0.050	6731731	<0.050	0.050	6731731
Dissolved Tin (Sn)	ug/L	-	-	-	<1.0	1.0	6731731	<1.0	1.0	6731731
Dissolved Vanadium (V)	ug/L	6	-	-	0.97	0.50	6731731	0.58	0.50	6731731
Dissolved Zinc (Zn)	ug/L	30	-	5000	5.1	5.0	6731731	<5.0	5.0	6731731

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
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LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					MQO391		
Sampling Date					2020/05/11 17:45		
COC Number					770937-02-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW12**	**RDL**	**QC Batch**
Inorganics							
Total Ammonia-N	mg/L	-	-	-	4.5	0.050	6737502
Total Chemical Oxygen Demand (COD)	mg/L	-	-	-	14	4.0	6734360
Conductivity	umho/cm	-	-	-	1100	1.0	6733842
Total Dissolved Solids	mg/L	-	-	500	545	10	6732141
Total Kjeldahl Nitrogen (TKN)	mg/L	-	-	-	4.9	0.10	6737235
Dissolved Organic Carbon	mg/L	-	-	5	4.8	0.40	6734717
pH	pH	6.5:8.5	-	6.5:8.5	7.62		6733843
Phenols-4AAP	mg/L	0.001	-	-	<0.0010	0.0010	6732043
Total Phosphorus	mg/L	0.01	-	-	0.24	0.10	6738064
Dissolved Sulphate (SO4)	mg/L	-	-	500	110	1.0	6732587
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500	420	1.0	6733839
Dissolved Chloride (Cl-)	mg/L	-	-	250	31	1.0	6732582
Nitrite (N)	mg/L	-	1	-	<0.010	0.010	6733860
Nitrate (N)	mg/L	-	10	-	<0.10	0.10	6733860
Metals							
Mercury (Hg)	mg/L	0.0002	0.001	-	<0.00010	0.00010	6732008
Dissolved Aluminum (Al)	ug/L	-	-	100	18	5.0	6731720
Dissolved Antimony (Sb)	ug/L	20	6	-	<0.50	0.50	6731720
Dissolved Arsenic (As)	ug/L	100	10	-	3.1	1.0	6731720
Dissolved Barium (Ba)	ug/L	-	1000	-	97	2.0	6731720
Dissolved Beryllium (Be)	ug/L	11	-	-	<0.50	0.50	6731720
Dissolved Bismuth (Bi)	ug/L	-	-	-	<1.0	1.0	6731720
Dissolved Boron (B)	ug/L	200	5000	-	800	10	6731720
Dissolved Cadmium (Cd)	ug/L	0.2	5	-	<0.10	0.10	6731720
Dissolved Calcium (Ca)	ug/L	-	-	-	130000	200	6731720
Dissolved Chromium (Cr)	ug/L	-	50	-	<5.0	5.0	6731720
Dissolved Cobalt (Co)	ug/L	0.9	-	-	<0.50	0.50	6731720
Dissolved Copper (Cu)	ug/L	5	-	1000	<1.0	1.0	6731720

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					MQO391		
Sampling Date					2020/05/11 17:45		
COC Number					770937-02-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW12**	**RDL**	**QC Batch**
Dissolved Iron (Fe)	ug/L	300	-	300	6500	100	6731720
Dissolved Lead (Pb)	ug/L	5	10	-	<0.50	0.50	6731720
Dissolved Magnesium (Mg)	ug/L	-	-	-	34000	50	6731720
Dissolved Manganese (Mn)	ug/L	-	-	50	890	2.0	6731720
Dissolved Molybdenum (Mo)	ug/L	40	-	-	<0.50	0.50	6731720
Dissolved Nickel (Ni)	ug/L	25	-	-	3.3	1.0	6731720
Dissolved Potassium (K)	ug/L	-	-	-	13000	200	6731720
Dissolved Selenium (Se)	ug/L	100	50	-	<2.0	2.0	6731720
Dissolved Silicon (Si)	ug/L	-	-	-	5200	50	6731720
Dissolved Sodium (Na)	ug/L	-	-	200000	38000	100	6731720
Dissolved Strontium (Sr)	ug/L	-	-	-	250	1.0	6731720
Dissolved Thallium (Tl)	ug/L	0.3	-	-	<0.050	0.050	6731720
Dissolved Tin (Sn)	ug/L	-	-	-	<1.0	1.0	6731720
Dissolved Vanadium (V)	ug/L	6	-	-	<0.50	0.50	6731720
Dissolved Zinc (Zn)	ug/L	30	-	5000	<5.0	5.0	6731720

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

BV Labs Job #: C0C0212
Report Date: 2020/05/25

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: GERALDTON LANDFILL
Sampler Initials: FF

LANDFILL STANDARDS SCH 5 - SW COMP. LIST (WATER)

BV Labs ID					MQO394		MQO395		
Sampling Date					2020/05/12 11:10		2020/05/12 10:40		
COC Number					C#770940-01-01		C#770940-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**SW1**	**QC Batch**	**SW2**	**RDL**	**QC Batch**
Inorganics									
Total Ammonia-N	mg/L	-	-	-	<0.050	6737502	<0.050	0.050	6737502
Total BOD	mg/L	-	-	-	4	6728674	<2	2	6728674
Total Chemical Oxygen Demand (COD)	mg/L	-	-	-	27	6734360	27	4.0	6734360
Conductivity	umho/cm	-	-	-	370	6733842	160	1.0	6733842
Total Dissolved Solids	mg/L	-	-	500	180	6731200	100	10	6731200
Total Kjeldahl Nitrogen (TKN)	mg/L	-	-	-	0.40	6737235	0.38	0.10	6737235
pH	pH	6.5:8.5	-	6.5:8.5	7.75	6733843	7.63		6733843
Phenols-4AAP	mg/L	0.001	-	-	<0.0010	6732033	<0.0010	0.0010	6732043
Total Phosphorus	mg/L	0.01	-	-	0.019	6738035	0.015	0.004	6738035
Total Suspended Solids	mg/L	-	-	-	8	6732079	3	1	6732059
Dissolved Sulphate (SO4)	mg/L	-	-	500	10	6732599	<1.0	1.0	6732599
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500	85	6733839	55	1.0	6733839
Dissolved Chloride (Cl-)	mg/L	-	-	250	48	6732594	11	1.0	6732594
Nitrite (N)	mg/L	-	1	-	<0.010	6733860	<0.010	0.010	6733860
Nitrate (N)	mg/L	-	10	-	<0.10	6733860	<0.10	0.10	6733860
Metals									
Mercury (Hg)	mg/L	0.0002	0.001	-	<0.00010	6732008	<0.00010	0.00010	6732008
Total Antimony (Sb)	ug/L	20	6	-	<0.50	6732686	<0.50	0.50	6732686
Total Arsenic (As)	ug/L	100	10	-	13	6732686	12	1.0	6732686
Total Barium (Ba)	ug/L	-	1000	-	11	6732686	4.6	2.0	6732686
Total Beryllium (Be)	ug/L	11	-	-	<0.50	6732686	<0.50	0.50	6732686
Total Bismuth (Bi)	ug/L	-	-	-	<1.0	6732686	<1.0	1.0	6732686
Total Boron (B)	ug/L	200	5000	-	<10	6732686	<10	10	6732686
Total Cadmium (Cd)	ug/L	0.2	5	-	<0.10	6732686	<0.10	0.10	6732686
Total Calcium (Ca)	ug/L	-	-	-	33000	6732686	19000	200	6732686
Total Chromium (Cr)	ug/L	-	50	-	<5.0	6732686	<5.0	5.0	6732686
Total Cobalt (Co)	ug/L	0.9	-	-	<0.50	6732686	<0.50	0.50	6732686
Total Copper (Cu)	ug/L	5	-	1000	1.1	6732686	1.2	1.0	6732686
Total Iron (Fe)	ug/L	300	-	300	230	6732686	190	100	6732686

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999

MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

BV Labs Job #: C0C0212
Report Date: 2020/05/25

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: GERALDTON LANDFILL
Sampler Initials: FF

LANDFILL STANDARDS SCH 5 - SW COMP. LIST (WATER)

BV Labs ID					MQO394		MQO395		
Sampling Date					2020/05/12 11:10		2020/05/12 10:40		
COC Number					C#770940-01-01		C#770940-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**SW1**	**QC Batch**	**SW2**	**RDL**	**QC Batch**
Total Lead (Pb)	ug/L	5	10	-	<0.50	6732686	<0.50	0.50	6732686
Total Magnesium (Mg)	ug/L	-	-	-	6100	6732686	3800	50	6732686
Total Manganese (Mn)	ug/L	-	-	50	22	6732686	25	2.0	6732686
Total Molybdenum (Mo)	ug/L	40	-	-	<0.50	6732686	<0.50	0.50	6732686
Total Nickel (Ni)	ug/L	25	-	-	<1.0	6732686	<1.0	1.0	6732686
Total Potassium (K)	ug/L	-	-	-	500	6732686	450	200	6732686
Total Selenium (Se)	ug/L	100	50	-	<2.0	6732686	<2.0	2.0	6732686
Total Silicon (Si)	ug/L	-	-	-	1400	6732686	1400	50	6732686
Total Silver (Ag)	ug/L	0.1	-	-	<0.10	6732686	<0.10	0.10	6732686
Total Sodium (Na)	ug/L	-	-	200000	33000	6732686	5900	100	6732686
Total Strontium (Sr)	ug/L	-	-	-	47	6732686	27	1.0	6732686
Total Thallium (Tl)	ug/L	0.3	-	-	<0.050	6732686	<0.050	0.050	6732686
Total Tin (Sn)	ug/L	-	-	-	<1.0	6732686	<1.0	1.0	6732686
Total Vanadium (V)	ug/L	6	-	-	<0.50	6732686	<0.50	0.50	6732686
Total Zinc (Zn)	ug/L	30	-	5000	<5.0	6732686	<5.0	5.0	6732686

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
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BV Labs Job #: C0C0212
Report Date: 2020/05/25

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: GERALDTON LANDFILL
Sampler Initials: FF

LANDFILL STANDARDS SCH 5 - SW COMP. LIST (WATER)

BV Labs ID					MQO396		
Sampling Date					2020/05/12 18:50		
COC Number					C#770940-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**SW3**	**RDL**	**QC Batch**
Inorganics							
Total Ammonia-N	mg/L	-	-	-	<0.050	0.050	6737502
Total BOD	mg/L	-	-	-	<2	2	6728674
Total Chemical Oxygen Demand (COD)	mg/L	-	-	-	21	4.0	6734360
Conductivity	umho/cm	-	-	-	150	1.0	6733842
Total Dissolved Solids	mg/L	-	-	500	75	10	6732141
Total Kjeldahl Nitrogen (TKN)	mg/L	-	-	-	0.34	0.10	6737235
pH	pH	6.5:8.5	-	6.5:8.5	7.63		6733843
Phenols-4AAP	mg/L	0.001	-	-	<0.0010	0.0010	6732043
Total Phosphorus	mg/L	0.01	-	-	0.013	0.004	6738035
Total Suspended Solids	mg/L	-	-	-	1	1	6732079
Dissolved Sulphate (SO4)	mg/L	-	-	500	<1.0	1.0	6732599
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500	57	1.0	6733839
Dissolved Chloride (Cl-)	mg/L	-	-	250	8.5	1.0	6732594
Nitrite (N)	mg/L	-	1	-	<0.010	0.010	6733853
Nitrate (N)	mg/L	-	10	-	<0.10	0.10	6733853
Metals							
Mercury (Hg)	mg/L	0.0002	0.001	-	<0.00010	0.00010	6732008
Total Antimony (Sb)	ug/L	20	6	-	<0.50	0.50	6732686
Total Arsenic (As)	ug/L	100	10	-	11	1.0	6732686
Total Barium (Ba)	ug/L	-	1000	-	4.3	2.0	6732686
Total Beryllium (Be)	ug/L	11	-	-	<0.50	0.50	6732686
Total Bismuth (Bi)	ug/L	-	-	-	<1.0	1.0	6732686
Total Boron (B)	ug/L	200	5000	-	<10	10	6732686
Total Cadmium (Cd)	ug/L	0.2	5	-	<0.10	0.10	6732686
Total Calcium (Ca)	ug/L	-	-	-	20000	200	6732686
Total Chromium (Cr)	ug/L	-	50	-	<5.0	5.0	6732686
Total Cobalt (Co)	ug/L	0.9	-	-	<0.50	0.50	6732686
Total Copper (Cu)	ug/L	5	-	1000	<1.0	1.0	6732686
Total Iron (Fe)	ug/L	300	-	300	<100	100	6732686

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999

MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

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BV Labs Job #: C0C0212
Report Date: 2020/05/25

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: GERALDTON LANDFILL
Sampler Initials: FF

LANDFILL STANDARDS SCH 5 - SW COMP. LIST (WATER)

BV Labs ID					MQO396		
Sampling Date					2020/05/12 18:50		
COC Number					C#770940-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**SW3**	**RDL**	**QC Batch**
Total Lead (Pb)	ug/L	5	10	-	<0.50	0.50	6732686
Total Magnesium (Mg)	ug/L	-	-	-	3600	50	6732686
Total Manganese (Mn)	ug/L	-	-	50	30	2.0	6732686
Total Molybdenum (Mo)	ug/L	40	-	-	<0.50	0.50	6732686
Total Nickel (Ni)	ug/L	25	-	-	<1.0	1.0	6732686
Total Potassium (K)	ug/L	-	-	-	390	200	6732686
Total Selenium (Se)	ug/L	100	50	-	<2.0	2.0	6732686
Total Silicon (Si)	ug/L	-	-	-	1200	50	6732686
Total Silver (Ag)	ug/L	0.1	-	-	<0.10	0.10	6732686
Total Sodium (Na)	ug/L	-	-	200000	4600	100	6732686
Total Strontium (Sr)	ug/L	-	-	-	23	1.0	6732686
Total Thallium (Tl)	ug/L	0.3	-	-	<0.050	0.050	6732686
Total Tin (Sn)	ug/L	-	-	-	<1.0	1.0	6732686
Total Vanadium (V)	ug/L	6	-	-	<0.50	0.50	6732686
Total Zinc (Zn)	ug/L	30	-	5000	<5.0	5.0	6732686

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

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BV Labs Job #: C0C0212
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exp Services Inc
Client Project #: THB-00006189-QE
Site Location: GERALDTON LANDFILL
Sampler Initials: FF

RESULTS OF ANALYSES OF WATER

BV Labs ID			MQO373		MQO374			MQO374		
Sampling Date			2020/05/11 10:55		2020/05/11 16:15			2020/05/11 16:15		
COC Number			770937-01-01		770937-01-01			770937-01-01		
	UNITS	**A/O**	**MW1**	**QC Batch**	**MW2**	**RDL**	**QC Batch**	**MW2 Lab-Dup**	**RDL**	**QC Batch**
Calculated Parameters										
Hardness (CaCO3)	mg/L	80:100	450	6729231	220	1.0	6729231			
Ion Balance (% Difference)	%	-	6.35	6729235	0.450	N/A	6729235			
Total Organic Nitrogen	mg/L	0.15	0.69	6729243	<0.10	0.10	6729243			
Inorganics										
Orthophosphate (P)	mg/L	-	<0.010	6732590	<0.010	0.010	6732574	<0.010	0.010	6732574

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)
N/A = Not Applicable

BV Labs ID			MQO375	MQO376	MQO377	MQO378	MQO379		
Sampling Date			2020/05/12 09:45	2020/05/12 09:25	2020/05/11 15:00	2020/05/11 18:20	2020/05/11 15:30		
COC Number			770937-01-01	770937-01-01	770937-01-01	770937-01-01	770937-01-01		
	UNITS	**A/O**	**MW3A**	**MW3B**	**MW4**	**MW5**	**MW6**	**RDL**	**QC Batch**
Calculated Parameters									
Hardness (CaCO3)	mg/L	80:100	480	530	540	460	290	1.0	6729231
Ion Balance (% Difference)	%	-	2.47	3.04	1.02	0.950	0.460	N/A	6729235
Total Organic Nitrogen	mg/L	0.15	0.36	0.44	0.29	0.42	0.40	0.10	6729243
Inorganics									
Orthophosphate (P)	mg/L	-	0.020	<0.010	<0.010	<0.010	<0.010	0.010	6732590

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
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N/A = Not Applicable

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BV Labs Job #: C0C0212
Report Date: 2020/05/25

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: GERALDTON LANDFILL
Sampler Initials: FF

RESULTS OF ANALYSES OF WATER

BV Labs ID			MQO380	MQO381	MQO382	MQO388	MQO389		
Sampling Date			2020/05/11 13:45	2020/05/11 11:45	2020/05/11 21:55	2020/05/11 19:20	2020/05/11 19:45		
COC Number			770937-01-01	770937-01-01	770937-01-01	770937-02-01	770937-02-01		
	UNITS	**A/O**	**MW7**	**MW8**	**MW9**	**MW10A**	**MW10B**	**RDL**	**QC Batch**
Calculated Parameters									
Hardness (CaCO3)	mg/L	80:100	410	650	290	250	240	1.0	6729231
Ion Balance (% Difference)	%	-	4.30	1.11	0.890	1.35	6.38	N/A	6729235
Total Organic Nitrogen	mg/L	0.15	0.70	0.76	0.18	0.29	0.47	0.10	6729243
Inorganics									
Orthophosphate (P)	mg/L	-	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	6732590

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)
N/A = Not Applicable

BV Labs ID			MQO390	MQO391			MQO394		
Sampling Date			2020/05/11 12:45	2020/05/11 17:45			2020/05/12 11:10		
COC Number			770937-02-01	770937-02-01			C#770940-01-01		
	UNITS	**A/O**	**MW11**	**MW12**	**RDL**	**QC Batch**	**SW1**	**RDL**	**QC Batch**
Calculated Parameters									
Hardness (CaCO3)	mg/L	80:100	240	460	1.0	6729231	99	1.0	6729231
Ion Balance (% Difference)	%	-	0.260	0.710	N/A	6729235			
Total Organic Nitrogen	mg/L	0.15	<0.10	0.45	0.10	6729243	0.40	0.10	6729243
Inorganics									
Dissolved Organic Carbon	mg/L	5					11	0.40	6734717
Orthophosphate (P)	mg/L	-	<0.010	<0.010	0.010	6732590			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)
N/A = Not Applicable

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BV Labs Job #: C0C0212
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exp Services Inc
Client Project #: THB-00006189-QE
Site Location: GERALDTON LANDFILL
Sampler Initials: FF

RESULTS OF ANALYSES OF WATER

BV Labs ID			MQO395		MQO396		
Sampling Date			2020/05/12 10:40		2020/05/12 18:50		
COC Number			C#770940-01-01		C#770940-01-01		
	UNITS	**A/O**	**SW2**	**QC Batch**	**SW3**	**RDL**	**QC Batch**
Calculated Parameters							
Hardness (CaCO3)	mg/L	80:100	61	6729231	58	1.0	6729231
Total Organic Nitrogen	mg/L	0.15	0.38	6729243	0.34	0.10	6729243
Inorganics							
Dissolved Organic Carbon	mg/L	5	9.9	6740975	8.3	0.40	6732269

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

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BV Labs Job #: C0C0212
Report Date: 2020/05/25

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: GERALDTON LANDFILL
Sampler Initials: FF

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

BV Labs ID				MQO394	MQO395	MQO396		
Sampling Date				2020/05/12 11:10	2020/05/12 10:40	2020/05/12 18:50		
COC Number				C#770940-01-01	C#770940-01-01	C#770940-01-01		
	UNITS	**Criteria**	**A/O**	**SW1**	**SW2**	**SW3**	**RDL**	**QC Batch**
Metals								
Dissolved (0.2u) Aluminum (Al)	ug/L	15	100	6	9	7	5	6732695

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

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TEST SUMMARY

BV Labs ID: MQO373
Sample ID: MW1
Matrix: Water

Collected: 2020/05/11
Shipped:
Received: 2020/05/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6733839	N/A	2020/05/22	Surinder Rai
Chloride by Automated Colourimetry	KONE	6732582	N/A	2020/05/21	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6734360	N/A	2020/05/22	Viorica Rotaru
Conductivity	AT	6733842	N/A	2020/05/22	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6734717	N/A	2020/05/22	Nimarta Singh
Field Measured Conductivity	PH	0	N/A		Pradeepa Perera
Hardness (calculated as CaCO3)		6729231	N/A	2020/05/22	Automated Statchk
Mercury in Water by CVAA	CV/AA	6732008	2020/05/20	2020/05/21	Meghaben Patel
Dissolved Metals by ICPMS	ICP/MS	6731720	N/A	2020/05/21	Nan Raykha
Ion Balance (% Difference)	CALC	6729235	N/A	2020/05/25	Automated Statchk
Total Ammonia-N	LACH/NH4	6737502	N/A	2020/05/22	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6733860	N/A	2020/05/21	Chandra Nandlal
Organic Nitrogen	CALC	6729243	N/A	2020/05/22	Automated Statchk
pH	AT	6733843	2020/05/21	2020/05/22	Surinder Rai
Phenols (4AAP)	TECH/PHEN	6732043	N/A	2020/05/20	Bramdeo Motiram
Field Measured Conductivity	PH	0	N/A		Pradeepa Perera
Orthophosphate	KONE	6732590	N/A	2020/05/22	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6732587	N/A	2020/05/21	Deonarine Ramnarine
Total Dissolved Solids	BAL	6731200	2020/05/20	2020/05/21	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	6734357	2020/05/21	2020/05/22	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	6738064	2020/05/22	2020/05/25	Shivani Shivani

BV Labs ID: MQO373 Dup
Sample ID: MW1
Matrix: Water

Collected: 2020/05/11
Shipped:
Received: 2020/05/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chemical Oxygen Demand	SPEC	6734360	N/A	2020/05/22	Viorica Rotaru

BV Labs ID: MQO374
Sample ID: MW2
Matrix: Water

Collected: 2020/05/11
Shipped:
Received: 2020/05/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6733839	N/A	2020/05/22	Surinder Rai
Chloride by Automated Colourimetry	KONE	6732560	N/A	2020/05/21	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6734360	N/A	2020/05/22	Viorica Rotaru
Conductivity	AT	6733842	N/A	2020/05/22	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6732269	N/A	2020/05/21	Nimarta Singh
Field Measured Conductivity	PH	0	N/A		Pradeepa Perera
Hardness (calculated as CaCO3)		6729231	N/A	2020/05/25	Automated Statchk
Mercury in Water by CVAA	CV/AA	6732008	2020/05/20	2020/05/21	Meghaben Patel
Dissolved Metals by ICPMS	ICP/MS	6731731	N/A	2020/05/25	Nan Raykha
Ion Balance (% Difference)	CALC	6729235	N/A	2020/05/25	Automated Statchk

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: GERALDTON LANDFILL
Sampler Initials: FF

TEST SUMMARY

BV Labs ID: MQO374
Sample ID: MW2
Matrix: Water

Collected: 2020/05/11
Shipped:
Received: 2020/05/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Ammonia-N	LACH/NH4	6737502	N/A	2020/05/22	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6733860	N/A	2020/05/21	Chandra Nandlal
Organic Nitrogen	CALC	6729243	N/A	2020/05/22	Automated Statchk
pH	AT	6733843	2020/05/21	2020/05/22	Surinder Rai
Phenols (4AAP)	TECH/PHEN	6732043	N/A	2020/05/20	Bramdeo Motiram
Field Measured Conductivity	PH	0	N/A		Pradeepa Perera
Orthophosphate	KONE	6732574	N/A	2020/05/22	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6732566	N/A	2020/05/21	Deonarine Ramnarine
Total Dissolved Solids	BAL	6732141	2020/05/20	2020/05/21	Jingwei (Alvin) Shi
Total Kjeldahl Nitrogen in Water	SKAL	6737235	2020/05/22	2020/05/22	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	6738064	2020/05/22	2020/05/25	Shivani Shivani

BV Labs ID: MQO374 Dup
Sample ID: MW2
Matrix: Water

Collected: 2020/05/11
Shipped:
Received: 2020/05/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	KONE	6732560	N/A	2020/05/21	Deonarine Ramnarine
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6733860	N/A	2020/05/21	Chandra Nandlal
Orthophosphate	KONE	6732574	N/A	2020/05/22	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6732566	N/A	2020/05/21	Deonarine Ramnarine
Total Kjeldahl Nitrogen in Water	SKAL	6737235	2020/05/22	2020/05/22	Rajni Tyagi

BV Labs ID: MQO375
Sample ID: MW3A
Matrix: Water

Collected: 2020/05/12
Shipped:
Received: 2020/05/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6733839	N/A	2020/05/22	Surinder Rai
Chloride by Automated Colourimetry	KONE	6732582	N/A	2020/05/21	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6734360	N/A	2020/05/22	Viorica Rotaru
Conductivity	AT	6733842	N/A	2020/05/22	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6732269	N/A	2020/05/21	Nimarta Singh
Field Measured Conductivity	PH	0	N/A		Pradeepa Perera
Hardness (calculated as CaCO3)		6729231	N/A	2020/05/25	Automated Statchk
Mercury in Water by CVAA	CV/AA	6732008	2020/05/20	2020/05/21	Meghaben Patel
Dissolved Metals by ICPMS	ICP/MS	6731731	N/A	2020/05/22	Nan Raykha
Ion Balance (% Difference)	CALC	6729235	N/A	2020/05/25	Automated Statchk
Total Ammonia-N	LACH/NH4	6737502	N/A	2020/05/22	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6733853	N/A	2020/05/22	Chandra Nandlal
Organic Nitrogen	CALC	6729243	N/A	2020/05/22	Automated Statchk
pH	AT	6733843	2020/05/21	2020/05/22	Surinder Rai
Phenols (4AAP)	TECH/PHEN	6732033	N/A	2020/05/20	Bramdeo Motiram
Field Measured Conductivity	PH	0	N/A		Pradeepa Perera

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BV Labs Job #: C0C0212
Report Date: 2020/05/25

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: GERALDTON LANDFILL
Sampler Initials: FF

TEST SUMMARY

BV Labs ID: MQO375
Sample ID: MW3A
Matrix: Water

Collected: 2020/05/12
Shipped:
Received: 2020/05/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Orthophosphate	KONE	6732590	N/A	2020/05/22	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6732587	N/A	2020/05/21	Deonarine Ramnarine
Total Dissolved Solids	BAL	6731200	2020/05/20	2020/05/21	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	6734357	2020/05/21	2020/05/22	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	6738064	2020/05/22	2020/05/25	Shivani Shivani

BV Labs ID: MQO375 Dup
Sample ID: MW3A
Matrix: Water

Collected: 2020/05/12
Shipped:
Received: 2020/05/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Water by CVAA	CV/AA	6732008	2020/05/20	2020/05/21	Meghaben Patel

BV Labs ID: MQO376
Sample ID: MW3B
Matrix: Water

Collected: 2020/05/12
Shipped:
Received: 2020/05/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6732608	N/A	2020/05/21	Surinder Rai
Chloride by Automated Colourimetry	KONE	6732582	N/A	2020/05/21	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6734360	N/A	2020/05/22	Viorica Rotaru
Conductivity	AT	6732609	N/A	2020/05/21	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6740975	N/A	2020/05/23	Nimarta Singh
Field Measured Conductivity	PH	0	N/A		Pradeepa Perera
Hardness (calculated as CaCO3)		6729231	N/A	2020/05/25	Automated Statchk
Mercury in Water by CVAA	CV/AA	6732008	2020/05/20	2020/05/21	Meghaben Patel
Dissolved Metals by ICPMS	ICP/MS	6731731	N/A	2020/05/22	Nan Raykha
Ion Balance (% Difference)	CALC	6729235	N/A	2020/05/25	Automated Statchk
Total Ammonia-N	LACH/NH4	6737502	N/A	2020/05/22	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6733853	N/A	2020/05/22	Chandra Nandlal
Organic Nitrogen	CALC	6729243	N/A	2020/05/22	Automated Statchk
pH	AT	6732612	2020/05/20	2020/05/21	Surinder Rai
Phenols (4AAP)	TECH/PHEN	6732043	N/A	2020/05/20	Bramdeo Motiram
Field Measured Conductivity	PH	0	N/A		Pradeepa Perera
Orthophosphate	KONE	6732590	N/A	2020/05/22	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6732587	N/A	2020/05/21	Deonarine Ramnarine
Total Dissolved Solids	BAL	6731200	2020/05/20	2020/05/21	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	6737235	2020/05/22	2020/05/22	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	6738064	2020/05/22	2020/05/25	Shivani Shivani

TEST SUMMARY

BV Labs ID: MQO376 Dup
Sample ID: MW3B
Matrix: Water

Collected: 2020/05/12
Shipped:
Received: 2020/05/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6732608	N/A	2020/05/21	Surinder Rai
Conductivity	AT	6732609	N/A	2020/05/21	Surinder Rai
pH	AT	6732612	2020/05/20	2020/05/21	Surinder Rai

BV Labs ID: MQO377
Sample ID: MW4
Matrix: Water

Collected: 2020/05/11
Shipped:
Received: 2020/05/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6733839	N/A	2020/05/22	Surinder Rai
Chloride by Automated Colourimetry	KONE	6732582	N/A	2020/05/21	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6734360	N/A	2020/05/22	Viorica Rotaru
Conductivity	AT	6733842	N/A	2020/05/22	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6740975	N/A	2020/05/23	Nimarta Singh
Field Measured Conductivity	PH	0	N/A		Pradeepa Perera
Hardness (calculated as CaCO3)		6729231	N/A	2020/05/25	Automated Statchk
Mercury in Water by CVAA	CV/AA	6732008	2020/05/20	2020/05/21	Meghaben Patel
Dissolved Metals by ICPMS	ICP/MS	6731731	N/A	2020/05/25	Nan Raykha
Ion Balance (% Difference)	CALC	6729235	N/A	2020/05/25	Automated Statchk
Total Ammonia-N	LACH/NH4	6737502	N/A	2020/05/22	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6733860	N/A	2020/05/21	Chandra Nandlal
Organic Nitrogen	CALC	6729243	N/A	2020/05/22	Automated Statchk
pH	AT	6733843	2020/05/21	2020/05/22	Surinder Rai
Phenols (4AAP)	TECH/PHEN	6732033	N/A	2020/05/20	Bramdeo Motiram
Field Measured Conductivity	PH	0	N/A		Pradeepa Perera
Orthophosphate	KONE	6732590	N/A	2020/05/22	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6732587	N/A	2020/05/21	Deonarine Ramnarine
Total Dissolved Solids	BAL	6732141	2020/05/20	2020/05/21	Jingwei (Alvin) Shi
Total Kjeldahl Nitrogen in Water	SKAL	6734357	2020/05/21	2020/05/22	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	6738064	2020/05/22	2020/05/25	Shivani Shivani

BV Labs ID: MQO378
Sample ID: MW5
Matrix: Water

Collected: 2020/05/11
Shipped:
Received: 2020/05/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6733839	N/A	2020/05/22	Surinder Rai
Chloride by Automated Colourimetry	KONE	6732582	N/A	2020/05/21	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6734360	N/A	2020/05/22	Viorica Rotaru
Conductivity	AT	6733842	N/A	2020/05/22	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6734717	N/A	2020/05/22	Nimarta Singh
Field Measured Conductivity	PH	0	N/A		Pradeepa Perera
Hardness (calculated as CaCO3)		6729231	N/A	2020/05/22	Automated Statchk
Mercury in Water by CVAA	CV/AA	6732008	2020/05/20	2020/05/21	Meghaben Patel

BV Labs Job #: C0C0212
Report Date: 2020/05/25

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: GERALDTON LANDFILL
Sampler Initials: FF

TEST SUMMARY

BV Labs ID: MQO378
Sample ID: MW5
Matrix: Water

Collected: 2020/05/11
Shipped:
Received: 2020/05/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Metals by ICPMS	ICP/MS	6731720	N/A	2020/05/21	Nan Raykha
Ion Balance (% Difference)	CALC	6729235	N/A	2020/05/25	Automated Statchk
Total Ammonia-N	LACH/NH4	6737502	N/A	2020/05/22	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6733860	N/A	2020/05/21	Chandra Nandlal
Organic Nitrogen	CALC	6729243	N/A	2020/05/22	Automated Statchk
pH	AT	6733843	2020/05/21	2020/05/22	Surinder Rai
Phenols (4AAP)	TECH/PHEN	6732033	N/A	2020/05/20	Bramdeo Motiram
Field Measured Conductivity	PH	0	N/A		Pradeepa Perera
Orthophosphate	KONE	6732590	N/A	2020/05/22	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6732587	N/A	2020/05/21	Deonarine Ramnarine
Total Dissolved Solids	BAL	6732141	2020/05/20	2020/05/21	Jingwei (Alvin) Shi
Total Kjeldahl Nitrogen in Water	SKAL	6737235	2020/05/22	2020/05/22	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	6738064	2020/05/22	2020/05/25	Shivani Shivani

BV Labs ID: MQO379
Sample ID: MW6
Matrix: Water

Collected: 2020/05/11
Shipped:
Received: 2020/05/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6733839	N/A	2020/05/22	Surinder Rai
Chloride by Automated Colourimetry	KONE	6732582	N/A	2020/05/21	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6734360	N/A	2020/05/22	Viorica Rotaru
Conductivity	AT	6733842	N/A	2020/05/22	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6734717	N/A	2020/05/22	Nimarta Singh
Field Measured Conductivity	PH	0	N/A		Pradeepa Perera
Hardness (calculated as CaCO3)		6729231	N/A	2020/05/22	Automated Statchk
Mercury in Water by CVAA	CV/AA	6732008	2020/05/20	2020/05/21	Meghaben Patel
Dissolved Metals by ICPMS	ICP/MS	6731720	N/A	2020/05/21	Nan Raykha
Ion Balance (% Difference)	CALC	6729235	N/A	2020/05/25	Automated Statchk
Total Ammonia-N	LACH/NH4	6737502	N/A	2020/05/22	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6733853	N/A	2020/05/22	Chandra Nandlal
Organic Nitrogen	CALC	6729243	N/A	2020/05/22	Automated Statchk
pH	AT	6733843	2020/05/21	2020/05/22	Surinder Rai
Phenols (4AAP)	TECH/PHEN	6732043	N/A	2020/05/20	Bramdeo Motiram
Field Measured Conductivity	PH	0	N/A		Pradeepa Perera
Orthophosphate	KONE	6732590	N/A	2020/05/22	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6732587	N/A	2020/05/21	Deonarine Ramnarine
Total Dissolved Solids	BAL	6732141	2020/05/20	2020/05/21	Jingwei (Alvin) Shi
Total Kjeldahl Nitrogen in Water	SKAL	6737235	2020/05/22	2020/05/22	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	6738064	2020/05/22	2020/05/25	Shivani Shivani

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TEST SUMMARY

BV Labs ID: MQO379 Dup
Sample ID: MW6
Matrix: Water

Collected: 2020/05/11
Shipped:
Received: 2020/05/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Metals by ICPMS	ICP/MS	6731720	N/A	2020/05/21	Nan Raykha

BV Labs ID: MQO380
Sample ID: MW7
Matrix: Water

Collected: 2020/05/11
Shipped:
Received: 2020/05/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6733839	N/A	2020/05/22	Surinder Rai
Chloride by Automated Colourimetry	KONE	6732582	N/A	2020/05/21	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6734360	N/A	2020/05/22	Viorica Rotaru
Conductivity	AT	6733842	N/A	2020/05/22	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6734717	N/A	2020/05/22	Nimarta Singh
Field Measured Conductivity	PH	0	N/A		Pradeepa Perera
Hardness (calculated as CaCO3)		6729231	N/A	2020/05/22	Automated Statchk
Mercury in Water by CVAA	CV/AA	6732008	2020/05/20	2020/05/21	Meghaben Patel
Dissolved Metals by ICPMS	ICP/MS	6731720	N/A	2020/05/21	Nan Raykha
Ion Balance (% Difference)	CALC	6729235	N/A	2020/05/25	Automated Statchk
Total Ammonia-N	LACH/NH4	6737502	N/A	2020/05/22	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6733860	N/A	2020/05/21	Chandra Nandlal
Organic Nitrogen	CALC	6729243	N/A	2020/05/22	Automated Statchk
pH	AT	6733843	2020/05/21	2020/05/22	Surinder Rai
Phenols (4AAP)	TECH/PHEN	6732043	N/A	2020/05/20	Bramdeo Motiram
Field Measured Conductivity	PH	0	N/A		Pradeepa Perera
Orthophosphate	KONE	6732590	N/A	2020/05/22	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6732587	N/A	2020/05/21	Deonarine Ramnarine
Total Dissolved Solids	BAL	6732141	2020/05/20	2020/05/21	Jingwei (Alvin) Shi
Total Kjeldahl Nitrogen in Water	SKAL	6737235	2020/05/22	2020/05/22	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	6738064	2020/05/22	2020/05/25	Shivani Shivani

BV Labs ID: MQO381
Sample ID: MW8
Matrix: Water

Collected: 2020/05/11
Shipped:
Received: 2020/05/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6733839	N/A	2020/05/22	Surinder Rai
Chloride by Automated Colourimetry	KONE	6732582	N/A	2020/05/21	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6734360	N/A	2020/05/22	Viorica Rotaru
Conductivity	AT	6733842	N/A	2020/05/22	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6734717	N/A	2020/05/22	Nimarta Singh
Field Measured Conductivity	PH	0	N/A		Pradeepa Perera
Hardness (calculated as CaCO3)		6729231	N/A	2020/05/22	Automated Statchk
Mercury in Water by CVAA	CV/AA	6731929	2020/05/20	2020/05/20	Meghaben Patel
Dissolved Metals by ICPMS	ICP/MS	6731720	N/A	2020/05/22	Nan Raykha
Ion Balance (% Difference)	CALC	6729235	N/A	2020/05/25	Automated Statchk

BV Labs Job #: C0C0212
Report Date: 2020/05/25

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: GERALDTON LANDFILL
Sampler Initials: FF

TEST SUMMARY

BV Labs ID: MQO381
Sample ID: MW8
Matrix: Water

Collected: 2020/05/11
Shipped:
Received: 2020/05/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Ammonia-N	LACH/NH4	6737502	N/A	2020/05/22	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6733860	N/A	2020/05/21	Chandra Nandlal
Organic Nitrogen	CALC	6729243	N/A	2020/05/22	Automated Statchk
pH	AT	6733843	2020/05/21	2020/05/22	Surinder Rai
Phenols (4AAP)	TECH/PHEN	6732033	N/A	2020/05/20	Bramdeo Motiram
Field Measured Conductivity	PH	0	N/A		Pradeepa Perera
Orthophosphate	KONE	6732590	N/A	2020/05/22	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6732587	N/A	2020/05/21	Deonarine Ramnarine
Total Dissolved Solids	BAL	6732141	2020/05/20	2020/05/21	Jingwei (Alvin) Shi
Total Kjeldahl Nitrogen in Water	SKAL	6737235	2020/05/22	2020/05/22	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	6738064	2020/05/22	2020/05/25	Shivani Shivani

BV Labs ID: MQO382
Sample ID: MW9
Matrix: Water

Collected: 2020/05/11
Shipped:
Received: 2020/05/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6733839	N/A	2020/05/22	Surinder Rai
Chloride by Automated Colourimetry	KONE	6732582	N/A	2020/05/21	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6734360	N/A	2020/05/22	Viorica Rotaru
Conductivity	AT	6733842	N/A	2020/05/22	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6734717	N/A	2020/05/22	Nimarta Singh
Field Measured Conductivity	PH	0	N/A		Pradeepa Perera
Hardness (calculated as CaCO3)		6729231	N/A	2020/05/22	Automated Statchk
Mercury in Water by CVAA	CV/AA	6732008	2020/05/20	2020/05/21	Meghaben Patel
Dissolved Metals by ICPMS	ICP/MS	6731720	N/A	2020/05/21	Nan Raykha
Ion Balance (% Difference)	CALC	6729235	N/A	2020/05/25	Automated Statchk
Total Ammonia-N	LACH/NH4	6737502	N/A	2020/05/22	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6733860	N/A	2020/05/21	Chandra Nandlal
Organic Nitrogen	CALC	6729243	N/A	2020/05/22	Automated Statchk
pH	AT	6733843	2020/05/21	2020/05/22	Surinder Rai
Phenols (4AAP)	TECH/PHEN	6732043	N/A	2020/05/20	Bramdeo Motiram
Field Measured Conductivity	PH	0	N/A		Pradeepa Perera
Orthophosphate	KONE	6732590	N/A	2020/05/22	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6732587	N/A	2020/05/21	Deonarine Ramnarine
Total Dissolved Solids	BAL	6731200	2020/05/20	2020/05/21	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	6737235	2020/05/22	2020/05/22	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	6738064	2020/05/22	2020/05/25	Shivani Shivani

BV Labs Job #: C0C0212
Report Date: 2020/05/25

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: GERALDTON LANDFILL
Sampler Initials: FF

TEST SUMMARY

BV Labs ID: MQO388
Sample ID: MW10A
Matrix: Water

Collected: 2020/05/11
Shipped:
Received: 2020/05/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6733839	N/A	2020/05/22	Surinder Rai
Chloride by Automated Colourimetry	KONE	6732582	N/A	2020/05/21	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6734360	N/A	2020/05/22	Viorica Rotaru
Conductivity	AT	6733842	N/A	2020/05/22	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6732269	N/A	2020/05/21	Nimarta Singh
Field Measured Conductivity	PH	0	N/A		Pradeepa Perera
Hardness (calculated as CaCO3)		6729231	N/A	2020/05/25	Automated Statchk
Mercury in Water by CVAA	CV/AA	6732008	2020/05/20	2020/05/21	Meghaben Patel
Dissolved Metals by ICPMS	ICP/MS	6731731	N/A	2020/05/22	Nan Raykha
Ion Balance (% Difference)	CALC	6729235	N/A	2020/05/25	Automated Statchk
Total Ammonia-N	LACH/NH4	6737502	N/A	2020/05/22	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6733860	N/A	2020/05/21	Chandra Nandlal
Organic Nitrogen	CALC	6729243	N/A	2020/05/22	Automated Statchk
pH	AT	6733843	2020/05/21	2020/05/22	Surinder Rai
Phenols (4AAP)	TECH/PHEN	6732043	N/A	2020/05/20	Bramdeo Motiram
Field Measured Conductivity	PH	0	N/A		Pradeepa Perera
Orthophosphate	KONE	6732590	N/A	2020/05/22	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6732587	N/A	2020/05/21	Deonarine Ramnarine
Total Dissolved Solids	BAL	6731200	2020/05/20	2020/05/21	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	6737235	2020/05/22	2020/05/22	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	6738064	2020/05/22	2020/05/25	Shivani Shivani

BV Labs ID: MQO389
Sample ID: MW10B
Matrix: Water

Collected: 2020/05/11
Shipped:
Received: 2020/05/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6733839	N/A	2020/05/22	Surinder Rai
Chloride by Automated Colourimetry	KONE	6732582	N/A	2020/05/21	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6734360	N/A	2020/05/22	Viorica Rotaru
Conductivity	AT	6733842	N/A	2020/05/22	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6740975	N/A	2020/05/23	Nimarta Singh
Field Measured Conductivity	PH	0	N/A		Pradeepa Perera
Hardness (calculated as CaCO3)		6729231	N/A	2020/05/25	Automated Statchk
Mercury in Water by CVAA	CV/AA	6732008	2020/05/20	2020/05/21	Meghaben Patel
Dissolved Metals by ICPMS	ICP/MS	6731731	N/A	2020/05/22	Nan Raykha
Ion Balance (% Difference)	CALC	6729235	N/A	2020/05/25	Automated Statchk
Total Ammonia-N	LACH/NH4	6737502	N/A	2020/05/22	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6733853	N/A	2020/05/22	Chandra Nandlal
Organic Nitrogen	CALC	6729243	N/A	2020/05/22	Automated Statchk
pH	AT	6733843	2020/05/21	2020/05/22	Surinder Rai
Phenols (4AAP)	TECH/PHEN	6732043	N/A	2020/05/20	Bramdeo Motiram
Field Measured Conductivity	PH	0	N/A		Pradeepa Perera
Orthophosphate	KONE	6732590	N/A	2020/05/22	Deonarine Ramnarine

TEST SUMMARY

BV Labs ID: MQO389
Sample ID: MW10B
Matrix: Water

Collected: 2020/05/11
Shipped:
Received: 2020/05/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Sulphate by Automated Colourimetry	KONE	6732587	N/A	2020/05/21	Deonarine Ramnarine
Total Dissolved Solids	BAL	6731200	2020/05/20	2020/05/21	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	6734357	2020/05/21	2020/05/22	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	6738064	2020/05/22	2020/05/25	Shivani Shivani

BV Labs ID: MQO390
Sample ID: MW11
Matrix: Water

Collected: 2020/05/11
Shipped:
Received: 2020/05/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6733839	N/A	2020/05/22	Surinder Rai
Chloride by Automated Colourimetry	KONE	6732582	N/A	2020/05/21	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6734360	N/A	2020/05/22	Viorica Rotaru
Conductivity	AT	6733842	N/A	2020/05/22	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6732269	N/A	2020/05/21	Nimarta Singh
Field Measured Conductivity	PH	0	N/A		Pradeepa Perera
Hardness (calculated as CaCO3)		6729231	N/A	2020/05/25	Automated Statchk
Mercury in Water by CVAA	CV/AA	6732008	2020/05/20	2020/05/21	Meghaben Patel
Dissolved Metals by ICPMS	ICP/MS	6731731	N/A	2020/05/25	Nan Raykha
Ion Balance (% Difference)	CALC	6729235	N/A	2020/05/25	Automated Statchk
Total Ammonia-N	LACH/NH4	6737502	N/A	2020/05/22	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6733860	N/A	2020/05/21	Chandra Nandlal
Organic Nitrogen	CALC	6729243	N/A	2020/05/22	Automated Statchk
pH	AT	6733843	2020/05/21	2020/05/22	Surinder Rai
Phenols (4AAP)	TECH/PHEN	6732043	N/A	2020/05/20	Bramdeo Motiram
Field Measured Conductivity	PH	0	N/A		Pradeepa Perera
Orthophosphate	KONE	6732590	N/A	2020/05/22	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6732587	N/A	2020/05/21	Deonarine Ramnarine
Total Dissolved Solids	BAL	6731200	2020/05/20	2020/05/21	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	6737235	2020/05/22	2020/05/22	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	6738064	2020/05/22	2020/05/25	Shivani Shivani

BV Labs ID: MQO391
Sample ID: MW12
Matrix: Water

Collected: 2020/05/11
Shipped:
Received: 2020/05/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6733839	N/A	2020/05/22	Surinder Rai
Chloride by Automated Colourimetry	KONE	6732582	N/A	2020/05/21	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6734360	N/A	2020/05/22	Viorica Rotaru
Conductivity	AT	6733842	N/A	2020/05/22	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6734717	N/A	2020/05/22	Nimarta Singh
Field Measured Conductivity	PH	0	N/A		Pradeepa Perera
Hardness (calculated as CaCO3)		6729231	N/A	2020/05/22	Automated Statchk

BV Labs Job #: C0C0212
Report Date: 2020/05/25

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: GERALDTON LANDFILL
Sampler Initials: FF

TEST SUMMARY

BV Labs ID: MQO391
Sample ID: MW12
Matrix: Water

Collected: 2020/05/11
Shipped:
Received: 2020/05/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Water by CVAA	CV/AA	6732008	2020/05/20	2020/05/21	Meghaben Patel
Dissolved Metals by ICPMS	ICP/MS	6731720	N/A	2020/05/21	Nan Raykha
Ion Balance (% Difference)	CALC	6729235	N/A	2020/05/25	Automated Statchk
Total Ammonia-N	LACH/NH4	6737502	N/A	2020/05/22	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6733860	N/A	2020/05/21	Chandra Nandlal
Organic Nitrogen	CALC	6729243	N/A	2020/05/22	Automated Statchk
pH	AT	6733843	2020/05/21	2020/05/22	Surinder Rai
Phenols (4AAP)	TECH/PHEN	6732043	N/A	2020/05/20	Bramdeo Motiram
Field Measured Conductivity	PH	0	N/A		Pradeepa Perera
Orthophosphate	KONE	6732590	N/A	2020/05/22	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6732587	N/A	2020/05/21	Deonarine Ramnarine
Total Dissolved Solids	BAL	6732141	2020/05/20	2020/05/21	Jingwei (Alvin) Shi
Total Kjeldahl Nitrogen in Water	SKAL	6737235	2020/05/22	2020/05/22	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	6738064	2020/05/22	2020/05/25	Shivani Shivani

BV Labs ID: MQO394
Sample ID: SW1
Matrix: Water

Collected: 2020/05/12
Shipped:
Received: 2020/05/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Aluminum (0.2 u, clay free)	ICP/MS	6732695	N/A	2020/05/21	Arefa Dabhad
Alkalinity	AT	6733839	N/A	2020/05/22	Surinder Rai
Biochemical Oxygen Demand (BOD)	DO	6728674	2020/05/16	2020/05/21	Navjot Kaur Gill
Chloride by Automated Colourimetry	KONE	6732594	N/A	2020/05/21	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6734360	N/A	2020/05/22	Viorica Rotaru
Conductivity	AT	6733842	N/A	2020/05/22	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6734717	N/A	2020/05/22	Nimarta Singh
Hardness (calculated as CaCO3)		6729231	N/A	2020/05/21	Automated Statchk
Mercury in Water by CVAA	CV/AA	6732008	2020/05/20	2020/05/21	Meghaben Patel
Total Metals Analysis by ICPMS	ICP/MS	6732686	N/A	2020/05/21	Nan Raykha
Total Ammonia-N	LACH/NH4	6737502	N/A	2020/05/22	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6733860	N/A	2020/05/21	Chandra Nandlal
Organic Nitrogen	CALC	6729243	N/A	2020/05/22	Automated Statchk
pH	AT	6733843	2020/05/21	2020/05/22	Surinder Rai
Phenols (4AAP)	TECH/PHEN	6732033	N/A	2020/05/20	Bramdeo Motiram
Sulphate by Automated Colourimetry	KONE	6732599	N/A	2020/05/21	Deonarine Ramnarine
Total Dissolved Solids	BAL	6731200	2020/05/20	2020/05/21	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	6737235	2020/05/22	2020/05/22	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	6738035	2020/05/22	2020/05/25	Shivani Shivani
Low Level Total Suspended Solids	BAL	6732079	2020/05/20	2020/05/21	Jingwei (Alvin) Shi

TEST SUMMARY

BV Labs ID: MQO395
Sample ID: SW2
Matrix: Water

Collected: 2020/05/12
Shipped:
Received: 2020/05/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Aluminum (0.2 u, clay free)	ICP/MS	6732695	N/A	2020/05/21	Arefa Dabhad
Alkalinity	AT	6733839	N/A	2020/05/22	Surinder Rai
Biochemical Oxygen Demand (BOD)	DO	6728674	2020/05/16	2020/05/21	Navjot Kaur Gill
Chloride by Automated Colourimetry	KONE	6732594	N/A	2020/05/21	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6734360	N/A	2020/05/22	Viorica Rotaru
Conductivity	AT	6733842	N/A	2020/05/22	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6740975	N/A	2020/05/23	Nimarta Singh
Hardness (calculated as CaCO3)		6729231	N/A	2020/05/21	Automated Statchk
Mercury in Water by CVAA	CV/AA	6732008	2020/05/20	2020/05/21	Meghaben Patel
Total Metals Analysis by ICPMS	ICP/MS	6732686	N/A	2020/05/21	Nan Raykha
Total Ammonia-N	LACH/NH4	6737502	N/A	2020/05/22	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6733860	N/A	2020/05/21	Chandra Nandlal
Organic Nitrogen	CALC	6729243	N/A	2020/05/22	Automated Statchk
pH	AT	6733843	2020/05/21	2020/05/22	Surinder Rai
Phenols (4AAP)	TECH/PHEN	6732043	N/A	2020/05/20	Bramdeo Motiram
Sulphate by Automated Colourimetry	KONE	6732599	N/A	2020/05/21	Deonarine Ramnarine
Total Dissolved Solids	BAL	6731200	2020/05/20	2020/05/21	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	6737235	2020/05/22	2020/05/22	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	6738035	2020/05/22	2020/05/25	Shivani Shivani
Low Level Total Suspended Solids	BAL	6732059	2020/05/21	2020/05/21	Jingwei (Alvin) Shi

BV Labs ID: MQO396
Sample ID: SW3
Matrix: Water

Collected: 2020/05/12
Shipped:
Received: 2020/05/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Aluminum (0.2 u, clay free)	ICP/MS	6732695	N/A	2020/05/21	Arefa Dabhad
Alkalinity	AT	6733839	N/A	2020/05/22	Surinder Rai
Biochemical Oxygen Demand (BOD)	DO	6728674	2020/05/16	2020/05/21	Navjot Kaur Gill
Chloride by Automated Colourimetry	KONE	6732594	N/A	2020/05/21	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6734360	N/A	2020/05/22	Viorica Rotaru
Conductivity	AT	6733842	N/A	2020/05/22	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6732269	N/A	2020/05/21	Nimarta Singh
Hardness (calculated as CaCO3)		6729231	N/A	2020/05/21	Automated Statchk
Mercury in Water by CVAA	CV/AA	6732008	2020/05/20	2020/05/21	Meghaben Patel
Total Metals Analysis by ICPMS	ICP/MS	6732686	N/A	2020/05/21	Nan Raykha
Total Ammonia-N	LACH/NH4	6737502	N/A	2020/05/22	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6733853	N/A	2020/05/22	Chandra Nandlal
Organic Nitrogen	CALC	6729243	N/A	2020/05/22	Automated Statchk
pH	AT	6733843	2020/05/21	2020/05/22	Surinder Rai
Phenols (4AAP)	TECH/PHEN	6732043	N/A	2020/05/20	Bramdeo Motiram
Sulphate by Automated Colourimetry	KONE	6732599	N/A	2020/05/21	Deonarine Ramnarine
Total Dissolved Solids	BAL	6732141	2020/05/20	2020/05/21	Jingwei (Alvin) Shi
Total Kjeldahl Nitrogen in Water	SKAL	6737235	2020/05/22	2020/05/22	Rajni Tyagi

BV Labs Job #: C0C0212
Report Date: 2020/05/25

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: GERALDTON LANDFILL
Sampler Initials: FF

TEST SUMMARY

BV Labs ID: MQO396
Sample ID: SW3
Matrix: Water

Collected: 2020/05/12
Shipped:
Received: 2020/05/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Phosphorus (Colourimetric)	LACH/P	6738035	2020/05/22	2020/05/25	Shivani Shivani
Low Level Total Suspended Solids	BAL	6732079	2020/05/20	2020/05/21	Jingwei (Alvin) Shi

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exp Services Inc
Client Project #: THB-00006189-QE
Site Location: GERALDTON LANDFILL
Sampler Initials: FF

GENERAL COMMENTS

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

Package 1	0.7°C
Package 2	5.3°C
Package 3	3.7°C
Package 4	5.0°C

Results relate only to the items tested.

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BV Labs Job #: C0C0212
Report Date: 2020/05/25

QUALITY ASSURANCE REPORT

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: GERALDTON LANDFILL
Sampler Initials: FF

			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
6728674	Total BOD	2020/05/21					<2	mg/L	NC	30	100	80 - 120
6731200	Total Dissolved Solids	2020/05/21					<10	mg/L	1.3	25	95	90 - 110
6731720	Dissolved Aluminum (Al)	2020/05/21	106	80 - 120	98	80 - 120	<5.0	ug/L	NC	20		
6731720	Dissolved Antimony (Sb)	2020/05/21	111	80 - 120	100	80 - 120	<0.50	ug/L	NC	20		
6731720	Dissolved Arsenic (As)	2020/05/21	108	80 - 120	98	80 - 120	<1.0	ug/L	1.9	20		
6731720	Dissolved Barium (Ba)	2020/05/21	102	80 - 120	95	80 - 120	<2.0	ug/L	6.7	20		
6731720	Dissolved Beryllium (Be)	2020/05/21	104	80 - 120	92	80 - 120	<0.50	ug/L	NC	20		
6731720	Dissolved Bismuth (Bi)	2020/05/21	106	80 - 120	101	80 - 120	<1.0	ug/L	NC	20		
6731720	Dissolved Boron (B)	2020/05/21	105	80 - 120	94	80 - 120	<10	ug/L	0.96	20		
6731720	Dissolved Cadmium (Cd)	2020/05/21	108	80 - 120	98	80 - 120	<0.10	ug/L	NC	20		
6731720	Dissolved Calcium (Ca)	2020/05/21	NC	80 - 120	99	80 - 120	<200	ug/L	0.51	20		
6731720	Dissolved Chromium (Cr)	2020/05/21	102	80 - 120	92	80 - 120	<5.0	ug/L	NC	20		
6731720	Dissolved Cobalt (Co)	2020/05/21	108	80 - 120	94	80 - 120	<0.50	ug/L	NC	20		
6731720	Dissolved Copper (Cu)	2020/05/21	103	80 - 120	95	80 - 120	<1.0	ug/L	1.3	20		
6731720	Dissolved Iron (Fe)	2020/05/21	108	80 - 120	97	80 - 120	<100	ug/L	NC	20		
6731720	Dissolved Lead (Pb)	2020/05/21	103	80 - 120	94	80 - 120	<0.50	ug/L	NC	20		
6731720	Dissolved Magnesium (Mg)	2020/05/21	105	80 - 120	99	80 - 120	<50	ug/L	2.0	20		
6731720	Dissolved Manganese (Mn)	2020/05/21	106	80 - 120	95	80 - 120	<2.0	ug/L	3.0	20		
6731720	Dissolved Molybdenum (Mo)	2020/05/21	107	80 - 120	97	80 - 120	<0.50	ug/L	NC	20		
6731720	Dissolved Nickel (Ni)	2020/05/21	102	80 - 120	94	80 - 120	<1.0	ug/L	0.33	20		
6731720	Dissolved Potassium (K)	2020/05/21	112	80 - 120	100	80 - 120	<200	ug/L	1.5	20		
6731720	Dissolved Selenium (Se)	2020/05/21	107	80 - 120	97	80 - 120	<2.0	ug/L	NC	20		
6731720	Dissolved Silicon (Si)	2020/05/21	109	80 - 120	99	80 - 120	<50	ug/L	0.63	20		
6731720	Dissolved Sodium (Na)	2020/05/21	107	80 - 120	96	80 - 120	<100	ug/L	1.8	20		
6731720	Dissolved Strontium (Sr)	2020/05/21	106	80 - 120	95	80 - 120	<1.0	ug/L	0.77	20		
6731720	Dissolved Thallium (Tl)	2020/05/21	106	80 - 120	97	80 - 120	<0.050	ug/L	2.2	20		
6731720	Dissolved Tin (Sn)	2020/05/21	109	80 - 120	98	80 - 120	<1.0	ug/L	NC	20		
6731720	Dissolved Vanadium (V)	2020/05/21	104	80 - 120	93	80 - 120	<0.50	ug/L	NC	20		
6731720	Dissolved Zinc (Zn)	2020/05/21	107	80 - 120	96	80 - 120	<5.0	ug/L	4.8	20		
6731731	Dissolved Aluminum (Al)	2020/05/22	114	80 - 120	100	80 - 120	<5.0	ug/L				
6731731	Dissolved Antimony (Sb)	2020/05/25	115	80 - 120	99	80 - 120	<0.50	ug/L	NC	20		

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6731731	Dissolved Arsenic (As)	2020/05/25	110	80 - 120	100	80 - 120	<1.0	ug/L	NC	20		
6731731	Dissolved Barium (Ba)	2020/05/25	NC	80 - 120	99	80 - 120	<2.0	ug/L	4.1	20		
6731731	Dissolved Beryllium (Be)	2020/05/25	101	80 - 120	94	80 - 120	<0.50	ug/L	NC	20		
6731731	Dissolved Bismuth (Bi)	2020/05/22	103	80 - 120	99	80 - 120	<1.0	ug/L				
6731731	Dissolved Boron (B)	2020/05/25	NC	80 - 120	91	80 - 120	<10	ug/L	1.5	20		
6731731	Dissolved Cadmium (Cd)	2020/05/25	110	80 - 120	99	80 - 120	<0.10	ug/L	NC	20		
6731731	Dissolved Calcium (Ca)	2020/05/22	NC	80 - 120	101	80 - 120	<200	ug/L				
6731731	Dissolved Chromium (Cr)	2020/05/25	111	80 - 120	97	80 - 120	<5.0	ug/L	NC	20		
6731731	Dissolved Cobalt (Co)	2020/05/25	105	80 - 120	101	80 - 120	<0.50	ug/L	NC	20		
6731731	Dissolved Copper (Cu)	2020/05/25	112	80 - 120	100	80 - 120	<1.0	ug/L	NC	20		
6731731	Dissolved Iron (Fe)	2020/05/22	105	80 - 120	98	80 - 120	<100	ug/L				
6731731	Dissolved Lead (Pb)	2020/05/25	103	80 - 120	97	80 - 120	<0.50	ug/L	NC	20		
6731731	Dissolved Magnesium (Mg)	2020/05/22	NC	80 - 120	102	80 - 120	<50	ug/L				
6731731	Dissolved Manganese (Mn)	2020/05/22	109	80 - 120	99	80 - 120	<2.0	ug/L				
6731731	Dissolved Molybdenum (Mo)	2020/05/25	116	80 - 120	96	80 - 120	<0.50	ug/L	NC	20		
6731731	Dissolved Nickel (Ni)	2020/05/25	101	80 - 120	97	80 - 120	<1.0	ug/L	NC	20		
6731731	Dissolved Potassium (K)	2020/05/22	NC	80 - 120	105	80 - 120	<200	ug/L				
6731731	Dissolved Selenium (Se)	2020/05/25	103	80 - 120	98	80 - 120	<2.0	ug/L	NC	20		
6731731	Dissolved Silicon (Si)	2020/05/22	119	80 - 120	104	80 - 120	<50	ug/L				
6731731	Dissolved Sodium (Na)	2020/05/25	NC	80 - 120	101	80 - 120	<100	ug/L	1.3	20		
6731731	Dissolved Strontium (Sr)	2020/05/22	NC	80 - 120	95	80 - 120	<1.0	ug/L				
6731731	Dissolved Thallium (Tl)	2020/05/25	103	80 - 120	96	80 - 120	<0.050	ug/L	NC	20		
6731731	Dissolved Tin (Sn)	2020/05/22	115	80 - 120	99	80 - 120	<1.0	ug/L				
6731731	Dissolved Vanadium (V)	2020/05/25	111	80 - 120	97	80 - 120	<0.50	ug/L	NC	20		
6731731	Dissolved Zinc (Zn)	2020/05/25	102	80 - 120	97	80 - 120	<5.0	ug/L	NC	20		
6731929	Mercury (Hg)	2020/05/20	100	75 - 125	95	80 - 120	<0.00010	mg/L	NC	20		
6732008	Mercury (Hg)	2020/05/21	106	75 - 125	89	80 - 120	<0.00010	mg/L	NC	20		
6732033	Phenols-4AAP	2020/05/20	93	80 - 120	96	80 - 120	<0.0010	mg/L	NC	20		
6732043	Phenols-4AAP	2020/05/20	93	80 - 120	96	80 - 120	<0.0010	mg/L	NC	20		
6732059	Total Suspended Solids	2020/05/21					<1	mg/L	0	25	95	85 - 115
6732079	Total Suspended Solids	2020/05/21					<1	mg/L	NC	25	96	85 - 115

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6732141	Total Dissolved Solids	2020/05/21					<10	mg/L	3.0	25	102	90 - 110
6732269	Dissolved Organic Carbon	2020/05/21	NC	80 - 120	96	80 - 120	<0.40	mg/L	1.0	20		
6732560	Dissolved Chloride (Cl-)	2020/05/21	120	80 - 120	101	80 - 120	<1.0	mg/L	2.0	20		
6732566	Dissolved Sulphate (SO4)	2020/05/21	133 (1)	75 - 125	101	80 - 120	<1.0	mg/L	NC	20		
6732574	Orthophosphate (P)	2020/05/22	108	75 - 125	99	80 - 120	<0.010	mg/L	NC	25		
6732582	Dissolved Chloride (Cl-)	2020/05/21	NC	80 - 120	101	80 - 120	<1.0	mg/L	0.047	20		
6732587	Dissolved Sulphate (SO4)	2020/05/21	NC	75 - 125	102	80 - 120	<1.0	mg/L	0.83	20		
6732590	Orthophosphate (P)	2020/05/22	111	75 - 125	101	80 - 120	<0.010	mg/L	NC	25		
6732594	Dissolved Chloride (Cl-)	2020/05/21	NC	80 - 120	101	80 - 120	<1.0	mg/L	1.9	20		
6732599	Dissolved Sulphate (SO4)	2020/05/21	NC	75 - 125	104	80 - 120	<1.0	mg/L	0.19	20		
6732608	Alkalinity (Total as CaCO3)	2020/05/21			96	85 - 115	<1.0	mg/L	0.52	20		
6732609	Conductivity	2020/05/21			101	85 - 115	<1.0	umho/cm	0	25		
6732612	pH	2020/05/21			101	98 - 103			0.025	N/A		
6732686	Total Antimony (Sb)	2020/05/21	100	80 - 120	100	80 - 120	<0.50	ug/L				
6732686	Total Arsenic (As)	2020/05/21	98	80 - 120	98	80 - 120	<1.0	ug/L				
6732686	Total Barium (Ba)	2020/05/21	92	80 - 120	93	80 - 120	<2.0	ug/L				
6732686	Total Beryllium (Be)	2020/05/21	93	80 - 120	94	80 - 120	<0.50	ug/L				
6732686	Total Bismuth (Bi)	2020/05/21	97	80 - 120	97	80 - 120	<1.0	ug/L				
6732686	Total Boron (B)	2020/05/21	91	80 - 120	95	80 - 120	<10	ug/L				
6732686	Total Cadmium (Cd)	2020/05/21	96	80 - 120	98	80 - 120	<0.10	ug/L	2.3	20		
6732686	Total Calcium (Ca)	2020/05/21	NC	80 - 120	99	80 - 120	<200	ug/L				
6732686	Total Chromium (Cr)	2020/05/21	91	80 - 120	91	80 - 120	<5.0	ug/L	0.71	20		
6732686	Total Cobalt (Co)	2020/05/21	94	80 - 120	93	80 - 120	<0.50	ug/L				
6732686	Total Copper (Cu)	2020/05/21	92	80 - 120	94	80 - 120	<1.0	ug/L	2.8	20		
6732686	Total Iron (Fe)	2020/05/21	97	80 - 120	96	80 - 120	<100	ug/L	1.0	20		
6732686	Total Lead (Pb)	2020/05/21	96	80 - 120	93	80 - 120	<0.50	ug/L	19	20		
6732686	Total Magnesium (Mg)	2020/05/21	90	80 - 120	98	80 - 120	<50	ug/L				
6732686	Total Manganese (Mn)	2020/05/21	94	80 - 120	94	80 - 120	<2.0	ug/L				
6732686	Total Molybdenum (Mo)	2020/05/21	96	80 - 120	96	80 - 120	<0.50	ug/L				
6732686	Total Nickel (Ni)	2020/05/21	93	80 - 120	93	80 - 120	<1.0	ug/L	0.84	20		

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6732686	Total Potassium (K)	2020/05/21	94	80 - 120	96	80 - 120	<200	ug/L				
6732686	Total Selenium (Se)	2020/05/21	97	80 - 120	101	80 - 120	<2.0	ug/L				
6732686	Total Silicon (Si)	2020/05/21	97	80 - 120	97	80 - 120	<50	ug/L				
6732686	Total Silver (Ag)	2020/05/21	91	80 - 120	95	80 - 120	<0.10	ug/L				
6732686	Total Sodium (Na)	2020/05/21	NC	80 - 120	95	80 - 120	<100	ug/L				
6732686	Total Strontium (Sr)	2020/05/21	93	80 - 120	95	80 - 120	<1.0	ug/L				
6732686	Total Thallium (Tl)	2020/05/21	94	80 - 120	95	80 - 120	<0.050	ug/L				
6732686	Total Tin (Sn)	2020/05/21	94	80 - 120	97	80 - 120	<1.0	ug/L				
6732686	Total Vanadium (V)	2020/05/21	94	80 - 120	93	80 - 120	<0.50	ug/L				
6732686	Total Zinc (Zn)	2020/05/21	97	80 - 120	99	80 - 120	<5.0	ug/L	0.63	20		
6732695	Dissolved (0.2u) Aluminum (Al)	2020/05/21	104	80 - 120	96	80 - 120	<5	ug/L	0.10	20		
6733839	Alkalinity (Total as CaCO3)	2020/05/22			98	85 - 115	<1.0	mg/L	0.30	20		
6733842	Conductivity	2020/05/22			101	85 - 115	<1.0	umho/cm	0.43	25		
6733843	pH	2020/05/22			101	98 - 103			0.36	N/A		
6733853	Nitrate (N)	2020/05/22	102	80 - 120	101	80 - 120	<0.10	mg/L	0.99	20		
6733853	Nitrite (N)	2020/05/22	108	80 - 120	108	80 - 120	<0.010	mg/L	NC	20		
6733860	Nitrate (N)	2020/05/21	103	80 - 120	104	80 - 120	<0.10	mg/L	NC	20		
6733860	Nitrite (N)	2020/05/21	107	80 - 120	108	80 - 120	<0.010	mg/L	10	20		
6734357	Total Kjeldahl Nitrogen (TKN)	2020/05/22	98	80 - 120	96	80 - 120	<0.10	mg/L	1.5	20	99	80 - 120
6734360	Total Chemical Oxygen Demand (COD)	2020/05/22	95	80 - 120	100	80 - 120	<4.0	mg/L	0.15	20		
6734717	Dissolved Organic Carbon	2020/05/22	92	80 - 120	98	80 - 120	<0.40	mg/L	13	20		
6737235	Total Kjeldahl Nitrogen (TKN)	2020/05/22	118	80 - 120	103	80 - 120	<0.10	mg/L	1.6	20	103	80 - 120
6737502	Total Ammonia-N	2020/05/22	99	75 - 125	100	80 - 120	<0.050	mg/L	6.2	20		
6738035	Total Phosphorus	2020/05/25	90	80 - 120	101	80 - 120	<0.004	mg/L	NC	20	96	80 - 120
6738064	Total Phosphorus	2020/05/25	99	80 - 120	99	80 - 120	<0.020	mg/L	0.77	20	96	80 - 120

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6740975	Dissolved Organic Carbon	2020/05/23	94	80 - 120	98	80 - 120	<0.40	mg/L	0.64	20		

N/A = Not Applicable

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

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

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

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

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

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

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

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

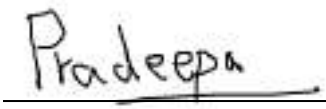
BV Labs Job #: C0C0212
Report Date: 2020/05/25

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: GERALDTON LANDFILL
Sampler Initials: FF

VALIDATION SIGNATURE PAGE

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

Anastassia Hamanov, Scientific Specialist



Pradeepa Perera, Sample Entry Technician

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Bureau Veritas Laboratories

14-May-20 14:13

Julie Clement

C0C0212

URE ENV-1410

Page 1 of 3

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name	#17501 exp Services Inc	Company Name		Quotation #	B90503
Attention	accounts payable	Attention	Ahileas Mitsopoulos, Mike Sawchuk	P.O. #	
Address	1142 Roland St	Address		Project	THB-00006169-DE
	Thunder Bay ON P7B 5M4			Project Name	
Tel	(807) 623-9495 Fax (807) 623-8070	Tel	Fax	Site #	Gorsliffton Landfill
Email	thunderbay@exp.com; Karen.Burke@exp.com; AP@ex	Email	ahileas.mitsopoulos@exp.com; connor.porter@exp.com	Sampled By	EF

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BV LABS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011) | Other Regulations: [X] Other: PWQO / MOWS | Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ____

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required: Regular (Standard) TAT [X]

#	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Analysis 1	Analysis 2	Analysis 3	Analysis 4	Analysis 5	# of Bottles	Comments
1		MW1	May 11 2020	10:55 AM	GW	X	X	X	X	X	8	
2		MW2	May 11 2020	4:15 PM	GW	X	X	X	X	X	8	
3		MW3A	May 12 2020	11:45 AM	GW	X	X	X	X	X	8	
4		MW3B	May 12 2020	11:[illegible] AM	GW	X	X	X	X	X	8	
5		MW4	May 11 2020	3:[illegible] PM	GW	X	X	X	X	X	8	
6		MW5	May 11 2020	[illegible] PM	GW	X	X	X	X	X	8	
7		MW6	May 11 2020	2:30 PM	GW	X	X	X	X	X	8	
8		MW7	May 11 2020	1:40 PM	GW	X	X	X	X	X	8	
9		MW8	May 11 2020	11:45 AM	GW	X	X	X	X	X	8	
10		MW9	May 11 2020	[illegible] AM	GW	X	X	X	X	X	8	0/1/1, 4/3/4, 5/5/5

RECEIVED

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time
Ahileas Mitsopoulos	20/05/14	[illegible]	James Klapporich	2020/05/14	14:13
			[illegible]	2020/05/14	23:03

Laboratory Use Only: Temperature (°C) on Recei: 5/5/6

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

White: BV Labs Yellow: Client — REFER TO AECR

Bureau Veritas Canada (2019) Inc.

CHAIN OF CUSTODY RECORD

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name	#17501 exp Services Inc.	Company Name		Quotation #	B00565
Attention	accounts payable	Attention	Ahileas Mitsopoulos / Mike Sernowski	P.O. #	
Address	1142 Roland St	Address		Project	THB-00008169-OE
	Thunder Bay ON P7B 5M4			Project Name	
Tel	(807) 623-9495 Fax (807) 623-8070	Tel	Fax	Site #	Geraldton Landfill
Email	thunderbay@exp.com; Karen.Burke@exp.com;AP@ex	Email	ahileas.mitsopoulos@exp.com	Sampled By	FF

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BV LABS DRINKING WATER CHAIN OF CUSTODY

Other Regulations: PWQO [x]; Other [x] ODWS

#	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Analysis 1	Analysis 2	Analysis 3	Analysis 4	Metals	# of Bottles
1		MW10A	May 11 2020	7:30 PM	GW	X	X	X	X	X	8
2		MW10B	May 11 2020	[illegible]	GW	X	X	X	X	X	8
3		MW11	May 11 2020	12:45 PM	GW	X	X	X	X	X	8
4		MW12	May 11 2020	5:15 PM	GW	A	X	X	X	X	8

Relinquished by: Ahileas Mitsopoulos — Date: 20/05/14 — Time: 1:00 PM

Received by: James Klapprick — Date: 2020/05/14 — Time: 14:13

RECEIVED T.Bay

Refer to AETR

Bureau Veritas Laboratories
[illegible] Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel (905) 817-5700 Toll-free 800-563-6266 Fax (905) 817-5777 www.bvlabs.com

CHAIN OF CUSTODY RECORD

Page 3 of 3

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name	#17501 exp Services Inc	Company Name		Quotation #	B90565	BV Labs Job #	Bottle Order #
Attention	accounts payable	Attention	Ahileas Mitsopoulos, Mike Somenski	P.O. #			[illegible]
Address	1142 Roland St	Address		Project	THB-00008169-OE	COC #	Project Manager
	Thunder Bay ON P7B 5M4			Project Name		[illegible]	[illegible]
Tel	(807) 623-9495 Fax (807) 623-8070	Tel	Fax	Site #	Geraldton Landfill		
Email	thunderbay@exp.com; Karen.Burke@exp.com AP@ex	Email	ahileas.mitsopoulos@exp.com, [illegible]@exp.com	Sampled By	[illegible]		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BV LABS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ______ ☒ PWQO ☐ Other ______

Special Instructions:

Include Criteria on Certificate of Analysis (Y/N)? ______

Analysis Requested (Please be specific)

Turnaround Time (TAT) Required: Regular (Standard) TAT: ☒

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	[illegible]	Organic Nitrogen	Hardness (calculated as CaCO3)	Ca, Mg, Na, K	Dissolved Aluminum [illegible]	Dissolved Organic Carbon (DOC)	[illegible]				# of Bottles	Comments
1		SW1	May 12 2020	11:10 AM	SW		X	X	X	X	X	X	X				10	
2		SW2	May 12 2020	10:40 AM	SW		X	X	X	X	X	X	X				10	
3		SW3	May 12 2020	6:50 AM	SW		X	X	X	X	X	X	X				10	
4																		
5																		
6																		
7																		
8																		
9																		
10																		RECEIVED

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Laboratory Use Only
[illegible] Ahileas Mitsopoulos	20/05/14	1:00 PM	[illegible] James Kloppenburg	2020/05/14	14:13		Time Sensitive / Temperature (°C) on Receipt / Custody Seal Present / Intact: N/A

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVLABS.COM/RESOURCES/CHAIN-OF-CUSTODY-FORMS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

White: BV Labs Yellow: Client

Refer to ACTR

Bureau Veritas Canada (2019) Inc.

Your Project #: THB-00006189-QE
Site Location: Geraldton LF

Attention: Ahileas Mitsopoulos

exp Services Inc
Thunder Bay Branch
1142 Roland St
Thunder Bay, ON
CANADA P7B 5M4

Your C.O.C. #: 791127-01-01, 791127-02-01, C#791128-01-01

Report Date: 2021/01/27
Report #: R6495493
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BV LABS JOB #: C0P9040
Received: 2020/10/02, 16:36

Sample Matrix: Water
Samples Received: 17

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Dissolved Aluminum (0.2 u, clay free)	3	N/A	2020/10/07	CAM SOP-00447	EPA 6020B m
Alkalinity	14	N/A	2020/10/06	CAM SOP-00448	SM 23 2320 B m
Alkalinity	3	N/A	2020/10/07	CAM SOP-00448	SM 23 2320 B m
Biochemical Oxygen Demand (BOD)	3	2020/10/03	2020/10/08	CAM SOP-00427	SM 23 5210B m
Chloride by Automated Colourimetry	1	N/A	2020/10/07	CAM SOP-00463	SM 23 4500-Cl E m
Chloride by Automated Colourimetry	16	N/A	2020/10/09	CAM SOP-00463	SM 23 4500-Cl E m
Chemical Oxygen Demand	17	N/A	2020/10/11	CAM SOP-00416	SM 23 5220 D m
Conductivity	14	N/A	2020/10/06	CAM SOP-00414	SM 23 2510 m
Conductivity	3	N/A	2020/10/07	CAM SOP-00414	SM 23 2510 m
Dissolved Organic Carbon (DOC) (1)	2	N/A	2020/10/06	CAM SOP-00446	SM 23 5310 B m
Dissolved Organic Carbon (DOC) (1)	9	N/A	2020/10/07	CAM SOP-00446	SM 23 5310 B m
Dissolved Organic Carbon (DOC) (1)	6	N/A	2020/10/08	CAM SOP-00446	SM 23 5310 B m
Hardness (calculated as CaCO3)	14	N/A	2020/10/07	CAM SOP 00102/00408/00447	SM 2340 B
Hardness (calculated as CaCO3)	3	N/A	2020/10/08	CAM SOP 00102/00408/00447	SM 2340 B
Mercury in Water by CVAA	17	2020/10/08	2020/10/08	CAM SOP-00453	EPA 7470A m
Dissolved Metals by ICPMS	11	N/A	2020/10/06	CAM SOP-00447	EPA 6020B m
Dissolved Metals by ICPMS	3	N/A	2020/10/08	CAM SOP-00447	EPA 6020B m
Total Metals Analysis by ICPMS	3	N/A	2020/10/08	CAM SOP-00447	EPA 6020B m
Ion Balance (% Difference)	1	N/A	2020/10/07		
Ion Balance (% Difference)	13	N/A	2020/10/09		
Total Ammonia-N	17	N/A	2020/10/08	CAM SOP-00441	USGS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (2)	12	N/A	2020/10/07	CAM SOP-00440	SM 23 4500-NO3I/NO2B
Nitrate (NO3) and Nitrite (NO2) in Water (2)	5	N/A	2020/10/08	CAM SOP-00440	SM 23 4500-NO3I/NO2B
Organic Nitrogen	17	N/A	2020/10/10		
pH	14	2020/10/05	2020/10/06	CAM SOP-00413	SM 4500H+ B m

Your Project #: THB-00006189-QE
Site Location: Geraldton LF

Attention: Ahileas Mitsopoulos

exp Services Inc
Thunder Bay Branch
1142 Roland St
Thunder Bay, ON
CANADA P7B 5M4

Your C.O.C. #: 791127-01-01, 791127-02-01, C#791128-01-01

Report Date: 2021/01/27
Report #: R6495493
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BV LABS JOB #: C0P9040
Received: 2020/10/02, 16:36

Sample Matrix: Water
Samples Received: 17

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
pH	3	2020/10/05	2020/10/07	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	16	N/A	2020/10/07	CAM SOP-00444	OMOE E3179 m
Orthophosphate	14	N/A	2020/10/07	CAM SOP-00461	EPA 365.1 m
Sulphate by Automated Colourimetry	1	N/A	2020/10/07	CAM SOP-00464	EPA 375.4 m
Sulphate by Automated Colourimetry	16	N/A	2020/10/09	CAM SOP-00464	EPA 375.4 m
Total Dissolved Solids	3	2020/10/05	2020/10/06	CAM SOP-00428	SM 23 2540C m
Total Dissolved Solids	14	2020/10/07	2020/10/08	CAM SOP-00428	SM 23 2540C m
Total Kjeldahl Nitrogen in Water	7	2020/10/07	2020/10/10	CAM SOP-00938	OMOE E3516 m
Total Kjeldahl Nitrogen in Water	10	2020/10/07	2020/10/09	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	3	2020/10/08	2020/10/08	CAM SOP-00407	SM 23 4500 P B H m
Total Phosphorus (Colourimetric)	14	2020/10/07	2020/10/08	CAM SOP-00407	SM 23 4500 P B H m
Low Level Total Suspended Solids	3	2020/10/05	2020/10/06	CAM SOP-00428	SM 23 2540D m
Volatile Organic Compounds in Water	1	N/A	2020/10/07	CAM SOP-00226	EPA 8260C m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Your Project #: THB-00006189-QE
Site Location: Geraldton LF

Attention: Ahileas Mitsopoulos

exp Services Inc
Thunder Bay Branch
1142 Roland St
Thunder Bay, ON
CANADA P7B 5M4

Your C.O.C. #: 791127-01-01, 791127-02-01, C#791128-01-01

Report Date: 2021/01/27
Report #: R6495493
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BV LABS JOB #: C0P9040
Received: 2020/10/02, 16:36

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
(1) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.
(2) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Julie Clement, Technical Account Manager
Email: Julie.CLEMENT@bureauveritas.com
Phone# (613)868-6079
==========
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

BV Labs Job #: C0P9040
Report Date: 2021/01/27

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: Geraldton LF
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID		NUK579			NUK580		
Sampling Date		2020/09/29 12:16			2020/09/29 13:00		
COC Number		791127-01-01			791127-01-01		
	UNITS	**MW1**	**RDL**	**QC Batch**	**MW2**	**RDL**	**QC Batch**
Inorganics							
Total Ammonia-N	mg/L	5.5 (1)	0.050	6987655	0.55	0.050	6987655
Total Chemical Oxygen Demand (COD)	mg/L	33	4.0	6987813	21	4.0	6987813
Conductivity	umho/cm	1500	1.0	6983381	430	1.0	6983381
Total Dissolved Solids	mg/L	815	10	6982647	230	10	6982647
Total Kjeldahl Nitrogen (TKN)	mg/L	5.4 (1)	1.0	6987789	0.70	0.10	6987789
Dissolved Organic Carbon	mg/L	8.7	0.40	6983265	6.6	0.40	6983372
pH	pH	7.66		6983383	7.85		6983383
Phenols-4AAP	mg/L	<0.0010	0.0010	6984897	<0.0010	0.0010	6984890
Total Phosphorus	mg/L	0.034	0.020	6987659	<0.020	0.020	6987659
Dissolved Sulphate (SO4)	mg/L	25	1.0	6983350	<1.0	1.0	6983658
Alkalinity (Total as CaCO3)	mg/L	560	1.0	6983378	220	1.0	6983378
Dissolved Chloride (Cl-)	mg/L	130	2.0	6983346	6.3	1.0	6983659
Nitrite (N)	mg/L	<0.010	0.010	6983369	<0.010	0.010	6983180
Nitrate (N)	mg/L	0.27	0.10	6983369	<0.10	0.10	6983180
Metals							
Mercury (Hg)	mg/L	<0.00010	0.00010	6989777	<0.00010	0.00010	6989777
Dissolved Aluminum (Al)	ug/L	16	4.9	6985415	12	4.9	6985415
Dissolved Antimony (Sb)	ug/L	<0.50	0.50	6985415	<0.50	0.50	6985415
Dissolved Arsenic (As)	ug/L	7.0	1.0	6985415	2.8	1.0	6985415
Dissolved Barium (Ba)	ug/L	110	2.0	6985415	16	2.0	6985415
Dissolved Beryllium (Be)	ug/L	<0.40	0.40	6985415	<0.40	0.40	6985415
Dissolved Bismuth (Bi)	ug/L	<1.0	1.0	6985415	<1.0	1.0	6985415
Dissolved Boron (B)	ug/L	190	10	6985415	30	10	6985415
Dissolved Cadmium (Cd)	ug/L	<0.090	0.090	6985415	<0.090	0.090	6985415
Dissolved Calcium (Ca)	ug/L	180000	200	6985415	72000	200	6985415
Dissolved Chromium (Cr)	ug/L	<5.0	5.0	6985415	<5.0	5.0	6985415
Dissolved Cobalt (Co)	ug/L	19	0.50	6985415	1.8	0.50	6985415
Dissolved Copper (Cu)	ug/L	2.0	0.90	6985415	8.9	0.90	6985415
Dissolved Iron (Fe)	ug/L	5500	100	6985415	150	100	6985415
Dissolved Lead (Pb)	ug/L	<0.50	0.50	6985415	<0.50	0.50	6985415
Dissolved Magnesium (Mg)	ug/L	19000	50	6985415	8800	50	6985415
Dissolved Manganese (Mn)	ug/L	2200	2.0	6985415	1300	2.0	6985415
Dissolved Molybdenum (Mo)	ug/L	1.3	0.50	6985415	<0.50	0.50	6985415

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) TKN < NH4: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.

BV Labs Job #: C0P9040
Report Date: 2021/01/27

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: Geraldton LF
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID		NUK579			NUK580		
Sampling Date		2020/09/29 12:16			2020/09/29 13:00		
COC Number		791127-01-01			791127-01-01		
	UNITS	**MW1**	**RDL**	**QC Batch**	**MW2**	**RDL**	**QC Batch**
Dissolved Nickel (Ni)	ug/L	8.2	1.0	6985415	1.8	1.0	6985415
Dissolved Potassium (K)	ug/L	19000	200	6985415	2000	200	6985415
Dissolved Selenium (Se)	ug/L	<2.0	2.0	6985415	<2.0	2.0	6985415
Dissolved Silicon (Si)	ug/L	9200	50	6985415	4200	50	6985415
Dissolved Sodium (Na)	ug/L	99000	100	6985415	3900	100	6985415
Dissolved Strontium (Sr)	ug/L	340	1.0	6985415	67	1.0	6985415
Dissolved Thallium (Tl)	ug/L	0.15	0.050	6985415	<0.050	0.050	6985415
Dissolved Tin (Sn)	ug/L	<1.0	1.0	6985415	<1.0	1.0	6985415
Dissolved Vanadium (V)	ug/L	0.62	0.50	6985415	1.3	0.50	6985415
Dissolved Zinc (Zn)	ug/L	<5.0	5.0	6985415	<5.0	5.0	6985415

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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BV Labs Job #: C0P9040
Report Date: 2021/01/27

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: Geraldton LF
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID		NUK580			NUK581			NUK581		
Sampling Date		2020/09/29 13:00			2020/09/28 12:35			2020/09/28 12:35		
COC Number		791127-01-01			791127-01-01			791127-01-01		
	UNITS	**MW2 Lab-Dup**	**RDL**	**QC Batch**	**MW3A**	**RDL**	**QC Batch**	**MW3A Lab-Dup**	**RDL**	**QC Batch**
Inorganics										
Total Ammonia-N	mg/L				11	0.050	6987655	11 (1)	0.050	6987655
Total Chemical Oxygen Demand (COD)	mg/L				32	4.0	6987813			
Conductivity	umho/cm				1200	1.0	6983381			
Total Dissolved Solids	mg/L	235	10	6982647	610	10	6982647			
Total Kjeldahl Nitrogen (TKN)	mg/L				9.7 (1)	0.50	6987789	9.7 (1)	0.50	6987789
Dissolved Organic Carbon	mg/L				7.8	0.40	6983372			
pH	pH				7.59		6983383			
Phenols-4AAP	mg/L				<0.0010	0.0010	6984890			
Total Phosphorus	mg/L				0.057	0.020	6987659			
Dissolved Sulphate (SO4)	mg/L	<1.0	1.0	6983658	23	1.0	6983350			
Alkalinity (Total as CaCO3)	mg/L				530	1.0	6983378			
Dissolved Chloride (Cl-)	mg/L	6.3	1.0	6983659	63	1.0	6983346			
Nitrite (N)	mg/L				<0.010	0.010	6983180			
Nitrate (N)	mg/L				<0.10	0.10	6983180			
Metals										
Mercury (Hg)	mg/L				<0.00010	0.00010	6989769			
Dissolved Aluminum (Al)	ug/L				47	4.9	6985415			
Dissolved Antimony (Sb)	ug/L				<0.50	0.50	6985415			
Dissolved Arsenic (As)	ug/L				16	1.0	6985415			
Dissolved Barium (Ba)	ug/L				140	2.0	6985415			
Dissolved Beryllium (Be)	ug/L				<0.40	0.40	6985415			
Dissolved Bismuth (Bi)	ug/L				<1.0	1.0	6985415			
Dissolved Boron (B)	ug/L				280	10	6985415			
Dissolved Cadmium (Cd)	ug/L				<0.090	0.090	6985415			
Dissolved Calcium (Ca)	ug/L				150000	200	6985415			
Dissolved Chromium (Cr)	ug/L				<5.0	5.0	6985415			
Dissolved Cobalt (Co)	ug/L				5.3	0.50	6985415			
Dissolved Copper (Cu)	ug/L				1.5	0.90	6985415			
Dissolved Iron (Fe)	ug/L				15000	100	6985415			
Dissolved Lead (Pb)	ug/L				<0.50	0.50	6985415			
Dissolved Magnesium (Mg)	ug/L				24000	50	6985415			
Dissolved Manganese (Mn)	ug/L				1100	2.0	6985415			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
(1) TKN < NH4: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.

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BV Labs Job #: C0P9040
Report Date: 2021/01/27

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: Geraldton LF
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID		NUK580			NUK581			NUK581		
Sampling Date		2020/09/29 13:00			2020/09/28 12:35			2020/09/28 12:35		
COC Number		791127-01-01			791127-01-01			791127-01-01		
	UNITS	**MW2 Lab-Dup**	**RDL**	**QC Batch**	**MW3A**	**RDL**	**QC Batch**	**MW3A Lab-Dup**	**RDL**	**QC Batch**
Dissolved Molybdenum (Mo)	ug/L				<0.50	0.50	6985415			
Dissolved Nickel (Ni)	ug/L				5.4	1.0	6985415			
Dissolved Potassium (K)	ug/L				12000	200	6985415			
Dissolved Selenium (Se)	ug/L				<2.0	2.0	6985415			
Dissolved Silicon (Si)	ug/L				7600	50	6985415			
Dissolved Sodium (Na)	ug/L				48000	100	6985415			
Dissolved Strontium (Sr)	ug/L				240	1.0	6985415			
Dissolved Thallium (Tl)	ug/L				<0.050	0.050	6985415			
Dissolved Tin (Sn)	ug/L				<1.0	1.0	6985415			
Dissolved Vanadium (V)	ug/L				0.84	0.50	6985415			
Dissolved Zinc (Zn)	ug/L				<5.0	5.0	6985415			

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

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BV Labs Job #: C0P9040
Report Date: 2021/01/27

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: Geraldton LF
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID		NUK582			NUK583		NUK584		
Sampling Date		2020/09/29 09:20			2020/09/29 13:58		2020/09/29 11:43		
COC Number		791127-01-01			791127-01-01		791127-01-01		
	UNITS	**MW3B**	**RDL**	**QC Batch**	**MW4**	**QC Batch**	**MW5**	**RDL**	**QC Batch**
Inorganics									
Total Ammonia-N	mg/L	6.0 (1)	0.050	6987655	0.24 (1)	6987655	2.4 (1)	0.050	6987655
Total Chemical Oxygen Demand (COD)	mg/L	22	4.0	6987813	<4.0	6987813	18	4.0	6987813
Conductivity	umho/cm	1100	1.0	6983381	930	6983381	1100	1.0	6983381
Total Dissolved Solids	mg/L	600	10	6982647	525	6982647	605	10	6982647
Total Kjeldahl Nitrogen (TKN)	mg/L	5.6 (1)	1.0	6987789	0.22 (1)	6987782	2.2 (1)	0.10	6987789
Dissolved Organic Carbon	mg/L	6.9	0.40	6983372	1.8	6983372	5.4	0.40	6983372
pH	pH	7.69		6983383	7.72	6983383	7.76		6983383
Phenols-4AAP	mg/L	<0.0010	0.0010	6984890	<0.0010	6984897	<0.0010	0.0010	6984897
Total Phosphorus	mg/L	0.086	0.020	6987659	0.16	6987659	0.10	0.020	6987659
Dissolved Sulphate (SO4)	mg/L	36	1.0	6983350	33	6983350	98	1.0	6983350
Alkalinity (Total as CaCO3)	mg/L	520	1.0	6983378	460	6983378	460	1.0	6983378
Dissolved Chloride (Cl-)	mg/L	43	1.0	6983346	18	6983346	43	1.0	6983346
Nitrite (N)	mg/L	0.035	0.010	6983180	<0.010	6983180	0.027	0.010	6983369
Nitrate (N)	mg/L	0.63	0.10	6983180	0.59	6983180	<0.10	0.10	6983369
Metals									
Mercury (Hg)	mg/L	<0.00010	0.00010	6989777	<0.00010	6989777	<0.00010	0.00010	6989769
Dissolved Aluminum (Al)	ug/L	<4.9	4.9	6985415	<4.9	6985415	130	4.9	6985415
Dissolved Antimony (Sb)	ug/L	<0.50	0.50	6985415	<0.50	6985415	<0.50	0.50	6985415
Dissolved Arsenic (As)	ug/L	5.0	1.0	6985415	<1.0	6985415	3.4	1.0	6985415
Dissolved Barium (Ba)	ug/L	110	2.0	6985415	52	6985415	91	2.0	6985415
Dissolved Beryllium (Be)	ug/L	<0.40	0.40	6985415	<0.40	6985415	<0.40	0.40	6985415
Dissolved Bismuth (Bi)	ug/L	<1.0	1.0	6985415	<1.0	6985415	<1.0	1.0	6985415
Dissolved Boron (B)	ug/L	360	10	6985415	190	6985415	970	10	6985415
Dissolved Cadmium (Cd)	ug/L	<0.090	0.090	6985415	<0.090	6985415	<0.090	0.090	6985415
Dissolved Calcium (Ca)	ug/L	150000	200	6985415	170000	6985415	140000	200	6985415
Dissolved Chromium (Cr)	ug/L	<5.0	5.0	6985415	<5.0	6985415	<5.0	5.0	6985415
Dissolved Cobalt (Co)	ug/L	5.9	0.50	6985415	2.4	6985415	1.4	0.50	6985415
Dissolved Copper (Cu)	ug/L	3.0	0.90	6985415	<0.90	6985415	4.2	0.90	6985415
Dissolved Iron (Fe)	ug/L	2700	100	6985415	<100	6985415	1800	100	6985415
Dissolved Lead (Pb)	ug/L	<0.50	0.50	6985415	<0.50	6985415	0.60	0.50	6985415
Dissolved Magnesium (Mg)	ug/L	26000	50	6985415	18000	6985415	45000	50	6985415
Dissolved Manganese (Mn)	ug/L	910	2.0	6985415	350	6985415	1300	2.0	6985415
Dissolved Molybdenum (Mo)	ug/L	<0.50	0.50	6985415	<0.50	6985415	<0.50	0.50	6985415

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) TKN < NH4: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.

BV Labs Job #: C0P9040
Report Date: 2021/01/27

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: Geraldton LF
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID		NUK582			NUK583		NUK584		
Sampling Date		2020/09/29 09:20			2020/09/29 13:58		2020/09/29 11:43		
COC Number		791127-01-01			791127-01-01		791127-01-01		
	UNITS	**MW3B**	**RDL**	**QC Batch**	**MW4**	**QC Batch**	**MW5**	**RDL**	**QC Batch**
Dissolved Nickel (Ni)	ug/L	7.4	1.0	6985415	4.2	6985415	6.7	1.0	6985415
Dissolved Potassium (K)	ug/L	13000	200	6985415	2100	6985415	13000	200	6985415
Dissolved Selenium (Se)	ug/L	<2.0	2.0	6985415	<2.0	6985415	<2.0	2.0	6985415
Dissolved Silicon (Si)	ug/L	6800	50	6985415	5700	6985415	6000	50	6985415
Dissolved Sodium (Na)	ug/L	39000	100	6985415	13000	6985415	41000	100	6985415
Dissolved Strontium (Sr)	ug/L	270	1.0	6985415	140	6985415	280	1.0	6985415
Dissolved Thallium (Tl)	ug/L	<0.050	0.050	6985415	0.089	6985415	<0.050	0.050	6985415
Dissolved Tin (Sn)	ug/L	<1.0	1.0	6985415	<1.0	6985415	<1.0	1.0	6985415
Dissolved Vanadium (V)	ug/L	<0.50	0.50	6985415	<0.50	6985415	0.96	0.50	6985415
Dissolved Zinc (Zn)	ug/L	<5.0	5.0	6985415	<5.0	6985415	<5.0	5.0	6985415

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID		NUK585			NUK586		
Sampling Date		2020/09/29 14:41			2020/09/29 15:22		
COC Number		791127-01-01			791127-01-01		
	UNITS	**MW6**	**RDL**	**QC Batch**	**MW7**	**RDL**	**QC Batch**
Inorganics							
Total Ammonia-N	mg/L	0.13	0.050	6987655	6.9 (1)	0.050	6987655
Total Chemical Oxygen Demand (COD)	mg/L	<4.0	4.0	6987813	13	4.0	6987813
Conductivity	umho/cm	500	1.0	6983381	950	1.0	6983381
Total Dissolved Solids	mg/L	270	10	6982647	495	10	6982647
Total Kjeldahl Nitrogen (TKN)	mg/L	0.15	0.10	6987789	6.7 (1)	1.0	6987789
Dissolved Organic Carbon	mg/L	2.5	0.40	6983372	5.4	0.40	6983265
pH	pH	7.92		6983383	7.82		6983383
Phenols-4AAP	mg/L	<0.0010	0.0010	6984890	<0.0010	0.0010	6984897
Total Phosphorus	mg/L	0.058	0.020	6987659	0.14	0.020	6987659
Dissolved Sulphate (SO4)	mg/L	8.1	1.0	6983350	27	1.0	6983350
Alkalinity (Total as CaCO3)	mg/L	260	1.0	6983378	450	1.0	6983378
Dissolved Chloride (Cl-)	mg/L	2.0	1.0	6983346	31	1.0	6983346
Nitrite (N)	mg/L	<0.010	0.010	6983369	<0.010	0.010	6983369
Nitrate (N)	mg/L	<0.10	0.10	6983369	<0.10	0.10	6983369
Metals							
Mercury (Hg)	mg/L	<0.00010	0.00010	6989777	<0.00010	0.00010	6989769
Dissolved Aluminum (Al)	ug/L	<4.9	4.9	6985415	5.0	4.9	6985415
Dissolved Antimony (Sb)	ug/L	<0.50	0.50	6985415	<0.50	0.50	6985415
Dissolved Arsenic (As)	ug/L	1.8	1.0	6985415	45	1.0	6985415
Dissolved Barium (Ba)	ug/L	17	2.0	6985415	180	2.0	6985415
Dissolved Beryllium (Be)	ug/L	<0.40	0.40	6985415	<0.40	0.40	6985415
Dissolved Bismuth (Bi)	ug/L	<1.0	1.0	6985415	<1.0	1.0	6985415
Dissolved Boron (B)	ug/L	16	10	6985415	260	10	6985415
Dissolved Cadmium (Cd)	ug/L	<0.090	0.090	6985415	<0.090	0.090	6985415
Dissolved Calcium (Ca)	ug/L	83000	200	6985415	140000	200	6985415
Dissolved Chromium (Cr)	ug/L	<5.0	5.0	6985415	<5.0	5.0	6985415
Dissolved Cobalt (Co)	ug/L	1.4	0.50	6985415	11	0.50	6985415
Dissolved Copper (Cu)	ug/L	1.1	0.90	6985415	<0.90	0.90	6985415
Dissolved Iron (Fe)	ug/L	<100	100	6985415	20000	100	6985415
Dissolved Lead (Pb)	ug/L	<0.50	0.50	6985415	<0.50	0.50	6985415
Dissolved Magnesium (Mg)	ug/L	14000	50	6985415	18000	50	6985415
Dissolved Manganese (Mn)	ug/L	380	2.0	6985415	1500	2.0	6985415
Dissolved Molybdenum (Mo)	ug/L	0.90	0.50	6985415	0.52	0.50	6985415

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) TKN < NH4: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.

BV Labs Job #: C0P9040
Report Date: 2021/01/27

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: Geraldton LF
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID		NUK585			NUK586		
Sampling Date		2020/09/29 14:41			2020/09/29 15:22		
COC Number		791127-01-01			791127-01-01		
	UNITS	**MW6**	**RDL**	**QC Batch**	**MW7**	**RDL**	**QC Batch**
Dissolved Nickel (Ni)	ug/L	3.5	1.0	6985415	7.1	1.0	6985415
Dissolved Potassium (K)	ug/L	1600	200	6985415	9600	200	6985415
Dissolved Selenium (Se)	ug/L	<2.0	2.0	6985415	<2.0	2.0	6985415
Dissolved Silicon (Si)	ug/L	6400	50	6985415	9900	50	6985415
Dissolved Sodium (Na)	ug/L	3900	100	6985415	25000	100	6985415
Dissolved Strontium (Sr)	ug/L	78	1.0	6985415	190	1.0	6985415
Dissolved Thallium (Tl)	ug/L	0.15	0.050	6985415	<0.050	0.050	6985415
Dissolved Tin (Sn)	ug/L	<1.0	1.0	6985415	<1.0	1.0	6985415
Dissolved Vanadium (V)	ug/L	<0.50	0.50	6985415	0.79	0.50	6985415
Dissolved Zinc (Zn)	ug/L	<5.0	5.0	6985415	<5.0	5.0	6985415

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID		NUK587			NUK588		
Sampling Date		2020/09/29 11:00			2020/09/29 10:02		
COC Number		791127-01-01			791127-01-01		
	UNITS	**MW8**	**RDL**	**QC Batch**	**MW9**	**RDL**	**QC Batch**
Inorganics							
Total Ammonia-N	mg/L	0.15	0.050	6987655	0.30 (1)	0.050	6987655
Total Chemical Oxygen Demand (COD)	mg/L	23	4.0	6987813	7.0	4.0	6987813
Conductivity	umho/cm	5300	1.0	6983381	650	1.0	6983381
Total Dissolved Solids	mg/L	2570	10	6982647	310	10	6982647
Total Kjeldahl Nitrogen (TKN)	mg/L	0.26	0.10	6987789	0.26 (1)	0.20	6987789
Dissolved Organic Carbon	mg/L	2.6	0.40	6983372	0.81	0.40	6983372
pH	pH	7.87		6983383	8.01		6983383
Phenols-4AAP	mg/L	<0.0010	0.0010	6984897			
Total Phosphorus	mg/L	0.052	0.020	6987659	0.60	0.020	6987659
Dissolved Sulphate (SO4)	mg/L	36	1.0	6983350	3.0	1.0	6983350
Alkalinity (Total as CaCO3)	mg/L	370	1.0	6983378	280	1.0	6983378
Dissolved Chloride (Cl-)	mg/L	1500	15	6983346	41	1.0	6983346
Nitrite (N)	mg/L	<0.010	0.010	6983180	<0.010	0.010	6983369
Nitrate (N)	mg/L	1.63	0.10	6983180	0.14	0.10	6983369
Metals							
Mercury (Hg)	mg/L	<0.00010	0.00010	6989769	<0.00010	0.00010	6989777
Dissolved Aluminum (Al)	ug/L	<4.9	4.9	6985415	10	4.9	6985415
Dissolved Antimony (Sb)	ug/L	<0.50	0.50	6985415	<0.50	0.50	6985415
Dissolved Arsenic (As)	ug/L	<1.0	1.0	6985415	<1.0	1.0	6985415
Dissolved Barium (Ba)	ug/L	82	2.0	6985415	18	2.0	6985415
Dissolved Beryllium (Be)	ug/L	<0.40	0.40	6985415	<0.40	0.40	6985415
Dissolved Bismuth (Bi)	ug/L	<1.0	1.0	6985415	<1.0	1.0	6985415
Dissolved Boron (B)	ug/L	<10	10	6985415	<10	10	6985415
Dissolved Cadmium (Cd)	ug/L	<0.090	0.090	6985415	<0.090	0.090	6985415
Dissolved Calcium (Ca)	ug/L	180000	200	6985415	80000	200	6985415
Dissolved Chromium (Cr)	ug/L	<5.0	5.0	6985415	<5.0	5.0	6985415
Dissolved Cobalt (Co)	ug/L	<0.50	0.50	6985415	<0.50	0.50	6985415
Dissolved Copper (Cu)	ug/L	1.3	0.90	6985415	1.5	0.90	6985415
Dissolved Iron (Fe)	ug/L	<100	100	6985415	<100	100	6985415
Dissolved Lead (Pb)	ug/L	<0.50	0.50	6985415	<0.50	0.50	6985415
Dissolved Magnesium (Mg)	ug/L	14000	50	6985415	15000	50	6985415
Dissolved Manganese (Mn)	ug/L	<2.0	2.0	6985415	<2.0	2.0	6985415
Dissolved Molybdenum (Mo)	ug/L	<0.50	0.50	6985415	<0.50	0.50	6985415

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) TKN < NH4: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.

BV Labs Job #: C0P9040
Report Date: 2021/01/27

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: Geraldton LF
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID		NUK587			NUK588		
Sampling Date		2020/09/29 11:00			2020/09/29 10:02		
COC Number		791127-01-01			791127-01-01		
	UNITS	**MW8**	**RDL**	**QC Batch**	**MW9**	**RDL**	**QC Batch**
Dissolved Nickel (Ni)	ug/L	<1.0	1.0	6985415	<1.0	1.0	6985415
Dissolved Potassium (K)	ug/L	3200	200	6985415	1100	200	6985415
Dissolved Selenium (Se)	ug/L	<2.0	2.0	6985415	<2.0	2.0	6985415
Dissolved Silicon (Si)	ug/L	2800	50	6985415	4700	50	6985415
Dissolved Sodium (Na)	ug/L	790000	500	6985415	31000	100	6985415
Dissolved Strontium (Sr)	ug/L	220	1.0	6985415	68	1.0	6985415
Dissolved Thallium (Tl)	ug/L	<0.050	0.050	6985415	<0.050	0.050	6985415
Dissolved Tin (Sn)	ug/L	<1.0	1.0	6985415	<1.0	1.0	6985415
Dissolved Vanadium (V)	ug/L	<0.50	0.50	6985415	<0.50	0.50	6985415
Dissolved Zinc (Zn)	ug/L	<5.0	5.0	6985415	<5.0	5.0	6985415

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID		NUK588			NUK592		
Sampling Date		2020/09/29 10:02			2020/09/29 08:15		
COC Number		791127-01-01			791127-02-01		
	UNITS	**MW9 Lab-Dup**	**RDL**	**QC Batch**	**MW10A**	**RDL**	**QC Batch**
Inorganics							
Total Ammonia-N	mg/L				0.39	0.050	6987655
Total Chemical Oxygen Demand (COD)	mg/L				40	4.0	6987813
Conductivity	umho/cm				680	1.0	6983523
Total Dissolved Solids	mg/L				375	10	6982647
Total Kjeldahl Nitrogen (TKN)	mg/L				0.73	0.10	6987789
Dissolved Organic Carbon	mg/L	0.78	0.40	6983372	13	0.40	6983372
pH	pH				7.23		6983530
Phenols-4AAP	mg/L				<0.0010	0.0010	6984897
Total Phosphorus	mg/L				0.093	0.020	6987659
Dissolved Sulphate (SO4)	mg/L				<1.0	1.0	6983350
Alkalinity (Total as CaCO3)	mg/L				190	1.0	6983515
Dissolved Chloride (Cl-)	mg/L				100	1.0	6983346
Nitrite (N)	mg/L				<0.010	0.010	6983172
Nitrate (N)	mg/L				<0.10	0.10	6983172
Metals							
Mercury (Hg)	mg/L				<0.00010	0.00010	6989777
Dissolved Aluminum (Al)	ug/L	10	4.9	6985415	180	4.9	6985415
Dissolved Antimony (Sb)	ug/L	<0.50	0.50	6985415	<0.50	0.50	6985415
Dissolved Arsenic (As)	ug/L	<1.0	1.0	6985415	24	1.0	6985415
Dissolved Barium (Ba)	ug/L	17	2.0	6985415	26	2.0	6985415
Dissolved Beryllium (Be)	ug/L	<0.40	0.40	6985415	<0.40	0.40	6985415
Dissolved Bismuth (Bi)	ug/L	<1.0	1.0	6985415	<1.0	1.0	6985415
Dissolved Boron (B)	ug/L	<10	10	6985415	<10	10	6985415
Dissolved Cadmium (Cd)	ug/L	<0.090	0.090	6985415	<0.090	0.090	6985415
Dissolved Calcium (Ca)	ug/L	79000	200	6985415	69000	200	6985415
Dissolved Chromium (Cr)	ug/L	<5.0	5.0	6985415	<5.0	5.0	6985415
Dissolved Cobalt (Co)	ug/L	<0.50	0.50	6985415	<0.50	0.50	6985415
Dissolved Copper (Cu)	ug/L	1.4	0.90	6985415	<0.90	0.90	6985415
Dissolved Iron (Fe)	ug/L	<100	100	6985415	2100	100	6985415
Dissolved Lead (Pb)	ug/L	<0.50	0.50	6985415	<0.50	0.50	6985415
Dissolved Magnesium (Mg)	ug/L	16000	50	6985415	14000	50	6985415
Dissolved Manganese (Mn)	ug/L	<2.0	2.0	6985415	73	2.0	6985415
Dissolved Molybdenum (Mo)	ug/L	<0.50	0.50	6985415	<0.50	0.50	6985415

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

BV Labs Job #: C0P9040
Report Date: 2021/01/27

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: Geraldton LF
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID		NUK588			NUK592		
Sampling Date		2020/09/29 10:02			2020/09/29 08:15		
COC Number		791127-01-01			791127-02-01		
	UNITS	**MW9 Lab-Dup**	**RDL**	**QC Batch**	**MW10A**	**RDL**	**QC Batch**
Dissolved Nickel (Ni)	ug/L	<1.0	1.0	6985415	1.2	1.0	6985415
Dissolved Potassium (K)	ug/L	1100	200	6985415	360	200	6985415
Dissolved Selenium (Se)	ug/L	<2.0	2.0	6985415	<2.0	2.0	6985415
Dissolved Silicon (Si)	ug/L	4600	50	6985415	2600	50	6985415
Dissolved Sodium (Na)	ug/L	31000	100	6985415	46000	100	6985415
Dissolved Strontium (Sr)	ug/L	70	1.0	6985415	71	1.0	6985415
Dissolved Thallium (Tl)	ug/L	<0.050	0.050	6985415	<0.050	0.050	6985415
Dissolved Tin (Sn)	ug/L	<1.0	1.0	6985415	<1.0	1.0	6985415
Dissolved Vanadium (V)	ug/L	<0.50	0.50	6985415	2.0	0.50	6985415
Dissolved Zinc (Zn)	ug/L	<5.0	5.0	6985415	<5.0	5.0	6985415

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

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID		NUK593			NUK593		
Sampling Date		2020/09/29 08:55			2020/09/29 08:55		
COC Number		791127-02-01			791127-02-01		
	UNITS	**MW10B**	**RDL**	**QC Batch**	**MW10B Lab-Dup**	**RDL**	**QC Batch**
Inorganics							
Total Ammonia-N	mg/L	0.29	0.050	6987655			
Total Chemical Oxygen Demand (COD)	mg/L	49	4.0	6987813			
Conductivity	umho/cm	1500	1.0	6983136			
Total Dissolved Solids	mg/L	785	10	6982647			
Total Kjeldahl Nitrogen (TKN)	mg/L	0.58	0.10	6987789			
Dissolved Organic Carbon	mg/L	16	0.40	6983372			
pH	pH	7.85		6983140			
Phenols-4AAP	mg/L	<0.0010	0.0010	6984897	<0.0010	0.0010	6984897
Total Phosphorus	mg/L	0.073	0.040	6987659			
Dissolved Sulphate (SO4)	mg/L	<1.0	1.0	6983350			
Alkalinity (Total as CaCO3)	mg/L	370	1.0	6983130			
Dissolved Chloride (Cl-)	mg/L	240	3.0	6983346			
Nitrite (N)	mg/L	<0.010	0.010	6983172			
Nitrate (N)	mg/L	<0.10	0.10	6983172			
Metals							
Mercury (Hg)	mg/L	<0.00010	0.00010	6989777			
Dissolved Aluminum (Al)	ug/L	230	4.9	6985415			
Dissolved Antimony (Sb)	ug/L	<0.50	0.50	6985415			
Dissolved Arsenic (As)	ug/L	27	1.0	6985415			
Dissolved Barium (Ba)	ug/L	27	2.0	6985415			
Dissolved Beryllium (Be)	ug/L	<0.40	0.40	6985415			
Dissolved Bismuth (Bi)	ug/L	<1.0	1.0	6985415			
Dissolved Boron (B)	ug/L	<10	10	6985415			
Dissolved Cadmium (Cd)	ug/L	<0.090	0.090	6985415			
Dissolved Calcium (Ca)	ug/L	120000	200	6985415			
Dissolved Chromium (Cr)	ug/L	<5.0	5.0	6985415			
Dissolved Cobalt (Co)	ug/L	<0.50	0.50	6985415			
Dissolved Copper (Cu)	ug/L	1.6	0.90	6985415			
Dissolved Iron (Fe)	ug/L	2800	100	6985415			
Dissolved Lead (Pb)	ug/L	0.69	0.50	6985415			
Dissolved Magnesium (Mg)	ug/L	12000	50	6985415			
Dissolved Manganese (Mn)	ug/L	110	2.0	6985415			
Dissolved Molybdenum (Mo)	ug/L	<0.50	0.50	6985415			

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

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID		NUK593			NUK593		
Sampling Date		2020/09/29 08:55			2020/09/29 08:55		
COC Number		791127-02-01			791127-02-01		
	UNITS	**MW10B**	**RDL**	**QC Batch**	**MW10B Lab-Dup**	**RDL**	**QC Batch**
Dissolved Nickel (Ni)	ug/L	1.1	1.0	6985415			
Dissolved Potassium (K)	ug/L	470	200	6985415			
Dissolved Selenium (Se)	ug/L	<2.0	2.0	6985415			
Dissolved Silicon (Si)	ug/L	2100	50	6985415			
Dissolved Sodium (Na)	ug/L	170000	100	6985415			
Dissolved Strontium (Sr)	ug/L	95	1.0	6985415			
Dissolved Thallium (Tl)	ug/L	<0.050	0.050	6985415			
Dissolved Tin (Sn)	ug/L	<1.0	1.0	6985415			
Dissolved Vanadium (V)	ug/L	1.0	0.50	6985415			
Dissolved Zinc (Zn)	ug/L	<5.0	5.0	6985415			

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

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID		NUK594			NUK594		
Sampling Date		2020/09/29 16:55			2020/09/29 16:55		
COC Number		791127-02-01			791127-02-01		
	UNITS	**MW11**	**RDL**	**QC Batch**	**MW11 Lab-Dup**	**RDL**	**QC Batch**
Inorganics							
Total Ammonia-N	mg/L	0.17	0.050	6987655			
Total Chemical Oxygen Demand (COD)	mg/L	9.4	4.0	6987813			
Conductivity	umho/cm	460	1.0	6983136			
Total Dissolved Solids	mg/L	240	10	6982647			
Total Kjeldahl Nitrogen (TKN)	mg/L	0.29	0.10	6987789			
Dissolved Organic Carbon	mg/L	1.4	0.40	6983372			
pH	pH	8.01		6983140			
Phenols-4AAP	mg/L	<0.0010	0.0010	6984897			
Total Phosphorus	mg/L	0.83	0.040	6987659			
Dissolved Sulphate (SO4)	mg/L	<1.0	1.0	6983350			
Alkalinity (Total as CaCO3)	mg/L	260	1.0	6983130			
Dissolved Chloride (Cl-)	mg/L	1.5	1.0	6983346			
Nitrite (N)	mg/L	0.011	0.010	6983172			
Nitrate (N)	mg/L	0.10	0.10	6983172			
Metals							
Mercury (Hg)	mg/L	<0.00010	0.00010	6989777	<0.00010	0.00010	6989777
Dissolved Aluminum (Al)	ug/L	<4.9	4.9	6985415			
Dissolved Antimony (Sb)	ug/L	<0.50	0.50	6985415			
Dissolved Arsenic (As)	ug/L	<1.0	1.0	6985415			
Dissolved Barium (Ba)	ug/L	30	2.0	6985415			
Dissolved Beryllium (Be)	ug/L	<0.40	0.40	6985415			
Dissolved Bismuth (Bi)	ug/L	<1.0	1.0	6985415			
Dissolved Boron (B)	ug/L	14	10	6985415			
Dissolved Cadmium (Cd)	ug/L	<0.090	0.090	6985415			
Dissolved Calcium (Ca)	ug/L	66000	200	6985415			
Dissolved Chromium (Cr)	ug/L	<5.0	5.0	6985415			
Dissolved Cobalt (Co)	ug/L	<0.50	0.50	6985415			
Dissolved Copper (Cu)	ug/L	<0.90	0.90	6985415			
Dissolved Iron (Fe)	ug/L	<100	100	6985415			
Dissolved Lead (Pb)	ug/L	<0.50	0.50	6985415			
Dissolved Magnesium (Mg)	ug/L	14000	50	6985415			
Dissolved Manganese (Mn)	ug/L	130	2.0	6985415			
Dissolved Molybdenum (Mo)	ug/L	0.92	0.50	6985415			

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

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID		NUK594			NUK594		
Sampling Date		2020/09/29 16:55			2020/09/29 16:55		
COC Number		791127-02-01			791127-02-01		
	UNITS	**MW11**	**RDL**	**QC Batch**	**MW11 Lab-Dup**	**RDL**	**QC Batch**
Dissolved Nickel (Ni)	ug/L	<1.0	1.0	6985415			
Dissolved Potassium (K)	ug/L	1000	200	6985415			
Dissolved Selenium (Se)	ug/L	<2.0	2.0	6985415			
Dissolved Silicon (Si)	ug/L	7000	50	6985415			
Dissolved Sodium (Na)	ug/L	6500	100	6985415			
Dissolved Strontium (Sr)	ug/L	84	1.0	6985415			
Dissolved Thallium (Tl)	ug/L	<0.050	0.050	6985415			
Dissolved Tin (Sn)	ug/L	<1.0	1.0	6985415			
Dissolved Vanadium (V)	ug/L	1.7	0.50	6985415			
Dissolved Zinc (Zn)	ug/L	<5.0	5.0	6985415			

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

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID		NUK595		
Sampling Date		2020/09/29 11:05		
COC Number		791127-02-01		
	UNITS	**MW12**	**RDL**	**QC Batch**
Inorganics				
Total Ammonia-N	mg/L	11 (1)	0.050	6987655
Total Chemical Oxygen Demand (COD)	mg/L	27	4.0	6987813
Conductivity	umho/cm	1200	1.0	6983136
Total Dissolved Solids	mg/L	610	10	6982647
Total Kjeldahl Nitrogen (TKN)	mg/L	10 (1)	1.0	6987789
Dissolved Organic Carbon	mg/L	7.7	0.40	6983372
pH	pH	7.72		6983140
Phenols-4AAP	mg/L	<0.0010	0.0010	6984897
Total Phosphorus	mg/L	0.057	0.020	6987659
Dissolved Sulphate (SO4)	mg/L	24	1.0	6983209
Alkalinity (Total as CaCO3)	mg/L	530	1.0	6983130
Dissolved Chloride (Cl-)	mg/L	64	1.0	6983204
Nitrite (N)	mg/L	<0.010	0.010	6983172
Nitrate (N)	mg/L	<0.10	0.10	6983172
Metals				
Mercury (Hg)	mg/L	<0.00010	0.00010	6989777
Dissolved Aluminum (Al)	ug/L	61	4.9	6985415
Dissolved Antimony (Sb)	ug/L	<0.50	0.50	6985415
Dissolved Arsenic (As)	ug/L	16	1.0	6985415
Dissolved Barium (Ba)	ug/L	140	2.0	6985415
Dissolved Beryllium (Be)	ug/L	<0.40	0.40	6985415
Dissolved Bismuth (Bi)	ug/L	<1.0	1.0	6985415
Dissolved Boron (B)	ug/L	310	10	6985415
Dissolved Cadmium (Cd)	ug/L	<0.090	0.090	6985415
Dissolved Calcium (Ca)	ug/L	150000	200	6985415
Dissolved Chromium (Cr)	ug/L	<5.0	5.0	6985415
Dissolved Cobalt (Co)	ug/L	5.2	0.50	6985415
Dissolved Copper (Cu)	ug/L	1.6	0.90	6985415
Dissolved Iron (Fe)	ug/L	15000	100	6985415
Dissolved Lead (Pb)	ug/L	<0.50	0.50	6985415
Dissolved Magnesium (Mg)	ug/L	24000	50	6985415
Dissolved Manganese (Mn)	ug/L	1200	2.0	6985415

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) TKN < NH4: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.

BV Labs Job #: C0P9040
Report Date: 2021/01/27

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: Geraldton LF
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID		NUK595		
Sampling Date		2020/09/29 11:05		
COC Number		791127-02-01		
	UNITS	**MW12**	**RDL**	**QC Batch**
Dissolved Molybdenum (Mo)	ug/L	<0.50	0.50	6985415
Dissolved Nickel (Ni)	ug/L	5.6	1.0	6985415
Dissolved Potassium (K)	ug/L	12000	200	6985415
Dissolved Selenium (Se)	ug/L	<2.0	2.0	6985415
Dissolved Silicon (Si)	ug/L	7600	50	6985415
Dissolved Sodium (Na)	ug/L	51000	100	6985415
Dissolved Strontium (Sr)	ug/L	250	1.0	6985415
Dissolved Thallium (Tl)	ug/L	<0.050	0.050	6985415
Dissolved Tin (Sn)	ug/L	<1.0	1.0	6985415
Dissolved Vanadium (V)	ug/L	0.87	0.50	6985415
Dissolved Zinc (Zn)	ug/L	<5.0	5.0	6985415

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

LANDFILL STANDARDS SCH 5 - SW COMP. LIST (WATER)

BV Labs ID		NUK596			NUK596		
Sampling Date		2020/09/28 15:30			2020/09/28 15:30		
COC Number		C#791128-01-01			C#791128-01-01		
	UNITS	**SW1**	**RDL**	**QC Batch**	**SW1 Lab-Dup**	**RDL**	**QC Batch**
Inorganics							
Total Ammonia-N	mg/L	0.069	0.050	6989993			
Total BOD	mg/L	2	2	6981754			
Total Chemical Oxygen Demand (COD)	mg/L	11	4.0	6987813	16	4.0	6987813
Conductivity	umho/cm	280	1.0	6983381			
Total Dissolved Solids	mg/L	200	10	6982702			
Total Kjeldahl Nitrogen (TKN)	mg/L	0.41	0.10	6987782			
pH	pH	7.82		6983383			
Phenols-4AAP	mg/L	<0.0010	0.0010	6984897			
Total Phosphorus	mg/L	0.017	0.004	6989961			
Total Suspended Solids	mg/L	4	1	6982687			
Dissolved Sulphate (SO4)	mg/L	<1.0	1.0	6983170			
Alkalinity (Total as CaCO3)	mg/L	100	1.0	6983378			
Dissolved Chloride (Cl-)	mg/L	24	1.0	6983165			
Nitrite (N)	mg/L	<0.010	0.010	6983369			
Nitrate (N)	mg/L	<0.10	0.10	6983369			
Metals							
Mercury (Hg)	mg/L	<0.00010	0.00010	6989777			
Total Antimony (Sb)	ug/L	<0.50	0.50	6990069			
Total Arsenic (As)	ug/L	29	1.0	6990069			
Total Barium (Ba)	ug/L	16	2.0	6990069			
Total Beryllium (Be)	ug/L	<0.40	0.40	6990069			
Total Bismuth (Bi)	ug/L	<1.0	1.0	6990069			
Total Boron (B)	ug/L	16	10	6990069			
Total Cadmium (Cd)	ug/L	<0.090	0.090	6990069			
Total Chromium (Cr)	ug/L	<5.0	5.0	6990069			
Total Cobalt (Co)	ug/L	<0.50	0.50	6990069			
Total Copper (Cu)	ug/L	2.0	0.90	6990069			
Total Iron (Fe)	ug/L	460	100	6990069			
Total Lead (Pb)	ug/L	<0.50	0.50	6990069			
Total Molybdenum (Mo)	ug/L	<0.50	0.50	6990069			
Total Nickel (Ni)	ug/L	<1.0	1.0	6990069			
Total Selenium (Se)	ug/L	<2.0	2.0	6990069			
Total Silicon (Si)	ug/L	2500	50	6990069			

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

BV Labs Job #: C0P9040
Report Date: 2021/01/27

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: Geraldton LF
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - SW COMP. LIST (WATER)

BV Labs ID		NUK596			NUK596		
Sampling Date		2020/09/28 15:30			2020/09/28 15:30		
COC Number		C#791128-01-01			C#791128-01-01		
	UNITS	**SW1**	**RDL**	**QC Batch**	**SW1 Lab-Dup**	**RDL**	**QC Batch**
Total Silver (Ag)	ug/L	<0.090	0.090	6990069			
Total Strontium (Sr)	ug/L	40	1.0	6990069			
Total Thallium (Tl)	ug/L	<0.050	0.050	6990069			
Total Vanadium (V)	ug/L	<0.50	0.50	6990069			
Total Zinc (Zn)	ug/L	<5.0	5.0	6990069			

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

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

BV Labs Job #: C0P9040
Report Date: 2021/01/27

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: Geraldton LF
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - SW COMP. LIST (WATER)

BV Labs ID		NUK597			NUK597		
Sampling Date		2020/09/28 15:00			2020/09/28 15:00		
COC Number		C#791128-01-01			C#791128-01-01		
	UNITS	**SW2**	**RDL**	**QC Batch**	**SW2 Lab-Dup**	**RDL**	**QC Batch**
Inorganics							
Total Ammonia-N	mg/L	0.18	0.050	6987655			
Total BOD	mg/L	<2	2	6981754			
Total Chemical Oxygen Demand (COD)	mg/L	32	4.0	6987813			
Conductivity	umho/cm	200	1.0	6983523			
Total Dissolved Solids	mg/L	155	10	6982702			
Total Kjeldahl Nitrogen (TKN)	mg/L	0.36	0.10	6987789			
pH	pH	7.74		6983530			
Phenols-4AAP	mg/L	<0.0010	0.0010	6984897			
Total Phosphorus	mg/L	0.017	0.004	6989961			
Total Suspended Solids	mg/L	3	1	6982687			
Dissolved Sulphate (SO4)	mg/L	4.1	1.0	6983170	4.0	1.0	6983170
Alkalinity (Total as CaCO3)	mg/L	85	1.0	6983515			
Dissolved Chloride (Cl-)	mg/L	8.0	1.0	6983165	7.9	1.0	6983165
Nitrite (N)	mg/L	<0.010	0.010	6983172			
Nitrate (N)	mg/L	<0.10	0.10	6983172			
Metals							
Mercury (Hg)	mg/L	<0.00010	0.00010	6989777			
Total Antimony (Sb)	ug/L	<0.50	0.50	6990069			
Total Arsenic (As)	ug/L	55	1.0	6990069			
Total Barium (Ba)	ug/L	8.9	2.0	6990069			
Total Beryllium (Be)	ug/L	<0.40	0.40	6990069			
Total Bismuth (Bi)	ug/L	<1.0	1.0	6990069			
Total Boron (B)	ug/L	<10	10	6990069			
Total Cadmium (Cd)	ug/L	<0.090	0.090	6990069			
Total Chromium (Cr)	ug/L	<5.0	5.0	6990069			
Total Cobalt (Co)	ug/L	<0.50	0.50	6990069			
Total Copper (Cu)	ug/L	3.2	0.90	6990069			
Total Iron (Fe)	ug/L	210	100	6990069			
Total Lead (Pb)	ug/L	<0.50	0.50	6990069			
Total Molybdenum (Mo)	ug/L	<0.50	0.50	6990069			
Total Nickel (Ni)	ug/L	1.0	1.0	6990069			
Total Selenium (Se)	ug/L	<2.0	2.0	6990069			
Total Silicon (Si)	ug/L	2800	50	6990069			

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

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BV Labs Job #: C0P9040
Report Date: 2021/01/27

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: Geraldton LF
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - SW COMP. LIST (WATER)

BV Labs ID		NUK597			NUK597		
Sampling Date		2020/09/28 15:00			2020/09/28 15:00		
COC Number		C#791128-01-01			C#791128-01-01		
	UNITS	**SW2**	**RDL**	**QC Batch**	**SW2 Lab-Dup**	**RDL**	**QC Batch**
Total Silver (Ag)	ug/L	<0.090	0.090	6990069			
Total Strontium (Sr)	ug/L	40	1.0	6990069			
Total Thallium (Tl)	ug/L	<0.050	0.050	6990069			
Total Vanadium (V)	ug/L	0.55	0.50	6990069			
Total Zinc (Zn)	ug/L	<5.0	5.0	6990069			

RDL = Reportable Detection Limit
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Lab-Dup = Laboratory Initiated Duplicate

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BV Labs Job #: C0P9040
Report Date: 2021/01/27

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: Geraldton LF
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - SW COMP. LIST (WATER)

BV Labs ID		NUK598			NUK598		
Sampling Date		2020/09/28 14:00			2020/09/28 14:00		
COC Number		C#791128-01-01			C#791128-01-01		
	UNITS	**SW3**	**RDL**	**QC Batch**	**SW3 Lab-Dup**	**RDL**	**QC Batch**
Inorganics							
Total Ammonia-N	mg/L	0.091	0.050	6987655			
Total BOD	mg/L	<2	2	6981754	<2	2	6981754
Total Chemical Oxygen Demand (COD)	mg/L	32	4.0	6987813			
Conductivity	umho/cm	220	1.0	6983381			
Total Dissolved Solids	mg/L	140	10	6982702			
Total Kjeldahl Nitrogen (TKN)	mg/L	0.42	0.10	6987789			
pH	pH	7.88		6983383			
Phenols-4AAP	mg/L	<0.0010	0.0010	6984897			
Total Phosphorus	mg/L	0.022	0.004	6989961			
Total Suspended Solids	mg/L	6	1	6982687			
Dissolved Sulphate (SO4)	mg/L	6.7	1.0	6983170			
Alkalinity (Total as CaCO3)	mg/L	87	1.0	6983378			
Dissolved Chloride (Cl-)	mg/L	10	1.0	6983165			
Nitrite (N)	mg/L	<0.010	0.010	6983594			
Nitrate (N)	mg/L	<0.10	0.10	6983594			
Metals							
Mercury (Hg)	mg/L	<0.00010	0.00010	6989777			
Total Antimony (Sb)	ug/L	0.67	0.50	6990069			
Total Arsenic (As)	ug/L	72	1.0	6990069			
Total Barium (Ba)	ug/L	7.6	2.0	6990069			
Total Beryllium (Be)	ug/L	<0.40	0.40	6990069			
Total Bismuth (Bi)	ug/L	<1.0	1.0	6990069			
Total Boron (B)	ug/L	<10	10	6990069			
Total Cadmium (Cd)	ug/L	<0.090	0.090	6990069			
Total Chromium (Cr)	ug/L	<5.0	5.0	6990069			
Total Cobalt (Co)	ug/L	<0.50	0.50	6990069			
Total Copper (Cu)	ug/L	4.9	0.90	6990069			
Total Iron (Fe)	ug/L	240	100	6990069			
Total Lead (Pb)	ug/L	<0.50	0.50	6990069			
Total Molybdenum (Mo)	ug/L	<0.50	0.50	6990069			
Total Nickel (Ni)	ug/L	1.3	1.0	6990069			
Total Selenium (Se)	ug/L	<2.0	2.0	6990069			
Total Silicon (Si)	ug/L	2900	50	6990069			

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

BV Labs Job #: C0P9040
Report Date: 2021/01/27

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: Geraldton LF
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - SW COMP. LIST (WATER)

BV Labs ID		NUK598			NUK598		
Sampling Date		2020/09/28 14:00			2020/09/28 14:00		
COC Number		C#791128-01-01			C#791128-01-01		
	UNITS	**SW3**	**RDL**	**QC Batch**	**SW3 Lab-Dup**	**RDL**	**QC Batch**
Total Silver (Ag)	ug/L	<0.090	0.090	6990069			
Total Strontium (Sr)	ug/L	46	1.0	6990069			
Total Thallium (Tl)	ug/L	<0.050	0.050	6990069			
Total Vanadium (V)	ug/L	0.51	0.50	6990069			
Total Zinc (Zn)	ug/L	<5.0	5.0	6990069			

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

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BV Labs Job #: C0P9040
Report Date: 2021/01/27

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: Geraldton LF
Sampler Initials: EF

RESULTS OF ANALYSES OF WATER

BV Labs ID		NUK579		NUK580			NUK580		
Sampling Date		2020/09/29 12:16		2020/09/29 13:00			2020/09/29 13:00		
COC Number		791127-01-01		791127-01-01			791127-01-01		
	UNITS	**MW1**	**QC Batch**	**MW2**	**RDL**	**QC Batch**	**MW2 Lab-Dup**	**RDL**	**QC Batch**
Calculated Parameters									
Hardness (CaCO3)	mg/L	530	6981747	210	1.0	6981747			
Ion Balance (% Difference)	%	1.43	6981411	0.220	N/A	6981411			
Total Organic Nitrogen	mg/L	<0.10	6981687	0.15	0.10	6981687			
Inorganics									
Orthophosphate (P)	mg/L	<0.010	6983362	<0.010	0.010	6983637	<0.010	0.010	6983637

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

BV Labs ID		NUK581	NUK582	NUK583	NUK584	NUK585	NUK586		
Sampling Date		2020/09/28 12:35	2020/09/29 09:20	2020/09/29 13:58	2020/09/29 11:43	2020/09/29 14:41	2020/09/29 15:22		
COC Number		791127-01-01	791127-01-01	791127-01-01	791127-01-01	791127-01-01	791127-01-01		
	UNITS	**MW3A**	**MW3B**	**MW4**	**MW5**	**MW6**	**MW7**	**RDL**	**QC Batch**
Calculated Parameters									
Hardness (CaCO3)	mg/L	460	470	510	530	260	420	1.0	6981747
Ion Balance (% Difference)	%	0.340	1.29	1.73	2.20	0.0800	2.71	N/A	6981411
Total Organic Nitrogen	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	6981687
Inorganics									
Orthophosphate (P)	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	6983362

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

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BV Labs Job #: C0P9040
Report Date: 2021/01/27

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: Geraldton LF
Sampler Initials: EF

RESULTS OF ANALYSES OF WATER

BV Labs ID		NUK587	NUK588	NUK592	NUK593	NUK594		
Sampling Date		2020/09/29 11:00	2020/09/29 10:02	2020/09/29 08:15	2020/09/29 08:55	2020/09/29 16:55		
COC Number		791127-01-01	791127-01-01	791127-02-01	791127-02-01	791127-02-01		
	UNITS	**MW8**	**MW9**	**MW10A**	**MW10B**	**MW11**	**RDL**	**QC Batch**
Calculated Parameters								
Hardness (CaCO3)	mg/L	500	260	230	350	220	1.0	6981747
Ion Balance (% Difference)	%	7.00	1.07	0.310	0.440	3.70	N/A	6981411
Total Organic Nitrogen	mg/L	0.12	<0.10	0.34	0.29	0.11	0.10	6981687
Inorganics								
Orthophosphate (P)	mg/L	<0.010	<0.010	0.010	<0.010	<0.010	0.010	6983362

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

BV Labs ID		NUK595			NUK596		NUK597		
Sampling Date		2020/09/29 11:05			2020/09/28 15:30		2020/09/28 15:00		
COC Number		791127-02-01			C#791128-01-01		C#791128-01-01		
	UNITS	**MW12**	**RDL**	**QC Batch**	**SW1**	**QC Batch**	**SW2**	**RDL**	**QC Batch**
Calculated Parameters									
Hardness (CaCO3)	mg/L	480	1.0	6981747	110	6981445	100	1.0	6981445
Ion Balance (% Difference)	%	1.65	N/A	6981750					
Total Organic Nitrogen	mg/L	<0.10	0.10	6981687	0.34	6981687	0.19	0.10	6981687
Inorganics									
Dissolved Organic Carbon	mg/L				10	6983372	11	0.40	6988311
Orthophosphate (P)	mg/L	<0.010	0.010	6983218					

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

BV Labs ID		NUK598		
Sampling Date		2020/09/28 14:00		
COC Number		C#791128-01-01		
	UNITS	**SW3**	**RDL**	**QC Batch**
Calculated Parameters				
Hardness (CaCO3)	mg/L	110	1.0	6981747
Total Organic Nitrogen	mg/L	0.33	0.10	6981687
Inorganics				
Dissolved Organic Carbon	mg/L	11	0.40	6983372

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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BV Labs Job #: C0P9040
Report Date: 2021/01/27

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: Geraldton LF
Sampler Initials: EF

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

BV Labs ID		NUK596		NUK597		NUK598		
Sampling Date		2020/09/28 15:30		2020/09/28 15:00		2020/09/28 14:00		
COC Number		C#791128-01-01		C#791128-01-01		C#791128-01-01		
	UNITS	**SW1**	**QC Batch**	**SW2**	**QC Batch**	**SW3**	**RDL**	**QC Batch**
Metals								
Dissolved (0.2u) Aluminum (Al)	ug/L	<5	6985497	<5	6985306	<5	5	6985497

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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VOLATILE ORGANICS BY GC/MS (WATER)

BV Labs ID		NUK584		
Sampling Date		2020/09/29 11:43		
COC Number		791127-01-01		
	UNITS	**MW5**	**RDL**	**QC Batch**
Volatile Organics				
Acetone (2-Propanone)	ug/L	<250	250	6982696
Benzene	ug/L	<2.5	2.5	6982696
Bromodichloromethane	ug/L	<2.5	2.5	6982696
Bromoform	ug/L	<5.0	5.0	6982696
Bromomethane	ug/L	<13	13	6982696
Carbon Tetrachloride	ug/L	<2.5	2.5	6982696
Chlorobenzene	ug/L	<2.5	2.5	6982696
Chloroform	ug/L	<2.5	2.5	6982696
Dibromochloromethane	ug/L	<5.0	5.0	6982696
1,2-Dichlorobenzene	ug/L	<5.0	5.0	6982696
1,3-Dichlorobenzene	ug/L	<5.0	5.0	6982696
1,4-Dichlorobenzene	ug/L	<5.0	5.0	6982696
Dichlorodifluoromethane (FREON 12)	ug/L	<13	13	6982696
1,1-Dichloroethane	ug/L	<2.5	2.5	6982696
1,2-Dichloroethane	ug/L	<5.0	5.0	6982696
1,1-Dichloroethylene	ug/L	<2.5	2.5	6982696
cis-1,2-Dichloroethylene	ug/L	<2.5	2.5	6982696
trans-1,2-Dichloroethylene	ug/L	<2.5	2.5	6982696
1,2-Dichloropropane	ug/L	<2.5	2.5	6982696
cis-1,3-Dichloropropene	ug/L	<5.0	5.0	6982696
trans-1,3-Dichloropropene	ug/L	<5.0	5.0	6982696
Ethylbenzene	ug/L	<2.5	2.5	6982696
Ethylene Dibromide	ug/L	<5.0	5.0	6982696
Hexane	ug/L	<13	13	6982696
Methylene Chloride(Dichloromethane)	ug/L	<13	13	6982696
Methyl Ethyl Ketone (2-Butanone)	ug/L	<130	130	6982696
Methyl Isobutyl Ketone	ug/L	<130	130	6982696
Methyl t-butyl ether (MTBE)	ug/L	<5.0	5.0	6982696
Styrene	ug/L	<5.0	5.0	6982696
1,1,1,2-Tetrachloroethane	ug/L	<5.0	5.0	6982696
1,1,2,2-Tetrachloroethane	ug/L	<5.0	5.0	6982696
Tetrachloroethylene	ug/L	<2.5	2.5	6982696
Toluene	ug/L	<5.0	5.0	6982696

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

VOLATILE ORGANICS BY GC/MS (WATER)

BV Labs ID		NUK584		
Sampling Date		2020/09/29 11:43		
COC Number		791127-01-01		
	UNITS	**MW5**	**RDL**	**QC Batch**
1,1,1-Trichloroethane	ug/L	<2.5	2.5	6982696
1,1,2-Trichloroethane	ug/L	<5.0	5.0	6982696
Trichloroethylene	ug/L	<2.5	2.5	6982696
Trichlorofluoromethane (FREON 11)	ug/L	<5.0	5.0	6982696
Vinyl Chloride	ug/L	<5.0	5.0	6982696
p+m-Xylene	ug/L	<2.5	2.5	6982696
o-Xylene	ug/L	<2.5	2.5	6982696
Total Xylenes	ug/L	<2.5	2.5	6982696
Surrogate Recovery (%)				
4-Bromofluorobenzene	%	101		6982696
D4-1,2-Dichloroethane	%	99		6982696
D8-Toluene	%	98		6982696

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

TEST SUMMARY

BV Labs ID: NUK579
Sample ID: MW1
Matrix: Water

Collected: 2020/09/29
Shipped:
Received: 2020/10/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6983378	N/A	2020/10/06	Yogesh Patel
Chloride by Automated Colourimetry	KONE	6983346	N/A	2020/10/09	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6987813	N/A	2020/10/11	Nimarta Singh
Conductivity	AT	6983381	N/A	2020/10/06	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6983265	N/A	2020/10/06	Nimarta Singh
Hardness (calculated as CaCO3)		6981747	N/A	2020/10/08	Automated Statchk
Mercury in Water by CVAA	CV/AA	6989777	2020/10/08	2020/10/08	Meghaben Patel
Dissolved Metals by ICPMS	ICP/MS	6985415	N/A	2020/10/08	Daniel Teclu
Ion Balance (% Difference)	CALC	6981411	N/A	2020/10/09	Automated Statchk
Total Ammonia-N	LACH/NH4	6987655	N/A	2020/10/08	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6983369	N/A	2020/10/07	Chandra Nandlal
Organic Nitrogen	CALC	6981687	N/A	2020/10/10	Automated Statchk
pH	AT	6983383	2020/10/05	2020/10/06	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6984897	N/A	2020/10/07	Bramdeo Motiram
Orthophosphate	KONE	6983362	N/A	2020/10/07	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	6983350	N/A	2020/10/09	Deonarine Ramnarine
Total Dissolved Solids	BAL	6982647	2020/10/07	2020/10/08	Margesh Majmunda
Total Kjeldahl Nitrogen in Water	SKAL	6987789	2020/10/07	2020/10/10	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	6987659	2020/10/07	2020/10/08	Shivani Shivani

BV Labs ID: NUK580
Sample ID: MW2
Matrix: Water

Collected: 2020/09/29
Shipped:
Received: 2020/10/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6983378	N/A	2020/10/06	Yogesh Patel
Chloride by Automated Colourimetry	KONE	6983659	N/A	2020/10/07	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6987813	N/A	2020/10/11	Nimarta Singh
Conductivity	AT	6983381	N/A	2020/10/06	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6983372	N/A	2020/10/07	Nimarta Singh
Hardness (calculated as CaCO3)		6981747	N/A	2020/10/07	Automated Statchk
Mercury in Water by CVAA	CV/AA	6989777	2020/10/08	2020/10/08	Meghaben Patel
Dissolved Metals by ICPMS	ICP/MS	6985415	N/A	2020/10/06	Daniel Teclu
Ion Balance (% Difference)	CALC	6981411	N/A	2020/10/07	Automated Statchk
Total Ammonia-N	LACH/NH4	6987655	N/A	2020/10/08	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6983180	N/A	2020/10/07	Chandra Nandlal
Organic Nitrogen	CALC	6981687	N/A	2020/10/10	Automated Statchk
pH	AT	6983383	2020/10/05	2020/10/06	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6984890	N/A	2020/10/07	Bramdeo Motiram
Orthophosphate	KONE	6983637	N/A	2020/10/07	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	6983658	N/A	2020/10/07	Deonarine Ramnarine
Total Dissolved Solids	BAL	6982647	2020/10/07	2020/10/08	Margesh Majmunda
Total Kjeldahl Nitrogen in Water	SKAL	6987789	2020/10/07	2020/10/09	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	6987659	2020/10/07	2020/10/08	Shivani Shivani

TEST SUMMARY

BV Labs ID: NUK580 Dup
Sample ID: MW2
Matrix: Water

Collected: 2020/09/29
Shipped:
Received: 2020/10/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	KONE	6983659	N/A	2020/10/07	Deonarine Ramnarine
Orthophosphate	KONE	6983637	N/A	2020/10/07	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	6983658	N/A	2020/10/07	Deonarine Ramnarine
Total Dissolved Solids	BAL	6982647	2020/10/07	2020/10/08	Margesh Majmunda

BV Labs ID: NUK581
Sample ID: MW3A
Matrix: Water

Collected: 2020/09/28
Shipped:
Received: 2020/10/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6983378	N/A	2020/10/06	Yogesh Patel
Chloride by Automated Colourimetry	KONE	6983346	N/A	2020/10/09	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6987813	N/A	2020/10/11	Nimarta Singh
Conductivity	AT	6983381	N/A	2020/10/06	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6983372	N/A	2020/10/07	Nimarta Singh
Hardness (calculated as CaCO3)		6981747	N/A	2020/10/07	Automated Statchk
Mercury in Water by CVAA	CV/AA	6989769	2020/10/08	2020/10/08	Meghaben Patel
Dissolved Metals by ICPMS	ICP/MS	6985415	N/A	2020/10/06	Daniel Teclu
Ion Balance (% Difference)	CALC	6981411	N/A	2020/10/09	Automated Statchk
Total Ammonia-N	LACH/NH4	6987655	N/A	2020/10/08	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6983180	N/A	2020/10/07	Chandra Nandlal
Organic Nitrogen	CALC	6981687	N/A	2020/10/10	Automated Statchk
pH	AT	6983383	2020/10/05	2020/10/06	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6984890	N/A	2020/10/07	Bramdeo Motiram
Orthophosphate	KONE	6983362	N/A	2020/10/07	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	6983350	N/A	2020/10/09	Deonarine Ramnarine
Total Dissolved Solids	BAL	6982647	2020/10/07	2020/10/08	Margesh Majmunda
Total Kjeldahl Nitrogen in Water	SKAL	6987789	2020/10/07	2020/10/10	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	6987659	2020/10/07	2020/10/08	Shivani Shivani

BV Labs ID: NUK581 Dup
Sample ID: MW3A
Matrix: Water

Collected: 2020/09/28
Shipped:
Received: 2020/10/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Ammonia-N	LACH/NH4	6987655	N/A	2020/10/08	Amanpreet Sappal
Total Kjeldahl Nitrogen in Water	SKAL	6987789	2020/10/07	2020/10/10	Rajni Tyagi

BV Labs ID: NUK582
Sample ID: MW3B
Matrix: Water

Collected: 2020/09/29
Shipped:
Received: 2020/10/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6983378	N/A	2020/10/06	Yogesh Patel

BV Labs Job #: C0P9040
Report Date: 2021/01/27

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: Geraldton LF
Sampler Initials: EF

TEST SUMMARY

BV Labs ID: NUK582
Sample ID: MW3B
Matrix: Water

Collected: 2020/09/29
Shipped:
Received: 2020/10/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	KONE	6983346	N/A	2020/10/09	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6987813	N/A	2020/10/11	Nimarta Singh
Conductivity	AT	6983381	N/A	2020/10/06	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6983372	N/A	2020/10/08	Nimarta Singh
Hardness (calculated as CaCO3)		6981747	N/A	2020/10/07	Automated Statchk
Mercury in Water by CVAA	CV/AA	6989777	2020/10/08	2020/10/08	Meghaben Patel
Dissolved Metals by ICPMS	ICP/MS	6985415	N/A	2020/10/06	Daniel Teclu
Ion Balance (% Difference)	CALC	6981411	N/A	2020/10/09	Automated Statchk
Total Ammonia-N	LACH/NH4	6987655	N/A	2020/10/08	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6983180	N/A	2020/10/07	Chandra Nandlal
Organic Nitrogen	CALC	6981687	N/A	2020/10/10	Automated Statchk
pH	AT	6983383	2020/10/05	2020/10/06	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6984890	N/A	2020/10/07	Bramdeo Motiram
Orthophosphate	KONE	6983362	N/A	2020/10/07	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	6983350	N/A	2020/10/09	Deonarine Ramnarine
Total Dissolved Solids	BAL	6982647	2020/10/07	2020/10/08	Margesh Majmunda
Total Kjeldahl Nitrogen in Water	SKAL	6987789	2020/10/07	2020/10/10	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	6987659	2020/10/07	2020/10/08	Shivani Shivani

BV Labs ID: NUK583
Sample ID: MW4
Matrix: Water

Collected: 2020/09/29
Shipped:
Received: 2020/10/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6983378	N/A	2020/10/06	Yogesh Patel
Chloride by Automated Colourimetry	KONE	6983346	N/A	2020/10/09	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6987813	N/A	2020/10/11	Nimarta Singh
Conductivity	AT	6983381	N/A	2020/10/06	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6983372	N/A	2020/10/07	Nimarta Singh
Hardness (calculated as CaCO3)		6981747	N/A	2020/10/07	Automated Statchk
Mercury in Water by CVAA	CV/AA	6989777	2020/10/08	2020/10/08	Meghaben Patel
Dissolved Metals by ICPMS	ICP/MS	6985415	N/A	2020/10/06	Daniel Teclu
Ion Balance (% Difference)	CALC	6981411	N/A	2020/10/09	Automated Statchk
Total Ammonia-N	LACH/NH4	6987655	N/A	2020/10/08	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6983180	N/A	2020/10/07	Chandra Nandlal
Organic Nitrogen	CALC	6981687	N/A	2020/10/10	Automated Statchk
pH	AT	6983383	2020/10/05	2020/10/06	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6984897	N/A	2020/10/07	Bramdeo Motiram
Orthophosphate	KONE	6983362	N/A	2020/10/07	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	6983350	N/A	2020/10/09	Deonarine Ramnarine
Total Dissolved Solids	BAL	6982647	2020/10/07	2020/10/08	Margesh Majmunda
Total Kjeldahl Nitrogen in Water	SKAL	6987782	2020/10/07	2020/10/10	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	6987659	2020/10/07	2020/10/08	Shivani Shivani

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BV Labs Job #: C0P9040
Report Date: 2021/01/27

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: Geraldton LF
Sampler Initials: EF

TEST SUMMARY

BV Labs ID: NUK584
Sample ID: MW5
Matrix: Water

Collected: 2020/09/29
Shipped:
Received: 2020/10/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6983378	N/A	2020/10/06	Yogesh Patel
Chloride by Automated Colourimetry	KONE	6983346	N/A	2020/10/09	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6987813	N/A	2020/10/11	Nimarta Singh
Conductivity	AT	6983381	N/A	2020/10/06	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6983372	N/A	2020/10/08	Nimarta Singh
Hardness (calculated as CaCO3)		6981747	N/A	2020/10/08	Automated Statchk
Mercury in Water by CVAA	CV/AA	6989769	2020/10/08	2020/10/08	Meghaben Patel
Dissolved Metals by ICPMS	ICP/MS	6985415	N/A	2020/10/08	Daniel Teclu
Ion Balance (% Difference)	CALC	6981411	N/A	2020/10/09	Automated Statchk
Total Ammonia-N	LACH/NH4	6987655	N/A	2020/10/08	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6983369	N/A	2020/10/07	Chandra Nandlal
Organic Nitrogen	CALC	6981687	N/A	2020/10/10	Automated Statchk
pH	AT	6983383	2020/10/05	2020/10/06	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6984897	N/A	2020/10/07	Bramdeo Motiram
Orthophosphate	KONE	6983362	N/A	2020/10/07	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	6983350	N/A	2020/10/09	Deonarine Ramnarine
Total Dissolved Solids	BAL	6982647	2020/10/07	2020/10/08	Margesh Majmunda
Total Kjeldahl Nitrogen in Water	SKAL	6987789	2020/10/07	2020/10/09	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	6987659	2020/10/07	2020/10/08	Shivani Shivani
Volatile Organic Compounds in Water	P&T/MS	6982696	N/A	2020/10/07	Adriana Zurita

BV Labs ID: NUK585
Sample ID: MW6
Matrix: Water

Collected: 2020/09/29
Shipped:
Received: 2020/10/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6983378	N/A	2020/10/06	Yogesh Patel
Chloride by Automated Colourimetry	KONE	6983346	N/A	2020/10/09	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6987813	N/A	2020/10/11	Nimarta Singh
Conductivity	AT	6983381	N/A	2020/10/06	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6983372	N/A	2020/10/07	Nimarta Singh
Hardness (calculated as CaCO3)		6981747	N/A	2020/10/07	Automated Statchk
Mercury in Water by CVAA	CV/AA	6989777	2020/10/08	2020/10/08	Meghaben Patel
Dissolved Metals by ICPMS	ICP/MS	6985415	N/A	2020/10/06	Daniel Teclu
Ion Balance (% Difference)	CALC	6981411	N/A	2020/10/09	Automated Statchk
Total Ammonia-N	LACH/NH4	6987655	N/A	2020/10/08	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6983369	N/A	2020/10/07	Chandra Nandlal
Organic Nitrogen	CALC	6981687	N/A	2020/10/10	Automated Statchk
pH	AT	6983383	2020/10/05	2020/10/06	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6984890	N/A	2020/10/07	Bramdeo Motiram
Orthophosphate	KONE	6983362	N/A	2020/10/07	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	6983350	N/A	2020/10/09	Deonarine Ramnarine
Total Dissolved Solids	BAL	6982647	2020/10/07	2020/10/08	Margesh Majmunda
Total Kjeldahl Nitrogen in Water	SKAL	6987789	2020/10/07	2020/10/09	Rajni Tyagi

BV Labs Job #: C0P9040
Report Date: 2021/01/27

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: Geraldton LF
Sampler Initials: EF

TEST SUMMARY

BV Labs ID: NUK585
Sample ID: MW6
Matrix: Water

Collected: 2020/09/29
Shipped:
Received: 2020/10/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Phosphorus (Colourimetric)	LACH/P	6987659	2020/10/07	2020/10/08	Shivani Shivani

BV Labs ID: NUK586
Sample ID: MW7
Matrix: Water

Collected: 2020/09/29
Shipped:
Received: 2020/10/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6983378	N/A	2020/10/06	Yogesh Patel
Chloride by Automated Colourimetry	KONE	6983346	N/A	2020/10/09	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6987813	N/A	2020/10/11	Nimarta Singh
Conductivity	AT	6983381	N/A	2020/10/06	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6983265	N/A	2020/10/06	Nimarta Singh
Hardness (calculated as CaCO3)		6981747	N/A	2020/10/07	Automated Statchk
Mercury in Water by CVAA	CV/AA	6989769	2020/10/08	2020/10/08	Meghaben Patel
Dissolved Metals by ICPMS	ICP/MS	6985415	N/A	2020/10/06	Daniel Teclu
Ion Balance (% Difference)	CALC	6981411	N/A	2020/10/09	Automated Statchk
Total Ammonia-N	LACH/NH4	6987655	N/A	2020/10/08	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6983369	N/A	2020/10/07	Chandra Nandlal
Organic Nitrogen	CALC	6981687	N/A	2020/10/10	Automated Statchk
pH	AT	6983383	2020/10/05	2020/10/06	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6984897	N/A	2020/10/07	Bramdeo Motiram
Orthophosphate	KONE	6983362	N/A	2020/10/07	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	6983350	N/A	2020/10/09	Deonarine Ramnarine
Total Dissolved Solids	BAL	6982647	2020/10/07	2020/10/08	Margesh Majmunda
Total Kjeldahl Nitrogen in Water	SKAL	6987789	2020/10/07	2020/10/10	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	6987659	2020/10/07	2020/10/08	Shivani Shivani

BV Labs ID: NUK587
Sample ID: MW8
Matrix: Water

Collected: 2020/09/29
Shipped:
Received: 2020/10/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6983378	N/A	2020/10/06	Yogesh Patel
Chloride by Automated Colourimetry	KONE	6983346	N/A	2020/10/09	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6987813	N/A	2020/10/11	Nimarta Singh
Conductivity	AT	6983381	N/A	2020/10/06	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6983372	N/A	2020/10/08	Nimarta Singh
Hardness (calculated as CaCO3)		6981747	N/A	2020/10/08	Automated Statchk
Mercury in Water by CVAA	CV/AA	6989769	2020/10/08	2020/10/08	Meghaben Patel
Dissolved Metals by ICPMS	ICP/MS	6985415	N/A	2020/10/08	Daniel Teclu
Ion Balance (% Difference)	CALC	6981411	N/A	2020/10/09	Automated Statchk
Total Ammonia-N	LACH/NH4	6987655	N/A	2020/10/08	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6983180	N/A	2020/10/07	Chandra Nandlal
Organic Nitrogen	CALC	6981687	N/A	2020/10/10	Automated Statchk

TEST SUMMARY

BV Labs ID: NUK587
Sample ID: MW8
Matrix: Water

Collected: 2020/09/29
Shipped:
Received: 2020/10/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH	AT	6983383	2020/10/05	2020/10/06	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6984897	N/A	2020/10/07	Bramdeo Motiram
Orthophosphate	KONE	6983362	N/A	2020/10/07	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	6983350	N/A	2020/10/09	Deonarine Ramnarine
Total Dissolved Solids	BAL	6982647	2020/10/07	2020/10/08	Margesh Majmunda
Total Kjeldahl Nitrogen in Water	SKAL	6987789	2020/10/07	2020/10/09	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	6987659	2020/10/07	2020/10/08	Shivani Shivani

BV Labs ID: NUK588
Sample ID: MW9
Matrix: Water

Collected: 2020/09/29
Shipped:
Received: 2020/10/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6983378	N/A	2020/10/06	Yogesh Patel
Chloride by Automated Colourimetry	KONE	6983346	N/A	2020/10/09	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6987813	N/A	2020/10/11	Nimarta Singh
Conductivity	AT	6983381	N/A	2020/10/06	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6983372	N/A	2020/10/07	Nimarta Singh
Hardness (calculated as CaCO3)		6981747	N/A	2020/10/07	Automated Statchk
Mercury in Water by CVAA	CV/AA	6989777	2020/10/08	2020/10/08	Meghaben Patel
Dissolved Metals by ICPMS	ICP/MS	6985415	N/A	2020/10/06	Daniel Teclu
Ion Balance (% Difference)	CALC	6981411	N/A	2020/10/09	Automated Statchk
Total Ammonia-N	LACH/NH4	6987655	N/A	2020/10/08	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6983369	N/A	2020/10/07	Chandra Nandlal
Organic Nitrogen	CALC	6981687	N/A	2020/10/10	Automated Statchk
pH	AT	6983383	2020/10/05	2020/10/06	Yogesh Patel
Orthophosphate	KONE	6983362	N/A	2020/10/07	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	6983350	N/A	2020/10/09	Deonarine Ramnarine
Total Dissolved Solids	BAL	6982647	2020/10/07	2020/10/08	Margesh Majmunda
Total Kjeldahl Nitrogen in Water	SKAL	6987789	2020/10/07	2020/10/10	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	6987659	2020/10/07	2020/10/08	Shivani Shivani

BV Labs ID: NUK588 Dup
Sample ID: MW9
Matrix: Water

Collected: 2020/09/29
Shipped:
Received: 2020/10/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6983372	N/A	2020/10/07	Nimarta Singh
Dissolved Metals by ICPMS	ICP/MS	6985415	N/A	2020/10/06	Daniel Teclu

BV Labs Job #: C0P9040
Report Date: 2021/01/27

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: Geraldton LF
Sampler Initials: EF

TEST SUMMARY

BV Labs ID: NUK592
Sample ID: MW10A
Matrix: Water

Collected: 2020/09/29
Shipped:
Received: 2020/10/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6983515	N/A	2020/10/06	Yogesh Patel
Chloride by Automated Colourimetry	KONE	6983346	N/A	2020/10/09	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6987813	N/A	2020/10/11	Nimarta Singh
Conductivity	AT	6983523	N/A	2020/10/06	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6983372	N/A	2020/10/07	Nimarta Singh
Hardness (calculated as CaCO3)		6981747	N/A	2020/10/07	Automated Statchk
Mercury in Water by CVAA	CV/AA	6989777	2020/10/08	2020/10/08	Meghaben Patel
Dissolved Metals by ICPMS	ICP/MS	6985415	N/A	2020/10/06	Daniel Teclu
Ion Balance (% Difference)	CALC	6981411	N/A	2020/10/09	Automated Statchk
Total Ammonia-N	LACH/NH4	6987655	N/A	2020/10/08	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6983172	N/A	2020/10/08	Chandra Nandlal
Organic Nitrogen	CALC	6981687	N/A	2020/10/10	Automated Statchk
pH	AT	6983530	2020/10/05	2020/10/06	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6984897	N/A	2020/10/07	Bramdeo Motiram
Orthophosphate	KONE	6983362	N/A	2020/10/07	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	6983350	N/A	2020/10/09	Deonarine Ramnarine
Total Dissolved Solids	BAL	6982647	2020/10/07	2020/10/08	Margesh Majmunda
Total Kjeldahl Nitrogen in Water	SKAL	6987789	2020/10/07	2020/10/09	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	6987659	2020/10/07	2020/10/08	Shivani Shivani

BV Labs ID: NUK593
Sample ID: MW10B
Matrix: Water

Collected: 2020/09/29
Shipped:
Received: 2020/10/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6983130	N/A	2020/10/07	Yogesh Patel
Chloride by Automated Colourimetry	KONE	6983346	N/A	2020/10/09	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6987813	N/A	2020/10/11	Nimarta Singh
Conductivity	AT	6983136	N/A	2020/10/07	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6983372	N/A	2020/10/07	Nimarta Singh
Hardness (calculated as CaCO3)		6981747	N/A	2020/10/07	Automated Statchk
Mercury in Water by CVAA	CV/AA	6989777	2020/10/08	2020/10/08	Meghaben Patel
Dissolved Metals by ICPMS	ICP/MS	6985415	N/A	2020/10/06	Daniel Teclu
Ion Balance (% Difference)	CALC	6981411	N/A	2020/10/09	Automated Statchk
Total Ammonia-N	LACH/NH4	6987655	N/A	2020/10/08	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6983172	N/A	2020/10/08	Chandra Nandlal
Organic Nitrogen	CALC	6981687	N/A	2020/10/10	Automated Statchk
pH	AT	6983140	2020/10/05	2020/10/07	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6984897	N/A	2020/10/07	Bramdeo Motiram
Orthophosphate	KONE	6983362	N/A	2020/10/07	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	6983350	N/A	2020/10/09	Deonarine Ramnarine
Total Dissolved Solids	BAL	6982647	2020/10/07	2020/10/08	Margesh Majmunda
Total Kjeldahl Nitrogen in Water	SKAL	6987789	2020/10/07	2020/10/09	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	6987659	2020/10/07	2020/10/08	Shivani Shivani

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TEST SUMMARY

BV Labs ID: NUK593 Dup
Sample ID: MW10B
Matrix: Water

Collected: 2020/09/29
Shipped:
Received: 2020/10/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Phenols (4AAP)	TECH/PHEN	6984897	N/A	2020/10/07	Bramdeo Motiram

BV Labs ID: NUK594
Sample ID: MW11
Matrix: Water

Collected: 2020/09/29
Shipped:
Received: 2020/10/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6983130	N/A	2020/10/07	Yogesh Patel
Chloride by Automated Colourimetry	KONE	6983346	N/A	2020/10/09	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6987813	N/A	2020/10/11	Nimarta Singh
Conductivity	AT	6983136	N/A	2020/10/07	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6983372	N/A	2020/10/07	Nimarta Singh
Hardness (calculated as CaCO3)		6981747	N/A	2020/10/07	Automated Statchk
Mercury in Water by CVAA	CV/AA	6989777	2020/10/08	2020/10/08	Meghaben Patel
Dissolved Metals by ICPMS	ICP/MS	6985415	N/A	2020/10/06	Daniel Teclu
Ion Balance (% Difference)	CALC	6981411	N/A	2020/10/09	Automated Statchk
Total Ammonia-N	LACH/NH4	6987655	N/A	2020/10/08	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6983172	N/A	2020/10/08	Chandra Nandlal
Organic Nitrogen	CALC	6981687	N/A	2020/10/10	Automated Statchk
pH	AT	6983140	2020/10/05	2020/10/07	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6984897	N/A	2020/10/07	Bramdeo Motiram
Orthophosphate	KONE	6983362	N/A	2020/10/07	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	6983350	N/A	2020/10/09	Deonarine Ramnarine
Total Dissolved Solids	BAL	6982647	2020/10/07	2020/10/08	Margesh Majmunda
Total Kjeldahl Nitrogen in Water	SKAL	6987789	2020/10/07	2020/10/09	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	6987659	2020/10/07	2020/10/08	Shivani Shivani

BV Labs ID: NUK594 Dup
Sample ID: MW11
Matrix: Water

Collected: 2020/09/29
Shipped:
Received: 2020/10/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Water by CVAA	CV/AA	6989777	2020/10/08	2020/10/08	Meghaben Patel

BV Labs ID: NUK595
Sample ID: MW12
Matrix: Water

Collected: 2020/09/29
Shipped:
Received: 2020/10/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6983130	N/A	2020/10/07	Yogesh Patel
Chloride by Automated Colourimetry	KONE	6983204	N/A	2020/10/09	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6987813	N/A	2020/10/11	Nimarta Singh
Conductivity	AT	6983136	N/A	2020/10/07	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6983372	N/A	2020/10/08	Nimarta Singh

BV Labs Job #: C0P9040
Report Date: 2021/01/27

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: Geraldton LF
Sampler Initials: EF

TEST SUMMARY

BV Labs ID: NUK595
Sample ID: MW12
Matrix: Water

Collected: 2020/09/29
Shipped:
Received: 2020/10/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hardness (calculated as CaCO3)		6981747	N/A	2020/10/07	Automated Statchk
Mercury in Water by CVAA	CV/AA	6989777	2020/10/08	2020/10/08	Meghaben Patel
Dissolved Metals by ICPMS	ICP/MS	6985415	N/A	2020/10/06	Daniel Teclu
Ion Balance (% Difference)	CALC	6981750	N/A	2020/10/09	Automated Statchk
Total Ammonia-N	LACH/NH4	6987655	N/A	2020/10/08	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6983172	N/A	2020/10/08	Chandra Nandlal
Organic Nitrogen	CALC	6981687	N/A	2020/10/10	Automated Statchk
pH	AT	6983140	2020/10/05	2020/10/07	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6984897	N/A	2020/10/07	Bramdeo Motiram
Orthophosphate	KONE	6983218	N/A	2020/10/07	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	6983209	N/A	2020/10/09	Deonarine Ramnarine
Total Dissolved Solids	BAL	6982647	2020/10/07	2020/10/08	Margesh Majmunda
Total Kjeldahl Nitrogen in Water	SKAL	6987789	2020/10/07	2020/10/10	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	6987659	2020/10/07	2020/10/08	Shivani Shivani

BV Labs ID: NUK596
Sample ID: SW1
Matrix: Water

Collected: 2020/09/28
Shipped:
Received: 2020/10/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Aluminum (0.2 u, clay free)	ICP/MS	6985497	N/A	2020/10/07	Arefa Dabhad
Alkalinity	AT	6983378	N/A	2020/10/06	Yogesh Patel
Biochemical Oxygen Demand (BOD)	DO	6981754	2020/10/03	2020/10/08	Navjot Kaur Gill
Chloride by Automated Colourimetry	KONE	6983165	N/A	2020/10/09	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6987813	N/A	2020/10/11	Nimarta Singh
Conductivity	AT	6983381	N/A	2020/10/06	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6983372	N/A	2020/10/07	Nimarta Singh
Hardness (calculated as CaCO3)		6981445	N/A	2020/10/07	Automated Statchk
Mercury in Water by CVAA	CV/AA	6989777	2020/10/08	2020/10/08	Meghaben Patel
Total Metals Analysis by ICPMS	ICP/MS	6990069	N/A	2020/10/08	Daniel Teclu
Total Ammonia-N	LACH/NH4	6989993	N/A	2020/10/08	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6983369	N/A	2020/10/07	Chandra Nandlal
Organic Nitrogen	CALC	6981687	N/A	2020/10/10	Automated Statchk
pH	AT	6983383	2020/10/05	2020/10/06	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6984897	N/A	2020/10/07	Bramdeo Motiram
Sulphate by Automated Colourimetry	KONE	6983170	N/A	2020/10/09	Deonarine Ramnarine
Total Dissolved Solids	BAL	6982702	2020/10/05	2020/10/06	Margesh Majmunda
Total Kjeldahl Nitrogen in Water	SKAL	6987782	2020/10/07	2020/10/09	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	6989961	2020/10/08	2020/10/08	Shivani Shivani
Low Level Total Suspended Solids	BAL	6982687	2020/10/05	2020/10/06	Margesh Majmunda

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TEST SUMMARY

BV Labs ID: NUK596 Dup
Sample ID: SW1
Matrix: Water

Collected: 2020/09/28
Shipped:
Received: 2020/10/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chemical Oxygen Demand	SPEC	6987813	N/A	2020/10/11	Nimarta Singh

BV Labs ID: NUK597
Sample ID: SW2
Matrix: Water

Collected: 2020/09/28
Shipped:
Received: 2020/10/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Aluminum (0.2 u, clay free)	ICP/MS	6985306	N/A	2020/10/07	Nan Raykha
Alkalinity	AT	6983515	N/A	2020/10/06	Yogesh Patel
Biochemical Oxygen Demand (BOD)	DO	6981754	2020/10/03	2020/10/08	Navjot Kaur Gill
Chloride by Automated Colourimetry	KONE	6983165	N/A	2020/10/09	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6987813	N/A	2020/10/11	Nimarta Singh
Conductivity	AT	6983523	N/A	2020/10/06	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6988311	N/A	2020/10/08	Nimarta Singh
Hardness (calculated as CaCO3)		6981445	N/A	2020/10/07	Automated Statchk
Mercury in Water by CVAA	CV/AA	6989777	2020/10/08	2020/10/08	Meghaben Patel
Total Metals Analysis by ICPMS	ICP/MS	6990069	N/A	2020/10/08	Daniel Teclu
Total Ammonia-N	LACH/NH4	6987655	N/A	2020/10/08	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6983172	N/A	2020/10/08	Chandra Nandlal
Organic Nitrogen	CALC	6981687	N/A	2020/10/10	Automated Statchk
pH	AT	6983530	2020/10/05	2020/10/06	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6984897	N/A	2020/10/07	Bramdeo Motiram
Sulphate by Automated Colourimetry	KONE	6983170	N/A	2020/10/09	Deonarine Ramnarine
Total Dissolved Solids	BAL	6982702	2020/10/05	2020/10/06	Margesh Majmunda
Total Kjeldahl Nitrogen in Water	SKAL	6987789	2020/10/07	2020/10/09	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	6989961	2020/10/08	2020/10/08	Shivani Shivani
Low Level Total Suspended Solids	BAL	6982687	2020/10/05	2020/10/06	Margesh Majmunda

BV Labs ID: NUK597 Dup
Sample ID: SW2
Matrix: Water

Collected: 2020/09/28
Shipped:
Received: 2020/10/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	KONE	6983165	N/A	2020/10/09	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	6983170	N/A	2020/10/09	Deonarine Ramnarine

BV Labs ID: NUK598
Sample ID: SW3
Matrix: Water

Collected: 2020/09/28
Shipped:
Received: 2020/10/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Aluminum (0.2 u, clay free)	ICP/MS	6985497	N/A	2020/10/07	Arefa Dabhad
Alkalinity	AT	6983378	N/A	2020/10/06	Yogesh Patel
Biochemical Oxygen Demand (BOD)	DO	6981754	2020/10/03	2020/10/08	Navjot Kaur Gill

BV Labs Job #: C0P9040
Report Date: 2021/01/27

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: Geraldton LF
Sampler Initials: EF

TEST SUMMARY

BV Labs ID: NUK598
Sample ID: SW3
Matrix: Water

Collected: 2020/09/28
Shipped:
Received: 2020/10/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	KONE	6983165	N/A	2020/10/09	Deonarine Ramnarine
Chemical Oxygen Demand	SPEC	6987813	N/A	2020/10/11	Nimarta Singh
Conductivity	AT	6983381	N/A	2020/10/06	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6983372	N/A	2020/10/08	Nimarta Singh
Hardness (calculated as CaCO3)		6981747	N/A	2020/10/07	Automated Statchk
Mercury in Water by CVAA	CV/AA	6989777	2020/10/08	2020/10/08	Meghaben Patel
Total Metals Analysis by ICPMS	ICP/MS	6990069	N/A	2020/10/08	Daniel Teclu
Total Ammonia-N	LACH/NH4	6987655	N/A	2020/10/08	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6983594	N/A	2020/10/07	Chandra Nandlal
Organic Nitrogen	CALC	6981687	N/A	2020/10/10	Automated Statchk
pH	AT	6983383	2020/10/05	2020/10/06	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	6984897	N/A	2020/10/07	Bramdeo Motiram
Sulphate by Automated Colourimetry	KONE	6983170	N/A	2020/10/09	Deonarine Ramnarine
Total Dissolved Solids	BAL	6982702	2020/10/05	2020/10/06	Margesh Majmunda
Total Kjeldahl Nitrogen in Water	SKAL	6987789	2020/10/07	2020/10/09	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	6989961	2020/10/08	2020/10/08	Shivani Shivani
Low Level Total Suspended Solids	BAL	6982687	2020/10/05	2020/10/06	Margesh Majmunda

BV Labs ID: NUK598 Dup
Sample ID: SW3
Matrix: Water

Collected: 2020/09/28
Shipped:
Received: 2020/10/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Biochemical Oxygen Demand (BOD)	DO	6981754	2020/10/03	2020/10/08	Navjot Kaur Gill

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BV Labs Job #: C0P9040
Report Date: 2021/01/27

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: Geraldton LF
Sampler Initials: EF

GENERAL COMMENTS

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

Package 1	6.0°C
Package 2	5.7°C
Package 3	4.0°C
Package 4	4.7°C

Revised Report (2021/01/27): Additional metal parameters reoprted for sample MW4

Sample NUK579 [MW1] : TKN < Ammonia: Both values fall within the method uncertainty for duplicates and are likely equivalent.

Sample NUK581 [MW3A] : TKN < Ammonia: Both values fall within the method uncertainty for duplicates and are likely equivalent.

Sample NUK582 [MW3B] : TKN < Ammonia: Both values fall within the method uncertainty for duplicates and are likely equivalent.

Sample NUK583 [MW4] : TKN < Ammonia: Both values fall within the method uncertainty for duplicates and are likely equivalent.

Sample NUK584 [MW5] : VOC Water Analysis: Due to foaming, sample required dilution. The detection limits were adjusted accordingly.
TKN < Ammonia: Both values fall within the method uncertainty for duplicates and are likely equivalent.

Sample NUK586 [MW7] : TKN < Ammonia: Both values fall within the method uncertainty for duplicates and are likely equivalent.

Sample NUK588 [MW9] : TKN < Ammonia: Both values fall within the method uncertainty for duplicates and are likely equivalent.

Sample NUK592 [MW10A] : ortho-Phosphate > Total Phosphorus: Both values fall within the method uncertainty for duplicates and are likely equivalent.

Sample NUK595 [MW12] : TKN < Ammonia: Both values fall within the method uncertainty for duplicates and are likely equivalent.

Results relate only to the items tested.

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BV Labs Job #: C0P9040
Report Date: 2021/01/27

QUALITY ASSURANCE REPORT

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: Geraldton LF
Sampler Initials: EF

			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
6982696	4-Bromofluorobenzene	2020/10/06	103	70 - 130	103	70 - 130	102	%				
6982696	D4-1,2-Dichloroethane	2020/10/06	101	70 - 130	99	70 - 130	98	%				
6982696	D8-Toluene	2020/10/06	97	70 - 130	98	70 - 130	99	%				
6981754	Total BOD	2020/10/08					<2	mg/L	NC	30	100	80 - 120
6982647	Total Dissolved Solids	2020/10/08					<10	mg/L	2.2	25	95	90 - 110
6982687	Total Suspended Solids	2020/10/06					<1	mg/L	9.5	25	95	85 - 115
6982696	1,1,1,2-Tetrachloroethane	2020/10/06	100	70 - 130	99	70 - 130	<0.20	ug/L	NC	30		
6982696	1,1,1-Trichloroethane	2020/10/06	99	70 - 130	98	70 - 130	<0.10	ug/L	NC	30		
6982696	1,1,2,2-Tetrachloroethane	2020/10/06	97	70 - 130	95	70 - 130	<0.20	ug/L	NC	30		
6982696	1,1,2-Trichloroethane	2020/10/06	97	70 - 130	96	70 - 130	<0.20	ug/L	NC	30		
6982696	1,1-Dichloroethane	2020/10/06	96	70 - 130	95	70 - 130	<0.10	ug/L	NC	30		
6982696	1,1-Dichloroethylene	2020/10/06	105	70 - 130	105	70 - 130	<0.10	ug/L	NC	30		
6982696	1,2-Dichlorobenzene	2020/10/06	90	70 - 130	94	70 - 130	<0.20	ug/L	NC	30		
6982696	1,2-Dichloroethane	2020/10/06	96	70 - 130	93	70 - 130	<0.20	ug/L	NC	30		
6982696	1,2-Dichloropropane	2020/10/06	95	70 - 130	94	70 - 130	<0.10	ug/L	NC	30		
6982696	1,3-Dichlorobenzene	2020/10/06	87	70 - 130	94	70 - 130	<0.20	ug/L	NC	30		
6982696	1,4-Dichlorobenzene	2020/10/06	88	70 - 130	93	70 - 130	<0.20	ug/L	NC	30		
6982696	Acetone (2-Propanone)	2020/10/06	108	60 - 140	104	60 - 140	<10	ug/L	NC	30		
6982696	Benzene	2020/10/06	96	70 - 130	96	70 - 130	<0.10	ug/L	NC	30		
6982696	Bromodichloromethane	2020/10/06	103	70 - 130	101	70 - 130	<0.10	ug/L	NC	30		
6982696	Bromoform	2020/10/06	113	70 - 130	112	70 - 130	<0.20	ug/L	NC	30		
6982696	Bromomethane	2020/10/06	102	60 - 140	97	60 - 140	<0.50	ug/L	NC	30		
6982696	Carbon Tetrachloride	2020/10/06	103	70 - 130	102	70 - 130	<0.10	ug/L	NC	30		
6982696	Chlorobenzene	2020/10/06	93	70 - 130	95	70 - 130	<0.10	ug/L	NC	30		
6982696	Chloroform	2020/10/06	98	70 - 130	97	70 - 130	<0.10	ug/L	NC	30		
6982696	cis-1,2-Dichloroethylene	2020/10/06	98	70 - 130	97	70 - 130	<0.10	ug/L	NC	30		
6982696	cis-1,3-Dichloropropene	2020/10/06	95	70 - 130	93	70 - 130	<0.20	ug/L	NC	30		
6982696	Dibromochloromethane	2020/10/06	106	70 - 130	104	70 - 130	<0.20	ug/L	NC	30		
6982696	Dichlorodifluoromethane (FREON 12)	2020/10/06	79	60 - 140	83	60 - 140	<0.50	ug/L	NC	30		
6982696	Ethylbenzene	2020/10/06	91	70 - 130	95	70 - 130	<0.10	ug/L	NC	30		
6982696	Ethylene Dibromide	2020/10/06	98	70 - 130	96	70 - 130	<0.20	ug/L	NC	30		

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6982696	Hexane	2020/10/06	82	70 - 130	88	70 - 130	<0.50	ug/L	NC	30		
6982696	Methyl Ethyl Ketone (2-Butanone)	2020/10/06	96	60 - 140	92	60 - 140	<5.0	ug/L	NC	30		
6982696	Methyl Isobutyl Ketone	2020/10/06	97	70 - 130	94	70 - 130	<5.0	ug/L	NC	30		
6982696	Methyl t-butyl ether (MTBE)	2020/10/06	99	70 - 130	96	70 - 130	<0.20	ug/L	NC	30		
6982696	Methylene Chloride(Dichloromethane)	2020/10/06	104	70 - 130	103	70 - 130	<0.50	ug/L	NC	30		
6982696	o-Xylene	2020/10/06	95	70 - 130	96	70 - 130	<0.10	ug/L	NC	30		
6982696	p+m-Xylene	2020/10/06	91	70 - 130	94	70 - 130	<0.10	ug/L	2.8	30		
6982696	Styrene	2020/10/06	97	70 - 130	99	70 - 130	<0.20	ug/L	NC	30		
6982696	Tetrachloroethylene	2020/10/06	94	70 - 130	97	70 - 130	<0.10	ug/L	NC	30		
6982696	Toluene	2020/10/06	92	70 - 130	94	70 - 130	<0.20	ug/L	7.3	30		
6982696	Total Xylenes	2020/10/06					<0.10	ug/L	2.8	30		
6982696	trans-1,2-Dichloroethylene	2020/10/06	99	70 - 130	98	70 - 130	<0.10	ug/L	NC	30		
6982696	trans-1,3-Dichloropropene	2020/10/06	92	70 - 130	91	70 - 130	<0.20	ug/L	NC	30		
6982696	Trichloroethylene	2020/10/06	100	70 - 130	99	70 - 130	<0.10	ug/L	NC	30		
6982696	Trichlorofluoromethane (FREON 11)	2020/10/06	105	70 - 130	109	70 - 130	<0.20	ug/L	NC	30		
6982696	Vinyl Chloride	2020/10/06	96	70 - 130	96	70 - 130	<0.20	ug/L	NC	30		
6982702	Total Dissolved Solids	2020/10/06					<10	mg/L	1.7	25	97	90 - 110
6983130	Alkalinity (Total as CaCO3)	2020/10/07			97	85 - 115	<1.0	mg/L	0.55	20		
6983136	Conductivity	2020/10/07			101	85 - 115	<1.0	umho/cm	0.45	25		
6983140	pH	2020/10/07			101	98 - 103			0.48	N/A		
6983165	Dissolved Chloride (Cl-)	2020/10/09	115	80 - 120	103	80 - 120	<1.0	mg/L	2.0	20		
6983170	Dissolved Sulphate (SO4)	2020/10/09	125	75 - 125	103	80 - 120	<1.0	mg/L	3.2	20		
6983172	Nitrate (N)	2020/10/08	102	80 - 120	100	80 - 120	<0.10	mg/L	1.1	20		
6983172	Nitrite (N)	2020/10/08	108	80 - 120	107	80 - 120	<0.010	mg/L	NC	20		
6983180	Nitrate (N)	2020/10/07	99	80 - 120	102	80 - 120	<0.10	mg/L	NC	20		
6983180	Nitrite (N)	2020/10/07	103	80 - 120	106	80 - 120	<0.010	mg/L	NC	20		
6983204	Dissolved Chloride (Cl-)	2020/10/09	NC	80 - 120	103	80 - 120	<1.0	mg/L	3.1	20		
6983209	Dissolved Sulphate (SO4)	2020/10/09	115	75 - 125	103	80 - 120	<1.0	mg/L	NC	20		
6983218	Orthophosphate (P)	2020/10/07	100	75 - 125	99	80 - 120	<0.010	mg/L	NC	25		
6983265	Dissolved Organic Carbon	2020/10/05	93	80 - 120	96	80 - 120	<0.40	mg/L	0.31	20		

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6983346	Dissolved Chloride (Cl-)	2020/10/09	NC	80 - 120	102	80 - 120	<1.0	mg/L	1.1	20		
6983350	Dissolved Sulphate (SO4)	2020/10/09	NC	75 - 125	102	80 - 120	<1.0	mg/L	1.8	20		
6983362	Orthophosphate (P)	2020/10/07	100	75 - 125	99	80 - 120	<0.010	mg/L	NC	25		
6983369	Nitrate (N)	2020/10/07	106	80 - 120	100	80 - 120	<0.10	mg/L	NC	20		
6983369	Nitrite (N)	2020/10/07	97	80 - 120	107	80 - 120	<0.010	mg/L	NC	20		
6983372	Dissolved Organic Carbon	2020/10/07	94	80 - 120	96	80 - 120	<0.40	mg/L	3.1	20		
6983378	Alkalinity (Total as CaCO3)	2020/10/06			95	85 - 115	<1.0	mg/L	0.57	20		
6983381	Conductivity	2020/10/06			101	85 - 115	<1.0	umho/cm	0	25		
6983383	pH	2020/10/06			102	98 - 103			0.34	N/A		
6983515	Alkalinity (Total as CaCO3)	2020/10/06			96	85 - 115	<1.0	mg/L	0.53	20		
6983523	Conductivity	2020/10/06			101	85 - 115	<1.0	umho/cm	0	25		
6983530	pH	2020/10/06			102	98 - 103			0.73	N/A		
6983594	Nitrate (N)	2020/10/07	97	80 - 120	102	80 - 120	<0.10	mg/L	NC	20		
6983594	Nitrite (N)	2020/10/07	101	80 - 120	106	80 - 120	<0.010	mg/L	NC	20		
6983637	Orthophosphate (P)	2020/10/07	98	75 - 125	98	80 - 120	<0.010	mg/L	NC	25		
6983658	Dissolved Sulphate (SO4)	2020/10/07	145 (1)	75 - 125	105	80 - 120	<1.0	mg/L	NC	20		
6983659	Dissolved Chloride (Cl-)	2020/10/07	118	80 - 120	102	80 - 120	<1.0	mg/L	1.3	20		
6984890	Phenols-4AAP	2020/10/07	107	80 - 120	97	80 - 120	<0.0010	mg/L	NC	20		
6984897	Phenols-4AAP	2020/10/07	105	80 - 120	98	80 - 120	<0.0010	mg/L	NC	20		
6985306	Dissolved (0.2u) Aluminum (Al)	2020/10/07	108	80 - 120	105	80 - 120	<5	ug/L	5.3	20		
6985415	Dissolved Aluminum (Al)	2020/10/06	96	80 - 120	97	80 - 120	<4.9	ug/L	0.52	20		
6985415	Dissolved Antimony (Sb)	2020/10/06	101	80 - 120	101	80 - 120	<0.50	ug/L	NC	20		
6985415	Dissolved Arsenic (As)	2020/10/06	96	80 - 120	99	80 - 120	<1.0	ug/L	NC	20		
6985415	Dissolved Barium (Ba)	2020/10/06	96	80 - 120	98	80 - 120	<2.0	ug/L	3.4	20		
6985415	Dissolved Beryllium (Be)	2020/10/06	94	80 - 120	92	80 - 120	<0.40	ug/L	NC	20		
6985415	Dissolved Bismuth (Bi)	2020/10/06	94	80 - 120	96	80 - 120	<1.0	ug/L	NC	20		
6985415	Dissolved Boron (B)	2020/10/06	92	80 - 120	90	80 - 120	<10	ug/L	NC	20		
6985415	Dissolved Cadmium (Cd)	2020/10/06	100	80 - 120	99	80 - 120	<0.090	ug/L	NC	20		
6985415	Dissolved Calcium (Ca)	2020/10/06	NC	80 - 120	97	80 - 120	<200	ug/L	0.71	20		

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6985415	Dissolved Chromium (Cr)	2020/10/06	93	80 - 120	97	80 - 120	<5.0	ug/L	NC	20		
6985415	Dissolved Cobalt (Co)	2020/10/06	96	80 - 120	101	80 - 120	<0.50	ug/L	NC	20		
6985415	Dissolved Copper (Cu)	2020/10/06	97	80 - 120	97	80 - 120	<0.90	ug/L	4.3	20		
6985415	Dissolved Iron (Fe)	2020/10/06	95	80 - 120	100	80 - 120	<100	ug/L	NC	20		
6985415	Dissolved Lead (Pb)	2020/10/06	93	80 - 120	96	80 - 120	<0.50	ug/L	NC	20		
6985415	Dissolved Magnesium (Mg)	2020/10/06	95	80 - 120	97	80 - 120	<50	ug/L	5.2	20		
6985415	Dissolved Manganese (Mn)	2020/10/06	94	80 - 120	97	80 - 120	<2.0	ug/L	NC	20		
6985415	Dissolved Molybdenum (Mo)	2020/10/06	99	80 - 120	97	80 - 120	<0.50	ug/L	NC	20		
6985415	Dissolved Nickel (Ni)	2020/10/06	92	80 - 120	97	80 - 120	<1.0	ug/L	NC	20		
6985415	Dissolved Potassium (K)	2020/10/06	99	80 - 120	102	80 - 120	<200	ug/L	1.6	20		
6985415	Dissolved Selenium (Se)	2020/10/06	98	80 - 120	98	80 - 120	<2.0	ug/L	NC	20		
6985415	Dissolved Silicon (Si)	2020/10/06	95	80 - 120	96	80 - 120	<50	ug/L	1.4	20		
6985415	Dissolved Sodium (Na)	2020/10/06	NC	80 - 120	98	80 - 120	<100	ug/L	0.30	20		
6985415	Dissolved Strontium (Sr)	2020/10/06	95	80 - 120	98	80 - 120	<1.0	ug/L	2.8	20		
6985415	Dissolved Thallium (Tl)	2020/10/06	97	80 - 120	98	80 - 120	<0.050	ug/L	NC	20		
6985415	Dissolved Tin (Sn)	2020/10/06	101	80 - 120	100	80 - 120	<1.0	ug/L	NC	20		
6985415	Dissolved Vanadium (V)	2020/10/06	97	80 - 120	99	80 - 120	<0.50	ug/L	NC	20		
6985415	Dissolved Zinc (Zn)	2020/10/06	94	80 - 120	98	80 - 120	<5.0	ug/L	NC	20		
6985497	Dissolved (0.2u) Aluminum (Al)	2020/10/07	99	80 - 120	99	80 - 120	<5	ug/L	2.7	20		
6987655	Total Ammonia-N	2020/10/08	84	75 - 125	102	80 - 120	<0.050	mg/L	0.20 (2)	20		
6987659	Total Phosphorus	2020/10/08	96	80 - 120	96	80 - 120	<0.020	mg/L	1.3	20	96	N/A
6987782	Total Kjeldahl Nitrogen (TKN)	2020/10/09	99	80 - 120	100	80 - 120	<0.10	mg/L	6.0	20	97	80 - 120
6987789	Total Kjeldahl Nitrogen (TKN)	2020/10/10	NC	80 - 120	99	80 - 120	<0.10	mg/L	0.48 (2)	20	95	80 - 120
6987813	Total Chemical Oxygen Demand (COD)	2020/10/11	116	80 - 120	98	80 - 120	<4.0	mg/L	NC	20		
6988311	Dissolved Organic Carbon	2020/10/08	92	80 - 120	96	80 - 120	<0.40	mg/L	1.9	20		
6989769	Mercury (Hg)	2020/10/08	102	75 - 125	97	80 - 120	<0.00010	mg/L	NC	20		
6989777	Mercury (Hg)	2020/10/08	100	75 - 125	97	80 - 120	<0.00010	mg/L	NC	20		
6989961	Total Phosphorus	2020/10/08	NC	80 - 120	92	80 - 120	<0.004	mg/L	0.27	20	89	80 - 120
6989993	Total Ammonia-N	2020/10/08	92	75 - 125	98	80 - 120	<0.050	mg/L	NC	20		
6990069	Total Antimony (Sb)	2020/10/08	100	80 - 120	96	80 - 120	<0.50	ug/L	NC	20		
6990069	Total Arsenic (As)	2020/10/08	97	80 - 120	94	80 - 120	<1.0	ug/L	NC	20		

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6990069	Total Barium (Ba)	2020/10/08	95	80 - 120	93	80 - 120	<2.0	ug/L				
6990069	Total Beryllium (Be)	2020/10/08	101	80 - 120	97	80 - 120	<0.40	ug/L				
6990069	Total Bismuth (Bi)	2020/10/08	93	80 - 120	88	80 - 120	<1.0	ug/L				
6990069	Total Boron (B)	2020/10/08	94	80 - 120	91	80 - 120	<10	ug/L				
6990069	Total Cadmium (Cd)	2020/10/08	98	80 - 120	95	80 - 120	<0.090	ug/L	NC	20		
6990069	Total Chromium (Cr)	2020/10/08	94	80 - 120	90	80 - 120	<5.0	ug/L	NC	20		
6990069	Total Cobalt (Co)	2020/10/08	95	80 - 120	93	80 - 120	<0.50	ug/L	NC	20		
6990069	Total Copper (Cu)	2020/10/08	98	80 - 120	93	80 - 120	<0.90	ug/L	2.3	20		
6990069	Total Iron (Fe)	2020/10/08	95	80 - 120	94	80 - 120	<100	ug/L				
6990069	Total Lead (Pb)	2020/10/08	94	80 - 120	94	80 - 120	<0.50	ug/L	NC	20		
6990069	Total Molybdenum (Mo)	2020/10/08	100	80 - 120	97	80 - 120	<0.50	ug/L	3.5	20		
6990069	Total Nickel (Ni)	2020/10/08	92	80 - 120	90	80 - 120	<1.0	ug/L	NC	20		
6990069	Total Selenium (Se)	2020/10/08	101	80 - 120	99	80 - 120	<2.0	ug/L	NC	20		
6990069	Total Silicon (Si)	2020/10/08	96	80 - 120	94	80 - 120	<50	ug/L				
6990069	Total Silver (Ag)	2020/10/08	99	80 - 120	94	80 - 120	<0.090	ug/L	NC	20		
6990069	Total Strontium (Sr)	2020/10/08	90	80 - 120	90	80 - 120	<1.0	ug/L				
6990069	Total Thallium (Tl)	2020/10/08	94	80 - 120	95	80 - 120	<0.050	ug/L				
6990069	Total Vanadium (V)	2020/10/08	92	80 - 120	90	80 - 120	<0.50	ug/L				

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6990069	Total Zinc (Zn)	2020/10/08	98	80 - 120	102	80 - 120	<5.0	ug/L	0.52	20		

N/A = Not Applicable

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

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

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

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

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

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

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

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

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

(2) TKN < NH4: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

BV Labs Job #: C0P9040
Report Date: 2021/01/27

exp Services Inc
Client Project #: THB-00006189-QE
Site Location: Geraldton LF
Sampler Initials: EF

VALIDATION SIGNATURE PAGE

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

Anastassia Hamanov, Scientific Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Page 1 of 3

02-Oct-20 16:36

Julie Clement

C0P9040

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name	#17501 exp Services Inc	Company Name		Quotation #	B90565
	Accounts Payable		Andreas Mitsopoulos S. Shaun Mawson	P.O. #	
Address	1142 Roland St			Project	THB-00008158-GE
	Thunder Bay ON P7B 5M4			Project Name	
Tel	(807) 623-9495 Fax (807) 623-8070	Tel		Site #	Geraldton IF
Email	thunderbay@exp.com, Karen.Burke@exp.com; AP@exp	Email	andreas.mitsopoulos@exp.com	Sampled By	Elain Forbes

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BV LABS DRINKING WATER CHAIN OF CUSTODY

Other Regulations: ☒ Other: EPWS

Include Criteria on Certificate of Analysis (Y/N)?

Regular (Standard) TAT: ☒

#	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (Metals / Hg / Cr VI)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	# of Bottles	Comments
1		MW1	9-29-2020	12:16PM	GW	X	X	X	X	X	X		11	
2		MW2	9-29-2020	1:00PM	GW	X	X	X	X	X	X		11	
3		MW3A	9-28-2020	12:35PM	GW	X	X	X	X	X	X		11	
4		MW3B	9-29-2020	9:20AM	GW	X	X	X	X	X	X		11	
5		MW4	9-29-2020	1:58PM	GW	X	X	X	X	X	X		11	
6		MW5	9-29-2020	11:43AM	GW	X	X	X	X	X	X	X	14	
7		MW6	9-29-2020	2:41PM	GW	X	X	X	X	X	X		11	Rec'd In Thunder Bay
8		MW7	9-29-2020	3:22PM	GW	X	X	X	X	X	X		11	
9		MW8	9-29-2020	11:00AM	GW	X	X	X	X	X	X		11	
10		MW9	9-29-2020	10:02AM	GW	X	X	X	X	X	X		11	

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time
Elain Forbes	2020 Oct 2		James Kluparsky	2020/10/02	16:36
				2020/10/02	16:46

SEEACTR

NA

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

Refer to ACTR

CHAIN OF CUSTODY RECORD

2-3

INVOICE TO:	
Company Name:	#17501 exp Services Inc
Attention:	Accounts Payable
Address:	1142 Roland St
	Thunder Bay ON P7B 5M4
Tel:	(807) 623-9495 Fax: (807) 623-8070
Email:	thunderbay@exp.com; Karen.Burke@exp.com; AP@exp

REPORT TO:	
Attention:	Ahilaas Mileaspoulos Bekobit Nilaryaz
Email:	ahilaas.mileaspoulos@exp.com

PROJECT INFORMATION:	
Quotation #:	B90565
Project:	THB-00008189-DE
Site #:	Brooklyn LF
Sampled By:	Elwin Fanfan

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BV LABS DRINKING WATER CHAIN OF CUSTODY

Other Regulations: ☒ Other PWQO

Regular (Standard) TAT ☒

#	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix								# of Bottles
1		MW 10A	9-29-2020	8:15AM	GW	X	X	X	X	X	X		11
2		MW 10B	9-29-2020	8:55AM	GW	X	X	X	X	X	X		11
3		MW 11	9-29-2020	4:55PM	GW	X	X	X	X	X	X		11
4		MW 12	9-29-2020	11:05AM	GW	X	X	X	X	X	X		11
5					GW								
6					GW								
7					GW								
8					GW								
9					GW								
10					GW								

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)
Elwin Fanfan Elwin Fanfan	2020/09/2[illegible]		SEE PAGE 2

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CHAIN OF CUSTODY RECORD

INVOICE TO:
#17501 exp Services Inc
Accounts Payable
1142 Roland St
Thunder Bay ON P7B 5M4
Tel: (807) 623-9495 Fax: (807) 623-8070
Email: thunderbay@exp.com; Karen.Burke@exp.com; AP@exp...

REPORT TO:
Attention: Athleas Mitsopoulos / Stuart Mackinnon
Email: athleas.mitsopoulos@exp.com

PROJECT INFORMATION:
Quotation #: B90565
Project: THB-00006189-GE
Sampled By: Elwin Ferrier

Laboratory Use Only

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BV LABS DRINKING WATER CHAIN OF CUSTODY

Regular (Standard) TAT: ☒

Other: PWQO

#	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix								# of Bottles	Comments
1		SW 1	9-28-2021	3:30pm	SW	X	X	X	X	X	X	X	12	
2		SW 2	9-28-2021	3:00pm	SW	X	X	X	X	X	X	X	12	
3		SW 3	9-28-2021	2:00pm	SW	X	X	X	X	X	X	X	12	
4					SW									
5					SW									
6					SW									
7														
8														
9														
10														

RELINQUISHED BY: (Signature/Print) Elwin Ferrier

RECEIVED BY: (Signature/Print) SEE PAGE 1

SAMPLES MUST BE KEPT COOL FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

Your Project #: THB-00006189-RE
Site#: Geraldton Landfill
Site Location: GERALDTON LANDFILL

Attention: Ahileas Mitsopoulos

exp Services Inc
Thunder Bay Branch
1142 Roland St
Thunder Bay, ON
CANADA P7B 5M4

Your C.O.C. #: 825045-01-01, 825045-02-01, c#825046-01-01

Report Date: 2021/05/28
Report #: R6652868
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1D8212
Received: 2021/05/20, 14:30

Sample Matrix: Water
Samples Received: 17

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Dissolved Aluminum (0.2 u, clay free)	3	N/A	2021/05/27	CAM SOP-00447	EPA 6020B m
Alkalinity	4	N/A	2021/05/26	CAM SOP-00448	SM 23 2320 B m
Alkalinity	13	N/A	2021/05/27	CAM SOP-00448	SM 23 2320 B m
Biochemical Oxygen Demand (BOD)	3	2021/05/22	2021/05/27	CAM SOP-00427	SM 23 5210B m
Chloride by Automated Colourimetry	3	N/A	2021/05/26	CAM SOP-00463	SM 23 4500-Cl E m
Chloride by Automated Colourimetry	14	N/A	2021/05/27	CAM SOP-00463	SM 23 4500-Cl E m
Chemical Oxygen Demand	1	N/A	2021/05/25	CAM SOP-00416	SM 23 5220 D m
Chemical Oxygen Demand	16	N/A	2021/05/26	CAM SOP-00416	SM 23 5220 D m
Conductivity	4	N/A	2021/05/26	CAM SOP-00414	SM 23 2510 m
Conductivity	13	N/A	2021/05/27	CAM SOP-00414	SM 23 2510 m
Dissolved Organic Carbon (DOC) (1)	6	N/A	2021/05/26	CAM SOP-00446	SM 23 5310 B m
Dissolved Organic Carbon (DOC) (1)	11	N/A	2021/05/27	CAM SOP-00446	SM 23 5310 B m
Field Measured Conductivity (2)	14	N/A	2021/05/20		Field Meter
Hardness (calculated as CaCO3)	14	N/A	2021/05/27	CAM SOP 00102/00408/00447	SM 2340 B
Hardness (calculated as CaCO3)	3	N/A	2021/05/28	CAM SOP 00102/00408/00447	SM 2340 B
Mercury in Water by CVAA	2	2021/05/25	2021/05/26	CAM SOP-00453	EPA 7470A m
Mercury in Water by CVAA	14	2021/05/26	2021/05/28	CAM SOP-00453	EPA 7470A m
Mercury in Water by CVAA	1	2021/05/27	2021/05/28	CAM SOP-00453	EPA 7470A m
Dissolved Metals by ICPMS	5	N/A	2021/05/26	CAM SOP-00447	EPA 6020B m
Dissolved Metals by ICPMS	9	N/A	2021/05/27	CAM SOP-00447	EPA 6020B m
Total Metals Analysis by ICPMS	3	N/A	2021/05/27	CAM SOP-00447	EPA 6020B m
Ion Balance (% Difference)	14	N/A	2021/05/27		
Total Ammonia-N	17	N/A	2021/05/27	CAM SOP-00441	USGS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (3)	10	N/A	2021/05/26	CAM SOP-00440	SM 23 4500-NO3I/NO2B
Nitrate (NO3) and Nitrite (NO2) in Water (3)	7	N/A	2021/05/27	CAM SOP-00440	SM 23 4500-NO3I/NO2B

Your Project #: THB-00006189-RE
Site#: Geraldton Landfill
Site Location: GERALDTON LANDFILL

Attention: Ahileas Mitsopoulos

exp Services Inc
Thunder Bay Branch
1142 Roland St
Thunder Bay, ON
CANADA P7B 5M4

Your C.O.C. #: 825045-01-01, 825045-02-01, c#825046-01-01

Report Date: 2021/05/28
Report #: R6652868
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1D8212
Received: 2021/05/20, 14:30

Sample Matrix: Water
Samples Received: 17

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Organic Nitrogen	17	N/A	2021/05/27	Auto Calc.	
pH	4	2021/05/25	2021/05/26	CAM SOP-00413	SM 4500H+ B m
pH	13	2021/05/25	2021/05/27	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	12	N/A	2021/05/25	CAM SOP-00444	OMOE E3179 m
Phenols (4AAP)	5	N/A	2021/05/26	CAM SOP-00444	OMOE E3179 m
Field Measured pH (2)	14	N/A	2021/05/20		Field pH Meter
Orthophosphate	14	N/A	2021/05/26	CAM SOP-00461	EPA 365.1 m
Sulphate by Automated Colourimetry	17	N/A	2021/05/26	CAM SOP-00464	EPA 375.4 m
Total Dissolved Solids	3	2021/05/22	2021/05/26	CAM SOP-00428	SM 23 2540C m
Total Dissolved Solids	13	2021/05/25	2021/05/26	CAM SOP-00428	SM 23 2540C m
Total Dissolved Solids	1	2021/05/26	2021/05/27	CAM SOP-00428	SM 23 2540C m
Total Kjeldahl Nitrogen in Water	17	2021/05/25	2021/05/25	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	1	2021/05/25	2021/05/26	CAM SOP-00407	SM 23 4500 P B H m
Total Phosphorus (Colourimetric)	2	2021/05/27	2021/05/27	CAM SOP-00407	SM 23 4500 P B H m
Total Phosphorus (Colourimetric)	14	2021/05/26	2021/05/27	CAM SOP-00407	SM 23 4500 P B H m
Low Level Total Suspended Solids	3	2021/05/25	2021/05/26	CAM SOP-00428	SM 23 2540D m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report.

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Your Project #: THB-00006189-RE
Site#: Geraldton Landfill
Site Location: GERALDTON LANDFILL

Attention: Ahileas Mitsopoulos

exp Services Inc
Thunder Bay Branch
1142 Roland St
Thunder Bay, ON
CANADA P7B 5M4

Your C.O.C. #: 825045-01-01, 825045-02-01, c#825046-01-01

Report Date: 2021/05/28
Report #: R6652868
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1D8212
Received: 2021/05/20, 14:30

Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
(1) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.
(2) This is a field test, therefore, the results relate to items that were not analysed at Bureau Veritas Laboratories.
(3) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Michelle Huth, Project Manager Assistant
Email: michelle.brescacin@bureauveritas.com
Phone# (807)344-4220
==========
This report has been generated and distributed using a secure automated process.
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

BV Labs Job #: C1D8212
Report Date: 2021/05/28

exp Services Inc
Client Project #: THB-00006189-RE
Site Location: GERALDTON LANDFILL
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					PQC390			PQC390		
Sampling Date					2021/05/19 11:30			2021/05/19 11:30		
COC Number					825045-01-01			825045-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW1**	**RDL**	**QC Batch**	**MW1 Lab-Dup**	**RDL**	**QC Batch**
Inorganics										
Total Ammonia-N	mg/L	-	-	-	3.2	0.050	7369832	3.2	0.050	7369832
Total Chemical Oxygen Demand (COD)	mg/L	-	-	-	27	4.0	7369855	24	4.0	7369855
Conductivity	umho/cm	-	-	-	1400	1.0	7369846			
Total Dissolved Solids	mg/L	-	-	500	720	10	7367666			
Total Kjeldahl Nitrogen (TKN)	mg/L	-	-	-	3.4	0.10	7369600			
Dissolved Organic Carbon	mg/L	-	-	5	7.6	0.40	7371762			
pH	pH	6.5:8.5	-	6.5:8.5	7.73		7369851			
Phenols-4AAP	mg/L	0.001	-	-	0.0014	0.0010	7369143			
Total Phosphorus	mg/L	0.01	-	-	**<0.020 (1)**	0.020	7371173			
Dissolved Sulphate (SO4)	mg/L	-	-	500	30	1.0	7369785			
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500	540	1.0	7369834			
Dissolved Chloride (Cl-)	mg/L	-	-	250	130	1.0	7369774			
Nitrite (N)	mg/L	-	1	-	0.028	0.010	7369818			
Nitrate (N)	mg/L	-	10	-	0.62	0.10	7369818			
Metals										
Mercury (Hg)	mg/L	0.0002	0.001	-	<0.00010	0.00010	7371337			
Dissolved Aluminum (Al)	ug/L	-	-	100	<4.9	4.9	7369874			
Dissolved Antimony (Sb)	ug/L	20	6	-	<0.50	0.50	7369874			
Dissolved Arsenic (As)	ug/L	100	10	-	5.5	1.0	7369874			
Dissolved Barium (Ba)	ug/L	-	1000	-	95	2.0	7369874			
Dissolved Beryllium (Be)	ug/L	11	-	-	<0.40	0.40	7369874			
Dissolved Bismuth (Bi)	ug/L	-	-	-	<1.0	1.0	7369874			
Dissolved Boron (B)	ug/L	200	5000	-	150	10	7369874			
Dissolved Cadmium (Cd)	ug/L	0.2	5	-	<0.090	0.090	7369874			
Dissolved Calcium (Ca)	ug/L	-	-	-	200000	200	7369874			
Dissolved Chromium (Cr)	ug/L	-	50	-	<5.0	5.0	7369874			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)
(1) RDL exceeds criteria

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BV Labs Job #: C1D8212
Report Date: 2021/05/28

exp Services Inc
Client Project #: THB-00006189-RE
Site Location: GERALDTON LANDFILL
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					PQC390			PQC390		
Sampling Date					2021/05/19 11:30			2021/05/19 11:30		
COC Number					825045-01-01			825045-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW1**	**RDL**	**QC Batch**	**MW1 Lab-Dup**	**RDL**	**QC Batch**
Dissolved Cobalt (Co)	ug/L	0.9	-	-	14	0.50	7369874			
Dissolved Copper (Cu)	ug/L	5	-	1000	1.2	0.90	7369874			
Dissolved Iron (Fe)	ug/L	300	-	300	5300	100	7369874			
Dissolved Lead (Pb)	ug/L	5	10	-	<0.50	0.50	7369874			
Dissolved Magnesium (Mg)	ug/L	-	-	-	20000	50	7369874			
Dissolved Manganese (Mn)	ug/L	-	-	50	1600	2.0	7369874			
Dissolved Molybdenum (Mo)	ug/L	40	-	-	0.84	0.50	7369874			
Dissolved Nickel (Ni)	ug/L	25	-	-	6.8	1.0	7369874			
Dissolved Potassium (K)	ug/L	-	-	-	13000	200	7369874			
Dissolved Selenium (Se)	ug/L	100	50	-	<2.0	2.0	7369874			
Dissolved Silicon (Si)	ug/L	-	-	-	8100	50	7369874			
Dissolved Sodium (Na)	ug/L	-	-	200000	65000	100	7369874			
Dissolved Strontium (Sr)	ug/L	-	-	-	300	1.0	7369874			
Dissolved Thallium (Tl)	ug/L	0.3	-	-	0.11	0.050	7369874			
Dissolved Tin (Sn)	ug/L	-	-	-	<1.0	1.0	7369874			
Dissolved Vanadium (V)	ug/L	6	-	-	<0.50	0.50	7369874			
Dissolved Zinc (Zn)	ug/L	30	-	5000	<5.0	5.0	7369874			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

BV Labs Job #: C1D8212
Report Date: 2021/05/28

exp Services Inc
Client Project #: THB-00006189-RE
Site Location: GERALDTON LANDFILL
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					PQC391			PQC391		
Sampling Date					2021/05/19 11:00			2021/05/19 11:00		
COC Number					825045-01-01			825045-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW2**	**RDL**	**QC Batch**	**MW2 Lab-Dup**	**RDL**	**QC Batch**
Inorganics										
Total Ammonia-N	mg/L	-	-	-	0.31	0.050	7369832			
Total Chemical Oxygen Demand (COD)	mg/L	-	-	-	13	4.0	7369855			
Conductivity	umho/cm	-	-	-	470	1.0	7369846			
Total Dissolved Solids	mg/L	-	-	500	235	10	7367666	245	10	7367666
Total Kjeldahl Nitrogen (TKN)	mg/L	-	-	-	0.45	0.10	7369600			
Dissolved Organic Carbon	mg/L	-	-	5	3.6	0.40	7371762			
pH	pH	6.5:8.5	-	6.5:8.5	8.10		7369851			
Phenols-4AAP	mg/L	0.001	-	-	0.0010	0.0010	7369143			
Total Phosphorus	mg/L	0.01	-	-	**<0.020 (1)**	0.020	7371173			
Dissolved Sulphate (SO4)	mg/L	-	-	500	4.5	1.0	7369785			
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500	240	1.0	7369834			
Dissolved Chloride (Cl-)	mg/L	-	-	250	7.0	1.0	7369774			
Nitrite (N)	mg/L	-	1	-	<0.010	0.010	7370365			
Nitrate (N)	mg/L	-	10	-	<0.10	0.10	7370365			
Metals										
Mercury (Hg)	mg/L	0.0002	0.001	-	<0.00010	0.00010	7371337			
Dissolved Aluminum (Al)	ug/L	-	-	100	6.3	4.9	7369874			
Dissolved Antimony (Sb)	ug/L	20	6	-	<0.50	0.50	7369874			
Dissolved Arsenic (As)	ug/L	100	10	-	2.3	1.0	7369874			
Dissolved Barium (Ba)	ug/L	-	1000	-	16	2.0	7369874			
Dissolved Beryllium (Be)	ug/L	11	-	-	<0.40	0.40	7369874			
Dissolved Bismuth (Bi)	ug/L	-	-	-	<1.0	1.0	7369874			
Dissolved Boron (B)	ug/L	200	5000	-	26	10	7369874			
Dissolved Cadmium (Cd)	ug/L	0.2	5	-	<0.090	0.090	7369874			
Dissolved Calcium (Ca)	ug/L	-	-	-	77000	200	7369874			
Dissolved Chromium (Cr)	ug/L	-	50	-	<5.0	5.0	7369874			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)
(1) RDL exceeds criteria

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BV Labs Job #: C1D8212
Report Date: 2021/05/28

exp Services Inc
Client Project #: THB-00006189-RE
Site Location: GERALDTON LANDFILL
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					PQC391			PQC391		
Sampling Date					2021/05/19 11:00			2021/05/19 11:00		
COC Number					825045-01-01			825045-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW2**	**RDL**	**QC Batch**	**MW2 Lab-Dup**	**RDL**	**QC Batch**
Dissolved Cobalt (Co)	ug/L	0.9	-	-	1.6	0.50	7369874			
Dissolved Copper (Cu)	ug/L	5	-	1000	7.0	0.90	7369874			
Dissolved Iron (Fe)	ug/L	300	-	300	100	100	7369874			
Dissolved Lead (Pb)	ug/L	5	10	-	<0.50	0.50	7369874			
Dissolved Magnesium (Mg)	ug/L	-	-	-	11000	50	7369874			
Dissolved Manganese (Mn)	ug/L	-	-	50	1300	2.0	7369874			
Dissolved Molybdenum (Mo)	ug/L	40	-	-	<0.50	0.50	7369874			
Dissolved Nickel (Ni)	ug/L	25	-	-	1.6	1.0	7369874			
Dissolved Potassium (K)	ug/L	-	-	-	1600	200	7369874			
Dissolved Selenium (Se)	ug/L	100	50	-	<2.0	2.0	7369874			
Dissolved Silicon (Si)	ug/L	-	-	-	3900	50	7369874			
Dissolved Sodium (Na)	ug/L	-	-	200000	3100	100	7369874			
Dissolved Strontium (Sr)	ug/L	-	-	-	63	1.0	7369874			
Dissolved Thallium (Tl)	ug/L	0.3	-	-	0.084	0.050	7369874			
Dissolved Tin (Sn)	ug/L	-	-	-	<1.0	1.0	7369874			
Dissolved Vanadium (V)	ug/L	6	-	-	<0.50	0.50	7369874			
Dissolved Zinc (Zn)	ug/L	30	-	5000	<5.0	5.0	7369874			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

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BV Labs Job #: C1D8212
Report Date: 2021/05/28

exp Services Inc
Client Project #: THB-00006189-RE
Site Location: GERALDTON LANDFILL
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					PQC392		PQC393		
Sampling Date					2021/05/18 19:10		2021/05/18 20:15		
COC Number					825045-01-01		825045-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW3A**	**QC Batch**	**MW3B**	**RDL**	**QC Batch**
Inorganics									
Total Ammonia-N	mg/L	-	-	-	10	7369232	9.2 (1)	0.050	7369539
Total Chemical Oxygen Demand (COD)	mg/L	-	-	-	26	7369120	26	4.0	7369557
Conductivity	umho/cm	-	-	-	1200	7369846	1200	1.0	7369370
Total Dissolved Solids	mg/L	-	-	500	620	7367667	520	10	7367666
Total Kjeldahl Nitrogen (TKN)	mg/L	-	-	-	11	7369282	9.1 (1)	0.50	7369600
Dissolved Organic Carbon	mg/L	-	-	5	6.7	7371762	8.3	0.40	7371762
pH	pH	6.5:8.5	-	6.5:8.5	7.73	7369851	7.65		7369366
Phenols-4AAP	mg/L	0.001	-	-	0.0010	7369253	0.0010	0.0010	7369143
Total Phosphorus	mg/L	0.01	-	-	0.068	7371173	0.054	0.020	7371173
Dissolved Sulphate (SO4)	mg/L	-	-	500	15	7369785	20	1.0	7369386
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500	500	7369834	540	1.0	7369358
Dissolved Chloride (Cl-)	mg/L	-	-	250	100	7369774	80	1.0	7369382
Nitrite (N)	mg/L	-	1	-	<0.010	7369818	<0.010	0.010	7369794
Nitrate (N)	mg/L	-	10	-	<0.10	7369818	0.47	0.10	7369794
Metals									
Mercury (Hg)	mg/L	0.0002	0.001	-	<0.00010	7371337	<0.00010	0.00010	7371337
Dissolved Aluminum (Al)	ug/L	-	-	100	<4.9	7369874	<4.9	4.9	7369874
Dissolved Antimony (Sb)	ug/L	20	6	-	<0.50	7369874	<0.50	0.50	7369874
Dissolved Arsenic (As)	ug/L	100	10	-	17	7369874	7.4	1.0	7369874
Dissolved Barium (Ba)	ug/L	-	1000	-	140	7369874	130	2.0	7369874
Dissolved Beryllium (Be)	ug/L	11	-	-	<0.40	7369874	<0.40	0.40	7369874
Dissolved Bismuth (Bi)	ug/L	-	-	-	<1.0	7369874	<1.0	1.0	7369874
Dissolved Boron (B)	ug/L	200	5000	-	230	7369874	330	10	7369874
Dissolved Cadmium (Cd)	ug/L	0.2	5	-	<0.090	7369874	<0.090	0.090	7369874
Dissolved Calcium (Ca)	ug/L	-	-	-	140000	7369874	160000	200	7369874
Dissolved Chromium (Cr)	ug/L	-	50	-	<5.0	7369874	<5.0	5.0	7369874
Dissolved Cobalt (Co)	ug/L	0.9	-	-	4.9	7369874	7.7	0.50	7369874

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)
(1) TKN < NH4: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.

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BV Labs Job #: C1D8212
Report Date: 2021/05/28

exp Services Inc
Client Project #: THB-00006189-RE
Site Location: GERALDTON LANDFILL
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					PQC392		PQC393		
Sampling Date					2021/05/18 19:10		2021/05/18 20:15		
COC Number					825045-01-01		825045-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW3A**	**QC Batch**	**MW3B**	**RDL**	**QC Batch**
Dissolved Copper (Cu)	ug/L	5	-	1000	<0.90	7369874	3.0	0.90	7369874
Dissolved Iron (Fe)	ug/L	300	-	300	16000	7369874	6700	100	7369874
Dissolved Lead (Pb)	ug/L	5	10	-	<0.50	7369874	<0.50	0.50	7369874
Dissolved Magnesium (Mg)	ug/L	-	-	-	23000	7369874	27000	50	7369874
Dissolved Manganese (Mn)	ug/L	-	-	50	1200	7369874	1200	2.0	7369874
Dissolved Molybdenum (Mo)	ug/L	40	-	-	<0.50	7369874	<0.50	0.50	7369874
Dissolved Nickel (Ni)	ug/L	25	-	-	4.5	7369874	7.7	1.0	7369874
Dissolved Potassium (K)	ug/L	-	-	-	12000	7369874	16000	200	7369874
Dissolved Selenium (Se)	ug/L	100	50	-	<2.0	7369874	<2.0	2.0	7369874
Dissolved Silicon (Si)	ug/L	-	-	-	7500	7369874	7500	50	7369874
Dissolved Sodium (Na)	ug/L	-	-	200000	61000	7369874	54000	100	7369874
Dissolved Strontium (Sr)	ug/L	-	-	-	220	7369874	270	1.0	7369874
Dissolved Thallium (Tl)	ug/L	0.3	-	-	<0.050	7369874	<0.050	0.050	7369874
Dissolved Tin (Sn)	ug/L	-	-	-	<1.0	7369874	<1.0	1.0	7369874
Dissolved Vanadium (V)	ug/L	6	-	-	0.56	7369874	<0.50	0.50	7369874
Dissolved Zinc (Zn)	ug/L	30	-	5000	<5.0	7369874	<5.0	5.0	7369874

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

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BV Labs Job #: C1D8212
Report Date: 2021/05/28

exp Services Inc
Client Project #: THB-00006189-RE
Site Location: GERALDTON LANDFILL
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					PQC393			PQC394		
Sampling Date					2021/05/18 20:15			2021/05/18 20:40		
COC Number					825045-01-01			825045-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW3B Lab-Dup**	**RDL**	**QC Batch**	**MW4**	**RDL**	**QC Batch**
Inorganics										
Total Ammonia-N	mg/L	-	-	-				<0.050	0.050	7369539
Total Chemical Oxygen Demand (COD)	mg/L	-	-	-				5.2	4.0	7369557
Conductivity	umho/cm	-	-	-				800	1.0	7369846
Total Dissolved Solids	mg/L	-	-	500				365	10	7367666
Total Kjeldahl Nitrogen (TKN)	mg/L	-	-	-				0.20	0.10	7369282
Dissolved Organic Carbon	mg/L	-	-	5				1.4	0.40	7371762
pH	pH	6.5:8.5	-	6.5:8.5				7.83		7369851
Phenols-4AAP	mg/L	0.001	-	-				0.0012	0.0010	7369143
Total Phosphorus	mg/L	0.01	-	-				0.092	0.020	7371717
Dissolved Sulphate (SO4)	mg/L	-	-	500	19	1.0	7369386	24	1.0	7369785
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500				410	1.0	7369834
Dissolved Chloride (Cl-)	mg/L	-	-	250	79	1.0	7369382	8.8	1.0	7369774
Nitrite (N)	mg/L	-	1	-				<0.010	0.010	7369818
Nitrate (N)	mg/L	-	10	-				0.33	0.10	7369818
Metals										
Mercury (Hg)	mg/L	0.0002	0.001	-				<0.00010	0.00010	7371337
Dissolved Aluminum (Al)	ug/L	-	-	100				<4.9	4.9	7369874
Dissolved Antimony (Sb)	ug/L	20	6	-				<0.50	0.50	7369874
Dissolved Arsenic (As)	ug/L	100	10	-				<1.0	1.0	7369874
Dissolved Barium (Ba)	ug/L	-	1000	-				32	2.0	7369874
Dissolved Beryllium (Be)	ug/L	11	-	-				<0.40	0.40	7369874
Dissolved Bismuth (Bi)	ug/L	-	-	-				<1.0	1.0	7369874
Dissolved Boron (B)	ug/L	200	5000	-				100	10	7369874
Dissolved Cadmium (Cd)	ug/L	0.2	5	-				<0.090	0.090	7369874
Dissolved Calcium (Ca)	ug/L	-	-	-				130000	200	7369874
Dissolved Chromium (Cr)	ug/L	-	50	-				<5.0	5.0	7369874
Dissolved Cobalt (Co)	ug/L	0.9	-	-				0.56	0.50	7369874

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

BV Labs Job #: C1D8212
Report Date: 2021/05/28

exp Services Inc
Client Project #: THB-00006189-RE
Site Location: GERALDTON LANDFILL
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					PQC393			PQC394		
Sampling Date					2021/05/18 20:15			2021/05/18 20:40		
COC Number					825045-01-01			825045-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW3B Lab-Dup**	**RDL**	**QC Batch**	**MW4**	**RDL**	**QC Batch**
Dissolved Copper (Cu)	ug/L	5	-	1000				3.5	0.90	7369874
Dissolved Iron (Fe)	ug/L	300	-	300				<100	100	7369874
Dissolved Lead (Pb)	ug/L	5	10	-				<0.50	0.50	7369874
Dissolved Magnesium (Mg)	ug/L	-	-	-				13000	50	7369874
Dissolved Manganese (Mn)	ug/L	-	-	50				130	2.0	7369874
Dissolved Molybdenum (Mo)	ug/L	40	-	-				<0.50	0.50	7369874
Dissolved Nickel (Ni)	ug/L	25	-	-				2.2	1.0	7369874
Dissolved Potassium (K)	ug/L	-	-	-				1500	200	7369874
Dissolved Selenium (Se)	ug/L	100	50	-				<2.0	2.0	7369874
Dissolved Silicon (Si)	ug/L	-	-	-				4500	50	7369874
Dissolved Sodium (Na)	ug/L	-	-	200000				6700	100	7369874
Dissolved Strontium (Sr)	ug/L	-	-	-				100	1.0	7369874
Dissolved Thallium (Tl)	ug/L	0.3	-	-				0.079	0.050	7369874
Dissolved Tin (Sn)	ug/L	-	-	-				<1.0	1.0	7369874
Dissolved Vanadium (V)	ug/L	6	-	-				<0.50	0.50	7369874
Dissolved Zinc (Zn)	ug/L	30	-	5000				<5.0	5.0	7369874

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

BV Labs Job #: C1D8212
Report Date: 2021/05/28

exp Services Inc
Client Project #: THB-00006189-RE
Site Location: GERALDTON LANDFILL
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					PQC394			PQC395		
Sampling Date					2021/05/18 20:40			2021/05/18 21:35		
COC Number					825045-01-01			825045-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW4 Lab-Dup**	**RDL**	**QC Batch**	**MW5**	**RDL**	**QC Batch**
Inorganics										
Total Ammonia-N	mg/L	-	-	-	<0.050	0.050	7369539	2.8	0.050	7369539
Total Chemical Oxygen Demand (COD)	mg/L	-	-	-	5.2	4.0	7369557	13	4.0	7369557
Conductivity	umho/cm	-	-	-				840	1.0	7369846
Total Dissolved Solids	mg/L	-	-	500				480	10	7370508
Total Kjeldahl Nitrogen (TKN)	mg/L	-	-	-				2.9	0.10	7369600
Dissolved Organic Carbon	mg/L	-	-	5				2.8	0.40	7371762
pH	pH	6.5:8.5	-	6.5:8.5				7.90		7369851
Phenols-4AAP	mg/L	0.001	-	-				<0.0010	0.0010	7369253
Total Phosphorus	mg/L	0.01	-	-				0.065	0.020	7371173
Dissolved Sulphate (SO4)	mg/L	-	-	500				77	1.0	7369785
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500				360	1.0	7369834
Dissolved Chloride (Cl-)	mg/L	-	-	250				19	1.0	7369774
Nitrite (N)	mg/L	-	1	-				<0.010	0.010	7369818
Nitrate (N)	mg/L	-	10	-				<0.10	0.10	7369818
Metals										
Mercury (Hg)	mg/L	0.0002	0.001	-				<0.00010	0.00010	7371349
Dissolved Aluminum (Al)	ug/L	-	-	100				<4.9	4.9	7369874
Dissolved Antimony (Sb)	ug/L	20	6	-				<0.50	0.50	7369874
Dissolved Arsenic (As)	ug/L	100	10	-				2.4	1.0	7369874
Dissolved Barium (Ba)	ug/L	-	1000	-				71	2.0	7369874
Dissolved Beryllium (Be)	ug/L	11	-	-				<0.40	0.40	7369874
Dissolved Bismuth (Bi)	ug/L	-	-	-				<1.0	1.0	7369874
Dissolved Boron (B)	ug/L	200	5000	-				410	10	7369874
Dissolved Cadmium (Cd)	ug/L	0.2	5	-				<0.090	0.090	7369874
Dissolved Calcium (Ca)	ug/L	-	-	-				110000	200	7369874
Dissolved Chromium (Cr)	ug/L	-	50	-				<5.0	5.0	7369874
Dissolved Cobalt (Co)	ug/L	0.9	-	-				<0.50	0.50	7369874

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

BV Labs Job #: C1D8212
Report Date: 2021/05/28

exp Services Inc
Client Project #: THB-00006189-RE
Site Location: GERALDTON LANDFILL
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					PQC394			PQC395		
Sampling Date					2021/05/18 20:40			2021/05/18 21:35		
COC Number					825045-01-01			825045-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW4 Lab-Dup**	**RDL**	**QC Batch**	**MW5**	**RDL**	**QC Batch**
Dissolved Copper (Cu)	ug/L	5	-	1000				<0.90	0.90	7369874
Dissolved Iron (Fe)	ug/L	300	-	300				4800	100	7369874
Dissolved Lead (Pb)	ug/L	5	10	-				<0.50	0.50	7369874
Dissolved Magnesium (Mg)	ug/L	-	-	-				30000	50	7369874
Dissolved Manganese (Mn)	ug/L	-	-	50				770	2.0	7369874
Dissolved Molybdenum (Mo)	ug/L	40	-	-				<0.50	0.50	7369874
Dissolved Nickel (Ni)	ug/L	25	-	-				1.5	1.0	7369874
Dissolved Potassium (K)	ug/L	-	-	-				11000	200	7369874
Dissolved Selenium (Se)	ug/L	100	50	-				<2.0	2.0	7369874
Dissolved Silicon (Si)	ug/L	-	-	-				5000	50	7369874
Dissolved Sodium (Na)	ug/L	-	-	200000				21000	100	7369874
Dissolved Strontium (Sr)	ug/L	-	-	-				200	1.0	7369874
Dissolved Thallium (Tl)	ug/L	0.3	-	-				<0.050	0.050	7369874
Dissolved Tin (Sn)	ug/L	-	-	-				<1.0	1.0	7369874
Dissolved Vanadium (V)	ug/L	6	-	-				<0.50	0.50	7369874
Dissolved Zinc (Zn)	ug/L	30	-	5000				<5.0	5.0	7369874

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

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LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					PQC396			PQC396		
Sampling Date					2021/05/19 10:30			2021/05/19 10:30		
COC Number					825045-01-01			825045-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW6**	**RDL**	**QC Batch**	**MW6 Lab-Dup**	**RDL**	**QC Batch**
Inorganics										
Total Ammonia-N	mg/L	-	-	-	<0.050	0.050	7369539			
Total Chemical Oxygen Demand (COD)	mg/L	-	-	-	16	4.0	7369557			
Conductivity	umho/cm	-	-	-	590	1.0	7369846			
Total Dissolved Solids	mg/L	-	-	500	230	10	7367666			
Total Kjeldahl Nitrogen (TKN)	mg/L	-	-	-	0.26	0.10	7369600			
Dissolved Organic Carbon	mg/L	-	-	5	3.1	0.40	7372408			
pH	pH	6.5:8.5	-	6.5:8.5	8.11		7369851			
Phenols-4AAP	mg/L	0.001	-	-	<0.0010	0.0010	7369253			
Total Phosphorus	mg/L	0.01	-	-	0.078	0.020	7371173			
Dissolved Sulphate (SO4)	mg/L	-	-	500	18	1.0	7369785			
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500	310	1.0	7369834			
Dissolved Chloride (Cl-)	mg/L	-	-	250	2.1	1.0	7369774			
Nitrite (N)	mg/L	-	1	-	<0.010	0.010	7369794	<0.010	0.010	7369794
Nitrate (N)	mg/L	-	10	-	<0.10	0.10	7369794	<0.10	0.10	7369794
Metals										
Mercury (Hg)	mg/L	0.0002	0.001	-	<0.00010	0.00010	7371337			
Dissolved Aluminum (Al)	ug/L	-	-	100	<4.9	4.9	7369874			
Dissolved Antimony (Sb)	ug/L	20	6	-	<0.50	0.50	7369874			
Dissolved Arsenic (As)	ug/L	100	10	-	3.9	1.0	7369874			
Dissolved Barium (Ba)	ug/L	-	1000	-	17	2.0	7369874			
Dissolved Beryllium (Be)	ug/L	11	-	-	<0.40	0.40	7369874			
Dissolved Bismuth (Bi)	ug/L	-	-	-	<1.0	1.0	7369874			
Dissolved Boron (B)	ug/L	200	5000	-	18	10	7369874			
Dissolved Cadmium (Cd)	ug/L	0.2	5	-	0.13	0.090	7369874			
Dissolved Calcium (Ca)	ug/L	-	-	-	95000	200	7369874			
Dissolved Chromium (Cr)	ug/L	-	50	-	<5.0	5.0	7369874			
Dissolved Cobalt (Co)	ug/L	0.9	-	-	2.2	0.50	7369874			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

BV Labs Job #: C1D8212
Report Date: 2021/05/28

exp Services Inc
Client Project #: THB-00006189-RE
Site Location: GERALDTON LANDFILL
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					PQC396			PQC396		
Sampling Date					2021/05/19 10:30			2021/05/19 10:30		
COC Number					825045-01-01			825045-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW6**	**RDL**	**QC Batch**	**MW6 Lab-Dup**	**RDL**	**QC Batch**
Dissolved Copper (Cu)	ug/L	5	-	1000	2.4	0.90	7369874			
Dissolved Iron (Fe)	ug/L	300	-	300	760	100	7369874			
Dissolved Lead (Pb)	ug/L	5	10	-	<0.50	0.50	7369874			
Dissolved Magnesium (Mg)	ug/L	-	-	-	18000	50	7369874			
Dissolved Manganese (Mn)	ug/L	-	-	50	370	2.0	7369874			
Dissolved Molybdenum (Mo)	ug/L	40	-	-	<0.50	0.50	7369874			
Dissolved Nickel (Ni)	ug/L	25	-	-	2.7	1.0	7369874			
Dissolved Potassium (K)	ug/L	-	-	-	1500	200	7369874			
Dissolved Selenium (Se)	ug/L	100	50	-	<2.0	2.0	7369874			
Dissolved Silicon (Si)	ug/L	-	-	-	5300	50	7369874			
Dissolved Sodium (Na)	ug/L	-	-	200000	4200	100	7369874			
Dissolved Strontium (Sr)	ug/L	-	-	-	82	1.0	7369874			
Dissolved Thallium (Tl)	ug/L	0.3	-	-	0.084	0.050	7369874			
Dissolved Tin (Sn)	ug/L	-	-	-	<1.0	1.0	7369874			
Dissolved Vanadium (V)	ug/L	6	-	-	<0.50	0.50	7369874			
Dissolved Zinc (Zn)	ug/L	30	-	5000	5.2	5.0	7369874			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
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BV Labs Job #: C1D8212
Report Date: 2021/05/28

exp Services Inc
Client Project #: THB-00006189-RE
Site Location: GERALDTON LANDFILL
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					PQC397			PQC398		
Sampling Date					2021/05/19 09:40			2021/05/18 18:40		
COC Number					825045-01-01			825045-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW7**	**RDL**	**QC Batch**	**MW8**	**RDL**	**QC Batch**
Inorganics										
Total Ammonia-N	mg/L	-	-	-	4.9	0.050	7369539	<0.050	0.050	7369539
Total Chemical Oxygen Demand (COD)	mg/L	-	-	-	14	4.0	7369557	17	4.0	7369557
Conductivity	umho/cm	-	-	-	760	1.0	7369846	5700	1.0	7369852
Total Dissolved Solids	mg/L	-	-	500	440	10	7367667	3320	10	7367667
Total Kjeldahl Nitrogen (TKN)	mg/L	-	-	-	5.0	0.10	7369600	0.13	0.10	7369600
Dissolved Organic Carbon	mg/L	-	-	5	3.4	0.40	7372408	2.6	0.40	7371762
pH	pH	6.5:8.5	-	6.5:8.5	7.77		7369851	7.97		7369858
Phenols-4AAP	mg/L	0.001	-	-	<0.0010	0.0010	7369253	<0.0010	0.0010	7369253
Total Phosphorus	mg/L	0.01	-	-	0.081	0.020	7371717	0.043	0.020	7371717
Dissolved Sulphate (SO4)	mg/L	-	-	500	18	1.0	7369785	35	1.0	7369785
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500	390	1.0	7369834	360	1.0	7369863
Dissolved Chloride (Cl-)	mg/L	-	-	250	10	1.0	7369774	1700	20	7369774
Nitrite (N)	mg/L	-	1	-	<0.010	0.010	7369818	<0.010	0.010	7369818
Nitrate (N)	mg/L	-	10	-	<0.10	0.10	7369818	2.09	0.10	7369818
Metals										
Mercury (Hg)	mg/L	0.0002	0.001	-	<0.00010	0.00010	7371337	<0.00010	0.00010	7371349
Dissolved Aluminum (Al)	ug/L	-	-	100	7.6	4.9	7369874	<4.9	4.9	7369874
Dissolved Antimony (Sb)	ug/L	20	6	-	<0.50	0.50	7369874	<0.50	0.50	7369874
Dissolved Arsenic (As)	ug/L	100	10	-	37	1.0	7369874	<1.0	1.0	7369874
Dissolved Barium (Ba)	ug/L	-	1000	-	130	2.0	7369874	110	2.0	7369874
Dissolved Beryllium (Be)	ug/L	11	-	-	<0.40	0.40	7369874	<0.40	0.40	7369874
Dissolved Bismuth (Bi)	ug/L	-	-	-	<1.0	1.0	7369874	<1.0	1.0	7369874
Dissolved Boron (B)	ug/L	200	5000	-	160	10	7369874	12	10	7369874
Dissolved Cadmium (Cd)	ug/L	0.2	5	-	<0.090	0.090	7369874	<0.090	0.090	7369874
Dissolved Calcium (Ca)	ug/L	-	-	-	120000	200	7369874	250000	200	7369874
Dissolved Chromium (Cr)	ug/L	-	50	-	<5.0	5.0	7369874	<5.0	5.0	7369874
Dissolved Cobalt (Co)	ug/L	0.9	-	-	9.5	0.50	7369874	<0.50	0.50	7369874
Dissolved Copper (Cu)	ug/L	5	-	1000	<0.90	0.90	7369874	1.9	0.90	7369874

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

BV Labs Job #: C1D8212
Report Date: 2021/05/28

exp Services Inc
Client Project #: THB-00006189-RE
Site Location: GERALDTON LANDFILL
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					PQC397			PQC398		
Sampling Date					2021/05/19 09:40			2021/05/18 18:40		
COC Number					825045-01-01			825045-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW7**	**RDL**	**QC Batch**	**MW8**	**RDL**	**QC Batch**
Dissolved Iron (Fe)	ug/L	300	-	300	16000	100	7369874	<100	100	7369874
Dissolved Lead (Pb)	ug/L	5	10	-	<0.50	0.50	7369874	<0.50	0.50	7369874
Dissolved Magnesium (Mg)	ug/L	-	-	-	17000	50	7369874	20000	50	7369874
Dissolved Manganese (Mn)	ug/L	-	-	50	1300	2.0	7369874	<2.0	2.0	7369874
Dissolved Molybdenum (Mo)	ug/L	40	-	-	<0.50	0.50	7369874	<0.50	0.50	7369874
Dissolved Nickel (Ni)	ug/L	25	-	-	5.0	1.0	7369874	<1.0	1.0	7369874
Dissolved Potassium (K)	ug/L	-	-	-	7600	200	7369874	3900	200	7369874
Dissolved Selenium (Se)	ug/L	100	50	-	<2.0	2.0	7369874	<2.0	2.0	7369874
Dissolved Silicon (Si)	ug/L	-	-	-	8700	50	7369874	2900	50	7369874
Dissolved Sodium (Na)	ug/L	-	-	200000	11000	100	7369874	990000	500	7369874
Dissolved Strontium (Sr)	ug/L	-	-	-	150	1.0	7369874	300	1.0	7369874
Dissolved Thallium (Tl)	ug/L	0.3	-	-	<0.050	0.050	7369874	<0.050	0.050	7369874
Dissolved Tin (Sn)	ug/L	-	-	-	<1.0	1.0	7369874	<1.0	1.0	7369874
Dissolved Vanadium (V)	ug/L	6	-	-	0.55	0.50	7369874	<0.50	0.50	7369874
Dissolved Zinc (Zn)	ug/L	30	-	5000	<5.0	5.0	7369874	<5.0	5.0	7369874

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

BV Labs Job #: C1D8212
Report Date: 2021/05/28

exp Services Inc
Client Project #: THB-00006189-RE
Site Location: GERALDTON LANDFILL
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					PQC398			PQC399		
Sampling Date					2021/05/18 18:40			2021/05/18 19:30		
COC Number					825045-01-01			825045-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW8 Lab-Dup**	**RDL**	**QC Batch**	**MW9**	**RDL**	**QC Batch**
Inorganics										
Total Ammonia-N	mg/L	-	-	-				<0.050	0.050	7369539
Total Chemical Oxygen Demand (COD)	mg/L	-	-	-				6.2	4.0	7369557
Conductivity	umho/cm	-	-	-	5700	1.0	7369852	690	1.0	7369370
Total Dissolved Solids	mg/L	-	-	500				260	10	7367666
Total Kjeldahl Nitrogen (TKN)	mg/L	-	-	-				0.32	0.10	7369600
Dissolved Organic Carbon	mg/L	-	-	5				1.2	0.40	7371762
pH	pH	6.5:8.5	-	6.5:8.5	7.98		7369858	8.11		7369366
Phenols-4AAP	mg/L	0.001	-	-				<0.0010	0.0010	7369253
Total Phosphorus	mg/L	0.01	-	-				0.51	0.10	7371173
Dissolved Sulphate (SO4)	mg/L	-	-	500				2.5	1.0	7369785
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500	360	1.0	7369863	260	1.0	7369358
Dissolved Chloride (Cl-)	mg/L	-	-	250				70	1.0	7369774
Nitrite (N)	mg/L	-	1	-				<0.010	0.010	7369794
Nitrate (N)	mg/L	-	10	-				0.22	0.10	7369794
Metals										
Mercury (Hg)	mg/L	0.0002	0.001	-				<0.00010	0.00010	7371337
Dissolved Aluminum (Al)	ug/L	-	-	100				<4.9	4.9	7369850
Dissolved Antimony (Sb)	ug/L	20	6	-				<0.50	0.50	7369850
Dissolved Arsenic (As)	ug/L	100	10	-				<1.0	1.0	7369850
Dissolved Barium (Ba)	ug/L	-	1000	-				19	2.0	7369850
Dissolved Beryllium (Be)	ug/L	11	-	-				<0.40	0.40	7369850
Dissolved Bismuth (Bi)	ug/L	-	-	-				<1.0	1.0	7369850
Dissolved Boron (B)	ug/L	200	5000	-				<10	10	7369850
Dissolved Cadmium (Cd)	ug/L	0.2	5	-				<0.090	0.090	7369850
Dissolved Calcium (Ca)	ug/L	-	-	-				84000	200	7369850
Dissolved Chromium (Cr)	ug/L	-	50	-				<5.0	5.0	7369850
Dissolved Cobalt (Co)	ug/L	0.9	-	-				<0.50	0.50	7369850

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

BV Labs Job #: C1D8212
Report Date: 2021/05/28

exp Services Inc
Client Project #: THB-00006189-RE
Site Location: GERALDTON LANDFILL
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					PQC398			PQC399		
Sampling Date					2021/05/18 18:40			2021/05/18 19:30		
COC Number					825045-01-01			825045-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW8 Lab-Dup**	**RDL**	**QC Batch**	**MW9**	**RDL**	**QC Batch**
Dissolved Copper (Cu)	ug/L	5	-	1000				2.2	0.90	7369850
Dissolved Iron (Fe)	ug/L	300	-	300				<100	100	7369850
Dissolved Lead (Pb)	ug/L	5	10	-				<0.50	0.50	7369850
Dissolved Magnesium (Mg)	ug/L	-	-	-				17000	50	7369850
Dissolved Manganese (Mn)	ug/L	-	-	50				<2.0	2.0	7369850
Dissolved Molybdenum (Mo)	ug/L	40	-	-				<0.50	0.50	7369850
Dissolved Nickel (Ni)	ug/L	25	-	-				<1.0	1.0	7369850
Dissolved Potassium (K)	ug/L	-	-	-				1200	200	7369850
Dissolved Selenium (Se)	ug/L	100	50	-				<2.0	2.0	7369850
Dissolved Silicon (Si)	ug/L	-	-	-				5000	50	7369850
Dissolved Sodium (Na)	ug/L	-	-	200000				42000	100	7369850
Dissolved Strontium (Sr)	ug/L	-	-	-				70	1.0	7369850
Dissolved Thallium (Tl)	ug/L	0.3	-	-				<0.050	0.050	7369850
Dissolved Tin (Sn)	ug/L	-	-	-				<1.0	1.0	7369850
Dissolved Vanadium (V)	ug/L	6	-	-				<0.50	0.50	7369850
Dissolved Zinc (Zn)	ug/L	30	-	5000				<5.0	5.0	7369850

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					PQC434			PQC435		
Sampling Date					2021/05/18 20:00			2021/05/18 20:10		
COC Number					825045-02-01			825045-02-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW10A**	**RDL**	**QC Batch**	**MW10B**	**RDL**	**QC Batch**
Inorganics										
Total Ammonia-N	mg/L	-	-	-	0.28	0.050	7369539	0.090	0.050	7369539
Total Chemical Oxygen Demand (COD)	mg/L	-	-	-	60	4.0	7369557	53	4.0	7369557
Conductivity	umho/cm	-	-	-	690	1.0	7369846	1300	1.0	7369370
Total Dissolved Solids	mg/L	-	-	500	365	10	7367666	570	10	7367666
Total Kjeldahl Nitrogen (TKN)	mg/L	-	-	-	0.70	0.10	7369600	0.58	0.10	7369600
Dissolved Organic Carbon	mg/L	-	-	5	14	0.40	7372408	17	0.40	7372408
pH	pH	6.5:8.5	-	6.5:8.5	7.32		7369851	7.59		7369366
Phenols-4AAP	mg/L	0.001	-	-	<0.0010	0.0010	7369477	<0.0010	0.0010	7369477
Total Phosphorus	mg/L	0.01	-	-	0.092	0.040	7371173	0.034	0.020	7371717
Dissolved Sulphate (SO4)	mg/L	-	-	500	<1.0	1.0	7369785	<1.0	1.0	7369785
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500	170	1.0	7369834	260	1.0	7369358
Dissolved Chloride (Cl-)	mg/L	-	-	250	120	1.0	7369774	260	3.0	7369774
Nitrite (N)	mg/L	-	1	-	<0.010	0.010	7369818	<0.010	0.010	7369794
Nitrate (N)	mg/L	-	10	-	<0.10	0.10	7369818	<0.10	0.10	7369794
Metals										
Mercury (Hg)	mg/L	0.0002	0.001	-	<0.00010	0.00010	7371337	<0.00010	0.00010	7371349
Dissolved Aluminum (Al)	ug/L	-	-	100	250	4.9	7369850	68	4.9	7369850
Dissolved Antimony (Sb)	ug/L	20	6	-	<0.50	0.50	7369850	<0.50	0.50	7369850
Dissolved Arsenic (As)	ug/L	100	10	-	19	1.0	7369850	8.6	1.0	7369850
Dissolved Barium (Ba)	ug/L	-	1000	-	29	2.0	7369850	25	2.0	7369850
Dissolved Beryllium (Be)	ug/L	11	-	-	<0.40	0.40	7369850	<0.40	0.40	7369850
Dissolved Bismuth (Bi)	ug/L	-	-	-	<1.0	1.0	7369850	<1.0	1.0	7369850
Dissolved Boron (B)	ug/L	200	5000	-	14	10	7369850	<10	10	7369850
Dissolved Cadmium (Cd)	ug/L	0.2	5	-	<0.090	0.090	7369850	<0.090	0.090	7369850
Dissolved Calcium (Ca)	ug/L	-	-	-	69000	200	7369850	86000	200	7369850
Dissolved Chromium (Cr)	ug/L	-	50	-	<5.0	5.0	7369850	<5.0	5.0	7369850
Dissolved Cobalt (Co)	ug/L	0.9	-	-	<0.50	0.50	7369850	<0.50	0.50	7369850
Dissolved Copper (Cu)	ug/L	5	-	1000	3.7	0.90	7369850	3.7	0.90	7369850

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

BV Labs Job #: C1D8212
Report Date: 2021/05/28

exp Services Inc
Client Project #: THB-00006189-RE
Site Location: GERALDTON LANDFILL
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					PQC434			PQC435		
Sampling Date					2021/05/18 20:00			2021/05/18 20:10		
COC Number					825045-02-01			825045-02-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW10A**	**RDL**	**QC Batch**	**MW10B**	**RDL**	**QC Batch**
Dissolved Iron (Fe)	ug/L	300	-	300	1700	100	7369850	1300	100	7369850
Dissolved Lead (Pb)	ug/L	5	10	-	0.72	0.50	7369850	<0.50	0.50	7369850
Dissolved Magnesium (Mg)	ug/L	-	-	-	13000	50	7369850	10000	50	7369850
Dissolved Manganese (Mn)	ug/L	-	-	50	75	2.0	7369850	140	2.0	7369850
Dissolved Molybdenum (Mo)	ug/L	40	-	-	<0.50	0.50	7369850	<0.50	0.50	7369850
Dissolved Nickel (Ni)	ug/L	25	-	-	1.5	1.0	7369850	1.5	1.0	7369850
Dissolved Potassium (K)	ug/L	-	-	-	450	200	7369850	260	200	7369850
Dissolved Selenium (Se)	ug/L	100	50	-	<2.0	2.0	7369850	<2.0	2.0	7369850
Dissolved Silicon (Si)	ug/L	-	-	-	3200	50	7369850	1600	50	7369850
Dissolved Sodium (Na)	ug/L	-	-	200000	50000	100	7369850	140000	100	7369850
Dissolved Strontium (Sr)	ug/L	-	-	-	71	1.0	7369850	71	1.0	7369850
Dissolved Thallium (Tl)	ug/L	0.3	-	-	<0.050	0.050	7369850	<0.050	0.050	7369850
Dissolved Tin (Sn)	ug/L	-	-	-	<1.0	1.0	7369850	<1.0	1.0	7369850
Dissolved Vanadium (V)	ug/L	6	-	-	2.6	0.50	7369850	<0.50	0.50	7369850
Dissolved Zinc (Zn)	ug/L	30	-	5000	<5.0	5.0	7369850	<5.0	5.0	7369850

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

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BV Labs Job #: C1D8212
Report Date: 2021/05/28

exp Services Inc
Client Project #: THB-00006189-RE
Site Location: GERALDTON LANDFILL
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					PQC436			PQC437		
Sampling Date					2021/05/19 09:05			2021/05/18 19:40		
COC Number					825045-02-01			825045-02-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW11**	**RDL**	**QC Batch**	**MW12**	**RDL**	**QC Batch**
Inorganics										
Total Ammonia-N	mg/L	-	-	-	0.080	0.050	7369539	10 (1)	0.050	7369539
Total Chemical Oxygen Demand (COD)	mg/L	-	-	-	4.8	4.0	7369557	29	4.0	7369557
Conductivity	umho/cm	-	-	-	460	1.0	7369846	1200	1.0	7369370
Total Dissolved Solids	mg/L	-	-	500	200	10	7372880	535	10	7367666
Total Kjeldahl Nitrogen (TKN)	mg/L	-	-	-	0.15	0.10	7369600	9.6 (1)	0.50	7369600
Dissolved Organic Carbon	mg/L	-	-	5	1.4	0.40	7372408	7.1	0.40	7372408
pH	pH	6.5:8.5	-	6.5:8.5	8.23		7369851	7.63		7369366
Phenols-4AAP	mg/L	0.001	-	-	<0.0010	0.0010	7369682	<0.0010	0.0010	7369682
Total Phosphorus	mg/L	0.01	-	-	0.12	0.10	7371173	0.062	0.020	7371173
Dissolved Sulphate (SO4)	mg/L	-	-	500	<1.0	1.0	7369785	16	1.0	7369785
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500	260	1.0	7369834	500	1.0	7369358
Dissolved Chloride (Cl-)	mg/L	-	-	250	1.2	1.0	7369774	110	1.0	7369774
Nitrite (N)	mg/L	-	1	-	<0.010	0.010	7369818	<0.010	0.010	7369794
Nitrate (N)	mg/L	-	10	-	<0.10	0.10	7369818	<0.10	0.10	7369794
Metals										
Mercury (Hg)	mg/L	0.0002	0.001	-	<0.00010	0.00010	7373612	<0.00010	0.00010	7371349
Dissolved Aluminum (Al)	ug/L	-	-	100	5.0	4.9	7369850	<4.9	4.9	7369850
Dissolved Antimony (Sb)	ug/L	20	6	-	<0.50	0.50	7369850	<0.50	0.50	7369850
Dissolved Arsenic (As)	ug/L	100	10	-	<1.0	1.0	7369850	18	1.0	7369850
Dissolved Barium (Ba)	ug/L	-	1000	-	29	2.0	7369850	140	2.0	7369850
Dissolved Beryllium (Be)	ug/L	11	-	-	<0.40	0.40	7369850	<0.40	0.40	7369850
Dissolved Bismuth (Bi)	ug/L	-	-	-	<1.0	1.0	7369850	<1.0	1.0	7369850
Dissolved Boron (B)	ug/L	200	5000	-	14	10	7369850	240	10	7369850
Dissolved Cadmium (Cd)	ug/L	0.2	5	-	<0.090	0.090	7369850	<0.090	0.090	7369850
Dissolved Calcium (Ca)	ug/L	-	-	-	71000	200	7369850	150000	200	7369850
Dissolved Chromium (Cr)	ug/L	-	50	-	<5.0	5.0	7369850	<5.0	5.0	7369850
Dissolved Cobalt (Co)	ug/L	0.9	-	-	<0.50	0.50	7369850	5.0	0.50	7369850

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)
(1) TKN < NH4: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.

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BV Labs Job #: C1D8212
Report Date: 2021/05/28

exp Services Inc
Client Project #: THB-00006189-RE
Site Location: GERALDTON LANDFILL
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					PQC436			PQC437		
Sampling Date					2021/05/19 09:05			2021/05/18 19:40		
COC Number					825045-02-01			825045-02-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW11**	**RDL**	**QC Batch**	**MW12**	**RDL**	**QC Batch**
Dissolved Copper (Cu)	ug/L	5	-	1000	3.5	0.90	7369850	<0.90	0.90	7369850
Dissolved Iron (Fe)	ug/L	300	-	300	<100	100	7369850	17000	100	7369850
Dissolved Lead (Pb)	ug/L	5	10	-	<0.50	0.50	7369850	<0.50	0.50	7369850
Dissolved Magnesium (Mg)	ug/L	-	-	-	15000	50	7369850	24000	50	7369850
Dissolved Manganese (Mn)	ug/L	-	-	50	150	2.0	7369850	1200	2.0	7369850
Dissolved Molybdenum (Mo)	ug/L	40	-	-	0.94	0.50	7369850	<0.50	0.50	7369850
Dissolved Nickel (Ni)	ug/L	25	-	-	<1.0	1.0	7369850	4.6	1.0	7369850
Dissolved Potassium (K)	ug/L	-	-	-	1000	200	7369850	12000	200	7369850
Dissolved Selenium (Se)	ug/L	100	50	-	<2.0	2.0	7369850	<2.0	2.0	7369850
Dissolved Silicon (Si)	ug/L	-	-	-	7200	50	7369850	7700	50	7369850
Dissolved Sodium (Na)	ug/L	-	-	200000	7100	100	7369850	64000	100	7369850
Dissolved Strontium (Sr)	ug/L	-	-	-	85	1.0	7369850	240	1.0	7369850
Dissolved Thallium (Tl)	ug/L	0.3	-	-	<0.050	0.050	7369850	<0.050	0.050	7369850
Dissolved Tin (Sn)	ug/L	-	-	-	<1.0	1.0	7369850	<1.0	1.0	7369850
Dissolved Vanadium (V)	ug/L	6	-	-	1.4	0.50	7369850	0.60	0.50	7369850
Dissolved Zinc (Zn)	ug/L	30	-	5000	<5.0	5.0	7369850	<5.0	5.0	7369850

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999

MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

BV Labs Job #: C1D8212
Report Date: 2021/05/28

exp Services Inc
Client Project #: THB-00006189-RE
Site Location: GERALDTON LANDFILL
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - SW COMP. LIST (WATER)

BV Labs ID					PQC442			PQC443		
Sampling Date					2021/05/18 18:20			2021/05/18 17:10		
COC Number					c#825046-01-01			c#825046-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**SW1**	**RDL**	**QC Batch**	**SW2**	**RDL**	**QC Batch**
Inorganics										
Total Ammonia-N	mg/L	-	-	-	0.071	0.050	7369539	0.079	0.050	7369832
Total BOD	mg/L	-	-	-	3	2	7367405	<2	2	7367405
Total Chemical Oxygen Demand (COD)	mg/L	-	-	-	63	4.0	7369557	40	4.0	7369855
Conductivity	umho/cm	-	-	-	300	1.0	7369852	260	1.0	7369846
Total Dissolved Solids	mg/L	-	-	500	145	10	7367666	145	10	7367666
Total Kjeldahl Nitrogen (TKN)	mg/L	-	-	-	0.53	0.10	7369600	0.48	0.10	7369600
pH	pH	6.5:8.5	-	6.5:8.5	7.98		7369858	8.05		7369851
Phenols-4AAP	mg/L	0.001	-	-	<0.0010	0.0010	7369253	<0.0010	0.0010	7369253
Total Phosphorus	mg/L	0.01	-	-	0.11	0.02	7369536	0.037	0.004	7373408
Total Suspended Solids	mg/L	-	-	-	280	2	7367787	72	1	7367787
Dissolved Sulphate (SO4)	mg/L	-	-	500	<1.0	1.0	7369538	<1.0	1.0	7369538
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500	80	1.0	7369863	99	1.0	7369834
Dissolved Chloride (Cl-)	mg/L	-	-	250	36	1.0	7369546	17	1.0	7369546
Nitrite (N)	mg/L	-	1	-	<0.010	0.010	7369818	<0.010	0.010	7369818
Nitrate (N)	mg/L	-	10	-	<0.10	0.10	7369818	<0.10	0.10	7369818
Metals										
Mercury (Hg)	mg/L	0.0002	0.001	-	<0.00010	0.00010	7371349	<0.00010	0.00010	7369482
Total Antimony (Sb)	ug/L	20	6	-	<0.50	0.50	7373388	<0.50	0.50	7373388
Total Arsenic (As)	ug/L	100	10	-	50	1.0	7373388	17	1.0	7373388
Total Barium (Ba)	ug/L	-	1000	-	17	2.0	7373388	9.1	2.0	7373388
Total Beryllium (Be)	ug/L	11	-	-	<0.40	0.40	7373388	<0.40	0.40	7373388
Total Bismuth (Bi)	ug/L	-	-	-	<1.0	1.0	7373388	<1.0	1.0	7373388
Total Boron (B)	ug/L	200	5000	-	14	10	7373388	22	10	7373388
Total Cadmium (Cd)	ug/L	0.2	5	-	<0.090	0.090	7373388	<0.090	0.090	7373388
Total Calcium (Ca)	ug/L	-	-	-	28000	200	7373388	35000	200	7373388
Total Chromium (Cr)	ug/L	-	50	-	<5.0	5.0	7373388	<5.0	5.0	7373388
Total Cobalt (Co)	ug/L	0.9	-	-	0.58	0.50	7373388	<0.50	0.50	7373388
Total Copper (Cu)	ug/L	5	-	1000	4.5	0.90	7373388	2.6	0.90	7373388
Total Iron (Fe)	ug/L	300	-	300	2100	100	7373388	190	100	7373388

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999

MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

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BV Labs Job #: C1D8212
Report Date: 2021/05/28

exp Services Inc
Client Project #: THB-00006189-RE
Site Location: GERALDTON LANDFILL
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - SW COMP. LIST (WATER)

BV Labs ID					PQC442			PQC443		
Sampling Date					2021/05/18 18:20			2021/05/18 17:10		
COC Number					c#825046-01-01			c#825046-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**SW1**	**RDL**	**QC Batch**	**SW2**	**RDL**	**QC Batch**
Total Lead (Pb)	ug/L	5	10	-	0.73	0.50	7373388	<0.50	0.50	7373388
Total Magnesium (Mg)	ug/L	-	-	-	5500	50	7373388	6600	50	7373388
Total Manganese (Mn)	ug/L	-	-	50	120	2.0	7373388	46	2.0	7373388
Total Molybdenum (Mo)	ug/L	40	-	-	<0.50	0.50	7373388	<0.50	0.50	7373388
Total Nickel (Ni)	ug/L	25	-	-	2.0	1.0	7373388	1.3	1.0	7373388
Total Potassium (K)	ug/L	-	-	-	720	200	7373388	770	200	7373388
Total Selenium (Se)	ug/L	100	50	-	<2.0	2.0	7373388	<2.0	2.0	7373388
Total Silicon (Si)	ug/L	-	-	-	1500	50	7373388	1500	50	7373388
Total Silver (Ag)	ug/L	0.1	-	-	<0.090	0.090	7373388	<0.090	0.090	7373388
Total Sodium (Na)	ug/L	-	-	200000	23000	100	7373388	10000	100	7373388
Total Strontium (Sr)	ug/L	-	-	-	38	1.0	7373388	41	1.0	7373388
Total Thallium (Tl)	ug/L	0.3	-	-	<0.050	0.050	7373388	<0.050	0.050	7373388
Total Vanadium (V)	ug/L	6	-	-	1.6	0.50	7373388	<0.50	0.50	7373388
Total Zinc (Zn)	ug/L	30	-	5000	6.2	5.0	7373388	<5.0	5.0	7373388

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

BV Labs Job #: C1D8212
Report Date: 2021/05/28

exp Services Inc
Client Project #: THB-00006189-RE
Site Location: GERALDTON LANDFILL
Sampler Initials: EF

LANDFILL STANDARDS SCH 5 - SW COMP. LIST (WATER)

BV Labs ID					PQC444		
Sampling Date					2021/05/18 17:50		
COC Number					c#825046-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**SW3**	**RDL**	**QC Batch**
Inorganics							
Total Ammonia-N	mg/L	-	-	-	0.078	0.050	7369832
Total BOD	mg/L	-	-	-	<2	2	7367405
Total Chemical Oxygen Demand (COD)	mg/L	-	-	-	40	4.0	7369855
Conductivity	umho/cm	-	-	-	160	1.0	7369846
Total Dissolved Solids	mg/L	-	-	500	70	10	7367666
Total Kjeldahl Nitrogen (TKN)	mg/L	-	-	-	0.54	0.10	7369600
pH	pH	6.5:8.5	-	6.5:8.5	7.93		7369851
Phenols-4AAP	mg/L	0.001	-	-	<0.0010	0.0010	7369253
Total Phosphorus	mg/L	0.01	-	-	0.024	0.004	7373408
Total Suspended Solids	mg/L	-	-	-	8	1	7367787
Dissolved Sulphate (SO4)	mg/L	-	-	500	<1.0	1.0	7369538
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500	56	1.0	7369834
Dissolved Chloride (Cl-)	mg/L	-	-	250	10	1.0	7369546
Nitrite (N)	mg/L	-	1	-	<0.010	0.010	7369794
Nitrate (N)	mg/L	-	10	-	<0.10	0.10	7369794
Metals							
Mercury (Hg)	mg/L	0.0002	0.001	-	<0.00010	0.00010	7369482
Total Antimony (Sb)	ug/L	20	6	-	<0.50	0.50	7373388
Total Arsenic (As)	ug/L	100	10	-	22	1.0	7373388
Total Barium (Ba)	ug/L	-	1000	-	5.7	2.0	7373388
Total Beryllium (Be)	ug/L	11	-	-	<0.40	0.40	7373388
Total Bismuth (Bi)	ug/L	-	-	-	<1.0	1.0	7373388
Total Boron (B)	ug/L	200	5000	-	12	10	7373388
Total Cadmium (Cd)	ug/L	0.2	5	-	<0.090	0.090	7373388
Total Calcium (Ca)	ug/L	-	-	-	20000	200	7373388
Total Chromium (Cr)	ug/L	-	50	-	<5.0	5.0	7373388
Total Cobalt (Co)	ug/L	0.9	-	-	<0.50	0.50	7373388
Total Copper (Cu)	ug/L	5	-	1000	3.6	0.90	7373388
Total Iron (Fe)	ug/L	300	-	300	420	100	7373388

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
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LANDFILL STANDARDS SCH 5 - SW COMP. LIST (WATER)

BV Labs ID					PQC444		
Sampling Date					2021/05/18 17:50		
COC Number					c#825046-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**SW3**	**RDL**	**QC Batch**
Total Lead (Pb)	ug/L	5	10	-	<0.50	0.50	7373388
Total Magnesium (Mg)	ug/L	-	-	-	4300	50	7373388
Total Manganese (Mn)	ug/L	-	-	50	18	2.0	7373388
Total Molybdenum (Mo)	ug/L	40	-	-	<0.50	0.50	7373388
Total Nickel (Ni)	ug/L	25	-	-	<1.0	1.0	7373388
Total Potassium (K)	ug/L	-	-	-	460	200	7373388
Total Selenium (Se)	ug/L	100	50	-	<2.0	2.0	7373388
Total Silicon (Si)	ug/L	-	-	-	1300	50	7373388
Total Silver (Ag)	ug/L	0.1	-	-	<0.090	0.090	7373388
Total Sodium (Na)	ug/L	-	-	200000	6600	100	7373388
Total Strontium (Sr)	ug/L	-	-	-	30	1.0	7373388
Total Thallium (Tl)	ug/L	0.3	-	-	<0.050	0.050	7373388
Total Vanadium (V)	ug/L	6	-	-	0.63	0.50	7373388
Total Zinc (Zn)	ug/L	30	-	5000	7.0	5.0	7373388

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

BV Labs Job #: C1D8212
Report Date: 2021/05/28

exp Services Inc
Client Project #: THB-00006189-RE
Site Location: GERALDTON LANDFILL
Sampler Initials: EF

RESULTS OF ANALYSES OF WATER

BV Labs ID			PQC390	PQC391	PQC392		PQC393		
Sampling Date			2021/05/19 11:30	2021/05/19 11:00	2021/05/18 19:10		2021/05/18 20:15		
COC Number			825045-01-01	825045-01-01	825045-01-01		825045-01-01		
	UNITS	**A/O**	**MW1**	**MW2**	**MW3A**	**QC Batch**	**MW3B**	**RDL**	**QC Batch**
Calculated Parameters									
Hardness (CaCO3)	mg/L	80:100	590	240	450	7365759	500	1.0	7365759
Ion Balance (% Difference)	%	-	0.730	2.23	0.350	7365778	0.550	N/A	7365778
Total Organic Nitrogen	mg/L	0.15	0.23	0.14	0.54	7366501	<0.10	0.10	7366501
Inorganics									
Orthophosphate (P)	mg/L	-	<0.010	<0.010	<0.010	7369790	<0.010	0.010	7369377

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)
N/A = Not Applicable

BV Labs ID			PQC393			PQC394	PQC395	PQC396		
Sampling Date			2021/05/18 20:15			2021/05/18 20:40	2021/05/18 21:35	2021/05/19 10:30		
COC Number			825045-01-01			825045-01-01	825045-01-01	825045-01-01		
	UNITS	**A/O**	**MW3B Lab-Dup**	**RDL**	**QC Batch**	**MW4**	**MW5**	**MW6**	**RDL**	**QC Batch**
Calculated Parameters										
Hardness (CaCO3)	mg/L	80:100				380	390	310	1.0	7365759
Ion Balance (% Difference)	%	-				6.34	0.270	0.710	N/A	7365778
Total Organic Nitrogen	mg/L	0.15				0.20	<0.10	0.26	0.10	7366501
Inorganics										
Orthophosphate (P)	mg/L	-	<0.010	0.010	7369377	<0.010	<0.010	<0.010	0.010	7369790

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)
N/A = Not Applicable

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BV Labs Job #: C1D8212
Report Date: 2021/05/28

exp Services Inc
Client Project #: THB-00006189-RE
Site Location: GERALDTON LANDFILL
Sampler Initials: EF

RESULTS OF ANALYSES OF WATER

BV Labs ID			PQC397	PQC398	PQC399	PQC434	PQC435		
Sampling Date			2021/05/19 09:40	2021/05/18 18:40	2021/05/18 19:30	2021/05/18 20:00	2021/05/18 20:10		
COC Number			825045-01-01	825045-01-01	825045-01-01	825045-02-01	825045-02-01		
	UNITS	**A/O**	**MW7**	**MW8**	**MW9**	**MW10A**	**MW10B**	**RDL**	**QC Batch**
Calculated Parameters									
Hardness (CaCO3)	mg/L	80:100	370	720	280	230	260	1.0	7365759
Ion Balance (% Difference)	%	-	3.29	2.10	1.17	0.100	4.48	N/A	7365778
Total Organic Nitrogen	mg/L	0.15	0.11	0.13	0.32	0.42	0.49	0.10	7366501
Inorganics									
Orthophosphate (P)	mg/L	-	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	7369790

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)
N/A = Not Applicable

BV Labs ID			PQC436	PQC437			PQC442	PQC443		
Sampling Date			2021/05/19 09:05	2021/05/18 19:40			2021/05/18 18:20	2021/05/18 17:10		
COC Number			825045-02-01	825045-02-01			c#825046-01-01	c#825046-01-01		
	UNITS	**A/O**	**MW11**	**MW12**	**RDL**	**QC Batch**	**SW1**	**SW2**	**RDL**	**QC Batch**
Calculated Parameters										
Hardness (CaCO3)	mg/L	80:100	240	480	1.0	7365759	92	110	1.0	7365759
Ion Balance (% Difference)	%	-	0.300	2.38	N/A	7365778				
Total Organic Nitrogen	mg/L	0.15	<0.10	<0.10	0.10	7366501	0.46	0.40	0.10	7366501
Inorganics										
Dissolved Organic Carbon	mg/L	5					12	12	0.40	7372408
Orthophosphate (P)	mg/L	-	<0.010	<0.010	0.010	7369790				

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)
N/A = Not Applicable

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BV Labs Job #: C1D8212
Report Date: 2021/05/28

exp Services Inc
Client Project #: THB-00006189-RE
Site Location: GERALDTON LANDFILL
Sampler Initials: EF

RESULTS OF ANALYSES OF WATER

BV Labs ID			PQC444		
Sampling Date			2021/05/18 17:50		
COC Number			c#825046-01-01		
	UNITS	**A/O**	**SW3**	**RDL**	**QC Batch**
Calculated Parameters					
Hardness (CaCO3)	mg/L	80:100	66	1.0	7365759
Total Organic Nitrogen	mg/L	0.15	0.46	0.10	7366501
Inorganics					
Dissolved Organic Carbon	mg/L	5	13	0.40	7372408

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
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BV Labs Job #: C1D8212
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exp Services Inc
Client Project #: THB-00006189-RE
Site Location: GERALDTON LANDFILL
Sampler Initials: EF

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

BV Labs ID				PQC442	PQC443	PQC444		
Sampling Date				2021/05/18 18:20	2021/05/18 17:10	2021/05/18 17:50		
COC Number				c#825046-01-01	c#825046-01-01	c#825046-01-01		
	UNITS	**Criteria**	**A/O**	**SW1**	**SW2**	**SW3**	**RDL**	**QC Batch**
Metals								
Dissolved (0.2u) Aluminum (Al)	ug/L	15	100	<5	7	10	5	7369891

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
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TEST SUMMARY

BV Labs ID: PQC390
Sample ID: MW1
Matrix: Water

Collected: 2021/05/19
Shipped:
Received: 2021/05/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7369834	N/A	2021/05/27	Surinder Rai
Chloride by Automated Colourimetry	KONE	7369774	N/A	2021/05/27	Alina Dobreanu
Chemical Oxygen Demand	SPEC	7369855	N/A	2021/05/26	Nimarta Singh
Conductivity	AT	7369846	N/A	2021/05/27	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7371762	N/A	2021/05/27	Nimarta Singh
Field Measured Conductivity	PH	0	N/A		Michelle Huth
Hardness (calculated as CaCO3)		7365759	N/A	2021/05/27	Automated Statchk
Mercury in Water by CVAA	CV/AA	7371337	2021/05/26	2021/05/28	Medhat Nasr
Dissolved Metals by ICPMS	ICP/MS	7369874	N/A	2021/05/27	Prempal Bhatti
Ion Balance (% Difference)	CALC	7365778	N/A	2021/05/27	Automated Statchk
Total Ammonia-N	LACH/NH4	7369832	N/A	2021/05/27	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7369818	N/A	2021/05/26	Chandra Nandlal
Organic Nitrogen	CALC	7366501	N/A	2021/05/27	Automated Statchk
pH	AT	7369851	2021/05/25	2021/05/27	Surinder Rai
Phenols (4AAP)	TECH/PHEN	7369143	N/A	2021/05/25	Deonarine Ramnarine
Field Measured Conductivity	PH	0	N/A		Michelle Huth
Orthophosphate	KONE	7369790	N/A	2021/05/26	Avneet Kour Sudan
Sulphate by Automated Colourimetry	KONE	7369785	N/A	2021/05/26	Avneet Kour Sudan
Total Dissolved Solids	BAL	7367666	2021/05/25	2021/05/26	Sandeep Kaur
Total Kjeldahl Nitrogen in Water	SKAL	7369600	2021/05/25	2021/05/25	Massarat Jan
Total Phosphorus (Colourimetric)	LACH/P	7371173	2021/05/26	2021/05/27	Shivani Shivani

BV Labs ID: PQC390 Dup
Sample ID: MW1
Matrix: Water

Collected: 2021/05/19
Shipped:
Received: 2021/05/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chemical Oxygen Demand	SPEC	7369855	N/A	2021/05/26	Nimarta Singh
Total Ammonia-N	LACH/NH4	7369832	N/A	2021/05/27	Amanpreet Sappal

BV Labs ID: PQC391
Sample ID: MW2
Matrix: Water

Collected: 2021/05/19
Shipped:
Received: 2021/05/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7369834	N/A	2021/05/27	Surinder Rai
Chloride by Automated Colourimetry	KONE	7369774	N/A	2021/05/27	Alina Dobreanu
Chemical Oxygen Demand	SPEC	7369855	N/A	2021/05/26	Nimarta Singh
Conductivity	AT	7369846	N/A	2021/05/27	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7371762	N/A	2021/05/26	Nimarta Singh
Field Measured Conductivity	PH	0	N/A		Michelle Huth
Hardness (calculated as CaCO3)		7365759	N/A	2021/05/27	Automated Statchk
Mercury in Water by CVAA	CV/AA	7371337	2021/05/26	2021/05/28	Medhat Nasr
Dissolved Metals by ICPMS	ICP/MS	7369874	N/A	2021/05/27	Prempal Bhatti

BV Labs Job #: C1D8212
Report Date: 2021/05/28

exp Services Inc
Client Project #: THB-00006189-RE
Site Location: GERALDTON LANDFILL
Sampler Initials: EF

TEST SUMMARY

BV Labs ID: PQC391
Sample ID: MW2
Matrix: Water

Collected: 2021/05/19
Shipped:
Received: 2021/05/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Ion Balance (% Difference)	CALC	7365778	N/A	2021/05/27	Automated Statchk
Total Ammonia-N	LACH/NH4	7369832	N/A	2021/05/27	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7370365	N/A	2021/05/27	Chandra Nandlal
Organic Nitrogen	CALC	7366501	N/A	2021/05/27	Automated Statchk
pH	AT	7369851	2021/05/25	2021/05/27	Surinder Rai
Phenols (4AAP)	TECH/PHEN	7369143	N/A	2021/05/25	Deonarine Ramnarine
Field Measured Conductivity	PH	0	N/A		Michelle Huth
Orthophosphate	KONE	7369790	N/A	2021/05/26	Avneet Kour Sudan
Sulphate by Automated Colourimetry	KONE	7369785	N/A	2021/05/26	Avneet Kour Sudan
Total Dissolved Solids	BAL	7367666	2021/05/25	2021/05/26	Sandeep Kaur
Total Kjeldahl Nitrogen in Water	SKAL	7369600	2021/05/25	2021/05/25	Massarat Jan
Total Phosphorus (Colourimetric)	LACH/P	7371173	2021/05/26	2021/05/27	Shivani Shivani

BV Labs ID: PQC391 Dup
Sample ID: MW2
Matrix: Water

Collected: 2021/05/19
Shipped:
Received: 2021/05/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Dissolved Solids	BAL	7367666	2021/05/25	2021/05/26	Sandeep Kaur

BV Labs ID: PQC392
Sample ID: MW3A
Matrix: Water

Collected: 2021/05/18
Shipped:
Received: 2021/05/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7369834	N/A	2021/05/27	Surinder Rai
Chloride by Automated Colourimetry	KONE	7369774	N/A	2021/05/27	Alina Dobreanu
Chemical Oxygen Demand	SPEC	7369120	N/A	2021/05/25	Nimarta Singh
Conductivity	AT	7369846	N/A	2021/05/27	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7371762	N/A	2021/05/26	Nimarta Singh
Field Measured Conductivity	PH	0	N/A		Michelle Huth
Hardness (calculated as CaCO3)		7365759	N/A	2021/05/27	Automated Statchk
Mercury in Water by CVAA	CV/AA	7371337	2021/05/26	2021/05/28	Medhat Nasr
Dissolved Metals by ICPMS	ICP/MS	7369874	N/A	2021/05/27	Prempal Bhatti
Ion Balance (% Difference)	CALC	7365778	N/A	2021/05/27	Automated Statchk
Total Ammonia-N	LACH/NH4	7369232	N/A	2021/05/27	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7369818	N/A	2021/05/26	Chandra Nandlal
Organic Nitrogen	CALC	7366501	N/A	2021/05/27	Automated Statchk
pH	AT	7369851	2021/05/25	2021/05/27	Surinder Rai
Phenols (4AAP)	TECH/PHEN	7369253	N/A	2021/05/25	Deonarine Ramnarine
Field Measured Conductivity	PH	0	N/A		Michelle Huth
Orthophosphate	KONE	7369790	N/A	2021/05/26	Avneet Kour Sudan
Sulphate by Automated Colourimetry	KONE	7369785	N/A	2021/05/26	Avneet Kour Sudan
Total Dissolved Solids	BAL	7367667	2021/05/22	2021/05/26	Shivani Desai

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BV Labs Job #: C1D8212
Report Date: 2021/05/28

exp Services Inc
Client Project #: THB-00006189-RE
Site Location: GERALDTON LANDFILL
Sampler Initials: EF

TEST SUMMARY

BV Labs ID: PQC392
Sample ID: MW3A
Matrix: Water

Collected: 2021/05/18
Shipped:
Received: 2021/05/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Kjeldahl Nitrogen in Water	SKAL	7369282	2021/05/25	2021/05/25	Massarat Jan
Total Phosphorus (Colourimetric)	LACH/P	7371173	2021/05/26	2021/05/27	Shivani Shivani

BV Labs ID: PQC393
Sample ID: MW3B
Matrix: Water

Collected: 2021/05/18
Shipped:
Received: 2021/05/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7369358	N/A	2021/05/26	Surinder Rai
Chloride by Automated Colourimetry	KONE	7369382	N/A	2021/05/27	Alina Dobreanu
Chemical Oxygen Demand	SPEC	7369557	N/A	2021/05/26	Nimarta Singh
Conductivity	AT	7369370	N/A	2021/05/26	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7371762	N/A	2021/05/26	Nimarta Singh
Field Measured Conductivity	PH	0	N/A		Michelle Huth
Hardness (calculated as CaCO3)		7365759	N/A	2021/05/27	Automated Statchk
Mercury in Water by CVAA	CV/AA	7371337	2021/05/26	2021/05/28	Medhat Nasr
Dissolved Metals by ICPMS	ICP/MS	7369874	N/A	2021/05/27	Prempal Bhatti
Ion Balance (% Difference)	CALC	7365778	N/A	2021/05/27	Automated Statchk
Total Ammonia-N	LACH/NH4	7369539	N/A	2021/05/27	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7369794	N/A	2021/05/27	Chandra Nandlal
Organic Nitrogen	CALC	7366501	N/A	2021/05/27	Automated Statchk
pH	AT	7369366	2021/05/25	2021/05/26	Surinder Rai
Phenols (4AAP)	TECH/PHEN	7369143	N/A	2021/05/26	Deonarine Ramnarine
Field Measured Conductivity	PH	0	N/A		Michelle Huth
Orthophosphate	KONE	7369377	N/A	2021/05/26	Avneet Kour Sudan
Sulphate by Automated Colourimetry	KONE	7369386	N/A	2021/05/26	Avneet Kour Sudan
Total Dissolved Solids	BAL	7367666	2021/05/25	2021/05/26	Sandeep Kaur
Total Kjeldahl Nitrogen in Water	SKAL	7369600	2021/05/25	2021/05/25	Massarat Jan
Total Phosphorus (Colourimetric)	LACH/P	7371173	2021/05/26	2021/05/27	Shivani Shivani

BV Labs ID: PQC393 Dup
Sample ID: MW3B
Matrix: Water

Collected: 2021/05/18
Shipped:
Received: 2021/05/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	KONE	7369382	N/A	2021/05/27	Alina Dobreanu
Orthophosphate	KONE	7369377	N/A	2021/05/26	Avneet Kour Sudan
Sulphate by Automated Colourimetry	KONE	7369386	N/A	2021/05/26	Avneet Kour Sudan

BV Labs Job #: C1D8212
Report Date: 2021/05/28

exp Services Inc
Client Project #: THB-00006189-RE
Site Location: GERALDTON LANDFILL
Sampler Initials: EF

TEST SUMMARY

BV Labs ID: PQC394
Sample ID: MW4
Matrix: Water

Collected: 2021/05/18
Shipped:
Received: 2021/05/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7369834	N/A	2021/05/27	Surinder Rai
Chloride by Automated Colourimetry	KONE	7369774	N/A	2021/05/27	Alina Dobreanu
Chemical Oxygen Demand	SPEC	7369557	N/A	2021/05/26	Nimarta Singh
Conductivity	AT	7369846	N/A	2021/05/27	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7371762	N/A	2021/05/26	Nimarta Singh
Field Measured Conductivity	PH	0	N/A		Michelle Huth
Hardness (calculated as CaCO3)		7365759	N/A	2021/05/27	Automated Statchk
Mercury in Water by CVAA	CV/AA	7371337	2021/05/26	2021/05/28	Medhat Nasr
Dissolved Metals by ICPMS	ICP/MS	7369874	N/A	2021/05/27	Prempal Bhatti
Ion Balance (% Difference)	CALC	7365778	N/A	2021/05/27	Automated Statchk
Total Ammonia-N	LACH/NH4	7369539	N/A	2021/05/27	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7369818	N/A	2021/05/26	Chandra Nandlal
Organic Nitrogen	CALC	7366501	N/A	2021/05/27	Automated Statchk
pH	AT	7369851	2021/05/25	2021/05/27	Surinder Rai
Phenols (4AAP)	TECH/PHEN	7369143	N/A	2021/05/25	Deonarine Ramnarine
Field Measured Conductivity	PH	0	N/A		Michelle Huth
Orthophosphate	KONE	7369790	N/A	2021/05/26	Avneet Kour Sudan
Sulphate by Automated Colourimetry	KONE	7369785	N/A	2021/05/26	Avneet Kour Sudan
Total Dissolved Solids	BAL	7367666	2021/05/25	2021/05/26	Sandeep Kaur
Total Kjeldahl Nitrogen in Water	SKAL	7369282	2021/05/25	2021/05/25	Massarat Jan
Total Phosphorus (Colourimetric)	LACH/P	7371717	2021/05/26	2021/05/27	Shivani Shivani

BV Labs ID: PQC394 Dup
Sample ID: MW4
Matrix: Water

Collected: 2021/05/18
Shipped:
Received: 2021/05/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chemical Oxygen Demand	SPEC	7369557	N/A	2021/05/26	Nimarta Singh
Total Ammonia-N	LACH/NH4	7369539	N/A	2021/05/27	Amanpreet Sappal

BV Labs ID: PQC395
Sample ID: MW5
Matrix: Water

Collected: 2021/05/18
Shipped:
Received: 2021/05/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7369834	N/A	2021/05/27	Surinder Rai
Chloride by Automated Colourimetry	KONE	7369774	N/A	2021/05/27	Alina Dobreanu
Chemical Oxygen Demand	SPEC	7369557	N/A	2021/05/26	Nimarta Singh
Conductivity	AT	7369846	N/A	2021/05/27	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7371762	N/A	2021/05/26	Nimarta Singh
Field Measured Conductivity	PH	0	N/A		Michelle Huth
Hardness (calculated as CaCO3)		7365759	N/A	2021/05/27	Automated Statchk
Mercury in Water by CVAA	CV/AA	7371349	2021/05/26	2021/05/28	Medhat Nasr
Dissolved Metals by ICPMS	ICP/MS	7369874	N/A	2021/05/27	Prempal Bhatti

TEST SUMMARY

BV Labs ID: PQC395
Sample ID: MW5
Matrix: Water

Collected: 2021/05/18
Shipped:
Received: 2021/05/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Ion Balance (% Difference)	CALC	7365778	N/A	2021/05/27	Automated Statchk
Total Ammonia-N	LACH/NH4	7369539	N/A	2021/05/27	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7369818	N/A	2021/05/26	Chandra Nandlal
Organic Nitrogen	CALC	7366501	N/A	2021/05/27	Automated Statchk
pH	AT	7369851	2021/05/25	2021/05/27	Surinder Rai
Phenols (4AAP)	TECH/PHEN	7369253	N/A	2021/05/25	Deonarine Ramnarine
Field Measured Conductivity	PH	0	N/A		Michelle Huth
Orthophosphate	KONE	7369790	N/A	2021/05/26	Avneet Kour Sudan
Sulphate by Automated Colourimetry	KONE	7369785	N/A	2021/05/26	Avneet Kour Sudan
Total Dissolved Solids	BAL	7370508	2021/05/25	2021/05/26	Sandeep Kaur
Total Kjeldahl Nitrogen in Water	SKAL	7369600	2021/05/25	2021/05/25	Massarat Jan
Total Phosphorus (Colourimetric)	LACH/P	7371173	2021/05/26	2021/05/27	Shivani Shivani

BV Labs ID: PQC396
Sample ID: MW6
Matrix: Water

Collected: 2021/05/19
Shipped:
Received: 2021/05/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7369834	N/A	2021/05/27	Surinder Rai
Chloride by Automated Colourimetry	KONE	7369774	N/A	2021/05/27	Alina Dobreanu
Chemical Oxygen Demand	SPEC	7369557	N/A	2021/05/26	Nimarta Singh
Conductivity	AT	7369846	N/A	2021/05/27	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7372408	N/A	2021/05/27	Nimarta Singh
Field Measured Conductivity	PH	0	N/A		Michelle Huth
Hardness (calculated as CaCO3)		7365759	N/A	2021/05/27	Automated Statchk
Mercury in Water by CVAA	CV/AA	7371337	2021/05/26	2021/05/28	Medhat Nasr
Dissolved Metals by ICPMS	ICP/MS	7369874	N/A	2021/05/27	Prempal Bhatti
Ion Balance (% Difference)	CALC	7365778	N/A	2021/05/27	Automated Statchk
Total Ammonia-N	LACH/NH4	7369539	N/A	2021/05/27	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7369794	N/A	2021/05/27	Chandra Nandlal
Organic Nitrogen	CALC	7366501	N/A	2021/05/27	Automated Statchk
pH	AT	7369851	2021/05/25	2021/05/27	Surinder Rai
Phenols (4AAP)	TECH/PHEN	7369253	N/A	2021/05/25	Deonarine Ramnarine
Field Measured Conductivity	PH	0	N/A		Michelle Huth
Orthophosphate	KONE	7369790	N/A	2021/05/26	Avneet Kour Sudan
Sulphate by Automated Colourimetry	KONE	7369785	N/A	2021/05/26	Avneet Kour Sudan
Total Dissolved Solids	BAL	7367666	2021/05/25	2021/05/26	Sandeep Kaur
Total Kjeldahl Nitrogen in Water	SKAL	7369600	2021/05/25	2021/05/25	Massarat Jan
Total Phosphorus (Colourimetric)	LACH/P	7371173	2021/05/26	2021/05/27	Shivani Shivani

TEST SUMMARY

BV Labs ID: PQC396 Dup
Sample ID: MW6
Matrix: Water

Collected: 2021/05/19
Shipped:
Received: 2021/05/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7369794	N/A	2021/05/27	Chandra Nandlal

BV Labs ID: PQC397
Sample ID: MW7
Matrix: Water

Collected: 2021/05/19
Shipped:
Received: 2021/05/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7369834	N/A	2021/05/27	Surinder Rai
Chloride by Automated Colourimetry	KONE	7369774	N/A	2021/05/27	Alina Dobreanu
Chemical Oxygen Demand	SPEC	7369557	N/A	2021/05/26	Nimarta Singh
Conductivity	AT	7369846	N/A	2021/05/27	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7372408	N/A	2021/05/27	Nimarta Singh
Field Measured Conductivity	PH	0	N/A		Michelle Huth
Hardness (calculated as CaCO3)		7365759	N/A	2021/05/27	Automated Statchk
Mercury in Water by CVAA	CV/AA	7371337	2021/05/26	2021/05/28	Medhat Nasr
Dissolved Metals by ICPMS	ICP/MS	7369874	N/A	2021/05/27	Prempal Bhatti
Ion Balance (% Difference)	CALC	7365778	N/A	2021/05/27	Automated Statchk
Total Ammonia-N	LACH/NH4	7369539	N/A	2021/05/27	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7369818	N/A	2021/05/26	Chandra Nandlal
Organic Nitrogen	CALC	7366501	N/A	2021/05/27	Automated Statchk
pH	AT	7369851	2021/05/25	2021/05/27	Surinder Rai
Phenols (4AAP)	TECH/PHEN	7369253	N/A	2021/05/25	Deonarine Ramnarine
Field Measured Conductivity	PH	0	N/A		Michelle Huth
Orthophosphate	KONE	7369790	N/A	2021/05/26	Avneet Kour Sudan
Sulphate by Automated Colourimetry	KONE	7369785	N/A	2021/05/26	Avneet Kour Sudan
Total Dissolved Solids	BAL	7367667	2021/05/22	2021/05/26	Shivani Desai
Total Kjeldahl Nitrogen in Water	SKAL	7369600	2021/05/25	2021/05/25	Massarat Jan
Total Phosphorus (Colourimetric)	LACH/P	7371717	2021/05/26	2021/05/27	Shivani Shivani

BV Labs ID: PQC398
Sample ID: MW8
Matrix: Water

Collected: 2021/05/18
Shipped:
Received: 2021/05/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7369863	N/A	2021/05/27	Surinder Rai
Chloride by Automated Colourimetry	KONE	7369774	N/A	2021/05/27	Alina Dobreanu
Chemical Oxygen Demand	SPEC	7369557	N/A	2021/05/26	Nimarta Singh
Conductivity	AT	7369852	N/A	2021/05/27	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7371762	N/A	2021/05/26	Nimarta Singh
Field Measured Conductivity	PH	0	N/A		Michelle Huth
Hardness (calculated as CaCO3)		7365759	N/A	2021/05/27	Automated Statchk
Mercury in Water by CVAA	CV/AA	7371349	2021/05/26	2021/05/28	Medhat Nasr
Dissolved Metals by ICPMS	ICP/MS	7369874	N/A	2021/05/27	Prempal Bhatti
Ion Balance (% Difference)	CALC	7365778	N/A	2021/05/27	Automated Statchk

BV Labs Job #: C1D8212
Report Date: 2021/05/28

exp Services Inc
Client Project #: THB-00006189-RE
Site Location: GERALDTON LANDFILL
Sampler Initials: EF

TEST SUMMARY

BV Labs ID: PQC398
Sample ID: MW8
Matrix: Water

Collected: 2021/05/18
Shipped:
Received: 2021/05/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Ammonia-N	LACH/NH4	7369539	N/A	2021/05/27	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7369818	N/A	2021/05/26	Chandra Nandlal
Organic Nitrogen	CALC	7366501	N/A	2021/05/27	Automated Statchk
pH	AT	7369858	2021/05/25	2021/05/27	Surinder Rai
Phenols (4AAP)	TECH/PHEN	7369253	N/A	2021/05/25	Deonarine Ramnarine
Field Measured Conductivity	PH	0	N/A		Michelle Huth
Orthophosphate	KONE	7369790	N/A	2021/05/26	Avneet Kour Sudan
Sulphate by Automated Colourimetry	KONE	7369785	N/A	2021/05/26	Avneet Kour Sudan
Total Dissolved Solids	BAL	7367667	2021/05/22	2021/05/26	Shivani Desai
Total Kjeldahl Nitrogen in Water	SKAL	7369600	2021/05/25	2021/05/25	Massarat Jan
Total Phosphorus (Colourimetric)	LACH/P	7371717	2021/05/26	2021/05/27	Shivani Shivani

BV Labs ID: PQC398 Dup
Sample ID: MW8
Matrix: Water

Collected: 2021/05/18
Shipped:
Received: 2021/05/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7369863	N/A	2021/05/27	Surinder Rai
Conductivity	AT	7369852	N/A	2021/05/27	Surinder Rai
pH	AT	7369858	2021/05/25	2021/05/27	Surinder Rai

BV Labs ID: PQC399
Sample ID: MW9
Matrix: Water

Collected: 2021/05/18
Shipped:
Received: 2021/05/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7369358	N/A	2021/05/26	Surinder Rai
Chloride by Automated Colourimetry	KONE	7369774	N/A	2021/05/27	Alina Dobreanu
Chemical Oxygen Demand	SPEC	7369557	N/A	2021/05/26	Nimarta Singh
Conductivity	AT	7369370	N/A	2021/05/26	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7371762	N/A	2021/05/27	Nimarta Singh
Field Measured Conductivity	PH	0	N/A		Michelle Huth
Hardness (calculated as CaCO3)		7365759	N/A	2021/05/27	Automated Statchk
Mercury in Water by CVAA	CV/AA	7371337	2021/05/26	2021/05/28	Medhat Nasr
Dissolved Metals by ICPMS	ICP/MS	7369850	N/A	2021/05/26	Prempal Bhatti
Ion Balance (% Difference)	CALC	7365778	N/A	2021/05/27	Automated Statchk
Total Ammonia-N	LACH/NH4	7369539	N/A	2021/05/27	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7369794	N/A	2021/05/27	Chandra Nandlal
Organic Nitrogen	CALC	7366501	N/A	2021/05/27	Automated Statchk
pH	AT	7369366	2021/05/25	2021/05/26	Surinder Rai
Phenols (4AAP)	TECH/PHEN	7369253	N/A	2021/05/25	Deonarine Ramnarine
Field Measured Conductivity	PH	0	N/A		Michelle Huth
Orthophosphate	KONE	7369790	N/A	2021/05/26	Avneet Kour Sudan
Sulphate by Automated Colourimetry	KONE	7369785	N/A	2021/05/26	Avneet Kour Sudan

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BV Labs Job #: C1D8212
Report Date: 2021/05/28

exp Services Inc
Client Project #: THB-00006189-RE
Site Location: GERALDTON LANDFILL
Sampler Initials: EF

TEST SUMMARY

BV Labs ID: PQC399
Sample ID: MW9
Matrix: Water

Collected: 2021/05/18
Shipped:
Received: 2021/05/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Dissolved Solids	BAL	7367666	2021/05/25	2021/05/26	Sandeep Kaur
Total Kjeldahl Nitrogen in Water	SKAL	7369600	2021/05/25	2021/05/25	Massarat Jan
Total Phosphorus (Colourimetric)	LACH/P	7371173	2021/05/26	2021/05/27	Shivani Shivani

BV Labs ID: PQC434
Sample ID: MW10A
Matrix: Water

Collected: 2021/05/18
Shipped:
Received: 2021/05/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7369834	N/A	2021/05/27	Surinder Rai
Chloride by Automated Colourimetry	KONE	7369774	N/A	2021/05/27	Alina Dobreanu
Chemical Oxygen Demand	SPEC	7369557	N/A	2021/05/26	Nimarta Singh
Conductivity	AT	7369846	N/A	2021/05/27	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7372408	N/A	2021/05/27	Nimarta Singh
Field Measured Conductivity	PH	0	N/A		Michelle Huth
Hardness (calculated as CaCO3)		7365759	N/A	2021/05/27	Automated Statchk
Mercury in Water by CVAA	CV/AA	7371337	2021/05/26	2021/05/28	Medhat Nasr
Dissolved Metals by ICPMS	ICP/MS	7369850	N/A	2021/05/26	Prempal Bhatti
Ion Balance (% Difference)	CALC	7365778	N/A	2021/05/27	Automated Statchk
Total Ammonia-N	LACH/NH4	7369539	N/A	2021/05/27	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7369818	N/A	2021/05/26	Chandra Nandlal
Organic Nitrogen	CALC	7366501	N/A	2021/05/27	Automated Statchk
pH	AT	7369851	2021/05/25	2021/05/27	Surinder Rai
Phenols (4AAP)	TECH/PHEN	7369477	N/A	2021/05/26	Deonarine Ramnarine
Field Measured Conductivity	PH	0	N/A		Michelle Huth
Orthophosphate	KONE	7369790	N/A	2021/05/26	Avneet Kour Sudan
Sulphate by Automated Colourimetry	KONE	7369785	N/A	2021/05/26	Avneet Kour Sudan
Total Dissolved Solids	BAL	7367666	2021/05/25	2021/05/26	Sandeep Kaur
Total Kjeldahl Nitrogen in Water	SKAL	7369600	2021/05/25	2021/05/25	Massarat Jan
Total Phosphorus (Colourimetric)	LACH/P	7371173	2021/05/26	2021/05/27	Shivani Shivani

BV Labs ID: PQC435
Sample ID: MW10B
Matrix: Water

Collected: 2021/05/18
Shipped:
Received: 2021/05/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7369358	N/A	2021/05/26	Surinder Rai
Chloride by Automated Colourimetry	KONE	7369774	N/A	2021/05/27	Alina Dobreanu
Chemical Oxygen Demand	SPEC	7369557	N/A	2021/05/26	Nimarta Singh
Conductivity	AT	7369370	N/A	2021/05/26	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7372408	N/A	2021/05/27	Nimarta Singh
Field Measured Conductivity	PH	0	N/A		Michelle Huth
Hardness (calculated as CaCO3)		7365759	N/A	2021/05/27	Automated Statchk
Mercury in Water by CVAA	CV/AA	7371349	2021/05/26	2021/05/28	Medhat Nasr

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BV Labs Job #: C1D8212
Report Date: 2021/05/28

exp Services Inc
Client Project #: THB-00006189-RE
Site Location: GERALDTON LANDFILL
Sampler Initials: EF

TEST SUMMARY

BV Labs ID: PQC435
Sample ID: MW10B
Matrix: Water

Collected: 2021/05/18
Shipped:
Received: 2021/05/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Metals by ICPMS	ICP/MS	7369850	N/A	2021/05/26	Prempal Bhatti
Ion Balance (% Difference)	CALC	7365778	N/A	2021/05/27	Automated Statchk
Total Ammonia-N	LACH/NH4	7369539	N/A	2021/05/27	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7369794	N/A	2021/05/27	Chandra Nandlal
Organic Nitrogen	CALC	7366501	N/A	2021/05/27	Automated Statchk
pH	AT	7369366	2021/05/25	2021/05/26	Surinder Rai
Phenols (4AAP)	TECH/PHEN	7369477	N/A	2021/05/26	Deonarine Ramnarine
Field Measured Conductivity	PH	0	N/A		Michelle Huth
Orthophosphate	KONE	7369790	N/A	2021/05/26	Avneet Kour Sudan
Sulphate by Automated Colourimetry	KONE	7369785	N/A	2021/05/26	Avneet Kour Sudan
Total Dissolved Solids	BAL	7367666	2021/05/25	2021/05/26	Sandeep Kaur
Total Kjeldahl Nitrogen in Water	SKAL	7369600	2021/05/25	2021/05/25	Massarat Jan
Total Phosphorus (Colourimetric)	LACH/P	7371717	2021/05/26	2021/05/27	Shivani Shivani

BV Labs ID: PQC436
Sample ID: MW11
Matrix: Water

Collected: 2021/05/19
Shipped:
Received: 2021/05/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7369834	N/A	2021/05/27	Surinder Rai
Chloride by Automated Colourimetry	KONE	7369774	N/A	2021/05/27	Alina Dobreanu
Chemical Oxygen Demand	SPEC	7369557	N/A	2021/05/26	Nimarta Singh
Conductivity	AT	7369846	N/A	2021/05/27	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7372408	N/A	2021/05/27	Nimarta Singh
Field Measured Conductivity	PH	0	N/A		Michelle Huth
Hardness (calculated as CaCO3)		7365759	N/A	2021/05/27	Automated Statchk
Mercury in Water by CVAA	CV/AA	7373612	2021/05/27	2021/05/28	Medhat Nasr
Dissolved Metals by ICPMS	ICP/MS	7369850	N/A	2021/05/26	Prempal Bhatti
Ion Balance (% Difference)	CALC	7365778	N/A	2021/05/27	Automated Statchk
Total Ammonia-N	LACH/NH4	7369539	N/A	2021/05/27	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7369818	N/A	2021/05/26	Chandra Nandlal
Organic Nitrogen	CALC	7366501	N/A	2021/05/27	Automated Statchk
pH	AT	7369851	2021/05/25	2021/05/27	Surinder Rai
Phenols (4AAP)	TECH/PHEN	7369682	N/A	2021/05/26	Deonarine Ramnarine
Field Measured Conductivity	PH	0	N/A		Michelle Huth
Orthophosphate	KONE	7369790	N/A	2021/05/26	Avneet Kour Sudan
Sulphate by Automated Colourimetry	KONE	7369785	N/A	2021/05/26	Avneet Kour Sudan
Total Dissolved Solids	BAL	7372880	2021/05/26	2021/05/27	Shivani Desai
Total Kjeldahl Nitrogen in Water	SKAL	7369600	2021/05/25	2021/05/25	Massarat Jan
Total Phosphorus (Colourimetric)	LACH/P	7371173	2021/05/26	2021/05/27	Shivani Shivani

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BV Labs Job #: C1D8212
Report Date: 2021/05/28

exp Services Inc
Client Project #: THB-00006189-RE
Site Location: GERALDTON LANDFILL
Sampler Initials: EF

TEST SUMMARY

BV Labs ID: PQC437
Sample ID: MW12
Matrix: Water

Collected: 2021/05/18
Shipped:
Received: 2021/05/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7369358	N/A	2021/05/26	Surinder Rai
Chloride by Automated Colourimetry	KONE	7369774	N/A	2021/05/27	Alina Dobreanu
Chemical Oxygen Demand	SPEC	7369557	N/A	2021/05/26	Nimarta Singh
Conductivity	AT	7369370	N/A	2021/05/26	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7372408	N/A	2021/05/27	Nimarta Singh
Field Measured Conductivity	PH	0	N/A		Michelle Huth
Hardness (calculated as CaCO3)		7365759	N/A	2021/05/27	Automated Statchk
Mercury in Water by CVAA	CV/AA	7371349	2021/05/26	2021/05/28	Medhat Nasr
Dissolved Metals by ICPMS	ICP/MS	7369850	N/A	2021/05/26	Prempal Bhatti
Ion Balance (% Difference)	CALC	7365778	N/A	2021/05/27	Automated Statchk
Total Ammonia-N	LACH/NH4	7369539	N/A	2021/05/27	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7369794	N/A	2021/05/27	Chandra Nandlal
Organic Nitrogen	CALC	7366501	N/A	2021/05/27	Automated Statchk
pH	AT	7369366	2021/05/25	2021/05/26	Surinder Rai
Phenols (4AAP)	TECH/PHEN	7369682	N/A	2021/05/26	Deonarine Ramnarine
Field Measured Conductivity	PH	0	N/A		Michelle Huth
Orthophosphate	KONE	7369790	N/A	2021/05/26	Avneet Kour Sudan
Sulphate by Automated Colourimetry	KONE	7369785	N/A	2021/05/26	Avneet Kour Sudan
Total Dissolved Solids	BAL	7367666	2021/05/25	2021/05/26	Sandeep Kaur
Total Kjeldahl Nitrogen in Water	SKAL	7369600	2021/05/25	2021/05/25	Massarat Jan
Total Phosphorus (Colourimetric)	LACH/P	7371173	2021/05/26	2021/05/27	Shivani Shivani

BV Labs ID: PQC442
Sample ID: SW1
Matrix: Water

Collected: 2021/05/18
Shipped:
Received: 2021/05/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Aluminum (0.2 u, clay free)	ICP/MS	7369891	N/A	2021/05/27	Arefa Dabhad
Alkalinity	AT	7369863	N/A	2021/05/27	Surinder Rai
Biochemical Oxygen Demand (BOD)	DO	7367405	2021/05/22	2021/05/27	Nusrat Naz
Chloride by Automated Colourimetry	KONE	7369546	N/A	2021/05/26	Alina Dobreanu
Chemical Oxygen Demand	SPEC	7369557	N/A	2021/05/26	Nimarta Singh
Conductivity	AT	7369852	N/A	2021/05/27	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7372408	N/A	2021/05/27	Nimarta Singh
Hardness (calculated as CaCO3)		7365759	N/A	2021/05/28	Automated Statchk
Mercury in Water by CVAA	CV/AA	7371349	2021/05/26	2021/05/28	Medhat Nasr
Total Metals Analysis by ICPMS	ICP/MS	7373388	N/A	2021/05/27	Prempal Bhatti
Total Ammonia-N	LACH/NH4	7369539	N/A	2021/05/27	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7369818	N/A	2021/05/26	Chandra Nandlal
Organic Nitrogen	CALC	7366501	N/A	2021/05/27	Automated Statchk
pH	AT	7369858	2021/05/25	2021/05/27	Surinder Rai
Phenols (4AAP)	TECH/PHEN	7369253	N/A	2021/05/25	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	7369538	N/A	2021/05/26	Avneet Kour Sudan
Total Dissolved Solids	BAL	7367666	2021/05/25	2021/05/26	Sandeep Kaur

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BV Labs Job #: C1D8212
Report Date: 2021/05/28

exp Services Inc
Client Project #: THB-00006189-RE
Site Location: GERALDTON LANDFILL
Sampler Initials: EF

TEST SUMMARY

BV Labs ID: PQC442
Sample ID: SW1
Matrix: Water

Collected: 2021/05/18
Shipped:
Received: 2021/05/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Kjeldahl Nitrogen in Water	SKAL	7369600	2021/05/25	2021/05/25	Massarat Jan
Total Phosphorus (Colourimetric)	LACH/P	7369536	2021/05/25	2021/05/26	Shivani Shivani
Low Level Total Suspended Solids	BAL	7367787	2021/05/25	2021/05/26	Shaneil Hall

BV Labs ID: PQC443
Sample ID: SW2
Matrix: Water

Collected: 2021/05/18
Shipped:
Received: 2021/05/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Aluminum (0.2 u, clay free)	ICP/MS	7369891	N/A	2021/05/27	Arefa Dabhad
Alkalinity	AT	7369834	N/A	2021/05/27	Surinder Rai
Biochemical Oxygen Demand (BOD)	DO	7367405	2021/05/22	2021/05/27	Nusrat Naz
Chloride by Automated Colourimetry	KONE	7369546	N/A	2021/05/26	Alina Dobreanu
Chemical Oxygen Demand	SPEC	7369855	N/A	2021/05/26	Nimarta Singh
Conductivity	AT	7369846	N/A	2021/05/27	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7372408	N/A	2021/05/27	Nimarta Singh
Hardness (calculated as CaCO3)		7365759	N/A	2021/05/28	Automated Statchk
Mercury in Water by CVAA	CV/AA	7369482	2021/05/25	2021/05/26	Meghaben Patel
Total Metals Analysis by ICPMS	ICP/MS	7373388	N/A	2021/05/27	Prempal Bhatti
Total Ammonia-N	LACH/NH4	7369832	N/A	2021/05/27	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7369818	N/A	2021/05/26	Chandra Nandlal
Organic Nitrogen	CALC	7366501	N/A	2021/05/27	Automated Statchk
pH	AT	7369851	2021/05/25	2021/05/27	Surinder Rai
Phenols (4AAP)	TECH/PHEN	7369253	N/A	2021/05/25	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	7369538	N/A	2021/05/26	Avneet Kour Sudan
Total Dissolved Solids	BAL	7367666	2021/05/25	2021/05/26	Sandeep Kaur
Total Kjeldahl Nitrogen in Water	SKAL	7369600	2021/05/25	2021/05/25	Massarat Jan
Total Phosphorus (Colourimetric)	LACH/P	7373408	2021/05/27	2021/05/27	Shivani Shivani
Low Level Total Suspended Solids	BAL	7367787	2021/05/25	2021/05/26	Shaneil Hall

BV Labs ID: PQC444
Sample ID: SW3
Matrix: Water

Collected: 2021/05/18
Shipped:
Received: 2021/05/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Aluminum (0.2 u, clay free)	ICP/MS	7369891	N/A	2021/05/27	Arefa Dabhad
Alkalinity	AT	7369834	N/A	2021/05/27	Surinder Rai
Biochemical Oxygen Demand (BOD)	DO	7367405	2021/05/22	2021/05/27	Nusrat Naz
Chloride by Automated Colourimetry	KONE	7369546	N/A	2021/05/26	Alina Dobreanu
Chemical Oxygen Demand	SPEC	7369855	N/A	2021/05/26	Nimarta Singh
Conductivity	AT	7369846	N/A	2021/05/27	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7372408	N/A	2021/05/27	Nimarta Singh
Hardness (calculated as CaCO3)		7365759	N/A	2021/05/28	Automated Statchk
Mercury in Water by CVAA	CV/AA	7369482	2021/05/25	2021/05/26	Meghaben Patel

BV Labs Job #: C1D8212
Report Date: 2021/05/28

exp Services Inc
Client Project #: THB-00006189-RE
Site Location: GERALDTON LANDFILL
Sampler Initials: EF

TEST SUMMARY

BV Labs ID: PQC444
Sample ID: SW3
Matrix: Water

Collected: 2021/05/18
Shipped:
Received: 2021/05/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Metals Analysis by ICPMS	ICP/MS	7373388	N/A	2021/05/27	Prempal Bhatti
Total Ammonia-N	LACH/NH4	7369832	N/A	2021/05/27	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7369794	N/A	2021/05/27	Chandra Nandlal
Organic Nitrogen	CALC	7366501	N/A	2021/05/27	Automated Statchk
pH	AT	7369851	2021/05/25	2021/05/27	Surinder Rai
Phenols (4AAP)	TECH/PHEN	7369253	N/A	2021/05/25	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	7369538	N/A	2021/05/26	Avneet Kour Sudan
Total Dissolved Solids	BAL	7367666	2021/05/25	2021/05/26	Sandeep Kaur
Total Kjeldahl Nitrogen in Water	SKAL	7369600	2021/05/25	2021/05/25	Massarat Jan
Total Phosphorus (Colourimetric)	LACH/P	7373408	2021/05/27	2021/05/27	Shivani Shivani
Low Level Total Suspended Solids	BAL	7367787	2021/05/25	2021/05/26	Shaneil Hall

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GENERAL COMMENTS

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

Package 1	6.7°C
Package 2	6.3°C
Package 3	6.0°C

Sample PQC393 [MW3B] : TKN < Ammonia: Both values fall within the method uncertainty for duplicates and are likely equivalent.

Sample PQC437 [MW12] : TKN < Ammonia: Both values fall within the method uncertainty for duplicates and are likely equivalent.

Results relate only to the items tested.

BV Labs Job #: C1D8212
Report Date: 2021/05/28

QUALITY ASSURANCE REPORT

exp Services Inc
Client Project #: THB-00006189-RE
Site Location: GERALDTON LANDFILL
Sampler Initials: EF

			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
7367405	Total BOD	2021/05/27					<2	mg/L	NC	30	99	80 - 120
7367666	Total Dissolved Solids	2021/05/26					<10	mg/L	4.2	25	102	90 - 110
7367667	Total Dissolved Solids	2021/05/26					<10	mg/L	0	25	100	90 - 110
7367787	Total Suspended Solids	2021/05/26					<1	mg/L	12	25	95	85 - 115
7369120	Total Chemical Oxygen Demand (COD)	2021/05/25	103	80 - 120	105	80 - 120	<4.0	mg/L	NC	20		
7369143	Phenols-4AAP	2021/05/25	104	80 - 120	102	80 - 120	<0.0010	mg/L	NC	20		
7369232	Total Ammonia-N	2021/05/27	91	75 - 125	100	80 - 120	<0.050	mg/L	0.68	20		
7369253	Phenols-4AAP	2021/05/25	101	80 - 120	102	80 - 120	<0.0010	mg/L	NC	20		
7369282	Total Kjeldahl Nitrogen (TKN)	2021/05/25	NC	80 - 120	101	80 - 120	<0.10	mg/L	1.5	20	97	80 - 120
7369358	Alkalinity (Total as CaCO3)	2021/05/26			95	85 - 115	<1.0	mg/L	2.1	20		
7369366	pH	2021/05/26			101	98 - 103			0.45	N/A		
7369370	Conductivity	2021/05/26			102	85 - 115	<1.0	umho/cm	0	25		
7369377	Orthophosphate (P)	2021/05/26	130 (1)	75 - 125	101	80 - 120	<0.010	mg/L	NC	25		
7369382	Dissolved Chloride (Cl-)	2021/05/27	NC	80 - 120	103	80 - 120	<1.0	mg/L	1.5	20		
7369386	Dissolved Sulphate (SO4)	2021/05/26	86	75 - 125	103	80 - 120	<1.0	mg/L	1.4	20		
7369477	Phenols-4AAP	2021/05/26	103	80 - 120	99	80 - 120	<0.0010	mg/L	3.2	20		
7369482	Mercury (Hg)	2021/05/26	97	75 - 125	96	80 - 120	<0.00010	mg/L	NC	20		
7369536	Total Phosphorus	2021/05/26	111	80 - 120	94	80 - 120	<0.004	mg/L	0.22	20	96	80 - 120
7369538	Dissolved Sulphate (SO4)	2021/05/26	NC	75 - 125	103	80 - 120	<1.0	mg/L	5.9	20		
7369539	Total Ammonia-N	2021/05/27	100	75 - 125	100	80 - 120	<0.050	mg/L	NC	20		
7369546	Dissolved Chloride (Cl-)	2021/05/26	NC	80 - 120	100	80 - 120	<1.0	mg/L	0.61	20		
7369557	Total Chemical Oxygen Demand (COD)	2021/05/26	96	80 - 120	103	80 - 120	<4.0	mg/L	0	20		
7369600	Total Kjeldahl Nitrogen (TKN)	2021/05/25	110	80 - 120	101	80 - 120	<0.10	mg/L	0	20	99	80 - 120
7369682	Phenols-4AAP	2021/05/26	104	80 - 120	100	80 - 120	<0.0010	mg/L	NC	20		
7369774	Dissolved Chloride (Cl-)	2021/05/27	NC	80 - 120	104	80 - 120	<1.0	mg/L	0.078	20		
7369785	Dissolved Sulphate (SO4)	2021/05/26	NC	75 - 125	104	80 - 120	<1.0	mg/L	0.13	20		
7369790	Orthophosphate (P)	2021/05/26	139 (1)	75 - 125	101	80 - 120	<0.010	mg/L	NC	25		
7369794	Nitrate (N)	2021/05/27	109	80 - 120	104	80 - 120	<0.10	mg/L	NC	20		
7369794	Nitrite (N)	2021/05/27	112	80 - 120	107	80 - 120	<0.010	mg/L	NC	20		
7369818	Nitrate (N)	2021/05/26	113	80 - 120	105	80 - 120	<0.10	mg/L	1.8	20		

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
7369818	Nitrite (N)	2021/05/26	100	80 - 120	107	80 - 120	<0.010	mg/L	NC	20		
7369832	Total Ammonia-N	2021/05/27	97	75 - 125	100	80 - 120	<0.050	mg/L	0.13	20		
7369834	Alkalinity (Total as CaCO3)	2021/05/27			94	85 - 115	<1.0	mg/L	1.2	20		
7369846	Conductivity	2021/05/27			101	85 - 115	<1.0	umho/cm	0.59	25		
7369850	Dissolved Aluminum (Al)	2021/05/26	104	80 - 120	102	80 - 120	<4.9	ug/L				
7369850	Dissolved Antimony (Sb)	2021/05/26	108	80 - 120	104	80 - 120	<0.50	ug/L				
7369850	Dissolved Arsenic (As)	2021/05/26	105	80 - 120	103	80 - 120	<1.0	ug/L	NC	20		
7369850	Dissolved Barium (Ba)	2021/05/26	103	80 - 120	101	80 - 120	<2.0	ug/L	0.061	20		
7369850	Dissolved Beryllium (Be)	2021/05/26	107	80 - 120	104	80 - 120	<0.40	ug/L				
7369850	Dissolved Bismuth (Bi)	2021/05/26	105	80 - 120	103	80 - 120	<1.0	ug/L				
7369850	Dissolved Boron (B)	2021/05/26	104	80 - 120	100	80 - 120	<10	ug/L	NC	20		
7369850	Dissolved Cadmium (Cd)	2021/05/26	104	80 - 120	102	80 - 120	<0.090	ug/L	NC	20		
7369850	Dissolved Calcium (Ca)	2021/05/26	NC	80 - 120	100	80 - 120	<200	ug/L	0.79	20		
7369850	Dissolved Chromium (Cr)	2021/05/26	102	80 - 120	99	80 - 120	<5.0	ug/L	NC	20		
7369850	Dissolved Cobalt (Co)	2021/05/26	106	80 - 120	105	80 - 120	<0.50	ug/L				
7369850	Dissolved Copper (Cu)	2021/05/26	105	80 - 120	102	80 - 120	<0.90	ug/L	4.4	20		
7369850	Dissolved Iron (Fe)	2021/05/26	104	80 - 120	101	80 - 120	<100	ug/L	NC	20		
7369850	Dissolved Lead (Pb)	2021/05/26	106	80 - 120	104	80 - 120	<0.50	ug/L	NC	20		
7369850	Dissolved Magnesium (Mg)	2021/05/26	107	80 - 120	103	80 - 120	<50	ug/L	2.8	20		
7369850	Dissolved Manganese (Mn)	2021/05/26	103	80 - 120	101	80 - 120	<2.0	ug/L	NC	20		
7369850	Dissolved Molybdenum (Mo)	2021/05/26	111	80 - 120	106	80 - 120	<0.50	ug/L				
7369850	Dissolved Nickel (Ni)	2021/05/26	102	80 - 120	101	80 - 120	<1.0	ug/L				
7369850	Dissolved Potassium (K)	2021/05/26	106	80 - 120	102	80 - 120	<200	ug/L	1.6	20		
7369850	Dissolved Selenium (Se)	2021/05/26	104	80 - 120	103	80 - 120	<2.0	ug/L				
7369850	Dissolved Silicon (Si)	2021/05/26	102	80 - 120	100	80 - 120	<50	ug/L				
7369850	Dissolved Sodium (Na)	2021/05/26	107	80 - 120	105	80 - 120	<100	ug/L	0.48	20		
7369850	Dissolved Strontium (Sr)	2021/05/26	101	80 - 120	99	80 - 120	<1.0	ug/L				
7369850	Dissolved Thallium (Tl)	2021/05/26	105	80 - 120	104	80 - 120	<0.050	ug/L				
7369850	Dissolved Tin (Sn)	2021/05/26	107	80 - 120	102	80 - 120	<1.0	ug/L				
7369850	Dissolved Vanadium (V)	2021/05/26	103	80 - 120	100	80 - 120	<0.50	ug/L				

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
7369850	Dissolved Zinc (Zn)	2021/05/26	103	80 - 120	100	80 - 120	<5.0	ug/L	NC	20		
7369851	pH	2021/05/27			102	98 - 103			0.85	N/A		
7369852	Conductivity	2021/05/27			102	85 - 115	<1.0	umho/cm	0	25		
7369855	Total Chemical Oxygen Demand (COD)	2021/05/26	96	80 - 120	102	80 - 120	7.0, RDL=4.0	mg/L	11	20		
7369858	pH	2021/05/27			102	98 - 103			0.23	N/A		
7369863	Alkalinity (Total as CaCO3)	2021/05/27			95	85 - 115	<1.0	mg/L	0.54	20		
7369874	Dissolved Aluminum (Al)	2021/05/27	100	80 - 120	100	80 - 120	<4.9	ug/L	0.75	20		
7369874	Dissolved Antimony (Sb)	2021/05/27	107	80 - 120	102	80 - 120	<0.50	ug/L	NC	20		
7369874	Dissolved Arsenic (As)	2021/05/27	100	80 - 120	98	80 - 120	<1.0	ug/L	NC	20		
7369874	Dissolved Barium (Ba)	2021/05/27	101	80 - 120	100	80 - 120	<2.0	ug/L	1.3	20		
7369874	Dissolved Beryllium (Be)	2021/05/27	100	80 - 120	99	80 - 120	<0.40	ug/L	NC	20		
7369874	Dissolved Bismuth (Bi)	2021/05/27	96	80 - 120	98	80 - 120	<1.0	ug/L				
7369874	Dissolved Boron (B)	2021/05/27	100	80 - 120	97	80 - 120	<10	ug/L	5.4	20		
7369874	Dissolved Cadmium (Cd)	2021/05/27	102	80 - 120	100	80 - 120	<0.090	ug/L	NC	20		
7369874	Dissolved Calcium (Ca)	2021/05/27	NC	80 - 120	100	80 - 120	<200	ug/L	0.45	20		
7369874	Dissolved Chromium (Cr)	2021/05/27	96	80 - 120	94	80 - 120	<5.0	ug/L	NC	20		
7369874	Dissolved Cobalt (Co)	2021/05/27	97	80 - 120	97	80 - 120	<0.50	ug/L	NC	20		
7369874	Dissolved Copper (Cu)	2021/05/27	102	80 - 120	101	80 - 120	<0.90	ug/L	0.69	20		
7369874	Dissolved Iron (Fe)	2021/05/27	97	80 - 120	97	80 - 120	<100	ug/L	NC	20		
7369874	Dissolved Lead (Pb)	2021/05/27	98	80 - 120	97	80 - 120	<0.50	ug/L	NC	20		
7369874	Dissolved Magnesium (Mg)	2021/05/27	NC	80 - 120	100	80 - 120	<50	ug/L	1.0	20		
7369874	Dissolved Manganese (Mn)	2021/05/27	98	80 - 120	97	80 - 120	<2.0	ug/L	3.7	20		
7369874	Dissolved Molybdenum (Mo)	2021/05/27	108	80 - 120	102	80 - 120	<0.50	ug/L	NC	20		
7369874	Dissolved Nickel (Ni)	2021/05/27	96	80 - 120	96	80 - 120	<1.0	ug/L	NC	20		
7369874	Dissolved Potassium (K)	2021/05/27	102	80 - 120	100	80 - 120	<200	ug/L	0.49	20		
7369874	Dissolved Selenium (Se)	2021/05/27	101	80 - 120	100	80 - 120	<2.0	ug/L	NC	20		
7369874	Dissolved Silicon (Si)	2021/05/27	103	80 - 120	100	80 - 120	<50	ug/L	0.15	20		
7369874	Dissolved Sodium (Na)	2021/05/27	NC	80 - 120	98	80 - 120	<100	ug/L	0.95	20		
7369874	Dissolved Strontium (Sr)	2021/05/27	94	80 - 120	94	80 - 120	<1.0	ug/L	0.28	20		
7369874	Dissolved Thallium (Tl)	2021/05/27	98	80 - 120	98	80 - 120	<0.050	ug/L	NC	20		

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
7369874	Dissolved Tin (Sn)	2021/05/27	106	80 - 120	103	80 - 120	<1.0	ug/L				
7369874	Dissolved Vanadium (V)	2021/05/27	97	80 - 120	95	80 - 120	<0.50	ug/L	NC	20		
7369874	Dissolved Zinc (Zn)	2021/05/27	96	80 - 120	96	80 - 120	<5.0	ug/L	NC	20		
7369891	Dissolved (0.2u) Aluminum (Al)	2021/05/27	103	80 - 120	101	80 - 120	<5	ug/L	NC	20		
7370365	Nitrate (N)	2021/05/27	109	80 - 120	104	80 - 120	<0.10	mg/L	NC	20		
7370365	Nitrite (N)	2021/05/27	112	80 - 120	108	80 - 120	<0.010	mg/L	NC	20		
7370508	Total Dissolved Solids	2021/05/26					<10	mg/L	5.0	25	95	90 - 110
7371173	Total Phosphorus	2021/05/27	100	80 - 120	100	80 - 120	<0.020	mg/L	NC	20	102	80 - 120
7371337	Mercury (Hg)	2021/05/28	95	75 - 125	100	80 - 120	<0.00010	mg/L	NC	20		
7371349	Mercury (Hg)	2021/05/28	94	75 - 125	97	80 - 120	<0.00010	mg/L	NC	20		
7371717	Total Phosphorus	2021/05/27	103	80 - 120	100	80 - 120	<0.020	mg/L	0.60	20	99	80 - 120
7371762	Dissolved Organic Carbon	2021/05/26	91	80 - 120	95	80 - 120	<0.40	mg/L	1.5	20		
7372408	Dissolved Organic Carbon	2021/05/27	98	80 - 120	96	80 - 120	<0.40	mg/L	2.7	20		
7372880	Total Dissolved Solids	2021/05/27					<10	mg/L	1.0	25	95	90 - 110
7373388	Total Antimony (Sb)	2021/05/27	107	80 - 120	103	80 - 120	<0.50	ug/L	NC	20		
7373388	Total Arsenic (As)	2021/05/27	100	80 - 120	99	80 - 120	<1.0	ug/L	NC	20		
7373388	Total Barium (Ba)	2021/05/27	99	80 - 120	98	80 - 120	<2.0	ug/L	2.8	20		
7373388	Total Beryllium (Be)	2021/05/27	99	80 - 120	95	80 - 120	<0.40	ug/L	NC	20		
7373388	Total Bismuth (Bi)	2021/05/27	97	80 - 120	100	80 - 120	<1.0	ug/L	NC	20		
7373388	Total Boron (B)	2021/05/27	94	80 - 120	90	80 - 120	<10	ug/L	0.89	20		
7373388	Total Cadmium (Cd)	2021/05/27	101	80 - 120	100	80 - 120	<0.090	ug/L	NC	20		
7373388	Total Calcium (Ca)	2021/05/27	NC	80 - 120	95	80 - 120	<200	ug/L	0.044	20		
7373388	Total Chromium (Cr)	2021/05/27	92	80 - 120	93	80 - 120	<5.0	ug/L	NC	20		
7373388	Total Cobalt (Co)	2021/05/27	97	80 - 120	99	80 - 120	<0.50	ug/L	NC	20		
7373388	Total Copper (Cu)	2021/05/27	103	80 - 120	100	80 - 120	<0.90	ug/L	0.89	20		
7373388	Total Iron (Fe)	2021/05/27	95	80 - 120	97	80 - 120	<100	ug/L	2.5	20		
7373388	Total Lead (Pb)	2021/05/27	98	80 - 120	100	80 - 120	<0.50	ug/L	0.28	20		
7373388	Total Magnesium (Mg)	2021/05/27	NC	80 - 120	98	80 - 120	<50	ug/L	0.97	20		
7373388	Total Manganese (Mn)	2021/05/27	97	80 - 120	96	80 - 120	<2.0	ug/L	0.82	20		
7373388	Total Molybdenum (Mo)	2021/05/27	107	80 - 120	103	80 - 120	<0.50	ug/L	2.1	20		
7373388	Total Nickel (Ni)	2021/05/27	93	80 - 120	96	80 - 120	<1.0	ug/L	NC	20		

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
7373388	Total Potassium (K)	2021/05/27	97	80 - 120	97	80 - 120	<200	ug/L	1.0	20		
7373388	Total Selenium (Se)	2021/05/27	102	80 - 120	100	80 - 120	<2.0	ug/L	NC	20		
7373388	Total Silicon (Si)	2021/05/27	97	80 - 120	94	80 - 120	<50	ug/L	0.91	20		
7373388	Total Silver (Ag)	2021/05/27	99	80 - 120	98	80 - 120	<0.090	ug/L	NC	20		
7373388	Total Sodium (Na)	2021/05/27	NC	80 - 120	96	80 - 120	<100	ug/L	0.91	20		
7373388	Total Strontium (Sr)	2021/05/27	NC	80 - 120	93	80 - 120	<1.0	ug/L	2.1	20		
7373388	Total Thallium (Tl)	2021/05/27	98	80 - 120	100	80 - 120	<0.050	ug/L	NC	20		
7373388	Total Vanadium (V)	2021/05/27	94	80 - 120	94	80 - 120	<0.50	ug/L	1.3	20		
7373388	Total Zinc (Zn)	2021/05/27	97	80 - 120	101	80 - 120	<5.0	ug/L	1.4	20		
7373408	Total Phosphorus	2021/05/27	111	80 - 120	96	80 - 120	<0.004	mg/L	17	20	94	80 - 120
7373612	Mercury (Hg)	2021/05/28	94	75 - 125	95	80 - 120	<0.00010	mg/L	NC	20		

N/A = Not Applicable

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

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

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

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

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

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

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

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

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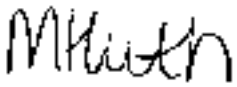
BV Labs Job #: C1D8212
Report Date: 2021/05/28

exp Services Inc
Client Project #: THB-00006189-RE
Site Location: GERALDTON LANDFILL
Sampler Initials: EF

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Anastassia Hamanov, Scientific Specialist



Michelle Huth, Project Manager Assistant

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.

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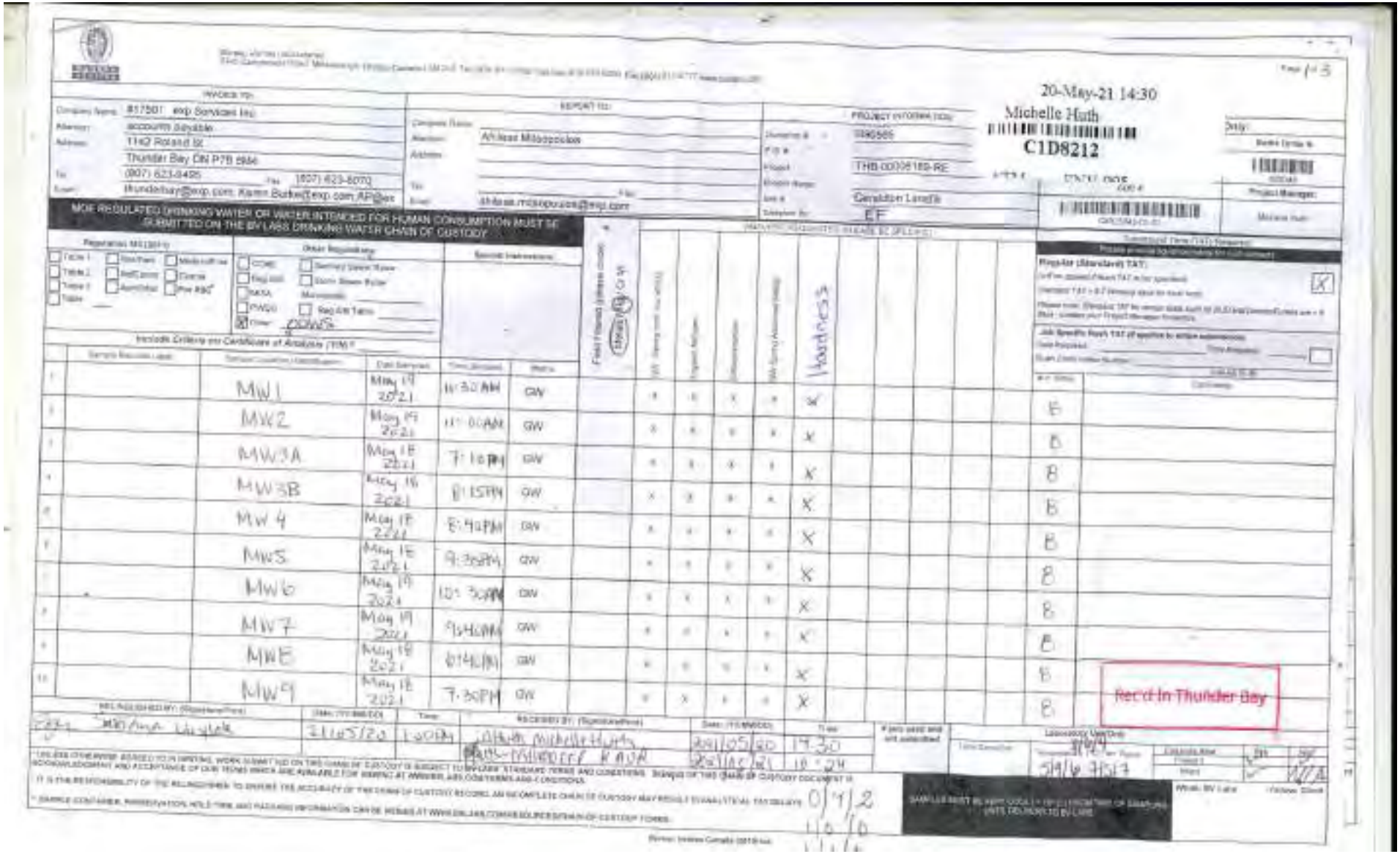


20-May-21 14:30
Michelle Huth
C1D8212

Page 1 of 3

INVOICE TO: 817501 exp Services Inc
Attention: accounts payable
Address: 1142 Roland St
Thunder Bay ON P7B 6M4
Tel: (807) 623-8485 Fax: (807) 623-8070
Email: thunderbay@exp.com; Karen.Burke@exp.com;AP@ex

REPORT TO: Attention: Ashleat Middlebrooke
Address:
Tel: Fax:
Email: ashleat.middlebrooke@exp.com

PROJECT INFORMATION: Quotation #: 0340585 P.O. #: Project: THB-00038189-RE Site Reference: Sub #: Canadian Lands Telephone No.: EF

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BV LABS DRINKING WATER CHAIN OF CUSTODY

Regulation 153/04: Table 1 / Table 2 / Table 3 / Table / Res/Park / Med/Fine / Agri/Other / Soil/Sed / Coarse / Fine RSC
Other Regulation: CCME / SWQG / PWQO / Other: COMS / Sanitary Sewer Bylaw / Storm Sewer Bylaw / Municipality: / Reg 406 Table
Special Instructions:
Include Criteria on Certificate of Analysis (Y/N)?

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle) & Preserved (please circle)					Hardness					Number of Containers	Comments
1		MW1	May 19 2021	10:30 AM	GW		X	X	X	X	X					8	
2		MW2	May 19 2021	11:00 AM	GW		X	X	X	X	X					8	
3		MW3A	May 18 2021	7:10 PM	GW		X	X	X	X	X					8	
4		MW3B	May 18 2021	8:15PM	GW		X	X	X	X	X					8	
5		MW 4	May 18 2021	8:40PM	GW		X	X	X	X	X					8	
6		MW5	May 18 2021	9:30PM	GW		X	X	X	X	X					8	
7		MW6	May 19 2021	10:30AM	GW		X	X	X	X	X					8	
8		MW7	May 19 2021	9:45AM	GW		X	X	X	X	X					8	
9		MW8	May 18 2021	8:45PM	GW		X	X	X	X	X					8	
10		MW9	May 18 2021	7:30PM	GW		X	X	X	X	X					8	

Rec'd In Thunder Bay

Relinquished By: (Signature/Print) Date: (YY/MM/DD) Time: Received By: (Signature/Print) Date: (YY/MM/DD) Time:
21/05/20 1:00PM 21/05/20 19:30
21/05/21 10:24

Laboratory Use Only: Custody Seal Intact: Yes / No / N/A

UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.

IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THIS CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

* SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND HAZARD INFORMATION CAN BE FOUND AT WWW.BVLABS.COM/RESOURCES/SAMPLE-CUSTODY-FORMS.

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL RECEIVED BY LAB

White: BV Labs Yellow: Client

Bureau Veritas Laboratories
6740 Campobello Road, Mississauga, Ontario, Canada L5N 2L8 Tel (905) 817-5700 Toll Free (800) 563-6266 Fax (905) 817-5777 www.bvlabs.com

CHAIN OF CUSTODY RECORD

INVOICE TO:	REPORT TO:	PROJECT INFORMATION:	Laboratory Use Only:
Company name: 817501 wsp Services Inc	Company name:	Quotation #: B00585	BV Labs Job #:
Attention: accounts payable	Attention: Ahlaas Mitsopoulos	P.O. #:	Bottle Order #:
Address: 1142 Roland St	Address:	Project: THB-00005189-RE	
Thunder Bay ON P7B 5M4		Project Name:	COC #:
Tel: (807) 623-9455 Fax: (807) 623-8070	Tel: Fax:	Site #: Geraldton Landfill	Project Manager:
Email: thunderbay@wsp.com; Karen.Burke@wsp.com;AP@ex	Email: ahlaas.mitsopoulos@wsp.com	Sampled By: EF	

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BV LABS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): Table 1 / Table 2 / Table 3 / Table ___ — Res/Park / Agri/Other / Med/Fine / Coarse / For RSC

Other Regulations: CCME / Reg 558 / PWQO / MISA / Sewer Use: Storm Sewer Bylaw / Sanitary Sewer Bylaw / Municipality ___ / Reg 406 Table ___ / Other 10 DAYS

Special Instructions:

Include Criteria on Certificate of Analysis (Y/N)? ___

Field Filtered (please circle): (Metals / Hg / Cr VI)

ANALYSIS REQUESTED (PLEASE BE SPECIFIC):

Turnaround Time (TAT) Required: Please provide advance notice for rush projects

Regular (Standard) TAT: (will be applied if Rush TAT is not specified) — X

Standard TAT = 5-7 Working days for most tests.

Please note: Standard TAT for certain tests such as BOD and Dissolved Metals are 1-5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission): Date Required: ___ Time Required: ___ Rush Confirmation Number: ___ (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered	DW - Hardness (as CaCO3)	Dissolved Hardness	Dissolved Metals	DW Boron Activated Metals	Hardness						# of Bottles	Comments
1		MW10A	May 18 2021	8:00PM	GW		X	X	X	X	X						8	
2		MW10B	May 18 2021	8:10PM	GW		X	X	X	X	X						8	
3		MW11	May 19 2021	9:05AM	GW		X	X	X	X	X						8	
4		MW12	May 18 2021	7:40PM	GW		X	X	X	X	X						8	
5																		
6																		
7																		
8																		
9																		
10																		

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# jars used and not submitted	Laboratory Use Only: Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
Sabrina Wydale	21/05/20	1:00PM							Present		
									Intact		

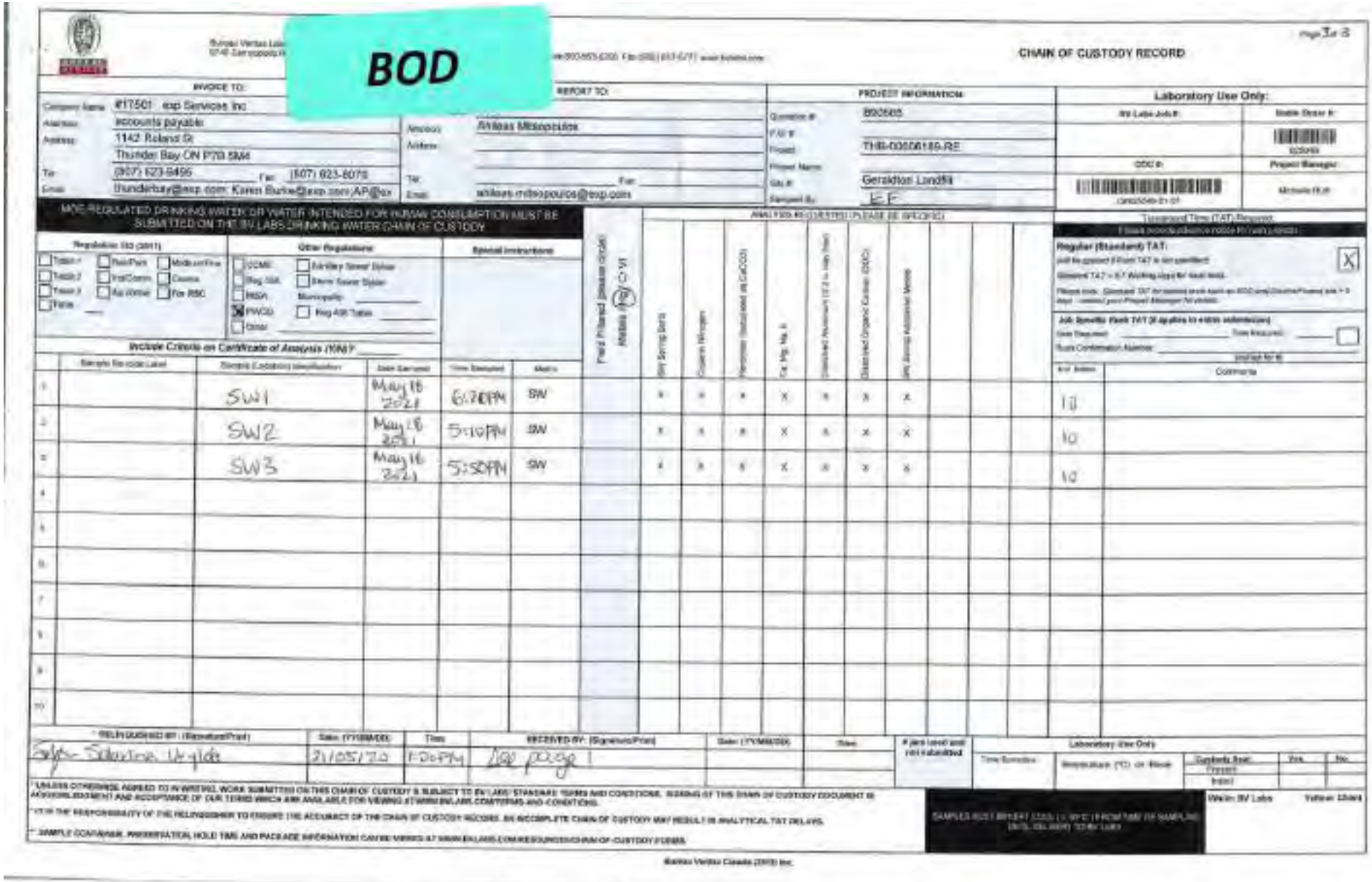
* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGEMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

** SAMPLE CONDITION UPON RECEIPT (HOLD TIME EXCEEDANCES, PRESERVATION, ETC.) MAY BE APPLICABLE

SAMPLES HELD AT BV LABS FOR A PERIOD OF 30 DAYS FROM DATE OF SAMPLING UNLESS OTHERWISE AGREED TO IN WRITING

White: BV Labs Yellow: Client



BOD

CHAIN OF CUSTODY RECORD

INVOICE TO:
Company Name: #17501 exp Services Inc
Attention: accounts payable
Address: 1142 Roland St
Thunder Bay ON P7B 5M4
Tel: (807) 623-9495 Fax: (807) 623-6078
Email: thunderbay@exp.com; Karen.Burke@exp.com;AP@ex

REPORT TO:
Attention: Aklilesa Mbogoutos
Address:
Tel: Fax:
Email: aklilesa.mbogoutos@exp.com

PROJECT INFORMATION:
Quotation #: B92685
P.O. #:
Project: THB-00006189-RE
Project Name:
Site #: Geraldton Landfill
Sampled By: E.F

Laboratory Use Only:
WI Labs Job #:
Bottle Order #: 625093
COC #:
Project Manager:
Shipment #:

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BV LABS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): Table 1 / Table 2 / Table 3 / Table ___ / Res/Park / Ind/Comm / Ag (Other) / Med or Fine / Coarse / For RSC
Other Regulations: CCME / Reg 558 / PWQO / Other / Sanitary Sewer By-law / Storm Sewer By-law / MISA / Municipality: ___ / Reg 406 Table ___
Special Instructions:
Include Criteria on Certificate of Analysis (Y/N)? ___

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle) Metals / Cr VI	BV Suite 500	Calcium	Hardness (calculated as CaCO3)	Ca, Mg, Na, K	Dissolved Aluminum (0.2 u filter)	Dissolved Organic Carbon (DOC)	BV Suite Aluminum Metals				Turnaround Time (TAT) Required: Please provide advance notice for rush projects. Regular (Standard) TAT: (will be applied if Rush TAT is not specified) X. Standard TAT = 5-7 Working days for most tests. Please note: Standard TAT for certain tests such as BOD and Dissolved Metals may be longer. Contact your Project Manager for details. Job Specific Rush TAT (if applies to entire submission): Date Required: Time Required: Rush Confirmation Number: (call lab for #)	
																	# of Bottles	Comments
1		SW1	May 16 2021	6:20PM	SW		X	X	X	X	X	X	X				10	
2		SW2	May 16 2021	5:10PM	SW		X	X	X	X	X	X	X				10	
3		SW3	May 16 2021	5:50PM	SW		X	X	X	X	X	X	X				10	
4																		
5																		
6																		
7																		
8																		
9																		
10																		

* RELINQUISHED BY: (Signature/Print) Sofia Sidorina Wright | Date: (YY/MM/DD) 21/05/20 | Time: 1:00PM
RECEIVED BY: (Signature/Print) See page 1 | Date: (YY/MM/DD) | Time:
jars used and not submitted | Time Sensitive | Laboratory Use Only: Temperature (°C) on Receipt | Custody Seal: Present / Intact | Yes | No

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGEMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.
* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.
** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVLABS.COM/RESOURCES/CHAIN-OF-CUSTODY-FORMS

SAMPLES MUST BE KEPT COOL (< 10°C FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS)

Metals: BV Labs Yellow: Client

Bureau Veritas Canada (2019) Inc.

Your Project #: THB-00006189-RE
Site#: Geraldton Landfill

Attention: Kole Pitkanen

exp Services Inc
Thunder Bay Branch
1142 Roland St
Thunder Bay, ON
CANADA P7B 5M4

Your C.O.C. #: 844810-01-01, 844810-02-01, 844811-01-01

Report Date: 2021/10/06
Report #: R6842647
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1S0164
Received: 2021/09/27, 11:50

Sample Matrix: Water
Samples Received: 17

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Dissolved Aluminum (0.2 u, clay free)	3	N/A	2021/09/30	CAM SOP-00447	EPA 6020B m
Alkalinity	8	N/A	2021/10/01	CAM SOP-00448	SM 23 2320 B m
Alkalinity	9	N/A	2021/09/30	CAM SOP-00448	SM 23 2320 B m
Biochemical Oxygen Demand (BOD)	3	2021/09/29	2021/10/04	CAM SOP-00427	SM 23 5210B m
Chloride by Automated Colourimetry	4	N/A	2021/09/29	CAM SOP-00463	SM 23 4500-Cl E m
Chloride by Automated Colourimetry	13	N/A	2021/09/30	CAM SOP-00463	SM 23 4500-Cl E m
Chemical Oxygen Demand	17	N/A	2021/10/02	CAM SOP-00416	SM 23 5220 D m
Conductivity	8	N/A	2021/10/01	CAM SOP-00414	SM 23 2510 m
Conductivity	9	N/A	2021/09/30	CAM SOP-00414	SM 23 2510 m
Dissolved Organic Carbon (DOC) (1)	17	N/A	2021/09/30	CAM SOP-00446	SM 23 5310 B m
Hardness (calculated as CaCO3)	3	N/A	2021/10/01	CAM SOP 00102/00408/00447	SM 2340 B
Hardness (calculated as CaCO3)	14	N/A	2021/10/06	CAM SOP 00102/00408/00447	SM 2340 B
Mercury in Water by CVAA	2	2021/10/01	2021/10/01	CAM SOP-00453	EPA 7470A m
Mercury in Water by CVAA	1	2021/09/29	2021/09/29	CAM SOP-00453	EPA 7470A m
Mercury in Water by CVAA	14	2021/09/30	2021/09/30	CAM SOP-00453	EPA 7470A m
Dissolved Metals by ICPMS	13	N/A	2021/10/05	CAM SOP-00447	EPA 6020B m
Dissolved Metals by ICPMS	1	N/A	2021/10/06	CAM SOP-00447	EPA 6020B m
Total Metals Analysis by ICPMS	3	N/A	2021/10/05	CAM SOP-00447	EPA 6020B m
Ion Balance (% Difference)	14	N/A	2021/10/06		
Total Ammonia-N	17	N/A	2021/10/02	CAM SOP-00441	USGS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (2)	6	N/A	2021/09/29	CAM SOP-00440	SM 23 4500-NO3I/NO2B
Nitrate (NO3) and Nitrite (NO2) in Water (2)	11	N/A	2021/09/30	CAM SOP-00440	SM 23 4500-NO3I/NO2B
Organic Nitrogen	17	N/A	2021/10/03	Auto Calc.	
pH	8	2021/09/29	2021/10/01	CAM SOP-00413	SM 4500H+ B m
pH	9	2021/09/29	2021/09/30	CAM SOP-00413	SM 4500H+ B m

Your Project #: THB-00006189-RE
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CANADA P7B 5M4

Your C.O.C. #: 844810-01-01, 844810-02-01, 844811-01-01

Report Date: 2021/10/06
Report #: R6842647
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1S0164
Received: 2021/09/27, 11:50

Sample Matrix: Water
Samples Received: 17

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Phenols (4AAP)	17	N/A	2021/09/29	CAM SOP-00444	OMOE E3179 m
Orthophosphate	4	N/A	2021/09/29	CAM SOP-00461	EPA 365.1 m
Orthophosphate	10	N/A	2021/09/30	CAM SOP-00461	EPA 365.1 m
Sulphate by Automated Colourimetry	17	N/A	2021/09/30	CAM SOP-00464	EPA 375.4 m
Total Dissolved Solids	17	2021/09/30	2021/10/01	CAM SOP-00428	SM 23 2540C m
Total Kjeldahl Nitrogen in Water	12	2021/09/30	2021/10/01	CAM SOP-00938	OMOE E3516 m
Total Kjeldahl Nitrogen in Water	5	2021/09/30	2021/10/03	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	3	2021/10/01	2021/10/04	CAM SOP-00407	SM 23 4500 P B H m
Total Phosphorus (Colourimetric)	14	2021/10/01	2021/10/01	CAM SOP-00407	SM 23 4500 P B H m
Low Level Total Suspended Solids	3	2021/10/01	2021/10/01	CAM SOP-00428	SM 23 2540D m
Volatile Organic Compounds in Water	1	N/A	2021/10/01	CAM SOP-00226	EPA 8260C m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope

Your Project #: THB-00006189-RE
Site#: Geraldton Landfill

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CANADA P7B 5M4

Your C.O.C. #: 844810-01-01, 844810-02-01, 844811-01-01

Report Date: 2021/10/06
Report #: R6842647
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CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1S0164
Received: 2021/09/27, 11:50

dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
(1) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.
(2) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Michelle Huth, Project Manager Assistant
Email: michelle.brescacin@bureauveritas.com
Phone# (807)344-4220
==========
This report has been generated and distributed using a secure automated process.
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

BV Labs Job #: C1S0164
Report Date: 2021/10/06

exp Services Inc
Client Project #: THB-00006189-RE
Sampler Initials: KP

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					QTV925			QTV925		
Sampling Date					2021/09/25 17:30			2021/09/25 17:30		
COC Number					844810-01-01			844810-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW1**	**RDL**	**QC Batch**	**MW1 Lab-Dup**	**RDL**	**QC Batch**
Inorganics										
Total Ammonia-N	mg/L	-	-	-	4.8	0.050	7608777			
Total Chemical Oxygen Demand (COD)	mg/L	-	-	-	42	4.0	7611725			
Conductivity	umho/cm	-	-	-	1500	1.0	7607497			
Total Dissolved Solids	mg/L	-	-	500	1010	10	7610620			
Total Kjeldahl Nitrogen (TKN)	mg/L	-	-	-	5.3	0.50	7611787	5.3	0.50	7611787
Dissolved Organic Carbon	mg/L	-	-	5	11	0.40	7610154			
pH	pH	6.5:8.5	-	6.5:8.5	7.79		7607507			
Phenols-4AAP	mg/L	0.001	-	-	0.0012	0.0010	7607173			
Total Phosphorus	mg/L	0.01	-	-	0.20	0.020	7612011			
Dissolved Sulphate (SO4)	mg/L	-	-	500	18	1.0	7608416			
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500	620	1.0	7607494			
Dissolved Chloride (Cl-)	mg/L	-	-	250	160	2.0	7608407			
Nitrite (N)	mg/L	-	1	-	0.011	0.010	7607797			
Nitrate (N)	mg/L	-	10	-	0.48	0.10	7607797			
Metals										
Mercury (Hg)	mg/L	0.0002	0.001	-	<0.00010	0.00010	7610180			
Dissolved Aluminum (Al)	ug/L	-	-	100	9.4	4.9	7610515			
Dissolved Antimony (Sb)	ug/L	20	6	-	<0.50	0.50	7610515			
Dissolved Arsenic (As)	ug/L	100	10	-	28	1.0	7610515			
Dissolved Barium (Ba)	ug/L	-	1000	-	190	2.0	7610515			
Dissolved Beryllium (Be)	ug/L	11	-	-	<0.40	0.40	7610515			
Dissolved Bismuth (Bi)	ug/L	-	-	-	<1.0	1.0	7610515			
Dissolved Boron (B)	ug/L	200	5000	-	260	10	7610515			
Dissolved Cadmium (Cd)	ug/L	0.2	5	-	<0.090	0.090	7610515			
Dissolved Calcium (Ca)	ug/L	-	-	-	230000	200	7610515			
Dissolved Chromium (Cr)	ug/L	-	50	-	<5.0	5.0	7610515			
Dissolved Cobalt (Co)	ug/L	0.9	-	-	26	0.50	7610515			
Dissolved Copper (Cu)	ug/L	5	-	1000	2.2	0.90	7610515			
Dissolved Iron (Fe)	ug/L	300	-	300	32000	100	7610515			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					QTV925			QTV925		
Sampling Date					2021/09/25 17:30			2021/09/25 17:30		
COC Number					844810-01-01			844810-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW1**	**RDL**	**QC Batch**	**MW1 Lab-Dup**	**RDL**	**QC Batch**
Dissolved Lead (Pb)	ug/L	5	10	-	<0.50	0.50	7610515			
Dissolved Magnesium (Mg)	ug/L	-	-	-	24000	50	7610515			
Dissolved Manganese (Mn)	ug/L	-	-	50	2700	2.0	7610515			
Dissolved Molybdenum (Mo)	ug/L	40	-	-	1.7	0.50	7610515			
Dissolved Nickel (Ni)	ug/L	25	-	-	12	1.0	7610515			
Dissolved Potassium (K)	ug/L	-	-	-	19000	200	7610515			
Dissolved Selenium (Se)	ug/L	100	50	-	<2.0	2.0	7610515			
Dissolved Silicon (Si)	ug/L	-	-	-	11000	50	7610515			
Dissolved Sodium (Na)	ug/L	-	-	200000	110000	100	7610515			
Dissolved Strontium (Sr)	ug/L	-	-	-	460	1.0	7610515			
Dissolved Thallium (Tl)	ug/L	0.3	-	-	0.15	0.050	7610515			
Dissolved Tin (Sn)	ug/L	-	-	-	<1.0	1.0	7610515			
Dissolved Vanadium (V)	ug/L	6	-	-	1.6	0.50	7610515			
Dissolved Zinc (Zn)	ug/L	30	-	5000	<5.0	5.0	7610515			

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999

MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

BV Labs Job #: C1S0164
Report Date: 2021/10/06

exp Services Inc
Client Project #: THB-00006189-RE
Sampler Initials: KP

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					QTV926			QTV927		
Sampling Date					2021/09/25 12:30			2021/09/25 10:00		
COC Number					844810-01-01			844810-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW2**	**RDL**	**QC Batch**	**MW3A**	**RDL**	**QC Batch**
Inorganics										
Total Ammonia-N	mg/L	-	-	-	0.33	0.050	7608777	8.7	0.050	7608777
Total Chemical Oxygen Demand (COD)	mg/L	-	-	-	21	4.0	7611725	25	4.0	7611725
Conductivity	umho/cm	-	-	-	410	1.0	7607497	1100	1.0	7608963
Total Dissolved Solids	mg/L	-	-	500	200	10	7610620	535	10	7610620
Total Kjeldahl Nitrogen (TKN)	mg/L	-	-	-	0.57	0.10	7611787	9.8	0.50	7611787
Dissolved Organic Carbon	mg/L	-	-	5	6.4	0.40	7610154	6.4	0.40	7610154
pH	pH	6.5:8.5	-	6.5:8.5	8.16		7607507	7.77		7608969
Phenols-4AAP	mg/L	0.001	-	-	<0.0010	0.0010	7607192	0.0012	0.0010	7607192
Total Phosphorus	mg/L	0.01	-	-	0.032	0.020	7612011	0.14	0.020	7612011
Dissolved Sulphate (SO4)	mg/L	-	-	500	6.4	1.0	7607452	21	1.0	7609217
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500	210	1.0	7607494	500	1.0	7608955
Dissolved Chloride (Cl-)	mg/L	-	-	250	9.9	1.0	7607448	47	1.0	7609208
Nitrite (N)	mg/L	-	1	-	0.022	0.010	7607390	<0.010	0.010	7608991
Nitrate (N)	mg/L	-	10	-	0.85	0.10	7607390	<0.10	0.10	7608991
Metals										
Mercury (Hg)	mg/L	0.0002	0.001	-	<0.00010	0.00010	7610180	<0.00010	0.00010	7610180
Dissolved Aluminum (Al)	ug/L	-	-	100	11	4.9	7610515	13	4.9	7610515
Dissolved Antimony (Sb)	ug/L	20	6	-	<0.50	0.50	7610515	<0.50	0.50	7610515
Dissolved Arsenic (As)	ug/L	100	10	-	2.4	1.0	7610515	14	1.0	7610515
Dissolved Barium (Ba)	ug/L	-	1000	-	15	2.0	7610515	130	2.0	7610515
Dissolved Beryllium (Be)	ug/L	11	-	-	<0.40	0.40	7610515	<0.40	0.40	7610515
Dissolved Bismuth (Bi)	ug/L	-	-	-	<1.0	1.0	7610515	<1.0	1.0	7610515
Dissolved Boron (B)	ug/L	200	5000	-	25	10	7610515	270	10	7610515
Dissolved Cadmium (Cd)	ug/L	0.2	5	-	<0.090	0.090	7610515	<0.090	0.090	7610515
Dissolved Calcium (Ca)	ug/L	-	-	-	70000	200	7610515	140000	200	7610515
Dissolved Chromium (Cr)	ug/L	-	50	-	<5.0	5.0	7610515	<5.0	5.0	7610515
Dissolved Cobalt (Co)	ug/L	0.9	-	-	1.5	0.50	7610515	4.8	0.50	7610515
Dissolved Copper (Cu)	ug/L	5	-	1000	5.1	0.90	7610515	2.5	0.90	7610515
Dissolved Iron (Fe)	ug/L	300	-	300	350	100	7610515	11000	100	7610515
Dissolved Lead (Pb)	ug/L	5	10	-	<0.50	0.50	7610515	<0.50	0.50	7610515

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

BV Labs Job #: C1S0164
Report Date: 2021/10/06

exp Services Inc
Client Project #: THB-00006189-RE
Sampler Initials: KP

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					QTV926			QTV927		
Sampling Date					2021/09/25 12:30			2021/09/25 10:00		
COC Number					844810-01-01			844810-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW2**	**RDL**	**QC Batch**	**MW3A**	**RDL**	**QC Batch**
Dissolved Magnesium (Mg)	ug/L	-	-	-	8300	50	7610515	22000	50	7610515
Dissolved Manganese (Mn)	ug/L	-	-	50	1100	2.0	7610515	1100	2.0	7610515
Dissolved Molybdenum (Mo)	ug/L	40	-	-	<0.50	0.50	7610515	0.65	0.50	7610515
Dissolved Nickel (Ni)	ug/L	25	-	-	1.8	1.0	7610515	6.0	1.0	7610515
Dissolved Potassium (K)	ug/L	-	-	-	1800	200	7610515	13000	200	7610515
Dissolved Selenium (Se)	ug/L	100	50	-	<2.0	2.0	7610515	<2.0	2.0	7610515
Dissolved Silicon (Si)	ug/L	-	-	-	3700	50	7610515	7400	50	7610515
Dissolved Sodium (Na)	ug/L	-	-	200000	3100	100	7610515	48000	100	7610515
Dissolved Strontium (Sr)	ug/L	-	-	-	63	1.0	7610515	240	1.0	7610515
Dissolved Thallium (Tl)	ug/L	0.3	-	-	<0.050	0.050	7610515	<0.050	0.050	7610515
Dissolved Tin (Sn)	ug/L	-	-	-	<1.0	1.0	7610515	<1.0	1.0	7610515
Dissolved Vanadium (V)	ug/L	6	-	-	1.0	0.50	7610515	<0.50	0.50	7610515
Dissolved Zinc (Zn)	ug/L	30	-	5000	<5.0	5.0	7610515	<5.0	5.0	7610515

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					QTV928			QTV928		
Sampling Date					2021/09/25 10:05			2021/09/25 10:05		
COC Number					844810-01-01			844810-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW3B**	**RDL**	**QC Batch**	**MW3B Lab-Dup**	**RDL**	**QC Batch**
Inorganics										
Total Ammonia-N	mg/L	-	-	-	5.8	0.050	7608777			
Total Chemical Oxygen Demand (COD)	mg/L	-	-	-	22	4.0	7611725			
Conductivity	umho/cm	-	-	-	1100	1.0	7608963	1100	1.0	7608963
Total Dissolved Solids	mg/L	-	-	500	595	10	7610620			
Total Kjeldahl Nitrogen (TKN)	mg/L	-	-	-	6.0	0.50	7611787			
Dissolved Organic Carbon	mg/L	-	-	5	6.5	0.40	7610154			
pH	pH	6.5:8.5	-	6.5:8.5	7.73		7608969	7.82		7608969
Phenols-4AAP	mg/L	0.001	-	-	<0.0010	0.0010	7607173			
Total Phosphorus	mg/L	0.01	-	-	0.036	0.020	7612011			
Dissolved Sulphate (SO4)	mg/L	-	-	500	35	1.0	7609217			
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500	510	1.0	7608955	520	1.0	7608955
Dissolved Chloride (Cl-)	mg/L	-	-	250	39	1.0	7609208			
Nitrite (N)	mg/L	-	1	-	<0.010	0.010	7608991			
Nitrate (N)	mg/L	-	10	-	0.69	0.10	7608991			
Metals										
Mercury (Hg)	mg/L	0.0002	0.001	-	<0.00010	0.00010	7610180			
Dissolved Aluminum (Al)	ug/L	-	-	100	6.5	4.9	7610515			
Dissolved Antimony (Sb)	ug/L	20	6	-	<0.50	0.50	7610515			
Dissolved Arsenic (As)	ug/L	100	10	-	5.3	1.0	7610515			
Dissolved Barium (Ba)	ug/L	-	1000	-	120	2.0	7610515			
Dissolved Beryllium (Be)	ug/L	11	-	-	<0.40	0.40	7610515			
Dissolved Bismuth (Bi)	ug/L	-	-	-	<1.0	1.0	7610515			
Dissolved Boron (B)	ug/L	200	5000	-	370	10	7610515			
Dissolved Cadmium (Cd)	ug/L	0.2	5	-	<0.090	0.090	7610515			
Dissolved Calcium (Ca)	ug/L	-	-	-	150000	200	7610515			
Dissolved Chromium (Cr)	ug/L	-	50	-	<5.0	5.0	7610515			
Dissolved Cobalt (Co)	ug/L	0.9	-	-	6.5	0.50	7610515			
Dissolved Copper (Cu)	ug/L	5	-	1000	4.9	0.90	7610515			
Dissolved Iron (Fe)	ug/L	300	-	300	3000	100	7610515			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					QTV928			QTV928		
Sampling Date					2021/09/25 10:05			2021/09/25 10:05		
COC Number					844810-01-01			844810-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW3B**	**RDL**	**QC Batch**	**MW3B Lab-Dup**	**RDL**	**QC Batch**
Dissolved Lead (Pb)	ug/L	5	10	-	<0.50	0.50	7610515			
Dissolved Magnesium (Mg)	ug/L	-	-	-	26000	50	7610515			
Dissolved Manganese (Mn)	ug/L	-	-	50	970	2.0	7610515			
Dissolved Molybdenum (Mo)	ug/L	40	-	-	<0.50	0.50	7610515			
Dissolved Nickel (Ni)	ug/L	25	-	-	7.2	1.0	7610515			
Dissolved Potassium (K)	ug/L	-	-	-	14000	200	7610515			
Dissolved Selenium (Se)	ug/L	100	50	-	<2.0	2.0	7610515			
Dissolved Silicon (Si)	ug/L	-	-	-	7200	50	7610515			
Dissolved Sodium (Na)	ug/L	-	-	200000	38000	100	7610515			
Dissolved Strontium (Sr)	ug/L	-	-	-	280	1.0	7610515			
Dissolved Thallium (Tl)	ug/L	0.3	-	-	<0.050	0.050	7610515			
Dissolved Tin (Sn)	ug/L	-	-	-	<1.0	1.0	7610515			
Dissolved Vanadium (V)	ug/L	6	-	-	<0.50	0.50	7610515			
Dissolved Zinc (Zn)	ug/L	30	-	5000	<5.0	5.0	7610515			

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999

MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					QTV929			QTV929		
Sampling Date					2021/09/25 18:50			2021/09/25 18:50		
COC Number					844810-01-01			844810-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW4**	**RDL**	**QC Batch**	**MW4 Lab-Dup**	**RDL**	**QC Batch**
Inorganics										
Total Ammonia-N	mg/L	-	-	-	<0.050	0.050	7608777			
Total Chemical Oxygen Demand (COD)	mg/L	-	-	-	8.8	4.0	7611725			
Conductivity	umho/cm	-	-	-	950	1.0	7608963			
Total Dissolved Solids	mg/L	-	-	500	580	10	7610620			
Total Kjeldahl Nitrogen (TKN)	mg/L	-	-	-	0.41	0.10	7611787			
Dissolved Organic Carbon	mg/L	-	-	5	1.7	0.40	7610154			
pH	pH	6.5:8.5	-	6.5:8.5	7.78		7608969			
Phenols-4AAP	mg/L	0.001	-	-	<0.0010	0.0010	7607173	<0.0010	0.0010	7607173
Total Phosphorus	mg/L	0.01	-	-	0.33	0.020	7612011			
Dissolved Sulphate (SO4)	mg/L	-	-	500	41	1.0	7609217			
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500	510	1.0	7608955			
Dissolved Chloride (Cl-)	mg/L	-	-	250	14	1.0	7609208			
Nitrite (N)	mg/L	-	1	-	<0.010	0.010	7608991			
Nitrate (N)	mg/L	-	10	-	0.39	0.10	7608991			
Metals										
Mercury (Hg)	mg/L	0.0002	0.001	-	<0.00010	0.00010	7610180			
Dissolved Aluminum (Al)	ug/L	-	-	100	5.3	4.9	7610515			
Dissolved Antimony (Sb)	ug/L	20	6	-	<0.50	0.50	7610515			
Dissolved Arsenic (As)	ug/L	100	10	-	<1.0	1.0	7610515			
Dissolved Barium (Ba)	ug/L	-	1000	-	56	2.0	7610515			
Dissolved Beryllium (Be)	ug/L	11	-	-	<0.40	0.40	7610515			
Dissolved Bismuth (Bi)	ug/L	-	-	-	<1.0	1.0	7610515			
Dissolved Boron (B)	ug/L	200	5000	-	230	10	7610515			
Dissolved Cadmium (Cd)	ug/L	0.2	5	-	<0.090	0.090	7610515			
Dissolved Calcium (Ca)	ug/L	-	-	-	180000	200	7610515			
Dissolved Chromium (Cr)	ug/L	-	50	-	<5.0	5.0	7610515			
Dissolved Cobalt (Co)	ug/L	0.9	-	-	1.8	0.50	7610515			
Dissolved Copper (Cu)	ug/L	5	-	1000	3.7	0.90	7610515			
Dissolved Iron (Fe)	ug/L	300	-	300	<100	100	7610515			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

BV Labs Job #: C1S0164
Report Date: 2021/10/06

exp Services Inc
Client Project #: THB-00006189-RE
Sampler Initials: KP

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					QTV929			QTV929		
Sampling Date					2021/09/25 18:50			2021/09/25 18:50		
COC Number					844810-01-01			844810-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW4**	**RDL**	**QC Batch**	**MW4 Lab-Dup**	**RDL**	**QC Batch**
Dissolved Lead (Pb)	ug/L	5	10	-	<0.50	0.50	7610515			
Dissolved Magnesium (Mg)	ug/L	-	-	-	18000	50	7610515			
Dissolved Manganese (Mn)	ug/L	-	-	50	250	2.0	7610515			
Dissolved Molybdenum (Mo)	ug/L	40	-	-	<0.50	0.50	7610515			
Dissolved Nickel (Ni)	ug/L	25	-	-	3.3	1.0	7610515			
Dissolved Potassium (K)	ug/L	-	-	-	2200	200	7610515			
Dissolved Selenium (Se)	ug/L	100	50	-	<2.0	2.0	7610515			
Dissolved Silicon (Si)	ug/L	-	-	-	5800	50	7610515			
Dissolved Sodium (Na)	ug/L	-	-	200000	12000	100	7610515			
Dissolved Strontium (Sr)	ug/L	-	-	-	150	1.0	7610515			
Dissolved Thallium (Tl)	ug/L	0.3	-	-	0.14	0.050	7610515			
Dissolved Tin (Sn)	ug/L	-	-	-	<1.0	1.0	7610515			
Dissolved Vanadium (V)	ug/L	6	-	-	<0.50	0.50	7610515			
Dissolved Zinc (Zn)	ug/L	30	-	5000	<5.0	5.0	7610515			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					QTV930	QTV931		
Sampling Date					2021/09/25 11:30	2021/09/26 09:20		
COC Number					844810-01-01	844810-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW5**	**MW6**	**RDL**	**QC Batch**
Inorganics								
Total Ammonia-N	mg/L	-	-	-	3.2	<0.050	0.050	7608777
Total Chemical Oxygen Demand (COD)	mg/L	-	-	-	24	11	4.0	7611725
Conductivity	umho/cm	-	-	-	1100	450	1.0	7608963
Total Dissolved Solids	mg/L	-	-	500	580	245	10	7610620
Total Kjeldahl Nitrogen (TKN)	mg/L	-	-	-	3.5	0.19	0.10	7611787
Dissolved Organic Carbon	mg/L	-	-	5	5.8	1.9	0.40	7610154
pH	pH	6.5:8.5	-	6.5:8.5	7.81	8.12		7608969
Phenols-4AAP	mg/L	0.001	-	-	<0.0010	<0.0010	0.0010	7607192
Total Phosphorus	mg/L	0.01	-	-	0.097	0.050	0.020	7612011
Dissolved Sulphate (SO4)	mg/L	-	-	500	79	5.4	1.0	7609217
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500	490	250	1.0	7608955
Dissolved Chloride (Cl-)	mg/L	-	-	250	38	1.8	1.0	7609208
Nitrite (N)	mg/L	-	1	-	<0.010	<0.010	0.010	7608991
Nitrate (N)	mg/L	-	10	-	<0.10	<0.10	0.10	7608991
Metals								
Mercury (Hg)	mg/L	0.0002	0.001	-	<0.00010	<0.00010	0.00010	7610180
Dissolved Aluminum (Al)	ug/L	-	-	100	<4.9	<4.9	4.9	7610515
Dissolved Antimony (Sb)	ug/L	20	6	-	<0.50	<0.50	0.50	7610515
Dissolved Arsenic (As)	ug/L	100	10	-	2.4	2.8	1.0	7610515
Dissolved Barium (Ba)	ug/L	-	1000	-	100	17	2.0	7610515
Dissolved Beryllium (Be)	ug/L	11	-	-	<0.40	<0.40	0.40	7610515
Dissolved Bismuth (Bi)	ug/L	-	-	-	<1.0	<1.0	1.0	7610515
Dissolved Boron (B)	ug/L	200	5000	-	940	15	10	7610515
Dissolved Cadmium (Cd)	ug/L	0.2	5	-	<0.090	<0.090	0.090	7610515
Dissolved Calcium (Ca)	ug/L	-	-	-	130000	78000	200	7610515
Dissolved Chromium (Cr)	ug/L	-	50	-	<5.0	<5.0	5.0	7610515
Dissolved Cobalt (Co)	ug/L	0.9	-	-	<0.50	1.9	0.50	7610515
Dissolved Copper (Cu)	ug/L	5	-	1000	<0.90	3.3	0.90	7610515
Dissolved Iron (Fe)	ug/L	300	-	300	6400	370	100	7610515
Dissolved Lead (Pb)	ug/L	5	10	-	<0.50	<0.50	0.50	7610515

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					QTV930	QTV931		
Sampling Date					2021/09/25 11:30	2021/09/26 09:20		
COC Number					844810-01-01	844810-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW5**	**MW6**	**RDL**	**QC Batch**
Dissolved Magnesium (Mg)	ug/L	-	-	-	41000	12000	50	7610515
Dissolved Manganese (Mn)	ug/L	-	-	50	1000	340	2.0	7610515
Dissolved Molybdenum (Mo)	ug/L	40	-	-	<0.50	0.70	0.50	7610515
Dissolved Nickel (Ni)	ug/L	25	-	-	4.0	2.2	1.0	7610515
Dissolved Potassium (K)	ug/L	-	-	-	15000	1400	200	7610515
Dissolved Selenium (Se)	ug/L	100	50	-	<2.0	<2.0	2.0	7610515
Dissolved Silicon (Si)	ug/L	-	-	-	5700	6300	50	7610515
Dissolved Sodium (Na)	ug/L	-	-	200000	39000	3300	100	7610515
Dissolved Strontium (Sr)	ug/L	-	-	-	290	72	1.0	7610515
Dissolved Thallium (Tl)	ug/L	0.3	-	-	<0.050	0.17	0.050	7610515
Dissolved Tin (Sn)	ug/L	-	-	-	<1.0	<1.0	1.0	7610515
Dissolved Vanadium (V)	ug/L	6	-	-	<0.50	<0.50	0.50	7610515
Dissolved Zinc (Zn)	ug/L	30	-	5000	<5.0	<5.0	5.0	7610515

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					QTV931			QTV932		
Sampling Date					2021/09/26 09:20			2021/09/26 10:30		
COC Number					844810-01-01			844810-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW6 Lab-Dup**	**RDL**	**QC Batch**	**MW7**	**RDL**	**QC Batch**
Inorganics										
Total Ammonia-N	mg/L	-	-	-				5.5	0.050	7608777
Total Chemical Oxygen Demand (COD)	mg/L	-	-	-				21	4.0	7611725
Conductivity	umho/cm	-	-	-				860	1.0	7607497
Total Dissolved Solids	mg/L	-	-	500				495	10	7610620
Total Kjeldahl Nitrogen (TKN)	mg/L	-	-	-				5.8	0.50	7611787
Dissolved Organic Carbon	mg/L	-	-	5	1.8	0.40	7610154	4.8	0.40	7610154
pH	pH	6.5:8.5	-	6.5:8.5				7.90		7607507
Phenols-4AAP	mg/L	0.001	-	-				<0.0010	0.0010	7607192
Total Phosphorus	mg/L	0.01	-	-				0.061	0.020	7612011
Dissolved Sulphate (SO4)	mg/L	-	-	500				22	1.0	7607452
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500				450	1.0	7607494
Dissolved Chloride (Cl-)	mg/L	-	-	250				27	1.0	7607448
Nitrite (N)	mg/L	-	1	-				<0.010	0.010	7607390
Nitrate (N)	mg/L	-	10	-				<0.10	0.10	7607390
Metals										
Mercury (Hg)	mg/L	0.0002	0.001	-				<0.00010	0.00010	7610180
Dissolved Aluminum (Al)	ug/L	-	-	100				43	4.9	7610515
Dissolved Antimony (Sb)	ug/L	20	6	-				<0.50	0.50	7610515
Dissolved Arsenic (As)	ug/L	100	10	-				40	1.0	7610515
Dissolved Barium (Ba)	ug/L	-	1000	-				160	2.0	7610515
Dissolved Beryllium (Be)	ug/L	11	-	-				<0.40	0.40	7610515
Dissolved Bismuth (Bi)	ug/L	-	-	-				<1.0	1.0	7610515
Dissolved Boron (B)	ug/L	200	5000	-				260	10	7610515
Dissolved Cadmium (Cd)	ug/L	0.2	5	-				<0.090	0.090	7610515
Dissolved Calcium (Ca)	ug/L	-	-	-				130000	200	7610515
Dissolved Chromium (Cr)	ug/L	-	50	-				<5.0	5.0	7610515
Dissolved Cobalt (Co)	ug/L	0.9	-	-				9.3	0.50	7610515
Dissolved Copper (Cu)	ug/L	5	-	1000				2.4	0.90	7610515
Dissolved Iron (Fe)	ug/L	300	-	300				16000	100	7610515

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					QTV931			QTV932		
Sampling Date					2021/09/26 09:20			2021/09/26 10:30		
COC Number					844810-01-01			844810-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW6 Lab-Dup**	**RDL**	**QC Batch**	**MW7**	**RDL**	**QC Batch**
Dissolved Lead (Pb)	ug/L	5	10	-				<0.50	0.50	7610515
Dissolved Magnesium (Mg)	ug/L	-	-	-				17000	50	7610515
Dissolved Manganese (Mn)	ug/L	-	-	50				1300	2.0	7610515
Dissolved Molybdenum (Mo)	ug/L	40	-	-				0.66	0.50	7610515
Dissolved Nickel (Ni)	ug/L	25	-	-				6.3	1.0	7610515
Dissolved Potassium (K)	ug/L	-	-	-				8400	200	7610515
Dissolved Selenium (Se)	ug/L	100	50	-				<2.0	2.0	7610515
Dissolved Silicon (Si)	ug/L	-	-	-				8900	50	7610515
Dissolved Sodium (Na)	ug/L	-	-	200000				22000	100	7610515
Dissolved Strontium (Sr)	ug/L	-	-	-				170	1.0	7610515
Dissolved Thallium (Tl)	ug/L	0.3	-	-				<0.050	0.050	7610515
Dissolved Tin (Sn)	ug/L	-	-	-				<1.0	1.0	7610515
Dissolved Vanadium (V)	ug/L	6	-	-				1.3	0.50	7610515
Dissolved Zinc (Zn)	ug/L	30	-	5000				11	5.0	7610515

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999

MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					QTV933			QTV934		
Sampling Date					2021/09/26 08:50			2021/09/25 16:20		
COC Number					844810-01-01			844810-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW8**	**RDL**	**QC Batch**	**MW9**	**RDL**	**QC Batch**
Inorganics										
Total Ammonia-N	mg/L	-	-	-	<0.050	0.050	7608777	<0.050	0.050	7608777
Total Chemical Oxygen Demand (COD)	mg/L	-	-	-	24	4.0	7611725	4.8	4.0	7611725
Conductivity	umho/cm	-	-	-	6100	1.0	7607497	790	1.0	7608963
Total Dissolved Solids	mg/L	-	-	500	3920	20	7610620	465	10	7610620
Total Kjeldahl Nitrogen (TKN)	mg/L	-	-	-	0.44	0.10	7611787	0.55	0.10	7611787
Dissolved Organic Carbon	mg/L	-	-	5	3.0	0.40	7610154	0.87	0.40	7610154
pH	pH	6.5:8.5	-	6.5:8.5	7.92		7607507	8.11		7608969
Phenols-4AAP	mg/L	0.001	-	-	<0.0010	0.0010	7607173	<0.0010	0.0010	7607173
Total Phosphorus	mg/L	0.01	-	-	0.14	0.020	7612011	2.5	0.040	7612011
Dissolved Sulphate (SO4)	mg/L	-	-	500	53	1.0	7608416	1.5	1.0	7609217
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500	360	1.0	7607494	230	1.0	7608955
Dissolved Chloride (Cl-)	mg/L	-	-	250	1900	15	7608407	120	1.0	7609208
Nitrite (N)	mg/L	-	1	-	<0.010	0.010	7607797	<0.010	0.010	7608991
Nitrate (N)	mg/L	-	10	-	2.04	0.10	7607797	0.13	0.10	7608991
Metals										
Mercury (Hg)	mg/L	0.0002	0.001	-	<0.00010	0.00010	7610180	<0.00010	0.00010	7610180
Dissolved Aluminum (Al)	ug/L	-	-	100	<4.9	4.9	7610515	5.1	4.9	7610515
Dissolved Antimony (Sb)	ug/L	20	6	-	<0.50	0.50	7610515	<0.50	0.50	7610515
Dissolved Arsenic (As)	ug/L	100	10	-	<1.0	1.0	7610515	<1.0	1.0	7610515
Dissolved Barium (Ba)	ug/L	-	1000	-	130	2.0	7610515	21	2.0	7610515
Dissolved Beryllium (Be)	ug/L	11	-	-	<0.40	0.40	7610515	<0.40	0.40	7610515
Dissolved Bismuth (Bi)	ug/L	-	-	-	<1.0	1.0	7610515	<1.0	1.0	7610515
Dissolved Boron (B)	ug/L	200	5000	-	17	10	7610515	10	10	7610515
Dissolved Cadmium (Cd)	ug/L	0.2	5	-	<0.090	0.090	7610515	<0.090	0.090	7610515
Dissolved Calcium (Ca)	ug/L	-	-	-	260000	200	7610515	93000	200	7610515
Dissolved Chromium (Cr)	ug/L	-	50	-	<5.0	5.0	7610515	<5.0	5.0	7610515
Dissolved Cobalt (Co)	ug/L	0.9	-	-	<0.50	0.50	7610515	<0.50	0.50	7610515
Dissolved Copper (Cu)	ug/L	5	-	1000	4.4	0.90	7610515	3.8	0.90	7610515
Dissolved Iron (Fe)	ug/L	300	-	300	<100	100	7610515	<100	100	7610515
Dissolved Lead (Pb)	ug/L	5	10	-	<0.50	0.50	7610515	<0.50	0.50	7610515

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

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LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					QTV933			QTV934		
Sampling Date					2021/09/26 08:50			2021/09/25 16:20		
COC Number					844810-01-01			844810-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW8**	**RDL**	**QC Batch**	**MW9**	**RDL**	**QC Batch**
Dissolved Magnesium (Mg)	ug/L	-	-	-	20000	50	7610515	17000	50	7610515
Dissolved Manganese (Mn)	ug/L	-	-	50	<2.0	2.0	7610515	<2.0	2.0	7610515
Dissolved Molybdenum (Mo)	ug/L	40	-	-	0.63	0.50	7610515	<0.50	0.50	7610515
Dissolved Nickel (Ni)	ug/L	25	-	-	<1.0	1.0	7610515	<1.0	1.0	7610515
Dissolved Potassium (K)	ug/L	-	-	-	3900	200	7610515	1100	200	7610515
Dissolved Selenium (Se)	ug/L	100	50	-	<2.0	2.0	7610515	<2.0	2.0	7610515
Dissolved Silicon (Si)	ug/L	-	-	-	2800	50	7610515	4700	50	7610515
Dissolved Sodium (Na)	ug/L	-	-	200000	1100000	500	7610515	48000	100	7610515
Dissolved Strontium (Sr)	ug/L	-	-	-	350	1.0	7610515	82	1.0	7610515
Dissolved Thallium (Tl)	ug/L	0.3	-	-	<0.050	0.050	7610515	<0.050	0.050	7610515
Dissolved Tin (Sn)	ug/L	-	-	-	<1.0	1.0	7610515	<1.0	1.0	7610515
Dissolved Vanadium (V)	ug/L	6	-	-	<0.50	0.50	7610515	<0.50	0.50	7610515
Dissolved Zinc (Zn)	ug/L	30	-	5000	<5.0	5.0	7610515	<5.0	5.0	7610515

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

BV Labs Job #: C1S0164
Report Date: 2021/10/06

exp Services Inc
Client Project #: THB-00006189-RE
Sampler Initials: KP

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					QTV934			QTV935		
Sampling Date					2021/09/25 16:20			2021/09/26 12:30		
COC Number					844810-01-01			844810-02-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW9 Lab-Dup**	**RDL**	**QC Batch**	**MW10A**	**RDL**	**QC Batch**
Inorganics										
Total Ammonia-N	mg/L	-	-	-				0.31	0.050	7608777
Total Chemical Oxygen Demand (COD)	mg/L	-	-	-				42	4.0	7611725
Conductivity	umho/cm	-	-	-				760	1.0	7608963
Total Dissolved Solids	mg/L	-	-	500				445	10	7611055
Total Kjeldahl Nitrogen (TKN)	mg/L	-	-	-				0.76	0.10	7611787
Dissolved Organic Carbon	mg/L	-	-	5				14	0.40	7610154
pH	pH	6.5:8.5	-	6.5:8.5				7.45		7608969
Phenols-4AAP	mg/L	0.001	-	-				<0.0010	0.0010	7607192
Total Phosphorus	mg/L	0.01	-	-				0.063	0.020	7612011
Dissolved Sulphate (SO4)	mg/L	-	-	500	1.5	1.0	7609217	<1.0	1.0	7609217
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500				210	1.0	7608955
Dissolved Chloride (Cl-)	mg/L	-	-	250	120	1.0	7609208	120	1.0	7609208
Nitrite (N)	mg/L	-	1	-				<0.010	0.010	7608991
Nitrate (N)	mg/L	-	10	-				<0.10	0.10	7608991
Metals										
Mercury (Hg)	mg/L	0.0002	0.001	-				<0.00010	0.00010	7607772
Dissolved Aluminum (Al)	ug/L	-	-	100				200	4.9	7610515
Dissolved Antimony (Sb)	ug/L	20	6	-				<0.50	0.50	7610515
Dissolved Arsenic (As)	ug/L	100	10	-				21	1.0	7610515
Dissolved Barium (Ba)	ug/L	-	1000	-				26	2.0	7610515
Dissolved Beryllium (Be)	ug/L	11	-	-				<0.40	0.40	7610515
Dissolved Bismuth (Bi)	ug/L	-	-	-				<1.0	1.0	7610515
Dissolved Boron (B)	ug/L	200	5000	-				19	10	7610515
Dissolved Cadmium (Cd)	ug/L	0.2	5	-				<0.090	0.090	7610515
Dissolved Calcium (Ca)	ug/L	-	-	-				71000	200	7610515
Dissolved Chromium (Cr)	ug/L	-	50	-				<5.0	5.0	7610515
Dissolved Cobalt (Co)	ug/L	0.9	-	-				<0.50	0.50	7610515
Dissolved Copper (Cu)	ug/L	5	-	1000				1.5	0.90	7610515
Dissolved Iron (Fe)	ug/L	300	-	300				2000	100	7610515

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

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LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					QTV934			QTV935		
Sampling Date					2021/09/25 16:20			2021/09/26 12:30		
COC Number					844810-01-01			844810-02-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW9 Lab-Dup**	**RDL**	**QC Batch**	**MW10A**	**RDL**	**QC Batch**
Dissolved Lead (Pb)	ug/L	5	10	-				<0.50	0.50	7610515
Dissolved Magnesium (Mg)	ug/L	-	-	-				13000	50	7610515
Dissolved Manganese (Mn)	ug/L	-	-	50				72	2.0	7610515
Dissolved Molybdenum (Mo)	ug/L	40	-	-				<0.50	0.50	7610515
Dissolved Nickel (Ni)	ug/L	25	-	-				1.5	1.0	7610515
Dissolved Potassium (K)	ug/L	-	-	-				420	200	7610515
Dissolved Selenium (Se)	ug/L	100	50	-				<2.0	2.0	7610515
Dissolved Silicon (Si)	ug/L	-	-	-				2900	50	7610515
Dissolved Sodium (Na)	ug/L	-	-	200000				44000	100	7610515
Dissolved Strontium (Sr)	ug/L	-	-	-				74	1.0	7610515
Dissolved Thallium (Tl)	ug/L	0.3	-	-				<0.050	0.050	7610515
Dissolved Tin (Sn)	ug/L	-	-	-				<1.0	1.0	7610515
Dissolved Vanadium (V)	ug/L	6	-	-				2.4	0.50	7610515
Dissolved Zinc (Zn)	ug/L	30	-	5000				<5.0	5.0	7610515

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999

MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					QTV936			QTV937		
Sampling Date					2021/09/26 12:40			2021/09/26 11:30		
COC Number					844810-02-01			844810-02-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW10B**	**RDL**	**QC Batch**	**MW11**	**RDL**	**QC Batch**
Inorganics										
Total Ammonia-N	mg/L	-	-	-	0.21	0.050	7608777	0.082	0.050	7608777
Total Chemical Oxygen Demand (COD)	mg/L	-	-	-	51	4.0	7611725	9.9	4.0	7611725
Conductivity	umho/cm	-	-	-	1700	1.0	7607497	450	1.0	7608963
Total Dissolved Solids	mg/L	-	-	500	960	10	7610620	315	10	7610620
Total Kjeldahl Nitrogen (TKN)	mg/L	-	-	-	0.57	0.10	7611787	0.76	0.50	7611787
Dissolved Organic Carbon	mg/L	-	-	5	17	0.40	7610154	1.5	0.40	7610154
pH	pH	6.5:8.5	-	6.5:8.5	8.27		7607507	8.16		7608969
Phenols-4AAP	mg/L	0.001	-	-	<0.0010	0.0010	7607192	<0.0010	0.0010	7607192
Total Phosphorus	mg/L	0.01	-	-	0.11	0.040	7612011	3.4	0.10	7612011
Dissolved Sulphate (SO4)	mg/L	-	-	500	<1.0	1.0	7607452	<1.0	1.0	7609217
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500	540	1.0	7607494	250	1.0	7608955
Dissolved Chloride (Cl-)	mg/L	-	-	250	240	3.0	7607448	1.5	1.0	7609208
Nitrite (N)	mg/L	-	1	-	<0.010	0.010	7607390	<0.010	0.010	7608991
Nitrate (N)	mg/L	-	10	-	<0.10	0.10	7607390	<0.10	0.10	7608991
Metals										
Mercury (Hg)	mg/L	0.0002	0.001	-	<0.00010	0.00010	7612172	<0.00010	0.00010	7610180
Dissolved Aluminum (Al)	ug/L	-	-	100	120	4.9	7610515	33	4.9	7610515
Dissolved Antimony (Sb)	ug/L	20	6	-	<0.50	0.50	7610515	<0.50	0.50	7610515
Dissolved Arsenic (As)	ug/L	100	10	-	25	1.0	7610515	<1.0	1.0	7610515
Dissolved Barium (Ba)	ug/L	-	1000	-	13	2.0	7610515	27	2.0	7610515
Dissolved Beryllium (Be)	ug/L	11	-	-	<0.40	0.40	7610515	<0.40	0.40	7610515
Dissolved Bismuth (Bi)	ug/L	-	-	-	<1.0	1.0	7610515	<1.0	1.0	7610515
Dissolved Boron (B)	ug/L	200	5000	-	<10	10	7610515	19	10	7610515
Dissolved Cadmium (Cd)	ug/L	0.2	5	-	<0.090	0.090	7610515	<0.090	0.090	7610515
Dissolved Calcium (Ca)	ug/L	-	-	-	82000	200	7610515	72000	200	7610515
Dissolved Chromium (Cr)	ug/L	-	50	-	<5.0	5.0	7610515	<5.0	5.0	7610515
Dissolved Cobalt (Co)	ug/L	0.9	-	-	<0.50	0.50	7610515	<0.50	0.50	7610515
Dissolved Copper (Cu)	ug/L	5	-	1000	2.0	0.90	7610515	2.4	0.90	7610515
Dissolved Iron (Fe)	ug/L	300	-	300	<100	100	7610515	130	100	7610515
Dissolved Lead (Pb)	ug/L	5	10	-	<0.50	0.50	7610515	<0.50	0.50	7610515

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

BV Labs Job #: C1S0164
Report Date: 2021/10/06

exp Services Inc
Client Project #: THB-00006189-RE
Sampler Initials: KP

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					QTV936			QTV937		
Sampling Date					2021/09/26 12:40			2021/09/26 11:30		
COC Number					844810-02-01			844810-02-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW10B**	**RDL**	**QC Batch**	**MW11**	**RDL**	**QC Batch**
Dissolved Magnesium (Mg)	ug/L	-	-	-	10000	50	7610515	13000	50	7610515
Dissolved Manganese (Mn)	ug/L	-	-	50	23	2.0	7610515	150	2.0	7610515
Dissolved Molybdenum (Mo)	ug/L	40	-	-	0.58	0.50	7610515	0.65	0.50	7610515
Dissolved Nickel (Ni)	ug/L	25	-	-	<1.0	1.0	7610515	<1.0	1.0	7610515
Dissolved Potassium (K)	ug/L	-	-	-	1500	200	7610515	630	200	7610515
Dissolved Selenium (Se)	ug/L	100	50	-	<2.0	2.0	7610515	<2.0	2.0	7610515
Dissolved Silicon (Si)	ug/L	-	-	-	3700	50	7610515	6500	50	7610515
Dissolved Sodium (Na)	ug/L	-	-	200000	350000	100	7610515	4900	100	7610515
Dissolved Strontium (Sr)	ug/L	-	-	-	75	1.0	7610515	77	1.0	7610515
Dissolved Thallium (Tl)	ug/L	0.3	-	-	<0.050	0.050	7610515	<0.050	0.050	7610515
Dissolved Tin (Sn)	ug/L	-	-	-	<1.0	1.0	7610515	<1.0	1.0	7610515
Dissolved Vanadium (V)	ug/L	6	-	-	0.90	0.50	7610515	0.83	0.50	7610515
Dissolved Zinc (Zn)	ug/L	30	-	5000	<5.0	5.0	7610515	<5.0	5.0	7610515

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					QTV938			QTV938		
Sampling Date					2021/09/25 12:00			2021/09/25 12:00		
COC Number					844810-02-01			844810-02-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW12**	**RDL**	**QC Batch**	**MW12 Lab-Dup**	**RDL**	**QC Batch**
Inorganics										
Total Ammonia-N	mg/L	-	-	-	3.2	0.050	7608777			
Total Chemical Oxygen Demand (COD)	mg/L	-	-	-	25	4.0	7611725	24	4.0	7611725
Conductivity	umho/cm	-	-	-	1000	1.0	7607497			
Total Dissolved Solids	mg/L	-	-	500	615	10	7611055			
Total Kjeldahl Nitrogen (TKN)	mg/L	-	-	-	3.5	0.10	7611787			
Dissolved Organic Carbon	mg/L	-	-	5	5.8	0.40	7610154			
pH	pH	6.5:8.5	-	6.5:8.5	8.02		7607507			
Phenols-4AAP	mg/L	0.001	-	-	<0.0010	0.0010	7607192	<0.0010	0.0010	7607192
Total Phosphorus	mg/L	0.01	-	-	0.10	0.020	7612011			
Dissolved Sulphate (SO4)	mg/L	-	-	500	75	1.0	7607452			
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500	490	1.0	7607494			
Dissolved Chloride (Cl-)	mg/L	-	-	250	39	1.0	7607448			
Nitrite (N)	mg/L	-	1	-	0.019	0.010	7607390			
Nitrate (N)	mg/L	-	10	-	0.74	0.10	7607390			
Metals										
Mercury (Hg)	mg/L	0.0002	0.001	-	<0.00010	0.00010	7610180			
Dissolved Aluminum (Al)	ug/L	-	-	100	<4.9	4.9	7610515			
Dissolved Antimony (Sb)	ug/L	20	6	-	<0.50	0.50	7610515			
Dissolved Arsenic (As)	ug/L	100	10	-	2.6	1.0	7610515			
Dissolved Barium (Ba)	ug/L	-	1000	-	110	2.0	7610515			
Dissolved Beryllium (Be)	ug/L	11	-	-	<0.40	0.40	7610515			
Dissolved Bismuth (Bi)	ug/L	-	-	-	<1.0	1.0	7610515			
Dissolved Boron (B)	ug/L	200	5000	-	930	10	7610515			
Dissolved Cadmium (Cd)	ug/L	0.2	5	-	<0.090	0.090	7610515			
Dissolved Calcium (Ca)	ug/L	-	-	-	130000	200	7610515			
Dissolved Chromium (Cr)	ug/L	-	50	-	<5.0	5.0	7610515			
Dissolved Cobalt (Co)	ug/L	0.9	-	-	<0.50	0.50	7610515			
Dissolved Copper (Cu)	ug/L	5	-	1000	<0.90	0.90	7610515			
Dissolved Iron (Fe)	ug/L	300	-	300	6600	100	7610515			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

LANDFILL STANDARDS SCH 5 - GW COMP. LIST (WATER)

BV Labs ID					QTV938			QTV938		
Sampling Date					2021/09/25 12:00			2021/09/25 12:00		
COC Number					844810-02-01			844810-02-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW12**	**RDL**	**QC Batch**	**MW12 Lab-Dup**	**RDL**	**QC Batch**
Dissolved Lead (Pb)	ug/L	5	10	-	<0.50	0.50	7610515			
Dissolved Magnesium (Mg)	ug/L	-	-	-	42000	50	7610515			
Dissolved Manganese (Mn)	ug/L	-	-	50	1000	2.0	7610515			
Dissolved Molybdenum (Mo)	ug/L	40	-	-	<0.50	0.50	7610515			
Dissolved Nickel (Ni)	ug/L	25	-	-	3.7	1.0	7610515			
Dissolved Potassium (K)	ug/L	-	-	-	15000	200	7610515			
Dissolved Selenium (Se)	ug/L	100	50	-	<2.0	2.0	7610515			
Dissolved Silicon (Si)	ug/L	-	-	-	5700	50	7610515			
Dissolved Sodium (Na)	ug/L	-	-	200000	39000	100	7610515			
Dissolved Strontium (Sr)	ug/L	-	-	-	290	1.0	7610515			
Dissolved Thallium (Tl)	ug/L	0.3	-	-	<0.050	0.050	7610515			
Dissolved Tin (Sn)	ug/L	-	-	-	<1.0	1.0	7610515			
Dissolved Vanadium (V)	ug/L	6	-	-	<0.50	0.50	7610515			
Dissolved Zinc (Zn)	ug/L	30	-	5000	<5.0	5.0	7610515			

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999

MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

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LANDFILL STANDARDS SCH 5 - SW COMP. LIST (WATER)

BV Labs ID					QTV939		QTV940		
Sampling Date					2021/09/25 19:00		2021/09/26 13:30		
COC Number					844811-01-01		844811-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**SW1**	**QC Batch**	**SW2**	**RDL**	**QC Batch**
Inorganics									
Total Ammonia-N	mg/L	-	-	-	0.11	7608777	<0.050	0.050	7608777
Total BOD	mg/L	-	-	-	<2	7607131	<2	2	7607131
Total Chemical Oxygen Demand (COD)	mg/L	-	-	-	31	7611725	36	4.0	7611725
Conductivity	umho/cm	-	-	-	270	7607497	220	1.0	7607497
Total Dissolved Solids	mg/L	-	-	500	190	7611662	135	10	7611662
Total Kjeldahl Nitrogen (TKN)	mg/L	-	-	-	0.47	7611787	0.50	0.10	7611787
pH	pH	6.5:8.5	-	6.5:8.5	8.15	7607507	8.16		7607507
Phenols-4AAP	mg/L	0.001	-	-	0.0011	7607192	<0.0010	0.0010	7607192
Total Phosphorus	mg/L	0.01	-	-	0.021	7612551	0.029	0.004	7612551
Total Suspended Solids	mg/L	-	-	-	4	7611097	9	1	7611097
Dissolved Sulphate (SO4)	mg/L	-	-	500	6.3	7607904	13	1.0	7607855
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500	100	7607494	96	1.0	7607494
Dissolved Chloride (Cl-)	mg/L	-	-	250	26	7607870	9.8	1.0	7607850
Nitrite (N)	mg/L	-	1	-	<0.010	7607390	<0.010	0.010	7607797
Nitrate (N)	mg/L	-	10	-	<0.10	7607390	<0.10	0.10	7607797
Metals									
Mercury (Hg)	mg/L	0.0002	0.001	-	<0.00010	7610180	<0.00010	0.00010	7610180
Total Antimony (Sb)	ug/L	20	6	-	<0.50	7613192	0.70	0.50	7613192
Total Arsenic (As)	ug/L	100	10	-	36	7613192	57	1.0	7613192
Total Barium (Ba)	ug/L	-	1000	-	18	7613192	9.7	2.0	7613192
Total Beryllium (Be)	ug/L	11	-	-	<0.40	7613192	<0.40	0.40	7613192
Total Bismuth (Bi)	ug/L	-	-	-	<1.0	7613192	<1.0	1.0	7613192
Total Boron (B)	ug/L	200	5000	-	<10	7613192	13	10	7613192
Total Cadmium (Cd)	ug/L	0.2	5	-	<0.090	7613192	<0.090	0.090	7613192
Total Calcium (Ca)	ug/L	-	-	-	35000	7613192	32000	200	7613192
Total Chromium (Cr)	ug/L	-	50	-	<5.0	7613192	<5.0	5.0	7613192
Total Cobalt (Co)	ug/L	0.9	-	-	<0.50	7613192	<0.50	0.50	7613192
Total Copper (Cu)	ug/L	5	-	1000	2.6	7613192	4.0	0.90	7613192
Total Iron (Fe)	ug/L	300	-	300	480	7613192	230	100	7613192
Total Lead (Pb)	ug/L	5	10	-	<0.50	7613192	<0.50	0.50	7613192

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

LANDFILL STANDARDS SCH 5 - SW COMP. LIST (WATER)

BV Labs ID					QTV939		QTV940		
Sampling Date					2021/09/25 19:00		2021/09/26 13:30		
COC Number					844811-01-01		844811-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**SW1**	**QC Batch**	**SW2**	**RDL**	**QC Batch**
Total Magnesium (Mg)	ug/L	-	-	-	6800	7613192	6600	50	7613192
Total Manganese (Mn)	ug/L	-	-	50	39	7613192	20	2.0	7613192
Total Molybdenum (Mo)	ug/L	40	-	-	<0.50	7613192	<0.50	0.50	7613192
Total Nickel (Ni)	ug/L	25	-	-	1.1	7613192	1.3	1.0	7613192
Total Potassium (K)	ug/L	-	-	-	790	7613192	880	200	7613192
Total Selenium (Se)	ug/L	100	50	-	<2.0	7613192	<2.0	2.0	7613192
Total Silicon (Si)	ug/L	-	-	-	2600	7613192	2800	50	7613192
Total Silver (Ag)	ug/L	0.1	-	-	<0.090	7613192	<0.090	0.090	7613192
Total Sodium (Na)	ug/L	-	-	200000	16000	7613192	6400	100	7613192
Total Strontium (Sr)	ug/L	-	-	-	45	7613192	46	1.0	7613192
Total Thallium (Tl)	ug/L	0.3	-	-	<0.050	7613192	<0.050	0.050	7613192
Total Vanadium (V)	ug/L	6	-	-	0.71	7613192	0.87	0.50	7613192
Total Zinc (Zn)	ug/L	30	-	5000	<5.0	7613192	<5.0	5.0	7613192

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

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LANDFILL STANDARDS SCH 5 - SW COMP. LIST (WATER)

BV Labs ID					QTV940			QTV941		
Sampling Date					2021/09/26 13:30			2021/09/26 14:00		
COC Number					844811-01-01			844811-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**SW2 Lab-Dup**	**RDL**	**QC Batch**	**SW3**	**RDL**	**QC Batch**
Inorganics										
Total Ammonia-N	mg/L	-	-	-				0.052	0.050	7608777
Total BOD	mg/L	-	-	-				<2	2	7607131
Total Chemical Oxygen Demand (COD)	mg/L	-	-	-				34	4.0	7611725
Conductivity	umho/cm	-	-	-				220	1.0	7607497
Total Dissolved Solids	mg/L	-	-	500				160	10	7611662
Total Kjeldahl Nitrogen (TKN)	mg/L	-	-	-				0.49	0.10	7611787
pH	pH	6.5:8.5	-	6.5:8.5				8.17		7607507
Phenols-4AAP	mg/L	0.001	-	-				<0.0010	0.0010	7607160
Total Phosphorus	mg/L	0.01	-	-				0.025	0.004	7612551
Total Suspended Solids	mg/L	-	-	-				9	1	7611097
Dissolved Sulphate (SO4)	mg/L	-	-	500	12	1.0	7607855	15	1.0	7607904
Alkalinity (Total as CaCO3)	mg/L	-	-	30:500				91	1.0	7607494
Dissolved Chloride (Cl-)	mg/L	-	-	250	10	1.0	7607850	12	1.0	7607870
Nitrite (N)	mg/L	-	1	-				<0.010	0.010	7607390
Nitrate (N)	mg/L	-	10	-				<0.10	0.10	7607390
Metals										
Mercury (Hg)	mg/L	0.0002	0.001	-				<0.00010	0.00010	7612172
Total Antimony (Sb)	ug/L	20	6	-				0.90	0.50	7613192
Total Arsenic (As)	ug/L	100	10	-				66	1.0	7613192
Total Barium (Ba)	ug/L	-	1000	-				9.5	2.0	7613192
Total Beryllium (Be)	ug/L	11	-	-				<0.40	0.40	7613192
Total Bismuth (Bi)	ug/L	-	-	-				<1.0	1.0	7613192
Total Boron (B)	ug/L	200	5000	-				<10	10	7613192
Total Cadmium (Cd)	ug/L	0.2	5	-				<0.090	0.090	7613192
Total Calcium (Ca)	ug/L	-	-	-				31000	200	7613192
Total Chromium (Cr)	ug/L	-	50	-				<5.0	5.0	7613192
Total Cobalt (Co)	ug/L	0.9	-	-				<0.50	0.50	7613192
Total Copper (Cu)	ug/L	5	-	1000				5.1	0.90	7613192
Total Iron (Fe)	ug/L	300	-	300				330	100	7613192

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

LANDFILL STANDARDS SCH 5 - SW COMP. LIST (WATER)

BV Labs ID					QTV940			QTV941		
Sampling Date					2021/09/26 13:30			2021/09/26 14:00		
COC Number					844811-01-01			844811-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**SW2 Lab-Dup**	**RDL**	**QC Batch**	**SW3**	**RDL**	**QC Batch**
Total Lead (Pb)	ug/L	5	10	-				<0.50	0.50	7613192
Total Magnesium (Mg)	ug/L	-	-	-				6600	50	7613192
Total Manganese (Mn)	ug/L	-	-	50				15	2.0	7613192
Total Molybdenum (Mo)	ug/L	40	-	-				<0.50	0.50	7613192
Total Nickel (Ni)	ug/L	25	-	-				1.8	1.0	7613192
Total Potassium (K)	ug/L	-	-	-				800	200	7613192
Total Selenium (Se)	ug/L	100	50	-				<2.0	2.0	7613192
Total Silicon (Si)	ug/L	-	-	-				3000	50	7613192
Total Silver (Ag)	ug/L	0.1	-	-				<0.090	0.090	7613192
Total Sodium (Na)	ug/L	-	-	200000				7300	100	7613192
Total Strontium (Sr)	ug/L	-	-	-				50	1.0	7613192
Total Thallium (Tl)	ug/L	0.3	-	-				<0.050	0.050	7613192
Total Vanadium (V)	ug/L	6	-	-				1.0	0.50	7613192
Total Zinc (Zn)	ug/L	30	-	5000				<5.0	5.0	7613192

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999

MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
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BV Labs Job #: C1S0164
Report Date: 2021/10/06

exp Services Inc
Client Project #: THB-00006189-RE
Sampler Initials: KP

RESULTS OF ANALYSES OF WATER

BV Labs ID			QTV925		QTV926		QTV927	QTV928		
Sampling Date			2021/09/25 17:30		2021/09/25 12:30		2021/09/25 10:00	2021/09/25 10:05		
COC Number			844810-01-01		844810-01-01		844810-01-01	844810-01-01		
	UNITS	**A/O**	**MW1**	**QC Batch**	**MW2**	**QC Batch**	**MW3A**	**MW3B**	**RDL**	**QC Batch**
Calculated Parameters										
Hardness (CaCO3)	mg/L	80:100	670	7604865	210	7604865	430	480	1.0	7604865
Ion Balance (% Difference)	%	-	7.24	7604461	3.23	7604461	1.01	0.430	N/A	7604461
Total Organic Nitrogen	mg/L	0.15	0.51	7605156	0.24	7605156	1.1	0.19	0.10	7605156
Inorganics										
Orthophosphate (P)	mg/L	-	<0.010	7608421	<0.010	7607454	<0.010	<0.010	0.010	7609221

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)
N/A = Not Applicable

BV Labs ID			QTV929	QTV930	QTV931			QTV932		
Sampling Date			2021/09/25 18:50	2021/09/25 11:30	2021/09/26 09:20			2021/09/26 10:30		
COC Number			844810-01-01	844810-01-01	844810-01-01			844810-01-01		
	UNITS	**A/O**	**MW4**	**MW5**	**MW6**	**RDL**	**QC Batch**	**MW7**	**RDL**	**QC Batch**
Calculated Parameters										
Hardness (CaCO3)	mg/L	80:100	530	490	240	1.0	7604865	380	1.0	7604865
Ion Balance (% Difference)	%	-	0.870	0.300	1.79	N/A	7604461	1.55	N/A	7604461
Total Organic Nitrogen	mg/L	0.15	0.41	0.29	0.19	0.10	7605156	0.25	0.10	7605156
Inorganics										
Orthophosphate (P)	mg/L	-	<0.010	<0.010	<0.010	0.010	7609221	<0.050	0.050	7607454

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)
N/A = Not Applicable

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BV Labs Job #: C1S0164
Report Date: 2021/10/06

exp Services Inc
Client Project #: THB-00006189-RE
Sampler Initials: KP

RESULTS OF ANALYSES OF WATER

BV Labs ID			QTV933		QTV934			QTV934		
Sampling Date			2021/09/26 08:50		2021/09/25 16:20			2021/09/25 16:20		
COC Number			844810-01-01		844810-01-01			844810-01-01		
	UNITS	**A/O**	**MW8**	**QC Batch**	**MW9**	**RDL**	**QC Batch**	**MW9 Lab-Dup**	**RDL**	**QC Batch**
Calculated Parameters										
Hardness (CaCO3)	mg/L	80:100	720	7604865	300	1.0	7604865			
Ion Balance (% Difference)	%	-	0.260	7604461	0.140	N/A	7604461			
Total Organic Nitrogen	mg/L	0.15	0.44	7605156	0.55	0.10	7605156			
Inorganics										
Orthophosphate (P)	mg/L	-	<0.010	7608421	<0.010	0.010	7609221	<0.010	0.010	7609221

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)
N/A = Not Applicable

BV Labs ID			QTV935		QTV936		QTV937		
Sampling Date			2021/09/26 12:30		2021/09/26 12:40		2021/09/26 11:30		
COC Number			844810-02-01		844810-02-01		844810-02-01		
	UNITS	**A/O**	**MW10A**	**QC Batch**	**MW10B**	**QC Batch**	**MW11**	**RDL**	**QC Batch**
Calculated Parameters									
Hardness (CaCO3)	mg/L	80:100	230	7604865	250	7604865	230	1.0	7604865
Ion Balance (% Difference)	%	-	7.04	7604461	7.30	7604461	2.26	N/A	7604461
Total Organic Nitrogen	mg/L	0.15	0.45	7605156	0.36	7605156	0.68	0.10	7605156
Inorganics									
Orthophosphate (P)	mg/L	-	<0.010	7609221	<0.010	7607454	<0.010	0.010	7609221

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)
N/A = Not Applicable

BV Labs Job #: C1S0164
Report Date: 2021/10/06

exp Services Inc
Client Project #: THB-00006189-RE
Sampler Initials: KP

RESULTS OF ANALYSES OF WATER

BV Labs ID			QTV938			QTV939	QTV940	QTV941		
Sampling Date			2021/09/25 12:00			2021/09/25 19:00	2021/09/26 13:30	2021/09/26 14:00		
COC Number			844810-02-01			844811-01-01	844811-01-01	844811-01-01		
	UNITS	**A/O**	**MW12**	**RDL**	**QC Batch**	**SW1**	**SW2**	**SW3**	**RDL**	**QC Batch**
Calculated Parameters										
Hardness (CaCO3)	mg/L	80:100	500	1.0	7604865	110	100	100	1.0	7604865
Ion Balance (% Difference)	%	-	0.160	N/A	7604461					
Total Organic Nitrogen	mg/L	0.15	0.30	0.10	7605156	0.36	0.50	0.44	0.10	7605156
Inorganics										
Dissolved Organic Carbon	mg/L	5				10	11	11	0.40	7610154
Orthophosphate (P)	mg/L	-	<0.010	0.010	7607454					

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)
N/A = Not Applicable

BV Labs Job #: C1S0164
Report Date: 2021/10/06

exp Services Inc
Client Project #: THB-00006189-RE
Sampler Initials: KP

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

BV Labs ID				QTV939	QTV940	QTV941		
Sampling Date				2021/09/25 19:00	2021/09/26 13:30	2021/09/26 14:00		
COC Number				844811-01-01	844811-01-01	844811-01-01		
	UNITS	**Criteria**	**A/O**	**SW1**	**SW2**	**SW3**	**RDL**	**QC Batch**
Metals								
Dissolved (0.2u) Aluminum (Al)	ug/L	15	100	<5	5	6	5	7608951

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999

A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
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VOLATILE ORGANICS BY GC/MS (WATER)

BV Labs ID					QTV930		
Sampling Date					2021/09/25 11:30		
COC Number					844810-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW5**	**RDL**	**QC Batch**
Volatile Organics							
Acetone (2-Propanone)	ug/L	-	-	-	<10	10	7607230
Benzene	ug/L	100	1	-	<0.10	0.10	7607230
Bromodichloromethane	ug/L	200	-	-	<0.10	0.10	7607230
Bromoform	ug/L	60	-	-	<0.20	0.20	7607230
Bromomethane	ug/L	0.9	-	-	<0.50	0.50	7607230
Carbon Tetrachloride	ug/L	-	2	-	<0.10	0.10	7607230
Chlorobenzene	ug/L	15	80	30	0.25	0.10	7607230
Chloroform	ug/L	-	-	-	<0.10	0.10	7607230
Dibromochloromethane	ug/L	40	-	-	<0.20	0.20	7607230
1,2-Dichlorobenzene	ug/L	2.5	200	3	<0.20	0.20	7607230
1,3-Dichlorobenzene	ug/L	2.5	-	-	<0.20	0.20	7607230
1,4-Dichlorobenzene	ug/L	4	5	1	0.29	0.20	7607230
Dichlorodifluoromethane (FREON 12)	ug/L	-	-	-	<0.50	0.50	7607230
1,1-Dichloroethane	ug/L	200	-	-	0.12	0.10	7607230
1,2-Dichloroethane	ug/L	100	5	-	<0.20	0.20	7607230
1,1-Dichloroethylene	ug/L	40	14	-	<0.10	0.10	7607230
cis-1,2-Dichloroethylene	ug/L	200	-	-	<0.10	0.10	7607230
trans-1,2-Dichloroethylene	ug/L	200	-	-	<0.10	0.10	7607230
1,2-Dichloropropane	ug/L	0.7	-	-	<0.10	0.10	7607230
cis-1,3-Dichloropropene	ug/L	-	-	-	<0.20	0.20	7607230
trans-1,3-Dichloropropene	ug/L	7	-	-	<0.20	0.20	7607230
Ethylbenzene	ug/L	8	140	1.6	<0.10	0.10	7607230
Ethylene Dibromide	ug/L	5	-	-	<0.20	0.20	7607230
Hexane	ug/L	-	-	-	<0.50	0.50	7607230
Methylene Chloride(Dichloromethane)	ug/L	100	50	-	<0.50	0.50	7607230
Methyl Ethyl Ketone (2-Butanone)	ug/L	400	-	-	<5.0	5.0	7607230
Methyl Isobutyl Ketone	ug/L	-	-	-	<5.0	5.0	7607230
Methyl t-butyl ether (MTBE)	ug/L	200	-	15	<0.20	0.20	7607230
Styrene	ug/L	4	-	-	<0.20	0.20	7607230
1,1,1,2-Tetrachloroethane	ug/L	20	-	-	<0.20	0.20	7607230

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

VOLATILE ORGANICS BY GC/MS (WATER)

BV Labs ID					QTV930		
Sampling Date					2021/09/25 11:30		
COC Number					844810-01-01		
	UNITS	**Criteria**	**MAC**	**A/O**	**MW5**	**RDL**	**QC Batch**
1,1,2,2-Tetrachloroethane	ug/L	70	-	-	<0.20	0.20	7607230
Tetrachloroethylene	ug/L	50	10	-	<0.10	0.10	7607230
Toluene	ug/L	0.8	60	24	<0.20	0.20	7607230
1,1,1-Trichloroethane	ug/L	10	-	-	<0.10	0.10	7607230
1,1,2-Trichloroethane	ug/L	800	-	-	<0.20	0.20	7607230
Trichloroethylene	ug/L	20	5	-	<0.10	0.10	7607230
Trichlorofluoromethane (FREON 11)	ug/L	-	-	-	<0.20	0.20	7607230
Vinyl Chloride	ug/L	600	1	-	<0.20	0.20	7607230
p+m-Xylene	ug/L	2	-	-	<0.10	0.10	7607230
o-Xylene	ug/L	40	-	-	<0.10	0.10	7607230
Total Xylenes	ug/L	-	90	20	<0.10	0.10	7607230
Surrogate Recovery (%)							
4-Bromofluorobenzene	%	-	-	-	96		7607230
D4-1,2-Dichloroethane	%	-	-	-	99		7607230
D8-Toluene	%	-	-	-	100		7607230

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

TEST SUMMARY

BV Labs ID: QTV925
Sample ID: MW1
Matrix: Water

Collected: 2021/09/25
Shipped:
Received: 2021/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7607494	N/A	2021/09/30	Surinder Rai
Chloride by Automated Colourimetry	KONE	7608407	N/A	2021/09/30	Avneet Kour Sudan
Chemical Oxygen Demand	SPEC	7611725	N/A	2021/10/02	Nimarta Singh
Conductivity	AT	7607497	N/A	2021/09/30	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7610154	N/A	2021/09/30	Julianna Castiglione
Hardness (calculated as CaCO3)		7604865	N/A	2021/10/06	Automated Statchk
Mercury in Water by CVAA	CV/AA	7610180	2021/09/30	2021/09/30	Gagandeep Rai
Dissolved Metals by ICPMS	ICP/MS	7610515	N/A	2021/10/05	Azita Fazaeli
Ion Balance (% Difference)	CALC	7604461	N/A	2021/10/06	Automated Statchk
Total Ammonia-N	LACH/NH4	7608777	N/A	2021/10/02	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7607797	N/A	2021/09/30	Chandra Nandlal
Organic Nitrogen	CALC	7605156	N/A	2021/10/03	Automated Statchk
pH	AT	7607507	2021/09/29	2021/09/30	Surinder Rai
Phenols (4AAP)	TECH/PHEN	7607173	N/A	2021/09/29	Deonarine Ramnarine
Orthophosphate	KONE	7608421	N/A	2021/09/30	Avneet Kour Sudan
Sulphate by Automated Colourimetry	KONE	7608416	N/A	2021/09/30	Avneet Kour Sudan
Total Dissolved Solids	BAL	7610620	2021/09/30	2021/10/01	Shaneil Hall
Total Kjeldahl Nitrogen in Water	SKAL	7611787	2021/09/30	2021/10/03	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	7612011	2021/10/01	2021/10/01	Shivani Shivani

BV Labs ID: QTV925 Dup
Sample ID: MW1
Matrix: Water

Collected: 2021/09/25
Shipped:
Received: 2021/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Kjeldahl Nitrogen in Water	SKAL	7611787	2021/09/30	2021/10/03	Rajni Tyagi

BV Labs ID: QTV926
Sample ID: MW2
Matrix: Water

Collected: 2021/09/25
Shipped:
Received: 2021/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7607494	N/A	2021/09/30	Surinder Rai
Chloride by Automated Colourimetry	KONE	7607448	N/A	2021/09/29	Alina Dobreanu
Chemical Oxygen Demand	SPEC	7611725	N/A	2021/10/02	Nimarta Singh
Conductivity	AT	7607497	N/A	2021/09/30	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7610154	N/A	2021/09/30	Julianna Castiglione
Hardness (calculated as CaCO3)		7604865	N/A	2021/10/06	Automated Statchk
Mercury in Water by CVAA	CV/AA	7610180	2021/09/30	2021/09/30	Gagandeep Rai
Dissolved Metals by ICPMS	ICP/MS	7610515	N/A	2021/10/05	Azita Fazaeli
Ion Balance (% Difference)	CALC	7604461	N/A	2021/10/06	Automated Statchk
Total Ammonia-N	LACH/NH4	7608777	N/A	2021/10/02	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7607390	N/A	2021/09/29	Chandra Nandlal
Organic Nitrogen	CALC	7605156	N/A	2021/10/03	Automated Statchk
pH	AT	7607507	2021/09/29	2021/09/30	Surinder Rai

TEST SUMMARY

BV Labs ID: QTV926
Sample ID: MW2
Matrix: Water

Collected: 2021/09/25
Shipped:
Received: 2021/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Phenols (4AAP)	TECH/PHEN	7607192	N/A	2021/09/29	Deonarine Ramnarine
Orthophosphate	KONE	7607454	N/A	2021/09/29	Avneet Kour Sudan
Sulphate by Automated Colourimetry	KONE	7607452	N/A	2021/09/30	Avneet Kour Sudan
Total Dissolved Solids	BAL	7610620	2021/09/30	2021/10/01	Shaneil Hall
Total Kjeldahl Nitrogen in Water	SKAL	7611787	2021/09/30	2021/10/01	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	7612011	2021/10/01	2021/10/01	Shivani Shivani

BV Labs ID: QTV927
Sample ID: MW3A
Matrix: Water

Collected: 2021/09/25
Shipped:
Received: 2021/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7608955	N/A	2021/10/01	Surinder Rai
Chloride by Automated Colourimetry	KONE	7609208	N/A	2021/09/30	Avneet Kour Sudan
Chemical Oxygen Demand	SPEC	7611725	N/A	2021/10/02	Nimarta Singh
Conductivity	AT	7608963	N/A	2021/10/01	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7610154	N/A	2021/09/30	Julianna Castiglione
Hardness (calculated as CaCO3)		7604865	N/A	2021/10/06	Automated Statchk
Mercury in Water by CVAA	CV/AA	7610180	2021/09/30	2021/09/30	Gagandeep Rai
Dissolved Metals by ICPMS	ICP/MS	7610515	N/A	2021/10/05	Azita Fazaeli
Ion Balance (% Difference)	CALC	7604461	N/A	2021/10/06	Automated Statchk
Total Ammonia-N	LACH/NH4	7608777	N/A	2021/10/02	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7608991	N/A	2021/09/30	Chandra Nandlal
Organic Nitrogen	CALC	7605156	N/A	2021/10/03	Automated Statchk
pH	AT	7608969	2021/09/29	2021/10/01	Surinder Rai
Phenols (4AAP)	TECH/PHEN	7607192	N/A	2021/09/29	Deonarine Ramnarine
Orthophosphate	KONE	7609221	N/A	2021/09/30	Avneet Kour Sudan
Sulphate by Automated Colourimetry	KONE	7609217	N/A	2021/09/30	Avneet Kour Sudan
Total Dissolved Solids	BAL	7610620	2021/09/30	2021/10/01	Shaneil Hall
Total Kjeldahl Nitrogen in Water	SKAL	7611787	2021/09/30	2021/10/03	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	7612011	2021/10/01	2021/10/01	Shivani Shivani

BV Labs ID: QTV928
Sample ID: MW3B
Matrix: Water

Collected: 2021/09/25
Shipped:
Received: 2021/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7608955	N/A	2021/10/01	Surinder Rai
Chloride by Automated Colourimetry	KONE	7609208	N/A	2021/09/30	Avneet Kour Sudan
Chemical Oxygen Demand	SPEC	7611725	N/A	2021/10/02	Nimarta Singh
Conductivity	AT	7608963	N/A	2021/10/01	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7610154	N/A	2021/09/30	Julianna Castiglione
Hardness (calculated as CaCO3)		7604865	N/A	2021/10/06	Automated Statchk
Mercury in Water by CVAA	CV/AA	7610180	2021/09/30	2021/09/30	Gagandeep Rai
Dissolved Metals by ICPMS	ICP/MS	7610515	N/A	2021/10/05	Azita Fazaeli

TEST SUMMARY

BV Labs ID: QTV928
Sample ID: MW3B
Matrix: Water

Collected: 2021/09/25
Shipped:
Received: 2021/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Ion Balance (% Difference)	CALC	7604461	N/A	2021/10/06	Automated Statchk
Total Ammonia-N	LACH/NH4	7608777	N/A	2021/10/02	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7608991	N/A	2021/09/30	Chandra Nandlal
Organic Nitrogen	CALC	7605156	N/A	2021/10/03	Automated Statchk
pH	AT	7608969	2021/09/29	2021/10/01	Surinder Rai
Phenols (4AAP)	TECH/PHEN	7607173	N/A	2021/09/29	Deonarine Ramnarine
Orthophosphate	KONE	7609221	N/A	2021/09/30	Avneet Kour Sudan
Sulphate by Automated Colourimetry	KONE	7609217	N/A	2021/09/30	Avneet Kour Sudan
Total Dissolved Solids	BAL	7610620	2021/09/30	2021/10/01	Shaneil Hall
Total Kjeldahl Nitrogen in Water	SKAL	7611787	2021/09/30	2021/10/03	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	7612011	2021/10/01	2021/10/01	Shivani Shivani

BV Labs ID: QTV928 Dup
Sample ID: MW3B
Matrix: Water

Collected: 2021/09/25
Shipped:
Received: 2021/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7608955	N/A	2021/10/01	Surinder Rai
Conductivity	AT	7608963	N/A	2021/10/01	Surinder Rai
pH	AT	7608969	2021/09/29	2021/10/01	Surinder Rai

BV Labs ID: QTV929
Sample ID: MW4
Matrix: Water

Collected: 2021/09/25
Shipped:
Received: 2021/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7608955	N/A	2021/10/01	Surinder Rai
Chloride by Automated Colourimetry	KONE	7609208	N/A	2021/09/30	Avneet Kour Sudan
Chemical Oxygen Demand	SPEC	7611725	N/A	2021/10/02	Nimarta Singh
Conductivity	AT	7608963	N/A	2021/10/01	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7610154	N/A	2021/09/30	Julianna Castiglione
Hardness (calculated as CaCO3)		7604865	N/A	2021/10/06	Automated Statchk
Mercury in Water by CVAA	CV/AA	7610180	2021/09/30	2021/09/30	Gagandeep Rai
Dissolved Metals by ICPMS	ICP/MS	7610515	N/A	2021/10/05	Azita Fazaeli
Ion Balance (% Difference)	CALC	7604461	N/A	2021/10/06	Automated Statchk
Total Ammonia-N	LACH/NH4	7608777	N/A	2021/10/02	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7608991	N/A	2021/09/30	Chandra Nandlal
Organic Nitrogen	CALC	7605156	N/A	2021/10/03	Automated Statchk
pH	AT	7608969	2021/09/29	2021/10/01	Surinder Rai
Phenols (4AAP)	TECH/PHEN	7607173	N/A	2021/09/29	Deonarine Ramnarine
Orthophosphate	KONE	7609221	N/A	2021/09/30	Avneet Kour Sudan
Sulphate by Automated Colourimetry	KONE	7609217	N/A	2021/09/30	Avneet Kour Sudan
Total Dissolved Solids	BAL	7610620	2021/09/30	2021/10/01	Shaneil Hall
Total Kjeldahl Nitrogen in Water	SKAL	7611787	2021/09/30	2021/10/01	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	7612011	2021/10/01	2021/10/01	Shivani Shivani

TEST SUMMARY

BV Labs ID: QTV929 Dup
Sample ID: MW4
Matrix: Water

Collected: 2021/09/25
Shipped:
Received: 2021/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Phenols (4AAP)	TECH/PHEN	7607173	N/A	2021/09/29	Deonarine Ramnarine

BV Labs ID: QTV930
Sample ID: MW5
Matrix: Water

Collected: 2021/09/25
Shipped:
Received: 2021/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7608955	N/A	2021/10/01	Surinder Rai
Chloride by Automated Colourimetry	KONE	7609208	N/A	2021/09/30	Avneet Kour Sudan
Chemical Oxygen Demand	SPEC	7611725	N/A	2021/10/02	Nimarta Singh
Conductivity	AT	7608963	N/A	2021/10/01	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7610154	N/A	2021/09/30	Julianna Castiglione
Hardness (calculated as CaCO3)		7604865	N/A	2021/10/06	Automated Statchk
Mercury in Water by CVAA	CV/AA	7610180	2021/09/30	2021/09/30	Gagandeep Rai
Dissolved Metals by ICPMS	ICP/MS	7610515	N/A	2021/10/05	Azita Fazaeli
Ion Balance (% Difference)	CALC	7604461	N/A	2021/10/06	Automated Statchk
Total Ammonia-N	LACH/NH4	7608777	N/A	2021/10/02	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7608991	N/A	2021/09/30	Chandra Nandlal
Organic Nitrogen	CALC	7605156	N/A	2021/10/03	Automated Statchk
pH	AT	7608969	2021/09/29	2021/10/01	Surinder Rai
Phenols (4AAP)	TECH/PHEN	7607192	N/A	2021/09/29	Deonarine Ramnarine
Orthophosphate	KONE	7609221	N/A	2021/09/30	Avneet Kour Sudan
Sulphate by Automated Colourimetry	KONE	7609217	N/A	2021/09/30	Avneet Kour Sudan
Total Dissolved Solids	BAL	7610620	2021/09/30	2021/10/01	Shaneil Hall
Total Kjeldahl Nitrogen in Water	SKAL	7611787	2021/09/30	2021/10/01	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	7612011	2021/10/01	2021/10/01	Shivani Shivani
Volatile Organic Compounds in Water	P&T/MS	7607230	N/A	2021/10/01	Gladys Guerrero

BV Labs ID: QTV931
Sample ID: MW6
Matrix: Water

Collected: 2021/09/26
Shipped:
Received: 2021/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7608955	N/A	2021/10/01	Surinder Rai
Chloride by Automated Colourimetry	KONE	7609208	N/A	2021/09/30	Avneet Kour Sudan
Chemical Oxygen Demand	SPEC	7611725	N/A	2021/10/02	Nimarta Singh
Conductivity	AT	7608963	N/A	2021/10/01	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7610154	N/A	2021/09/30	Julianna Castiglione
Hardness (calculated as CaCO3)		7604865	N/A	2021/10/06	Automated Statchk
Mercury in Water by CVAA	CV/AA	7610180	2021/09/30	2021/09/30	Gagandeep Rai
Dissolved Metals by ICPMS	ICP/MS	7610515	N/A	2021/10/05	Azita Fazaeli
Ion Balance (% Difference)	CALC	7604461	N/A	2021/10/06	Automated Statchk
Total Ammonia-N	LACH/NH4	7608777	N/A	2021/10/02	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7608991	N/A	2021/09/30	Chandra Nandlal
Organic Nitrogen	CALC	7605156	N/A	2021/10/03	Automated Statchk

TEST SUMMARY

BV Labs ID: QTV931
Sample ID: MW6
Matrix: Water

Collected: 2021/09/26
Shipped:
Received: 2021/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH	AT	7608969	2021/09/29	2021/10/01	Surinder Rai
Phenols (4AAP)	TECH/PHEN	7607192	N/A	2021/09/29	Deonarine Ramnarine
Orthophosphate	KONE	7609221	N/A	2021/09/30	Avneet Kour Sudan
Sulphate by Automated Colourimetry	KONE	7609217	N/A	2021/09/30	Avneet Kour Sudan
Total Dissolved Solids	BAL	7610620	2021/09/30	2021/10/01	Shaneil Hall
Total Kjeldahl Nitrogen in Water	SKAL	7611787	2021/09/30	2021/10/01	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	7612011	2021/10/01	2021/10/01	Shivani Shivani

BV Labs ID: QTV931 Dup
Sample ID: MW6
Matrix: Water

Collected: 2021/09/26
Shipped:
Received: 2021/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7610154	N/A	2021/09/30	Julianna Castiglione

BV Labs ID: QTV932
Sample ID: MW7
Matrix: Water

Collected: 2021/09/26
Shipped:
Received: 2021/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7607494	N/A	2021/09/30	Surinder Rai
Chloride by Automated Colourimetry	KONE	7607448	N/A	2021/09/29	Alina Dobreanu
Chemical Oxygen Demand	SPEC	7611725	N/A	2021/10/02	Nimarta Singh
Conductivity	AT	7607497	N/A	2021/09/30	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7610154	N/A	2021/09/30	Julianna Castiglione
Hardness (calculated as CaCO3)		7604865	N/A	2021/10/06	Automated Statchk
Mercury in Water by CVAA	CV/AA	7610180	2021/09/30	2021/09/30	Gagandeep Rai
Dissolved Metals by ICPMS	ICP/MS	7610515	N/A	2021/10/05	Azita Fazaeli
Ion Balance (% Difference)	CALC	7604461	N/A	2021/10/06	Automated Statchk
Total Ammonia-N	LACH/NH4	7608777	N/A	2021/10/02	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7607390	N/A	2021/09/29	Chandra Nandlal
Organic Nitrogen	CALC	7605156	N/A	2021/10/03	Automated Statchk
pH	AT	7607507	2021/09/29	2021/09/30	Surinder Rai
Phenols (4AAP)	TECH/PHEN	7607192	N/A	2021/09/29	Deonarine Ramnarine
Orthophosphate	KONE	7607454	N/A	2021/09/29	Avneet Kour Sudan
Sulphate by Automated Colourimetry	KONE	7607452	N/A	2021/09/30	Avneet Kour Sudan
Total Dissolved Solids	BAL	7610620	2021/09/30	2021/10/01	Shaneil Hall
Total Kjeldahl Nitrogen in Water	SKAL	7611787	2021/09/30	2021/10/03	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	7612011	2021/10/01	2021/10/01	Shivani Shivani

TEST SUMMARY

BV Labs ID: QTV933
Sample ID: MW8
Matrix: Water

Collected: 2021/09/26
Shipped:
Received: 2021/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7607494	N/A	2021/09/30	Surinder Rai
Chloride by Automated Colourimetry	KONE	7608407	N/A	2021/09/30	Avneet Kour Sudan
Chemical Oxygen Demand	SPEC	7611725	N/A	2021/10/02	Nimarta Singh
Conductivity	AT	7607497	N/A	2021/09/30	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7610154	N/A	2021/09/30	Julianna Castiglione
Hardness (calculated as CaCO3)		7604865	N/A	2021/10/06	Automated Statchk
Mercury in Water by CVAA	CV/AA	7610180	2021/09/30	2021/09/30	Gagandeep Rai
Dissolved Metals by ICPMS	ICP/MS	7610515	N/A	2021/10/06	Azita Fazaeli
Ion Balance (% Difference)	CALC	7604461	N/A	2021/10/06	Automated Statchk
Total Ammonia-N	LACH/NH4	7608777	N/A	2021/10/02	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7607797	N/A	2021/09/30	Chandra Nandlal
Organic Nitrogen	CALC	7605156	N/A	2021/10/03	Automated Statchk
pH	AT	7607507	2021/09/29	2021/09/30	Surinder Rai
Phenols (4AAP)	TECH/PHEN	7607173	N/A	2021/09/29	Deonarine Ramnarine
Orthophosphate	KONE	7608421	N/A	2021/09/30	Avneet Kour Sudan
Sulphate by Automated Colourimetry	KONE	7608416	N/A	2021/09/30	Avneet Kour Sudan
Total Dissolved Solids	BAL	7610620	2021/09/30	2021/10/01	Shaneil Hall
Total Kjeldahl Nitrogen in Water	SKAL	7611787	2021/09/30	2021/10/01	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	7612011	2021/10/01	2021/10/01	Shivani Shivani

BV Labs ID: QTV934
Sample ID: MW9
Matrix: Water

Collected: 2021/09/25
Shipped:
Received: 2021/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7608955	N/A	2021/10/01	Surinder Rai
Chloride by Automated Colourimetry	KONE	7609208	N/A	2021/09/30	Avneet Kour Sudan
Chemical Oxygen Demand	SPEC	7611725	N/A	2021/10/02	Nimarta Singh
Conductivity	AT	7608963	N/A	2021/10/01	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7610154	N/A	2021/09/30	Julianna Castiglione
Hardness (calculated as CaCO3)		7604865	N/A	2021/10/06	Automated Statchk
Mercury in Water by CVAA	CV/AA	7610180	2021/09/30	2021/09/30	Gagandeep Rai
Dissolved Metals by ICPMS	ICP/MS	7610515	N/A	2021/10/05	Azita Fazaeli
Ion Balance (% Difference)	CALC	7604461	N/A	2021/10/06	Automated Statchk
Total Ammonia-N	LACH/NH4	7608777	N/A	2021/10/02	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7608991	N/A	2021/09/30	Chandra Nandlal
Organic Nitrogen	CALC	7605156	N/A	2021/10/03	Automated Statchk
pH	AT	7608969	2021/09/29	2021/10/01	Surinder Rai
Phenols (4AAP)	TECH/PHEN	7607173	N/A	2021/09/29	Deonarine Ramnarine
Orthophosphate	KONE	7609221	N/A	2021/09/30	Avneet Kour Sudan
Sulphate by Automated Colourimetry	KONE	7609217	N/A	2021/09/30	Avneet Kour Sudan
Total Dissolved Solids	BAL	7610620	2021/09/30	2021/10/01	Shaneil Hall
Total Kjeldahl Nitrogen in Water	SKAL	7611787	2021/09/30	2021/10/01	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	7612011	2021/10/01	2021/10/01	Shivani Shivani

TEST SUMMARY

BV Labs ID: QTV934 Dup
Sample ID: MW9
Matrix: Water

Collected: 2021/09/25
Shipped:
Received: 2021/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	KONE	7609208	N/A	2021/09/30	Avneet Kour Sudan
Orthophosphate	KONE	7609221	N/A	2021/09/30	Avneet Kour Sudan
Sulphate by Automated Colourimetry	KONE	7609217	N/A	2021/09/30	Avneet Kour Sudan

BV Labs ID: QTV935
Sample ID: MW10A
Matrix: Water

Collected: 2021/09/26
Shipped:
Received: 2021/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7608955	N/A	2021/10/01	Surinder Rai
Chloride by Automated Colourimetry	KONE	7609208	N/A	2021/09/30	Avneet Kour Sudan
Chemical Oxygen Demand	SPEC	7611725	N/A	2021/10/02	Nimarta Singh
Conductivity	AT	7608963	N/A	2021/10/01	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7610154	N/A	2021/09/30	Julianna Castiglione
Hardness (calculated as CaCO3)		7604865	N/A	2021/10/06	Automated Statchk
Mercury in Water by CVAA	CV/AA	7607772	2021/09/29	2021/09/29	Gagandeep Rai
Dissolved Metals by ICPMS	ICP/MS	7610515	N/A	2021/10/05	Azita Fazaeli
Ion Balance (% Difference)	CALC	7604461	N/A	2021/10/06	Automated Statchk
Total Ammonia-N	LACH/NH4	7608777	N/A	2021/10/02	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7608991	N/A	2021/09/30	Chandra Nandlal
Organic Nitrogen	CALC	7605156	N/A	2021/10/03	Automated Statchk
pH	AT	7608969	2021/09/29	2021/10/01	Surinder Rai
Phenols (4AAP)	TECH/PHEN	7607192	N/A	2021/09/29	Deonarine Ramnarine
Orthophosphate	KONE	7609221	N/A	2021/09/30	Avneet Kour Sudan
Sulphate by Automated Colourimetry	KONE	7609217	N/A	2021/09/30	Avneet Kour Sudan
Total Dissolved Solids	BAL	7611055	2021/09/30	2021/10/01	Shaneil Hall
Total Kjeldahl Nitrogen in Water	SKAL	7611787	2021/09/30	2021/10/01	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	7612011	2021/10/01	2021/10/01	Shivani Shivani

BV Labs ID: QTV936
Sample ID: MW10B
Matrix: Water

Collected: 2021/09/26
Shipped:
Received: 2021/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7607494	N/A	2021/09/30	Surinder Rai
Chloride by Automated Colourimetry	KONE	7607448	N/A	2021/09/29	Alina Dobreanu
Chemical Oxygen Demand	SPEC	7611725	N/A	2021/10/02	Nimarta Singh
Conductivity	AT	7607497	N/A	2021/09/30	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7610154	N/A	2021/09/30	Julianna Castiglione
Hardness (calculated as CaCO3)		7604865	N/A	2021/10/06	Automated Statchk
Mercury in Water by CVAA	CV/AA	7612172	2021/10/01	2021/10/01	Gagandeep Rai
Dissolved Metals by ICPMS	ICP/MS	7610515	N/A	2021/10/05	Azita Fazaeli
Ion Balance (% Difference)	CALC	7604461	N/A	2021/10/06	Automated Statchk
Total Ammonia-N	LACH/NH4	7608777	N/A	2021/10/02	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7607390	N/A	2021/09/29	Chandra Nandlal

TEST SUMMARY

BV Labs ID: QTV936
Sample ID: MW10B
Matrix: Water

Collected: 2021/09/26
Shipped:
Received: 2021/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Organic Nitrogen	CALC	7605156	N/A	2021/10/03	Automated Statchk
pH	AT	7607507	2021/09/29	2021/09/30	Surinder Rai
Phenols (4AAP)	TECH/PHEN	7607192	N/A	2021/09/29	Deonarine Ramnarine
Orthophosphate	KONE	7607454	N/A	2021/09/29	Avneet Kour Sudan
Sulphate by Automated Colourimetry	KONE	7607452	N/A	2021/09/30	Avneet Kour Sudan
Total Dissolved Solids	BAL	7610620	2021/09/30	2021/10/01	Shaneil Hall
Total Kjeldahl Nitrogen in Water	SKAL	7611787	2021/09/30	2021/10/01	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	7612011	2021/10/01	2021/10/01	Shivani Shivani

BV Labs ID: QTV937
Sample ID: MW11
Matrix: Water

Collected: 2021/09/26
Shipped:
Received: 2021/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7608955	N/A	2021/10/01	Surinder Rai
Chloride by Automated Colourimetry	KONE	7609208	N/A	2021/09/30	Avneet Kour Sudan
Chemical Oxygen Demand	SPEC	7611725	N/A	2021/10/02	Nimarta Singh
Conductivity	AT	7608963	N/A	2021/10/01	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7610154	N/A	2021/09/30	Julianna Castiglione
Hardness (calculated as CaCO3)		7604865	N/A	2021/10/06	Automated Statchk
Mercury in Water by CVAA	CV/AA	7610180	2021/09/30	2021/09/30	Gagandeep Rai
Dissolved Metals by ICPMS	ICP/MS	7610515	N/A	2021/10/05	Azita Fazaeli
Ion Balance (% Difference)	CALC	7604461	N/A	2021/10/06	Automated Statchk
Total Ammonia-N	LACH/NH4	7608777	N/A	2021/10/02	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7608991	N/A	2021/09/30	Chandra Nandlal
Organic Nitrogen	CALC	7605156	N/A	2021/10/03	Automated Statchk
pH	AT	7608969	2021/09/29	2021/10/01	Surinder Rai
Phenols (4AAP)	TECH/PHEN	7607192	N/A	2021/09/29	Deonarine Ramnarine
Orthophosphate	KONE	7609221	N/A	2021/09/30	Avneet Kour Sudan
Sulphate by Automated Colourimetry	KONE	7609217	N/A	2021/09/30	Avneet Kour Sudan
Total Dissolved Solids	BAL	7610620	2021/09/30	2021/10/01	Shaneil Hall
Total Kjeldahl Nitrogen in Water	SKAL	7611787	2021/09/30	2021/10/03	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	7612011	2021/10/01	2021/10/01	Shivani Shivani

BV Labs ID: QTV938
Sample ID: MW12
Matrix: Water

Collected: 2021/09/25
Shipped:
Received: 2021/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7607494	N/A	2021/09/30	Surinder Rai
Chloride by Automated Colourimetry	KONE	7607448	N/A	2021/09/29	Alina Dobreanu
Chemical Oxygen Demand	SPEC	7611725	N/A	2021/10/02	Nimarta Singh
Conductivity	AT	7607497	N/A	2021/09/30	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7610154	N/A	2021/09/30	Julianna Castiglione
Hardness (calculated as CaCO3)		7604865	N/A	2021/10/06	Automated Statchk

TEST SUMMARY

BV Labs ID: QTV938
Sample ID: MW12
Matrix: Water

Collected: 2021/09/25
Shipped:
Received: 2021/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Water by CVAA	CV/AA	7610180	2021/09/30	2021/09/30	Gagandeep Rai
Dissolved Metals by ICPMS	ICP/MS	7610515	N/A	2021/10/05	Azita Fazaeli
Ion Balance (% Difference)	CALC	7604461	N/A	2021/10/06	Automated Statchk
Total Ammonia-N	LACH/NH4	7608777	N/A	2021/10/02	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7607390	N/A	2021/09/29	Chandra Nandlal
Organic Nitrogen	CALC	7605156	N/A	2021/10/03	Automated Statchk
pH	AT	7607507	2021/09/29	2021/09/30	Surinder Rai
Phenols (4AAP)	TECH/PHEN	7607192	N/A	2021/09/29	Deonarine Ramnarine
Orthophosphate	KONE	7607454	N/A	2021/09/29	Avneet Kour Sudan
Sulphate by Automated Colourimetry	KONE	7607452	N/A	2021/09/30	Avneet Kour Sudan
Total Dissolved Solids	BAL	7611055	2021/09/30	2021/10/01	Shaneil Hall
Total Kjeldahl Nitrogen in Water	SKAL	7611787	2021/09/30	2021/10/01	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	7612011	2021/10/01	2021/10/01	Shivani Shivani

BV Labs ID: QTV938 Dup
Sample ID: MW12
Matrix: Water

Collected: 2021/09/25
Shipped:
Received: 2021/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chemical Oxygen Demand	SPEC	7611725	N/A	2021/10/02	Nimarta Singh
Phenols (4AAP)	TECH/PHEN	7607192	N/A	2021/09/29	Deonarine Ramnarine

BV Labs ID: QTV939
Sample ID: SW1
Matrix: Water

Collected: 2021/09/25
Shipped:
Received: 2021/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Aluminum (0.2 u, clay free)	ICP/MS	7608951	N/A	2021/09/30	Azita Fazaeli
Alkalinity	AT	7607494	N/A	2021/09/30	Surinder Rai
Biochemical Oxygen Demand (BOD)	DO	7607131	2021/09/29	2021/10/04	Surleen Kaur Romana
Chloride by Automated Colourimetry	KONE	7607870	N/A	2021/09/30	Alina Dobreanu
Chemical Oxygen Demand	SPEC	7611725	N/A	2021/10/02	Nimarta Singh
Conductivity	AT	7607497	N/A	2021/09/30	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7610154	N/A	2021/09/30	Julianna Castiglione
Hardness (calculated as CaCO3)		7604865	N/A	2021/10/01	Automated Statchk
Mercury in Water by CVAA	CV/AA	7610180	2021/09/30	2021/09/30	Gagandeep Rai
Total Metals Analysis by ICPMS	ICP/MS	7613192	N/A	2021/10/05	Azita Fazaeli
Total Ammonia-N	LACH/NH4	7608777	N/A	2021/10/02	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7607390	N/A	2021/09/29	Chandra Nandlal
Organic Nitrogen	CALC	7605156	N/A	2021/10/03	Automated Statchk
pH	AT	7607507	2021/09/29	2021/09/30	Surinder Rai
Phenols (4AAP)	TECH/PHEN	7607192	N/A	2021/09/29	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	7607904	N/A	2021/09/30	Alina Dobreanu
Total Dissolved Solids	BAL	7611662	2021/09/30	2021/10/01	Shaneil Hall
Total Kjeldahl Nitrogen in Water	SKAL	7611787	2021/09/30	2021/10/01	Rajni Tyagi

TEST SUMMARY

BV Labs ID: QTV939
Sample ID: SW1
Matrix: Water

Collected: 2021/09/25
Shipped:
Received: 2021/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Phosphorus (Colourimetric)	LACH/P	7612551	2021/10/01	2021/10/04	Shivani Shivani
Low Level Total Suspended Solids	BAL	7611097	2021/10/01	2021/10/01	Sandeep Kaur

BV Labs ID: QTV940
Sample ID: SW2
Matrix: Water

Collected: 2021/09/26
Shipped:
Received: 2021/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Aluminum (0.2 u, clay free)	ICP/MS	7608951	N/A	2021/09/30	Azita Fazaeli
Alkalinity	AT	7607494	N/A	2021/09/30	Surinder Rai
Biochemical Oxygen Demand (BOD)	DO	7607131	2021/09/29	2021/10/04	Surleen Kaur Romana
Chloride by Automated Colourimetry	KONE	7607850	N/A	2021/09/30	Alina Dobreanu
Chemical Oxygen Demand	SPEC	7611725	N/A	2021/10/02	Nimarta Singh
Conductivity	AT	7607497	N/A	2021/09/30	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7610154	N/A	2021/09/30	Julianna Castiglione
Hardness (calculated as CaCO3)		7604865	N/A	2021/10/01	Automated Statchk
Mercury in Water by CVAA	CV/AA	7610180	2021/09/30	2021/09/30	Gagandeep Rai
Total Metals Analysis by ICPMS	ICP/MS	7613192	N/A	2021/10/05	Azita Fazaeli
Total Ammonia-N	LACH/NH4	7608777	N/A	2021/10/02	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7607797	N/A	2021/09/30	Chandra Nandlal
Organic Nitrogen	CALC	7605156	N/A	2021/10/03	Automated Statchk
pH	AT	7607507	2021/09/29	2021/09/30	Surinder Rai
Phenols (4AAP)	TECH/PHEN	7607192	N/A	2021/09/29	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	7607855	N/A	2021/09/30	Alina Dobreanu
Total Dissolved Solids	BAL	7611662	2021/09/30	2021/10/01	Shaneil Hall
Total Kjeldahl Nitrogen in Water	SKAL	7611787	2021/09/30	2021/10/01	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	7612551	2021/10/01	2021/10/04	Shivani Shivani
Low Level Total Suspended Solids	BAL	7611097	2021/10/01	2021/10/01	Sandeep Kaur

BV Labs ID: QTV940 Dup
Sample ID: SW2
Matrix: Water

Collected: 2021/09/26
Shipped:
Received: 2021/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	KONE	7607850	N/A	2021/09/30	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	7607855	N/A	2021/09/30	Alina Dobreanu

BV Labs ID: QTV941
Sample ID: SW3
Matrix: Water

Collected: 2021/09/26
Shipped:
Received: 2021/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Aluminum (0.2 u, clay free)	ICP/MS	7608951	N/A	2021/09/30	Azita Fazaeli
Alkalinity	AT	7607494	N/A	2021/09/30	Surinder Rai
Biochemical Oxygen Demand (BOD)	DO	7607131	2021/09/29	2021/10/04	Surleen Kaur Romana

BV Labs Job #: C1S0164
Report Date: 2021/10/06

exp Services Inc
Client Project #: THB-00006189-RE
Sampler Initials: KP

TEST SUMMARY

BV Labs ID: QTV941
Sample ID: SW3
Matrix: Water

Collected: 2021/09/26
Shipped:
Received: 2021/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	KONE	7607870	N/A	2021/09/30	Alina Dobreanu
Chemical Oxygen Demand	SPEC	7611725	N/A	2021/10/02	Nimarta Singh
Conductivity	AT	7607497	N/A	2021/09/30	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7610154	N/A	2021/09/30	Julianna Castiglione
Hardness (calculated as CaCO3)		7604865	N/A	2021/10/01	Automated Statchk
Mercury in Water by CVAA	CV/AA	7612172	2021/10/01	2021/10/01	Gagandeep Rai
Total Metals Analysis by ICPMS	ICP/MS	7613192	N/A	2021/10/05	Azita Fazaeli
Total Ammonia-N	LACH/NH4	7608777	N/A	2021/10/02	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7607390	N/A	2021/09/29	Chandra Nandlal
Organic Nitrogen	CALC	7605156	N/A	2021/10/03	Automated Statchk
pH	AT	7607507	2021/09/29	2021/09/30	Surinder Rai
Phenols (4AAP)	TECH/PHEN	7607160	N/A	2021/09/29	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	7607904	N/A	2021/09/30	Alina Dobreanu
Total Dissolved Solids	BAL	7611662	2021/09/30	2021/10/01	Shaneil Hall
Total Kjeldahl Nitrogen in Water	SKAL	7611787	2021/09/30	2021/10/01	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	7612551	2021/10/01	2021/10/04	Shivani Shivani
Low Level Total Suspended Solids	BAL	7611097	2021/10/01	2021/10/01	Sandeep Kaur

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

GENERAL COMMENTS

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

Package 1	3.7°C
Package 2	5.0°C
Package 3	1.3°C
Package 4	3.0°C

Results relate only to the items tested.

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

BV Labs Job #: C1S0164
Report Date: 2021/10/06

QUALITY ASSURANCE REPORT

exp Services Inc
Client Project #: THB-00006189-RE
Sampler Initials: KP

			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
7607230	4-Bromofluorobenzene	2021/10/01	100	70 - 130	101	70 - 130	97	%				
7607230	D4-1,2-Dichloroethane	2021/10/01	101	70 - 130	100	70 - 130	101	%				
7607230	D8-Toluene	2021/10/01	100	70 - 130	100	70 - 130	99	%				
7607131	Total BOD	2021/10/04					<2	mg/L	NC	30	89	80 - 120
7607160	Phenols-4AAP	2021/09/29	93	80 - 120	95	80 - 120	<0.0010	mg/L	NC	20		
7607173	Phenols-4AAP	2021/09/29	95	80 - 120	96	80 - 120	<0.0010	mg/L	NC	20		
7607192	Phenols-4AAP	2021/09/29	96	80 - 120	95	80 - 120	<0.0010	mg/L	NC	20		
7607230	1,1,1,2-Tetrachloroethane	2021/10/01	99	70 - 130	93	70 - 130	<0.20	ug/L	NC	30		
7607230	1,1,1-Trichloroethane	2021/10/01	102	70 - 130	97	70 - 130	<0.10	ug/L	NC	30		
7607230	1,1,2,2-Tetrachloroethane	2021/10/01	96	70 - 130	89	70 - 130	<0.20	ug/L	NC	30		
7607230	1,1,2-Trichloroethane	2021/10/01	96	70 - 130	89	70 - 130	<0.20	ug/L	NC	30		
7607230	1,1-Dichloroethane	2021/10/01	93	70 - 130	88	70 - 130	<0.10	ug/L	NC	30		
7607230	1,1-Dichloroethylene	2021/10/01	94	70 - 130	90	70 - 130	<0.10	ug/L	NC	30		
7607230	1,2-Dichlorobenzene	2021/10/01	85	70 - 130	82	70 - 130	<0.20	ug/L	NC	30		
7607230	1,2-Dichloroethane	2021/10/01	93	70 - 130	87	70 - 130	<0.20	ug/L	NC	30		
7607230	1,2-Dichloropropane	2021/10/01	95	70 - 130	90	70 - 130	<0.10	ug/L	NC	30		
7607230	1,3-Dichlorobenzene	2021/10/01	85	70 - 130	82	70 - 130	<0.20	ug/L	NC	30		
7607230	1,4-Dichlorobenzene	2021/10/01	97	70 - 130	94	70 - 130	<0.20	ug/L	NC	30		
7607230	Acetone (2-Propanone)	2021/10/01	97	60 - 140	90	60 - 140	<10	ug/L	NC	30		
7607230	Benzene	2021/10/01	92	70 - 130	87	70 - 130	<0.10	ug/L	NC	30		
7607230	Bromodichloromethane	2021/10/01	103	70 - 130	97	70 - 130	<0.10	ug/L	NC	30		
7607230	Bromoform	2021/10/01	103	70 - 130	95	70 - 130	<0.20	ug/L	NC	30		
7607230	Bromomethane	2021/10/01	89	60 - 140	79	60 - 140	<0.50	ug/L	NC	30		
7607230	Carbon Tetrachloride	2021/10/01	104	70 - 130	97	70 - 130	<0.10	ug/L	NC	30		
7607230	Chlorobenzene	2021/10/01	92	70 - 130	88	70 - 130	<0.10	ug/L	NC	30		
7607230	Chloroform	2021/10/01	96	70 - 130	90	70 - 130	<0.10	ug/L	NC	30		
7607230	cis-1,2-Dichloroethylene	2021/10/01	99	70 - 130	93	70 - 130	<0.10	ug/L	NC	30		
7607230	cis-1,3-Dichloropropene	2021/10/01	93	70 - 130	88	70 - 130	<0.20	ug/L	NC	30		
7607230	Dibromochloromethane	2021/10/01	100	70 - 130	93	70 - 130	<0.20	ug/L	NC	30		
7607230	Dichlorodifluoromethane (FREON 12)	2021/10/01	94	60 - 140	90	60 - 140	<0.50	ug/L	NC	30		
7607230	Ethylbenzene	2021/10/01	88	70 - 130	84	70 - 130	<0.10	ug/L	NC	30		

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
7607230	Ethylene Dibromide	2021/10/01	93	70 - 130	87	70 - 130	<0.20	ug/L	NC	30		
7607230	Hexane	2021/10/01	81	70 - 130	74	70 - 130	<0.50	ug/L	NC	30		
7607230	Methyl Ethyl Ketone (2-Butanone)	2021/10/01	97	60 - 140	90	60 - 140	<5.0	ug/L	NC	30		
7607230	Methyl Isobutyl Ketone	2021/10/01	96	70 - 130	88	70 - 130	<5.0	ug/L	NC	30		
7607230	Methyl t-butyl ether (MTBE)	2021/10/01	94	70 - 130	88	70 - 130	<0.20	ug/L	NC	30		
7607230	Methylene Chloride(Dichloromethane)	2021/10/01	98	70 - 130	93	70 - 130	<0.50	ug/L	NC	30		
7607230	o-Xylene	2021/10/01	89	70 - 130	85	70 - 130	<0.10	ug/L	NC	30		
7607230	p+m-Xylene	2021/10/01	93	70 - 130	88	70 - 130	<0.10	ug/L	NC	30		
7607230	Styrene	2021/10/01	97	70 - 130	92	70 - 130	<0.20	ug/L	NC	30		
7607230	Tetrachloroethylene	2021/10/01	88	70 - 130	83	70 - 130	<0.10	ug/L	NC	30		
7607230	Toluene	2021/10/01	94	70 - 130	88	70 - 130	<0.20	ug/L	NC	30		
7607230	Total Xylenes	2021/10/01					<0.10	ug/L	NC	30		
7607230	trans-1,2-Dichloroethylene	2021/10/01	97	70 - 130	92	70 - 130	<0.10	ug/L	NC	30		
7607230	trans-1,3-Dichloropropene	2021/10/01	94	70 - 130	88	70 - 130	<0.20	ug/L	NC	30		
7607230	Trichloroethylene	2021/10/01	99	70 - 130	96	70 - 130	<0.10	ug/L	NC	30		
7607230	Trichlorofluoromethane (FREON 11)	2021/10/01	99	70 - 130	94	70 - 130	<0.20	ug/L	NC	30		
7607230	Vinyl Chloride	2021/10/01	93	70 - 130	89	70 - 130	<0.20	ug/L	NC	30		
7607390	Nitrate (N)	2021/09/29	100	80 - 120	107	80 - 120	<0.10	mg/L	0.39	20		
7607390	Nitrite (N)	2021/09/29	105	80 - 120	110	80 - 120	<0.010	mg/L	0.43	20		
7607448	Dissolved Chloride (Cl-)	2021/09/29	NC	80 - 120	104	80 - 120	<1.0	mg/L	2.2	20		
7607452	Dissolved Sulphate (SO4)	2021/09/30	NC	75 - 125	99	80 - 120	<1.0	mg/L	0.64	20		
7607454	Orthophosphate (P)	2021/09/29	105	75 - 125	101	80 - 120	<0.010	mg/L	NC	25		
7607494	Alkalinity (Total as CaCO3)	2021/09/30			97	85 - 115	<1.0	mg/L	1.2	20		
7607497	Conductivity	2021/09/30			101	85 - 115	<1.0	umho/cm	1.8	25		
7607507	pH	2021/09/30			101	98 - 103			0.39	N/A		
7607772	Mercury (Hg)	2021/09/29	89	75 - 125	94	80 - 120	<0.00010	mg/L	NC	20		
7607797	Nitrate (N)	2021/09/30	99	80 - 120	100	80 - 120	<0.10	mg/L	NC	20		
7607797	Nitrite (N)	2021/09/30	105	80 - 120	104	80 - 120	<0.010	mg/L	NC	20		
7607850	Dissolved Chloride (Cl-)	2021/09/30	111	80 - 120	103	80 - 120	<1.0	mg/L	6.1	20		
7607855	Dissolved Sulphate (SO4)	2021/09/30	116	75 - 125	104	80 - 120	<1.0	mg/L	7.3	20		

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
7607870	Dissolved Chloride (Cl-)	2021/09/30	NC	80 - 120	103	80 - 120	<1.0	mg/L	1.0	20		
7607904	Dissolved Sulphate (SO4)	2021/09/30	NC	75 - 125	101	80 - 120	<1.0	mg/L	8.2	20		
7608407	Dissolved Chloride (Cl-)	2021/09/30	106	80 - 120	106	80 - 120	<1.0	mg/L	7.3	20		
7608416	Dissolved Sulphate (SO4)	2021/09/30	145 (1)	75 - 125	100	80 - 120	<1.0	mg/L	NC	20		
7608421	Orthophosphate (P)	2021/09/30	114	75 - 125	101	80 - 120	<0.010	mg/L	NC	25		
7608777	Total Ammonia-N	2021/10/02	99	75 - 125	101	80 - 120	<0.050	mg/L	0.59	20		
7608951	Dissolved (0.2u) Aluminum (Al)	2021/09/30	102	80 - 120	103	80 - 120	<5	ug/L	13	20		
7608955	Alkalinity (Total as CaCO3)	2021/10/01			99	85 - 115	<1.0	mg/L	1.6	20		
7608963	Conductivity	2021/10/01			101	85 - 115	<1.0	umho/cm	0.093	25		
7608969	pH	2021/10/01			102	98 - 103			1.2	N/A		
7608991	Nitrate (N)	2021/09/30	99	80 - 120	98	80 - 120	<0.10	mg/L	0.044	20		
7608991	Nitrite (N)	2021/09/30	105	80 - 120	105	80 - 120	<0.010	mg/L	2.5	20		
7609208	Dissolved Chloride (Cl-)	2021/09/30	NC	80 - 120	106	80 - 120	<1.0	mg/L	0.67	20		
7609217	Dissolved Sulphate (SO4)	2021/09/30	107	75 - 125	99	80 - 120	<1.0	mg/L	0.46	20		
7609221	Orthophosphate (P)	2021/09/30	109	75 - 125	101	80 - 120	<0.010	mg/L	NC	25		
7610154	Dissolved Organic Carbon	2021/09/30	85	80 - 120	94	80 - 120	<0.40	mg/L	1.2	20		
7610180	Mercury (Hg)	2021/09/30	79	75 - 125	93	80 - 120	<0.00010	mg/L	NC	20		
7610515	Dissolved Aluminum (Al)	2021/10/05	98	80 - 120	97	80 - 120	<4.9	ug/L	5.0	20		
7610515	Dissolved Antimony (Sb)	2021/10/05	102	80 - 120	98	80 - 120	<0.50	ug/L	NC	20		
7610515	Dissolved Arsenic (As)	2021/10/05	99	80 - 120	96	80 - 120	<1.0	ug/L	0.75	20		
7610515	Dissolved Barium (Ba)	2021/10/05	100	80 - 120	99	80 - 120	<2.0	ug/L	0.83	20		
7610515	Dissolved Beryllium (Be)	2021/10/05	101	80 - 120	100	80 - 120	<0.40	ug/L	NC	20		
7610515	Dissolved Bismuth (Bi)	2021/10/05	99	80 - 120	97	80 - 120	<1.0	ug/L	NC	20		
7610515	Dissolved Boron (B)	2021/10/05	NC	80 - 120	96	80 - 120	<10	ug/L	0.30	20		
7610515	Dissolved Cadmium (Cd)	2021/10/05	98	80 - 120	96	80 - 120	<0.090	ug/L	NC	20		
7610515	Dissolved Calcium (Ca)	2021/10/05	NC	80 - 120	94	80 - 120	<200	ug/L	1.9	20		
7610515	Dissolved Chromium (Cr)	2021/10/05	95	80 - 120	94	80 - 120	<5.0	ug/L	NC	20		
7610515	Dissolved Cobalt (Co)	2021/10/05	94	80 - 120	93	80 - 120	<0.50	ug/L	2.1	20		
7610515	Dissolved Copper (Cu)	2021/10/05	95	80 - 120	94	80 - 120	<0.90	ug/L	1.9	20		
7610515	Dissolved Iron (Fe)	2021/10/05	NC	80 - 120	91	80 - 120	<100	ug/L	0.24	20		

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
7610515	Dissolved Lead (Pb)	2021/10/05	93	80 - 120	91	80 - 120	<0.50	ug/L	NC	20		
7610515	Dissolved Magnesium (Mg)	2021/10/05	92	80 - 120	94	80 - 120	<50	ug/L	0.42	20		
7610515	Dissolved Manganese (Mn)	2021/10/05	NC	80 - 120	96	80 - 120	<2.0	ug/L	0.062	20		
7610515	Dissolved Molybdenum (Mo)	2021/10/05	102	80 - 120	99	80 - 120	<0.50	ug/L	3.7	20		
7610515	Dissolved Nickel (Ni)	2021/10/05	93	80 - 120	93	80 - 120	<1.0	ug/L	2.9	20		
7610515	Dissolved Potassium (K)	2021/10/05	94	80 - 120	93	80 - 120	<200	ug/L	0.41	20		
7610515	Dissolved Selenium (Se)	2021/10/05	97	80 - 120	96	80 - 120	<2.0	ug/L	NC	20		
7610515	Dissolved Silicon (Si)	2021/10/05	92	80 - 120	96	80 - 120	<50	ug/L	2.8	20		
7610515	Dissolved Sodium (Na)	2021/10/05	NC	80 - 120	95	80 - 120	<100	ug/L	0.071	20		
7610515	Dissolved Strontium (Sr)	2021/10/05	95	80 - 120	97	80 - 120	<1.0	ug/L	0.52	20		
7610515	Dissolved Thallium (Tl)	2021/10/05	94	80 - 120	93	80 - 120	<0.050	ug/L	NC	20		
7610515	Dissolved Tin (Sn)	2021/10/05	102	80 - 120	100	80 - 120	<1.0	ug/L	NC	20		
7610515	Dissolved Vanadium (V)	2021/10/05	98	80 - 120	95	80 - 120	<0.50	ug/L	9.2	20		
7610515	Dissolved Zinc (Zn)	2021/10/05	95	80 - 120	95	80 - 120	<5.0	ug/L	NC	20		
7610620	Total Dissolved Solids	2021/10/01					<10	mg/L	0	25	98	90 - 110
7611055	Total Dissolved Solids	2021/10/01					<10	mg/L	7.7	25	95	90 - 110
7611097	Total Suspended Solids	2021/10/01					<1	mg/L	0	25	98	85 - 115
7611662	Total Dissolved Solids	2021/10/01					<10	mg/L	2.7	25	97	90 - 110
7611725	Total Chemical Oxygen Demand (COD)	2021/10/02	100	80 - 120	106	80 - 120	<4.0	mg/L	4.3	20		
7611787	Total Kjeldahl Nitrogen (TKN)	2021/10/03	NC	80 - 120	96	80 - 120	<0.10	mg/L	1.1	20	97	80 - 120
7612011	Total Phosphorus	2021/10/01	97	80 - 120	98	80 - 120	<0.020	mg/L	15	20	97	80 - 120
7612172	Mercury (Hg)	2021/10/01	101	75 - 125	102	80 - 120	<0.00010	mg/L	NC	20		
7612551	Total Phosphorus	2021/10/04	113	80 - 120	99	80 - 120	<0.004	mg/L	5.6	20	90	80 - 120
7613192	Total Antimony (Sb)	2021/10/05	105	80 - 120	103	80 - 120	<0.50	ug/L	NC	20		
7613192	Total Arsenic (As)	2021/10/05	103	80 - 120	101	80 - 120	<1.0	ug/L	NC	20		
7613192	Total Barium (Ba)	2021/10/05	102	80 - 120	100	80 - 120	<2.0	ug/L	4.3	20		
7613192	Total Beryllium (Be)	2021/10/05	107	80 - 120	104	80 - 120	<0.40	ug/L	NC	20		
7613192	Total Bismuth (Bi)	2021/10/05	104	80 - 120	101	80 - 120	<1.0	ug/L				
7613192	Total Boron (B)	2021/10/05	101	80 - 120	99	80 - 120	<10	ug/L	2.8	20		
7613192	Total Cadmium (Cd)	2021/10/05	104	80 - 120	101	80 - 120	<0.090	ug/L	NC	20		
7613192	Total Calcium (Ca)	2021/10/05	100	80 - 120	98	80 - 120	<200	ug/L	0.45	20		

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
7613192	Total Chromium (Cr)	2021/10/05	101	80 - 120	99	80 - 120	<5.0	ug/L	NC	20		
7613192	Total Cobalt (Co)	2021/10/05	101	80 - 120	98	80 - 120	<0.50	ug/L	19	20		
7613192	Total Copper (Cu)	2021/10/05	103	80 - 120	99	80 - 120	<0.90	ug/L	4.9	20		
7613192	Total Iron (Fe)	2021/10/05	99	80 - 120	96	80 - 120	<100	ug/L	0.76	20		
7613192	Total Lead (Pb)	2021/10/05	100	80 - 120	98	80 - 120	<0.50	ug/L	0.79	20		
7613192	Total Magnesium (Mg)	2021/10/05	100	80 - 120	99	80 - 120	<50	ug/L	2.7	20		
7613192	Total Manganese (Mn)	2021/10/05	102	80 - 120	99	80 - 120	<2.0	ug/L	1.4	20		
7613192	Total Molybdenum (Mo)	2021/10/05	104	80 - 120	101	80 - 120	<0.50	ug/L	NC	20		
7613192	Total Nickel (Ni)	2021/10/05	101	80 - 120	99	80 - 120	<1.0	ug/L	NC	20		
7613192	Total Potassium (K)	2021/10/05	98	80 - 120	96	80 - 120	<200	ug/L	2.1	20		
7613192	Total Selenium (Se)	2021/10/05	108	80 - 120	106	80 - 120	<2.0	ug/L	NC	20		
7613192	Total Silicon (Si)	2021/10/05	103	80 - 120	99	80 - 120	<50	ug/L	0.11	20		
7613192	Total Silver (Ag)	2021/10/05	103	80 - 120	100	80 - 120	<0.090	ug/L	NC	20		
7613192	Total Sodium (Na)	2021/10/05	100	80 - 120	100	80 - 120	<100	ug/L	0.42	20		
7613192	Total Strontium (Sr)	2021/10/05	100	80 - 120	98	80 - 120	<1.0	ug/L	0.46	20		
7613192	Total Thallium (Tl)	2021/10/05	99	80 - 120	97	80 - 120	<0.050	ug/L	NC	20		
7613192	Total Vanadium (V)	2021/10/05	101	80 - 120	99	80 - 120	<0.50	ug/L	2.8	20		
7613192	Total Zinc (Zn)	2021/10/05	105	80 - 120	102	80 - 120	<5.0	ug/L	14	20		

N/A = Not Applicable

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

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

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

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

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

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

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

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

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

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VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Anastassia Hamanov, Scientific Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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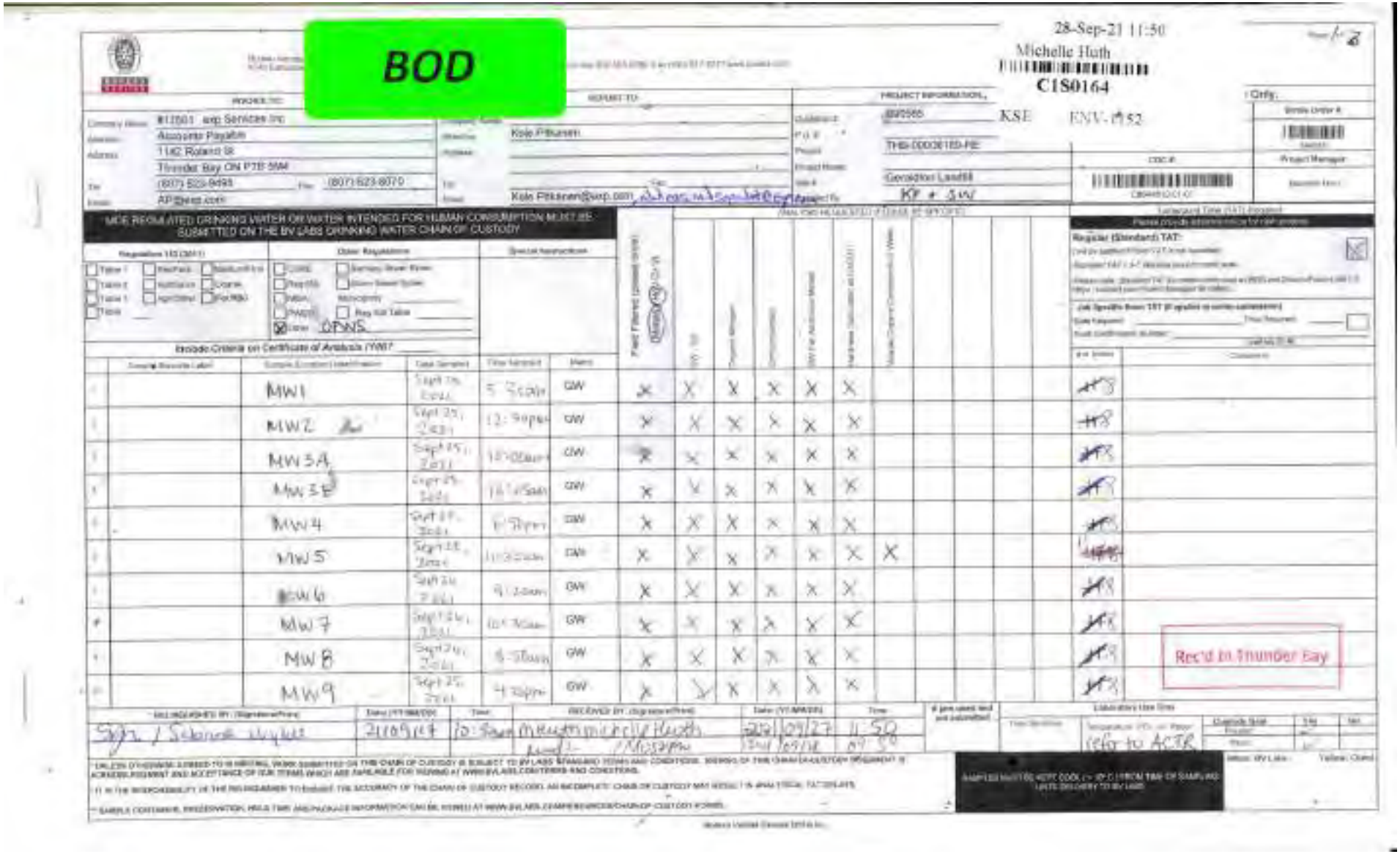
BOD
28-Sep-21 11:50
Michelle Huth
CIS0164
KSE
ENV-1452
Rec'd in Thunder Bay

CHAIN OF CUSTODY RECORD

Page 2 of 3

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#17561 exp Services Inc.	Company Name:		Quotation #:	B90565
Attention:	Accounts Payable	Attention:	Kola Pitkanen	P.O. #:	
Address:	1142 Roland St	Address:		Project:	THB-00006160-RE
	Thunder Bay ON P7B 5M4			Project Name:	
Tel:	(807) 623-9495 Fax: (807) 623-8070	Tel:	Fax:	Site #:	Geraldton Landfill
Email:	AP@exp.com	Email:	Kola.Pitkanen@exp.com	Sampled By:	KP + SW

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BV LABS DRINKING WATER CHAIN OF CUSTODY

Other Regulations: ☒ Other: ODWS

Laboratory Use Only

Regular (Standard) TAT ☒

#	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix							Comments
1		MW10A	Sept 26, 2021	12:40pm	GW	X	X	X	X	X	X	8
2		MW10B	Sept 26, 2021	12:40pm	GW	X	X	X	X	X	X	8
3		MW11	Sept 26, 2021	11:50am	GW	X	X	X	X	X	X	8
4		MW12	Sept 26, 2021	12:11pm	GW	X	X	X	X	X	X	8
5					GW							
6					GW							
7					GW							
8												
9												
10												

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time
Sabrina Wylde	21/09/27	10:50am	see page 1		

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

CHAIN OF CUSTODY RECORD

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name	#17501 exp Services Inc	Company Name		Quotation #	B90565
Attention	Accounts Payable	Attention	Kris Pitkanen	P.O. #	
Address	1142 Roland St	Address		Project	THB-00008183-RE
	Thunder Bay ON P7B 5M4			Project Name	
Tel	(807) 623-9495 Fax (807) 623-8070	Tel		Site #	Geraldton Landfill
Email	AP@exp.com	Email	Kris.Pitkanen@exp.com [illegible handwritten email]	Sampled By	[illegible]

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BV LABS DRINKING WATER CHAIN OF CUSTODY

Other Regulations: ☒ PWQO

#	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered	Analyses requested	# of Bottles	Comments
1		SW1	Sept 25 2021	7:00pm	SW	X	x x x x x x x	9	
2		SW2	Sept 26 2021	1:30pm	SW	X	x x x x x x x	9	
3		SW3	Sept 26 2021	2:00pm	SW	X	x x x x x x x	9	
4									
5									
6									
7									
8									
9									
10									

RELINQUISHED BY: (Signature/Print)	Date (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date (YY/MM/DD)	Time
[signature] / Sabrina Hyde	21/09/27	10:35am	See page 1 / See Page 1		

APPENDIX G-

Data Tables

List of Tables

Note – Table 1 is found in the report text. Tables 2, 3, 4, 5, 6, 7 and 8 are in Appendix G.

Table 1: Saturated Coefficient of Permeability (k) Estimated from Grain Size Analysis

Table 2: Summary of Groundwater Elevations

Table 3: Groundwater Data

Table 4: Volatile Organic Compounds Results

Table 5: Surface Water Data

Table 6: Mann-Kendall Groundwater Results Summary Table 2006 to 2021

Table 7: Mann-Kendall Surface Water Results Summary Table 2006 to 2021

Table 8: 2018 Trigger Concentrations

General Notes for Tables 3, 4 & 5

1. ODWS: Criteria from *Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines* (revised 2006). Exceedances indicated in **bold** typeface.

2. *Guideline B-7, Incorporation of the Reasonable Use Concept into MOE Ground Water Management Activities* (1994). Criteria calculated on the basis of arithmetic means of most recent two years' results for MW6 being representative of background conditions. Underlining indicates exceedance (current year results only). *Asterisk indicates that background exceeds ODWS; therefore, B-7 criterion = background.

3. PWQO: Provincial Water Quality Objectives, from *Water Management: Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of Environment and Energy* (1994). Exceedances are marked by a dark border, including at MW10A/10B are marked by a dark border. Interim PWQO values are bracketed.

4. APV: Aquatic Protection Value, from Table 3.1 of *Rationale for the Development of Soil and Ground Water Standards for Use at Contaminated Sites in Ontario* (2011). Exceedances (MW10A/10B only) are *italicized*.

5. All units are in mg/L unless otherwise indicated, except for pH which is unitless.

6. All tables to be read in conjunction with accompanying report.

Table 2: Summary of Groundwater Elevations (m)

Monitoring Well No.	Ground Surface Elevation	Top of Pipe Elevation	Depth to Groundwater and Elevations																			
			Aug. 19, 2006		Nov. 21, 2006		Nov. 7, 2007		June 20, 2008		Oct. 20, 2008		June 18, 2009		Oct. 27, 2009		June 11, 2010		Oct. 29, 2010		May 27, 2011		Oct. 13, 2011	
			GW Depth	GW Elev.	GW Depth	GW Elev.	GW Depth	GW Elev.	GW Depth	GW Elev.	GW Depth	GW Elev.	GW Depth	GW Elev.	GW Depth	GW Elev.	GW Depth	GW Elev.	GW Depth	GW Elev.	GW Depth	GW Elev.	GW Depth	GW Elev.
MW1	335.58	336.50	4.90	331.60	5.13	331.37	4.38	332.12	4.24	332.26	4.29	--	4.63	331.87	5.00	331.50	5.3	331.20	5.12	331.38	4.77	331.73	5.14	331.36
MW2	337.68	338.54	7.20	331.34	7.37	331.17	6.68	329.82	6.53	329.97	6.62	329.88	6.88	329.62	7.25	329.25	7.52	331.02	7.36	331.18	6.98	331.56	7.38	331.16
MW3A	335.13	336.27	5.43	330.84	5.45	330.82	4.91	331.59	4.75	331.75	4.92	331.58	5.04	331.46	5.37	331.13	5.54	330.73	5.39	330.88	5.08	331.19	5.51	330.76
MW3B	335.42	336.38	5.50	330.88	5.51	330.87	4.97	331.53	4.81	331.69	4.98	331.52	5.11	331.39	5.43	331.07	5.60	330.78	5.44	330.94	5.14	331.24	5.56	330.82
MW4	332.20	333.11	2.13	330.98	2.12	330.99	1.59	334.91	1.54	334.96	1.58	334.92	1.77	334.73	2.05	334.45	2.24	330.87	2.04	331.07	1.81	331.30	2.18	330.93
MW5	337.92	339.00	7.64	331.36	7.76	331.24	7.03	329.47	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW5 (new)	339.17	340.59	--	--	--	--	--	--	--	--	--	--	--	--	8.33	328.17	8.56	332.03	8.35	332.24	8.02	332.57	8.45	332.14
MW6	336.39	337.24	4.01	333.23	4.01	333.23	3.88	332.62	3.79	332.71	3.89	332.61	3.99	332.51	4.04	332.46	4.04	333.20	3.99	333.25	3.91	333.33	4	333.24
MW7	334.06	335.01	--	--	--	--	--	--	--	--	3.89	332.61	--	--	4.27	332.23	4.39	330.62	4.24	330.77	4	331.01	4.37	330.64
MW8	346.45	347.38	15.72	331.66	15.96	331.42	15.29	321.21	15.20	321.30	15.13	321.37	15.50	321.00	15.82	320.68	16.12	331.26	16.01	331.37	16.32	331.06	16.05	331.33
MW9	341.17	342.14	9.89	332.25	10.41	331.73	9.3	327.20	9.32	327.18	9.26	327.24	9.75	326.75	10.10	326.40	10.60	331.54	10.42	331.72	10.14	332.00	10.24	331.90
MW10A	330.43	331.27	1.31	329.96	1.09	330.18	0.91	335.59	0.82	335.68	1.04	335.46	0.97	335.53	1.18	335.32	1.17	330.10	1.09	330.18	0.95	330.32	1.23	330.04
MW10B	330.46	331.28	1.30	329.98	1.04	330.24	0.91	335.59	0.82	335.68	1.32	335.18	0.88	335.62	1.14	335.36	1.23	330.05	1.01	330.27	0.85	330.43	1.18	330.10
MW11	330.29	331.13	--	--	--	--	--	--	--	--	--	--	--	--	1.10	335.40	1.03	330.10	0.98	330.15	0.97	330.16	1.18	329.95

Notes:
1. Ground surface and top of pipe elevations at MW1 to MW5, MW6, MW8 to MW10 surveyed by Delta Survey Inc., Nov. 20-23, 2006. MW7 surveyed by Delta Survey Inc., July 30, 2008 . MW5 (new) and MW11 surveyed by Trow, Sept. 23, 2009.
2. Depths to groundwater measured from top of riser pipe (cap removed).

Table 2: Summary of Groundwater Elevations (m)

Monitoring Well No.	2012 Ground Surface Elevation	2012 Top of Pipe Elevation	2015 Ground Surface	2015 Top of Pipe Elevation	Depth to Groundwater and Elevations																			
					May 29, 2012		October 16, 2012		May 28, 2013		October 28, 2013		May 20, 2014		October 25, 2014		May 25, 2015		October 19, 2015		Spring 2016		Fall 2016		Spring 2017		Fall 2017	
					GW Depth	GW Elev.	GW Depth	GW Elev.	GW Depth	GW Elev.	GW Depth	GW Elev.	GW Depth	GW Elev.	GW Depth	GW Elev.	GW Depth	GW Elev.	GW Depth	GW Elev.	GW Depth	GW Elev.	GW Depth	GW Elev.	GW Depth	GW Elev.	GW Depth	GW Elev.
MW1	335.55	336.47	335.55	336.47	4.961	331.51	5.22	331.25	4.95	331.52	4.9	331.57	4.81	331.66	4.46	332.01	4.54	331.93	4.9	331.57	4.98	331.49	5.2	331.27	5.02	331.45	4.89	331.58
MW2	337.71	338.60	337.69	338.65	7.166	331.43	7.47	331.13	7.19	331.41	7.16	331.44	7.04	331.56	6.77	331.83	6.81	329.66	7.16	331.49	7.2	331.45	7.47	331.18	7.21	331.44	7.16	331.49
MW3A	335.44	336.36	335.48	336.44	5.184	331.18	5.59	330.77	5.2	331.16	5.25	331.11	5.07	331.29	4.96	331.40	4.94	331.53	5.3	331.14	5.27	331.17	5.59	330.85	5.21	331.23	5.18	331.26
MW3B	335.44	336.40	335.41	336.39	5.247	331.15	5.64	330.76	5.26	331.14	5.31	331.09	5.14	331.26	5.03	331.37	5	331.47	5.37	331.02	5.33	331.06	5.66	330.73	5.26	331.13	5.23	331.16
MW4	332.20	333.14	332.04	333.13	1.76	331.38	2.28	330.86	1.88	331.26	1.93	331.21	1.76	331.38	1.65	331.49	1.67	334.80	2	331.13	1.98	331.15	2.3	330.83	1.88	331.25	1.82	331.31
MW5	N/A	N/A	N/A	N/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW5 (new)	338.30	339.66	338.22	339.63	8.164	331.50	8.56	331.10	8.2	331.46	8.15	331.51	7.99	331.67	7.74	331.92	7.78	328.69	8.18	331.45	8.2	331.43	8.5	331.13	8.16	331.47	8.09	331.54
MW6	336.52	337.23	336.46	337.23	3.907	333.32	4.04	333.19	3.92	333.31	3.97	333.26	3.86	333.37	3.86	333.37	3.89	332.58	4.02	333.21	3.98	333.25	4.04	333.19	3.88	333.35	3.85	333.38
MW7	334.06	335.01	334.01	334.99	4.06	330.95	4.47	330.54	4.05	330.96	4.15	330.86	3.97	331.04	3.95	331.06	3.89	332.58	4.22	330.77	4.15	330.84	4.49	330.50	4.06	330.93	4.06	330.93
MW8	346.45	347.38	346.39	347.36	15.905	331.48	16.13	331.25	15.97	331.41	15.85	331.53	15.98	331.40	15.42	331.96	15.59	320.88	15.7	331.66	15.85	331.51	16.09	331.27	16.04	331.32	15.98	331.38
MW9	341.17	342.14	341.06	342.17	10.243	331.90	10.45	331.69	10.64	331.50	10.28	331.86	10.43	331.71	9.66	332.48	9.94	326.53	9.9	332.27	10.37	331.80	10.35	331.82	10.54	331.63	10.21	331.96
MW10A	330.43	331.27	330.44	331.30	0.807	330.46	1.34	329.93	0.85	330.42	0.99	330.28	0.79	330.48	0.97	330.30	0.83	335.64	1.16	330.14	1.08	330.22	1.37	329.93	0.87	330.43	0.77	330.53
MW10B	330.46	331.28	330.47	331.24	0.778	330.50	1.25	330.03	0.84	330.44	1.02	330.26	0.72	330.56	0.86	330.42	0.81	335.66	1.1	330.14	0.96	330.28	1.37	329.87	0.85	330.39	0.76	330.48
MW11	330.29	331.13	330.29	331.16	0.938	330.19	1.4	329.73	0.96	330.17	0.99	330.14	0.93	330.20	0.99	330.14	0.98	335.49	1.05	330.11	0.98	330.18	1.54	329.62	0.94	330.22	0.96	330.20

Notes:
1. Ground surface and top of pipe elevations at MW1 to MW6 resurveyed by Delta Survey Inc., May 29, 2012. 2012, 2013 and 2014 groundwater elevations calculated using 2012 survey.
MW8 to MW10 surveyed by Delta Survey Inc., Nov. 20-23, 2006.
MW7 surveyed by Delta Survey Inc., July 30, 2008.
MW11 surveyed by EXP (formerly Trow), Sept. 23, 2009.
2. Depths to groundwater measured from top of riser pipe (cap removed).
3. Ground surface and top of pipe elevations resurveyed by Delta Survey Inc, Aug 18, 2015. 2015, 2016 and 2017 groundwater elevations calculated using 2015 survey.

Table 2: Summary of Groundwater Elevations (m)

Monitoring Well No.	2018 Top of Ground Surface	2018 Top of Pipe Elevation	2021 Ground Surface	2021 Top of Pipe Elevation	Depth to Groundwater and Elevations															
					Spring 2018		Fall 2018		Spring 2019		Fall 2019		Spring 2020		Fall 2020		Spring 2021		Fall 2021	
					GW Depth	GW Elev.	GW Depth	GW Elev.	GW Depth	GW Elev.	GW Depth	GW Elev.	GW Depth	GW Elev.	GW Depth	GW Elev.	GW Depth	GW Elev.	GW Depth	GW Elev.
MW1	335.53	336.49	336.37	335.55	4.8	331.69	5.03	331.46	4.83	331.66	4.89	331.60	5.02	331.47	5.25	331.24	4.13	331.42	5.26	330.29
MW2	337.62	338.57	337.70	338.59	7.04	331.53	7.26	331.31	7.1	331.47	7.11	331.46	7.32	331.25	7.48	331.09	7.12	331.47	7.49	331.10
MW3A	335.44	336.36	335.44	336.33	5.09	331.27	5.33	331.03	5.13	331.23	5.2	331.16	5.24	331.12	5.58	330.78	5.20	331.13	5.57	330.76
MW3B	335.40	336.42	335.42	336.43	5.14	331.28	5.39	331.03	5.19	331.23	5.24	331.18	5.3	331.12	5.63	330.79	5.26	331.17	5.63	330.80
MW4	332.22	333.14	332.12	333.14	1.8	331.34	2.02	331.12	1.83	331.31	1.9	331.24	1.95	331.19	2.3	330.84	1.95	331.19	2.28	330.86
MW5	N/A	N/A	N/A	N/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW5 (new)	338.29	339.61	338.56	339.51	7.99	331.62	8.25	331.36	8.03	331.58	8.04	331.57	8.1	331.51	8.41	331.20	8.03	331.48	8.41	331.10
MW6	336.53	337.23	336.55	337.21	3.9	333.33	3.96	333.27	3.83	333.40	3.92	333.31	3.86	333.37	4.04	333.19	3.90	333.31	3.98	333.23
MW7	334.08	335.04	334.07	334.99	3.97	331.07	4.22	330.82	4	331.04	4.1	330.94	4.1	330.94	4.44	330.60	4.08	330.91	4.43	330.56
MW8	346.37	347.32	346.33	347.32	15.76	331.56	15.89	331.43	15.94	331.38	15.79	331.53	15.93	331.39	16.07	331.25	10.16	337.16	16.14	331.18
MW9	341.11	342.12	341.12	342.08	10.12	332.00	10.07	332.05	10.31	331.81	10.26	331.86	10.23	331.89	10.39	331.73	10.16	331.92	10.09	331.99
MW10A	330.47	331.34	330.43	331.27	0.87	330.47	1.04	330.30	0.87	330.47	1.00	330.34	0.92	330.42	1.27	330.07	0.92	330.35	1.18	330.09
MW10B	330.45	331.27	330.43	331.20	0.82	330.45	0.97	330.30	0.84	330.43	0.83	330.44	1.31	329.96	1.17	330.10	0.91	330.29	1.09	330.11
MW11	330.25	331.15	330.23	331.10	0.97	330.18	1.00	330.15	0.87	330.28	1.02	330.13	0.95	330.20	1.31	329.84	1.08	330.02	1.06	330.04

Notes:
1. Ground surface and top of pipe elevations resurveyed by Delta Survey Inc, Aug 23, 2018. 2018, 2019, and 2020 groundwater elevations calculated using 2018 survey.
2. Ground surface and top of pipe elevations resurveyed by Delta Survey Inc, Sept. 9 to 11, 2021. 2021 groundwater elevations calculated using 2021 survey.

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Table 3: Groundwater Data

Parameter	ODWS	2021 Background	2021 B-7	MW1																														
				Jun-03	Aug-06	Nov-06	Nov-07	Jun-08	Oct-08	Jun-09	Oct-09	Jun-10	Oct-10	May-11	Oct-11	May-12	Oct-12	May-13	Oct-13	May-14	Oct-14	May-15	Oct-15	May-16	Oct-16	May-17	Sep-17	May-18	Oct-18	May-19	Oct-19	May-20	Sep-20	May-21	Sep-21
General																																		
pH	6.5 to 8.5	8.0	--	7.3	7.8	8.0	8.0	8.0	7.9	7.7	7.6	7.8	7.75	7.35	7.57	7.75	7.43	7.77	7.64	7.59	7.47	7.52	7.41	7.65	7.46	7.72	7.59	7.26	7.35	7.85	7.3	7.55	7.66	7.73	7.79
Field pH	--	7.6	--	--	7.14	7.54	6.08	7.04	7.04	6.91	6.85	6.85	6.83	6.67	6.85	7.03	7.12	6.84	6.61	6.43	7.00	6.83	7.18	6.86	7	7.23	7.16	8.96	NV	6.92	7.14	6.92	6.86	6.88	6.87
Conductivity (uS/cm)	--	520	--	1,235	1,060	992	1,080	1,060	1,010	889	922	859	881	1,010	1,020	970	970	990	950	1,000	1,100	1,100	1,300	1,200	1,200	760	1,200	1,400	1,500	1,700	1,600	1,600	1,500	1,400	1,500
Field Conductivity (uS/cm)	--	447	--	--	1,110	988	1,078	>3,999	1,034	816	842	881	849	949	963	849	946	804	720	754	1,120	1,118	1,147	1,220	1,184	735	1,077	1,390	NV	1,501	909	1,004	869	545	1,828
Field Temperature (˚C)	--	9.6	--	--	9.5	4.2	6.3	9	6.4	15	5.1	8.3	5.9	6.8	7.9	5.7	6.1	7.5	6.1	6.5	7.4	10.3	3.1	8.4	10	9.2	8.7	10.7	NV	7.8	7.9	4.9	8.6	7.9	9.3
Total Dissolved Solids (mg/L)	500	250	375	**775**	**594**	**649**	481	**744**	**615**	**575**	**600**	**550**	**538**	**628**	**620**	**584**	**590**	**594**	**554**	**624**	**654**	**728**	**722**	**754**	**726**	432	**745**	**720**	**955**	**965**	**835**	**870**	**815**	**720**	**1,010**
Total Suspended Solids (mg/L)	--	--	--	--	--	--	280	170	270	--	--	--	--	--	--	--	--	--	--	150	160	55	270	--	--	--	--	--	--	--	--	--	--	--	--
Hardness (mg/L)	80 to 100	275	**275***	**565**	**550**	**520**	**570**	**570**	**530**	**440**	**450**	**470**	**440**	**550**	**530**	**500**	**480**	**530**	**460**	**550**	**540**	**570**	**540**	**620**	**580**	**370**	**550**	**630**	**660**	**570**	**540**	**450**	**530**	**590**	**670**
Organics (mg/L)																																		
Dissolved Organic Carbon (DOC)	5	2.5	3.8	**12.85**	**17.9**	**12.1**	**10.1**	**9.4**	**9.4**	**6.9**	**6.2**	**7.4**	**5.6**	**6.1**	**6**	**7.2**	**7**	**8.8**	**5.8**	**6.2**	**8.3**	**9**	**13**	**9.8**	**10**	4.3	**9.9**	**8.5**	**9**	**10**	**8.9**	**9.2**	**8.7**	**7.6**	**11**
Biochemical Oxygen Demand (BOD)	--	--	--	--	--	--	<2	<2	<2	--	--	--	--	--	--	--	--	--	--	--	<2	<2	4	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand (COD)	--	9.6	--	--	--	--	32	27	29	25	--	--	18	--	33	--	14	--	--	15	24	37	42	43	41	14	39	31	39	30	33	33	33	27	42
Phenols	--	0.0005	--	0.001	<0.001	--	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	0.0019	<0.001	0.0011	0.0033	0.0024	<0.001	0.0024	<0.0010	<0.0010	<0.0010	<0.0010	0.001	<0.001	0.0014	0.0012
Total Kjeldahl Nitrogen (TKN)	--	0.25	--	--	1.2	--	1	1.2	1.2	1.5	1.1	1.2	1.2	1.3	1.3	0.84	1.4	1.1	1.4	1.1	1.6	1.7	2.4	2.2	2.1	0.57	2.7	2.8	4.8	6.3	5.9	7.2	5.4	3.4	5.3
Ammonia-N	--	0.051	--	0.05	0.18	0.28	0.31	0.39	0.67	0.82	0.87	0.87	0.71	0.66	0.78	0.6	1	0.95	0.96	0.73	1	1	1.7	1.6	1.8	0.35	2.2	2.5	4.4	5.8	5.7	6.5	5.5	3.2	4.8
Organic Nitrogen	0.15	0.23	**0.23***	--	**1.02**	--	**0.69**	**0.81**	**0.53**	**0.68**	**0.23**	**0.4**	**0.5**	**0.64**	**0.52**	**0.24**	**0.4**	0.15	**0.50**	**0.30**	**0.60**	**0.65**	**0.75**	**0.59**	**0.28**	**0.22**	**0.59**	**0.32**	**0.36**	**0.46**	0.13	**0.69**	<0.10	**0.23**	**0.51**
Cations (mg/L)																																		
Sodium	200	3.9	102	56.15	50	36	19	19	15	16	14	11	10	10	11	12	14	17	14	15	18	20	21	29	32	8.4	25	42	64	130	110	97	99	65	110
Potassium	--	1.5	--	2.4	2.9	3.4	3.6	5.3	5.1	4.9	5.2	5.5	4.8	7.5	6.5	6.4	7.1	7.2	7.5	7.2	7.9	6.7	7.6	7.6	8.8	4.2	11	17	22	24	21	17	19	13	19
Calcium	--	86.3	--	175.5	170	170	180	180	170	140	140	150	140	180	160	160	150	170	150	180	170	180	170	200	190	130	190	220	220	200	180	160	180	200	230
Magnesium	--	15	--	30.95	28	24	27	28	25	21	22	25	22	25	29	24	25	25	22	22	25	26	25	28	26	12	20	23	25	19	20	15	19	20	24
Anions (mg/L)																																		
Chloride	250	2	126	62.85	21	14	17	14	15	7	8	7	6	7	10	10	11	9	10	12	15	26	42	37	39	7.8	39	88	150	180	150	150	130	130	160
Nitrate	10	0.1	2.5	<0.2	0.1	0.6	1.8	1.5	<0.1	0.2	0.3	0.1	<0.1	3.2	0.4	0.19	0.38	0.11	0.14	0.11	0.34	0.36	0.15	0.15	0.21	0.12	0.75	0.68	0.61	<0.10	0.47	<0.10	0.27	0.62	0.48
Nitrite	1	0.005	0.25	<0.2	0.03	--	0.04	0.06	<0.01	0.02	0.02	0.01	<0.01	0.1	0.01	<0.01	<0.01	<0.01	0.022	<0.010	0.011	0.029	<0.1	<0.010	<0.010	0.027	0.016	0.022	0.015	<0.010	0.014	<0.010	<0.010	0.028	0.011
Orthophosphate	--	0.005	--	--	<0.01	--	<0.01	--	<0.01	--	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.01	<0.01
Sulphate	500	12	256	76.5	91	61	87	112	94	55	87	54	63	55	90	47	39	49	66	55	52	27	18	15	13	8.8	29	53	35	43	35	27	25	30	18
Alkalinity as $CaCO_3$	30-500	275	388	**594**	**557**	**518**	**505**	490	467	428	420	416	420	476	465	470	480	490	460	500	**520**	**550**	**620**	**640**	**630**	390	**620**	**600**	**550**	**570**	**540**	**600**	**560**	**540**	**620**
Ion Balance (%)	--	--	--	4.985	0.183	1.83	0.59	0.43	0.66	0.07	1.96	4.13	1.93	2.5	0.88	1.65	0.98	3.23	2.07	2.98	0.98	1.75	6.5	1.88	--	--	--	0.28	6.13	2.77	3.83	6.35	1.43	0.73	7.24
Metals (mg/L)																																		
Aluminum	0.1	0.0025	0.05	0.007	0.023	0.016	0.013	0.009	0.01	0.006	0.008	0.007	<0.005	0.007	0.007	0.007	0.0097	0.0073	0.0079	0.0083	0.0089	0.0058	<0.005	0.0081	0.009	<0.005	0.0077	0.0084	0.0097	<0.005	0.0084	0.0073	0.016	<0.0049	0.0094
Antimony	0.006	0.00025	0.0031	<0.0005	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00053	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Arsenic	0.025	0.0025	0.0081	0.006	0.023	**0.029**	0.017	0.017	0.02	0.009	0.022	0.019	0.008	0.002	0.013	0.02	0.023	0.018	0.013	0.017	0.019	0.016	0.0033	0.025	0.025	0.0051	0.015	0.015	**0.026**	0.01	0.021	0.018	0.007	0.0055	**0.028**
Barium	1	0.017	0.26	0.033	0.055	0.054	0.06	0.063	0.067	0.048	0.059	0.053	0.043	0.066	0.073	0.06	0.07	0.068	0.064	0.071	0.079	0.073	0.081	0.094	0.11	0.041	0.097	0.13	0.2	0.14	0.17	0.12	0.11	0.095	0.19
Beryllium	--	0.00021	--	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.0004
Bismuth	--	0.0005	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	5	0.016	1.3	0.975	0.22	0.18	0.22	0.21	0.20	0.20	0.18	0.18	0.19	0.15	0.21	0.20	0.21	0.19	0.19	1	0.2	0.22	0.2	0.23	0.23	0.068	0.2	0.19	0.22	0.22	0.18	0.17	0.19	0.15	0.26
Cadmium	0.005	0.00012	0.0013	<0.0001	0.0009	0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00009	<0.00009	<0.00009
Chromium	0.05	0.0025	0.014	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Cobalt	--	0.0014	--	0.1255	0.013	0.011	0.011	0.011	0.011	0.0069	0.0078	0.0077	0.0051	0.0056	0.009	0.0073	0.0084	0.0096	0.0075	0.0087	0.011	0.012	0.017	0.016	0.016	0.0038	0.015	0.018	0.025	0.02	0.019	0.014	0.019	0.014	0.026
Copper	1	0.003	0.25	0.1585	0.002	0.003	0.003	0.009	0.003	0.003	0.002	0.004	0.001	0.005	0.001	0.002	0.0017	0.0017	0.0019	0.0016	0.002	0.0013	0.0022	0.0014	0.0011	0.0017	0.0015	0.0017	<0.001	0.0013	0.0012	0.001	0.002	0.0012	0.0022
Iron	0.3	0.31	**0.31***	<0.03	**12**	**13**	**9.9**	**8**	**14**	**4.7**	**9.6**	**8.9**	**1.2**	**0.58**	**11**	**7.7**	**11**	**8.4**	**8.1**	**8.4**	**14**	**10**	**8.4**	**18**	**20**	**1.9**	**15**	**15**	**31**	**11**	**23**	**18**	**5.5**	**5.3**	**32**
Lead	0.01	0.00025	0.005	0.0009	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Manganese	0.05	0.282	**0.282***	**1.02**	**1.7**	**1.7**	**1.8**	**1.6**	**1.7**	**1.3**	**1.4**	**1.5**	**1.2**	**0.91**	**1.8**	**1.4**	**1.7**	**1.5**	**1.7**	**1.5**	**2**	**2.1**	**2.7**	**2.5**	**2.6**	**0.61**	**2.2**	**2.5**	**3.3**	**2.6**	**2.4**	**1.9**	**2.2**	**1.6**	**2.7**
Mercury	0.001	0.00005	0.0003	0.00021	<0.0001	--	<0.0001	--	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.0001	<0.00010
Molybdenum	--	0.00053	--	0.003	<0.001	0.003	0.003	0.003	0.003	0.002	0.003	0.003	0.002	0.001	0.0027	0.0019	0.0022	0.0017	0.0017	0.0013	0.0018	0.0013	0.0016	0.0015	0.0013	<0.0005	0.00086	0.00091	0.012	0.0013	0.0013	0.0014	0.0013	0.00084	0.0017
Nickel	--	0.0028	--	0.01	0.002	0.007	0.006	0.004	0.004	0.004	0.004	0.002	0.003	0.005	0.003	0.0037	0.0043	0.0029	0.003	0.0044	0.0042	0.0057	0.0052	0.0042	0.0073	0.0022	0.0073	0.0075	0.081	0.0087	0.0078	0.0056	0.0082	0.0068	0.012
Phosphorus (Total)	--	0.057	--	<0.05	0.21	<0.050	0.06	<0.100	0.11	--	0.06	0.06	0.07	0.03	0.07	0.051	0.038	0.056	0.15	0.042	0.053	0.035	<0.1	0.065	0.031	0.036	0.042	0.049	0.028	0.064	0.035	0.055	0.034	<0.020	0.2
Selenium	0.01	0.001	0.0033	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Silicon	--	5.7	--	--	15	13	12	11	11	10	11	12	9.6	8.5	11	10	11	10	9.8	9.9	10	9.7	10	10	10	5	8.8	9.8	10	9.2	9.7	8.9	9.2	8.1	11
Silver	--	--	--	<0.0001	<0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	--	--	--	--	--	--	--	--	--
Strontium	--	0.078	--	0.1385	0.240	0.23	0.27	0.27	0.27	0.21	0.22	0.24	0.2	0.25	0.27	0.23	0.23	0.24	0.21	0.23	0.24	0.23	0.27	0.27	0.27	0.13	0.28	0.33	0.42	0.33	0.32	0.27	0.34	0.3	0.46
Thallium	--	0.00012	--	0.000155	0.00033	0.00031	0.00033	0.00034	0.0004	0.0003	0.00033	0.00027	0.00023	0.00036	0.00028	0.00026	0.00026	0.00023	0.00021	0.00019	0.00024	0.00025	0.00036	0.00028	0.00024	0.00019	0.00017	0.0002	0.00023	0.00017	0.00015	0.0001	0.00015	0.00011	0.00015
Tin	--	0.0005	--	<0.001	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Titanium	--	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	--	--	--	--	--	--	--	--	--	--
Vanadium	--	0.00025	--	0.00395	0.005	0.003	0.003	0.002	0.002	0.001	0.002	0.002	<0.001	0.001	0.0017	0.0014	0.0019	0.0013	0.0017	0.00091	0.0012	0.0013	<0.0005	0.0016	0.0018	<0.0005	0.0012	0.001	0.0016	0.00062	0.0013	0.0013	0.00062	<0.0005	0.0016
Zinc	5	0.004	2.5	0.005	0.01	0.016	<0.005	0.019	<0.005	0.007	0.011	0.01	<0.005	<0.005	<0.005	0.0055	0.0051	<0.005	<0.005	<0.005	0.0061	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005

Notes:
† - Denotes blind duplicate
NV - Denotes no value; handheld instrument was malfuntioning

THB-00006189-RE Phase 100 - Geraldton Landfill

Table 3 (cont'd): Groundwater Data

Parameter	ODWS	2021 Background	2021 B-7	MW2																																			
				Jun-03	Jun-03†	Aug-06	Aug-06†	Nov-06	Nov-07	Jun-08	Jun-08†	Oct-08	Jun-09	Jun-09†	Oct-09	Oct-09†	Jun-10	Oct-10	May-11	Oct-11	May-12	Oct-12	May-13	May-13†	Oct-13	May-14	Oct-14	May-15	Oct-15	May-16	Oct-16	May-17	Sep-17	May-18	Oct-18	May-19	Oct-19	May-20	Sep-20	May-21	Sep-21
General																																								
pH	6.5 to 8.5	8.0	--	7.47	7.46	8.0	8.0	8.2	8.2	8.1	8.1	8	7.4	7.5	7.6	7.7	7.7	7.98	7.73	7.87	7.92	7.7	8.01	8.05	7.93	7.89	7.83	7.73	7.79	7.9	7.76	7.98	7.94	7.67	7.84	7.89	7.77	7.87	7.85	8.1	8.16
Field pH	--	7.6	--	--	--	7.5	7.5	8	6.6	7.35	--	7.66	6.88	6.88	6.97	--	7.11	7.22	7.25	7.36	7.52	7.23	7.46	7.46	7.29	6.72	7.51	7.06	7.53	7.32	7.5	7.52	7.53	9.25	NV	7.64	8.36	6.91	7.17	7.29	7.65
Conductivity (uS/cm)	--	520	--	496	496	454	454	416	509	600	599	507	671	677	492	492	440	468	530	429	470	440	440	450	470	500	500	760	470	520	480	490	460	540	440	470	420	440	430	470	410
Field Conductivity (uS/cm)	--	447	--	--	--	466	466	>3,999	512	589	--	535	630	630	451	--	441	456	524	421	435	441	386	389	399	432	536	766	483	551	489	461	449	742	NV	453	651	365	460	270	412
Field Temperature (˚C)	--	9.6	--	--	17.4	7.9	7.9	4.8	3.7	7.4	--	3.1	13.2	13.2	3.9	--	6.6	5.6	5.3	8.5	4.6	5	6.9	6.9	4.4	6	5.8	9.3	4.5	7.4	8.3	7.9	7.2	10.2	NV	5.2	10.3	4.9	6.3	8	8.5
Total Dissolved Solids (mg/L)	500	250	375	279	277	274	278	265	298	395	382	310	420	450	315	325	280	312	332	246	254	260	236	270	256	284	288	468	262	332	276	242	295	245	190	295	250	215	230	235	200
Total Suspended Solids (mg/L)	--	--	--	--	--	--	--	--	68	180	120	260	--	--	--	--	--	--	--	--	--	--	--	--	--	50	57	57	43	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness (mg/L)	80 to 100	275	**275***	**240**	**249**	**250**	**250**	**230**	**250**	**310**	**310**	**250**	**340**	**330**	**220**	**240**	**230**	**230**	**270**	**200**	**230**	**210**	**240**	**240**	**240**	**270**	**250**	**390**	**230**	**280**	**230**	**240**	**220**	**270**	**220**	**250**	**220**	**220**	**210**	**240**	**210**
Organics (mg/L)																																								
Dissolved Organic Carbon (DOC)	5	2.5	3.8	**7**	**7.1**	**8.7**	**8.7**	**5.8**	**6**	**6.3**	**6.1**	**9.4**	**8.6**	**8.9**	**10.3**	**10.7**	**9.1**	**6**	5	**5.8**	4.4	**7.2**	**5.9**	**5.9**	3.8	3.7	**6.6**	**5.7**	**7.6**	**7.3**	**8.7**	4.7	**6.2**	**5.9**	**5.7**	**5.5**	**5.2**	**5.7**	**6.6**	3.6	**6.4**
Biochemical Oxygen Demand (BOD)	--	--	--	--	--	--	--	--	<2	3	2	3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4	<2	<2	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand (COD)	--	9.6	--	--	--	--	--	--	18	17	18	29	18	22	--	--	--	18	--	38	--	16	--	--	--	12	14	15	36	27	25	17	21	17	20	8.3	17	14	21	13	21
Phenols	--	0.0005	--	<0.001	<0.001	<0.001	<0.001	--	<0.001	--	--	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	0.0015	<0.0010	<0.0010	<0.0010	<0.0010	<0.001	0.001	<0.0010
Total Kjeldahl Nitrogen (TKN)	--	0.25	--	--	--	0.6	0.7	--	0.7	0.7	0.7	0.9	0.9	0.9	1	0.9	0.8	0.8	0.6	0.4	0.34	0.87	0.52	0.45	0.61	0.62	0.63	0.66	0.84	0.62	0.48	0.36	0.42	0.56	0.67	0.63	0.53	0.51	0.7	0.45	0.57
Ammonia-N	--	0.051	--	0.07	0.06	0.29	0.33	0.32	0.26	0.31	0.29	0.34	0.39	0.39	0.44	0.44	0.36	0.32	0.39	0.29	0.25	0.46	0.42	0.42	0.31	0.33	0.33	0.28	0.37	0.3	0.28	0.25	0.33	0.47	0.57	0.43	0.44	0.43	0.55	0.31	0.33
Organic Nitrogen	0.15	0.23	**0.23***	--	--	**0.31**	**0.37**	--	**0.44**	**0.39**	**0.41**	**0.56**	**0.51**	**0.51**	**0.56**	**0.46**	**0.5**	**0.5**	**0.21**	0.11	0.09	**0.41**	0.10	0.03	**0.30**	**0.3**	**0.3**	**0.38**	**0.47**	**0.32**	**0.2**	0.11	<0.1	<0.1	0.1	**0.2**	<0.1	<0.10	0.15	0.14	**0.24**
Cations (mg/L)																																								
Sodium	200	3.9	102	8.3	8.5	9.7	10	9.3	7.6	13	13	8.1	14	13	9.2	11	5.5	5.8	5.7	4	3.8	4.5	3.6	3.6	3.4	4.5	3.8	7	6	6	5.1	4.5	3.8	5.5	3.7	4.9	3.7	4.5	3.9	3.1	3.1
Potassium	--	1.5	--	1.1	1.1	1.5	1.5	1.9	1.5	1.9	1.9	1.6	1.5	1.4	1.3	1.3	1.3	1.4	1.5	1.3	1.4	1.3	1.3	1.3	1.4	1.6	1.3	1.8	1.7	1.6	1.5	1.4	1.5	2.1	1.8	1.7	1.5	1.8	2	1.6	1.8
Calcium	--	86.3	--	79.4	82.4	82	85	77	85	100	100	84	110	110	76	80	77	77	89	67	79	72	80	80	81	88	81	120	76	94	76	80	74	91	76	83	72	71	72	77	70
Magnesium	--	15	--	10.2	10.2	9.7	9.8	8.1	9.8	14	14	11	14	13	8.5	9.6	9.3	9.7	11	8.1	8.9	8.2	9.9	9.9	10	12	12	19	9.1	10	9.6	9.4	8.5	10	8.2	9.8	9.2	9.8	8.8	11	8.3
Anions (mg/L)																																								
Chloride	250	2	126	13	13.6	10	10	6	8	9	9	5	9	8	4	3	4	5	3	3	4	5	4	4	4	3	5	12	4.4	7.4	5.6	4.6	7.2	8.1	4.7	6.3	5.1	4.9	6.3	7	9.9
Nitrate	10	0.1	2.5	0.2	0.2	<0.1	<0.1	<0.1	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.85
Nitrite	1	0.005	0.25	<0.2	<0.2	<0.01	<0.01	--	0.09	0.05	0.07	<0.01	<0.01	0.01	0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.011	<0.010	<0.010	0.022
Orthophosphate	--	0.005	--	--	--	<0.01	<0.01	--	<0.01	--	--	<0.01	--	--	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.010	<0.010	<0.10	<0.010	<0.010	<0.010	<0.010	<0.010	<0.01	<0.01
Sulphate	500	12	256	15.5	16	6	7	7	5	7	6	<1	<10	8	<1	<1	10	7	48	30	8	25	6	6	8	7	<1	9	<1	<5.0	<1.0	<1.0	7.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4.5	6.4
Alkalinity as $CaCO_3$	30-500	275	388	242	232	249	246	220	261	312	312	276	354	358	259	260	220	236	218	193	240	200	220	220	250	260	260	390	240	280	240	250	230	280	230	250	210	220	220	240	210
Ion Balance (%)	--	--	--	3.21	0.08	0.111	1.52	3.00	0.99	2.00	1.42	1.29	0.37	2.87	3.17	0.59	1.66	0.33	1.72	3.56	1.49	1.98	3.31	3.68	1.14	2.22	1.69	1.17	0.03	0.2	--	--	--	1.39	0.25	0.95	2.01	0.45	0.22	2.23	3.23
Metals (mg/L)																																								
Aluminum	0.1	0.0025	0.05	0.008	<0.005	0.019	0.013	0.010	0.017	0.049	0.01	0.014	0.017	0.017	0.018	0.023	0.015	0.013	0.008	0.011	0.0079	0.0095	0.0051	0.0056	0.0075	0.0069	0.0069	0.0086	0.0091	0.0140	0.0170	0.01	0.0086	0.0092	0.013	0.0081	0.0011	0.01	0.012	0.0063	0.011
Antimony	0.006	0.00025	0.0031	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Arsenic	0.025	0.0025	0.0081	<0.002	<0.002	0.002	0.002	<0.001	<0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.001	0.001	<0.001	<0.001	0.0011	<0.001	<0.001	<0.001	0.0011	0.0017	0.0036	0.0016	0.0045	0.0039	0.0026	0.0021	0.0026	0.002	0.0026	0.0028	0.0026	0.0028	0.0023	0.0024
Barium	1	0.017	0.26	0.01	0.009	0.015	0.015	0.015	0.016	0.02	0.021	0.017	0.024	0.024	0.016	0.017	0.015	0.016	0.019	0.015	0.016	0.015	0.014	0.014	0.017	0.016	0.016	0.026	0.0096	0.021	0.016	0.016	0.017	0.019	0.016	0.016	0.0014	0.015	0.016	0.016	0.015
Beryllium	--	0.00021	--	0.001	<0.001	<0.005	<0.005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.0004
Bismuth	--	0.0005	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	5	0.016	1.3	0.006	0.006	<0.01	<0.01	<0.01	0.011	0.011	0.011	0.037	0.013	0.011	0.02	0.019	0.053	0.044	0.025	0.038	0.034	0.041	0.028	0.026	0.027	0.026	0.028	0.039	0.026	0.074	0.059	0.033	0.031	0.037	0.044	0.03	0.029	0.026	0.03	0.0026	0.025
Cadmium	0.005	0.00012	0.0013	<0.0001	<0.0001	0.0009	0.004	<0.001	<0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00034	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00009	<0.00009
Chromium	0.05	0.0025	0.014	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0005	<0.0005	<0.0005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0005	<0.0005	<0.0005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Cobalt	--	0.0014	--	0.0008	0.0008	0.0058	0.0058	0.0034	0.004	0.007	0.0076	0.0078	0.01	0.01	0.007	0.0072	0.0047	0.0042	0.0047	0.0035	0.0033	0.0032	0.0029	0.003	0.0027	0.003	0.0029	0.0065	0.0012	0.004	0.003	0.0025	0.0026	0.0029	0.0022	0.0023	0.0018	0.0018	0.0018	0.0016	0.0015
Copper	1	0.003	0.25	0.0029	0.0028	0.009	0.008	0.006	0.005	0.006	0.006	0.009	0.005	0.007	0.007	0.007	0.007	0.006	0.004	0.005	0.0038	0.0046	0.0021	0.0022	0.0029	0.0022	0.0033	0.0036	0.0087	0.0072	0.0051	0.003	0.0021	0.0031	0.0058	0.0015	0.0011	0.0044	0.0089	0.007	0.0051
Iron	0.3	0.31	**0.31***	<0.03	<0.03	<0.05	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.15	<0.1	0.26	0.2	0.13	0.12	0.16	0.14	0.2	0.22	0.26	0.15	0.1	**0.35**
Lead	0.01	0.00025	0.005	0.0006	0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Manganese	0.05	0.282	**0.282***	**0.323**	**0.32**	**1.8**	**1.8**	**1.4**	**1.4**	**1.9**	**1.9**	**1.9**	**2.9**	**2.9**	**2.1**	**2.2**	**2.1**	**2.1**	**2.3**	**1.7**	**1.8**	**1.6**	**1.7**	**1.7**	**1.7**	**1.8**	**1.5**	**2.4**	**1.1**	**2**	**1.7**	**1.7**	**1.6**	**1.9**	**1.5**	**1.5**	**1.3**	**1.4**	**1.3**	**1.3**	**1.1**
Mercury	0.001	0.00005	0.0003	<0.00005	<0.00005	0.0001	<0.0001	--	0.0002	--	--	0.0002	--	--	0.0004	0.0002	0.0003	0.0002	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.0001	<0.00010	<0.00010
Molybdenum	--	0.00053	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0007	0.00064	0.0005	0.00061	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00052	0.00055	0.00053	0.00053	<0.0005	<0.0005	<0.0005	0.00051	<0.0005	0.00055	<0.0005	<0.0005	<0.0005
Nickel	--	0.0028	--	0.002	0.002	0.008	0.008	0.006	0.004	0.01	0.009	0.011	0.014	0.014	0.011	0.01	0.007	0.007	0.006	0.005	0.0041	0.0037	0.0026	0.0026	0.003	0.0031	0.0036	0.0057	0.0042	0.0034	0.0036	0.0026	0.0031	0.0034	0.0024	0.0029	0.0022	0.0021	0.0018	0.0016	0.0018
Phosphorus (Total)	--	0.057	--	<0.05	<0.05	<0.050	<0.050	<0.050	0.03	<0.100	<0.1	0.14	--	--	0.03	0.03	0.03	0.02	0.02	0.07	0.031	0.035	0.021	<0.020	<0.02	0.045	0.028	0.02	0.026	0.025	<0.02	0.027	<0.02	0.054	0.071	<0.02	<0.02	<0.020	<0.02	<0.020	0.032
Selenium	0.01	0.001	0.0033	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Silicon	--	5.7	--	--	--	4.2	4.3	3.9	3.8	4.4	4.4	4.4	5.6	5.3	4.6	4.8	4.9	4.6	4.2	3.8	3.5	3.5	3.8	3.8	3.5	3.8	3.5	5	4.2	5	4.6	4.6	4.2	4.5	4	4	4	4.2	4.2	3.9	3.7
Silver	--	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	--	--	--	--	--	--	--	--	--	--
Strontium	--	0.078	--	0.053	0.051	0.066	0.065	0.065	0.073	0.086	0.086	0.07	0.08	0.082	0.055	0.06	0.054	0.06	0.076	0.059	0.064	0.062	0.069	0.07	0.068	0.073	0.068	0.1	0.069	0.076	0.062	0.063	0.063	0.077	0.066	0.068	0.057	0.063	0.067	0.063	0.063
Thallium	--	0.00012	--	0.00006	0.00005	0.00016	0.00016	0.00014	0.00012	0.00016	0.00016	0.00014	0.0001	0.0002	0.00015	0.00016	0.0001	0.00007	0.00016	0.00012	0.00012	0.00007	0.000086	0.000099	0.00013	0.00064	0.000071	0.00008	0.000051	0.000063	0.000074	0.000079	0.000092	0.000078	0.000058	0.000052	<0.00005	0.000062	<0.00005	0.000084	<0.00005
Tin	--	0.0005	--	<0.001	<0.001	--	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Titanium	--	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	0.00025	--	0.0014	0.001	0.002	0.001	<0.001	<0.001	<0.001	<0.001	0.001	0.001	0.001	0.002	0.002	0.002	<0.001	0.001	0.001	0.0013	0.0007	<0.0005	<0.0005	0.00092	<0.0005	0.0006	0.00067	0.00086	0.0016	0.0021	0.00083	0.00085	0.00072	0.00094	0.00084	0.00098	0.00099	0.0013	<0.0005	0.001
Zinc	5	0.004	2.5	0.013	0.005	0.006	0.008	0.011	0.012	0.007	0.007	0.006	<0.005	0.01	<0.005	<0.005	0.008	0.005	0.006	0.013	0.0057	<0.005	<0.005	<0.005	<0.005	0.0053	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0092	<0.005	<0.005	<0.005	<0.005

Notes:
† - Denotes blind duplicate
NV - Denotes no value; handheld instrument was malfuntioning

THB-00006189-RE Phase 100 - Geraldton Landfill

Table 3 (cont'd): Groundwater Data

Parameter	ODWS	2021 Background	2021 B-7	MW3A																							
				May-97	Jun-03	Aug-06	Nov-06	Nov-06†	Nov-07	Nov-07†	Jun-08	Oct-08	Oct-08†	Jun-09	Oct-09	Jun-10	Jun-10†	Oct-10	Oct-10†	May-11	May-11†	Oct-11	Oct-11†	May-12	May-12†	Oct-12	Oct-12†
General																											
pH	6.5 to 8.5	8.0	--	7.57	6.94	7.7	8.0	8	7.9	8	7.9	7.9	7.6	7.6	7.3	7.8	7.4	7.71	7.72	7.51	7.53	7.62	7.56	7.66	7.7	7.35	7.25
Field pH	--	7.6	--	6.8	--	7.0	7.44	--	6.2	--	7	5.58	5.58	6.72	6.69	6.67	--	7.06	--	6.45	--	6.61	--	6.77	--	7.18	--
Conductivity (uS/cm)	--	520	--	1,100	1,070	1,130	1,180	1,180	1,130	1,140	1,220	1,230	1,250	1,160	1,100	1,090	1,090	1,070	1,070	1,160	1,160	1,090	1,090	1,100	1,100	1,100	1,100
Field Conductivity (uS/cm)	--	447	--	867	--	1,201	1,134	>3,999	1,159	--	1,201	1,301	1,301	1,091	1,010	1,093	--	1,006	--	1,072	--	1,016	--	952	--	903	--
Field Temperature (°C)	--	9.6	--	8.4	--	9.8	4.1	--	4.6	--	8.8	6.6	6.6	16.5	4.5	7.1	--	5.5	--	7.9	--	8	--	5.7	--	6.6	--
Total Dissolved Solids (mg/L)	500	250	375	**562**	**641**	**629**	**702**	**717**	**543**	**559**	**780**	**770**	**750**	**690**	**720**	**700**	**700**	**680**	**682**	**732**	**732**	**770**	**768**	**566**	**548**	**572**	**614**
Total Suspended Solids (mg/L)	--	--	--		--	--	--	--	110	110	200	430	360	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness (mg/L)	80 to 100	275	**275***	**520**	**491**	**600**	**560**	**580**	**490**	**490**	**590**	**570**	**590**	**550**	**470**	**530**	**530**	**480**	**480**	**580**	**550**	**480**	**490**	**490**	**490**	**480**	**490**
Organics (mg/L)																											
Dissolved Organic Carbon (DOC)	5	2.5	3.8	**10.7**	**7.2**	**8.7**	**8.1**	**8.3**	**8.4**	**8.5**	**10.1**	**8.9**	**8.8**	**9.6**	**7.7**	**9.3**	**9.5**	**7.6**	**7.7**	**8.2**	**8.2**	**6.8**	**6.8**	**7.6**	**7.5**	**7.8**	**7.6**
Biochemical Oxygen Demand (BOD)	--	--	--	--	--	--	--	--	4	2	3	3	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand (COD)	--	9.6	--	--	--	--	--	--	32	34	30	29	27	43	--	--	--	26	31	--	--	37	39	--	--	28	25
Phenols	--	0.0005	--	<0.001	<0.001	<0.001	--	--	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.004	0.004	<0.001	<0.001	<0.001	<0.001
Total Kjeldahl Nitrogen (TKN)	--	0.25	--	8.1	--	5.6	--	--	7.8	8.1	7.2	6.1	6.6	6.9	6.5	7.2	7.6	8.4	8.2	9.3	9.2	7.8	7.9	7.9	8.2	8.5	9.2
Ammonia-N	--	0.051	--	8.6	4.93	4.90	5.7	6.29	8.07	7.66	6.9	7.1	6.9	7.9	7.3	7.4	7.7	8	8.2	9.4	9.5	8.1	8.2	7.6	8.2	8.2	8.1
Organic Nitrogen	0.15	0.23	**0.23***	~0	--	**0.70**	--	--	0	**0.44**	**0.3**	~0	~0	~0	~0	~0	~0	**0.4**	~0	~0	~0	~0	~0	**0.3**	~0	**0.3**	**1.1**
Cations (mg/L)																											
Sodium	200	3.9	102	26	18.1	29	22	26	24	22	31	32	32	29	26	28	29	25	25	26	26	26	26	23	24	25	26
Potassium	--	1.5	--	13	11.4	15	13	14	13	13	14	13	13	13	12	13	13	12	12	15	14	13	14	12	12	13	13
Calcium	--	86.3	--	170	147	180	180	180	150	150	180	170	180	170	140	160	160	150	150	180	170	150	150	150	150	150	150
Magnesium	--	15	--	27	30.4	37	29	33	29	28	34	35	36	32	28	31	31	27	27	31	30	27	27	25	26	25	27
Anions (mg/L)																											
Chloride	250	2	126	32	35.2	40	50	45	38	38	42	47	45	37	38	33	33	31	32	34	33	33	33	28	28	31	30
Nitrate	10	0.1	2.5	<0.1	<0.2	<0.1	<0.1	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrite	1	0.005	0.25	<0.01	<0.2	<0.01	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Orthophosphate	--	0.005	--	<0.01	--	<0.1	--	--	<0.01	<0.01	--	<0.01	<0.01	--	<0.01	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sulphate	500	12	256	26	53.7	72	88	87	38	38	35	77	76	40	48	32	31	25	25	19	19	41	41	25	25	33	33
Alkalinity as $CaCO_3$	30-500	275	388	**510**	**543**	**572**	**538**	**538**	**542**	**542**	**586**	**559**	**561**	**542**	**521**	**511**	**514**	**522**	**518**	**561**	**561**	495	500	**520**	**520**	500	500
Ion Balance (%)	--	--	--	6.37	7.11	0.500	2.45	0.396	2.11	0.88	3.01	0.07	1.34	3.39	2.54	5.6	5.8	0.72	0.69	6.82	4.38	2.41	2.74	2.12	1.89	2.37	3.33
Metals (mg/L)																											
Aluminum	0.1	0.0025	0.05	<0.005	<0.005	0.030	<0.005	<0.005	0.007	0.1	<0.005	0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.006	0.006	<0.005	0.005	<0.005	<0.005	<0.005	<0.005
Antimony	0.006	0.00025	0.0031	0.00059	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0014	<0.0005
Arsenic	0.025	0.0025	0.0081	0.018	0.011	0.005	0.017	0.017	0.017	0.018	0.016	0.02	0.016	0.018	0.015	0.018	0.019	0.008	0.007	0.02	0.018	0.017	0.016	0.018	0.017	0.017	0.017
Barium	1	0.017	0.26	0.14	0.114	0.13	0.14	0.15	0.15	0.15	0.16	0.067	0.150	0.140	0.12	0.13	0.13	0.10	0.099	0.16	0.16	0.14	0.15	0.13	0.13	0.14	0.14
Beryllium	--	0.00021	--	<0.0005	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Bismuth	--	0.0005	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	5	0.016	1.3	0.24	0.205	0.28	0.28	0.26	0.25	0.26	0.31	0.2	0.37	0.32	0.31	0.26	0.26	0.26	0.24	0.24	0.25	0.22	0.23	0.23	0.23	0.26	0.26
Cadmium	0.005	0.00012	0.0013	<0.0001	<0.0001	0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	0.05	0.0025	0.014	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Cobalt	--	0.0014	--	0.0073	0.0105	0.0097	0.0091	0.0091	0.0087	0.0088	0.0088	0.011	0.0085	0.0071	0.0068	0.007	0.0073	0.0072	0.007	0.0084	0.0086	0.0077	0.0079	0.0068	0.0066	0.0074	0.0076
Copper	1	0.003	0.25	<0.001	0.0005	0.001	<0.001	0.001	<0.001	<0.001	0.003	0.003	<0.001	0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Iron	0.3	0.31	**0.31***	**17**	**7.52**	**1.0**	**14**	**14.0**	**14.0**	**14.0**	**15.0**	**14.0**	**14.0**	**15.0**	**12.0**	**15.0**	**15.0**	**4.5**	**4.1**	**19.0**	**18.0**	**15**	**15**	**16**	**16**	**15**	**15**
Lead	0.01	0.00025	0.005	<0.0005	0.0008	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Manganese	0.05	0.282	**0.282***	**1.4**	**1.43**	**1.5**	**1.5**	**1.5**	**1.4**	**1.4**	**1.5**	**1.3**	**1.4**	**1.3**	**1.2**	**1.4**	**1.4**	**1.3**	**1.3**	**1.5**	**1.5**	**1.4**	**1.4**	**1.3**	**1.3**	**1.4**	**1.4**
Mercury	0.001	0.00005	0.0003	<0.0001	<0.00005	<0.0001	--	--	0.0001	<0.0001	--	<0.0001	<0.0001	--	<0.0001	0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum	--	0.00053	--	0.00069	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	0.001	<0.0005	<0.0005	<0.0005	0.00061	<0.0005
Nickel	--	0.0028	--	0.0029	0.008	0.005	0.005	0.006	0.004	0.004	0.005	0.005	0.005	0.005	0.006	0.005	0.005	0.007	0.006	0.004	0.006	0.006	0.005	0.0043	0.0045	0.0034	0.0038
Phosphorus (Total)	--	0.057	--	0.05	<0.05	<0.050	<0.050	0.055	0.13	0.18	<0.100	0.4	0.4	--	0.07	0.08	0.08	0.08	0.08	0.06	0.05	0.08	0.09	0.52	0.049	0.055	0.071
Selenium	0.01	0.001	0.0033	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Silicon	--	5.7	--	8.1	--	8.2	7.7	7.9	7.5	7.4	8.3	8	8.1	8	7.5	8.4	8.5	7.4	7.3	8.8	8.4	7.8	7.9	7.6	7.7	7.7	7.9
Silver	--	--	--	<0.0001	<0.0001	<0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Strontium	--	0.078	--	0.27	0.211	0.074	0.250	0.25	0.26	0.25	0.29	0.29	0.29	0.26	0.23	0.25	0.25	0.24	0.24	0.28	0.29	0.26	0.26	0.24	0.24	0.26	0.26
Thallium	--	0.00012	--	0.000056	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00008	0.00007	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Tin	--	0.0005	--	<0.001	<0.001	--	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Titanium	--	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Vanadium	--	0.00025	--	<0.00055	0.0041	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	0.001	0.0006	0.001	<0.0005	0.00076	<0.0005	0.00054
Zinc	5	0.004	2.5	<0.005	0.008	0.009	<0.005	<0.005	0.016	<0.005	0.019	<0.005	<0.005	0.007	0.007	0.005	0.007	0.007	0.005	0.012	0.012	<0.005	<0.005	0.0056	<0.005	<0.005	<0.005

Notes:
† - Denotes blind duplicate

THB-00006189-RE Phase 100 - Geraldton Landfill

Table 3 (cont'd): Groundwater Data

Parameter	ODWS	2021 Background	2021 B-7	MW3A Continued																												
				May-13	Oct-13	Oct-13†	May-14	May-14†	Oct-14	Oct-14†	May-15	May-15†	Oct-15	May-16	May-16†	Oct-16	Oct-16†	May-17	May-17†	Sep-17	Sep-17†	May-18	Oct-18	May-19	Oct-19	Oct-19†	May-20	Sep-20	Sep-20†	May-21	May-21†	Sep-21
General																																
pH	6.5 to 8.5	8.0	--	7.57	7.53	7.61	7.49	7.57	7.39	7.47	7.45	7.49	7.57	7.41	7.44	7.49	7.55	7.68	7.64	7.68	7.66	7.35	7.4	7.81	7.36	7.4	7.54	7.59	7.72	7.73	7.63	7.77
Field pH	--	7.6	--	6.8	6.81	--	6.3	--	6.99	--	6.8	--	7.06	6.89	--	7	--	7.6	--	7.01	--	6.95	NV	7.05	8.51	--	6.48	7.99	7.99	6.84	6.84	7.04
Conductivity (uS/cm)	--	520	--	1,100	1,000	1,100	1,100	1,100	1,100	1,100	1200	1,200	1,100	1,200	1200	1,200	1,200	1,300	1,300	1,200	1,200	1,400	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,100
Field Conductivity (uS/cm)	--	447	--	867	810	--	828	--	1,171	--	1,261	--	1,116	1,233	--	1,124	--	1,229	--	1,073	--	1,370	NV	1,112	1,317	--	865	881	881	525	525	1,035
Field Temperature (˚C)	--	9.6	--	8.4	5.3	--	7.4	--	7.3	--	11.2	--	4.4	9.7	--	10.4	--	8.9	--	7.9	--	12.1	NV	6.6	7.5	--	3.9	9.6	9.6	11.2	11.2	8.2
Total Dissolved Solids (mg/L)	500	250	375	**562**	**568**	**540**	**604**	**602**	**606**	**602**	**726**	**728**	**626**	**692**	**692**	**614**	**628**	**708**	**688**	**655**	**635**	**655**	**605**	**650**	**570**	**615**	**595**	**610**	**610**	**620**	**535**	**535**
Total Suspended Solids (mg/L)	--	--	--		--	--	78	52	79	55	82	77	56	--	--	--	--	--	--	`--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness (mg/L)	80 to 100	275	**275***	**520**	**450**	**460**	**530**	**530**	**490**	**490**	**530**	**540**	**450**	**500**	**500**	**460**	**440**	**460**	**480**	**430**	**440**	**500**	**460**	**470**	**450**	**460**	**480**	**460**	**480**	**450**	**480**	**430**
Organics (mg/L)																																
Dissolved Organic Carbon (DOC)	5	2.5	3.8	**10.7**	**6.8**	**6.6**	**8.1**	**7.9**	**8.1**	**8.1**	**8.2**	**8.7**	**9.2**	**7.3**	**7.3**	**8.2**	**8.4**	**6.4**	**6.4**	**6.6**	**6.6**	**7.4**	**8**	**7**	**7.1**	**7.7**	**7.2**	**7.8**	**7.7**	**6.7**	**7.1**	**6.4**
Biochemical Oxygen Demand (BOD)	--	--	--	--	--	--	--	--	2	<2	2	<2	<2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand (COD)	--	9.6	--	--	--	--	27	30	26	29	29	30	28	33	35	31	32	25	26	27	24	31	36	17	32	19	21	32	27	26	29	25
Phenols	--	0.0005	--	<0.001	<0.001	0.0017	0.0022	0.0016	0.0025	0.002	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0014	0.0021	<0.0010	<0.0010	0.001	<0.0010	<0.0010	<0.0010	<0.001	<0.001	0.001	<0.001	0.0012
Total Kjeldahl Nitrogen (TKN)	--	0.25	--	8.1	9.3	9.3	8.2	8.6	8.3	8.9	9.4	9.8	8.9	9.6	8.9	9.9	9.8	9.5	9.5	9.4	9	9	9.3	9.4	11	11	11	9.7	10	11	9.6	9.8
Ammonia-N	--	0.051	--	8.6	8.6	8.5	8.9	8.9	9.3	9.1	8.1	8.3	8.8	9.4	9.3	10	10	9.1	8.8	9.3	9.2	9.3	9.4	9.1	10	10	10	11	11	10	10	8.7
Organic Nitrogen	0.15	0.23	**0.23***	~0	**0.7**	**0.8**	~0	~0	~0	~0	**1.2**	**1.5**	0.12	**0.18**	<0.10	<0.10	<0.10	**0.4**	**0.73**	0.13	<0.1	<0.10	<0.10	**0.25**	**0.7**	**0.36**	**0.36**	<0.10	<0.10	**0.54**	<0.1	**1.1**
Cations (mg/L)																																
Sodium	200	3.9	102	26	24	24	28	28	28	29	37	37	33	50	49	45	45	68	71	60	61	65	55	64	59	60	59	48	51	61	64	48
Potassium	--	1.5	--	13	12	13	14	14	13	13	14	13	12	13	14	13	13	13	13	12	13	13	12	12	13	13	14	12	12	12	12	13
Calcium	--	86.3	--	170	140	150	170	170	160	160	160	170	140	150	150	140	140	140	150	140	140	160	150	150	140	150	150	150	150	140	150	140
Magnesium	--	15	--	27	24	24	26	26	26	25	28	29	24	26	26	25	24	24	25	22	23	26	23	23	24	23	24	24	24	23	24	22
Anions (mg/L)																																
Chloride	250	2	126	32	31	32	35	34	35	34	61	62	46	89	91	64	65	130	130	92	91	110	73	100	82	83	86	63	64	100	110	47
Nitrate	10	0.1	2.5	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrite	1	0.005	0.25	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Orthophosphate	--	0.005	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.02	<0.01	<0.01	<0.01	<0.01	<0.01
Sulphate	500	12	256	26	27	26	24	24	36	36	31	32	38	25	26	27	27	16	17	20	19	23	28	20	20	20	20	23	24	15	16	21
Alkalinity as $CaCO_3$	30-500	275	388	**510**	500	**520**	**530**	**520**	**510**	**510**	**520**	**520**	490	500	500	**510**	**510**	480	480	490	490	**540**	500	490	500	490	**510**	**530**	**530**	500	500	500
Ion Balance (%)	--	--	--	6.37	0.21	0.05	5.39	5.45	2.65	2.61	3	3.87	0.13	2.41	1.81	--	--	--	--	--	--	0.15	1.77	1.39	2.27	3.37	2.47	0.34	1.65	0.35	2.38	1.01
Metals (mg/L)																																
Aluminum	0.1	0.0025	0.05	<0.005	0.005	<0.005	0.035	0.0056	<0.005	<0.005	<0.0050	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0061	<0.005	<0.005	<0.005	0.0054	<0.005	<0.005	0.0053	<0.005	0.0051	0.047	0.061	<0.0049	<0.0049	0.013
Antimony	0.006	0.00025	0.0031	0.00059	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.00050	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Arsenic	0.025	0.0025	0.0081	0.018	0.017	0.017	0.018	0.018	0.017	0.017	0.017	0.017	0.0087	0.017	0.017	0.016	0.017	0.017	0.017	0.018	0.017	0.017	0.013	0.01	0.017	0.018	0.018	0.016	0.016	0.017	0.018	0.014
Barium	1	0.017	0.26	0.14	0.14	0.14	0.15	0.15	0.15	0.15	0.15	0.15	0.13	0.15	0.15	0.14	0.14	0.15	0.15	0.14	0.14	0.14	0.14	0.12	0.14	0.14	0.16	0.14	0.14	0.14	0.14	0.13
Beryllium	--	0.00021	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.00050	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
Bismuth	--	0.0005	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	5	0.016	1.3	0.24	0.24	0.23	0.25	0.25	0.28	0.27	0.32	0.31	0.28	0.28	0.27	0.29	0.29	0.22	0.23	0.23	0.23	0.27	0.32	0.26	0.29	0.28	0.27	0.28	0.31	0.23	0.24	0.27
Cadmium	0.005	0.00012	0.0013	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00009	<0.00009	<0.00009	<0.00009
Chromium	0.05	0.0025	0.014	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0050	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Cobalt	--	0.0014	--	0.0073	0.0063	0.0063	0.0069	0.007	0.0068	0.0066	0.0075	0.0071	0.0064	0.0061	0.006	0.0051	0.0054	0.0057	0.0056	0.0051	0.0052	0.0056	0.0052	0.005	0.0051	0.0058	0.0055	0.0053	0.0052	0.0049	0.005	0.0048
Copper	1	0.003	0.25	<0.001	<0.001	<0.001	0.0012	0.0011	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0015	0.0016	<0.0009	<0.0009	0.0025
Iron	0.3	0.31	**0.31***	**17**	**15**	**15**	**17**	**18**	**16**	**16**	**17**	**16**	**12**	**16**	**16**	**14**	**14**	**15**	**16**	**15**	**15**	**17**	**14**	**9.2**	**16**	**15**	**15**	**15**	**15**	**16**	**12**	**11**
Lead	0.01	0.00025	0.005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Manganese	0.05	0.282	**0.282***	**1.4**	**1.4**	**1.4**	**1.5**	**1.5**	**1.4**	**1.4**	**1.4**	**1.4**	**1.3**	**1.3**	**1.3**	**1.2**	**1.2**	**1.2**	**1.2**	**1.2**	**1.2**	**1.3**	**1.2**	**1.1**	**1.2**	**1.2**	**1.3**	**1.1**	**1.2**	**1.2**	**1.2**	**1.1**
Mercury	0.001	0.00005	0.0003	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010
Molybdenum	--	0.00053	--	0.00069	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00058	0.00055	0.00064	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00051	0.00056	<0.0005	<0.0005	<0.0005	<0.0005	0.00065
Nickel	--	0.0028	--	0.0029	0.0035	0.0039	0.0054	0.0056	0.0058	0.0059	0.0066	0.0063	0.0048	0.0036	0.0037	0.0048	0.005	0.0043	0.0048	0.0045	0.0044	0.0051	0.0054	0.0051	0.0051	0.0063	0.0055	0.0054	0.0056	0.0045	0.0046	0.006
Phosphorus (Total)	--	0.057	--	0.05	0.06	0.061	0.054	0.05	0.072	0.075	0.042	0.041	0.046	0.06	<0.1	0.039	<0.1	0.04	0.036	0.039	0.035	0.039	0.16	0.04	0.022	0.14	0.052	0.057	0.057	0.068	0.062	0.14
Selenium	0.01	0.001	0.0033	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Silicon	--	5.7	--	8.1	7.5	7.6	8.4	8.5	8.3	8.4	7.6	7.7	7.1	7.6	7.6	7.2	7	7.2	7.6	7.2	7.3	7.8	7.3	7.1	7.6	7.6	8.1	7.6	7.6	7.5	7.7	7.4
Silver	--	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Strontium	--	0.078	--	0.27	0.24	0.24	0.26	0.26	0.26	0.26	0.28	0.27	0.26	0.27	0.27	0.24	0.24	0.24	0.24	0.23	0.23	0.25	0.24	0.23	0.22	0.22	0.24	0.24	0.25	0.22	0.24	0.24
Thallium	--	0.00012	--	0.000056	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Tin	--	0.0005	--	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Titanium	--	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0050	<0.005	<0.005	<0.005	<0.005	<0.005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	0.00025	--	<0.00055	0.00098	0.001	0.00059	0.00066	0.0007	0.00066	0.00069	0.00052	<0.0005	0.00069	0.00083	0.00057	0.00055	<0.0005	0.00055	0.00066	0.00073	0.00063	0.00055	<0.0005	0.00058	0.00062	0.0006	0.00084	0.00087	0.00056	0.0006	<0.0005
Zinc	5	0.004	2.5	<0.005	<0.005	<0.005	0.01	0.006	0.03	<0.005	<0.005	<0.0050	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005

Notes:
† - Denotes blind duplicate
NV - Denotes no value; handheld instrument was malfuntioning

THB-00006189-RE Phase 100 - Geraldton Landfill

Table 3 (cont'd): Groundwater Data

Parameter	ODWS	2021 Background	2021 B-7	MW3B																															
				Jun-03	Aug-06	Nov-06	Nov-07	Jun-08	Oct-08	Jun-09	Oct-09	Jun-10	Oct-10	May-11	Oct-11	May-12	Oct-12	May-13	Oct-13	May-14	Oct-14	May-15	Oct-15	May-16	Oct-16	May-17	Sep-17	May-18	Oct-18	May-19	Oct-19	May-20	Sep-20	May-21	Sep-21
General																																			
pH	6.5 to 8.5	8.0	--	7.18	7.8	8.0	8.0	8.0	7.9	7.4	7.6	7.7	7.68	7.3	7.6	7.68	7.47	7.79	7.56	7.58	7.43	7.47	7.62	7.86	7.57	7.63	7.66	7.37	7.38	7.88	7.49	7.94	7.69	7.65	7.73
Field pH	--	7.6	--			--	7.05	7.13	7.2	7.03	5.39	6.63	6.71	6.48	6.64	6.79	6.86	6.74	6.67	6.54	7.27	6.83	7.8	6.89	7.04	7.1	7.02	8.12	NV	7.27	7.36	7.15	7.98	6.82	7.06
Conductivity (uS/cm)	--	520	--	990	1,090	1,310	1,150	1,210	1,370	1,240	1,190	1,140	1,160	1,180	1,210	1,200	1,100	1,000	1,200	920	1,200	1,200	1,200	1,200	1,100	1,300	1,300	1,200	1,200	780	1,200	1,200	1,100	1,200	1100
Field Conductivity (uS/cm)	--	447	--	--	1,126	1,235	1,102	>3,999	1,379	1,121	1,076	1,120	1,065	1,070	1,065	989	919	775	856	672	1,258	1,250	1,216	1,166	1,038	1,161	1,148	1,185	NV	725	2,138	891	780	527	1,060
Field Temperature (˚C)	--	9.6	--	--	9.1	5.6	4.1	7.3	5.5	12.5	5.6	6.6	5.9	6.7	8	5.5	7.3	6.6	5.2	5.7	7.8	9.2	3.8	8.3	10.5	7.4	8.2	16	NV	4.4	6.8	4.1	8.8	8.7	8.5
Total Dissolved Solids (mg/L)	500	250	375	**604**	**652**	**838**	476	**768**	**850**	**800**	**800**	**750**	**752**	**724**	**816**	**646**	**626**	**538**	**622**	**552**	**704**	**742**	**670**	**668**	**640**	**648**	**715**	**680**	**700**	435	**710**	**630**	**600**	**520**	**595**
Total Suspended Solids (mg/L)	--	--	--	--	--	--	4,800	2,900	2,600	--	--	--	--	--	--	--	--	--	--	1100	2100	290	200	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness (mg/L)	80 to 100	275	**275***	**470**	**580**	**640**	**510**	**600**	**670**	**590**	**560**	**580**	**540**	**550**	**550**	**540**	**530**	**450**	**520**	**450**	**550**	**530**	**530**	**530**	**460**	**500**	**520**	**540**	**540**	**360**	**530**	**530**	**470**	**500**	**480**
Organics (mg/L)																																			
Dissolved Organic Carbon (DOC)	5	2.5	3.8	**6.9**	**6.6**	**9.0**	**8.4**	**9.1**	**8.1**	**8.4**	**7.2**	**8.2**	**7.8**	**8.1**	**7.1**	**8.5**	**7.0**	**7.7**	**7.1**	**7**	**8.6**	**8.9**	**9.3**	**7.7**	**6.3**	**8.2**	**9.2**	**8.1**	**9.1**	**5.1**	**9.1**	**9**	**6.9**	**8.3**	**6.5**
Biochemical Oxygen Demand (BOD)	--	--	--	--	--	--	<2	<2	<2	--	--	--	--	--	--	--	--	--	--	--	<2	<2	<2	--	--	--		--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand (COD)	--	9.6	--	--	--	--	12.0	21.0	27.0	45.0	--	--	25	--	31	--	22	--	--	25	19	26	24	27	27	28	34	26	34	13	26	27	22	26	22
Phenols	--	0.0005	--	<0.001	<0.001	--	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	0.0014	0.0017	<0.001	<0.001	<0.0010	<0.0010	<0.0010	0.0021	<0.0010	0.001	<0.0010	0.0011	0.0011	<0.001	0.001	<0.0010
Total Kjeldahl Nitrogen (TKN)	--	0.25	--	--	1.9	--	4.7	4.7	2.9	6	2.9	4.3	5.2	5.8	4.2	5.9	4.6	6.1	6	6.2	6.7	7.1	5.7	6.4	4.2	8	8.7	6.3	7.1	4.5	9.3	9.4	5.6	9.1	6
Ammonia-N	--	0.051	--	1.68	1.58	2.77	3.22	3.7	1.9	3.3	2.5	3.7	4.3	6	3.7	6.2	4	6.7	5	6.8	6.6	6	5.3	5.9	3.9	7	8.4	6.5	7.4	4.5	8.8	8.9	6	9.2	5.8
Organic Nitrogen	0.15	0.23	**0.23***	--	**0.32**	--	**1.48**	**1**	**1**	**2.7**	**0.4**	**0.6**	**1**	~0	**0.5**	~0	**0.6**	~0	**1**	<0.1	0.1	**1.1**	**0.36**	**0.51**	**0.22**	**0.92**	**0.28**	<0.10	<0.10	<0.10	<0.10	**0.52**	**0.44**	<0.10	<0.10	**0.19**
Cations (mg/L)																																			
Sodium	200	3.9	102	19.2	28	29	26	33	43	35	37	33	30	35	28	30	30	31	30	29	33	37	36	39	33	46	56	46	46	33	55	53	39	54	38
Potassium	--	1.5	--	9.7	11	14	12	14	13	13	12	14	14	14	14	14	13	14	13	13	14	15	14	15	13	15	17	14	16	10	16	17	13	16	14
Calcium	--	86.3	--	139	170	200	150	180	190	170	160	170	160	170	160	170	160	140	160	140	170	160	160	160	140	160	160	170	170	110	170	170	150	160	150
Magnesium	--	15	--	30.2	38	36	33	38	49	40	41	38	33	33	35	29	32	24	29	23	30	30	30	29	28	27	29	27	30	17	28	28	26	27	26
Anions (mg/L)																																			
Chloride	250	2	126	32.8	49	59	42	42	57	44	41	39	40	43	39	37	34	41	39	37	42	49	45	48	39	81	83	68	62	37	69	71	43	80	39
Nitrate	10	0.1	2.5	2.5	<0.1	0.2	<0.1	0.2	<0.1	0.1	0.2	0.2	<0.1	0.6	0.1	0.26	0.4	0.66	<0.1	0.42	0.1	0.29	<0.1	0.29	0.38	0.22	<0.10	0.94	0.29	<0.10	0.52	1.09	0.63	0.47	0.69
Nitrite	1	0.005	0.25	<0.2	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	0.017	--	<0.01	<0.01	0.011	<0.01	0.024	0.011	0.028	<0.010	0.013	<0.010	0.028	0.027	0.02	0.019	0.035	<0.010	<0.010
Orthophosphate	--	0.005	--	--	<0.01	--	<0.01	--	<0.001	--	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01
Sulphate	500	12	256	69.5	99	112	35	50	143	73	89	55	33	26	59	36	56	29	36	25	50	36	57	37	40	21	21	24	39	12	27	23	36	20	35
Alkalinity as $CaCO_3$	30-500	275	388	466	**508**	**585**	**558**	**576**	**568**	**556**	**519**	**514**	**544**	**549**	**540**	**540**	**510**	440	**540**	450	**560**	**540**	**520**	**520**	490	**530**	**570**	**550**	**560**	340	**540**	**540**	**520**	**540**	**510**
Ion Balance (%)	--	--	--	5.62	1.79	3.22	4.77	1.43	0.56	0.19	0.19	4.32	0.06	2.22	0.9	1.57	1.4	3.23	0.6	2.22	0.4	1.42	0.03	2.46	--	--	--	0.35	0.38	6.15	2.86	3.04	1.29	0.55	0.43
Metals (mg/L)																																			
Aluminum	0.1	0.0025	0.05	0.008	0.02	<0.005	0.006	<0.005	<0.005	<0.005	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0059	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0086	<0.005	<0.005	0.0053	<0.005	<0.0049	<0.0049	0.0065
Antimony	0.006	0.00025	0.0031	<0.0005	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00079	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Arsenic	0.025	0.0025	0.0081	<0.002	<0.001	<0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.001	0.002	0.0028	0.003	0.0027	0.0046	0.003	0.0027	0.0051	<0.001	0.0059	0.0035	0.0044	0.0042	0.0043	0.0041	0.0046	0.0066	0.0076	0.005	0.0074	0.0053
Barium	1	0.017	0.26	0.07	0.093	0.11	0.10	0.11	0.11	0.11	0.096	0.099	0.11	0.11	0.11	0.12	0.11	0.1	0.12	0.1	0.13	0.13	0.12	0.13	0.1	0.13	0.14	0.13	0.14	0.089	0.14	0.13	0.11	0.13	0.12
Beryllium	--	0.00021	--	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.0004
Bismuth	--	0.0005	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	5	0.016	1.3	0.205	0.32	<0.370	0.29	0.35	0.6	0.46	0.48	0.36	0.32	0.28	0.29	0.28	0.32	0.23	0.3	0.22	0.32	0.37	0.38	0.36	0.35	0.3	0.33	0.29	0.4	0.2	0.37	0.36	0.36	0.33	0.37
Cadmium	0.005	0.00012	0.0013	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00009	<0.00009	<0.00009
Chromium	0.05	0.0025	0.014	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Cobalt	--	0.0014	--	0.0169	0.0075	0.009	0.0073	0.0076	0.0081	0.0077	0.0085	0.0087	0.0092	0.0083	0.0087	0.0093	0.0087	0.0076	0.0095	0.0076	0.0073	0.0087	0.01	0.0087	0.0067	0.0094	0.0091	0.0076	0.0073	0.0061	0.007	0.008	0.0059	0.0077	0.0065
Copper	1	0.003	0.25	0.0044	0.008	0.004	0.005	0.008	0.007	0.004	0.005	0.005	0.005	0.008	0.006	0.0049	0.0042	0.0018	0.003	0.0024	0.005	0.0035	0.0082	0.0032	0.0036	0.0031	0.0014	0.0033	0.0029	0.003	0.0024	0.0039	0.003	0.003	0.0049
Iron	0.3	0.31	**0.31***	<0.03	<0.05	**0.66**	**1.20**	**1.10**	**0.86**	**2.30**	**1.20**	**1.50**	**0.93**	<0.1	**1.3**	**2.7**	**1.9**	**3.5**	**3.5**	**2.6**	**2.6**	**4.6**	**0.72**	**4.3**	**2**	**3.8**	**5.2**	**3.9**	**3.5**	**2.8**	**5.6**	**6.2**	**2.7**	**6.7**	**3**
Lead	0.01	0.00025	0.005	0.0008	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Manganese	0.05	0.282	**0.282***	**1.02**	**0.84**	**1.0**	**1.0**	**0.93**	**0.91**	**1.20**	**1.1**	**1.3**	**1.3**	**1.1**	**1.3**	**1.4**	**1.2**	**1.4**	**1.4**	**1.1**	**1.2**	**1.2**	**1.4**	**1.3**	**1**	**1.3**	**1.4**	**1.2**	**1.2**	**0.88**	**1.2**	**1.4**	**0.91**	**1.2**	**0.97**
Mercury	0.001	0.00005	0.0003	<0.00005	<0.0001	--	0.0004	--	<0.0001	--	**0.0011**	0.0005	0.0005	0.0002	<0.0001	0.00036	0.00039	0.00019	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.0001	<0.00010	<0.00010
Molybdenum	--	0.00053	--	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0005	0.00052	0.00058	0.00052	<0.0005	0.57	<0.0005	<0.0005	0.00053	<0.0005	<0.0005	0.00054	0.00056	<0.0005	<0.0005	0.00084	<0.0005	0.00052	<0.0005	<0.0005	<0.0005
Nickel	--	0.0028	--	0.014	0.006	0.009	0.004	0.007	0.009	0.008	0.009	0.008	0.008	0.009	0.008	0.0072	0.0063	0.0045	0.0064	0.0059	0.0076	0.0081	0.0093	0.0061	0.0071	0.0085	0.0083	0.0084	0.0088	0.0056	0.0083	0.0082	0.0074	0.0077	0.0072
Phosphorus (Total)	--	0.057	--	<0.05	<0.050	<0.050	2.0	<0.100	1.3	--	0.3	0.26	0.14	0.05	0.09	0.096	0.21	0.11	0.13	0.82	0.99	0.082	0.048	0.1	0.055	0.086	0.031	0.059	0.15	0.12	0.13	0.13	0.086	0.054	0.036
Selenium	0.01	0.001	0.0033	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Silicon	--	5.7	--	--	6.5	7.1	6.3	7.1	7.4	7.6	7.7	8.1	7.8	7.7	7.5	7.6	7.5	7.4	7.4	7	7.8	7.1	7.2	7.4	6.6	7.2	7.9	6.8	7.7	5.2	8	8.3	6.8	7.5	7.2
Silver	--	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	--	--	--	--	--	--	--	--	--	--
Strontium	--	0.078	--	0.207	0.260	0.300	0.260	0.300	0.320	0.290	0.260	0.270	0.28	0.28	0.29	0.28	0.29	0.26	0.28	0.23	0.31	0.3	0.31	0.31	0.27	0.28	0.32	0.28	0.32	0.18	0.28	0.29	0.27	0.27	0.28
Thallium	--	0.00012	--	<0.00005	0.00006	<0.00005	<0.00005	<0.00005	0.00006	<0.00005	0.00006	<0.00005	<0.00005	0.00006	0.00007	<0.00005	<0.00005	<0.00005	<0.00005	0.000074	0.0001	<0.00005	0.000067	0.000063	<0.00005	0.000065	<0.00005	0.000061	<0.00005	0.000056	0.000052	<0.00005	<0.00005	<0.00005	<0.00005
Tin	--	0.0005	--	<0.001	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Titanium	--	--	--	<0.005	<0.0005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	0.00025	--	0.0036	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	0.00084	<0.0005	<0.0005	0.00054	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Zinc	5	0.004	2.5	0.018	0.014	0.015	0.017	0.019	0.005	0.01	0.014	0.009	0.006	<0.005	0.006	0.006	0.013	<0.005	<0.005	<0.005	0.019	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005

Notes:
† - Denotes blind duplicate
NV - Denotes no value; handheld instrument was malfuntioning

THB-00006189-RE Phase 100 - Geraldton Landfill

Table 3 (cont'd): Groundwater Data

Parameter	ODWS	2021 Background	2021 B-7	MW4																															
				Jun-03	Aug-06	Nov-06	Nov-07	Jun-08	Oct-08	Jun-09	Oct-09	Jun-10	Oct-10	May-11	Oct-11	May-12	Oct-12	May-13	Oct-13	May-14	Oct-14	May-15	Oct-15	May-16	Oct-16	May-17	Sep-17	May-18	Oct-18	May-19	Oct-19	May-20	Sep-20	May-21	Sep-21
General																																			
pH	6.5 to 8.5	8.0	--	7.34	7.8	7.9	8.0	7.8	7.8	7.3	7.5	7.8	7.57	7.5	7.63	7.79	7.31	7.88	7.69	7.55	7.41	7.44	7.57	7.41	7.6	7.62	7.82	7.4	7.51	7.82	7.61	7.56	7.72	7.83	7.78
Field pH	--	7.6	--	6.86	6.74	--	7.05	7.1	7.1	6.95	6.79	6.80	6.84	6.77	7.07	7.10	6.59	7.26	6.76	6.52	8.03	6.67	6.95	6.86	6.92	7.22	7.35	8.43	NV	7.04	5.94	7.7	7.93	6.91	6.83
Conductivity (uS/cm)	--	520	--	580	957	1,020	1,030	939	1,080	920	877	775	758	846	837	790	910	790	870	980	1,200	1,100	1,200	1,000	1,100	770	790	1,100	1,000	890	900	980	930	800	950
Field Conductivity (uS/cm)	--	447	--	--	1,003	925	945	>3,999	1,070	836	794	803	696	808	747	714	788	649	659	743	1,207	1,111	1,126	980	1,065	734	760	1,027	NV	829	897	746	674	385	981
Field Temperature (˚C)	--	9.6	--	--	9.7	5.7	4.2	6.2	8.2	11.6	7.6	6.5	7.7	4.1	9.5	4.7	8.6	6.4	6.7	4.4	8.8	8.3	3.3	6.7	11.4	7.7	9.3	10.7	NV	4.5	9.9	5.1	9.8	7.5	10.7
Total Dissolved Solids (mg/L)	500	250	375	319	**574**	**594**	**536**	**586**	**660**	**595**	**575**	500	466	**524**	**652**	448	486	466	488	**576**	**746**	**696**	**768**	**610**	**724**	428	**505**	**575**	**545**	**520**	500	**510**	**525**	365	**580**
Total Suspended Solids (mg/L)	--	--	--	--	--	--	1500	1100	1100		--	--	--	--	--	--	--	--	--	360	780	410	500	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness (mg/L)	80 to 100	275	**275***	**291**	**530**	**580**	**540**	**520**	**610**	**510**	**480**	**460**	**410**	**480**	**450**	**400**	**510**	**460**	**450**	**580**	**610**	**610**	**590**	**570**	**590**	**400**	**420**	**610**	**560**	**510**	**500**	**540**	**510**	**380**	**530**
Organics (mg/L)																																			
Dissolved Organic Carbon (DOC)	5	2.5	3.8	**8.1**	**5.5**	3.4	4.5	2.5	4.1	1.8	1.8	1.7	1.9	1.4	1.6	2.4	1.4	4.5	1.6	1.9	**6.4**	2.1	3.5	1.5	2.3	1.7	1.9	2.1	2.2	1.9	1.8	1.6	1.8	1.4	1.7
Biochemical Oxygen Demand (BOD)	--	--	--	--	--	--	<2	<2	2	--	--	--	--	--	--	--	--	--	--	--	<2	<2	<2	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand (COD)	--	9.6	--	--	--	--	17	<4	13	<4	--	--	7	--	16	--	8.3	--	--	<4	15	7.3	17	9.5	7.6	<4.0	8.7	8.4	5.7	<4.0	4.4	<4.0	<4.0	5.2	8.8
Phenols	--	0.0005	--	0.002	<0.001	--	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001	0.0015	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.001	0.0012	<0.0010
Total Kjeldahl Nitrogen (TKN)	--	0.25	--	--	0.4	--	0.9	0.4	1	0.5	0.6	0.4	0.2	0.3	0.5	<0.1	0.49	1	0.43	0.33	1	0.55	0.5	0.25	0.12	0.15	0.12	0.13	0.21	0.15	0.2	0.29	0.22	0.2	0.41
Ammonia-N	--	0.051	--	0.05	0.1	0.06	0.06	<0.05	0.29	0.22	0.22	0.15	0.06	0.06	<0.05	<0.05	0.13	0.092	<0.05	<0.05	0.14	<0.05	0.058	<0.050	<0.050	<0.050	<0.050	0.062	0.14	<0.050	<0.050	<0.050	0.24	<0.050	<0.050
Organic Nitrogen	0.15	0.23	**0.23***	--	**0.3**	--	**0.84**	**0.38**	**0.71**	**0.28**	**0.38**	**0.3**	**0.2**	**0.24**	**0.5**	<0.1	**0.36**	**0.908**	**0.43**	**0.3**	**0.9**	**0.55**	**0.44**	**0.25**	0.12	0.15	0.12	<0.10	<0.10	0.15	**0.2**	**0.29**	<0.10	**0.2**	**0.19**
Cations (mg/L)																																			
Sodium	200	3.9	102	6	5.6	5.7	6.9	5.8	6.9	2.2	2.3	2.1	2.3	2.4	2.7	2.1	3.5	3.1	7.4	3.9	16	3.7	9.8	4	6	7	8.5	12	10	10	5.8	7.3	11	13	6.7	12
Potassium	--	1.5	--	1.5	1.8	2.5	2.7	2.5	3.6	2.3	2.5	1.7	1.7	1.5	1.6	1.3	1.7	1.4	1.8	1.6	2.2	1.8	2.3	1.9	2.3	1.6	1.9	2	2.2	1.6	1.9	1.9	2.1	1.5	2.2
Calcium	--	86.3	--	97.8	180	200	180	180	210	180	170	150	140	160	150	130	170	160	150	190	210	210	200	200	200	140	140	210	190	180	170	180	170	130	180
Magnesium	--	15	--	11.4	20	20	20	17	18	16	16	18	17	22	19	15	20	18	16	22	21	19	18	18	20	14	15	21	19	16	17	19	18	13	18
Anions (mg/L)																																			
Chloride	250	2	126	15.9	8	5	5	3	16	5	4	5	10	6	2	14	2	10	32	9	29	9	16	9	20	11	9.4	13	16	5.7	14	13	18	8.8	14
Nitrate	10	0.1	2.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	0.2	0.1	<0.1	0.13	0.18	0.66	0.2	0.52	<0.1	<0.1	<0.1	<0.10	0.21	<0.10	0.22	0.26	<0.10	0.26	0.2	0.72	0.59	0.33	0.39
Nitrite	1	0.005	0.25	<0.2	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Orthophosphate	--	0.005	--	--	<0.01	--	<0.01	--	<0.01	--	<0.01	0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.01	<0.010	<0.01
Sulphate	500	12	256	31.1	7	10	7	6	4	7	6	17	12	10	6	8	6	10	9	13	120	30	67	28	110	24	36	70	55	31	50	36	33	24	41
Alkalinity as $CaCO_3$	30-500	275	388	248	**601**	**606**	**585**	**525**	**605**	**514**	485	405	392	452	456	400	490	400	420	**540**	**540**	**580**	**580**	**530**	**500**	380	400	**540**	500	450	420	490	460	410	**510**
Ion Balance (%)	--	--	--	0.57	6.67	2.26	3.97	0.25	0.06	1.26	0.6	3.82	0.74	2.01	0.57	2.98	1.87	4.99	0.65	1.93	4.56	0.05	4.78	0.4	--	--	--	0.47	1.01	3.26	2.4	1.02	1.73	6.34	0.43
Metals (mg/L)																																			
Aluminum	0.1	0.0025	0.05	<0.005	0.007	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0064	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.058	<0.0049	<0.0049	0.0053
Antimony	0.006	0.00025	0.0031	<0.0005	<0.001	<0.001	<0.0005	<0.0005	0.0009	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0013	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Arsenic	0.025	0.0025	0.0081	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	1	0.017	0.26	0.02	0.042	<0.051	0.057	0.048	0.07	0.052	0.049	0.036	0.037	0.035	0.042	0.032	0.047	0.032	0.042	0.043	0.062	0.053	0.065	0.05	0.062	0.033	0.04	0.051	0.054	0.04	0.046	0.045	0.052	0.032	0.056
Beryllium	--	0.00021	--	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004
Bismuth	--	0.0005	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.004	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0011	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	5	0.016	1.3	0.01	0.01	<0.019	0.025	0.019	0.046	<0.01	0.015	0.012	0.013	0.011	0.011	0.012	0.015	<0.01	0.015	<0.01	0.1	0.027	0.16	0.032	0.092	0.057	0.066	0.41	0.32	0.11	0.23	0.2	0.19	0.1	0.23
Cadmium	0.005	0.00012	0.0013	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00019	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00015	<0.0001	<0.0001	<0.0001	<0.0001	<0.00009	<0.00009	<0.00009
Chromium	0.05	0.0025	0.014	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Cobalt	--	0.0014	--	0.0024	0.007	0.0005	0.0007	0.0012	0.0024	0.0019	0.0015	0.0012	0.0006	0.0013	0.0011	0.0012	0.00095	0.00067	0.005	0.00075	0.0028	0.0042	0.0041	0.0032	0.0034	0.0022	0.0021	0.003	0.0029	0.0022	0.0025	0.0027	0.0024	0.00056	0.0018
Copper	1	0.003	0.25	0.0016	0.005	0.003	0.004	0.008	0.006	0.004	0.003	0.002	0.002	0.002	0.002	0.0023	0.0022	0.0012	0.0026	0.0011	0.0043	0.0019	0.0027	0.0016	0.0019	<0.001	0.0014	0.0014	0.0017	0.0012	0.0016	0.0033	<0.0009	0.0035	0.0037
Iron	0.3	0.31	**0.31***	<0.03	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.15	<0.10	<0.1	<0.1
Lead	0.01	0.00025	0.005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Manganese	0.05	0.282	**0.282***	**0.247**	**0.4**	**0.43**	**0.81**	**0.95**	**1.4**	**1.3**	**0.84**	**0.79**	**0.59**	**0.61**	**0.58**	**0.34**	**0.43**	**0.28**	**0.18**	**0.32**	**0.94**	**0.99**	**0.85**	**0.61**	**0.64**	**0.39**	**0.39**	**0.49**	**0.47**	**0.36**	**0.34**	**0.39**	**0.35**	**0.13**	**0.25**
Mercury	0.001	0.00005	0.0003	<0.00005	<0.0001	--	<0.0001	--	0.0008	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.0001	<0.00010
Molybdenum	--	0.00053	--	0.004	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	0.00054	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.00050	<0.0005	<0.0005
Nickel	--	0.0028	--	0.003	<0.002	<0.005	0.004	0.006	0.009	0.008	0.006	0.005	0.004	0.004	0.003	0.0022	0.0019	0.001	0.0017	0.003	0.0064	0.0089	0.007	0.0037	0.0068	0.0039	0.0036	0.0048	0.0054	0.0036	0.0041	0.0047	0.0042	0.0022	0.0033
Phosphorus (Total)	--	0.057	--	<0.05	0.87	<0.050	0.4	<0.100	0.5	--	0.23	0.23	0.25	0.18	0.59	0.15	0.21	1.2	0.46	0.35	0.61	0.14	0.087	0.073	0.32	0.13	0.16	0.24	0.23	0.34	0.2	0.3	0.16	0.092	0.33
Selenium	0.01	0.001	0.0033	<0.002	<0.0002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Silicon	--	5.7	--	--	6.2	7.2	6.7	6.1	7.5	5.9	6.2	5.5	5.7	5.4	5.6	4.5	6.2	5.2	5.5	6	6.4	5.8	6.2	5.6	5.8	4.8	5.2	5.4	6.1	5.1	6	5.8	5.7	4.5	5.8
Silver	--	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	--	--	--	--	--	--	--	--	--
Strontium	--	0.078	--	0.084	0.140	0.16	0.17	0.16	0.2	0.15	0.14	0.12	0.11	0.13	0.12	0.12	0.15	0.13	0.13	0.15	0.18	0.17	0.19	0.17	0.18	0.11	0.12	0.16	0.16	0.14	0.13	0.15	0.14	0.1	0.15
Thallium	--	0.00012	--	0.00007	0.00012	0.00013	0.00017	0.00012	0.00033	0.00021	0.00025	0.00015	0.00014	0.00012	0.00015	0.00011	0.00015	0.000076	0.00011	0.000072	0.00019	0.00013	0.00019	0.00013	0.00017	0.00011	0.00014	0.00011	0.00015	0.000081	0.00014	0.00012	0.000089	0.000079	0.00014
Tin	--	0.0005	--	<0.001	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Titanium	--	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	--	--	--	--	--	--	--	--	--	--
Vanadium	--	0.00025	--	0.0022	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Zinc	5	0.004	2.5	<0.005	0.008	0.014	0.014	0.016	0.009	0.01	0.009	0.006	<0.005	<0.005	0.006	0.0069	0.0051	0.001	0.0075	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005

Notes:
† - Denotes blind duplicate
NV - Denotes no value; handheld instrument was malfuntioning

THB-00006189-RE Phase 100 - Geraldton Landfill

Table 3 (cont'd): Groundwater Data

Parameter	ODWS	2021 Background	2021 B-7	MW5																																		
				Jun-03	Aug-06	Nov-06	Nov-07	Jun-08	Oct-09	Jun-10	Oct-10	May-11	Oct-11	May-12	Oct-12	May-13	Oct-13	May-14	Oct-14	May-15	Oct-15	Oct-15†	May-16	Oct-16	May-17	Sep-17	May-18	May-18†	Oct-18	Oct-18†	May-19	May-19†	Oct-19	May-20	May-20†	Sep-20	May-21	Sep-21	Sept-21†
General																																						
pH	6.5 to 8.5	8.0	--	7.37	7.9	8.0	7.9	**Not**	7.3	7.8	7.72	7.6	7.69	7.76	7.36	7.53	7.77	7.64	7.57	7.65	7.77	7.81	7.79	7.62	7.74	7.77	7.63	7.5	7.61	7.63	7.88	7.95	7.57	7.61	7.62	7.76	7.9	7.81	8.02
Field pH	--	7.6	--	6.62	6.62	--	7.18	**Sampled**	7.2	6.79	6.85	6.79	6.89	7.2	6.9	6.83	6.85	6.52	7.09	6.95	7.17	--	7.03	7.16	7.17	7.25	7.02	--	NV	--	6.86	--	6.66	7.67	7.67	6.75	6.97	7.21	--
Conductivity (uS/cm)	--	520	--	757	1,540	1,590	1,110	**Well**	1,540	1,250	990	1,050	1,390	1,000	1,300	1,500	1,100	1,100	1,500	1,100	1,600	1,500	1,200	1,300	990	1,000	1,300	1,200	1,300	1,300	960	960	1100	1100	1100	1100	840	1100	1000
Field Conductivity (uS/cm)	--	447	--	--	1,592	1,490	1,014	**Destroyed**	1,399	1,225	965	972	1,168	403	1,069	1,140	794	825	1,535	1,271	1,586	--	1,226	1,221	914	958	1,598	--	NV	--	867	--	1,294	755	755	541	402	1,075	--
Field Temperature (˚C)	--	9.6	--	--	10.2	6.6	4	**or**	7.6	9.2	7.4	9.7	10.1	8	7.7	10.7	7	10.5	8.3	12.5	3.1	--	10.6	11.1	11.5	8.7	14.3	--	NV	--	9.6	--	9.8	5.8	5.8	10.2	10.6	14.5	--
Total Dissolved Solids (mg/L)	500	250	375	439	**913**	**987**	480	**Buried**	**1000**	**800**	**640**	**664**	**1070**	**552**	**752**	**858**	**640**	**652**	**966**	**816**	**984**	**996**	**718**	**754**	**546**	**625**	**720**	**745**	**780**	**735**	**560**	**555**	**565**	**585**	**545**	**605**	480	**580**	**615**
Total Suspended Solids (mg/L)	--	--	--	--	--	--	2300		--	--	--	--	--	--	--	--	--	460	340	1,300	210	190	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness (mg/L)	80 to 100	275	**275***	**339**	**820**	**840**	**620**		**650**	**580**	**430**	**500**	**610**	**430**	**580**	**650**	**510**	**500**	**680**	**560**	**630**	**630**	**540**	**550**	**420**	**490**	**530**	**530**	**580**	**580**	**420**	**420**	**480**	**460**	**460**	**530**	**390**	**490**	**500**
Organics (mg/L)																																						
Dissolved Organic Carbon (DOC)	5	2.5	3.8	**22.5**	**9.7**	**8.1**	**6.1**		**8.7**	**6.3**	4.5	4	**6.3**	5	**5.8**	**17.3**	4	5	**6.7**	**5.5**	**11**	**11**	**5.3**	**6.8**	4	**5.2**	**5.2**	**5.2**	**6.6**	**6.6**	3.9	4	4.1	4.7	4.8	**5.4**	2.8	**5.8**	**5.8**
Biochemical Oxygen Demand (BOD)	--	--	--	--	--	--	<2		--	--	--	--	--	--	--	--	--	--	<2	<2	<2	<2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand (COD)	--	9.6	--	--	--	--	28		--	--	85	--	40	--	32	--	--	15	22	27	47	46	30	31	17	23	22	18	28	27	9	10	9.6	15	14	18	13	24	25
Phenols	--	0.0005	--	0.016	<0.001	--	<0.001		0.018	0.048	0.017	0.009	0.008	0.0023	<0.001	<0.001	<0.001	0.0034	<0.001	<0.0010	<0.001	<0.001	<0.0010	<0.0010	<0.0010	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.001	<0.0010	<0.0010	<0.0010
Total Kjeldahl Nitrogen (TKN)	--	0.25	--	--	0.6	--	1.2		33	<30	7	6	3	4.8	2.1	9.7	1.8	5.6	2.1	2.6	2.4	2.6	3.5	2.5	3.5	1.8	2.7	1.7	2.6	2.6	3.3	3.4	2.9	4.9	4.9	2.2	2.9	3.5	3.5
Ammonia-N	--	0.051	--	3.18	0.15	0.14	0.33		1.5	1.4	2	2.9	1.3	4.7	1.8	10	1.2	5.6	1.6	1.8	2	2	2.7	2.3	3	1.5	2.7	1.6	2.5	2.5	3.3	3.3	2.9	4.5	4.5	2.4	2.8	3.2	3.2
Organic Nitrogen	0.15	0.23	**0.23***	--	**0.45**	--	**0.87**		**31.5**	**26.9**	**4.5**	**3.1**	**1.7**	0.1	**0.3**	~0	**0.6**	0	**0.4**	**0.78**	**0.4**	**0.59**	**0.77**	**0.23**	**0.42**	**0.26**	<0.10	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	**0.42**	**0.45**	<0.10	<0.10	**0.29**	**0.3**
Cations (mg/L)																																						
Sodium	200	3.9	102	14.6	58	64	34		63	53	30	29	51	38	44	65	35	43	16	50	56	58	45	46	28	27	54	51	52	51	33	33	39	38	38	41	21	39	39
Potassium	--	1.5	--	9.9	13	13	9.9		24	28	22	19	18	20	19	25	14	18	15	19	18	18	20	22	17	16	16	15	15	15	13	13	14	13	13	13	11	15	15
Calcium	--	86.3	--	99.4	180	190	160		140	120	96	120	140	110	140	170	130	130	170	130	150	150	130	120	100	120	130	130	150	150	120	120	130	130	130	140	110	130	130
Magnesium	--	15	--	21.7	91	90	53		74	70	47	48	60	37	57	51	47	40	61	54	61	63	54	58	38	47	48	46	50	50	33	32	42	34	34	45	30	41	42
Anions (mg/L)																																						
Chloride	250	2	126	27	92	90	40		77	40	26	29	66	26	45	67	36	32	62	38	87	89	42	62	29	32	42	41	59	60	27	27	33	32	31	43	19	38	39
Nitrate	10	0.1	2.5	<0.2	<0.1	0.4	0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.74
Nitrite	1	0.005	0.25	<0.2	<0.01	--	0.03		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.012	0.018	<0.01	<0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.012	<0.010	<0.010	<0.010	<0.010	<0.010	0.027	<0.010	<0.010	0.019
Orthophosphate	--	0.005	--	--	<0.01	--	<0.01		<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Sulphate	500	12	256	51.8	299	281	157		220	200	140	150	170	90	140	120	130	120	250	160	210	210	160	120	81	91	150	150	150	150	95	93	120	110	110	98	77	79	75
Alkalinity as $CaCO_3$	30-500	275	388	341	**534**	**554**	418		**561**	448	400	382	496	420	470	**580**	420	430	490	410	**530**	**540**	450	**510**	400	440	480	480	490	490	380	390	420	420	420	460	360	490	490
Ion Balance (%)	--	--	--	4.82	0.75	0.965	5.53		3.46	2.26	3.31	3.18	0.72	2.14	3.08	5.52	1.17	4.18	0.21	5.79	5.24	5.23	0.38	--	--	--	0.85	1.45	0.17	0.22	1.53	1.04	1.87	0.95	0.71	2.2	0.27	0.3	0.16
Metals (mg/L)																																						
Aluminum	0.1	0.0025	0.05	<0.005	0.012	<0.005	0.006		0.007	0.006	<0.005	<0.005	0.006	<0.005	0.0051	0.0085	<0.005	<0.005	<0.005	<0.0050	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.1	<0.005	<0.005	<0.005	<0.005	0.0064	0.019	0.018	**0.13**	<0.0049	<0.0049	<0.0049
Antimony	0.006	0.00025	0.0031	0.0005	<0.001	<0.001	<0.001		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0011	0.00075	<0.0005	<0.0005	<0.0005	<0.0005	<0.00050	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Arsenic	0.025	0.0025	0.0081	0.006	<0.001	<0.001	0.002		0.007	0.004	0.005	0.004	0.003	0.0042	0.0039	0.0047	0.0044	0.0035	0.0046	0.0041	0.0023	0.0026	0.0035	0.0028	0.0026	0.0023	0.0027	0.0025	0.0032	0.0031	0.003	0.0032	0.0026	0.003	0.0031	0.0034	0.0024	0.0024	0.0026
Barium	1	0.017	0.26	0.065	0.11	0.12	0.096		0.17	0.15	0.12	0.12	0.13	0.13	0.14	0.22	0.097	0.14	0.15	0.14	0.14	0.14	0.13	0.14	0.11	0.11	0.11	0.11	0.12	0.12	0.097	0.095	0.099	0.095	0.097	0.091	0.071	0.1	0.11
Beryllium	--	0.00021	--	<0.001	<0.005	<0.0005	<0.0005		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.00050	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.0004	<0.0004
Bismuth	--	0.0005	--	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	0.0012	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	5	0.016	1.3	0.095	0.85	0.85	0.5		1	0.92	0.6	0.6	0.83	0.53	0.82	0.82	0.69	0.8	1.1	1	1.1	1.1	1.1	0.96	0.51	0.47	1.2	1.1	1.3	1.3	0.72	0.72	0.84	0.82	0.80	0.97	0.41	0.94	0.93
Cadmium	0.005	0.00012	0.0013	<0.0001	0.002	<0.0001	<0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00009	<0.00009	<0.00009	<0.00009
Chromium	0.05	0.0025	0.014	<0.005	<0.005	<0.005	<0.005		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0050	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Cobalt	--	0.0014	--	0.0068	0.075	0.0033	0.0032		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0011	0.00089	<0.0005	<0.0005	<0.0005	<0.0005	<0.00050	<0.0005	0.00059	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00068	0.00064	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0014	<0.0005	<0.0005	<0.0005
Copper	1	0.003	0.25	<0.0005	0.003	0.003	0.001		<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0023	0.0021	<0.001	<0.001	<0.001	0.0042	<0.0009	<0.0009	<0.0009
Iron	0.3	0.31	**0.31***	0.03	<0.050	**0.580**	**4.4**		**9.6**	**9.2**	**4.9**	**8.8**	**6.2**	**11.0**	**8.4**	**20**	**5.2**	**10**	**8.2**	**7.6**	**4.8**	**4.8**	**6.2**	**6.7**	**6.5**	**7.8**	**6.4**	**6.2**	**6.4**	**6.3**	**5.6**	**5.5**	**5.9**	**6.4**	**6.5**	**1.8**	**4.8**	**6.4**	**6.6**
Lead	0.01	0.00025	0.005	0.0009	<0.0005	<0.0005	<0.0005		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.00050	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Manganese	0.05	0.282	**0.282***	**0.634**	**1.1**	**0.62**	**1.1**		**0.96**	**0.77**	**0.93**	**0.91**	**1**	**1**	**1.1**	**1.6**	**1**	**1.1**	**1.2**	**1**	**1.3**	**1.3**	**0.93**	**0.9**	**0.7**	**0.84**	**0.95**	**0.87**	**1.3**	**1.2**	**0.77**	**0.76**	**0.93**	**0.89**	**0.89**	**1.3**	**0.77**	**1.0**	**1.0**
Mercury	0.001	0.00005	0.0003	<0.00005	--	--	<0.0001		0.0002	0.0003	0.0002	0.0004	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	0.00016	<0.00010	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.0001	<0.00010	<0.00010	<0.00010
Molybdenum	--	0.00053	--	0.006	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.00050	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Nickel	--	0.0028	--	0.015	0.005	0.007	0.003		0.005	0.003	0.004	0.002	0.004	0.0018	0.0017	0.0052	0.0026	0.0036	0.0046	0.0049	0.0066	0.0076	0.004	0.004	0.0024	0.0022	0.0048	0.004	0.0056	0.0058	0.0023	0.0023	0.0031	0.0034	0.0033	0.0067	0.0015	0.004	0.0037
Phosphorus (Total)	--	0.057	--	<0.05	<0.050	<0.050	0.6		19	8	2.3	2.8	1.9	0.32	0.43	<0.1	0.15	0.28	0.22	0.5	0.31	0.29	0.25	0.2	0.14	0.2	0.11	0.081	0.065	0.056	0.16	0.2	0.049	0.21	0.24	0.1	0.065	0.097	0.1
Selenium	0.01	0.001	0.0033	<0.002	<0.002	<0.002	<0.002		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0020	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Silicon	--	5.7	--	--	6.3	6.1	7		6.6	6.8	5.6	5.7	5.6	6	6	7.3	5.4	6.4	6.3	6	5.8	5.9	5.9	5.6	5.3	5.7	6	5.6	5.8	5.9	5.3	5.3	5.7	5.2	5.2	6	5	5.7	5.7
Silver	--	--	--	<0.0001	<0.0001	<0.0001	<0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.0001	<0.001	<0.0001	<0.00010	<0.0001	<0.0001	<0.0001	<0.0001	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Strontium	--	0.078	--	0.143	0.380	0.350	0.330		0.360	0.330	0.270	0.32	0.35	0.27	0.34	0.42	0.26	0.27	0.36	0.29	0.35	0.35	0.29	0.32	0.24	0.29	0.31	0.3	0.34	0.33	0.24	0.24	0.25	0.24	0.25	0.28	0.2	0.29	0.29
Thallium	--	0.00012	--	<0.00005	<0.00005	<0.00005	<0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Tin	--	0.0005	--	<0.001	--	--	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001
Titanium	--	--	--	<0.005	<0.005	<0.005	<0.005		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0050	<0.005	<0.005	<0.005	<0.005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	0.00025	--	0.0021	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.0005	0.00078	0.00054	0.0011	0.00078	0.00061	<0.0005	<0.00050	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00096	<0.0005	<0.0005	<0.0005
Zinc	5	0.004	2.5	0.007	0.01	0.013	0.014		0.006	0.006	0.008	0.007	<0.005	0.0056	0.0051	<0.005	<0.005	<0.005	<0.005	<0.0050	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005

Notes:
† - Denotes blind duplicate
NV - Denotes no value; handheld instrument was malfuntioning

THB-00006189-RE Phase 100 - Geraldton Landfill

Table 3 (cont'd): Groundwater Data

Parameter	ODWS	2021 Background	2021 B-7	MW6																															
				Jun-03	Aug-06	Nov-06	Nov-07	Jun-08	Oct-08	Jun-09	Oct-09	Jun-10	Oct-10	May-11	Oct-11	May-12	Oct-12	May-13	Oct-13	May-14	Oct-14	May-15	Oct-15	May-16	Oct-16	May-17	Sep-17	May-18	Oct-18	May-19	Oct-19	May-20	Sep-20	May-21	Sep-21
General																																			
pH	6.5 to 8.5	8.0	--	7.71	8.0	8.1	8	8.1	8	7.9	7.9	8	7.99	7.95	8.04	7.98	7.86	8.08	7.96	8.02	7.95	7.94	8	7.98	7.91	7.99	8.08	7.93	7.94	8.04	7.99	7.92	7.92	8.11	8.12
Field pH	--	7.6	--	7.6	6.95	--	7.66	--	6.57	7.73	8.03	7.61	7.53	7.54	7.47	7.84	7.4	7.49	7.09	6.95	7.89	7.67	7.66	7.76	7.6	7.7	7.75	11.9	NV	7.54	6.58	8.27	7.34	7.37	7.51
Conductivity (uS/cm)	--	520	--	631	867	728	1,070	900	807	723	561	543	677	826	574	690	530	470	560	540	630	660	540	540	510	610	530	650	500	490	520	540	500	590	450
Field Conductivity (uS/cm)	--	447	--	--	848	--	1,141	>3,999	837	684	514	774	661	798	548	651	496	409	475	455	683	676	578	593	480	549	515	1,066	NV	532	834	483	487	315	502
Field Temperature (˚C)	--	9.6	--	--	17.4	--	5.5	13.6	7.6	16	7.1	11.4	6.6	7.1	11.6	7	8.2	10.1	5.3	8.9	8.5	12.9	5.8	9.8	8.1	11.2	10.3	9.3	NV	6.4	10.2	6.1	10.2	10.2	11.7
Total Dissolved Solids (mg/L)	500	250	375	385	**534**	496	407	**578**	**550**	475	380	350	456	**542**	**528**	452	324	264	362	326	380	432	308	344	396	306	330	275	275	340	265	255	270	230	245
Total Suspended Solids (mg/L)	--	--	--	--	--	--	1000	1100	1400	--	--	--	--	--	--	--	--	--	--	460	1,400	420	170	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness (mg/L)	80 to 100	275	**275***	**254**	**450**	**400**	**470**	**400**	**390**	**340**	**250**	**260**	**320**	**270**	**270**	**340**	**260**	**250**	**300**	**300**	**320**	**340**	**290**	**320**	**260**	**310**	**270**	**320**	**270**	**310**	**280**	**290**	**260**	**310**	**240**
Organics (mg/L)																																			
Dissolved Organic Carbon (DOC)	5	2.5	3.8	**7**	**9.6**	**7.3**	**11**	**10.7**	**6.9**	**6.1**	3.7	3.6	4.6	**9.3**	**5.6**	**8.1**	4.4	**6.1**	3.9	4.6	4.4	6	4.4	**5.7**	4.1	4.3	3.5	4.6	2.7	3.5	3	2.6	2.5	3.1	1.9
Biochemical Oxygen Demand (BOD)	--	--	--	--	--	--	<2	<2	<2	--	--	--	--	--	--	--	--	--	--	--	<2	<2	<2	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand (COD)	--	9.6	--	--	--	--	41	33	22	22	--	--	17	--	28	--	15	--	--	30	18	20	20	28	18	21	15	17	26	6.7	8.9	9.4	<4.0	16	11
Phenols	--	0.0005	--	<0.001	<0.001	--	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.001	<0.0010	<0.0010
Total Kjeldahl Nitrogen (TKN)	--	0.25	--	--	0.6	--	1	1	0.5	0.6	0.5	0.5	0.5	0.8	0.5	0.61	0.56	0.3	0.33	0.4	0.61	0.64	0.18	0.3	0.12	0.18	<0.10	<0.10	0.1	0.15	0.22	0.4	0.15	0.26	0.19
Ammonia-N	--	0.051	--	<0.03	0.08	0.14	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.069	0.11	<0.050	<0.05	0.067	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050	<0.050	0.098	<0.050	<0.050	<0.050	0.13	<0.050	<0.050
Organic Nitrogen	0.15	0.23	**0.23***	--	**0.52**	--	**0.975**	**0.975**	**0.5**	**0.6**	**0.475**	**0.5**	**0.5**	0.08	**0.5**	**0.6**	**0.5**	**0.19**	**0.305**	**0.4**	**0.5**	**0.64**	**0.18**	**0.3**	0.12	**0.18**	<0.1	<0.10	<0.10	0.15	**0.22**	**0.4**	<0.10	**0.26**	**0.19**
Cations (mg/L)																																			
Sodium	200	3.9	102	34.4	40	32	49	73	39	38	18	23	43	73	32	40	21	9.5	16	10	11	14	8.8	9.9	6.1	10	6.4	7.6	5	4.4	4.5	4	3.9	4.2	3.3
Potassium	--	1.5	--	2.2	2.2	2.4	2.1	3	1.8	1.8	1.4	1.4	1.9	2	1.6	1.7	1.4	1.2	1.4	1.2	1.3	1.4	1.2	1.4	1.3	1.3	1.3	1.5	1.2	1.4	1	1.4	1.6	1.5	1.4
Calcium	--	86.3	--	77.9	140	130	150	120	120	100	79	80	99	77	84	100	81	79	95	94	100	110	91	100	80	96	86	100	86	97	88	89	83	95	78
Magnesium	--	15	--	14.5	24	21	26	22	20	18	13	14	17	19	14	19	13	14	16	16	17	18	15	17	13	18	14	18	13	16	14	16	14	18	12
Anions (mg/L)																																			
Chloride	250	2	126	23.6	33	24	47	20	13	10	5	5	4	2	2	3	5	2	2	2	1	2	1.3	1.3	1.5	1.4	1.2	1.5	1.4	1.2	1.2	2.4	2	2.1	1.8
Nitrate	10	0.1	2.5	3.9	6.0	4.9	7.7	6.2	4.7	3.7	1.7	1.7	2.7	8.1	2.1	3.6	1.4	0.85	1.2	1.21	0.91	0.95	0.63	0.84	<0.10	0.66	<0.10	0.28	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10
Nitrite	1	0.005	0.25	<0.2	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Orthophosphate	--	0.005	--	--	<0.01	--	<0.01	--	<0.01	--	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Sulphate	500	12	256	57.3	75	54	101	73	59	44	24	25	31	56	31	45	23	18	25	28	24	36	22	30	19	22	16	28	13	19	13	16	8.1	18	5.4
Alkalinity as $CaCO_3$	30-500	275	388	247	370	303	381	372	355	324	271	258	330	347	267	310	250	230	280	260	320	320	260	270	260	300	280	330	260	250	260	280	260	310	250
Ion Balance (%)	--	--	--	3.27	2.78	7.15	0.31	6.29	2.52	2.9	3.04	2.19	4.54	0.59	4.27	7.54	3.31	4.6	3.92	4.31	0.76	0.97	3.19	5.65	--	--	--	3.47	0.45	9.23	1.97	0.46	0.08	0.71	1.79
Metals (mg/L)																																			
Aluminum	0.1	0.0025	0.05	0.006	0.017	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.009	<0.005	<0.0049	<0.0049	<0.0049
Antimony	0.006	0.00025	0.0031	<0.0005	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Arsenic	0.025	0.0025	0.0081	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0034	<0.001	0.0021	<0.001	0.0028	0.0015	0.0018	0.0039	0.0028
Barium	1	0.017	0.26	0.02	0.032	0.026	0.037	0.033	0.027	0.022	0.016	0.015	0.022	0.022	0.019	0.022	0.017	0.013	0.019	0.016	0.019	0.018	0.016	0.018	0.015	0.017	0.019	0.021	0.016	0.021	0.019	0.017	0.017	0.017	0.017
Beryllium	--	0.00021	--	<0.001	<0.005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.0004
Bismuth	--	0.0005	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	5	0.016	1.3	0.016	0.020	0.027	0.045	0.022	0.02	0.017	0.019	0.021	0.018	0.021	0.012	0.021	0.018	0.025	0.019	0.019	0.019	0.02	0.02	0.018	0.023	0.017	0.02	0.016	0.021	0.015	0.017	0.013	0.016	0.018	0.015
Cadmium	0.005	0.00012	0.0013	<0.0001	0.0004	0.0003	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00026	<0.00009	0.00013	<0.00009
Chromium	0.05	0.0025	0.014	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Cobalt	--	0.0014	--	0.0003	<0.005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<.0.005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.002	<0.0005	0.01	<0.0005	0.0022	<0.0005	0.0021	<0.0005	0.0014	0.0022	0.0019
Copper	1	0.003	0.25	0.0018	0.003	0.003	0.003	0.009	0.004	0.009	0.002	0.004	<0.003	0.002	0.003	0.0026	0.0027	0.0017	0.0016	0.0017	0.0018	0.0027	0.0017	0.0022	0.0015	0.0017	<0.001	0.0027	0.0027	0.0017	<0.001	0.0045	0.0011	0.0024	0.0033
Iron	0.3	0.31	**0.31***	<0.03	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	**0.76**	**0.37**
Lead	0.01	0.00025	0.005	0.0008	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Manganese	0.05	0.282	**0.282***	0.009	0.003	<0.002	<0.002	<0.002	<0.002	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.0022	<0.002	**0.18**	<0.002	**1.5**	0.011	**0.62**	0.025	**0.5**	0.039	**0.38**	**0.37**	**0.34**
Mercury	0.001	0.00005	0.0003	<0.00005	<0.0001	--	<0.0001	--	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.0001	<0.00010	<0.00010
Molybdenum	--	0.00053	--	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0024	<0.0005	0.00089	<0.0005	0.00059	<0.00050	0.0009	<0.0005	0.0007
Nickel	--	0.0028	--	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0035	<0.001	0.021	0.0031	0.0047	0.0021	0.0041	0.0027	0.0035	0.0027	0.0022
Phosphorus (Total)	--	0.057	--	<0.05	0.40	<0.050	0.51	<0.1	0.2	--	0.23	0.53	0.24	0.14	0.14	0.065	0.072	0.12	0.29	0.29	0.25	0.1	0.09	0.029	0.033	0.053	0.036	0.035	0.098	0.3	<0.02	0.1	0.058	0.078	0.05
Selenium	0.01	0.001	0.0033	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Silicon	--	5.7	--	--	6.6	6.3	6.3	5.8	6.4	5.6	5.1	5.3	6	5.4	5.4	5.2	5.2	4.7	5.6	5.2	6.1	5.7	5.8	5.4	5.2	5.2	5.6	5.6	6.3	5	6.4	4.7	6.4	5.3	6.3
Silver	--	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	--	--	--	--	--	--	--	--	--
Strontium	--	0.078	--	0.078	0.140	0.11	0.16	0.14	0.12	0.096	0.071	0.071	0.09	0.094	0.083	0.097	0.079	0.074	0.09	0.082	0.088	0.093	0.1	0.093	0.1	0.082	0.088	0.083	0.094	0.083	0.088	0.073	0.08	0.078	0.082	0.072
Thallium	--	0.00012	--	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00015	0.00011	0.00011	0.000099	0.00013	0.000089	0.00015	0.000084	0.00017
Tin	--	0.0005	--	<0.001	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Titanium	--	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	--	--	--	--	--	--	--	--	--	--
Vanadium	--	0.00025	--	0.0015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0007	0.00072	<0.0005	<0.0005	0.00076	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Zinc	5	0.004	2.5	<0.005	0.01	0.011	0.006	<0.001	0.006	0.016	0.01	0.011	0.013	<0.005	0.006	0.0089	0.0053	0.012	<0.005	<0.005	0.007	0.0066	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0083	<0.005	<0.005	0.0067	<0.005	0.0052	<0.005

Notes:
† - Denotes blind duplicate
NV - Denotes no value; handheld instrument was malfuntioning

THB-00006189-RE Phase 100 - Geraldton Landfill

Table 3 (cont'd): Groundwater Data

Parameter	ODWS	2021 Background	2021 B-7	MW7																										
				Oct-08	Jun-09	Oct-09	Jun-10	Oct-10	May-11	Oct-11	May-12	Oct-12	May-13	Oct-13	May-14	Oct-14	May-15	Oct-15	May-16	Oct-16	May-17	Sep-17	May-18	Oct-18	May-19	Oct-19	May-20	Sep-20	May-21	Sep-21
General																														
pH	6.5 to 8.5	8.0	--	7.9	Not Sampled	7.5	7.7	7.38	7.5	7.56	7.66	7.33	7.7	7.58	7.5	7.47	7.5	7.42	7.38	7.48	7.46	7.62	7.23	7.44	7.72	7.28	7.47	7.82	7.77	7.9
Field pH	--	7.6	--	7.19		6.8	6.65	6.62	6.61	7.94	6.65	6.56	6.81	6.75	6.59	7.49	6.9	7.75	6.9	7.05	7	7.25	6.01	NV	6.92	7.3	7.25	7.06	6.76	6.89
Conductivity (uS/cm)	--	520	--	905		955	1,070	1,020	954	909	980	900	1,000	920	920	860	890	950	1000	1000	1,100	1,100	1,100	1,000	1,000	940	890	950	760	860
Field Conductivity (uS/cm)	--	447	--	954		903	1,158	>3,999	946	860	870	810	855	819	8	>3,999	990	965	1,075	1,033	1,059	1,035	1,070	NV	960	640	825	802	390	960
Field Temperature (˚C)	--	9.6	--	3.5		4.8	5.8	6.3	4.7	7.4	4.8	6.5	6	5.7	5.6	6.6	7.3	2.3	7.9	9.2	7.9	7.2	9.9	NV	6.4	9.6	5.6	10.1	8.8	10.8
Total Dissolved Solids (mg/L)	500	250	375	**580**		**630**	**700**	**650**	**596**	**672**	**518**	**504**	**554**	480	**510**	478	**506**	**522**	**566**	**550**	**568**	**635**	**510**	**535**	**585**	495	420	495	440	495
Total Suspended Solids (mg/L)	--	--	--	2,500		--	--	--	--	--	--	--	--	--	1,000	930	430	230	--	--	--	--	--	--	--	--	--	--	--	--
Hardness (mg/L)	80 to 100	275	**275***	**420**		**410**	**520**	**480**	**440**	**410**	**450**	**420**	**490**	**430**	**460**	**400**	**430**	**410**	**470**	**420**	**480**	**490**	**470**	**440**	**480**	**430**	**410**	**420**	**370**	**380**
Organics (mg/L)																														
Dissolved Organic Carbon (DOC)	5	2.5	3.8	**7.2**		**7.3**	**10**	**7.5**	**5.6**	**5.7**	**5.7**	**6**	**9**	**5.4**	**5.8**	4.9	4.9	**6.3**	**6**	**5.8**	**5.8**	**7.2**	**6**	**6.1**	**6.1**	**5.7**	4.8	**5.4**	3.4	4.8
Biochemical Oxygen Demand (BOD)	--	--	--	<2		--	--	--	--	--	--	--	--	--	--	<2	<2	<2	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand (COD)	--	9.6	--	28		--	--	40	--	37	--	18	--	--	23	14	16	19	26	28	26	32	27	22	21	16	17	13	14	21
Phenols	--	0.0005	--	<0.001		<0.001	<0.001	<0.001	<0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	0.0014	<0.001	<0.001	<0.0010	<0.0010	<0.0010	0.0018	<0.0010	<0.0010	<0.0010	<0.0010	0.001	<0.001	<0.0010	<0.0010
Total Kjeldahl Nitrogen (TKN)	--	0.25	--	8.2		10	11	14	47	8.8	9.6	7.9	8.5	8.5	7.1	6	7	7.6	7.9	7.4	8.3	7.2	6.7	7.1	7.4	6.9	7.5	6.7	5	5.8
Ammonia-N	--	0.051	--	8.4		9.2	12	12	11	9.3	9.2	7.9	8.8	7.2	7.6	6.6	6.1	6.4	7.5	7.7	7.3	7.4	6.6	7.1	7.3	6.6	6.8	6.9	4.9	5.5
Organic Nitrogen	0.15	0.23	**0.23***	~0		**0.8**	<0.1	**1.5**	**36**	~0	**0.4**	~0	~0	**1.3**	~0	~0	**0.86**	**1.1**	**0.4**	<0.10	**1**	<0.10	<0.10	<0.10	<0.10	**0.27**	**0.7**	<0.10	0.11	**0.25**
Cations (mg/L)																														
Sodium	200	3.9	102	17.0		17.0	21.0	18.0	14	16	15	15	18	15	17	15	15	20	24	30	22	27	32	38	24	27	19	25	11	22
Potassium	--	1.5	--	12		12	15	15	13	12	13	12	13	12	12	9.3	10	10	11	11	11	11	11	11	10	11	9.7	9.6	7.6	8.4
Calcium	--	86.3	--	130		130	170	150	140	130	140	130	160	140	150	130	140	130	150	130	150	160	150	140	160	140	130	140	120	130
Magnesium	--	15	--	22		21	27	25	21	20	22	20	24	21	21	19	21	21	23	20	23	23	22	21	21	20	19	18	17	17
Anions (mg/L)																														
Chloride	250	2	126	19		19	21	18	13	17	13	15	17	17	16	16	18	30	34	43	27	37	41	46	26	25	17	31	10	27
Nitrate	10	0.1	2.5	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrite	1	0.005	0.25	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Orthophosphate	--	0.005	--	<0.001		<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.01	<0.010	<0.050
Sulphate	500	12	256	32		23	16	14	11	21	13	18	15	17	15	20	17	24	19	21	26	27	29	29	36	30	25	27	18	22
Alkalinity as $CaCO_3$	30-500	275	388	449		477	**538**	**523**	480	446	500	450	500	470	470	430	450	440	500	460	**520**	**520**	**510**	470	480	440	440	450	390	450
Ion Balance (%)	--	--	--	1.93		0.06	7.55	3.08	5.32	4.43	3.77	4.02	6.75	2.9	6.53	2.33	3.86	0.95	3.51	--	--	--	1.77	2.57	4.63	4.68	4.3	2.71	3.29	1.55
Metals (mg/L)																														
Aluminum	0.1	0.0025	0.05	0.006		0.008	0.006	<0.005	0.013	0.011	0.0064	0.007	0.0055	0.006	0.0083	0.0057	0.0052	<0.005	<0.005	0.0054	0.0075	0.007	0.0063	0.0054	0.011	0.0099	<0.005	0.005	0.0076	0.043
Antimony	0.006	0.00025	0.0031	<0.0005		<0.0005	<0.0005	0.0018	<0.0005	<0.0005	0.00072	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Arsenic	0.025	0.0025	0.0081	**0.046**		**0.044**	**0.050**	0.018	**0.043**	**0.05**	**0.041**	**0.044**	**0.042**	**0.045**	**0.041**	**0.041**	**0.039**	**0.017**	**0.042**	**0.042**	**0.043**	**0.048**	**0.041**	**0.043**	**0.042**	**0.046**	**0.041**	**0.045**	**0.037**	**0.04**
Barium	1	0.017	0.26	0.19		0.20	0.25	0.22	0.23	0.21	0.21	0.20	0.21	0.20	0.2	0.17	0.18	0.16	0.22	0.19	0.22	0.22	0.19	0.2	0.21	0.18	0.17	0.18	0.13	0.16
Beryllium	--	0.00021	--	<0.0005		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004
Bismuth	--	0.0005	--	<0.001		<0.001	<0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	5	0.016	1.3	0.14		0.15	0.16	0.16	0.12	0.13	0.13	0.15	0.15	0.13	0.13	0.13	0.13	0.14	0.17	0.16	0.15	0.17	0.2	0.23	0.25	0.26	0.23	0.26	0.16	0.26
Cadmium	0.005	0.00012	0.0013	<0.0001		0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00037	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00009	<0.00009	<0.00009
Chromium	0.05	0.0025	0.014	<0.005		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Cobalt	--	0.0014	--	0.01		0.012	0.016	0.015	0.016	0.013	0.014	0.012	0.015	0.012	0.013	0.0098	0.011	0.012	0.014	0.012	0.016	0.017	0.014	0.012	0.015	0.013	0.012	0.011	0.0095	0.0093
Copper	1	0.003	0.25	0.002		0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0009	<0.0009	0.0024
Iron	0.3	0.31	**0.31***	**18**		**20**	**28**	**9.3**	**23**	**23**	**23**	**20**	**24**	**21**	**22**	**18**	**19**	**14**	**24**	**22**	**26**	**27**	**23**	**21**	**23**	**21**	**21**	**20**	**16**	**16**
Lead	0.01	0.00025	0.005	<0.0005		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Manganese	0.05	0.282	**0.282***	**1.8**		**1.9**	**2.5**	**2.3**	**2.2**	**2**	**2.1**	**2**	**2.3**	**2**	**2.2**	**1.7**	**1.8**	**1.8**	**2.1**	**1.8**	**2.1**	**2.1**	**1.9**	**1.7**	**1.9**	**1.7**	**1.6**	**1.5**	**1.3**	**1.3**
Mercury	0.001	0.00005	0.0003	<0.0001		0.0001	0.0002	0.0003	0.0003	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.0001	<0.00010	<0.00010
Molybdenum	--	0.00053	--	<0.001		<0.001	<0.001	<0.001	<0.001	0.0006	<0.0005	0.00059	<0.0005	<0.0005	<0.0005	<0.0005	0.00053	0.00056	<0.0005	<0.0005	<0.0005	0.00053	<0.0005	<0.0005	<0.0005	0.00005	<0.00050	0.00052	<0.50	0.00066
Nickel	--	0.0028	--	0.006		0.009	0.012	0.013	0.011	0.008	0.0082	0.0066	0.0089	0.0074	0.0087	0.0065	0.0072	0.0064	0.0086	0.008	0.01	0.011	0.0099	0.0085	0.0095	0.0077	0.0073	0.0071	<0.0005	0.0063
Phosphorus (Total)	--	0.057	--	1.4		0.8	0.99	4.7	1.7	1.1	0.19	0.55	0.4	0.45	0.39	0.2	0.14	0.073	0.1	0.082	0.073	0.098	0.048	0.026	0.21	0.06	0.22	0.14	0.081	0.061
Selenium	0.01	0.001	0.0033	<0.002		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Silicon	--	5.7	--	9.3		9.4	11	10	10	10	10	10	11	10	10	9.8	9.7	9.1	9.9	9.2	10	11	10	9.7	10	10	9.5	9.9	8.7	8.9
Silver	--	--	--	<0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	--	--	--	--	--	--	--	--	--
Strontium	--	0.078	--	0.21		0.19	0.24	0.24	0.23	0.21	0.23	0.21	0.25	0.21	0.21	0.19	0.2	0.2	0.23	0.2	0.23	0.24	0.21	0.21	0.22	0.19	0.18	0.19	0.15	0.17
Thallium	--	0.00012	--	<0.00005		<0.00005	<0.00005	0.00006	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Tin	--	0.0005	--	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Titanium	--	--	--	<0.005		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	--	--	--	--	--	--	--	--	--	--
Vanadium	--	0.00025	--	0.001		0.001	0.002	<0.001	0.002	0.0014	0.0012	0.0011	0.0012	0.0014	0.0011	0.0009	0.00086	<0.0005	0.001	0.001	0.001	0.001	0.00087	0.001	0.0011	0.0009	0.00076	0.00079	0.00055	0.0013
Zinc	5	0.004	2.5	0.01		0.01	0.009	0.01	0.005	0.005	0.0095	0.0091	<0.005	<0.005	0.0054	0.006	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.011

Notes:
† - Denotes blind duplicate
NV - Denotes no value; handheld instrument was malfuntioning

THB-00006189-RE Phase 100 - Geraldton Landfill

Table 3 (cont'd): Groundwater

Parameter	ODWS	2021	2021	MW8																														
	(mg/L)	Background	B-7	May-97	Aug-06	Nov-06	Nov-07	Jun-08	Oct-08	Jun-09	Oct-09	Jun-10	Oct-10	May-11	Oct-11	May-12	Oct-12	May-13	Oct-13	May-14	Oct-14	May-15	Oct-15	May-16	Oct-16	May-17	Sep-17	May-18	Oct-18	May-19	Oct-19	May-20	Sep-20	May-21	Sep-21
General																																		
pH	6.5 to 8.5	8.0	--	Not	8.1	8.1	8.1	8	8	8	7.9	8.1	8.04	7.84	7.92	7.95	7.83	8.04	7.91	7.88	7.8	7.96	7.94	7.93	7.99	7.96	7.94	7.87	7.9	7.81	7.95	7.86	7.87	7.97	7.92
Field pH	--	7.6	--	Installed	7.62	7.93	6.2	7.55	7.69	7.67	7.46	7.54	7.35	7.2	7.34	7.43	7.18	7.19	7.12	6.93	7.49	7.41	7.69	7.45	7.68	7.64	7.6	6.93	NV	7.33	6.73	7.61	7.23	7.27	7.56
Conductivity (uS/cm)	--	520	--		3,090	3,490	3,080	4,200	3,850	2,480	3,270	2,450	2,390	3,230	3,720	3,400	3,300	3,500	4,000	4,500	5,600	4,200	3,600	3600	3,500	3,900	4,200	4,800	5,100	5,900	5,000	6,100	5,300	5,700	6,100
Field Conductivity (uS/cm)	--	447	--		3,250	3,266	3,059	>3,999	3,728	2,293	2,755	2,416	2,199	2,753	3,025	737	2,331	2,530	2,420	2,874	>3,999	>3,999	3,315	3,276	3,114	3,258	3,175	3,412	NV	>3,999	1,268	3,019	>3999	1,417	>3999
Field Temperature (˚C)	--	9.6	--		9	5	4	10	5	--	6	7	5	5	11	6	7	6	5	8	7	8	6	15	11	11.4	7.8	10.9	NV	6.9	4.5	4.5	7.9	14.6	7.9
Total Dissolved Solids (mg/L)	500	250	375		**1,630**	**2,280**	**1,070**	**2,620**	**2,420**	**1,600**	**2,100**	**1,580**	**1,460**	**1,980**	**2,640**	**1,800**	**1,660**	**1,860**	**2,110**	**3,000**	**3,300**	**2,270**	**1,900**	**1870**	--	**2,060**	**2,240**	**2,880**	**2,780**	**3,390**	**2,550**	**3,030**	**2,570**	**3,320**	**3,920**
Total Suspended Solids (mg/L)	--	--	--		--	--	14,000	12,000	48,000	--	--	--	--	--	--	--	--	--	--	12,000	13,000	11,000	6,400	--	--	--	--	--	--	--	--	--	--	--	--
Hardness (mg/L)	80 to 100	275	**275***		**440**	**430**	**400**	**560**	**420**	**260**	**400**	**360**	**430**	**610**	**570**	**490**	**440**	**430**	**520**	**620**	**810**	**450**	**420**	**410**	**370**	**430**	**490**	**620**	**610**	**890**	**580**	**650**	**500**	**720**	**720**
Organics (mg/L)																																		
Dissolved Organic Carbon (DOC)	5	2.5	3.8		4.3	2.9	3.2	3.5	3.9	**5.1**	2.4	2.4	2.2	2.1	2.5	2.7	3.1	**5.7**	3	2.6	3.9	3.1	2.9	2.9	2.9	2.3	2.7	2.8	2.8	2.7	2.8	2.4	2.6	2.6	3
Biochemical Oxygen Demand (BOD)	--	--	--		--	--	<2	<2	<2	--	--	--	--	--	--	--	--	--	--	--	<2	<2	<2	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand (COD)	--	9.6	--		--	--	36	27	41	120	--	--	10	--	35	--	44	--	--	38	16	16	16	18	110	15	20	13	14	9.3	12	22	23	17	24
Phenols	--	0.0005	--		<0.001	--	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.001	<0.0010	<0.0010
Total Kjeldahl Nitrogen (TKN)	--	0.25	--		0.5	--	0.9	2	4	<10	1	0.3	0.8	0.7	<5	2.8	2.8	1.9	4.4	18	1.7	0.83	0.051	0.45	<0.20	0.46	0.88	0.48	1.1	0.65	0.67	0.76	0.26	0.13	0.44
Ammonia-N	--	0.051	--		0.15	0.16	0.07	<0.05	<0.05	0.1	<0.05	<0.05	<0.05	<0.05	0.09	0.069	0.081	0.11	<0.05	0.072	0.13	<0.05	<0.05	<0.050	<0.050	<0.050	0.052	0.077	0.23	<0.050	<0.050	<0.050	0.15	<0.050	<0.050
Organic Nitrogen	0.15	0.23	**0.23***		**0.35**	**--**	**0.83**	**1.975**	**4**	**--**	**0.975**	**0.3**	**0.8**	**0.7**	<0.1	**2.731**	**2.719**	**1.8**	**0.4**	**17.7**	**1.6**	**0.8**	**0.5**	**0.45**	<0.10	**0.46**	**0.83**	**0.4**	**0.91**	**0.65**	**0.67**	**0.76**	0.12	0.13	**0.44**
Cations (mg/L)																																		
Sodium	200	3.9	102		**570**	**570**	**520**	**570**	**650**	**450**	**530**	**380**	**320**	**400**	**530**	**520**	**490**	**590**	**630**	**680**	**860**	**730**	**570**	**580**	**580**	**600**	**530**	**690**	**780**	**890**	**820**	**1,000**	**790**	**990**	**1,100**
Potassium	--	1.5	--		5.8	4.8	3.4	4.5	3.3	3	2.7	2.3	2.2	2.7	2.9	2.8	2.7	2.7	3	3.5	3.2	3	2.7	2.9	2.9	2.7	2.9	3.2	3.3	3.7	3	3.4	3.2	3.9	3.9
Calcium	--	86.3	--		150	150	140	200	150	91	140	130	150	210	200	170	150	150	180	220	290	160	150	150	130	150	170	220	220	310	200	230	180	250	260
Magnesium	--	15	--		16	13	11	17	14	7.8	12	11	14	19	17	16	14	13	15	18	23	13	13	12	11	12	15	18	19	26	18	18	14	20	20
Anions (mg/L)																																		
Chloride	250	2	126		**735**	**940**	**750**	**1,100**	**910**	**510**	**780**	**600**	**530**	**800**	**940**	**760**	**740**	**860**	**1,000**	**1,300**	**1,500**	**1,100**	**920**	**900**	**870**	**950**	**1,100**	**1,300**	**1,400**	**1,700**	**1,300**	**1,700**	**1,500**	**1,700**	**1,900**
Nitrate	10	0.1	2.5		2.2	1.6	1.9	2.6	2.5	1.8	1.3	0.8	1.2	1.5	2	2.1	1.8	1.5	2.4	2.1	2.65	1.75	1.4	1.35	1.32	1.19	1.45	1.86	1.91	1.64	1.64	1.93	1.63	2.09	2.04
Nitrite	1	0.005	0.25		<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.012	<0.01	<0.01	<0.010	0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Orthophosphate	--	0.005	--		<0.01	--	<0.01	--	<0.01	--	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.017	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Sulphate	500	12	256		25	24	26	33	32	20	17	18	19	18	25	24	26	24	31	35	39	30	24	27	24	22	29	28	35	37	38	39	36	35	53
Alkalinity as $CaCO_3$	30-500	275	388		438	364	389	439	496	383	331	282	308	316	337	370	440	340	420	360	480	410	380	400	390	340	360	420	390	330	420	390	370	360	360
Ion Balance (%)	--	--	--		5.47	1.37	1.5	0.74	0.49	4.75	3.22	2.08	1.69	0.11	0.72	4.57	0.34	4.17	0.49	3.53	0.12	1.27	1.15	0.770	--	--	--	2.21	2.51	0.39	2.39	1.11	7	2.1	0.26
Metals (mg/L)																																		
Aluminum	0.1	0.0025	0.05		0.015	0.008	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.049	0.047	<0.005	<0.005	0.0064	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0062	<0.0049	<0.0049	<0.0049
Antimony	0.006	0.00025	0.0031		<0.001	<0.001	<0.0005	<0.0005	<0.005	<0.0005	<0.0005	<0.0005	0.0007	<0.0005	<0.0005	0.0011	<0.0005	<0.005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Arsenic	0.025	0.0025	0.0081		<0.0005	<0.005	<0.001	<0.005(1)	<0.01	0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.002	<0.002	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	1	0.017	0.26		0.060	0.06	0.051	0.085	0.069	0.036	0.052	0.039	0.043	0.064	0.074	0.06	0.055	0.056	0.071	0.087	0.12	0.071	0.059	0.06	0.058	0.06	0.07	0.09	0.095	0.13	0.09	0.1	0.082	0.11	0.13
Beryllium	--	0.00021	--		<0.005	<0.0005	<0.0005	<0.0005	<0.005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.0004
Bismuth	--	0.0005	--		<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	0.0012	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	5	0.016	1.3		0.013	<0.010	<0.01	<0.01	<0.1	0.01	<0.01	0.012	0.013	0.014	0.017	<0.01	0.011	<0.01	0.011	0.012	0.013	0.011	<0.01	<0.01	0.015	0.011	0.013	<0.01	0.012	0.013	0.011	0.013	<0.01	0.012	0.017
Cadmium	0.005	0.00012	0.0013		<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00009	<0.00009	<0.00009
Chromium	0.05	0.0025	0.014		<0.005	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Cobalt	--	0.0014	--		<0.0005	<0.0005	<0.0005	<0.0005	<0.005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Copper	1	0.003	0.25		0.005	0.002	0.001	0.006	<0.01	0.002	0.002	0.002	0.001	<0.002	0.003	0.0034	0.0022	0.0084	0.003	<0.005	<0.005	0.0016	0.0024	0.0015	0.0017	0.0014	0.0016	0.0021	0.0016	0.0016	0.0015	0.0016	0.0013	0.0019	0.0044
Iron	0.3	0.31	**0.31***		<0.050	<0.050	<0.1	<0.1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.1	<0.1
Lead	0.01	0.00025	0.005		<0.0005	<0.0005	<0.0005	<0.0005	<0.005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Manganese	0.05	0.282	**0.282***		0.044	0.019	0.015	0.005	<0.05	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.0078	0.008	0.0035	<0.002	<0.002	0.015	<0.002	0.0029	<0.002	0.0029	<0.002	<0.002	0.0064	0.0021	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Mercury	0.001	0.00005	0.0003		<0.0001	--	<0.0001	--	<0.0001	--	0.0001	<0.0001	<0.0001	<0.0001	0.0002	0.00018	0.00021	0.00018	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.0001	<0.00010	<0.00010
Molybdenum	--	0.00053	--		0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00053	<0.0005	0.0005	0.00053	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0013	<0.0005	<0.0005	0.00063
Nickel	--	0.0028	--		<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	2.7	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Phosphorus (Total)	--	0.057	--		<0.050	<0.050	<0.1	<0.1	24	--	1.9	0.53	1.2	1.4	11	8.4	3.3	6.1	3.5	8	4	3.3	4.2	6.7	33	2.6	11	0.51	41	1.6	1.5	1.4	0.052	0.043	0.14
Selenium	0.01	0.001	0.0033		<0.002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.002	<0.002	<0.002	<0.004	<0.004	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Silicon	--	5.7	--		4.5	3.4	3.8	3.3	3.3	3.4	2.8	2.9	2.8	3.1	2.9	3.1	3.2	2.9	2.8	3.5	3.1	2.9	3	3	2.8	2.7	2.8	2.8	2.8	2.8	2.8	2.7	2.8	2.9	2.8
Silver	--	--	--		<0.001	<0.0001	<0.0001	<0.0001	<0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	--	--	--	--	--	--	--	--	--	--
Strontium	--	0.078	--		0.190	0.170	0.160	0.250	0.190	0.100	0.160	0.140	0.170	0.25	0.24	0.2	0.18	0.19	0.21	0.25	0.34	0.19	0.19	0.18	0.16	0.18	0.21	0.26	0.27	0.37	0.24	0.28	0.22	0.3	0.35
Thallium	--	0.00012	--		<0.00005	<0.00005	<0.00005	<0.00005	<0.0005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Tin	--	0.0005	--		-	--	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Titanium	--	--	--		<0.005	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0065	0.0053	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	0.00025	--		<0.005	<0.005	<0.001	<0.005(1)	<0.01	<0.001	<0.001	<0.001	<0.005	<0.002	<0.001	<0.001	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Zinc	5	0.004	2.5		0.013	0.006	<0.005	0.016	<0.05	<0.005	0.007	0.008	0.008	<0.005	0.008	0.0053	<0.005	0.021	<0.005	0.0058	<0.005	<0.005	0.009	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0055	<0.005	<0.005	<0.005

Notes:
† - Denotes blind duplicate
NV - Denotes no value; handheld instrument was malfuntioning

THB-00006189-RE Phase 100 - Geraldton Landfill

Table 3 (cont'd): Groundwater Data

Parameter	ODWS	2021	2021	MW9																														
	(mg/L)	Background	B-7	May-97	Aug-06	Nov-06	Nov-07	Jun-08	Oct-08	Jun-09	Oct-09	Jun-10	Oct-10	May-11	Oct-11	May-12	Oct-12	May-13	Oct-13	May-14	Oct-14	May-15	Oct-15	May-16	Oct-16	May-17	Sep-17	May-18	Oct-18	May-19	Oct-19	May-20	Sep-20	May-21	Sep-21
General																																		
pH	6.5 to 8.5	8.0	--	Not	8.2	8.2	8.1	8.2	8	8	7.4	8	8.1	7.92	8.06	8	7.91	7.99	8.09	8.08	8	8.04	8.03	7.99	8	8.1	8.06	7.97	7.97	8.04	8.07	8.01	8.01	8.11	8.11
Field pH	--	7.6	--	Installed	7.84	8.38	7.2	7.82	7.79	7.62	7.69	7.39	7.71	7.34	7.33	7.43	7.47	7.4	7.21	7.03	7.8	7.6	7.87	7.48	7.75	7.72	7.76	6.52	NV	7.54	9.05	8.01	7.42	7.42	7.91
Conductivity (uS/cm)	--	520	--		540	537	590	572	794	772	814	839	787	799	816	880	740	850	640	630	730	750	900	910	930	1,100	990	980	880	1,100	720	690	650	690	790
Field Conductivity (uS/cm)	--	447	--		449	415	554	>3,999	696	745	351	833	953	771	705	737	768	713	461	473	754	750	862	862	820	1,107	916	1,457	NV	786	1,462	522	590	390	541
Field Temperature (°C)	--	9.6	--		11	3.9	3.9	11.8	6.3	20.4	1.5	13.3	4.9	7.1	9.3	6.3	3.3	10.6	--	8.5	6.5	10.9	4.1	10.8	10.7	10.3	7.5	16.1	NV	7.1	10.2	11	7.6	17.1	11.2
Total Dissolved Solids (mg/L)	500	250	375		350	349	355	392	495	**515**	**530**	**550**	496	**502**	**520**	**630**	**508**	**610**	356	394	424	476	**614**	**642**	--	**836**	**735**	**790**	**610**	**605**	415	345	310	260	465
Total Suspended Solids (mg/L)	--	--	--		--	--	810,000	450,000	660,000	--	--	--	--	--	--	--	--	--	--	18,000	2,400	400	39,000	--	--	--	--	--	--	--	--	--	--	--	--
Hardness (mg/L)	80 to 100	275	**275***		**260**	**330**	**270**	**290**	**340**	**330**	**300**	**350**	**320**	**320**	**330**	**360**	**320**	**380**	**290**	**300**	**300**	**320**	**340**	**390**	**350**	**420**	**430**	**360**	**340**	**380**	**290**	**290**	**260**	**280**	**300**
Organics (mg/L)																																		
Dissolved Organic Carbon (DOC)	5	2.5	3.8		3.0	2.3	2.9	2.8	3	1.5	2.5	2.2	1.4	0.9	0.9	1	0.91	1.3	1.1	1	1.1	1.1	1.4	1.1	1	1.1	0.99	0.97	1.2	0.97	0.83	0.67	0.81	1.2	0.87
Biochemical Oxygen Demand (BOD)	--	--	--		--	--	<2	<2	<2	--	--	--	--	--	--	--	--	--	--	--	<2	<2	<2	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand (COD)	--	9.6	--		--	--	170	210	770	120	--	--	61	--	25	--	150	--	--	5.8	<4	8.3	380	<4.0	260	5.1	10	5.5	<4	<4	<4	<4.0	7	6.2	4.8
Phenols	--	0.0005	--		<0.001	--	<0.001	--	<0.001	<0.001	0.008	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010		<0.0010	<0.0010
Total Kjeldahl Nitrogen (TKN)	--	0.25	--		0.6	--	36	14	32	<10	48	2	5	6	<2	0.22	0.62	0.36	0.85	44	0.31	1.1	0.69	0.18	0.11	0.4	0.39	<0.10	0.16	0.25	<0.10	0.18	0.26	0.32	0.55
Ammonia-N	--	0.051	--		0.14	0.83	0.08	<0.05	<0.05	0.11	<0.05	<0.05	0.05	0.05	<0.05	<0.05	0.11	0.093	<0.05	0.076	0.08	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050	0.065	0.2	<0.050	<0.050	<0.050	0.3	<0.050	<0.050
Organic Nitrogen	0.15	0.23	**0.23***		**0.46**	**--**	**35.9**	**14.0**	**32.0**	**--**	**48**	**2.3**	**4.5**	**5.95**	<0.1	**0.22**	**0.51**	**0.267**	**0.9**	**43.7**	**0.2**	**1.1**	**0.7**	**0.18**	0.11	**0.4**	**0.39**	<0.10	<0.10	**0.25**	<0.10	**0.18**	<0.10	**0.32**	**0.55**
Cations (mg/L)																																		
Sodium	200	3.9	102		25	17	31	33	30	29	31	38	35	33	25	27	23	26	19	18	30	33	37	31	34	39	43	48	46	45	35	33	31	42	48
Potassium	--	1.5	--		2.5	2.5	3.3	4.1	1.6	1.4	1.2	1.4	1.1	1.1	1.1	1.1	0.95	1.1	0.86	1	0.86	1	1.1	1.1	1.4	2.4	1.2	1.3	1.2	1.2	0.97	0.96	1.1	1.2	1.1
Calcium	--	86.3	--		81	83	83	89	110	100	93	110	100	98	100	110	99	120	89	95	94	99	100	120	110	130	130	110	100	120	88	89	80	84	93
Magnesium	--	15	--		15	13	16	17	19	18	17	19	18	18	18	19	18	21	16	16	17	17	19	21	20	24	24	20	20	21	17	17	15	17	17
Anions (mg/L)																																		
Chloride	250	2	126		25	24	36	35	120	100	110	140	120	120	120	130	91	140	57	60	80	96	150	140	140	190	170	140	130	180	73	68	41	70	120
Nitrate	10	0.1	2.5		0.7	0.8	<0.1	0.3	0.1	0.1	<0.1	0.1	0.1	0.2	0.2	0.34	0.25	0.42	0.23	<0.1	0.12	0.2	0.13	0.19	0.13	0.14	0.17	0.17	0.16	0.16	0.1	0.1	0.14	0.22	0.13
Nitrite	1	0.005	0.25		<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.01	0.07	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.012	<0.01	<0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Orthophosphate	--	0.005	--		<0.01	--	<0.01	--	<0.01	--	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010
Sulphate	500	12	256		5	4	3	3	2	4	2	2	2	2	4	3	4	4	4	5	4	6	4.7	3.2	3.3	2.5	3.6	6.2	7.5	8.1	5	5.4	3	2.5	1.5
Alkalinity as $CaCO_3$	30-500	275	388		279	260	265	274	229	233	252	224	224	223	219	220	230	210	240	240	260	230	220	230	240	220	200	240	260	230	260	260	280	260	230
Ion Balance (%)	--	--	--		0.0466	1.03	3.67	5.83	0.81	1.97	4.97	1.67	1.54	0.27	0.08	2	0.89	3.59	0.06	2.25	1.32	1.87	1.15	2.97	--	--	--	1.42	1.21	0.6	0.31	0.89	1.07	1.17	0.14
Metals (mg/L)																																		
Aluminum	0.1	0.0025	0.05		0.03	<0.005	0.008	0.016	0.006	<0.005	<0.005	0.006	<0.005	0.013	<0.005	0.0053	<0.005	0.0074	<0.005	<0.005	<0.005	<0.005	0.0056	<0.005	<0.005	<0.005	<0.005	0.0087	<0.005	<0.005	0.0061	<0.005	0.01	<0.0049	0.0051
Antimony	0.006	0.00025	0.0031		<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Arsenic	0.025	0.0025	0.0081		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	1	0.017	0.26		0.019	0.019	0.018	0.02	0.02	0.021	0.02	0.023	0.02	0.021	0.021	0.022	0.019	0.022	0.016	0.018	0.018	0.021	0.023	0.025	0.025	0.032	0.03	0.025	0.022	0.025	0.018	0.018	0.018	0.019	0.021
Beryllium	--	0.00021	--		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.0004
Bismuth	--	0.0005	--		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	5	0.016	1.3		0.019	0.015	0.011	<0.01	<0.01	0.011	<0.01	0.011	<0.01	<0.01	<0.01	<0.01	0.012	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.013	0.011	0.011	<0.01	0.013	<0.01	<0.01	<0.01	<0.01	<0.01	0.01
Cadmium	0.005	0.00012	0.0013		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00009	<0.00009	<0.00009
Chromium	0.05	0.0025	0.014		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Cobalt	--	0.0014	--		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Copper	1	0.003	0.25		0.003	0.002	0.003	0.01	0.005	0.001	0.002	0.002	0.003	0.002	0.002	0.002	0.0011	0.0015	0.0027	0.0012	0.0012	<0.001	0.0013	<0.001	<0.001	0.0011	0.0039	0.0057	<0.001	0.0099	<0.001	0.0027	0.0015	0.0022	0.0038
Iron	0.3	0.31	**0.31***		0.057	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.1	<0.1
Lead	0.01	0.00025	0.005		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0009	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00094	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Manganese	0.05	0.282	**0.282***		0.005	<0.002	<0.002	<0.002	<0.002	<0.002	0.034	**0.081**	0.047	0.003	0.003	0.0027	0.0038	0.0015	<0.002	0.0021	<0.002	<0.002	<0.002	0.0042	0.0026	0.0034	<0.002	0.0044	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Mercury	0.001	0.00005	0.0003		<0.0001	--	<0.0001	--	<0.0001	--	**0.003**	0.0003	<0.0001	0.0009	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.00010	<0.0001	<0.00010	<0.00010
Molybdenum	--	0.00053	--		0.004	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.00050	<0.0005	<0.0005	<0.0005
Nickel	--	0.0028	--		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	0.002	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0013	0.0011	0.0011	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Phosphorus (Total)	--	0.057	--		<0.05	<0.05	<0.1	<0.1	410	--	310	4.2	8.7	7.9	4.4	0.067	0.75	0.5	0.87	4	0.22	13	200	0.98	100	0.6	6.9	0.17	1.1	2.1	<0.020	8.3	0.6	0.51	2.5
Selenium	0.01	0.001	0.0033		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Silicon	--	5.7	--		5.5	5.2	5	5.2	4.8	5.2	4.9	5.5	4.8	4.9	4.6	4.8	4.6	4.8	4.7	5.3	4.5	4.5	4.4	5	4.6	4.8	4.9	4.9	4.8	4.7	4.7	4.5	4.7	5	4.7
Silver	--	--	--		<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.0001	<0.0001	<0.0001	<0.0001	--	--	--	--	--	--	--	--	--	--	--
Strontium	--	0.078	--		0.074	0.073	0.11	0.11	0.12	0.1	0.081	0.084	0.076	0.084	0.087	0.086	0.081	0.097	<0.069	0.072	0.096	0.095	0.11	0.11	0.091	0.11	0.11	0.097	0.098	0.099	0.077	0.077	0.068	0.07	0.082
Thallium	--	0.00012	--		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Tin	--	0.0005	--		--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Titanium	--	--	--		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	0.00025	--		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0012	0.00057	<0.0005	0.00057	0.00093	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Zinc	5	0.004	2.5		0.010	0.009	0.031	0.014	0.012	<0.005	0.011	0.008	0.011	0.023	<0.005	0.0086	<0.005	<0.005	<0.005	0.0068	0.0084	<0.005	<0.005	<0.005	<0.005	<0.005	0.019	<0.005	<0.005	0.0093	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005

Notes:
† - Denotes blind duplicate
NV - Denotes no value; handheld instrument was malfuntioning

THB-00006189-RE Phase 100 - Geraldton Landfill

Table 3 (cont'd): Groundwater

Parameter	ODWS	PWQO	APV	2021	2021	MW10A																														
	(mg/L)	(mg/L)	(mg/L)	Background	B-7	May-97	Aug-06	Nov-06	Nov-07	Jun-08	Oct-08	Jun-09	Oct-09	Jun-10	Oct-10	May-11	Oct-11	May-12	Oct-12	May-13	Oct-13	May-14	Oct-14	May-15	Oct-15	May-16	Oct-16	May-17	Sep-17	May-18	Oct-18	May-19	Oct-19	May-20	Sep-20	May-21	Sep-21
General																																				
pH	6.5 to 8.5	6.5 to 8.5	--	8.0	--	Not	7.8	8.0	8.0	7.9	7.8	7.5	7.1	7.2	7.62	7.4	7.38	7.72	7.17	7.62	7.45	7.59	7.29	7.48	7.21	7.52	7.33	7.52	7.48	7.33	7.28	7.61	7.02	7.3	7.23	7.32	7.45
Field pH	--	--	--	7.6	--	Installed	7.25	7.61	5.81	7.35	7.12	6.62	6.85	6.47	6.95	6.59	6.63	7.09	6.81	6.71	7.03	6.65	6.91	6.85	6.9	6.75	6.96	6.92	7.36	7.26	NV	6.83	7.36	7.59	6.29	6.73	6.32
Conductivity (uS/cm)	--	--	--	520	--		595	668	588	569	684	731	725	767	719	778	739	810	780	810	750	730	670	680	660	750	750	800	720	820	780	750	750	760	680	690	760
Field Conductivity (uS/cm)	--	--	--	447	--		659	652	>3,999	576	759	643	712	791	1,267	737	705	689	690	696	604	566	701	753	709	761	844	699	742	750	NV	748	470	574	681	353	665
Field Temperature (˚c)	--	--	--	9.6	--		6.6	4.9	3.9	9.4	4.7	12.2	5.3	5.7	4.2	3.4	7.5	4.8	5.7	5.6	5.1	5.7	6.6	7.4	10.1	13.8	9.6	9.1	7.4	10.8	NV	4.2	7.3	3.3	6.3	10.6	16.7
Total Dissolved Solids (mg/L)	500	--	--	250	375		313	432	344	372	422	480	475	500	450	484	490	464	488	480	434	446	406	452	446	498	--	480	470	420	470	450	390	385	375	365	445
Total Suspended Solids (mg/L)	--	--	--	--	--		--	--	14,000	5,700	2,200	--	--	--	--	--	--	--	--	--	--	1,900	2,200	1,600	190	--	--	--	--	--	--	--	--	--	--	--	--
Hardness (mg/L)	80 to 100	--	--	275	**275***		**310**	**330**	**290**	**290**	**290**	**310**	**330**	**320**	**320**	**360**	**310**	**340**	**340**	**380**	**300**	**330**	**300**	**310**	**230**	**330**	**320**	**310**	**310**	**270**	**250**	**320**	**280**	**250**	**230**	**230**	**230**
Organics (mg/L)																																				
Dissolved Organic Carbon (DOC)	5	--	--	2.5	3.8		**12.3**	**16.4**	**16.3**	**15.8**	**14.1**	**12.5**	**12.6**	**12.5**	**11.4**	**9**	**9.9**	**9.8**	**11**	**10.8**	**11**	**11**	**14**	**12**	**14**	**11**	**12**	**12**	**13**	**12**	**13**	**12**	**14**	**12**	**13**	**14**	**14**
Biochemical Oxygen Demand (BOD)	--	--	--	--	--		**--**	**--**	2	<2	<2	--	--	--	--	--	--	--	--	--	--	--	<2	2	<2	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand (COD)	--	--	--	9.6	--		--	--	340	160	110	51	--	--	110	--	88	--	27	--	--	79	54	66	67	39	56	35	39	37	45	36	31	37	40	60	42
Phenols	--	0.001	0.961	0.0005	--		<0.001	--	<0.001	--	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0016	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.001	<0.0010	<0.0010
Total Kjeldahl Nitrogen (TKN)	--	--	--	0.25	--		1.7	--	7.5	4	3	1.4	4	2.2	4	1.2	2	1.4	1.1	1.2	1.6	<5	1.4	1.2	0.72	0.54	0.52	0.75	0.74	0.61	0.65	0.62	0.66	0.65	0.73	0.7	0.76
Ammonia-N	--	--	--	0.051	--		0.29	0.69	0.6	0.47	0.33	0.3	0.31	0.28	0.34	0.26	0.32	0.29	0.47	0.5	0.36	0.41	0.4	0.34	0.25	0.31	0.29	0.34	0.29	0.41	0.4	0.39	0.33	0.36	0.39	0.28	0.31
Organic Nitrogen	0.15	--	--	0.23	**0.23***		**1.41**	--	**6.9**	**3.53**	**2.67**	**1.1**	**3.69**	**1.9**	**3.2**	**0.94**	**1.68**	**1.11**	**0.63**	**0.7**	**1.3**	~0	**1**	**0.84**	**0.47**	**0.23**	**0.23**	**0.41**	**0.45**	**0.2**	**0.25**	**0.23**	**0.33**	**0.29**	**0.34**	**0.42**	**0.45**
Cations (mg/L)																																				
Sodium	200	--	180	3.9	102		32	40	13	17	22	24	30	34	25	34	24	25	25	40	32	30	36	33	34	33	37	33	34	35	41	44	46	50	46	50	44
Potassium	--	--	--	1.5	--		1.5	1.4	0.42	1.3	0.69	0.3	0.34	0.23	0.28	0.33	0.32	0.34	0.35	0.38	0.39	0.34	0.26	0.33	0.23	0.34	0.33	0.3	0.35	0.39	0.3	0.38	0.41	0.4	0.36	0.45	0.42
Calcium	--	--	--	86.3	--		100	110	94	93	93	96	100	97	100	110	97	110	110	120	93	100	91	95	69	99	95	97	92	85	74	96	82	76	69	69	71
Magnesium	--	--	--	15	--		14	12	13	14	15	16	18	18	18	19	17	17	18	20	17	17	17	17	14	19	19	18	19	14	15	18	17	14	14	13	13
Anions (mg/L)																																				
Chloride	250	--	180	2	126		24	32	32	36	60	73	66	95	63	62	76	55	68	65	82	69	73	64	100	78	90	68	78	79	100	94	100	100	100	120	120
Nitrate	10	--	--	0.1	2.5		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrite	1	--	--	0.005	0.25		<0.01	--	0.02	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Orthophosphate	--	--	--	0.005	--		<0.01	--	<0.01	--	<0.01	--	<0.01	0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.011	0.011	0.010	<0.010	<0.010	<0.010	0.014	<0.010	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010
Sulphate	500	--	--	12	256		6	6	<1	3	<1	<5	1	1	6	11	8	18	15	19	9	8	1	9	<1	10	8.2	10	5.9	8.5	2.9	5.2	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity as $CaCO_3$	30-500	narrative	--	275	388		310	325	271	247	272	267	283	247	268	299	253	310	290	310	250	270	260	250	170	270	250	300	260	300	250	230	220	230	190	170	210
Ion Balance (%)	--	--	--	--	--		4.43	5.45	0.88	5.62	1.71	1.23	3.38	1.81	2.37	4.73	0.08	1.28	0.56	6.05	0.05	2.32	6	4.34	0.23	1.98	--	--	--	8.27	7.2	5.95	2.21	1.35	0.31	0.1	7.04
Metals (mg/L)																																				
Aluminum	0.1	(0.075)	--	0.0025	0.05		0.040	0.033	0.047	0.046	0.068	0.056	0.076	0.075	0.052	0.031	0.08	0.061	0.068	0.056	0.089	0.066	0.099	0.075	**0.11**	0.075	0.094	0.085	0.079	**0.12**	**0.14**	**0.11**	**0.13**	**0.13**	**0.18**	**0.25**	**0.2**
Antimony	0.006	(0.02)	1.6	0.00025	0.0031		<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Arsenic	0.025	0.1 (0.005)	0.15	0.0025	0.0081		0.005	0.004	0.005	0.006	0.013	0.013	0.021	0.024	0.015	0.005	0.017	0.012	0.016	0.012	0.02	0.011	0.021	0.014	0.021	0.017	0.022	0.016	0.016	0.016	0.021	0.02	0.023	0.02	0.024	0.019	0.021
Barium	1	--	2.3	0.017	0.26		0.028	0.040	0.017	0.018	0.023	0.025	0.031	0.031	0.034	0.034	0.026	0.026	0.029	0.030	0.027	0.024	0.030	0.026	0.024	0.030	0.030	0.027	0.026	0.023	0.026	0.03	0.029	0.027	0.026	0.029	0.026
Beryllium	--	0.011	0.0053	0.00021	--		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.0004
Bismuth	--	--	--	0.0005	--		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	5	(0.2)	3.55	0.016	1.3		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.014	0.019
Cadmium	0.005	0.0002 (0.0001	0.00021	0.00012	0.0013		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00009	<0.00009	<0.00009
Chromium	0.05	0.001	0.064	0.0025	0.014		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Cobalt	--	0.0009	0.0052	0.0014	--		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Copper	1	0.005	0.0069	0.003	0.25		<0.001	<0.001	<0.001	0.001	<0.001	<0.001	0.003	<0.001	<0.001	0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0019	<0.001	0.0067	<0.0009	0.0037	0.0015
Iron	0.3	0.3	--	0.31	**0.31***		**1.6**	**2.3**	**1.3**	**1.1**	**1.2**	**1.4**	**1.3**	**1.7**	**0.87**	<0.1	**1.7**	**1.8**	**2**	**1.9**	**1.8**	**1.7**	**1.9**	**1.8**	**1.6**	**2.1**	**2.1**	**2**	**1.9**	**1.8**	**1.9**	**2.3**	**24**	**1.9**	**2.1**	**1.7**	**2**
Lead	0.01	0.01 (0.003)	0.002	0.00025	0.005		<0.0005	<0.0005	<0.0005	0.0011	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00072	<0.0005
Manganese	0.05	--	--	0.282	**0.282***		**0.13**	**0.10**	**0.066**	**0.064**	**0.067**	**0.075**	**0.079**	**0.076**	**0.078**	**0.079**	**0.081**	**0.081**	**0.089**	**0.097**	**0.083**	**0.078**	**0.083**	**0.077**	**0.068**	**0.088**	**0.086**	**0.083**	**0.085**	**0.069**	**0.07**	**0.087**	**0.084**	**0.078**	**0.073**	**0.075**	**0.072**
Mercury	0.001	0.0002	0.00077	0.00005	0.0003		<0.0001	--	<0.0001	--	0.0008	--	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010
Molybdenum	--	(0.04)	0.73	0.00053	--		0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.00050	<0.0005	<0.0005
Nickel	--	0.025	0.039	0.0028	--		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0011	<0.001	0.0013	<0.001	0.0012	0.0012	0.0015	0.0011	0.0016	0.0015	0.0014	0.0012	0.0015	0.0015
Phosphorus (Total)	--	(0.02)	--	0.057	--		<0.05	<0.05	<0.1	<0.1	1.2	--	1.2	1.1	1.2	0.4	2.9	1.5	1.3	0.55	0.43	0.93	0.51	0.3	1.7	0.051	0.16	0.55	0.74	0.49	0.54	0.39	0.14	1.1	0.093	0.092	0.063
Selenium	0.01	0.1	0.005	0.001	0.0033		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Silicon	--	--	--	5.7	--		4.5	4.6	3.7	3.9	3.4	3.2	3	3	3.1	3.4	3.1	3.3	3.3	3.5	3	4	3	3.3	2.6	3	2.8	2.9	2.9	3	2.7	2.6	2.7	2.7	2.6	3.2	2.9
Silver	--	0.0001	0.00012	--	--		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	--	--	--	--	--	--	--	--	--
Strontium	--	--	--	0.078	--		0.100	0.110	0.084	0.087	0.084	0.076	0.078	0.072	0.078	0.082	0.076	0.082	0.090	0.097	0.078	0.080	0.077	0.078	0.065	0.085	0.083	0.083	0.084	0.074	0.072	0.084	0.076	0.075	0.071	0.071	0.074
Thallium	--	(0.0003)	0.04	0.00012	--		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Tin	--	--	--	0.0005	--		--	--	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Titanium	--	--	--	--	--		<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	--	--	--	--	--	--	--	--	--	--
Vanadium	--	(0.006)	0.02	0.00025	--		0.002	0.001	0.002	0.002	0.003	0.002	0.002	0.001	0.003	0.002	0.0024	0.0021	0.002	0.0022	0.0025	0.0022	0.0021	0.0023	0.0022	0.0018	0.0019	0.002	0.0022	0.0019	0.002	0.002	0.002	0.0017	0.002	0.0026	0.0024
Zinc	5	0.03 (0.02)	0.089	0.004	2.5		0.008	0.009	0.007	0.01	0.008	0.007	0.01	0.005	0.005	<0.005	0.007	<0.005	<0.005	<0.005	0.0062	0.0053	<0.005	<0.0050	0.0075	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005

Notes:
† - Denotes blind duplicate
NV - Denotes no value; handheld instrument was malfuntioning

THB-00006189-RE Phase 100 - Geraldton Landfill

Table 3 (cont'd): Groundwater Data

Parameter	ODWS	PWQO	APV	2021	2021	MW10B																													
	(mg/L)	(mg/L)	(mg/L)	Background	B-7	May-97	Aug-06	Nov-06	Nov-07	Jun-08	Oct-08	Jun-09	Oct-09	Jun-10	Oct-10	May-11	Oct-11	May-12	Oct-12	May-13	Oct-13	May-14	Oct-14	May-15	Oct-15	May-16	Oct-16	May-17	Sep-17	May-18	Oct-18	May-19	Oct-19	May-20	Sep-20	May-21	Sep-21
General																																				
pH	6.5 to 8.5	6.5 to 8.5	--	8.0	--	Not	7.7	8.0	8	8.2	7.9	7.4	7.1	7.2	7.71	7.33	7.54	7.67	7.22	7.78	7.57	7.52	7.46	7.48	7.63	7.60	7.51	7.55	7.62	7.38	7.52	7.49	7.46	7.36	7.85	7.59	8.27
Field pH	--	--	--	7.6	--	Installed	7.02	7.94	5.93	7.35	7.04	6.84	6.53	6.5	6.71	6.75	6.53	6.86	6.57	7.05	6.77	6.73	7.22	6.8	6.93	6.81	6.91	7.02	7.09	6.03	NV	7.02	6.41	6.79	6.74	6.68	8.76
Conductivity (uS/cm)	--	--	--	520	--		817	1,030	1,060	1,190	1,160	1,390	1,230	1,150	1,210	1,190	1,280	1,300	1,200	1,200	1,200	1,200	1,300	1,200	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,200	1,300	1,300	1,500	1,300	1,700
Field Conductivity (uS/cm)	--	--	--	447	--		828	996	>3,999	576	1,222	1,277	1,145	1,177	1,079	1,092	1,118	1,037	941	1,008	920	833	1,393	1,151	1,114	1,212	1,232	1,175	1,142	989	NV	1,101	1,287	866	1,324	529	1,833
Field Temperature (°C)	--	--	--	9.6	--		7.1	3.4	3.9	9.4	3.6	10.5	5.2	7.4	4.2	3.4	6.5	4.8	6.5	6.2	4.5	5.2	6.3	6.7	9.1	11	8.6	7.5	6.9	7.8	NV	4.2	7	2.9	6.4	8.9	16.9
Total Dissolved Solids (mg/L)	500	--	--	250	375		450	**616**	492	**742**	**710**	**865**	**800**	**750**	**758**	**750**	**842**	**794**	**812**	**740**	**764**	**770**	**836**	**772**	**774**	**834**	**784**	**828**	**810**	**670**	**815**	**710**	**615**	**650**	**785**	**570**	**960**
Total Suspended Solids (mg/L)	--	--	--	--	--		--	--	1,100	3,600	3,600	--	--	--	--	--	--	--	--	--	--	1,100	1,900	150	4,900	--	--	--	--	--	--	--	--	--	--	--	--
Hardness (mg/L)	80 to 100	--	--	275	**275***		**460**	**410**	**420**	**370**	**440**	**420**	**430**	**460**	**410**	**430**	**410**	**320**	**390**	**320**	**430**	**350**	**430**	**380**	**330**	**430**	**410**	**390**	**410**	**380**	**360**	**390**	**410**	**240**	**350**	**260**	**250**
Organics (mg/L)																																				
Dissolved Organic Carbon (DOC)	5	--	--	2.5	3.8		**24.8**	**17.6**	**15**	**16.2**	**15.3**	**12.2**	**13.7**	**14.2**	**14.1**	**12.4**	**13.2**	**15**	**18**	**18.1**	**15**	**15**	**15**	**14**	**15**	**12**	**15**	**16**	**15**	**15**	**15**	**16**	**17**	**14**	**16**	**17**	**17**
Biochemical Oxygen Demand (BOD)	--	--	--	--	--		--	--	6	<2	<2	--	--	--	--	--	--	--	--	--	--	--	<2	<2	<2	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand (COD)	--	--	--	9.6	--		--	--	100	140	160	58	--	--	62	--	130	--	58	--	--	85	110	66	78	47	51	50	48	52	47	39	41	44	49	53	51
Phenols	--	0.001	0.961	0.0005	--		<0.001	--	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	<0.001	<0.001	<0.001	0.0012	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	0.0024	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.001	<0.0010	<0.0010
Total Kjeldahl Nitrogen (TKN)	--	--	--	0.25	--		1.6	--	2.9	3	4.2	2	3	4	2.2	1.5	3	1.8	2	1.1	2.3	6.1	2.9	1.2	0.72	0.50	0.45	0.68	0.68	0.58	0.64	0.52	0.53	0.57	0.58	0.58	0.57
Ammonia-N	--	--	--	0.051	--		0.77	0.56	0.67	0.66	0.61	0.48	0.54	0.39	0.31	0.12	0.32	0.24	0.36	0.24	0.25	0.18	0.31	0.17	0.22	0.19	0.16	0.16	0.18	0.24	0.31	0.14	0.21	0.094	0.29	0.09	0.21
Organic Nitrogen	0.15	--	--	0.23	**0.23***		**0.83**	--	**2.23**	**2.34**	**3.59**	**1.52**	**2.46**	**3.8**	**1.9**	**1.38**	**2.68**	**1.56**	**1.64**	**0.86**	**2.05**	**5.9**	**2.6**	**1**	**0.5**	**0.31**	**0.29**	**0.52**	**0.45**	**0.35**	**0.33**	**0.38**	**0.32**	**0.47**	**0.29**	**0.49**	**0.36**
Cations (mg/L)																																				
Sodium	200	--	180	3.9	102		14	66	44	120	62	120	75	77	72	93	83	98	91	99	88	94	93	88	97	95	100	97	97	110	120	120	110	120	170	140	**350**
Potassium	--	--	--	1.5	--		1.3	1.3	0.83	1.7	0.58	0.58	0.46	0.37	0.4	0.32	0.33	0.25	0.29	0.21	0.26	0.22	0.21	0.24	0.21	0.27	0.23	0.2	<0.2	0.25	0.26	<0.2	<0.2	0.27	0.47	0.26	1.5
Calcium	--	--	--	86.3	--		150	140	140	130	150	140	150	160	140	150	140	110	140	110	150	120	150	130	110	150	140	130	140	130	130	140	140	76	120	86	82
Magnesium	--	--	--	15	--		20	12	14	13	16	15	15	15	14	15	13	12	12	12	12	11	13	12	12	13	13	12	12	11	11	12	12	12	12	10	10
Anions (mg/L)																																				
Chloride	250	--	180	2	126		39	130	110	130	170	170	180	170	190	180	180	160	190	180	190	190	180	170	200	190	210	180	210	*200*	*200*	*190*	*190*	*230*	*240*	**260**	*240*
Nitrate	10	--	--	0.1	2.5		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrite	1	--	--	0.005	0.25		<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Orthophosphate	--	--	--	0.005	--		<0.01	--	<0.01	--	<0.01	--	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.010	0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010
Sulphate	500	--	--	12	256		2	<1	<1	4	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity as $CaCO_3$	30-500	narrative	--	275	388		445	382	414	449	363	433	360	305	336	292	338	340	300	250	330	300	230	320	340	330	330	300	320	350	340	300	330	270	370	260	**540**
Ion Balance (%)	--	--	--	--	--		0.149	0.448	4.02	0.31	1.91	0.1	0.92	7.59	2.54	7.56	0.59	2.72	3.53	0.22	2.68	0.26	4	2.67	6.62	3.42	--	--	--	0.24	0.31	6.43	4.27	6.38	0.44	4.48	7.3
Metals (mg/L)																																				
Aluminum	0.1	(0.075)	--	0.0025	0.05		0.042	0.01	0.03	0.024	0.047	0.034	0.051	0.045	0.022	0.022	0.052	0.065	0.067	0.082	0.053	0.1	0.054	0.069	0.065	0.055	0.068	0.068	0.059	0.077	0.071	**0.11**	0.066	**0.23**	**0.23**	0.068	**0.12**
Antimony	0.006	(0.02)	1.6	0.00025	0.0031		<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00059	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Arsenic	0.025	0.1 (0.005)	0.15	0.0025	0.0081		0.005	0.01	0.011	0.017	0.021	0.019	0.023	**0.027**	0.018	0.005	0.025	0.017	**0.03**	0.021	0.023	**0.037**	**0.026**	**0.03**	0.018	**0.033**	**0.037**	**0.032**	**0.032**	**0.032**	**0.032**	**0.044**	**0.035**	**0.029**	**0.027**	0.0086	0.025
Barium	1	--	2.3	0.017	0.26		0.036	0.042	0.031	0.029	0.034	0.034	0.031	0.03	0.031	0.029	0.032	0.026	0.029	0.022	0.029	0.026	0.028	0.028	0.026	0.029	0.030	0.026	0.027	0.028	0.033	0.031	0.028	0.022	0.027	0.025	0.013
Beryllium	--	0.011	0.0053	0.00021	--		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.0004
Bismuth	--	--	--	0.0005	--		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	5	(0.2)	3.55	0.016	1.3		<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cadmium	0.005	0.0002 (0.0001	0.00021	0.00012	0.0013		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00009	<0.00009	<0.00009
Chromium	0.05	0.001	0.064	0.0025	0.014		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Cobalt	--	0.0009	0.0052	0.0014	--		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Copper	1	0.005	0.0069	0.003	0.25		<0.001	0.001	<0.001	0.001	0.002	0.001	0.003	0.003	<0.001	0.001	0.001	0.0016	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	0.0064	<0.001	<0.001	<0.001	0.0022	0.0016	0.0037	0.002
Iron	0.3	0.3	--	0.31	**0.31***		**2.5**	**1.1**	**2.5**	**1.6**	**3.4**	**2.6**	**3**	**3.4**	**1.1**	0.22	**3.1**	**1**	**2.9**	**1.7**	**3**	**4.7**	**3.4**	**5.3**	**1.4**	**5.7**	**3.8**	**4.3**	**3.6**	**4.5**	**2.8**	**5.6**	**3.5**	**8.1**	**2.8**	**1.3**	<0.1
Lead	0.01	0.01 (0.003)	0.002	0.00025	0.005		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0012	<0.0005	<0.0005	<0.0005	<0.0005	0.00069	<0.0005	<0.0005
Manganese	0.05	--	--	0.282	**0.282***		**0.14**	**0.13**	**0.110**	**0.11**	**0.13**	**0.12**	**0.110**	**0.120**	**0.100**	**0.098**	**0.100**	**0.084**	**0.091**	**0.11**	**0.11**	**0.160**	**0.110**	**0.170**	**0.085**	**0.180**	**0.11**	**0.13**	**0.1**	**0.12**	**0.095**	**0.15**	**0.091**	**0.19**	**0.11**	**0.14**	0.023
Mercury	0.001	0.0002	0.00077	0.00005	0.0003		<0.0001	--	<0.0001	--	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.0001	<0.00010	<0.00010
Molybdenum	--	(0.04)	0.73	0.00053	--		0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.00050	<0.0005	<0.0005	0.00058
Nickel	--	0.025	0.039	0.0028	--		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0013	<0.001	<0.001	<0.001	0.0014	0.0011	0.0015	<0.001
Phosphorus (Total)	--	(0.02)	--	0.057	--		<0.050	--	<0.1	<0.1	0.8	--	0.9	5.3	0.8	0.17	1	0.63	1.4	0.22	0.39	0.35	0.68	1.2	0.4	0.13	0.26	0.11	0.45	0.98	0.5	<0.10	0.029	0.38	0.073	0.034	0.11
Selenium	0.01	0.1	0.005	0.001	0.0033		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Silicon	--	--	--	5.7	--		4.8	2.1	2.8	2.9	2.8	2.5	2.4	2.3	2	2	2	1.6	1.8	1.5	1.8	1.9	1.8	2.1	1.7	1.9	1.7	1.7	1.7	1.9	1.7	1.9	1.6	1.6	2.1	1.6	3.7
Silver	--	0.0001	0.00012	--	--		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	--	--	--	--	--	--	--	--	--
Strontium	--	--	--	0.078	--		0.14	0.11	0.14	0.13	0.14	0.12	0.12	0.12	0.12	0.11	0.12	0.093	0.12	0.094	0.12	0.096	0.120	0.110	0.100	0.120	0.110	0.1	0.11	0.1	0.1	0.1	0.1	0.063	0.095	0.071	0.075
Thallium	--	(0.0003)	0.04	0.00012	--		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00009	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Tin	--	--	--	0.0005	--		--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Titanium	--	--	--	--	--		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	--	--	--	--	--	--	--	--	--	--
Vanadium	--	(0.006)	0.02	0.00025	--		0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0012	0.00096	0.00057	<0.0007	0.0012	0.00099	0.00072	0.001	0.00053	0.00091	0.00067	0.00083	0.00087	0.00097	0.00094	0.0011	0.00098	0.00097	0.001	<0.0005	0.0009
Zinc	5	0.03 (0.02)	0.089	0.004	2.5		0.011	0.014	0.009	0.013	0.006	0.009	0.007	0.009	<0.005	<0.005	<0.005	<0.005	0.0085	<0.005	<0.005	<0.005	<0.005	<0.005	0.011	<0.005	<0.005	<0.005	<0.005	0.019	<0.005	<0.005	<0.005	0.0051	<0.005	<0.005	<0.005

Notes:
† - Denotes blind duplicate
NV - Denotes no value; handheld instrument was malfuntioning

THB-00006189-RE Phase 100 - Geraldton Landfill

Table 3 (cont'd): Groundwater Data

Parameter	ODWS	2021	2021	MW11																							
	(mg/L)	Background	B-7	Oct-09	Jun-10	Oct-10	May-11	Oct-11	May-12	Oct-12	May-13	Oct-13	May-14	Oct-14	May-15	Oct-15	May-16	Oct-16	May-17	Sep-17	May-18	Oct-18	May-19	Oct-19	May-20	Sep-20	May-21	Sep-21
General																											
pH	6.5 to 8.5	8.0	--	7.9	8	8.1	7.99	8.08	8.06	7.82	8.13	8.04	8.05	7.96	8.01	8.09	8.09	8.05	8.04	8.14	7.92	7.91	8.19	7.99	7.98	8.01	8.23	8.16
Field pH	--	7.6	--	7.5	7.33	7.57	7.27	7.66	7.6	6.95	7.47	7	6.9	7.79	7.62	7.69	7.68	7.72	7.66	7.76	6.7	NV	7.68	7.49	7.91	7.31	7.41	7.42
Conductivity (uS/cm)	--	520	--	499	464	491	477	469	480	470	480	460	460	470	470	470	460	470	490	470	490	450	460	470	470	460	460	450
Field Conductivity (uS/cm)	--	447	--	449	479	469	>3,999	447	434	422	416	403	397	505	498	482	469	479	467	462	550	NV	433	349	404	439	302	443
Field Temperature (°C)	--	9.6	--	4.5	5.4	5.6	5	7.9	4.4	7	4.5	5	4.5	7	6.9	7.7	8.4	10.1	6.9	8.9	10.5	NV	4.8	8.4	2.9	7.8	7.6	11.1
Total Dissolved Solids (mg/L)	500	250	375	325	300	320	296	334	264	262	260	254	264	274	272	268	278	--	238	290	285	225	295	240	215	240	200	315
Total Suspended Solids (mg/L)	--	--	--	--	--	--	--	--	--	--	--	--	17,000	7,100	12,000	4,700	--	--	--	--	--	--	--	--	--	--	--	--
Hardness (mg/L)	80 to 100	275	**275***	**240**	**250**	**250**	**250**	**250**	**250**	**240**	**260**	**240**	**250**	**240**	**250**	**230**	**230**	**230**	**240**	**230**	**250**	**240**	**240**	**240**	**240**	**220**	**240**	**230**
Organics (mg/L)																												
Dissolved Organic Carbon (DOC)	5	2.5	3.8	3.1	2.9	2.5	2.2	2.9	2.4	1.9	2.9	2.6	1.8	2.1	1.5	2.4	1.5	1.9	1.3	1.8	1.6	2.7	1.6	1.8	1.4	1.4	1.4	1.5
Biochemical Oxygen Demand (BOD)	--	--	--	--	--	--	--	--	--	--	--	--	--		3	<2	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand (COD)	--	9.6	--	--	--	95	--	110	--	140	--	--	<4	68	51	24	150	57	6.9	14	7.7	10	<4.0	5	<4.0	9.4	4.8	9.9
Phenols	--	0.0005	--	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.001	<0.0010	<0.0010
Total Kjeldahl Nitrogen (TKN)	--	0.25	--	18	7	3	2	2	2.6	2.7	4.8	0.24	49	2.4	0.77	0.21	0.74	0.18	0.75	0.41	0.17	0.23	0.26	0.5	<0.10	0.29	0.15	0.76
Ammonia-N	--	0.051	--	0.15	0.21	0.22	0.18	0.14	0.22	0.22	0.42	0.13	0.17	0.17	0.15	0.084	0.068	0.064	0.096	0.092	0.16	0.27	0.11	0.098	0.057	0.17	0.08	0.082
Organic Nitrogen	0.15	0.23	**0.23***	**17.9**	**7.1**	**3.1**	**1.82**	**1.86**	**2.38**	**2.48**	**4.38**	0.1	**49.3**	**2.3**	**0.62**	0.13	**0.68**	0.12	**0.66**	**0.32**	<0.10	<0.10	0.15	**0.4**	<0.10	0.11	<0.10	**0.68**
Cations (mg/L)																												
Sodium	200	3.9	102	7.6	5.2	7.1	6.3	5.9	7.6	6.9	3.6	6.9	7.4	6.8	7.1	6.9	6.5	7.1	6.8	7.1	7	6	6.5	7.4	6.8	6.5	7.1	4.9
Potassium	--	1.5	--	1.3	0.69	1.3	0.89	0.89	1.1	1.1	1.3	1.2	1.2	1	1	1	0.8	1.2	0.94	1.1	1	0.71	1	0.86	0.82	1	1	0.63
Calcium	--	86.3	--	73	77	73	74	75	73	73	80	73	76	73	74	69	70	68	71	69	75	72	72	73	72	66	71	72
Magnesium	--	15	--	13	15	16	15	15	16	15	9.9	14	15	15	15	15	14	15	15	15	15	14	15	15	15	14	15	13
Anions (mg/L)																												
Chloride	250	2	126	2	2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1.0	1.2	1	1.3	<1.0	1.1	<1.0	1	<1.0	1.5	1.2	1.5
Nitrate	10	0.1	2.5	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.1	<0.10	<0.10
Nitrite	1	0.005	0.25	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.019	<0.01	0.014	0.012	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.011	<0.010	<0.010
Orthophosphate	--	0.005	--	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010
Sulphate	500	12	256	7	4	<1	<1	2	<1	2	6	3	2	1	<1	<1	<1.0	1.3	<1.0	<1.0	<1.0	<1.0	<1.0	1.3	<1.0	<1.0	<1.0	<1.0
Alkalinity as $CaCO_3$	30-500	275	388	268	247	268	257	249	260	250	220	250	250	260	250	250	250	260	260	260	270	250	250	250	260	260	260	250
Ion Balance (%)	--	--	--	4.03	2.25	0.46	1.26	2.32	1.09	0.69	4.4	0.66	3.55	0.05	3	0	0.71	--	--	--	1.67	0	1.43	1.39	0.26	3.7	0.3	2.26
Metals (mg/L)																												
Aluminum	0.1	0.0025	0.05	<0.005	<0.005	<0.005	<0.005	0.044	<0.005	<0.005	<0.005	<0.005	0.039	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0054	<0.005	<0.005	0.0052	<0.0049	0.005	0.033
Antimony	0.006	0.00025	0.0031	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Arsenic	0.025	0.0025	0.0081	0.002	0.002	0.005	0.003	0.001	0.0026	0.0022	0.0024	0.002	0.0019	0.0012	0.0011	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	0.001	0.0012	<0.001	<0.001	<0.001	<0.001
Barium	1	0.017	0.26	0.044	0.036	0.043	0.033	0.035	0.033	0.037	0.0036	0.0045	0.0046	0.0380	0.032	0.029	0.031	0.038	0.026	0.028	0.03	0.028	0.031	0.032	0.024	0.03	0.029	0.027
Beryllium	--	0.00021	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.0004
Bismuth	--	0.0005	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	5	0.016	1.3	0.012	0.011	0.014	<0.01	<0.01	0.014	0.014	<0.01	0.013	0.011	0.015	0.012	<0.01	0.011	0.018	0.012	0.015	<0.01	0.013	0.012	0.015	<0.01	0.014	0.014	0.019
Cadmium	0.005	0.00012	0.0013	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00009	<0.00009	<0.00009
Chromium	0.05	0.0025	0.014	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Cobalt	--	0.0014	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Copper	1	0.003	0.25	<0.001	0.003	0.003	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0019	<0.001	<0.001	<0.001	<0.001	<0.001	0.0027	<0.001	0.0015	<0.0009	0.0035	0.0024
Iron	0.3	0.31	**0.31***	<0.1	0.19	<0.1	**0.34**	<0.1	**0.35**	0.19	**0.35**	0.1	0.13	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.14	0.1	0.1	<0.10	<0.10	<0.1	0.13
Lead	0.01	0.00025	0.005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.00050	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Manganese	0.05	0.282	**0.282***	**0.22**	**0.26**	**0.27**	**0.24**	**0.22**	**0.17**	**0.16**	**0.14**	**0.11**	**0.099**	**0.110**	**0.110**	**0.100**	**0.130**	**0.084**	**0.094**	**0.077**	**0.083**	**0.12**	**0.097**	**0.12**	**0.14**	**0.13**	**0.15**	**0.15**
Mercury	0.001	0.00005	0.0003	0.0003	0.0003	0.0002	0.0002	<0.0001	0.00023	0.00013	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.0001	<0.00010	<0.00010
Molybdenum	--	0.00053	--	0.001	<0.001	0.001	<0.001	0.0009	0.00084	0.00094	0.00076	0.00082	0.00086	<0.0005	0.001	0.0013	0.00092	0.0009	0.0011	0.0011	0.0011	0.0008	0.00095	0.00091	0.00094	0.00092	0.00094	0.00065
Nickel	--	0.0028	--	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Phosphorus (Total)	--	0.057	--	10	4.6	3.4	2.5	5	7.1	7.2	10	6.2	11	4.5	9	2.7	8.8	4.5	0.54	5.3	2.6	1.8	1.9	14	5.2	0.83	0.12	3.4
Selenium	0.01	0.001	0.0033	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Silicon	--	5.7	--	6.4	6.1	8.8	7.1	7	8.3	7.9	8.1	7.8	8.2	8.1	7.1	7.1	6.1	7	6.7	7	6.7	6.4	7.1	6.9	7.4	7	7.2	6.5
Silver	--	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	--	--	--	--	--	--	--	--	--
Strontium	--	0.078	--	0.096	0.08	0.099	0.092	0.087	0.1	0.095	0.1	0.094	0.1	0.1	0.090	0.089	0.084	0.093	0.084	0.087	0.085	0.08	0.091	0.079	0.084	0.084	0.085	0.077
Thallium	--	0.00012	--	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Tin	--	0.0005	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0021	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001
Titanium	--	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	--	--	--	--	--	--	--	--	--	--
Vanadium	--	0.00025	--	0.001	0.001	0.001	0.001	0.0018	<0.0005	<0.0005	<0.0005	0.0014	<0.0005	0.00065	0.0005	0.0006	0.00051	0.00084	<0.0005	<0.0005	<0.0005	0.00066	<0.0005	0.00075	0.00058	0.0017	0.0014	0.00083
Zinc	5	0.004	2.5	0.013	0.009	0.008	<0.005	0.01	0.0051	0.0055	<0.005	<0.005	0.0071	<0.005	<0.005	0.0063	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005

Notes:
† - Denotes blind duplicate
NV - Denotes no value; handheld instrument was malfuntioning

Table 5: Surface Water Data

THB-00006189-PE Phase 100 - Geraldton Landfill

Parameter	PWQO		SW1																												
		Jun-03	Aug-06	Nov-06	Nov-07	Jun-08	Oct-08	Jun-09	Oct-09	Jun-10	Oct-10	May-11	Oct-11	May-12	Oct-12	May-13	Oct-13	May-14	Oct-14	May-15	Oct-15	May-16	Oct-16	May-17	Sep-17	May-18	Oct-18	May-19	Oct-19	May-20	Sep-20	May-21	Sep-21
General																																
pH	6.5 to 8.5	No	8.2	8.1	7.9	8.1	8	7.4	7.4	7.9	8.03	7.68	7.97	7.55	7.79	7.74	7.9	7.18	7.74	7.78	7.9	7.97	7.94	7.86	7.92	7.66	7.58	7.52	7.95	7.75	7.82	7.98	8.15
Field pH	6.5 to 8.5	Sample	8.23	8.1	6.17	7.76	8.28	>3,999	8.02	7.89	7.65	7.7	7.61	7.91	7.49	7.42	8.19	7.25	7.98	7.75	8.03	6.53	8.1	8.02	8.03	6.75	NV	7.84	8.2	7.5	7.41	7.83	7.78
Conductivity	--		389	437	212	270	259	162	355	241	263	129	285	200	410	170	230	150	340	150	330	280	260	210	250	230	290	53	450	370	280	300	270
Field Conductivity	--		287	407	299	266	272	149	525	247	563	130	338	175	402	196	208	103	203	191	326	275	283	392	248	267	NV	73	299	330	317	192	307
Field Temperature	narrative		22	1.9	0.8	23	0	23.7	3.3	15.7	2.1	8.4	14.2	10.7	6	15.6	0.5	9.7	8	16.9	8.8	23.1	17.4	17.7	13.7	13	NV	1.2	0.4	5.3	13.2	22.2	15.1
TSS	--		7	86	9	13	15	120	12	1	<10	2	15	5	83	7	5	5	21	5	6	8	52	63	6	8	13	37	10	8	4	280	4
BOD	--		<2	4	<2	<2	<2	5	5	<2	<2	<2	3	3	<2	<2	2	<2	2	2	<2	<2	<2	2	3	3	<2	<2	2	4	2	3	<2
COD	--		33	32	51	37	29	69	31	20	31	37	69	47	40	60	40	33	46	26	30	35	68	35	39	27	35	<4	34	27	11	63	31
TDS	--		234	239	173	172	160	105	250	160	178	78	218	108	254	36	166	116	164	132	178	188	186	154	205	85	190	60	205	180	200	145	190
Hardness	--		140	160	96	100	110	68	130	110	120	67	110	82	140	72	120	58	120	65	130	110	110	110	100	76	120	21	150	99	110	92	110
Organics																																
DOC	--		--	--	--	--	--	--	9	10.4	12.2	11.6	9.8	13	11	14	14	11	14	11	12	8.3	12	10	15	9.7	11	2.2	14	11	10	12	10
Phenols	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	0.001	0.002	0.0041	<0.001	<0.001	<0.001	<0.001	<0.001	0.0034	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0011
TKN	--		0.5	1.3	0.9	1.5	0.7	1.4	1.1	0.5	0.7	0.5	1.5	0.55	1.3	14	0.67	0.62	1	0.84	0.42	0.34	0.36	0.39	0.49	0.24	0.38	0.16	0.43	0.4	0.41	0.53	0.47
Ammonia-N	--		0.05	0.06	0.08	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.11	0.055	<0.05	<0.05	0.098	<0.05	<0.05	<0.050	<0.050	>0.050	<0.050	0.051	0.087	<0.050	<0.050	<0.050	0.069	0.071	0.11
Cations (mg/L)																																
Sodium	--		32	26	7.3	15	12	4.4	3.4	7.7	12	3.6	13	8.7	27	9.6	6.4	8.1	22	4.8	18	14	11	27	13	16	14	2.3	36	0	--	23	16
Potassium	--		1	1.2	0.64	0.7	0.81	0.77	1.1	1	0.68	0.49	0.9	0.56	0.97	0.84	0.79	0.61	0.8	0.47	0.82	0.83	0.86	0.81	0.66	0.59	0.62	<0.2	0.77	0.033	--	0.72	0.79
Calcium	--		47	58	32	32	36	23	49	33.9	35	18	36	26	44	22	34	15	36	18	35	32	33	38	30	22	31	6.7	44	0.0005	--	28	35
Magnesium	--		9	12	7.2	6.6	81	5.4	9.9	6.84	6.8	3.9	7.2	5.6	8.8	4.6	7	3.3	6.9	4	7.4	6.6	7.2	7.4	6	4.5	6.4	1	8.1	0.033	--	5.5	6.8
Anions (mg/L)																																
Chloride	--		45	42	10	25	17	8	36	12	20	6	21	12	40	15	9	15	36	10	31	25	20	36	21	25	27	4.6	64	48	24	36	26
Nitrate	--		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrite	--		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Sulphate	--		6	14	9	8	13	<5	12	11	5	<1	8	2	8	7	9	<1	8	1	9.6	10	<1.0	13	<1.0	2.3	18	<1.0	9	10	<1.0	<1.0	6.3
Orthophosphate	--		--	--	--	--	--	--	<0.01	0.02	<0.01	0.02	0.01	0.017	0.012	<0.01	0.013	<0.01	<0.01	<0.01	--	0.011	--	--	--	--	--	--	--	--	--	--	--
Alkalinity as $CaCO_3$	narrative		134	151	85	93	96	64	120	93	96	49	103	69	130	54	90	42	100	52	110	100	100	97	85	66	90	17	110	85	100	80	100
Metals (mg/L)																																
Aluminum	(0.075)		0.052	0.16	0.16	0.056	0.061	0.49	0.095	0.019	0.066	0.035	0.057	0.058	0.31	0.052	0.039	0.037	0.11	0.008	0.047	<0.005	<0.005	<0.005	0.01	0.008	<0.005	<0.005	0.007	0.006	<0.005	<0.005	<0.005
Antimony	(0.02)		<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	0.0005	0.0008	0.0005	<0.0005	0.0008	<0.0005	0.00057	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00059	<0.0005	<0.0005	<0.0005	0.00052	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Arsenic	0.1 (0.005)		0.066	0.049	0.04	0.024	0.044	0.038	0.032	0.025	0.028	0.022	0.046	0.027	0.052	0.022	0.038	0.013	0.035	0.018	0.033	0.015	0.11	0.048	0.04	0.011	0.042	0.0045	0.028	0.013	0.029	0.05	0.036
Barium	--		0.017	0.024	0.011	0.011	0.011	0.009	0.016	0.01	0.011	0.006	0.016	0.0075	0.019	0.0095	0.011	0.0058	0.015	0.005	0.013	0.012	0.019	0.019	0.0094	0.007	0.0086	0.003	0.02	0.011	0.016	0.017	0.018
Beryllium	0.011		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.005	<0.005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.0004
Bismuth	--		--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	(0.2)		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.012	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.012	<0.01	0.016	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	0.016	0.014	<0.01
Cadmium	0.0002 (0.0001)		0.0001	0.0006	<0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00043	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00009	<0.00009	<0.00009
Chromium (Total)	0.001		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Cobalt	0.0009		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00085	0.0006	<0.0005	<0.0005	<0.0005	<0.0005	--	<0.0005	<0.0005	0.00058	<0.0005
Copper	0.005		0.004	0.004	0.004	0.002	0.004	0.005	0.003	0.003	0.002	0.002	0.004	0.0029	0.0058	0.0021	0.0037	0.0015	0.0026	0.0016	0.0035	0.0022	0.011	0.005	0.0062	<0.001	0.0026	<0.001	0.003	0.0011	0.002	0.0045	0.0026
Iron	0.3		0.17	0.92	0.74	0.43	0.28	1.1	0.42	<0.1	0.2	0.21	0.51	0.26	0.95	0.31	0.19	0.21	0.73	0.18	0.25	0.24	3.6	2.5	0.3	0.24	0.19	0.14	0.92	0.23	0.46	2.1	0.48
Lead	0.01 (0.003)		<0.0005	0.001	<0.0005	<0.0005	<0.0005	0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00096	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0018	0.0009	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00073	<0.0005
Manganese	--		0.016	0.11	0.03	0.033	0.017	0.06	0.054	0.009	0.013	0.009	0.048	5.6	0.039	0.024	0.015	0.024	0.044	0.0098	0.075	0.019	0.14	0.15	0.019	0.013	0.011	0.0098	0.057	0.022	--	0.12	0.039
Mercury	0.0002		<0.0001	--	<0.0001	--	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010
Molybdenum	(0.04)		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Nickel	0.025		<0.001	0.002	<0.001	<0.001	<0.001	0.001	0.002	<0.001	<0.001	<0.001	0.001	<0.001	0.0019	<0.001	<0.001	<0.001	0.0012	<0.001	<0.001	<0.001	0.0035	0.0023	0.0019	<0.001	<0.001	<0.001	0.0012	<0.001	<0.001	0.002	0.0011
Phosphorus	(0.02)		0.048	0.098	0.069	0.05	0.08	0.2	0.1	0.013	0.19	0.032	0.064	0.043	0.075	0.03	0.03	0.026	0.049	0.025	0.024	0.037	0.11	0.094	0.029	0.027	0.029	0.015	0.035	0.019	0.017	0.11	0.021
Selenium	0.1		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Silicon	--		2.4	3.4	2.9	1.3	2.4	1.8	2.7	1.4	2.5	1.3	2.2	1.3	2.8	1.1	2.6	1.1	2.2	1.1	2.4	1.8	3.8	2.3	2.6	1.3	1.5	0.44	2.6	1.4	2.5	1.5	2.6
Silver	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00009	<0.00009	<0.00009
Strontium	--		--	--	0.044	0.045	0.055	0.031	0.057	0.046	0.044	0.027	0.049	0.039	0.054	0.031	0.047	0.025	0.051	0.032	0.048	0.043	0.042	0.054	0.045	0.035	0.046	0.0072	0.054	0.047	0.04	0.038	0.045
Thallium	(0.0003)		<0.00005	<0.00005	<0.05	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00015	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Tin	--		--	--	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--	--	--	--	--	--	<0.001	<0.001	--	--
Titanium	--		--	--	0.013	<0.005	0.005	0.043	0.012	<0.005	<0.005	<0.005	<0.005	<0.005	0.021	<0.005	<0.005	<0.005	0.0054	<0.005	<0.005	0.0054	0.03	0.015	--	--	--	--	--	--	--	--	--
Vanadium	(0.006)		<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.0005	0.0011	0.0012	<0.0005	<0.0005	<0.0005	0.00069	<0.0005	<0.0005	<0.0005	0.0032	0.0016	<0.0005	<0.0005	<0.0005	<0.0005	0.00066	<0.0005	<0.0005	0.0016	0.00071
Zinc	0.03 (0.02)		0.006	0.015	<0.005	<0.005	<0.005	0.009	<0.005	<0.005	<0.005	0.016	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	<0.005	<0.005	<0.005	0.01	0.0076	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0062	<0.005

NV - Denotes no value; handheld instrument was malfuntioning

Table 5 (cont'd): Surface Water Data

THB-00006189-PE Phase 100 - Geraldton Landfill

Parameter	PWQO	SW2																														
		Jun-03	Aug-06	Nov-06	Nov-07	Jun-08	Oct-08	Jun-09	Oct-09	Jun-10	Oct-10	May-11	Oct-11	May-12	Oct-12	May-13	Oct-13	May-14	Oct-14	May-15	Oct-15	May-16	Oct-16	May-17	Sep-17	May-18	Oct-18	May-19	Oct-19	May-20	Sep-20	May-21	Sep-21
General																																
pH	6.5 to 8.5	7.6	8.1	8.1	7.9	8	7.9	6.9	7.1	8	7.9	7.66	8.03	7.42	7.95	7.67	7.93	6.98	7.58	7.77	7.96	7.87	7.99	7.82	7.98	7.71	7.84	7.75	7.93	7.63	7.74	8.05	8.16
Field pH	6.5 to 8.5	--	8.14	8.25	6.16	8.27	8.42	>3,999	8.04	8.34	8.23	7.85	7.87	7.64	7.26	7.46	8.07	7.3	7.3	7.8	8.04	6.02	8.04	7.97	7.86	6.92	NV	7.63	7.66	7.66	8.02	7.65	8.38
Conductivity	--	171.5	209	229	206	145	211	162	226	244	203	135	226	180	230	130	220	100	190	150	250	270	210	210	190	180	250	140	200	160	200	260	220
Field Conductivity	--	--	298	236	228	144	164	151	208	247	205	134	213	157	300	132	208	104	104	185	130	265	230	230	204	315	NV	147	175	163	198	180	242
Field Temperature	narrative	--	21.7	0.9	0.5	20.1	0.6	22.4	3.4	16	3.2	10.1	14.8	10.5	5.6	19.4	0.4	8.1	8.1	16.7	5.6	19.1	16.8	15.2	14.7	13.4	NV	3.3	4.5	5.1	12.4	24.4	16.2
TSS	--	--	3	21	9	4	9	1	3	2	27	4	2	10	1	2	2	4	83	6	4	32	7	3	4	5	33	3	13	3	3	72	9
BOD	--	<0.5	<2	3	<2	2	<2	<2	<2	<2	<2	<2	<2	3	<2	<2	2	<2	<2	2	<2	<2.0	<2.0	<2.0	2	<2	<2	<2	2	<2	<2	<2	<2
COD	--	--	42	31	48	38	22	27	29	27	38	38	89	42	28	59	35	31	48	33	32	25	33	35	45	33	54	27	42	27	32	40	36
TDS	--	93	134	141	181	100	140	102	141	160	132	86	130	94	156	106	162	90	82	138	182	178	144	124	190	35	120	145	165	100	155	145	135
Hardness	--	82.7	100	100	96	68	100	70	100	110	99	69	98	78	110	57	120	49	86	67	120	120	100	67	91	71	120	62	98	61	100	110	100
Organics																																	
DOC	--	9.85	--	--	--	--	--	--	10.3	11.2	14.1	12.3	10	14	11	15	15	12	14	11	12	8.3	12	12	16	11	12	11	17	9.9	11	12	11
Phenols	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	0.0024	0.0043	<0.001	<0.001	<0.0010	<0.0010	<0.0010	0.003	<0.0010	0.0011	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
TKN	--	--	0.7	1	0.8	0.6	0.6	0.6	0.5	0.6	0.7	0.6	0.6	0.48	1.5	0.56	0.67	0.58	0.96	0.83	0.41	0.3	0.34	0.32	0.52	0.19	0.55	0.31	0.42	0.38	0.36	0.48	0.5
Ammonia-N	--	<0.03	0.08	0.06	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.051	0.052	<0.05	<0.05	0.1	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050	<0.050	0.083	<0.050	<0.050	<0.050	0.18	0.079	<0.050
Cations (mg/L)																																	
Sodium	--	5.2	4.9	4.6	6.1	4.1	5.5	4.9	5	7.4	6	4.7	5.6	6.3	4.9	5.1	7.3	4.1	5.5	8.6	6.7	10	6	12	6.8	6.2	8.5	6.6	7.8	5.9	--	10	6.4
Potassium	--	0.75	0.78	0.94	0.65	0.43	0.68	0.57	0.83	1	0.63	0.53	0.8	0.5	0.7	0.7	0.65	0.59	0.6	0.6	0.82	0.9	0.65	0.6	0.55	0.5	0.82	0.66	0.52	0.45	--	0.77	0.88
Calcium	--	24.1	33	34	33	21	29	20	30	32.9	32	20	33	24	33	18	33	13	26	24	31	35	29	28	27	21	34	18	29	19	--	35	32
Magnesium	--	5.31	6.9	7.1	7.5	4.6	6.9	4.4	6.4	6.87	7	4.3	6.9	5.3	6.9	4	7	3	5.9	5	7	7.1	6.3	5.6	5.6	4.1	7.4	3.7	5.9	3.8	--	6.6	6.6
Anions (mg/L)																																	
Chloride	--	8.45	7	8	6	7	8	8	9	13	9	7	9	9	7	7	11	7	9	10	12	18	10	18	11	13	15	11	13	11	8	17	9.8
Nitrate	--	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrite	--	<0.2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Sulphate	--	6.05	8	14	15	5	18	6	15	16	10	<1	12	1	9	<1	12	<1	1	<1	15	11	8.6	<1.0	<1.0	<1.0	17	<1.0	<1.0	<1.0	4.1	<1.0	13
Orthophosphate	--	--	--	--	--	--	--	--	0.02	0.02	<0.01	0.01	0.02	0.01	0.017	<0.01	0.013	<0.01	<0.01	<0.01	--	0.012	--	--	--	--	--	--	--	--	--	--	--
Alkalinity as $CaCO_3$	narrative	68.5	99	94	84	57	81	74	96	91	78	48	92	64	97	44	85	35	71	55	97	100	87	68	77	63	92	52	74	55	85	99	96
Metals (mg/L)																																	
Aluminum	(0.075)	0.031	0.053	0.045	0.26	0.05	0.036	0.027	0.039	0.044	0.18	0.053	0.04	0.072	0.032	0.045	0.041	0.043	0.64	0.008	0.064	<0.005	<0.005	0.009	0.01	0.009	<0.005	0.008	0.01	0.009	<0.005	0.007	0.005
Antimony	(0.02)	<0.0005	0.001	<0.001	<0.0005	<0.0005	0.0005	<0.0005	0.001	0.0008	<0.0005	<0.0005	0.0009	<0.0005	0.00061	<0.0005	0.00052	<0.0005	<0.0005	<0.0005	0.00087	0.00055	0.00076	<0.0005	<0.0005	<0.0005	0.00071	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0007
Arsenic	0.1 (0.005)	0.0425	0.12	0.039	0.054	0.026	0.053	0.028	0.04	0.044	0.046	0.033	0.063	0.028	0.054	0.022	0.05	0.012	0.073	0.034	0.05	0.036	0.073	0.016	0.044	0.015	0.1	0.017	0.034	0.012	0.055	0.017	0.057
Barium	--	0.008	0.01	0.015	0.01	0.006	0.007	<0.005	0.009	0.006	0.010	0.005	0.009	0.0066	0.010	0.006	0.008	0.0063	0.0110	0.0094	0.0100	0.013	0.0091	0.0069	0.0079	0.0057	0.021	0.0051	0.0075	0.0046	0.0089	0.0091	0.0097
Beryllium	0.011	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.0004
Bismuth	--	<0.001	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	(0.2)	0.0055	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.011	0.018	<0.01	<0.01	<0.01	<0.01	0.013	<0.01	<0.01	<0.01	<0.01	0.022	0.013
Cadmium	0.0002 (0.0001)	<0.0001	<0.0001	0.0008	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00009	<0.00009	<0.00009
Chromium (Total)	0.001	<0.005	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Cobalt	0.0009	<0.0001	<0.0005	<0.0005	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00095	<0.0005	<0.0005	0.00052	<0.0005	<0.0005	<0.0005	<0.0005	0.0017	<0.0005	--	<0.0005	<0.0005	<0.0005	<0.0005
Copper	0.005	0.0044	0.004	0.005	0.004	0.002	0.004	0.004	0.004	0.004	0.004	0.002	0.004	0.003	0.004	0.0012	0.0038	0.0019	0.006	0.0029	0.0046	0.0046	0.0045	0.0017	0.0025	0.0013	0.012	<0.001	0.0031	0.0012	0.0032	0.0026	0.004
Iron	0.3	0.0085	0.19	0.18	1.2	0.21	0.19	0.14	0.2	0.12	0.79	0.28	0.25	0.25	0.11	0.24	0.25	0.19	2	0.61	0.29	0.8	0.36	0.21	0.37	0.33	2.3	0.28	0.46	0.19	0.21	0.19	0.23
Lead	0.01 (0.003)	<0.0005	<0.005	0.0015	0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0007	<0.0005	<0.0005	<0.0005	<0.0005	0.0022	<0.0005	<0.0005	0.0013	0.00083	<0.0005	0.00071	<0.0005	<0.0005	<0.0005	<0.0005	0.0016	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Manganese	--	<0.0005	0.028	0.018	0.011	0.013	0.023	0.008	0.021	0.018	0.044	0.012	0.03	0.011	0.017	0.056	0.012	0.013	0.085	0.21	0.031	0.22	0.021	0.058	0.024	0.03	0.62	0.036	0.017	0.025	--	0.046	0.02
Mercury	0.0002	<0.00005	<0.0001	--	<0.0001	--	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum	(0.04)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Nickel	0.025	0.0005	0.001	0.003	0.005	<0.001	0.001	<0.001	<0.001	<0.001	0.002	0.001	0.001	<0.001	0.0011	<0.001	<0.001	<0.001	0.0025	0.0014	0.001	0.0023	0.0012	<0.001	<0.001	<0.001	0.0042	<0.001	0.0011	<0.001	0.001	0.0013	0.0013
Phosphorus	(0.02)	<0.05	0.082	0.048	0.028	0.03	0.12	0.037	0.042	0.014	0.018	0.027	0.025	0.027	0.053	0.023	0.02	0.02	0.067	0.037	0.029	0.026	0.023	0.014	0.028	0.024	0.12	0.02	0.03	0.015	0.017	0.037	0.029
Selenium	0.1	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Silicon	--	--	2.2	2.6	2.9	1.0	2.2	0.79	2.4	1.4	3.0	1.3	2.5	1.4	2.0	1.1	2.6	1.2	2.9	1.4	2.7	2.0	2.8	1.5	2.6	1.6	2.5	1.5	2.4	1.4	2.8	1.5	2.8
Silver	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00009	<0.00009	<0.00009
Strontium	--	0.032	--	--	0.05	0.033	0.055	0.034	0.046	0.053	0.051	0.033	0.053	0.038	0.046	0.027	0.055	0.022	0.042	0.04	0.051	0.049	0.043	0.038	0.04	0.027	0.059	0.022	0.037	0.027	0.04	0.041	0.046
Thallium	(0.0003)	<0.001	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00006	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Tin	--	0.001	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--	--	--	--	--	--	<0.001	--	--	--
Titanium	--	<0.005	--	--	0.013	<0.005	<0.005	<0.005	<0.005	<0.005	0.009	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.032	0.01	<0.005	0.011	<0.005	<0.005	--	--	--	--	--	--	--	--	--
Vanadium	(0.006)	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0006	0.00083	<0.0005	<0.0005	<0.0005	<0.0005	0.0022	0.00083	<0.0005	0.00084	0.00095	<0.0005	0.00052	0.00063	0.0019	<0.0005	0.00086	<0.0005	0.00055	<0.0005	0.00087
Zinc	0.03 (0.02)	<0.005	<0.005	0.017	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0086	0.0091	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0095	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005

NV - Denotes no value; handheld instrument was malfuntioning

Table 5 (cont'd): Surface Water Data

THB-00006189-PE Phase 100 - Geraldton Landfill

Parameter	PWQO	SW3																								
		Jun-09	Oct-09	Jun-10	Oct-10	May-11	Oct-11	May-12	Oct-12	May-13	Oct-13	May-14	Oct-14	May-15	Oct-15	May-16	Oct-16	May-17	Sep-17	May-18	Oct-18	May-19	Oct-19	May-20	Sep-20	May-21	Sep-21
General																										
pH	6.5 to 8.5	7.4	7.2	8	8	7.68	8.11	7.45	8.06	7.64	8.05	6.98	7.56	7.78	7.95	7.83	8	7.78	7.97	7.65	7.82	7.72	7.94	7.63	7.88	7.93	8.17
Field pH	6.5 to 8.5	7.85	7.96	8.29	8.17	7.85	8.06	>3,999	7.72	7.58	8.04	7.21	7.21	7.82	7.78	6.26	7.91	8.17	7.91	8.45	NV	7.6	7.55	7.95	8	7.95	8.37
Conductivity	--	165	225	234	196	137	223	180	230	130	630	100	180	160	230	200	240	170	190	140	250	140	220	150	220	160	220
Field Conductivity	--	155	207	237	193	135	220	165	222	121	210	103	103	175	462	207	249	172	201	157	NV	141	188	203	218	119	231
Field Temperature	narrative	24.1	3.5	18.2	3	10.1	14.9	10.9	5.6	20.2	0.6	9.9	9.9	19.5	3.8	19.6	16.3	14.9	14.7	7.7	NV	7.3	4.6	3.5	13.2	20.1	15
TSS	--	1	4	1	44	3	<1	2	4	7	5	17	73	27	9	6	5	2	6	35	37	4	6	1	6	8	9
BOD	--	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	2	<2	<2.0	<2.0	2	<2.0	<2	<2	<2	<2	<2	<2	<2	<2
COD	--	29	24	28	59	35	38	40	33	59	40	32	58	30	35	28	34	32	48	29	45	34	39	21	32	40	34
TDS	--	105	141	160	120	86	138	102	150	66	176	90	158	122	160	136	132	162	190	<10	125	130	130	75	140	70	160
Hardness	--	68	99	110	100	71	94	81	110	57	110	48	83	72	110	83	110	67	90	59	110	61	100	58	110	66	100
Organics																										
DOC	--	--	10.1	11.5	14.5	11.5	10.4	14	12	15	15	12	17	12	13	8.8	12	12	16	11	12	12	17	8.3	11	13	11
Phenols	0.001	<0.001	<0.001	<0.001	0.002	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	0.0025	0.0043	<0.001	<0.001	<0.0010	<0.0010	<0.0010	0.003	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
TKN	--	0.6	0.5	0.5	0.9	0.5	0.6	0.57	0.84	0.71	1.2	0.53	1.1	0.9	0.46	0.36	0.34	0.32	0.55	0.22	0.43	0.33	0.43	0.34	0.42	0.54	0.49
Ammonia-N	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.057	0.055	<0.050	<0.05	0.15	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050	<0.050	0.064	<0.050	<0.050	<0.050	0.091	0.078	0.052
Cations (mg/L)																										
Sodium	--	4.6	5.4	7.5	5	4	6.4	6.5	6.1	4.7	7.5	3.9	5.3	5.1	6.8	7.7	6.9	7.1	7	4.4	8.1	6.2	7.9	4.6	--	6.6	7.3
Potassium	--	0.6	0.75	1.000	0.63	0.49	0.79	0.56	0.72	0.77	0.68	0.58	0.66	0.57	0.75	0.66	0.77	0.46	0.59	0.52	0.81	0.63	0.55	0.39	--	0.46	0.8
Calcium	--	21	27	32.8	31	19	31	26	30	19	32	13	25	20	30	23	32	21	29	19	34	19	30	20	--	20	31
Magnesium	--	4.5	6.2	6.83	7	4.1	6.7	5.7	6.7	4	6.8	2.9	6.2	4.2	6.8	5.2	7	4.4	5.9	3.9	7.5	3.6	6.1	3.6	--	4.3	6.6
Anions (mg/L)																										
Chloride	--	8	10	12	8	7	10	9	9	7	55	7	9	9	11	14	12	12	11	7.5	14	11	14	8.5	10	10	12
Nitrate	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.22	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrite	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Sulphate	--	6	18	16	1	<1	14	1	14	<1	4	<1	<1	<1	15	10	11	<1	<1.0	<1.0	16	<1.0	<1.0	<1.1	0.0067	<1.0	15
Orthophosphate	--	--	0.02	0.02	0.01	0.01	0.02	<0.01	0.023	<0.01	<0.01	0.011	<0.001	<0.01	--	0.013	--	--	--	--	--	--	--	--	--	--	--
Alkalinity as $CaCO_3$	narrative	61	91	86	80	50	85	65	89	45	240	35	67	59	85	69	96	58	76	51	95	49	79	57	87	56	91
Metals (mg/L)																										
Aluminum	(0.075)	0.042	0.056	0.049	0.21	0.061	0.035	0.086	0.057	0.071	0.05	0.0036	1	0.008	0.08	<0.005	<0.005	0.009	0.01	0.01	<0.005	0.01	0.009	0.007	<0.005	0.01	0.006
Antimony	(0.02)	<0.0005	0.0012	0.0007	<0.0005	<0.0005	0.0011	<0.0005	0.00086	<0.0005	0.00073	<0.0005	<0.0005	<0.0005	0.0009	<0.0005	0.0008	<0.0005	0.00053	<0.0005	0.00061	<0.0005	<0.0005	<0.0005	0.00067	<0.0005	0.0009
Arsenic	0.1 (0.005)	0.028	0.049	0.051	0.045	0.03	0.071	0.03	0.082	0.024	0.052	0.011	0.077	0.021	0.06	0.026	0.077	0.017	0.05	0.017	0.073	0.015	0.033	0.011	0.072	0.022	0.066
Barium	--	<0.005	0.008	0.006	0.008	0.006	0.009	0.007	0.0084	0.0063	0.0079	0.004	0.013	0.006	0.009	0.008	0.0098	0.0047	0.0084	0.007	0.012	0.005	0.0076	0.0043	0.0076	0.0057	0.0095
Beryllium	0.011	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.0004
Bismuth	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	(0.2)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.012	<0.01	<0.01	<0.01	<0.1	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	0.012	<0.01
Cadmium	0.0002 (0.0001)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00009	<0.00009	<0.00009
Chromium (Total)	0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Cobalt	0.0009	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0013	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00091	<0.0005	--	<0.0005	<0.0005	<0.0005	<0.0005
Copper	0.005	0.003	0.004	0.004	0.004	0.002	0.005	0.0031	0.0051	0.0022	0.0046	0.0018	0.0093	0.0023	0.006	0.0032	0.0049	0.0015	0.0028	0.0014	0.0064	<0.001	0.003	<0.001	0.0049	0.0036	0.0051
Iron	0.3	0.17	0.25	0.15	0.74	0.27	0.13	0.28	0.22	0.34	0.26	0.16	2.8	0.2	0.39	0.24	0.34	0.21	0.42	0.49	1.2	0.2	0.43	<0.1	0.24	0.42	0.33
Lead	0.01 (0.003)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.005	0.0022	<0.0005	<0.0005	<0.0005	0.00056	<0.0005	0.00068	<0.0005	0.00078	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Manganese	--	0.013	0.023	0.011	0.026	0.012	0.01	0.016	0.0099	0.041	0.011	0.014	0.11	0.017	0.017	0.01	0.042	0.015	0.023	0.043	0.12	0.029	0.023	0.03	--	0.0018	0.015
Mercury	0.0002	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010
Molybdenum	(0.04)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Nickel	0.025	<0.001	<0.001	0.001	0.001	<0.001	0.001	<0.001	0.0013	<0.001	<0.001	<0.001	0.0045	0.0013	0.0015	<0.001	0.0019	<0.001	0.011	<0.001	0.0024	<0.001	0.0012	<0.001	0.0013	<0.001	0.0018
Phosphorus	(0.02)	0.045	0.023	0.017	0.037	0.032	0.024	0.022	0.032	0.033	0.019	0.016	0.074	0.022	0.025	0.13	0.022	0.014	0.021	0.027	0.061	0.023	0.021	0.013	0.022	0.024	0.025
Selenium	0.1	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<.0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Silicon	--	0.92	2.4	1.4	3.3	1.2	2.3	1.4	2.1	1.1	2.5	1.2	3.6	1.2	2.9	1.3	2.9	1.4	2.8	1.7	2.2	1.6	2.4	1.2	2.9	1.3	3
Silver	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00009	<0.00009	<0.00009
Strontium	--	0.034	0.048	0.055	0.044	0.031	0.057	0.04	0.052	0.027	0.055	0.022	0.042	0.032	0.052	0.04	0.049	0.029	0.043	0.029	0.056	0.022	0.039	0.023	0.046	0.003	0.05
Thallium	(0.0003)	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Tin	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--	--	--	--	--	--	<0.001	--	--	--
Titanium	--	<0.005	<0.005	<0.005	0.013	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.051	0.0055	<0.005	<0.005	<0.005	<0.005	--	--	--	--	--	--	--	--	--
Vanadium	(0.006)	<0.001	<0.001	<0.001	<0.001	<0.001	0.0005	0.00076	<0.0005	<0.0005	<0.0005	<0.0005	0.003	<0.0005	<0.0005	<0.00005	0.0009	<0.0005	0.00062	0.00096	0.0013	<0.0005	0.00083	<0.0005	0.00051	0.00063	0.001
Zinc	0.03 (0.02)	0.005	<0.005	<0.005	0.005	<0.005	<0.005	<0.005	<0.005	0.0052	<0.005	<0.005	0.014	0.0052	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.007	<0.005

NV - Denotes no value; handheld instrument was malfuntioning

Table 6
Mann-Kendall Groundwater Results Summary Table - 2006 to 2021
Geraldton Landfill - 2019 to 2021 Monitoring Report

Monitor	Number of Events	Number of Detects	Parameter	Mann-Kendall "S" Statistic	1-p value (decimal)	Coefficient of Variation	Trend*
MW1	31	31	TDS	13	0.5808	0.204	NT
MW1	31	31	Sodium	67	0.8690	0.977	NT
MW1	31	31	Chloride	68	0.8727	1.186	NT
MW1	31	31	Arsenic	99	0.9521	0.448	I
MW1	31	31	Iron	124	0.9817	0.630	I
MW1	31	31	Manganese	129	0.9852	0.311	I
MW1	30	26	Phosphorus	-4	0.5203	0.751	S
MW2	31	31	TDS	-179	0.9988	0.218	D
MW2	31	31	Sodium	-240	1.0000	0.473	D
MW2	31	31	Chloride	48	0.7879	0.389	NT
MW2	31	25	Arsenic	190	0.9993	0.560	I
MW2	31	13	Iron	273	1.0000	0.788	I
MW2	31	31	Manganese	-191	0.9994	0.228	D
MW2	30	19	Phosphorus	-136	0.9892	0.848	D
MW3A	31	31	TDS	-118	0.9766	0.105	D
MW3A	31	31	Sodium	245	1.0000	0.405	I
MW3A	31	31	Chloride	166	0.9975	0.500	I
MW3A	31	31	Arsenic	-44	0.7676	0.220	S
MW3A	31	31	Iron	62	0.8501	0.256	NT
MW3A	31	31	Manganese	-234	1.0000	0.091	D
MW3A	30	27	Phosphorus	-46	0.7779	0.936	S
MW3B	31	31	TDS	-176	0.9985	0.158	D
MW3B	31	31	Sodium	220	0.9999	0.243	I
MW3B	31	31	Chloride	64	0.8579	0.293	NT
MW3B	31	28	Arsenic	317	1.0000	0.587	I
MW3B	31	29	Iron	273	1.0000	0.664	I
MW3B	31	31	Manganese	63	0.8542	0.151	NT
MW3B	30	27	Phosphorus	-79	0.9076	1.718	PD
MW4	31	31	TDS	-50	0.7975	0.167	S
MW4	31	31	Sodium	214	0.9999	0.580	I
MW4	31	31	Chloride	151	0.9946	0.643	I
MW4	31	0	Arsenic	Insufficient Data			
MW4	31	1	Iron	Insufficient Data			
MW4	31	31	Manganese	-185	0.9991	0.542	D
MW4	30	28	Phosphorus	-63	0.8540	0.831	S

*Trend:
D = decreasing
PD = probably decreasing
I = increasing
PI = probably increasing
S = stable
NT = no trend
< 20% Detects = Insufficient Data

Table 6 (continued)
Mann-Kendall Groundwater Results Summary Table - 2006 to 2021
Geraldton Landfill - 2019 to 2021 Monitoring Report

Monitor	Number of Events	Number of Detects	Parameter	Mann-Kendall "S" Statistic	1-p value (decimal)	Coefficient of Variation	Trend*
MW5	28	28	TDS	-124	0.9925	0.234	D
MW5	28	28	Sodium	-90	0.9606	0.303	D
MW5	28	28	Chloride	-95	0.9683	0.445	D
MW5	28	26	Arsenic	-78	0.9359	0.403	PD
MW5	28	27	Iron	-39	0.7736	0.538	S
MW5	28	28	Manganese	-24	0.6752	0.208	S
MW5	28	25	Phosphorus	-154	0.9987	2.760	D
MW6	31	31	TDS	-305	1.0000	0.273	D
MW6	31	31	Sodium	-361	1.0000	0.927	D
MW6	31	31	Chloride	-271	1.0000	1.627	D
MW6	31	7	Arsenic	162	0.9969	1.001	I
MW6	31	2	Iron	Insufficient Data			
MW6	31	13	Manganese	205	0.9997	2.374	I
MW6	30	27	Phosphorus	-141	0.9913	0.920	D
MW7	26	26	TDS	-125	0.9969	0.128	D
MW7	26	26	Sodium	106	0.9897	0.311	I
MW7	26	26	Chloride	82	0.9630	0.422	I
MW7	26	26	Arsenic	-60	0.9034	0.185	PD
MW7	26	26	Iron	-28	0.7242	0.158	S
MW7	26	26	Manganese	-165	0.9999	0.155	D
MW7	26	26	Phosphorus	-203	1.0000	1.746	D
MW8	30	30	TDS	213	0.9998	0.286	I
MW8	31	31	Sodium	254	1.0000	0.290	I
MW8	31	31	Chloride	276	1.0000	0.348	I
MW8	31	1	Arsenic	Insufficient Data			
MW8	31	0	Iron	Insufficient Data			
MW8	31	12	Manganese	-141	0.9914	1.689	D
MW8	30	26	Phosphorus	14	0.5874	1.635	NT
MW9	30	30	TDS	66	0.8654	0.282	NT
MW9	31	31	Sodium	191	0.9994	0.254	I
MW9	31	31	Chloride	110	0.9681	0.442	I
MW9	31	0	Arsenic	Insufficient Data			
MW9	31	1	Iron	Insufficient Data			
MW9	31	14	Manganese	-74	0.8931	2.442	NT
MW9	30	25	Phosphorus	-6	0.5339	3.124	NT

*Trend:
D = decreasing
PD = probably decreasing
I = increasing
PI = probably increasing
S = stable
NT = no trend
< 20% Detects = Insufficient Data

Table 6 (continued)
Mann-Kendall Groundwater Results Summary Table - 2006 to 2021
Geraldton Landfill - 2019 to 2021 Monitoring Report

Monitor	Number of Events	Number of Detects	Parameter	Mann-Kendall "S" Statistic	1-p value (decimal)	Coefficient of Variation	Trend*
MW10A	30	30	TDS	-39	0.7408	0.111	S
MW10A	31	31	Sodium	286	1.0000	0.271	I
MW10A	31	31	Chloride	318	1.0000	0.322	I
MW10A	31	31	Arsenic	221	0.9999	0.380	I
MW10A	31	30	Iron	202	0.9997	1.636	I
MW10A	31	31	Manganese	-34	0.7128	0.155	S
MW10A	30	26	Phosphorus	-57	0.8295	0.992	S
MW10B	31	31	TDS	67	0.8690	0.147	NT
MW10B	31	31	Sodium	299	1.0000	0.521	I
MW10B	31	31	Chloride	319	1.0000	0.225	I
MW10B	31	31	Arsenic	204	0.9997	0.403	I
MW10B	31	30	Iron	114	0.9726	0.576	I
MW10B	31	31	Manganese	-21	0.6331	0.275	S
MW10B	29	25	Phosphorus	-62	0.8501	1.633	NT
MW11	24	24	TDS	-110	0.9945	0.131	D
MW11	25	25	Sodium	-23	0.6963	0.138	S
MW11	25	10	Chloride	33	0.7730	0.657	NT
MW11	25	15	Arsenic	-174	1.0000	0.831	D
MW11	25	12	Iron	-55	0.8967	0.851	S
MW11	25	25	Manganese	-102	0.9909	0.394	D
MW11	25	25	Phosphorus	-83	0.9723	0.680	D

*Trend:
D = decreasing
PD = probably decreasing
I = increasing
PI = probably increasing
S = stable
NT = no trend
< 20% Detects = Insufficient Data

Table 7
Mann-Kendall Surface Water Results Summary Table - 2006 to 2021
Geraldton Landfill - 2019 to 2021 Monitoring Report

Monitor	Number of Events	Number of Detects	Parameter	Mann-Kendall "S" Statistic	1-p value (decimal)	Coefficient of Variation	Trend*
SW1	31	31	Total Arsenic	-78	0.9047	0.568	PD
SW1	31	30	Total Iron	11	0.5675	1.235	NT
SW1	31	31	Total Phosphorus	-164	0.9972	0.817	D
SW2	31	31	Total Arsenic	-51	0.8023	0.572	S
SW2	31	31	Total Iron	78	0.9047	1.171	PI
SW2	31	31	Total Phosphorus	-94	0.9430	0.737	PD
SW3	27	27	Total Arsenic	-41	0.7978	0.537	S
SW3	27	26	Total Iron	73	0.9333	1.279	PI
SW3	27	27	Total Phosphorus	-68	0.9187	0.838	PD

*Trend:
D = decreasing
PD = probably decreasing
I = increasing
PI = probably increasing
S = stable
NT = no trend
< 20% Detects = Insufficient Data

THB-00006189-RE Geraldton Landfill

Table 8 - 2021 Trigger Concentrations (mg/L)

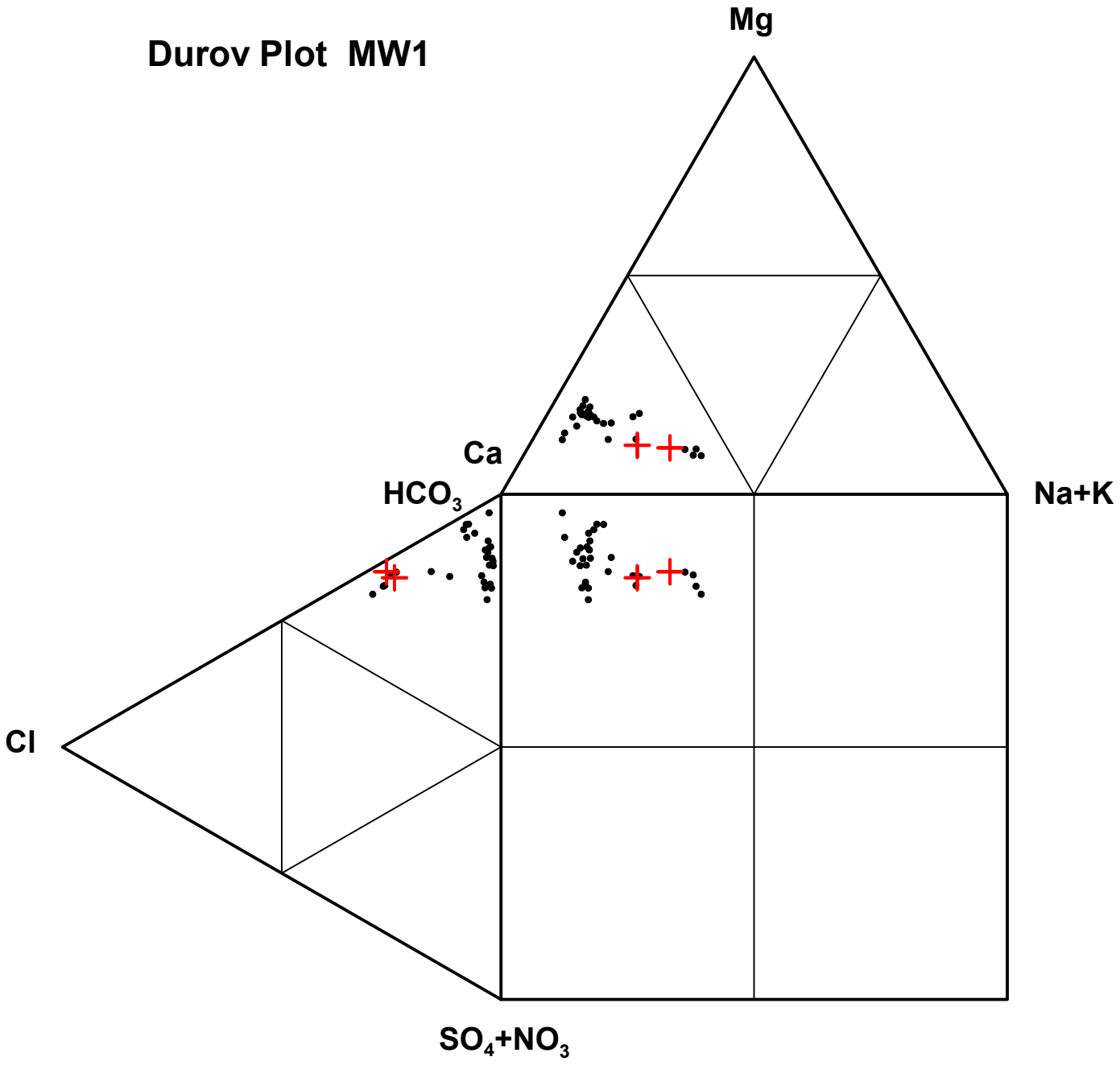
PARAMETER	PROVINCIAL WATER QUALITY OBJECTIVE	AQUATIC PROTECTION VALUE	ONTARIO DRINKING WATER STANDARD	SOURCE CONCENTRATION[1] (MW1, MW2, MW3A, MW3B, MW4 OR MW5)	BACKGROUND CONCENTRATION (MW6)[2]	2021 B-7	CALCULATED MW7 TRIGGER CONCENTRATION	MW7 MEASURED AVERAGE CONCENTRATION - 2021++	WEST ATTENUATION ZONE BOUNDARY MEASURED CONCENTRATION (MW11)[3]	SOUTHWEST ATTENUATION ZONE BOUNDARY MEASURED CONCENTRATION (MW10A or MW10B average)[3]
TDS			500	1,010 (MW1)	250	375	820	468	258	765 (>B-7)
Hardness			100	670 (MW1)	275	**275****	552	375	235	255
DOC			5	11 (MW1)	2.5	3.8	8.84	4.1	1.5	17 (>source & >B-7)+
Sodium		180	200	110 (MW1)	3.9	102	107.6	16.5	6	245 (>source & >B-7)+
Chloride		180	250	160 (MW1)	2	126	149.8	18.5	1.35	250 (>source & >B-7)+
Nitrate			10*	0.85 (MW2)	0.10	2.5	n/a	<0.1	<0.1	<0.1
Nitrite			1*	0.028 (MW1)	0.005	0.25	n/a	<0.01	<0.01	<0.01
Organic Nitrogen			0.15	1.1 (MW3A)	0.23	**0.23****	0.84	0.18	0.365	0.435 (>B-7)
Sulphate			500	79 (MW5)	12	256	n/a	20	<1	<1.0
Alkalinity			500	620 (MW1)	275	388	550.4	420	255	400 (>B-7)
Aluminum	(0.075)[4]		0.1	0.013 (MW3A)	0.0025	0.05	n/a	0.0253 (> source)+	0.019 (>source)+	0.225 (>source & >B-7)+
Antimony	(0.02)	1.6	0.006*	<0.0005 (all)	0.00025	0.0031	n/a	<0.0005	<0.0005	<0.0005
Arsenic	0.1 (0.005)	0.15	0.025*	0.028 (MW1)	0.0025	0.0081	0.022	**0.0385 (> source)+**	<0.001	0.02 (>B-7)+
Barium		2.3	1*	0.19 (MW1)	0.017	0.26	n/a	0.145	0.028	0.0275
Boron	(0.2)	3.55	5*	0.94 (MW5)	0.016	1.3	n/a	0.21	0.0165	0.0165
Cadmium	0.0002 (0.0001)	0.00021	0.005*	<0.00009 (all)	0.00012	0.0013	n/a	<0.00009	<0.00009	<0.00009
Chromium	0.001	0.064	0.05*	<0.005 (all)	0.0025	0.014	n/a	<0.005	<0.005	<0.005
Copper	0.005	0.0069	1	0.0077 (MW3B)	0.003	0.25	n/a	0.001425	0.00295	0.0029
Iron	0.3		0.3	32 (MW1)	0.31	**0.31****	22.5	16.0	0.09	1.85 (>B-7)
Lead	0.01 (0.003)	0.002	0.01*	<0.0005 (all)	0.00025	0.005	n/a	<0.0005	<0.0005	0.000485
Manganese			0.05	2.7 (MW1)	0.282	**0.282****	1.97	1.3	0.15	0.0815
Mercury	0.0002	0.00077	0.001*	<0.0001 (all)	0.00005	0.0003	n/a	<0.0001	<0.0001	<0.0001
Phenols	0.001	0.961		0.0014 (MW1)	0.00050			<0.001	<0.001	<0.001
Phosphorus	0.02			0.33 (MW4)	0.057			0.0710	1.76 (>source)+	0.0775
Selenium	0.1	0.005	0.01*	<0.002 (all)	0.001	0.0033	n/a	<0.002	<0.002	<0.002
Zinc	0.03 (0.02)	0.089	5	<0.005 (all)	0.004	2.5	n/a	0.00675 (> source)+	<0.005	<0.005
Approx. Distance from Source (Waste Footprint) to Trigger Point Well (m)							120			
Approx. Distance from Source to Downgradient Attenuation Zone Boundary (m)							400			

Notes:
1 - Source concentration based on highest concentration measured in indicated wells in 2021.
2 - Background concentration based on arithmetic mean of most recent two year results for MW6.
3 - Attenuation zone boundary concentrations based on the arithmetic mean of the two sampling events for MW11 in 2021, and the higher of the arithmetic mean of the two sampling events for MW10A and MW10B in 2021.
4 - Bracketed PWQO values represent interim criteria.
5 - n/a - not applicable (source concentration lower than or equal to B-7 criterion).
* - Indicates health-based standard.
** - Background exceeds ODWS; B-7 criterion defaults to background.
+ Value exceeds source concentration; therefore, additional source implicated.
++ **Bolded** MW7 concentrations exceed trigger.
Non-detectable concentrations are assumed equal to 1/2 the detection limit (when required for calculations).

APPENDIX H-

Durov Plots

Durov Plot MW1



Legend
- Historical Data Point
- 2021 Data

Drawing to be read in conjunction with accompanying report.

exp.

Thunder Bay, Ontario

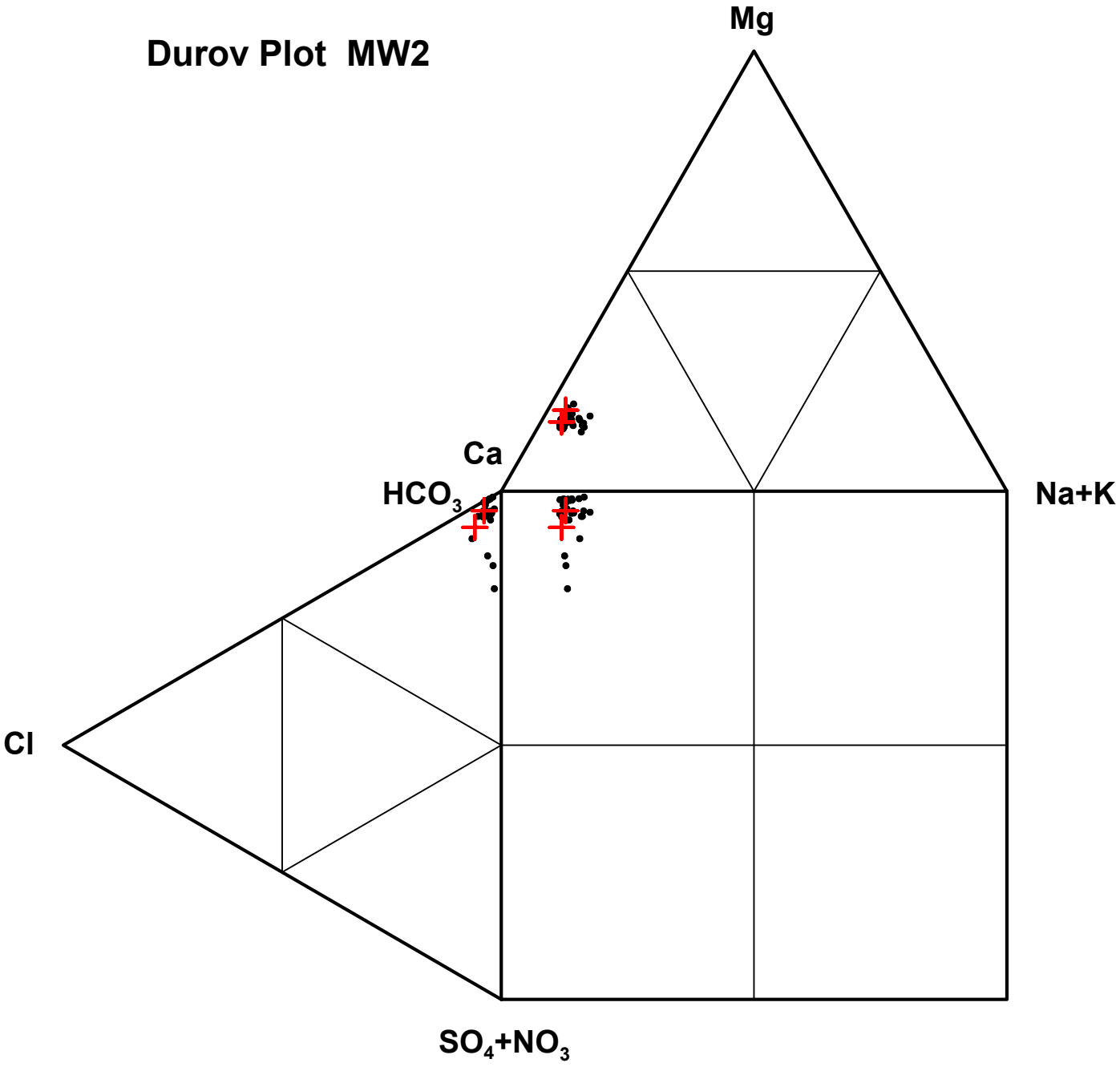
Figure H-1

Monitoring Well MW1

2019, 2020 & 2021 Monitoring Report
Geraldton Landfill
Municipality of Greenstone

REF. NO.:	THB-00006189-RE
SCALE:	N/A
DRAWN BY:	SW
CHECKED BY:	AM
DATE:	February 2, 2022

Durov Plot MW2



Legend

- Historical Data Point
- 2021 Data

Drawing to be read in conjunction with accompanying report.

exp.

Thunder Bay, Ontario

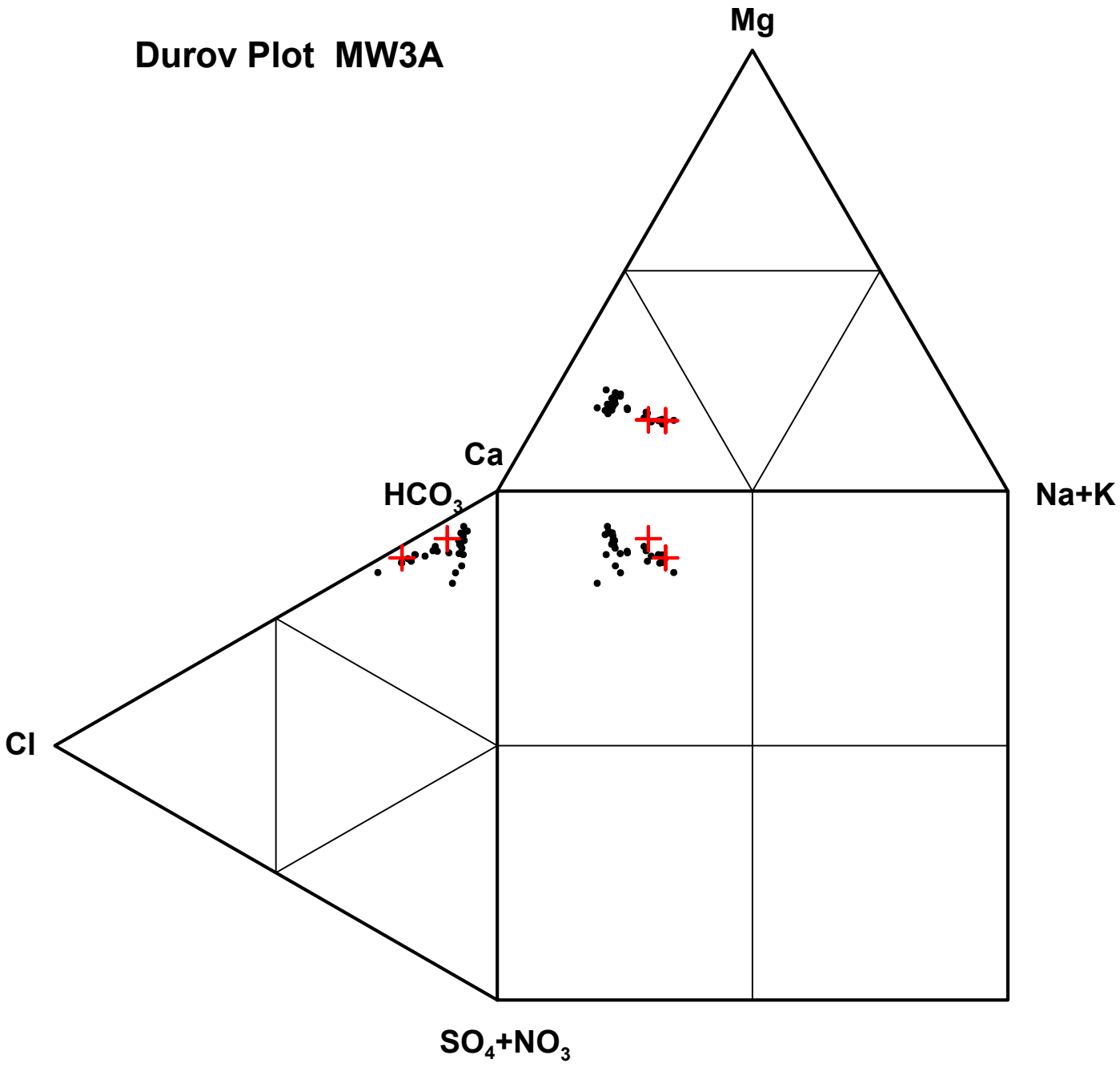
Figure H-2

Monitoring Well MW2

2019, 2020 & 2021 Monitoring Report
Geraldton Landfill
Municipality of Greenstone

REF. NO.:	THB-00006189-RE
SCALE:	N/A
DRAWN BY:	SW
CHECKED BY:	AM
DATE:	February 2, 2022

Durov Plot MW3A



Legend

- Historical Data Point
- 2021 Data

Drawing to be read in conjunction with accompanying report.

Thunder Bay, Ontario

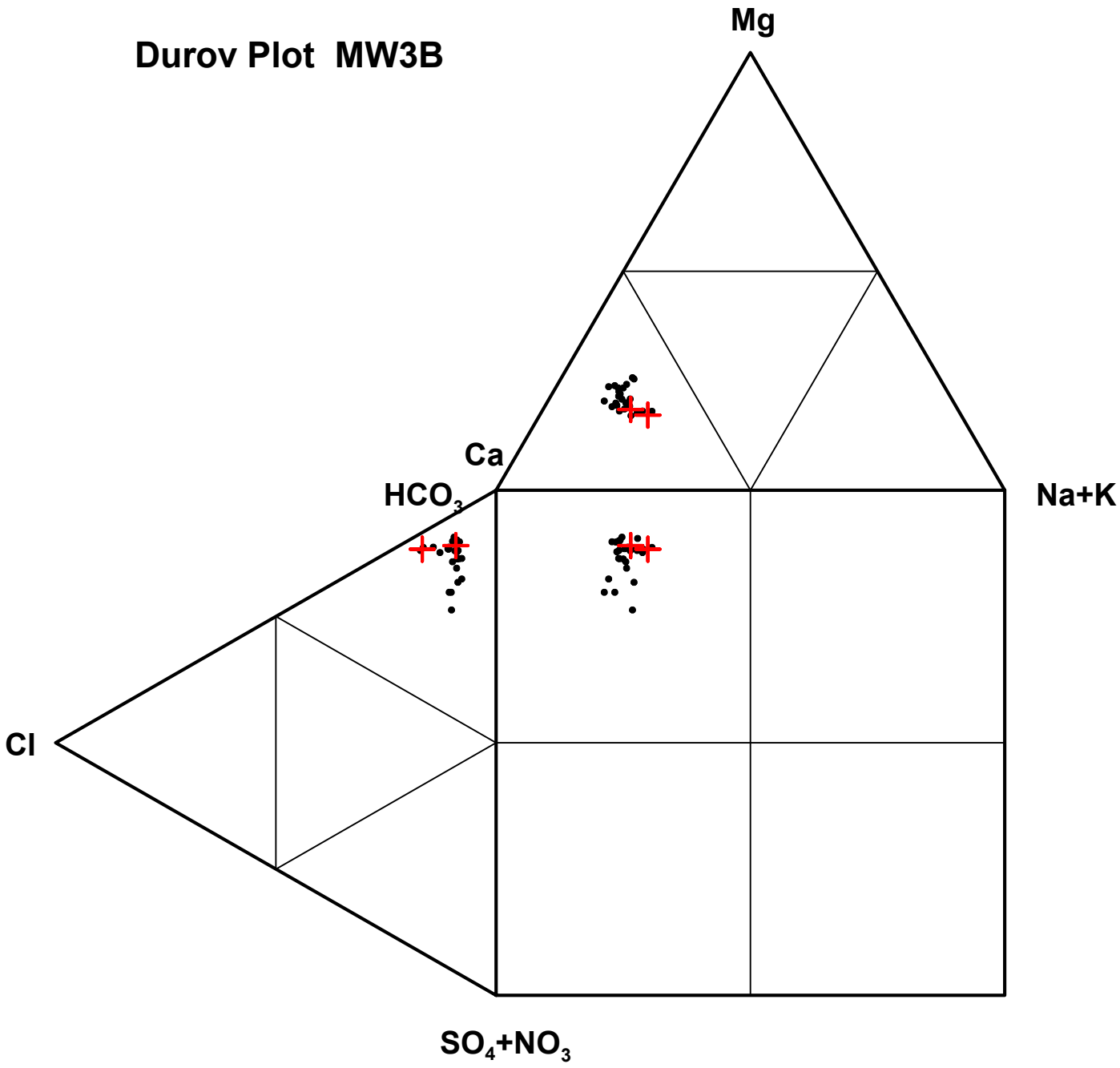
Figure H-3

Monitoring Well MW3A

2019, 2020 & 2021 Monitoring Report
Geraldton Landfill
Municipality of Greenstone

REF. NO.:	THB-00006189-RE
SCALE:	N/A
DRAWN BY:	SW
CHECKED BY:	AM
DATE:	February 2, 2022

Durov Plot MW3B



Legend

- Historical Data Point
- 2021 Data

Drawing to be read in conjunction with accompanying report.

exp.

Thunder Bay, Ontario

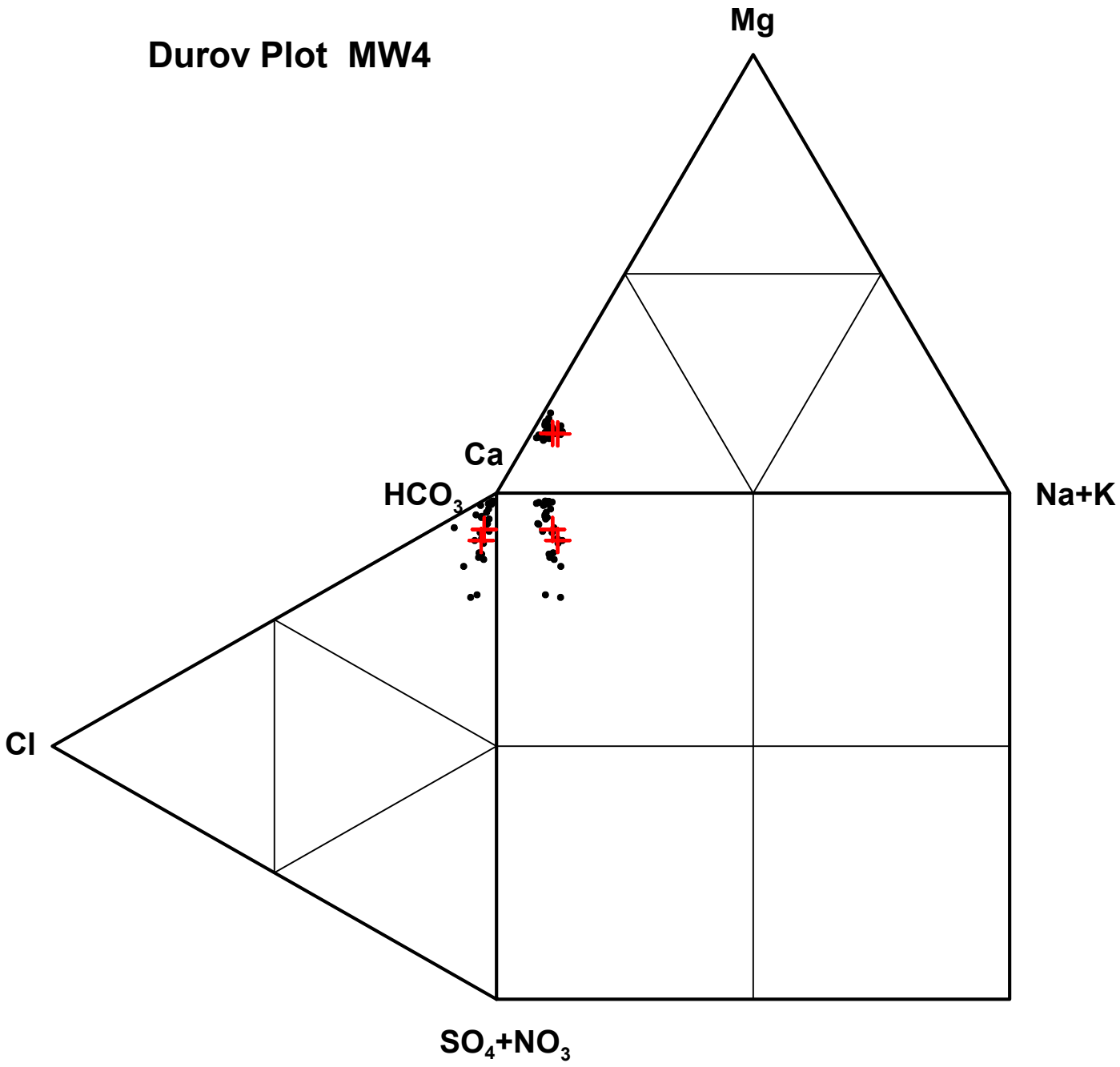
Figure H-4

Monitoring Well MW3B

2019, 2020 & 2021 Monitoring Report
Geraldton Landfill
Municipality of Greenstone

REF. NO.:	THB-00006189-RE
SCALE:	N/A
DRAWN BY:	SW
CHECKED BY:	AM
DATE:	February 2, 2022

Durov Plot MW4



Legend

- Historical Data Point
- 2021 Data

Drawing to be read in conjunction with accompanying report.

exp.

Thunder Bay, Ontario

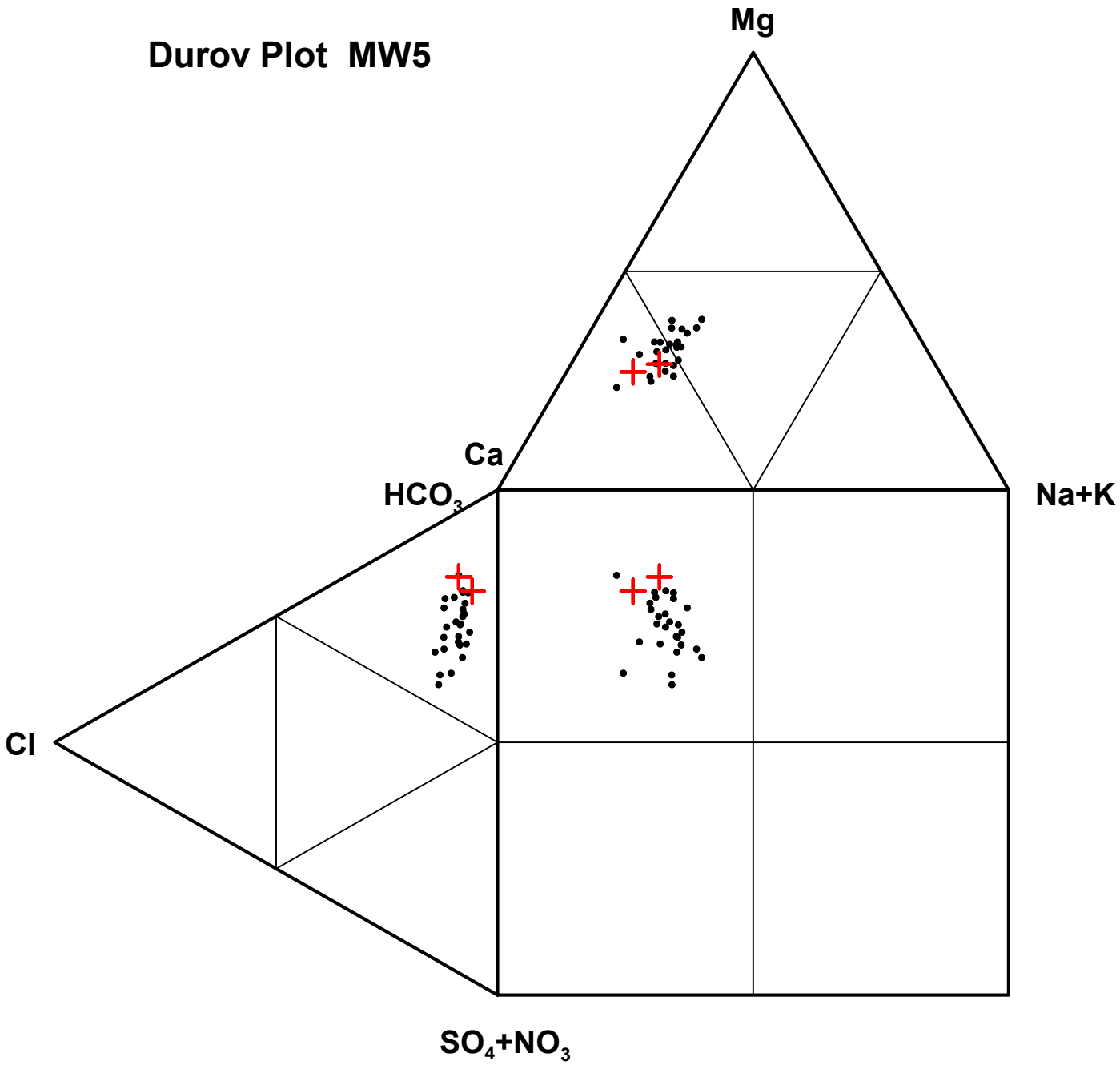
Figure H-5

Monitoring Well MW4

2019, 2020 & 2021 Monitoring Report
Geraldton Landfill
Municipality of Greenstone

REF. NO.:	THB-00006189-RE
SCALE:	N/A
DRAWN BY:	SW
CHECKED BY:	AM
DATE:	February 2, 2022

Durov Plot MW5



Legend

- Historical Data Point
- 2021 Data

Drawing to be read in conjunction with accompanying report.

exp.

Thunder Bay, Ontario

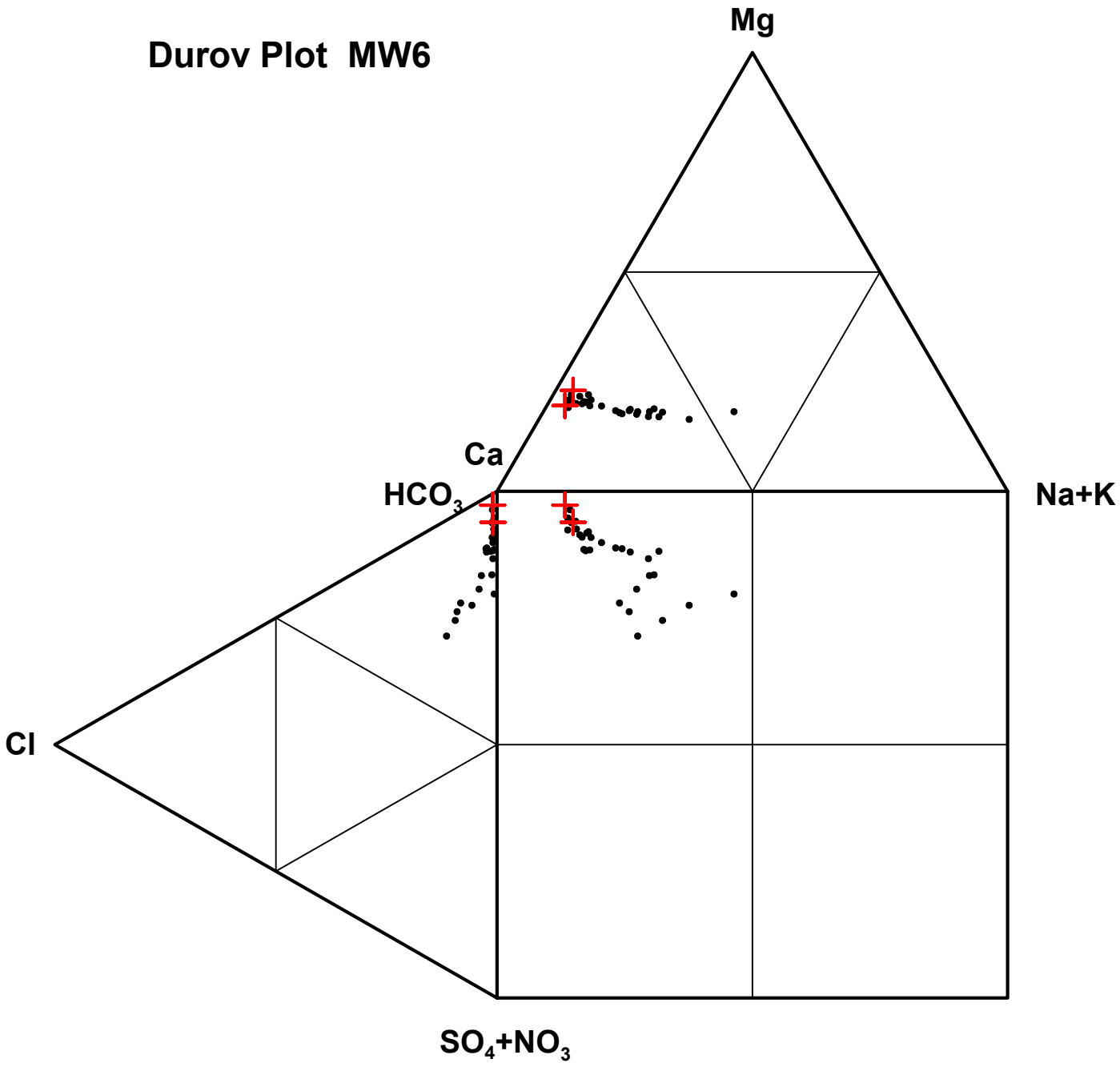
Figure H-6

Monitoring Well MW5

2019, 2020 & 2021 Monitoring Report
Geraldton Landfill
Municipality of Greenstone

REF. NO.:	THB-00006189-RE
SCALE:	N/A
DRAWN BY:	SW
CHECKED BY:	AM
DATE:	February 2, 2022

Durov Plot MW6



Legend

- Historical Data Point
- 2021 Data

Drawing to be read in conjunction with accompanying report.

exp.

Thunder Bay, Ontario

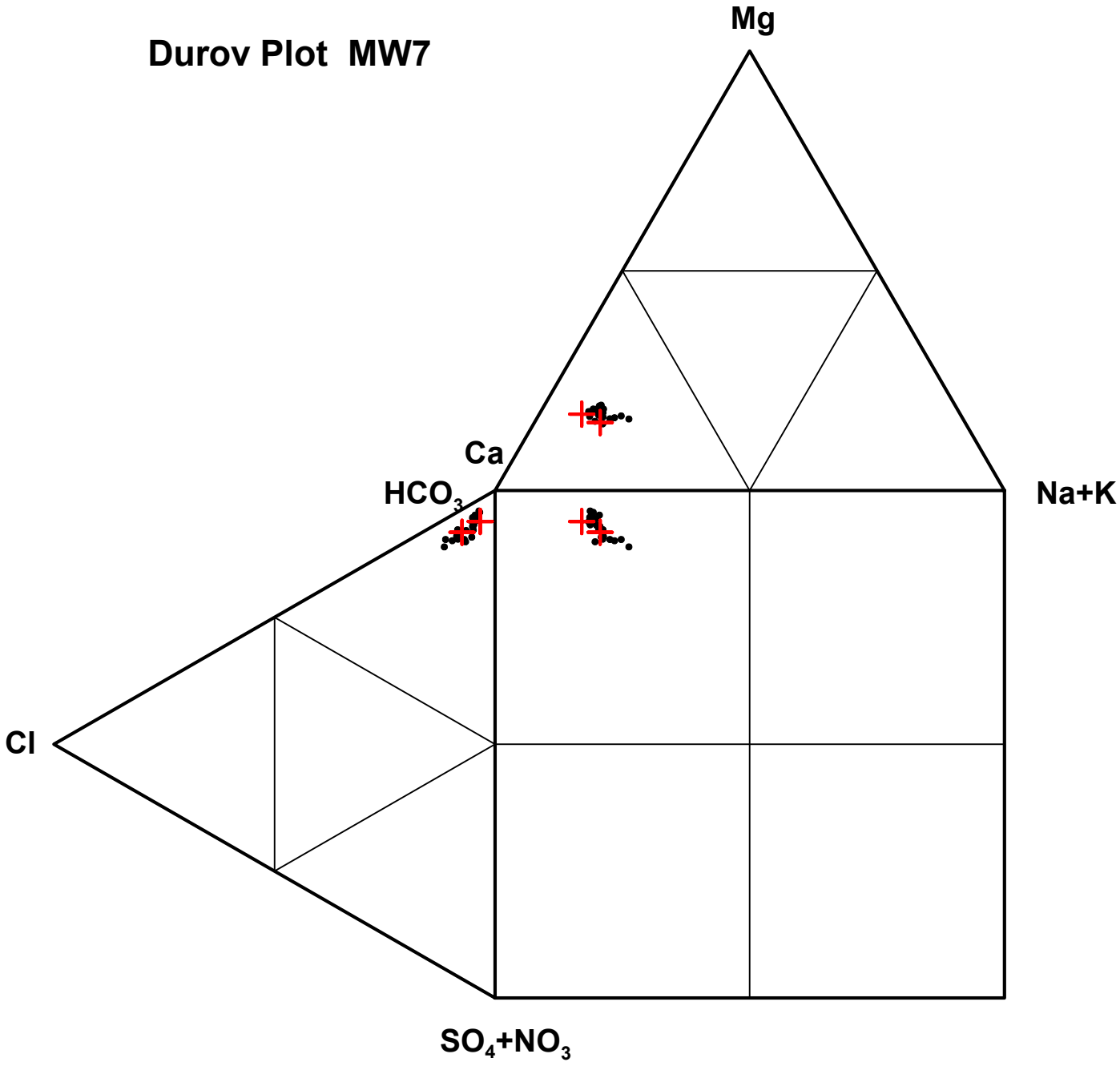
Figure H-7

Monitoring Well MW6

2019, 2020 & 2021 Monitoring Report
Geraldton Landfill
Municipality of Greenstone

REF. NO.:	THB-00006189-RE
SCALE:	N/A
DRAWN BY:	SW
CHECKED BY:	AM
DATE:	February 2, 2022

Durov Plot MW7



Legend

- Historical Data Point
+ 2021 Data

Drawing to be read in conjunction with accompanying report.

exp.

Thunder Bay, Ontario

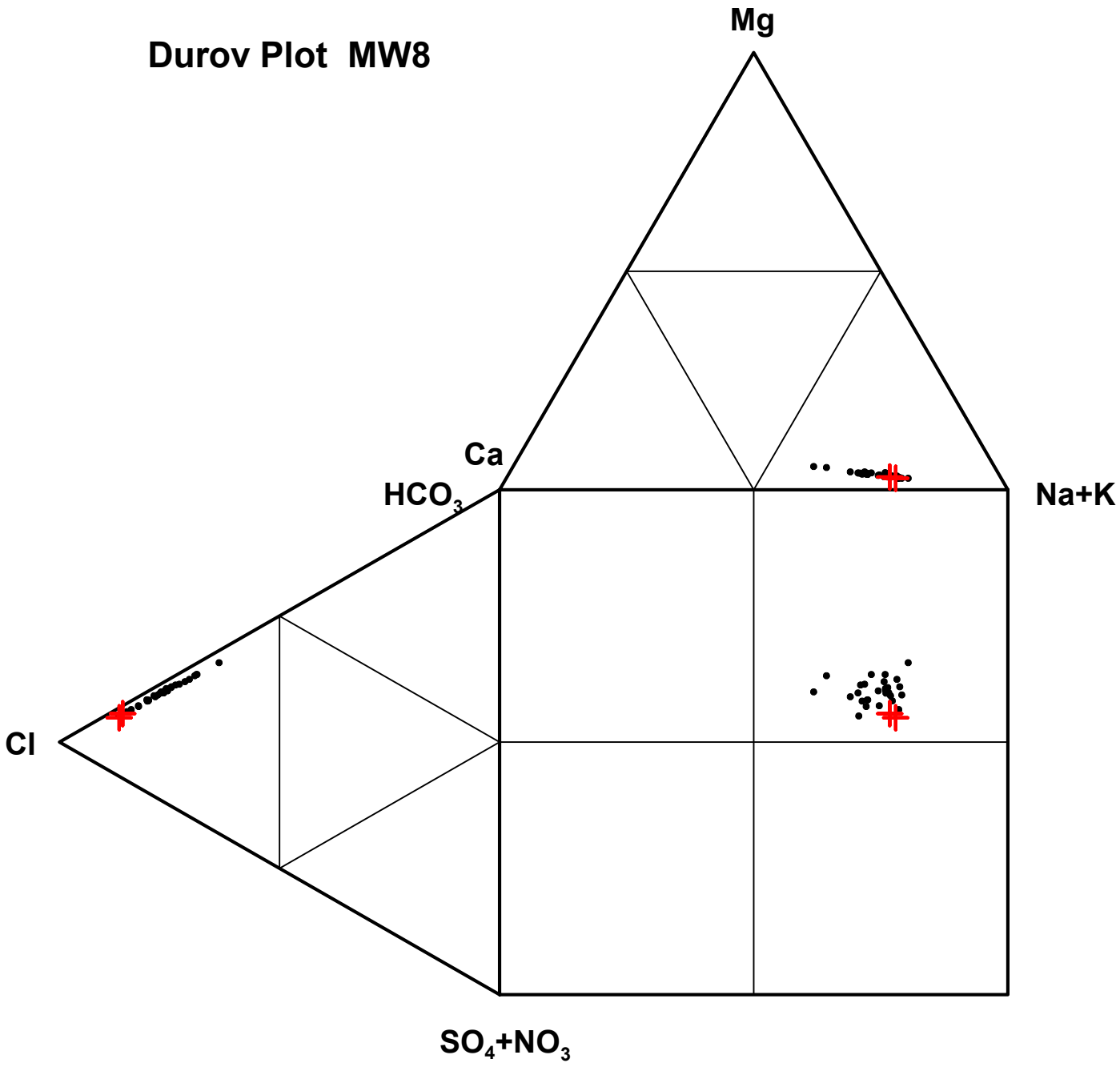
Figure H-8

Monitoring Well MW7

2019, 2020 & 2021 Monitoring Report
Geraldton Landfill
Municipality of Greenstone

REF. NO.:	THB-00006189-RE
SCALE:	N/A
DRAWN BY:	SW
CHECKED BY:	AM
DATE:	February 2, 2022

Durov Plot MW8



Legend

- Historical Data Point
- 2021 Data

Drawing to be read in conjunction with accompanying report.

exp.

Thunder Bay, Ontario

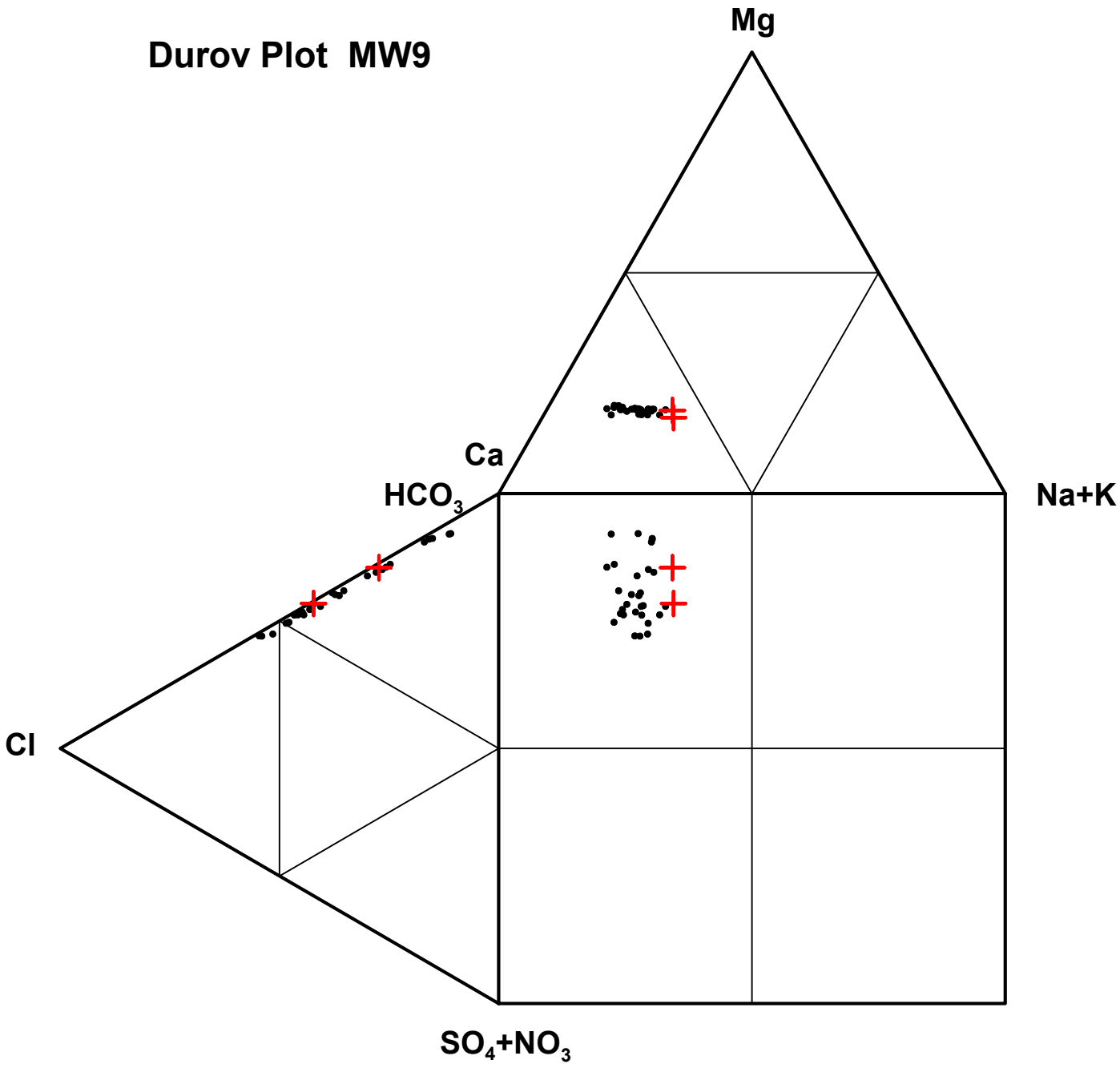
Figure H-9

Monitoring Well MW8

2019, 2020 & 2021 Monitoring Report
Geraldton Landfill
Municipality of Greenstone

REF. NO.:	THB-00006189-RE
SCALE:	N/A
DRAWN BY:	SW
CHECKED BY:	AM
DATE:	February 2, 2022

Durov Plot MW9



Legend
- Historical Data Point
- 2021 Data

Drawing to be read in conjunction with accompanying report.

exp.

Thunder Bay, Ontario

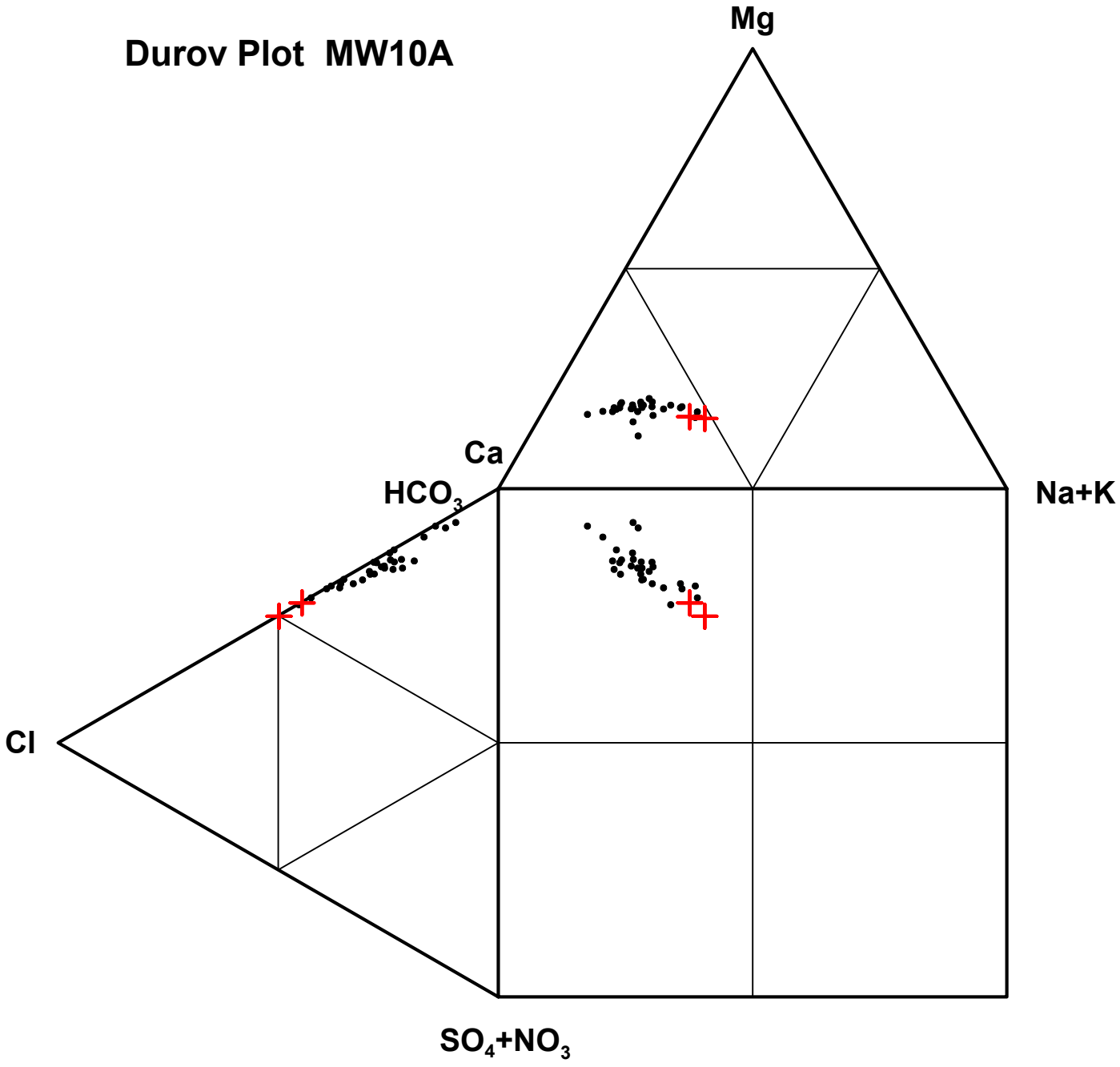
Figure H-10

Monitoring Well MW9

2019, 2020 & 2021 Monitoring Report
Geraldton Landfill
Municipality of Greenstone

REF. NO.:	THB-00006189-RE
SCALE:	N/A
DRAWN BY:	SW
CHECKED BY:	AM
DATE:	February 2, 2022

Durov Plot MW10A



Legend

- Historical Data Point
- 2021 Data

Drawing to be read in conjunction with accompanying report.

exp.

Thunder Bay, Ontario

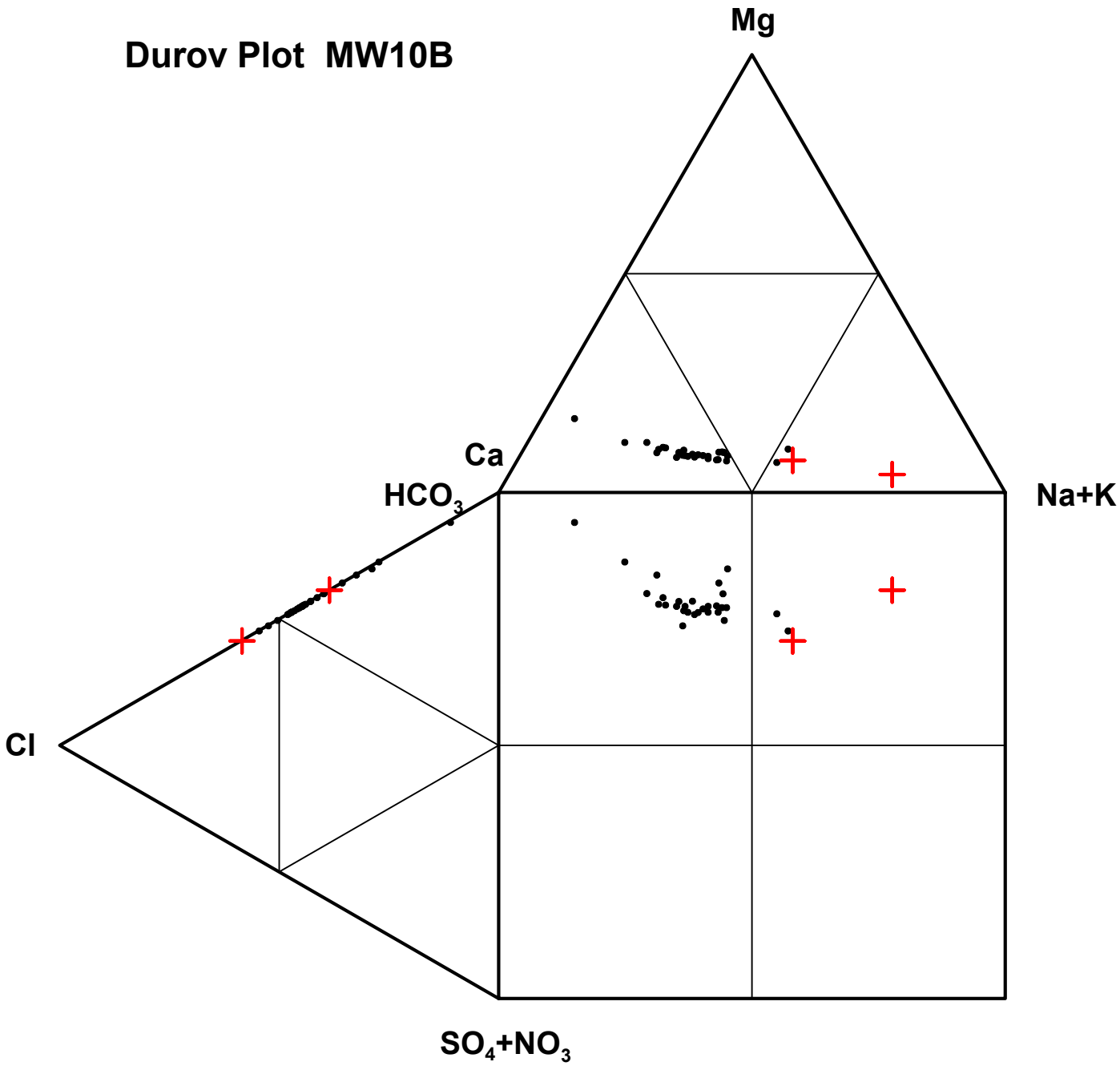
Figure H-11

Monitoring Well MW10A

2019, 2020 & 2021 Monitoring Report
Geraldton Landfill
Municipality of Greenstone

REF. NO.:	THB-00006189-RE
SCALE:	N/A
DRAWN BY:	SW
CHECKED BY:	AM
DATE:	February 2, 2022

Durov Plot MW10B



Legend

- Historical Data Point
- 2021 Data

Drawing to be read in conjunction with accompanying report.

exp.

Thunder Bay, Ontario

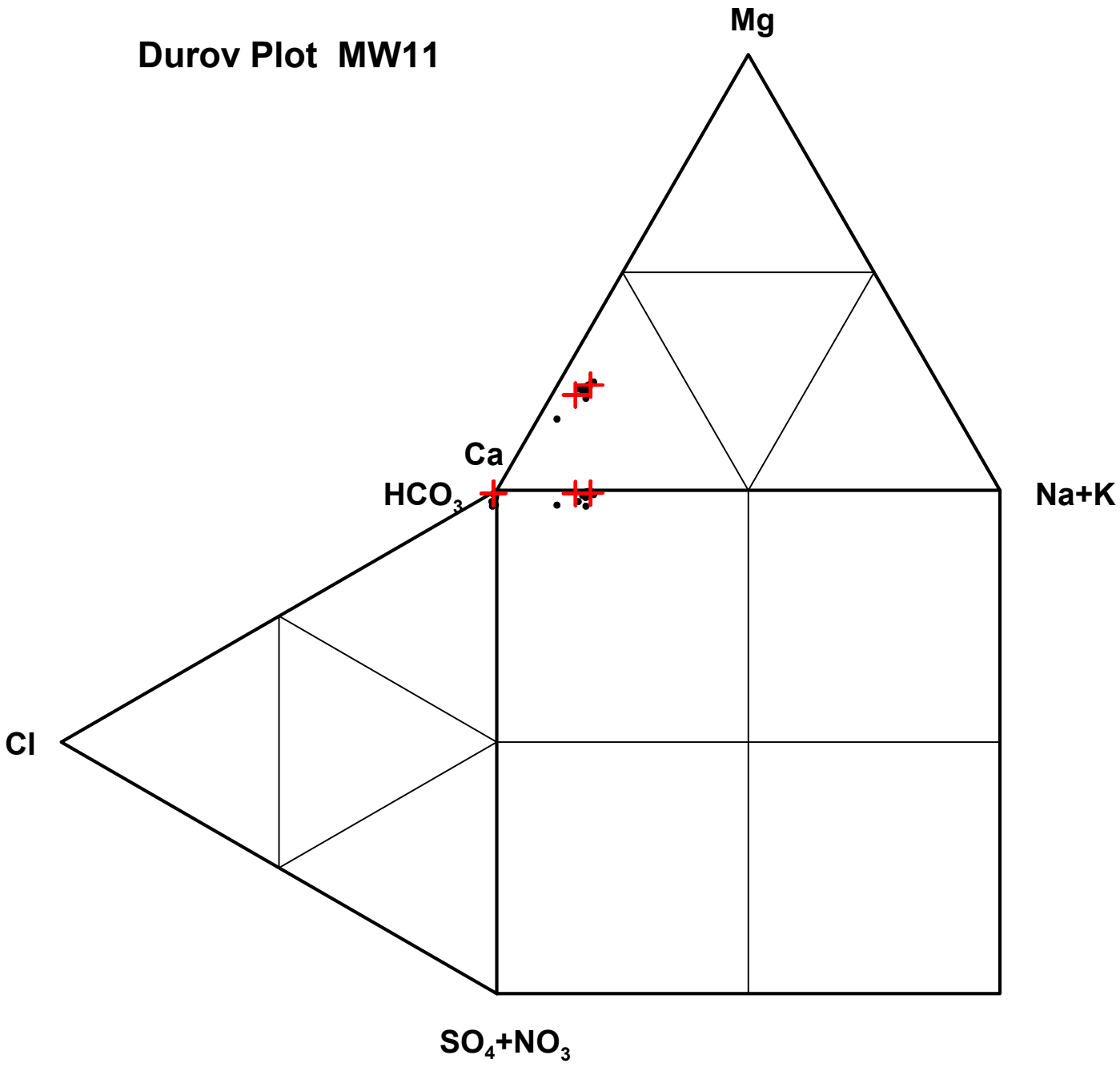
Figure H-12

Monitoring Well MW10B

2019, 2020 & 2021 Monitoring Report
Geraldton Landfill
Municipality of Greenstone

REF. NO.:	THB-00006189-RE
SCALE:	N/A
DRAWN BY:	SW
CHECKED BY:	AM
DATE:	February 2, 2022

Durov Plot MW11



Legend

- Historical Data Point
- 2021 Data

Drawing to be read in conjunction with accompanying report.

exp.

Thunder Bay, Ontario

Figure H-13

Monitoring Well MW11

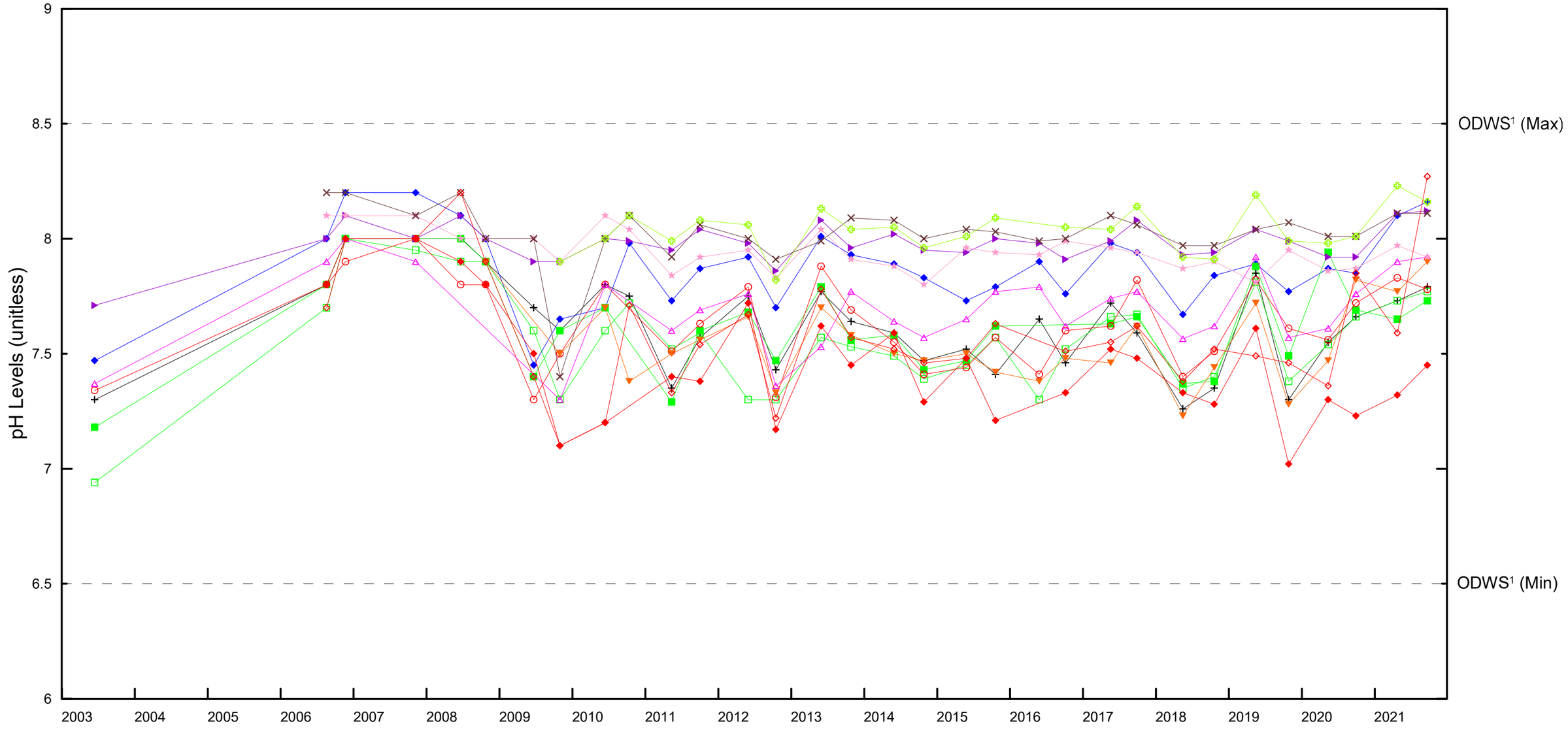
2019, 2020 & 2021 Monitoring Report
Geraldton Landfill
Municipality of Greenstone

REF. NO.:	THB-00006189-RE
SCALE:	N/A
DRAWN BY:	SW
CHECKED BY:	AM
DATE:	February 2, 2022

APPENDIX I-

Time Series Graphs - Groundwater

pH



Note:
1) ODWS: Ontario Drinking Water Standard (MOE, Rev Jan 2001).
2) Drawing to be read in conjunction with accompanying report.

exp.

Thunder Bay, Ontario

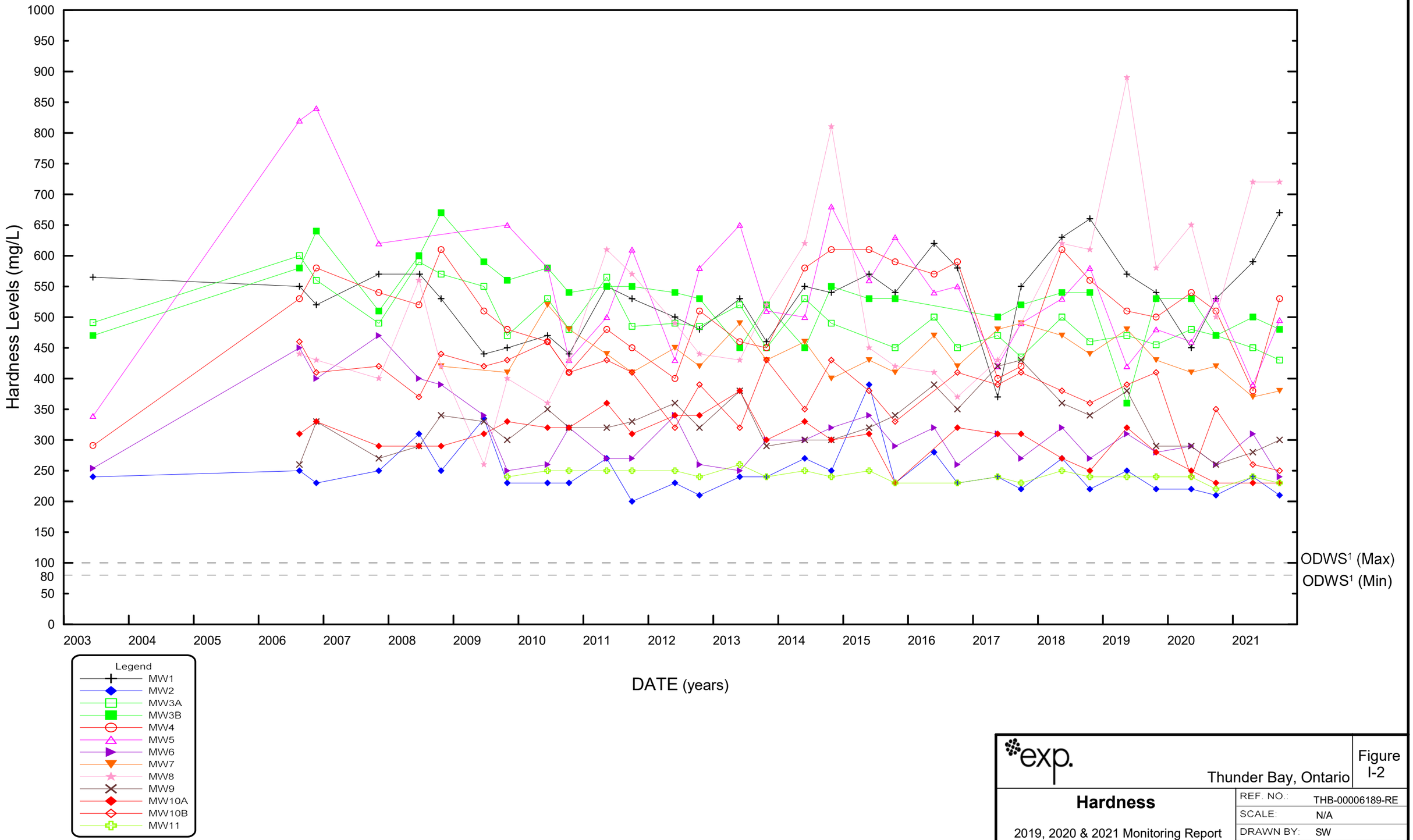
Figure I-1

pH

2019, 2020 & 2021 Monitoring Report
Geraldton Landfill
Municipality of Greenstone

REF. NO.:	THB-00006189-RE
SCALE:	N/A
DRAWN BY:	SW
CHECKED BY:	AM
DATE:	February 2, 2022

Hardness



Note:
1) ODWS: Ontario Drinking Water Standard (MOE, Rev Jan 2001).
2) Drawing to be read in conjunction with accompanying report.

exp. Thunder Bay, Ontario

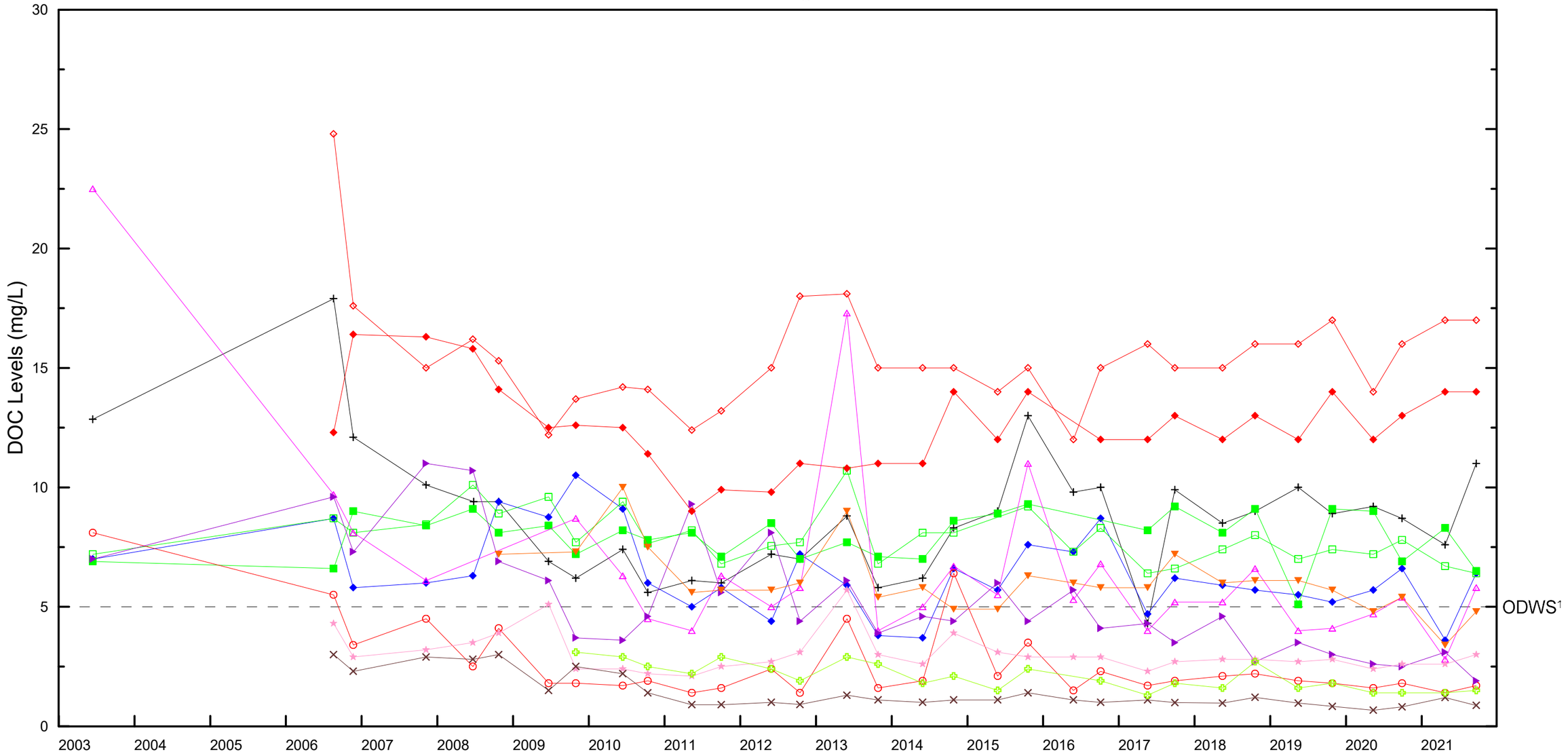
Figure I-2

Hardness

2019, 2020 & 2021 Monitoring Report
Geraldton Landfill
Municipality of Greenstone

REF. NO.:	THB-00006189-RE
SCALE:	N/A
DRAWN BY:	SW
CHECKED BY:	AM
DATE:	February 2, 2022

Dissolved Organic Carbon



Note:
1) ODWS: Ontario Drinking Water Standard (MOE, Rev Jan 2001).
2) Drawing to be read in conjunction with accompanying report.

exp. Thunder Bay, Ontario

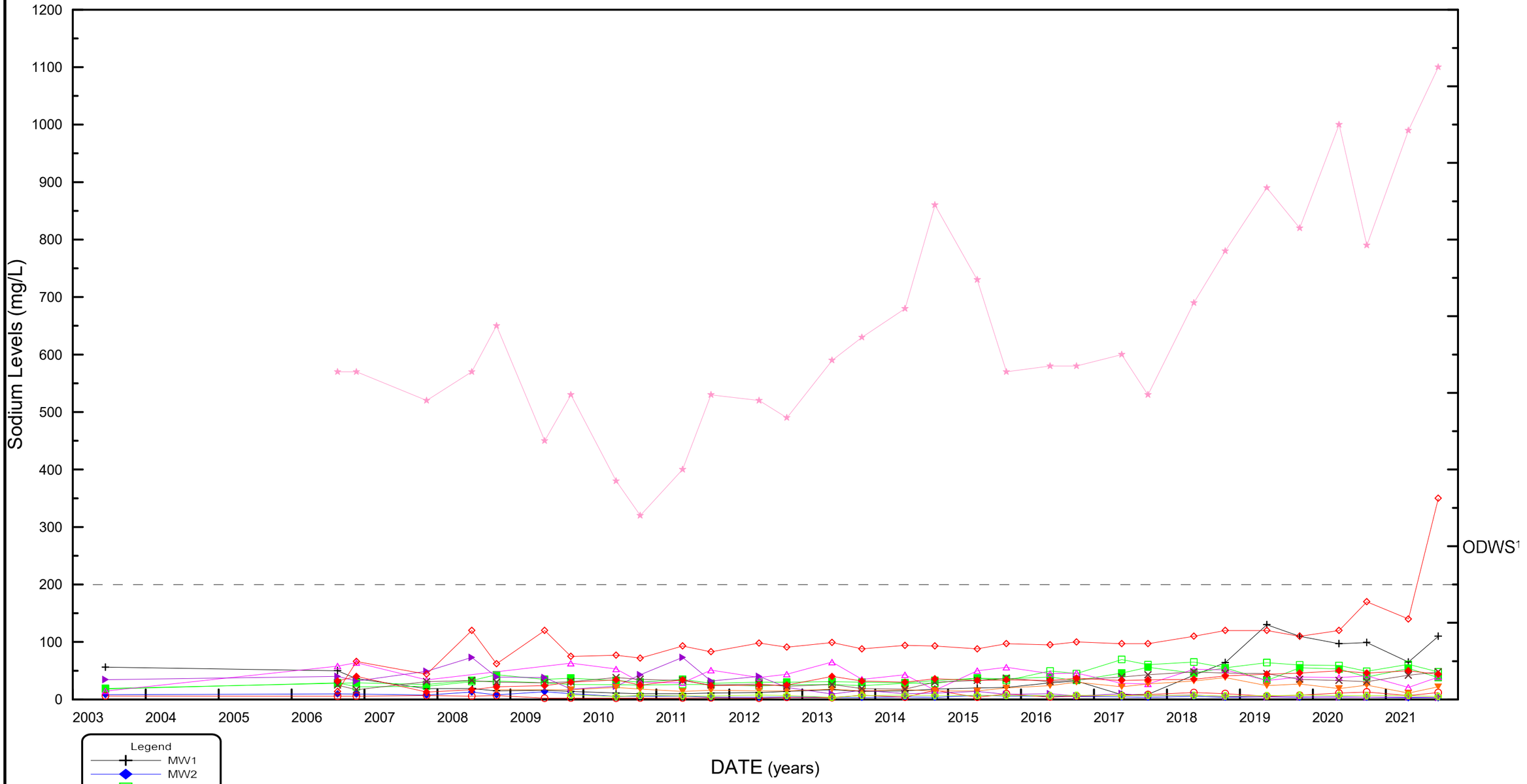
Figure I-3

DOC

2019, 2020 & 2021 Monitoring Report
Geraldton Landfill
Municipality of Greenstone

REF. NO.:	THB-00006189-RE
SCALE:	N/A
DRAWN BY:	SW
CHECKED BY:	AM
DATE:	February 2, 2022

Sodium



Note:
1) ODWS: Ontario Drinking Water Standard (MOE, Rev Jan 2001).
2) Drawing to be read in conjunction with accompanying report.

exp.

Thunder Bay, Ontario

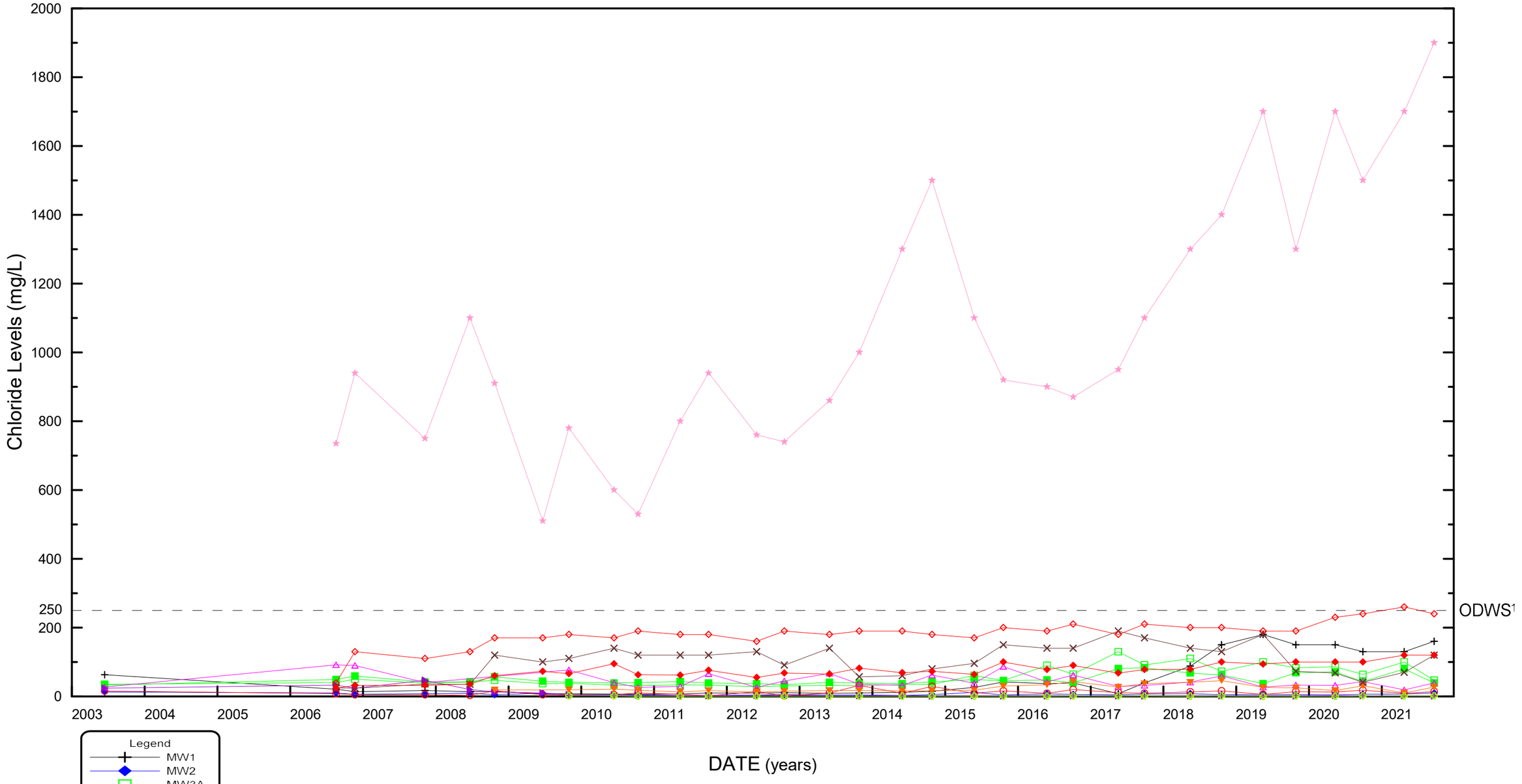
Figure I-4

Sodium

2019, 2020 & 2021 Monitoring Report
Geraldton Landfill
Municipality of Greenstone

REF. NO.:	THB-00006189-RE
SCALE:	N/A
DRAWN BY:	SW
CHECKED BY:	AM
DATE:	February 2, 2022

Chloride



Note:
1) ODWS: Ontario Drinking Water Standard (MOE, Rev Jan 2001).
2) Drawing to be read in conjunction with accompanying report.

exp. Thunder Bay, Ontario

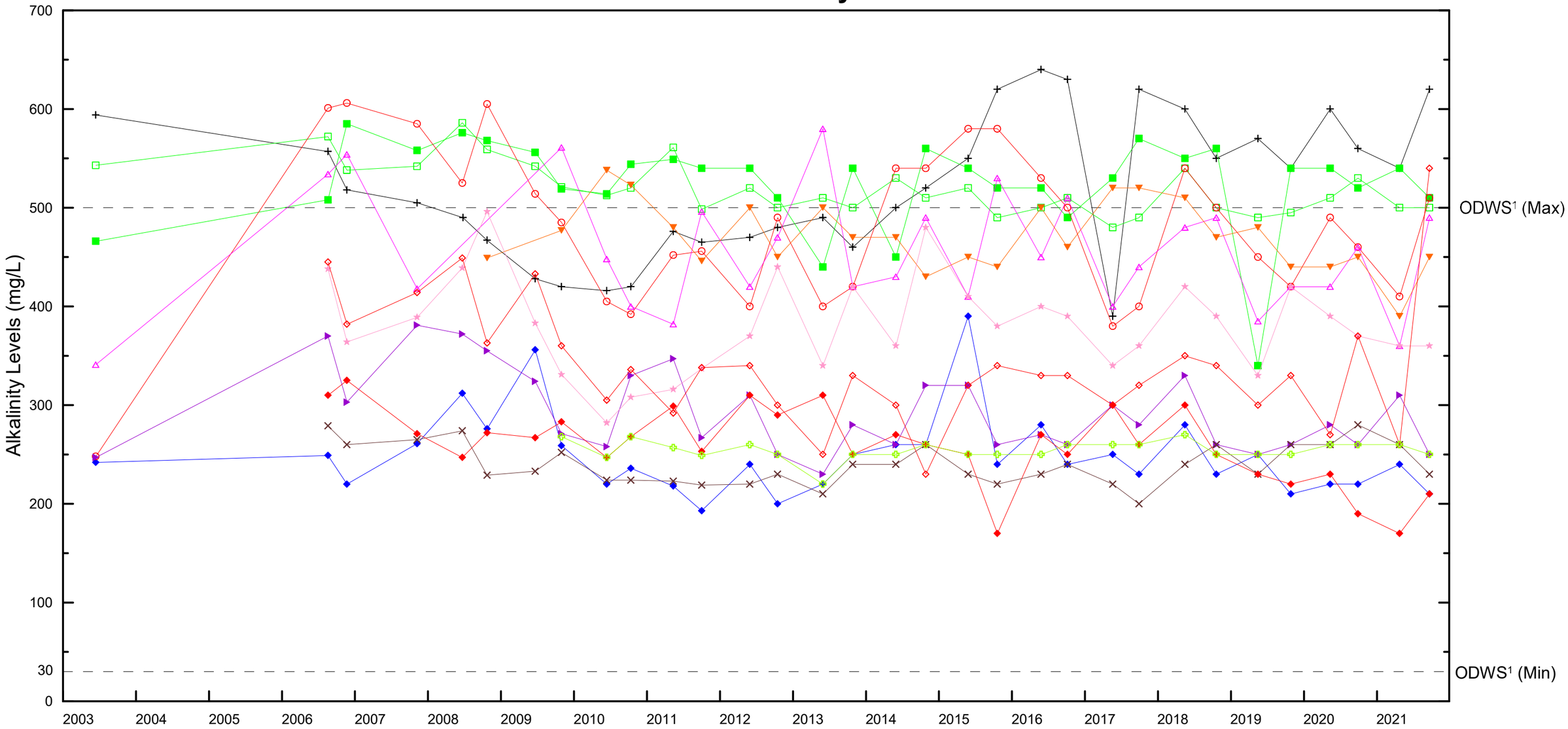
Figure I-5

Chloride

2019, 2020 & 2021 Monitoring Report
Geraldton Landfill
Municipality of Greenstone

REF. NO.:	THB-00006189-RE
SCALE:	N/A
DRAWN BY:	SW
CHECKED BY:	AM
DATE:	February 2, 2022

Alkalinity



Note:
1) ODWS: Ontario Drinking Water Standard (MOE, Rev Jan 2001).
2) Drawing to be read in conjunction with accompanying report.

exp.

Thunder Bay, Ontario

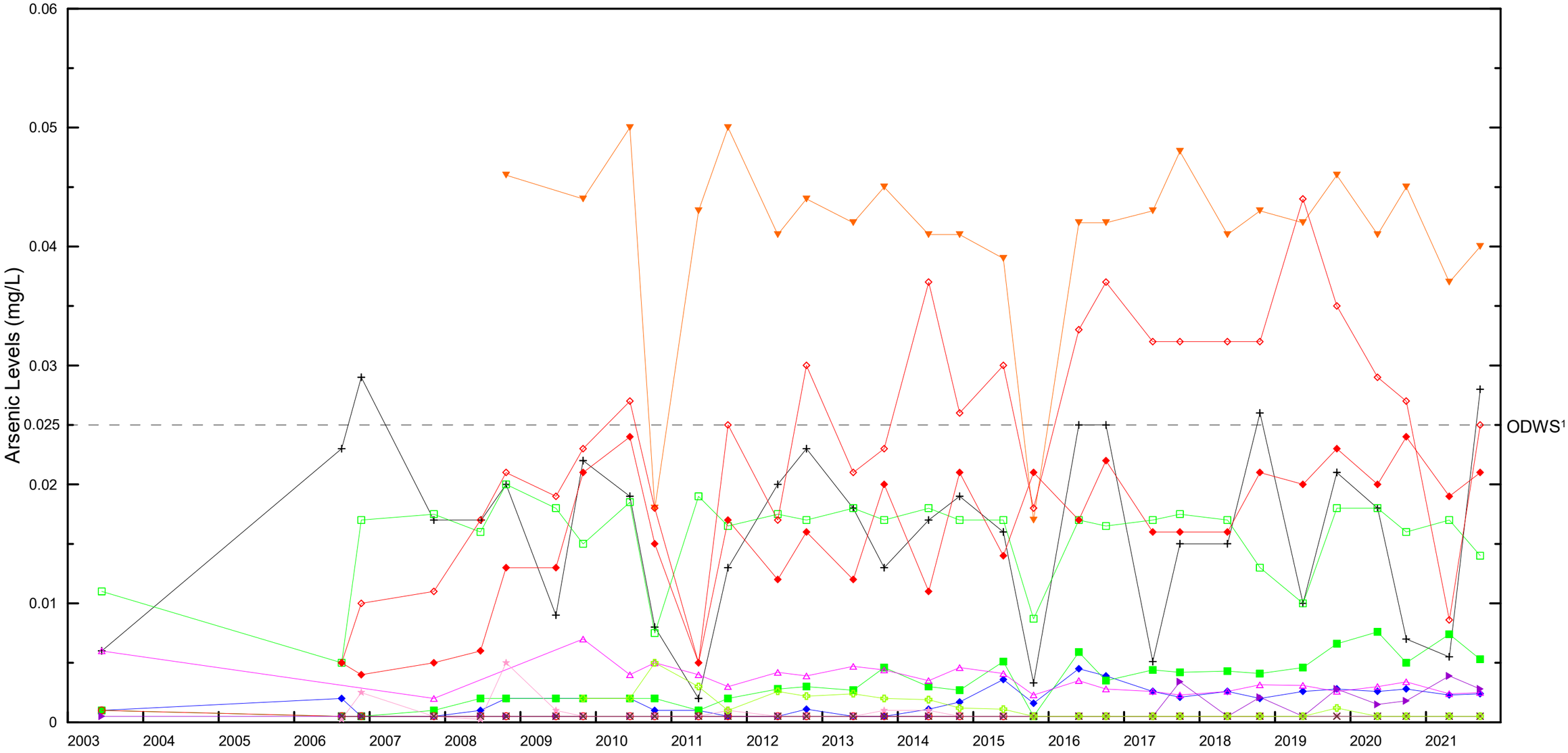
Figure I-6

Alkalinity

2019, 2020 & 2021 Monitoring Report
Geraldton Landfill
Municipality of Greenstone

REF. NO.:	THB-00006189-RE
SCALE:	N/A
DRAWN BY:	SW
CHECKED BY:	AM
DATE:	February 2, 2022

Arsenic



Note:
1) ODWS: Ontario Drinking Water Standard (MOE, Rev Jan 2001).
2) Drawing to be read in conjunction with accompanying report.

exp.

Thunder Bay, Ontario

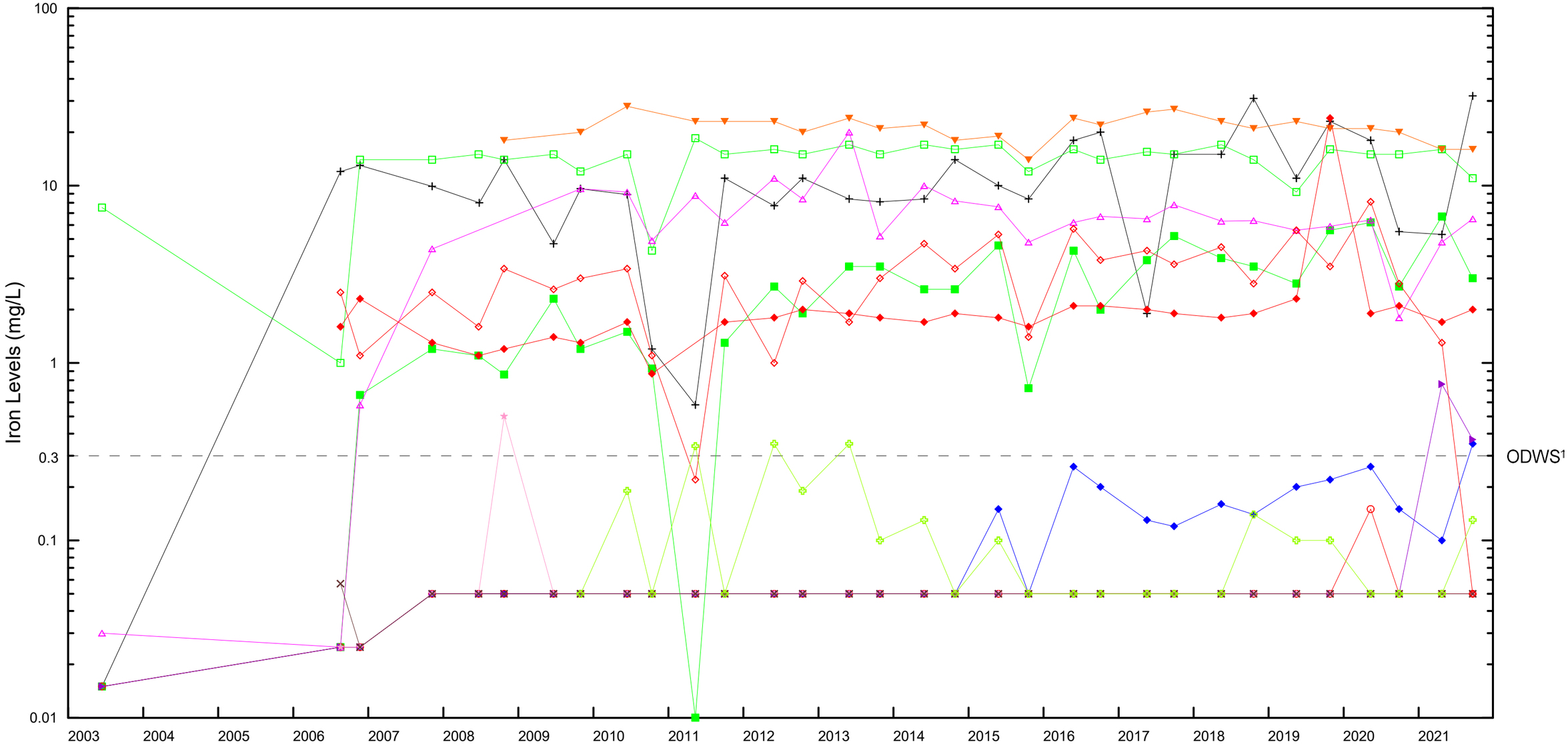
Figure I-7

Arsenic

2019, 2020 & 2021 Monitoring Report
Geraldton Landfill
Municipality of Greenstone

REF. NO.:	THB-00006189-RE
SCALE:	N/A
DRAWN BY:	SW
CHECKED BY:	AM
DATE:	February 2, 2022

Iron



Note:
1) ODWS: Ontario Drinking Water Standard (MOE, Rev Jan 2001).
2) Drawing to be read in conjunction with accompanying report.

exp. Thunder Bay, Ontario

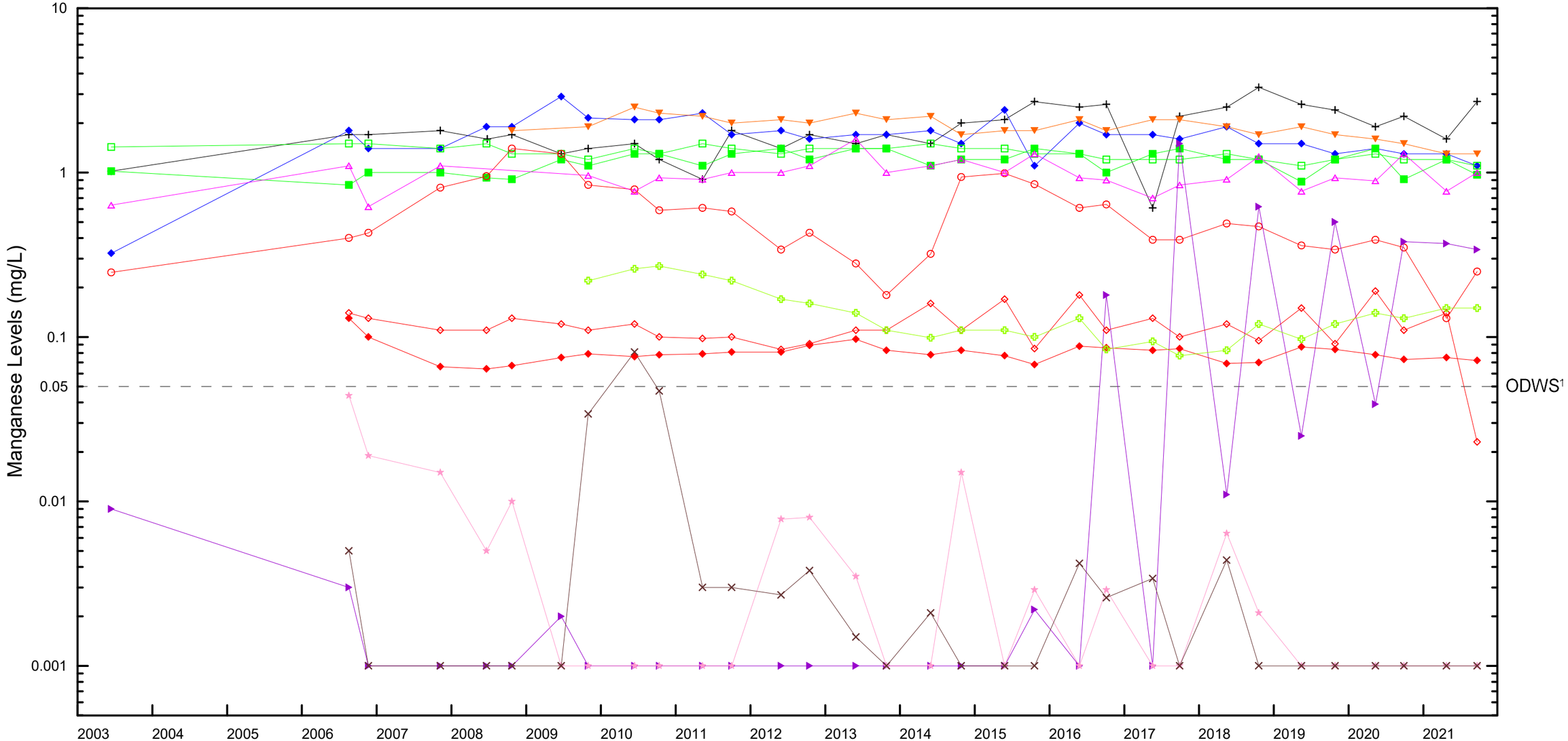
Figure I-8

Iron

2019, 2020 & 2021 Monitoring Report
Geraldton Landfill
Municipality of Greenstone

REF. NO.:	THB-00006189-RE
SCALE:	N/A
DRAWN BY:	SW
CHECKED BY:	AM
DATE:	February 2, 2022

Manganese



Note:
1) ODWS: Ontario Drinking Water Standard (MOE, Rev Jan 2001).
2) Drawing to be read in conjunction with accompanying report.

exp.

Thunder Bay, Ontario

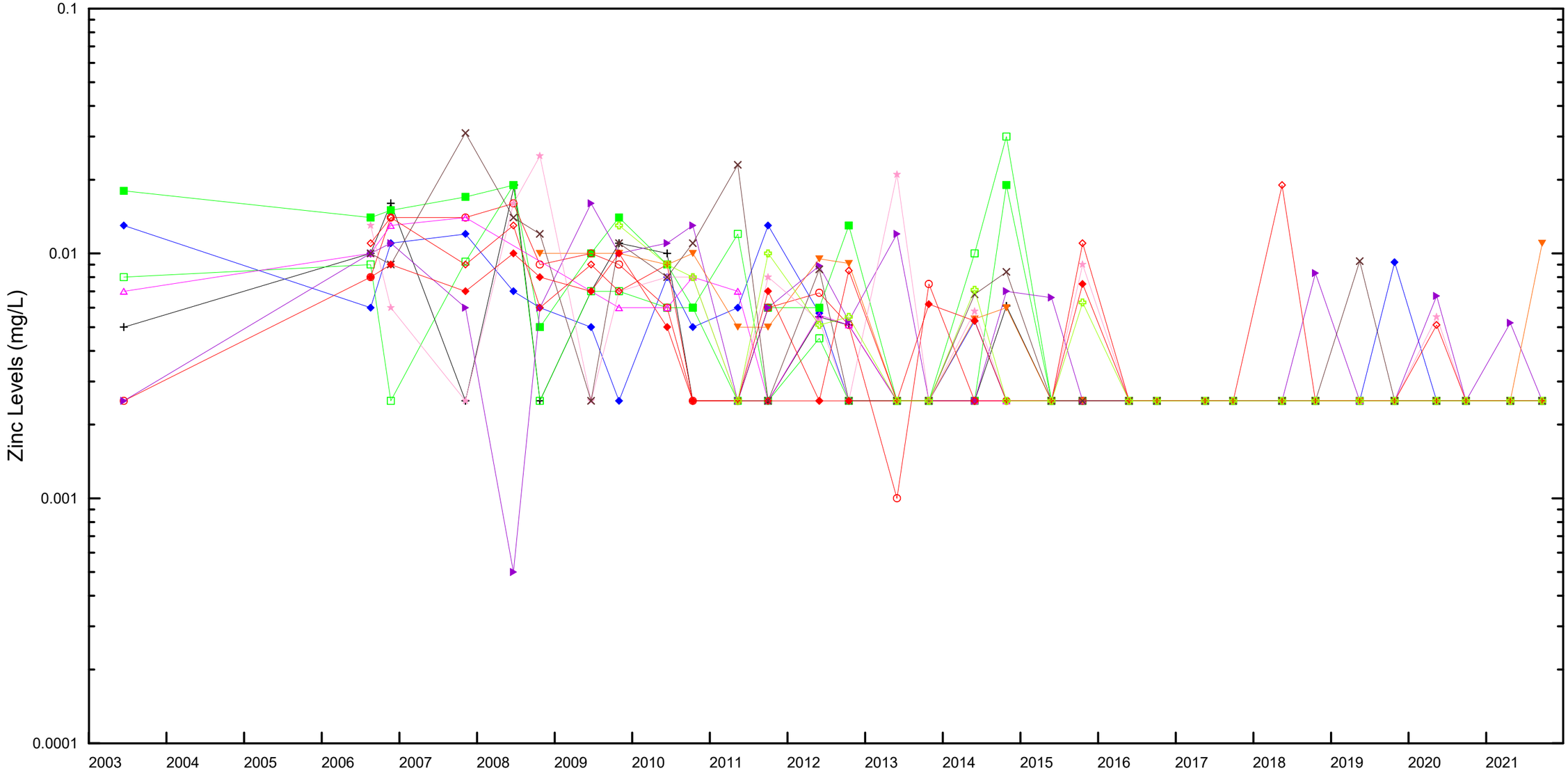
Figure I-9

Manganese

2019, 2020 & 2021 Monitoring Report
Geraldton Landfill
Municipality of Greenstone

REF. NO.:	THB-00006189-RE
SCALE:	N/A
DRAWN BY:	SW
CHECKED BY:	AM
DATE:	February 2, 2022

Zinc



Note:
1) ODWS: Ontario Drinking Water Standard (MOE, Rev Jan 2001).
2) Drawing to be read in conjunction with accompanying report.

exp. Thunder Bay, Ontario

Figure I-10

Zinc

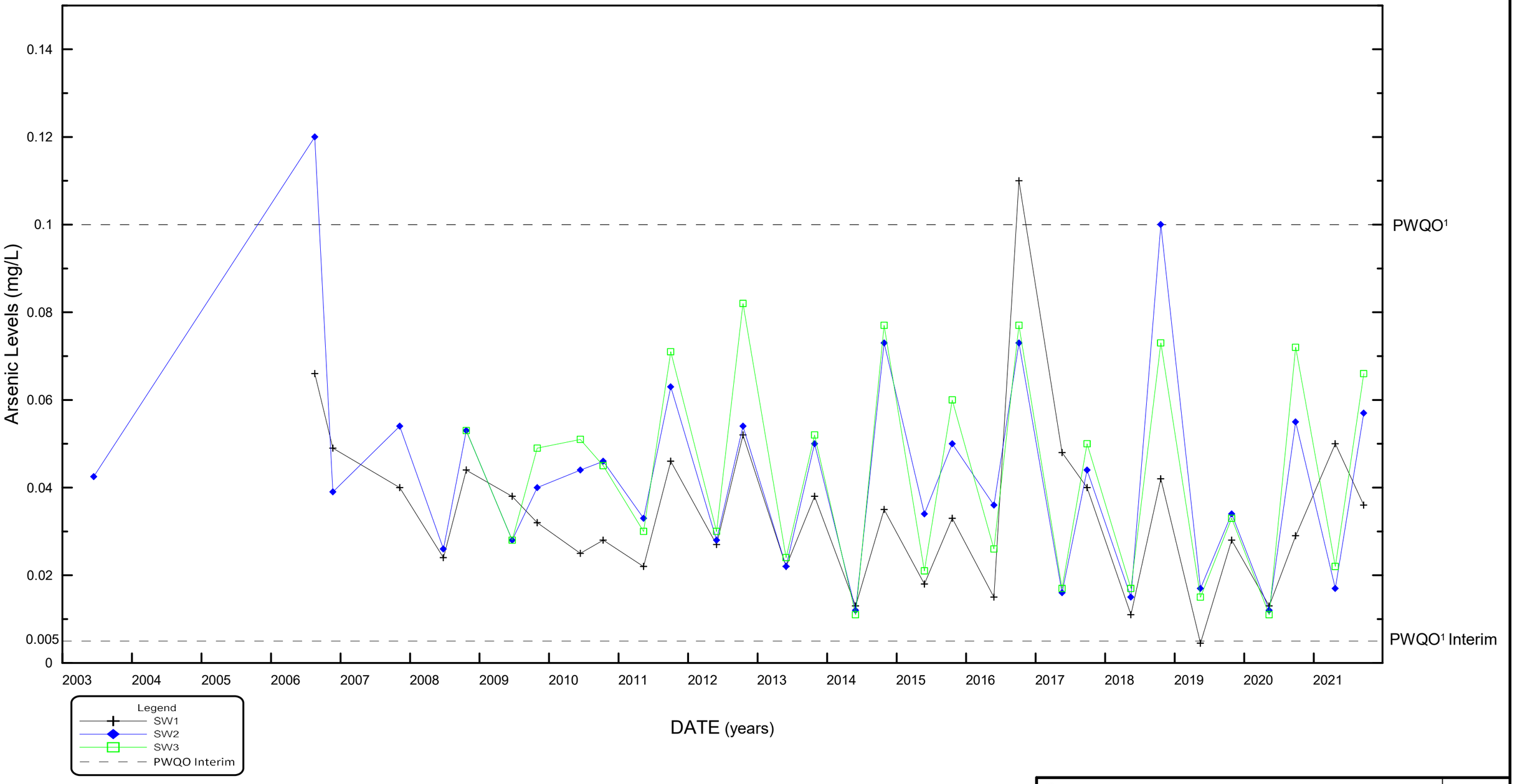
2019, 2020 & 2021 Monitoring Report
Geraldton Landfill
Municipality of Greenstone

REF. NO.:	THB-00006189-RE
SCALE:	N/A
DRAWN BY:	SW
CHECKED BY:	AM
DATE:	February 2, 2022

APPENDIX J-

Time Series Graphs – Surface Water

Total Arsenic



Note:
1) PWQO: Provincial Water Quality Objectives (MOEE, 1994).
2) Drawing to be read in conjunction with accompanying report.

exp.

Thunder Bay, Ontario

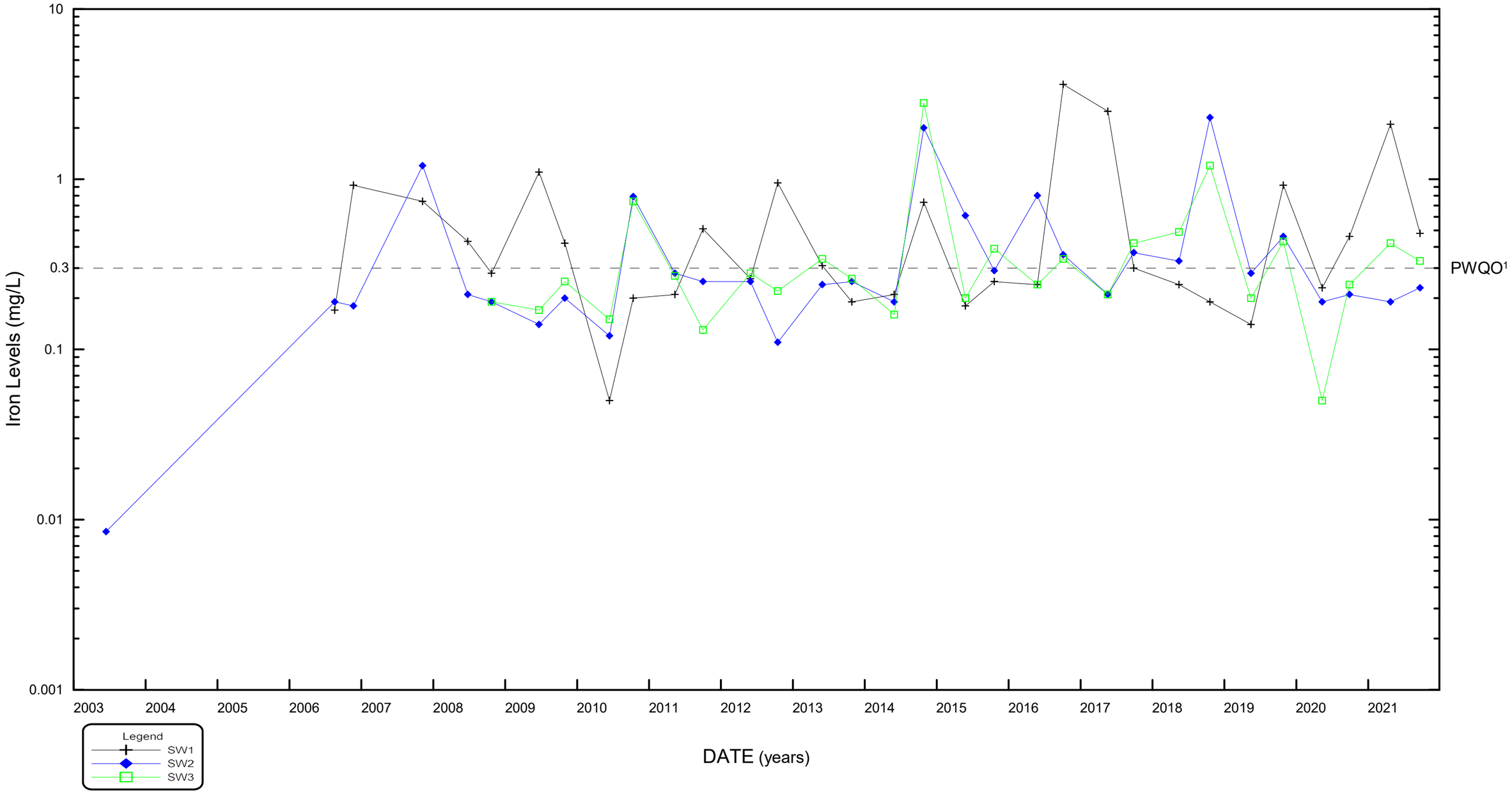
Figure J-1

Total Arsenic in Surface Water

2019, 2020 & 2021 Monitoring Report
Geraldton Landfill
Municipality of Greenstone

REF. NO.:	THB-00006189-RE
SCALE:	N/A
DRAWN BY:	SW
CHECKED BY:	AM
DATE:	March 11, 2022

Total Iron



Note:

1) PWQO: Provincial Water Quality Objectives (MOEE, 1994).
2) Drawing to be read in conjunction with accompanying report.

exp.

Thunder Bay, Ontario

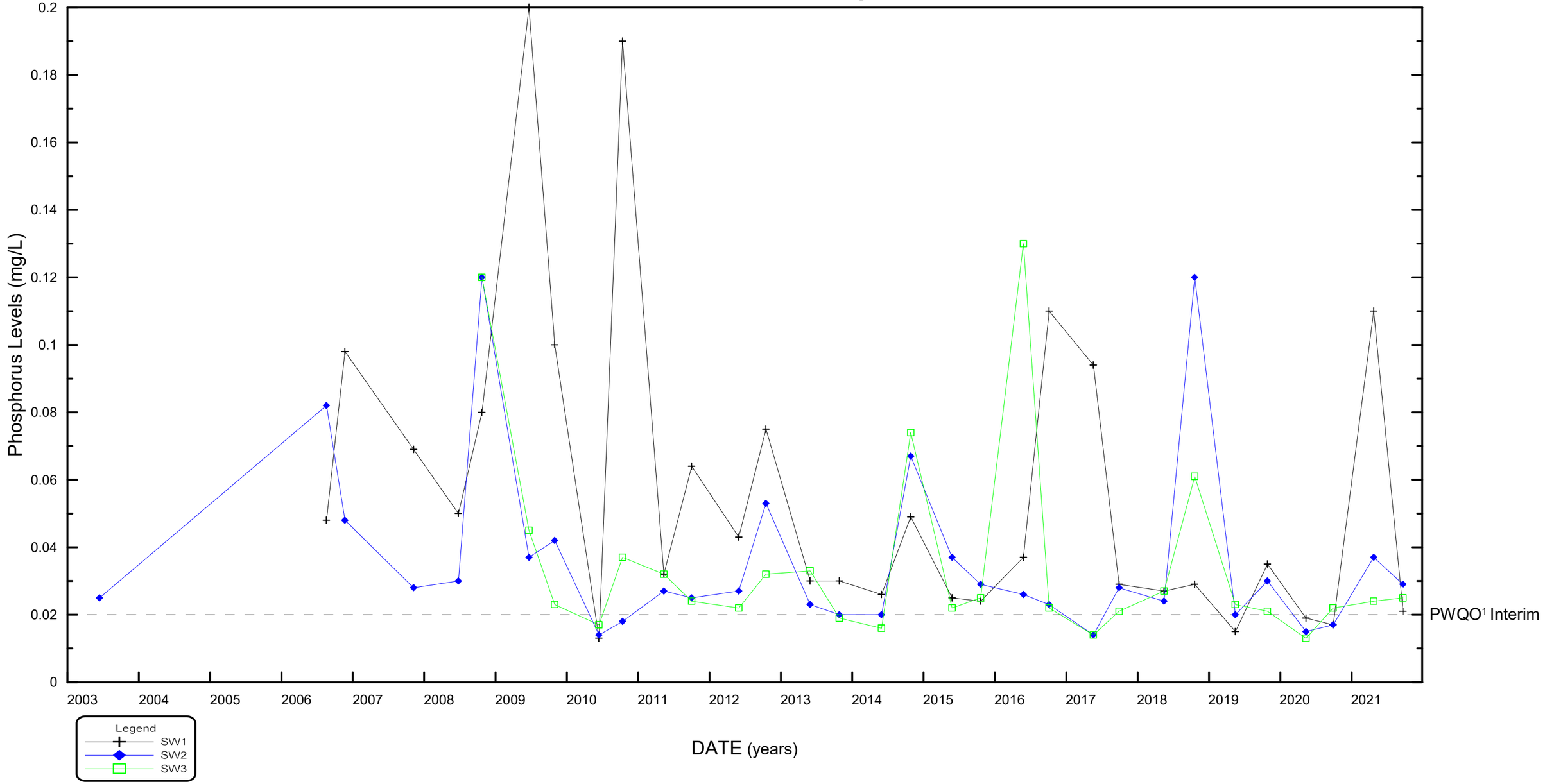
Figure J-2

Total Iron in Surface Water

2019, 2020 & 2021 Monitoring Report
Geraldton Landfill
Municipality of Greenstone

REF. NO.:	THB-00006189-RE
SCALE:	N/A
DRAWN BY:	SW
CHECKED BY:	AM
DATE:	March 11, 2022

Total Phosphorus



Note:
1) PWQO: Provincial Water Quality Objectives (MOEE, 1994).
2) Drawing to be read in conjunction with accompanying report.

exp.

Thunder Bay, Ontario

Figure J-3

Total Phosphorus in Surface Water

2019, 2020 & 2021 Monitoring Report
Geraldton Landfill
Municipality of Greenstone

REF. NO.:	THB-00006189-RE
SCALE:	N/A
DRAWN BY:	SW
CHECKED BY:	AM
DATE:	March 11, 2022

APPENDIX K-

Survey Plan

Grid North

Legend
- Denotes Monitor Well
- Denotes Found Monument
- Denotes Utility Pole
- Denotes Overhead Wire
- Denotes Treeline
- Denotes Existing Property Line (As stated by landfill manager)

Note

Coordinates are NAD83CSRS UTM Zone 16 (metric)

Elevations are referred to the Found IB having a CGVD28 elevation of 337.8M

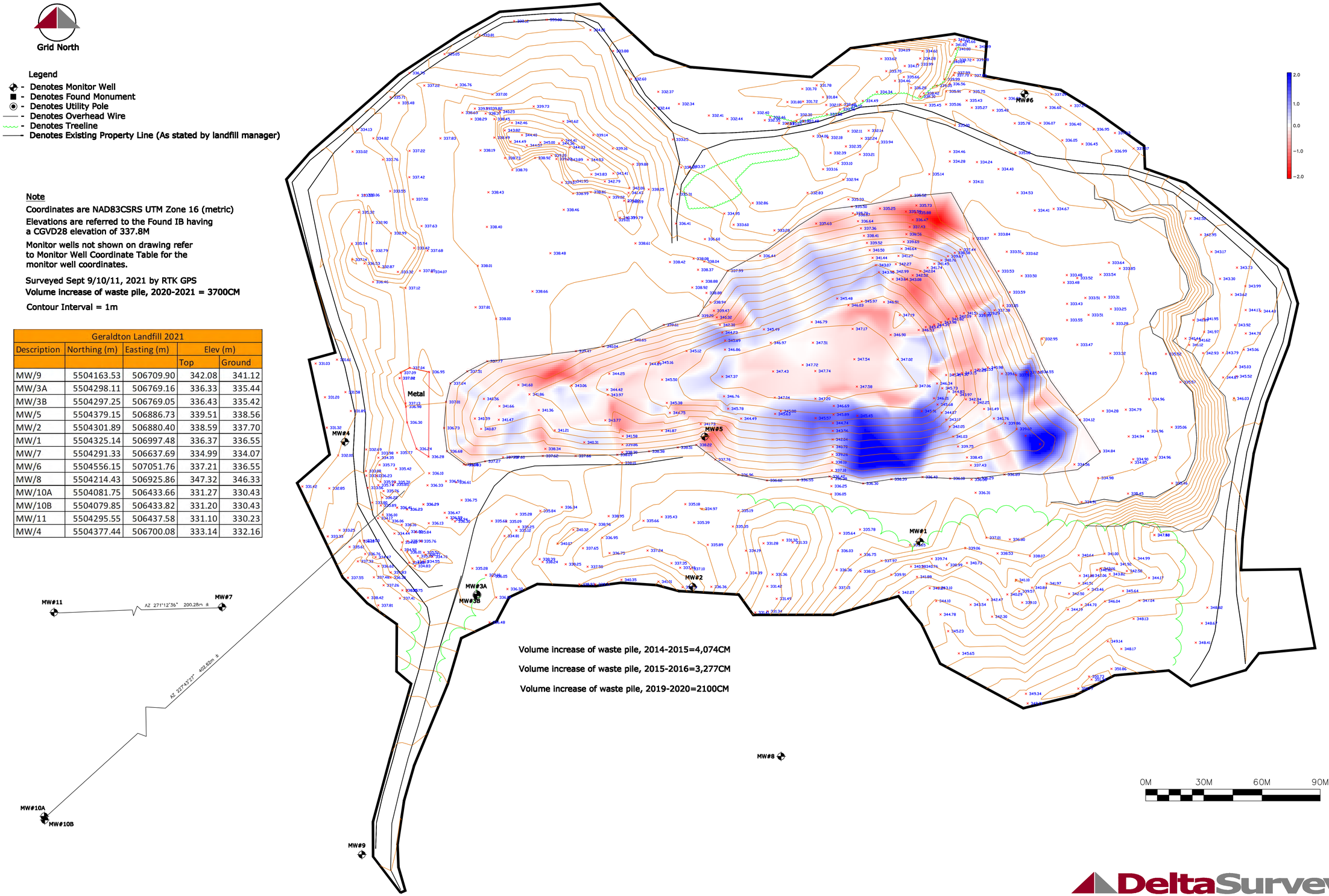
Monitor wells not shown on drawing refer to Monitor Well Coordinate Table for the monitor well coordinates.

Surveyed Sept 9/10/11, 2021 by RTK GPS

Volume increase of waste pile, 2020-2021 = 3700CM

Contour Interval = 1m

Geraldton Landfill 2021				
Description	Northing (m)	Easting (m)	Elev (m)	
			Top	Ground
MW/9	5504163.53	506709.90	342.08	341.12
MW/3A	5504298.11	506769.16	336.33	335.44
MW/3B	5504297.25	506769.05	336.43	335.42
MW/5	5504379.15	506886.73	339.51	338.56
MW/2	5504301.89	506880.40	338.59	337.70
MW/1	5504325.14	506997.48	336.37	336.55
MW/7	5504291.33	506637.69	334.99	334.07
MW/6	5504556.15	507051.76	337.21	336.55
MW/8	5504214.43	506925.86	347.32	346.33
MW/10A	5504081.75	506433.66	331.27	330.43
MW/10B	5504079.85	506433.82	331.20	330.43
MW/11	5504295.55	506437.58	331.10	330.23
MW/4	5504377.44	506700.08	333.14	332.16



Volume increase of waste pile, 2014-2015=4,074CM

Volume increase of waste pile, 2015-2016=3,277CM

Volume increase of waste pile, 2019-2020=2100CM

0M 30M 60M 90M

DeltaSurvey Inc.

EXP Services	Geraldton Landfill Survey Municipality of Greenstone	Scale As Plotted	Sept 14th, 2021	DS21-12-S1
		Rev 0		Drawn By: TE/CF

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