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May 25, 2017
File: 121414186

Attention: Tim Bouter, P.Eng.
Supervisor of Engineering Services
Municipality of the County of Kings
87 Cornwallis Street, P.O. Box 100
Kentville, NS B4N 3W3

Dear Mr. Bouter,

Reference: Evaluation of Groundwater and Surface Water Monitoring Program – Meadowview Landfill, Kentville, NS

INTRODUCTION

GENERAL

Stantec Consulting Ltd. (Stantec) was retained by the Municipality of the County of Kings (the Municipality) to perform environmental compliance monitoring at the Meadowview Landfill (the Site) in 2016 (Stantec 2017. As part of the recommendations in that report, Stantec recommended a re-evaluation of the groundwater and surface water monitoring network using the 2016 and historical data to identify if changes could be made to reduce the scope of both monitoring locations and parameters. Consideration should be given to using the more appropriate Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (NS Tier 1 EQS) and/or Tier 2 Pathway Specific Standards (NS Tier 2 PSS) for groundwater and surface water chemistry (NSE 2013a,b), and the provision of municipal water in the area (changes the classification of the site to non-potable, and puts more focus on aquatic habitat as being the receptor and compliance point).

BACKGROUND

The Town of Kentville established a landfill at the Site in the late 1960s. The Municipality took over operations and continued to operate the landfill until it closed on June 30, 1999. Upon closure, the Municipality implemented a Closure Plan, which drew on specifications outlined in the Site Closure Report (Porter Dillon 1995). The Closure Plan set out the requirements for an environmental monitoring program.

SITE DESCRIPTION

The Site is located on Brook Street near the Town of Kentville, NS (Drawing A-1). The Site is located at Lanzy Road and Brooklyn Street, south of Camp Aldershot in Kentville, and is described by Service Nova Scotia and Municipal Relations' Property Online as PIDs No. 55047310, 55058325, 55047328, 55047369, 55047351, 55049035, 55047336, and 55047476. The monitoring locations used for the environmental monitoring program are situated on land owned by the Municipality and the Department of National Defence (DND).

The topography of the Site and surrounding areas slopes south towards the Cornwallis River. Background, or upgradient monitoring sites are located north of the former landfill while downgradient monitoring sites are located to the south between the former landfill and the river. The landscape surrounding the Site is comprised of forested areas intersected by several roads with marsh and river habitat to the south.

REGULATORY FRAMEWORK

The historical groundwater and surface water data provided to Stantec in 2016 was screened against the Guidelines for Canadian Drinking Water Quality (GCDWQ) (Health Canada 2017) and Canadian Environmental Quality Guidelines (issued by the Canadian Council of Ministers of the Environment [CCME] - updates) for Freshwater Aquatic Life (CCME FAL), respectively.

NSE released its *Contaminated Sites Regulations* on July 6, 2013 which provide the requirements for notification of contaminated sites in Nova Scotia, as well as the basis for determining the appropriate numerical remediation levels, or ongoing site exposure management measures, applicable to a contaminated site.

The overall regulatory goals for remediation are to manage contamination to reduce related risks to acceptable levels for humans and the environment (i.e. ecology). These goals may be met by a variety of means acceptable to NSE, from cleanup at the conservative generic (Tier 1) level, to cleanup based on site-specific conditions (Tier 2), to long-term exposure management of site contamination through engineered, physical or administrative controls.

NS Tier 1 EQS are substance generic environmental quality standards that may be used for remediation levels. These standards represent a standardized level of risk for contributing pathways, based on land use and other factors. Use of the NS Tier 1 EQS for remediation is a conservative and typical application of cleanup standards. The NS Tier 1 EQS incorporate human health and ecological effects where applicable.

NS Tier 2 PSS were developed assessing all contributions to substance risk in all applicable exposure pathways, based on land use and other factors. Applicable standards have been developed for each specific pathway such as potable drinking water, vapour migration from groundwater to indoor air (based on land use type and soil type), and groundwater discharge to surface water (based on distance to fresh or marine water).

Reference: Evaluation of Groundwater and Surface Water Monitoring Program – Meadowview Landfill, Kentville, NS

SELECTION OF APPROPRIATE REGULATORY GUIDELINES

NSE (2013a, Figure 3 of Appendix 2) provides a clear definition of a potable versus non-potable site in Nova Scotia. Based on the North Kentville Water Distribution map provided by the Municipality, the Site and homes in the neighbourhoods to the east of the Site are serviced by municipal water. Fred Whynot (Town of Kentville, Director of Engineering and Works) confirmed in a personal communication with John Kozuskanich (Whynot 2017) that Camp Aldershot is also supplied by Municipal water services. The Kentville Water Commission Source Water Protection Area boundary is more than 1 km to the southwest of the Site. Thus, based on an evaluation of the determination factors provided by NSE (2013a), the Site is considered non-potable in Nova Scotia.

Thus, groundwater chemistry analytical results are compared to the following specific standards that are applicable to non-potable sites in Nova Scotia, local soil conditions, and the separation distances between monitoring wells and surface water features:

- NS Tier 1 EQS for groundwater (commercial/industrial, non-potable, coarse grained); and
- NS Tier 2 PSS for groundwater >10 m from a fresh surface water body.

Surface water chemistry analytical results are compared to NS Tier 1 EQS for surface water. CCME FAL (CCME updates) are also included for comparison because they have general chemistry parameters. In general, the NS Tier 1 EQS and CCME FAL metals guidance values are identical for common parameters, but the NS Tier 1 EQS has a more comprehensive list of parameters.

CURRENT MONITORING PROGRAM

The following outlines the current monitoring program originating and modified from the Site Closure Report (Porter Dillon 1995). The objective of the groundwater and surface water monitoring program is to track the influence of water emanating from the landfill and identify if concentrations exceed guideline values established to protect relevant receptors. Fisheries habitat monitoring is required to determine whether or not closure activities will allow this watercourse to recover.

GROUNDWATER

The current groundwater monitoring network consists of 21 monitoring wells, many of which are nested pairs or triplets with different screen depths at one location. These locations are shown on Drawing A-1 (attached). The details of monitoring well construction and annual analytical requirements are provided in Table 1. All monitoring wells are on Municipal land, with the exception of MW31A which is located upgradient in Camp Aldershot. Field parameters (water level, temperature, dissolved oxygen, salinity, pH) are measured and recorded at the time of sampling.

Reference: Evaluation of Groundwater and Surface Water Monitoring Program – Meadowview Landfill, Kentville, NS

Table 1 Summary of Monitoring Well Construction and Current Annual Analytical Program

Location	Easting (m)	Northing (m)	Well Depth (m)	Media	General Chemistry and Metals	VOC (EPA-624)	PHC	SVOC (EPA-625)
MW-4A	380795	4993550	10.42	Overburden	X	X	X	X
MW-12B	379991	4993816	13.51	Overburden	X	X	X	
MW-19B	380892	4993807	40.80	Bedrock	X			
MW-20A	380962	4993769	25.90	Overburden	X			
MW-21C	380860	4993440	23.04	Bedrock	X			
MW-22A	380036	4993547	4.68	Overburden	X	X	X	
MW-22B	380036	4993546	13.10	Interface	X	X	X	X
MW-22C	380034	4993546	24.98	Bedrock	X			
MW-23A	379827	4993726	4.80	Overburden	X			
MW-23B	379828	4993729	11.31	Overburden	X			
MW-23C	379824	4993728	22.75	Overburden	X			
MW-24A	380106	4993646	4.68	Overburden	X	X	X	
MW-24B	380107	4993644	11.82	Overburden	X	X	X	X
MW-25B	380242	4993537	13.52	Overburden	X	X	X	
MW-27B	380819	4994151	13.47	Bedrock	X*			
MW-27C	380821	4994151	23.27	Bedrock	X*			
MW-29B	380288	4994102	9.55	Bedrock	X			
MW-29C	380291	4994103	22.19	Bedrock	X			
MW-31A	380079	4994174	9.13	Overburden	X			
TH-1	380612	4993546	9.18	Overburden	X	X	X	X
TH-2	380580	4993536	16.63	Overburden	X			

Notes:
"*" denotes general chemistry analysis only
PHC = petroleum hydrocarbon
VOC = volatile organic compound
SVOC = semi-volatile organic compound

Reference: Evaluation of Groundwater and Surface Water Monitoring Program – Meadowview Landfill, Kentville, NS

SURFACE WATER

The current surface water monitoring network consist of six stations (Drawing A-1, attached). General chemistry and metals are analyzed on samples collected from all locations during low flow conditions on odd years (e.g., 2017), and only at SW7 on even years (e.g., 2018). Field parameters (pH, dissolved oxygen, salinity, temperature) are measured and recorded at the time of sampling.

FISHERIES HABITAT MONITORING

Qualitative biomonitoring is conducted at SW7, SW7A and REF every year, consisting of a fish survey (using minnow trap methods), a benthic invertebrate survey, and a habitat description.

REVIEW OF GROUNDWATER AND SURFACE WATER MONITORING DATA

The purpose of this exercise is to conduct a review of the groundwater and surface water monitoring data to determine if the current program is appropriate, or if it should be adjusted (refer to attached Tables A-1 through F-7).

INDICATOR PARAMETERS IN GROUNDWATER

The Site Closure Report (Porter Dillon 1995) identifies the following as indicator parameters of landfill leachate in groundwater:

- ammonia
- pH
- chloride
- specific conductance (conductivity)
- total organic carbon

Petroleum hydrocarbons (PHCs), volatile organic compounds (VOCs), and semi-volatile organic compounds (SVOCs) are also contaminants of potential concern, hence their inclusion in the current monitoring program (Table 1). Plots of the above noted indicator parameter concentrations at all monitoring wells sampled in 2016 are provided on Figures A-1 through F-3 (attached). The plots are organized into three areas around the landfill (Drawing A-1, attached). Area 1 is south and downgradient of the landfill. Area 2 is to the southwest and downgradient of the landfill. Area 3 is to the north and east of the landfill and is upgradient or cross-gradient of the landfill. Note that MW31 (on Camp Aldershot) and MW29 may serve as the best background sampling locations.

The following provides a summary of the review of the data generated for each indicator parameter:

Reference: Evaluation of Groundwater and Surface Water Monitoring Program – Meadowview Landfill, Kentville, NS

Ammonia

- The highest ammonia concentrations (>10 mg/L) are typically observed at MW-4A, MW-22A, MW-24B, and TH-1 (Areas 1 and 2).
- Ammonia is only routinely detected at MW-4A, MW-22A, MW-22B, MW-23B, MW-24A, MW-24B, and TH-1 (7 of 21 monitoring wells).
- Ammonia concentration trends have been general stable over time at all monitoring wells (i.e., no distinct increase, peak, and decrease).
- The concentration magnitude and general trend is similar at MW-4A and TH-1 (they are close and both installed to a depth of 9-10 m).
- Concentrations are typically not detected in the deepest "C" intervals at nested monitoring wells.
- There is no non-potable groundwater standard to compare the concentrations to.
- If the CCME FAL guideline value of 16 mg/L is applied (a conservative approach for the protection of aquatic life), only MW-4A, TH-1, MW-22A, and MW-24B regularly exceed.

pH

- pH ranges from approximately 6 to 8.5.
- There is no non-potable groundwater standard to compare concentrations to.
- If the CCME FAL guideline value range of 6.5 to 9 is applied (a conservative approach for the protection of aquatic life), the pH is routinely less than 6.5 at MW-31A, and periodically below 6.5 at MW-20A (note that these are both in Area 3 and upgradient of the landfill where an influence on groundwater quality is not expected). pH is also periodically below 6.5 at MW-24A which is in Area 2, downgradient of the landfill.

Chloride

- Chloride concentrations are/were most elevated (>100 mg/L) at MW-22A MW-22B, MW-24A, and MW-24B.
- Slowly decreasing concentrations are noted at many monitoring wells, but is most pronounced (an order of magnitude or more over 20+ years) at MW-22A (note that MW-22B has remained stable).
- Slowly increasing concentrations are noted at many monitoring wells, but is most pronounced (an order of magnitude or more over 20+ years) at MW-22C (note that MW-22B has remained stable).
- All concentrations are well below the NS Tier 2 PSS value of 15,000 mg/L, which is protective of surface water.

Conductivity

- Conductivity provides an indication of the bulk concentration of dissolved constituents.

- Conductivity is typically greater than 100 µS/cm in Areas 1 and 2, and less than 400 µS/cm in Area 3.
- Concentrations at downgradient wells generally show a downward trend over time, most notably at MW-22A, MW-24B, and TH-1.
- Concentrations at downgradient well MW-25B show an upward trend.
- There is no direct water quality guideline for this parameter.

Total Organic Carbon

- This dataset only covers the period of 2005 to present, and does not allow for a comparison of concentrations around the time of closure to those measured in more recent samples.
- Concentrations are more elevated in Areas 1 and 2 compared to Area 3.
- The highest concentrations (>10 mg/L) are routinely observed at MW-4A, MW-22A, MW-22B, and TH-1.

Based on the chloride and ammonia results, it appears that monitoring wells MW-4A, MW-22A, MW-22B, MW-24A, MW-24B and TH-1 are the most suitable for evaluating the influence of the landfill on the quality of the groundwater migrating towards and likely discharging to the Cornwallis River and Palmer Brook. MW-4A and TH-1 generally have the same magnitude and trend in indicator parameter concentrations, and have similar construction.

Historical concentrations of VOCs, SVOCs, and PHCs are provided in Tables C-1 through E-7 (attached), respectively.

This dataset only includes PHC data from the 2016 sampling event at the monitoring wells indicated in Table 1. Benzene, toluene, ethylbenzene and total xylenes (BTEX) were not detected. Low concentrations of $>C_{10}$-C_{16} hydrocarbons were detected at MW-4A and MW-24B.

A longer record of VOCs for the monitoring wells indicated in Table 1 is provided in Tables C-1 through C-8 (attached). VOC concentrations are typically below detections limits. There have been no measured concentrations greater than the NS Tier 1 EQS and NS Tier 2 PSS values since 2001 at any of the monitoring wells. The exceedances at monitoring wells prior to 2001 (bromomethane at MW-4A, MW-22A and MW-24B, carbon tetrachloride at MW4-A, and chlorobenzene at TH-1) were not persistent.

The record of SVOC results for the monitoring wells indicated in Table 1 is provided in Tables D-1 through D-4 (attached). Very few of the SVOC compounds have even been detected, and there is no record of a NS Tier 1 EQS or NS Tier 2 PSS guideline value at any location. Also note that only 10 of the 83 parameters currently have a guidance value.

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Based on these results, ammonia, chloride and conductivity are likely the best indicator parameters. PHCs, VOCs and SVOCs have never been good indicators, and any source that may have been present in the past has likely been attenuated and/or immobilized.

REGULATORY EXCEEDANCES IN GROUNDWATER

The following provides a summary of NS Tier 1 EQS and NS Tier 2 PSS exceedances in groundwater.

General Chemistry and Metals

General chemistry and metals results for the monitoring wells identified are provided in Tables A-1 through B-21 (attached). Chloride is the only general chemistry parameter with a guidance value (15,000 mg/L), and has not been detected at concentrations even close to this level at any of the monitoring wells.

Low pH conditions liberate metals from landfill materials and native geologic materials. Elevated levels of metals such as iron, manganese and arsenic are considered normal background conditions in Nova Scotia, depending on the local geology.

The following metals typically exceed NS Tier 2 PSS values either persistently or sporadically at most Area 1 and 2 downgradient monitoring wells (there are no NS Tier 1 EQS values for non-potable sites):

- aluminum
- arsenic
- cadmium
- iron
- lead
- manganese

Note that MW-27B, MW-27C, MW-29B, MW-29C and MW-31A may serve a background, upgradient monitoring locations for the landfill. There are sporadic metals concentration exceedances of the NS Tier 2 PSS for aluminum and cadmium at these locations. Thus, the arsenic, iron, lead, and manganese observed downgradient could be partially related to the landfill. They could also be related to the biogeochemical processes associated with the surface water features (Cornwallis River and the wetlands within the channel and its tributaries).

PHCs, VOCs, and SVOCs

Concentrations of these compounds and exceedances of regulatory guidance values were discussed in the previous section (Tables C-1 through E-7, attached). In short, the majority of the compound concentrations are below detection limits, and there are only a few isolated cases of regulatory value exceedances prior to 2001.

REGULATORY EXCEEDANCES IN SURFACE WATER

The current focus of the surface water program is in the Palmer Brook at SW-7. Other monitoring stations (SW-1, SW-2, SW-3, SW-7A, and REF) are sampled for general chemistry and metals every other year (on odd years).

The analytical chemistry results for SW-7 (Tables F-1 through F-6, attached) generally show that parameters with the most persistent exceedances of CCME FAL and NS Tier 1 EQS guidelines are aluminum, iron and manganese (similar to groundwater downgradient of the landfill). Table 2 provides a summary of the averages for these parameters at each surface water station. There are more periodic exceedances of cadmium, vanadium, and zinc. SW-7A, which is located downstream of SW-7 in the same surface water feature, has a more limited dataset, and also shows exceedances of aluminum, iron and manganese, plus arsenic and mercury.

Stations SW-1, SW-2, SW-3 are located downstream of SW-7 and SW-7A in the Cornwallis River. Parameters that exceed the regulatory guidelines at these locations include chloride (SW-1 in 1998 and 2000), aluminum, arsenic, barium, cadmium, copper, iron, lead, nickel, thallium, vanadium, and zinc. Of these, only aluminum, iron, and manganese exceedances are considered persistent.

The REF station serves as a reference for surface water quality and fish habitat monitoring because it is located upstream in Black Brook and is not impacted by the Site. It is noted that aluminum, cadmium, iron, lead, and silver exceed CCME FAL and NS Tier 1 EQS at this location (based on only two sampling events). In general, iron concentrations at this location are approximately three times lower than at SW-7. Manganese concentrations are roughly an order of magnitude higher at SW-7 compared to REF. Conversely, aluminum concentrations are close to an order of magnitude higher at REF compared to SW-7.

Table 2 Summary of Select Metals Concentrations at Surface Water Stations

Station ID	Average Aluminum (µg/L)	Average Iron (µg/L)	Average Manganese (µg/L)	Number of Samples	Position Relative to Landfill
SW-1	246	722	136	19	Downstream, Cornwallis River
SW-2	176	471	232	20	Downstream, Cornwallis River

Reference: Evaluation of Groundwater and Surface Water Monitoring Program – Meadowview Landfill, Kentville, NS

Table 2 Summary of Select Metals Concentrations at Surface Water Stations

Station ID	Average Aluminum (µg/L)	Average Iron (µg/L)	Average Manganese (µg/L)	Number of Samples	Position Relative to Landfill
SW-3[a]	118	479	111	17	Downstream, Cornwallis River
SW-7	22	2048	1548	28	Adjacent, Palmer Brook
SW-7A	35	21550	2485	2	Adjacent, Palmer Brook
SW-11	1033	7440	303	4	Upstream, Palmer Brook
REF	257	713	135	2	Background, Black Brook

Notes:

a) Averages do not include data from August 2007 and August 2009 events, which appears to be anomalous and the samples had high turbidity

b) All averages treat non-detects as zero

DISCUSSION

The indicator parameters suggest that the landfill still has an influence on groundwater chemistry in downgradient areas, though parameter concentrations have been generally decreasing since closure. Groundwater is most impacted in Area 2 between the landfill and Palmer Brook. The most persistent parameter exceedances of NS Tier 2 PSS values are for arsenic, iron, lead, and manganese. Other potential contaminants of concern (e.g., PHCs, VOCs, SVOCs) have had concentrations below detection limits and guideline values for more than 15 years.

The contribution of elevated concentrations of iron and manganese in groundwater discharging to the surface water environment is best observed at SW-7 and SW-7A. However, iron and several other metals either persistently or sporadically exceed NS Tier 1 EQS at upstream and downstream surface water stations and the reference location (REF). Thus, decoupling the landfill "signal" from the natural signal and/or input from other anthropogenic sources remains a challenge.

The focus of the groundwater and surface water sampling programs and applied regulatory criteria should be on the protection of aquatic life. Since the shallow groundwater at the Site discharges to the Cornwallis River and its tributaries, groundwater monitoring serves as an "early warning" detection system of potential "plugs" of contaminants migrating though the system. Given the age of the landfill and the time passed since closure, it is not expected that any new plumes of these compounds would be generated now. Thus, the 20+ years of historical groundwater and surface water chemistry likely captures the range of expected parameter concentrations at each sampling location and the associated trends.

The evaluation of the landfill impacts on surface water and fisheries is best accomplished through monitoring those sampling matrices directly, as is currently being done. Individual surface water chemistry parameter guidance values may be aquatic species specific, and an exceedance may not result in an adverse condition for the species present.

Existing groundwater monitoring wells are situated around the perimeter of the landfill in both upgradient and downgradient locations. Screen completions at different depths allow for the monitoring of groundwater chemistry along different flow paths; the deeper the well, the further upgradient the water originated from. Interpreted landfill-related impacts and indicator parameters are typically only observed in A and B (shallow and intermediate) levels in nested wells. Based on the historical chemistry results presented and the distribution of monitoring wells, there is opportunity to reduce the scope of the groundwater monitoring program and still get the information needed to confirm that the groundwater quality is the same or has improved compared to historical values. This can be achieved by reducing the parameter list and/or frequency of the analysis and the scope of the sampling points within the groundwater monitoring network. A summary of the data worth of groundwater chemistry information for each monitoring well and the appropriate future sampling regime is provided in Table 3.

Table 3 Summary of Monitoring Well Network Data Worth

Location	Well Depth (m)	Comment	Future Sampling
MW-4A	10.42	Elevated indicator parameters, similar magnitude and trend in parameters as TH-1, provides good coverage along Cornwallis River	Retain
MW-12B	13.51	Low indicator concentrations, other downgradient wells adjacent to Palmer Brook may be more appropriate for evaluating discharge to surface water	Reduce
MW-19B	40.80	Cross-gradient, typically lower metals concentrations than MW-20A, Area 2 wells more appropriate for monitoring groundwater prior to Cornwallis River	Reduce
MW-20A	25.90	Typically has the most elevated indicator parameters in Area 3, deep overburden, typically higher metals concentrations than MW-19B, Area 2 wells more	Reduce

Reference: Evaluation of Groundwater and Surface Water Monitoring Program – Meadowview Landfill, Kentville, NS

Table 3 Summary of Monitoring Well Network Data Worth

Location	Well Depth (m)	Comment	Future Sampling
		appropriate for monitoring groundwater prior to Cornwallis River	
MW-21C	23.04	Low indicator parameter concentrations, directly downgradient of MW-4A, close to SW-3 which could be used to directly measure quality of the Cornwallis River	Reduce
MW-22A	4.68	Elevated indicator parameters, could be used as sentinel well for discharge to surface water at Palmer Brook	Retain
MW-22B	13.10	Elevated indicator parameters, could be used as sentinel well for discharge to surface water at Palmer Brook	Retain
MW-22C	24.98	Some indicator parameter concentrations may be increasing, could be used as sentinel well	Retain
MW-23A	4.80	Moderate indicator parameter concentrations, MW-22 cluster is more elevated and may serve as better sentinel location	Reduce
MW-23B	11.31	Moderate indicator parameter concentrations, MW-22 cluster is more elevated and may serve as better sentinel location	Reduce
MW-23C	22.75	Low indicator concentrations, deep overburden, MW-22 cluster is more elevated and may serve as better sentinel location	Reduce
MW-24A	4.68	Elevated indicator parameter concentrations, similar concentrations to MW-22A/B, MW-22 cluster is downgradient and closer to Palmer Brook receptor	Reduce
MW-24B	11.82	Elevated indicator parameters, similar concentrations to MW-22A/B, MW-22 cluster is downgradient and closer to Palmer Brook receptor	Reduce
MW-25B	13.52	Moderate indicator concentrations, increasing chloride, provides good coverage along Cornwallis River	Retain
MW-27B	13.47	May serve as background location for intermediate bedrock, already scaled back to general chemistry analysis, may have been more relevant when domestic wells were present offsite, similar concentrations to other Area 3 wells	Reduce

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Table 3 Summary of Monitoring Well Network Data Worth

Location	Well Depth (m)	Comment	Future Sampling
MW-27C	23.27	May serve as background location for deep bedrock, already scaled back to general chemistry analysis, may have been more relevant when domestic wells were present offsite, similar concentrations to other Area 3 wells	Reduce
MW-29B	9.55	May serve as background location in intermediate bedrock, similar concentrations to other Area 3 monitoring wells	Reduce
MW-29C	22.19	May serve as background location in deep bedrock, no evidence of impacts	Reduce
MW-31A	9.13	May serve as background location in shallow overburden, no evidence of impacts	Reduce
TH-1	9.18	Elevated indicator parameters, similar magnitude and trend in parameters as MW-4A, provides good coverage along Cornwallis River	Retain
TH-2	16.63	TH-1 serves to better monitoring landfill impacted groundwater	Reduce

CONCLUSIONS AND RECOMMENDATIONS

GROUNDWATER MONITORING

Based on the historical groundwater quality results and discussion presented in this report, Stantec recommends that the groundwater monitoring program be refined to:

1. Retain the collection of chemistry data at pertinent monitoring locations relevant to tracking impacted groundwater that may discharge to surface water.
2. Reduce the scope in areas where landfill-related impacts are low, and/or long-term chemical trends are consistent, and/or the information is redundant and inconsequential to the protection of surface water receptors.
3. Use NS Tier 1 EQS and NS Tier 2 PSS as the regulatory guidelines for results screening.

Based on the information provided in Table 3 and the discussion, Stantec recommends the following specific actions for revising the groundwater monitoring program:

Reference: Evaluation of Groundwater and Surface Water Monitoring Program – Meadowview Landfill, Kentville, NS

Continued Annual Sampling

- Annual sampling for general chemistry and metals concentration analysis at six monitoring wells: MW-4A, MW-22A, MW-22B, MW-22C, MW-25B, and TH-1.
- Removal of PHC, VOC, and SVOC analysis from the sampling program at the relevant locations.
- Rationale: this line of monitoring wells provides good coverage across the downgradient impacted areas and allows the tracking and evaluation of groundwater chemistry prior to discharge to surface water receptors.

Reduced Sampling to Every Three Years (Next Sampling Event in 2019)

- Reduction of sampling for general chemistry and metals concentration analysis to every three years (next sampling event in 2019) at seven monitoring wells: MW-23A, MW-23B, MW-23C, MW-29B, MW-29C, and MW-31A.
- Removal of PHC, VOC, and SVOC analysis from the sampling program at the relevant locations.
- Rationale: reduced sampling at these monitoring wells still allows for the periodic evaluation of groundwater quality adjacent to surface water (MW-23A, MW-23B and MW-23C) and in upgradient/background overburden (MW-31A) and bedrock (MW-29B and MW-29C).

Elimination from Routine Sampling

- Removal of all routine sampling at nine monitoring wells: MW-12B, MW-19B, MW-20A, MW-21C, MW-24A, MW-24B, MW-27B, MW-27C, and TH-2.
- These monitoring wells should be kept in working order should they be needed in the future.
- Rationale: The analytical chemistry data obtained from these locations does not improve the interpretation of landfill-related impacts and the evaluation of potential impacts on surface water receptors.

Indicator Parameters, Action Levels, Response and Mitigative Actions

Stantec also recommends that a new approach be adopted for evaluating groundwater monitoring data in addition to using NS Tier 1 EQS and NS Tier 2 PSS guidance values. This approach uses defined action levels for indicator parameters to trigger a response and the appropriate mitigative actions.

The Closure Plan Report (Porter Dillon 1995) previously identified the indicator parameters as ammonia, pH, chloride, specific conductance (conductivity), and total organic carbon. However, pH is typically within an acceptable range and close to neutral at most monitoring wells, and is thus not an overly useful indicator. Chloride and conductivity typically track together with conductivity being the best bulk parameter measuring total dissolved load (which includes chloride) and chloride being valuable as a conservative tracer (travels faster and at higher concentrations compared to reactive species). Organic carbon is not conservative, is at relatively low concentrations in impacted area, and does not provide any added benefit as an indicator over chloride or conductivity. Ammonia concentrations are elevated and generally agree with the other indicator parameters for interpreting impacted areas. Based on this analysis, Stantec recommends carrying chloride, conductivity, and ammonia (total) forward as indicator parameters with action levels.

Action levels are concentration values for indicator parameters which would initiate further response. The generic definition of an action level is an indicator parameter concentration that increases more than three standard deviations from the mean of the historical data (defined here as 10 years of data collected in 2007 through 2016; the calculation is made using half of the reportable detection limit, where applicable). Action levels are quantified for the proposed annual and triennial (every three years) monitoring wells in the appropriate attached tables (Tables A-1, A-6, A-7, A-8, A-9, A-10, A-11, A-14, A-17, A-18, A-19, and A-20). In addition, a change that indicates a persistent increasing indicator parameter concentration trend should also trigger a response. This change in trend should be evaluated using appropriate statistical methods (e.g., Mann-Kendall Trend Test) with consideration for data requirements.

Groundwater quality values that exceed water quality action levels should be addressed through an investigative program. Key aspects of the investigation should include:

- Source of exceedance: confirm that the source relates to the landfill and not to sample, contamination, sampling procedure, or laboratory error. A second sample will be collected immediately following confirmation of the action level exceedance to confirm the findings of the first sample.
- Lateral and vertical extent of contamination: assess whether the exceedance event is isolated to one well or several wells, and whether the exceedance is limited to one or multiple of the intervals at nested wells at any location.
- Previous data: assess whether the exceedance event represents a spurious value or if it is consistent with previous trends.
- Magnitude of exceedance above the action level: assess whether the exceedance represents a minor or significant deviation from the action level.
- Parameter(s) of concern: assess whether the exceedance is limited to one or several parameters, and compare exceedances of regulatory guidance values to historical data to determine if the change represents a potential increased risk to the receptor.

Based on consideration to the primary investigation described above, secondary measures may be proposed to better define the source, extent and/or pathway of the contamination plume. This may include:

Reference: Evaluation of Groundwater and Surface Water Monitoring Program – Meadowview Landfill, Kentville, NS

- Sampling of additional existing monitoring wells near the exceedance location that were not part of the sampling event.
- Installation of additional monitoring wells to better constrain the seepage pathway (nature of conductive unit and vertical/lateral extent of the plume).
- Analytical or numerical modeling to quantify the contaminant flux to surface water bodies.
- Increased surface water and fisheries sampling regime in receiving waters, if appropriate based on proximity of exceedance to discharge location.

Based on the information derived for the primary and/or secondary investigations, the potential relevance of the exceedance event to aquatic receptors should be evaluated through quantitative risk evaluation. At that time, more rigorous monitoring may be recommended for critical zones identified for surface water bodies (e.g., increased sampling frequency, increased number of sampling locations, additional parameters, etc.).

If mitigation is deemed necessary to reduce the discharge of impacted groundwater to surface water, an options analysis should be performed and the appropriate option implemented that includes a tailored monitoring program to evaluate performance.

SURFACE WATER MONITORING

Stantec recommends that the surface water program parameters remain unchanged at this time, unless otherwise warranted through the response to indicator parameter exceedances in groundwater or results from the fish habitat monitoring. NS Tier 1 EQS should be used for concentration screening in addition to CCME FAL. Surface water monitoring is crucial for evaluating actual receptor conditions, and should be considered the compliance point. Should any significant changes in surface water chemistry be noted (e.g., the persistence of additional metals concentrations greater than NS Tier 1 EQS, increasing trends in parameters that may be attributed to landfill influence, concentration changes greater than three standard deviation of the historical mean that are not directly attributable to laboratory or sampling issues), a primary and/or secondary investigation similar to the one described above for groundwater should be considered and integrated with the results from the groundwater and fisheries habitat monitoring programs to identify the potential cause and the subsequent effect on aquatic life.

FISHERIES HABITAT MONITORING

Stantec recommends that the fisheries habitat monitoring program remain unchanged at this time, unless otherwise warranted through the response to indicator parameter exceedances in groundwater and surface water quality. Fisheries habitat monitoring is crucial for evaluating actual receptor conditions, and should be considered the compliance point. Should any significant changes in groundwater or surface water chemistry be observed during routine monitoring (defined above), a primary and/or secondary investigation similar to the one described above for groundwater should be considered and integrated with the results from the

Reference: Evaluation of Groundwater and Surface Water Monitoring Program – Meadowview Landfill, Kentville, NS

groundwater and surface water monitoring programs to identify the potential cause and the subsequent effect on aquatic life.

This report was prepared by John Kozuskanich Ph.D., P.Geo., and reviewed by Donald Carey, M.Sc., P.Eng.

If you have any questions, please do not hesitate to contact us at your convenience.

Regards,

STANTEC CONSULTING LTD.

John Kozuskanich, Ph.D., P.Geo.
Hydrogeologist, Environmental Services
Phone: (902) 468-7777
John.Kozuskanich@stantec.com

Attachment: Drawing A-1
Figures A-1 through E-3
Tables A-1 through A-21 Groundwater General Chemistry
Tables B-1 through B-21 Groundwater Metals Chemistry
Tables C-1 through C-8 Groundwater Volatile Organic Compound Chemistry
Tables D-1 through D-4 Groundwater Semi-Volatile Organic Compound Chemistry
Tables E-1 through E-7 Groundwater Petroleum Hydrocarbon Chemistry
Tables D-1 through D-4 Groundwater Semi-Volatile Organic Compound Chemistry
Tables F-1 through F-7 Surface Water General and Metals Chemistry

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Reference: Evaluation of Groundwater and Surface Water Monitoring Program – Meadowview Landfill, Kentville, NS

LIMITATIONS

This report documents work that was performed in accordance with generally accepted professional standards at the time and location in which the services were provided. No other representations, warranties or guarantees are made concerning the accuracy or completeness of the data or conclusions contained within this report, including no assurance that this work has uncovered all potential liabilities associated with the identified property.

All information received from the client or third parties in the preparation of this report has been assumed by Stantec to be correct. Stantec assumes no responsibility for any deficiency or inaccuracy in information received from others.

Conclusions made within this report consist of Stantec's professional opinion as of the time of the writing of this report, and are based solely on the scope of work described in the report, the limited data available and the results of the work. They are not a certification of the property's environmental condition. This report should not be construed as legal advice.

This report has been prepared for the exclusive use of the client identified herein and any use by any third party is prohibited. Stantec assumes no responsibility for losses, damages, liabilities or claims, howsoever arising, from third party use of this report.

REFERENCES

Canadian Council of Ministers of the Environment (CCME) (updates). Canadian Environmental Quality Guidelines. Accessed online at http://st-ts.ccme.ca/en/index.html.

Health Canada (2017). *Guidelines for Canadian Drinking Water Quality - Summary Table*. Prepared by the Federal-Provincial-Territorial Committee on Drinking Water of the Federal-Provincial-Territorial Committee on Health and the Environment. February 2017.

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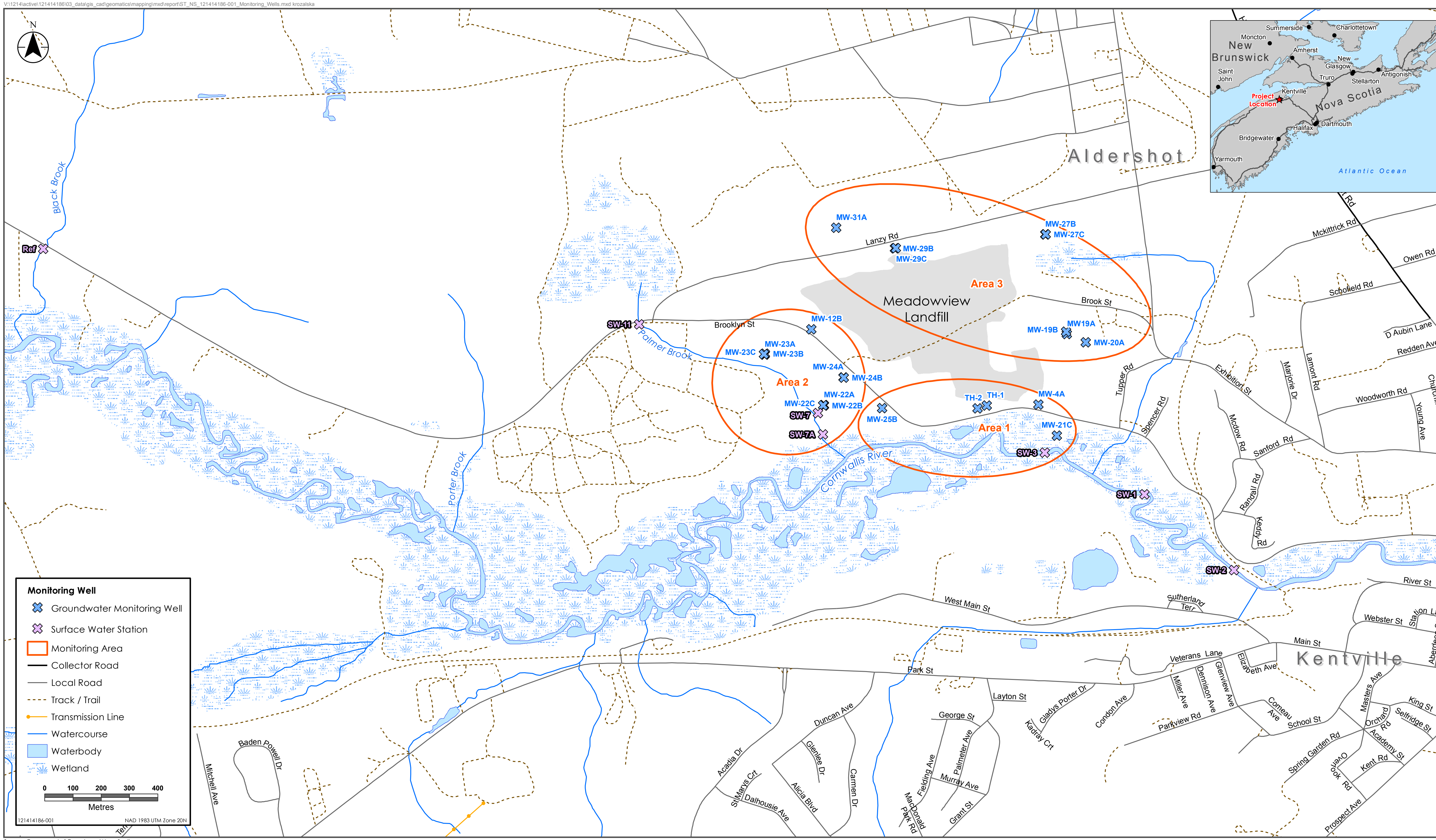

Sources: Government of Canada and Nova Scotia

Sampling Locations

Stantec

ENVIRONMENTAL COMPLIANCE MONITORING – MEADOWVIEW LANDFILL

Drawing A-1

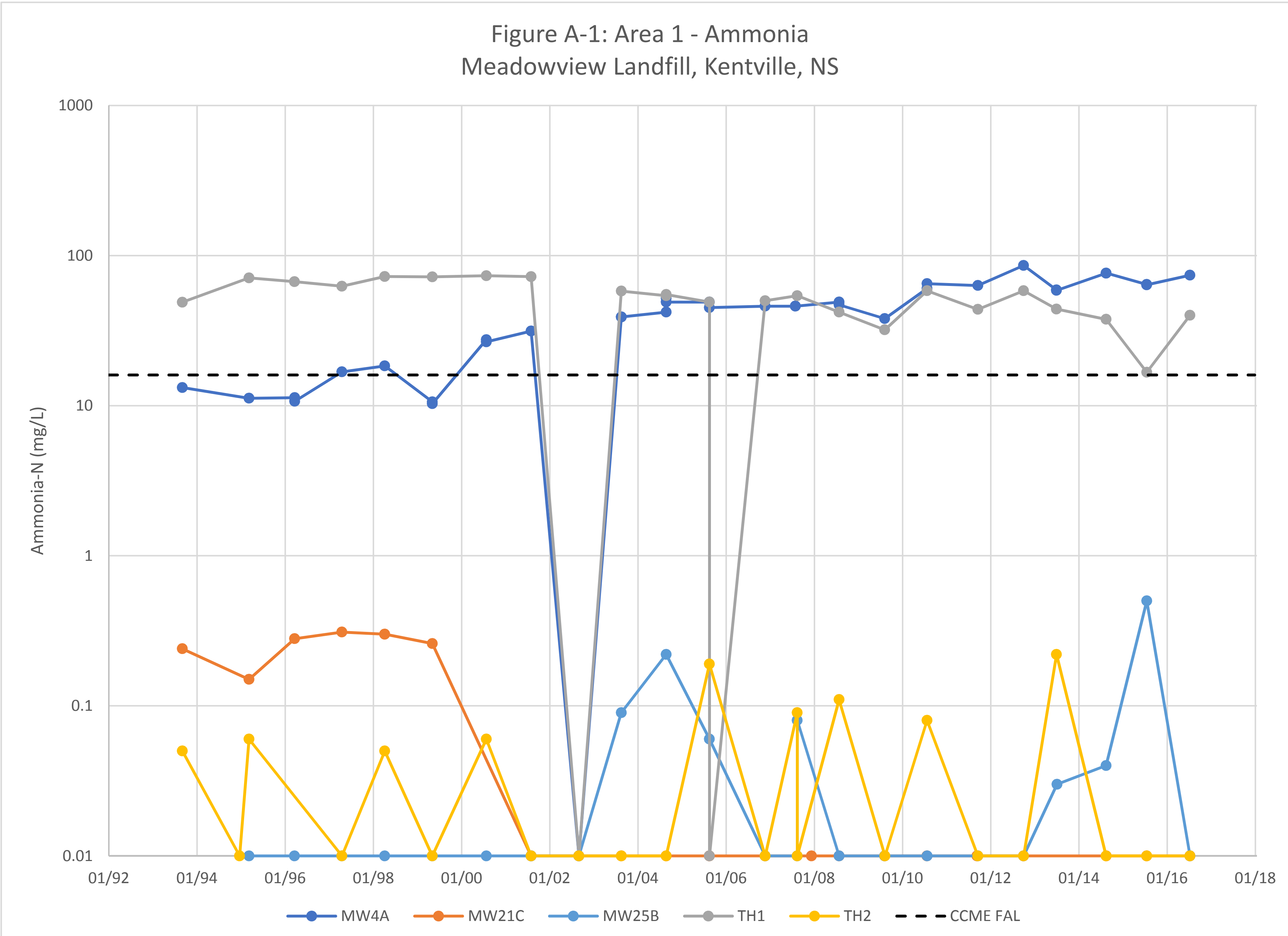
Figure A-1: Area 1 - Ammonia
Meadowview Landfill, Kentville, NS
Ammonia-N (mg/L)
1000
100
10
1
0.1
0.01
01/92
01/94
01/96
01/98
01/00
01/02
01/04
01/06
01/08
01/10
01/12
01/14
01/16
01/18
MW4A
MW21C
MW25B
TH1
TH2
CCME FAL

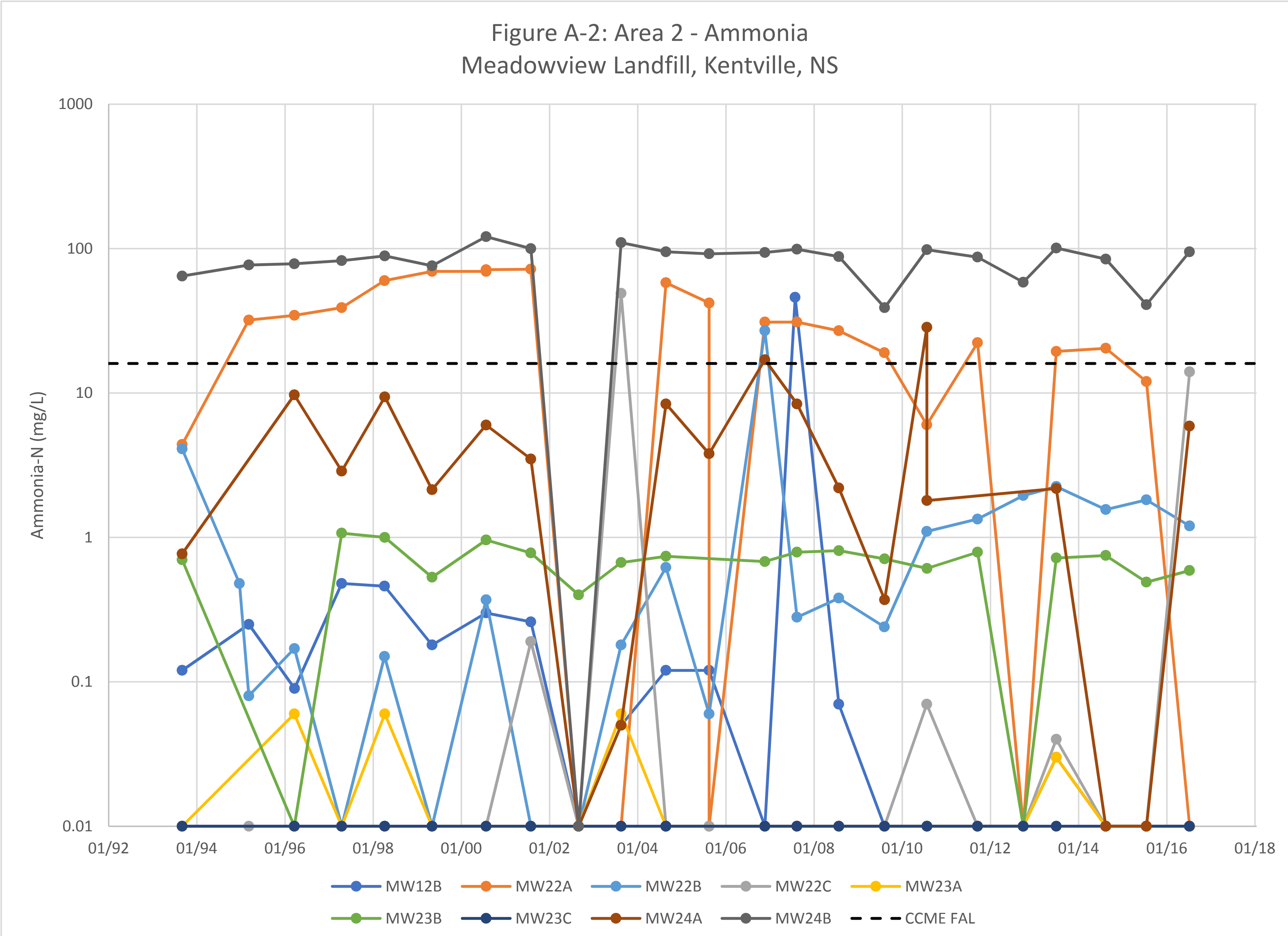
Figure A-2: Area 2 - Ammonia
Meadowview Landfill, Kentville, NS
Ammonia-N (mg/L)
1000
100
10
1
0.1
0.01
01/92
01/94
01/96
01/98
01/00
01/02
01/04
01/06
01/08
01/10
01/12
01/14
01/16
01/18
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MW22A
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MW23A
MW23B
MW23C
MW24A
MW24B
CCME FAL

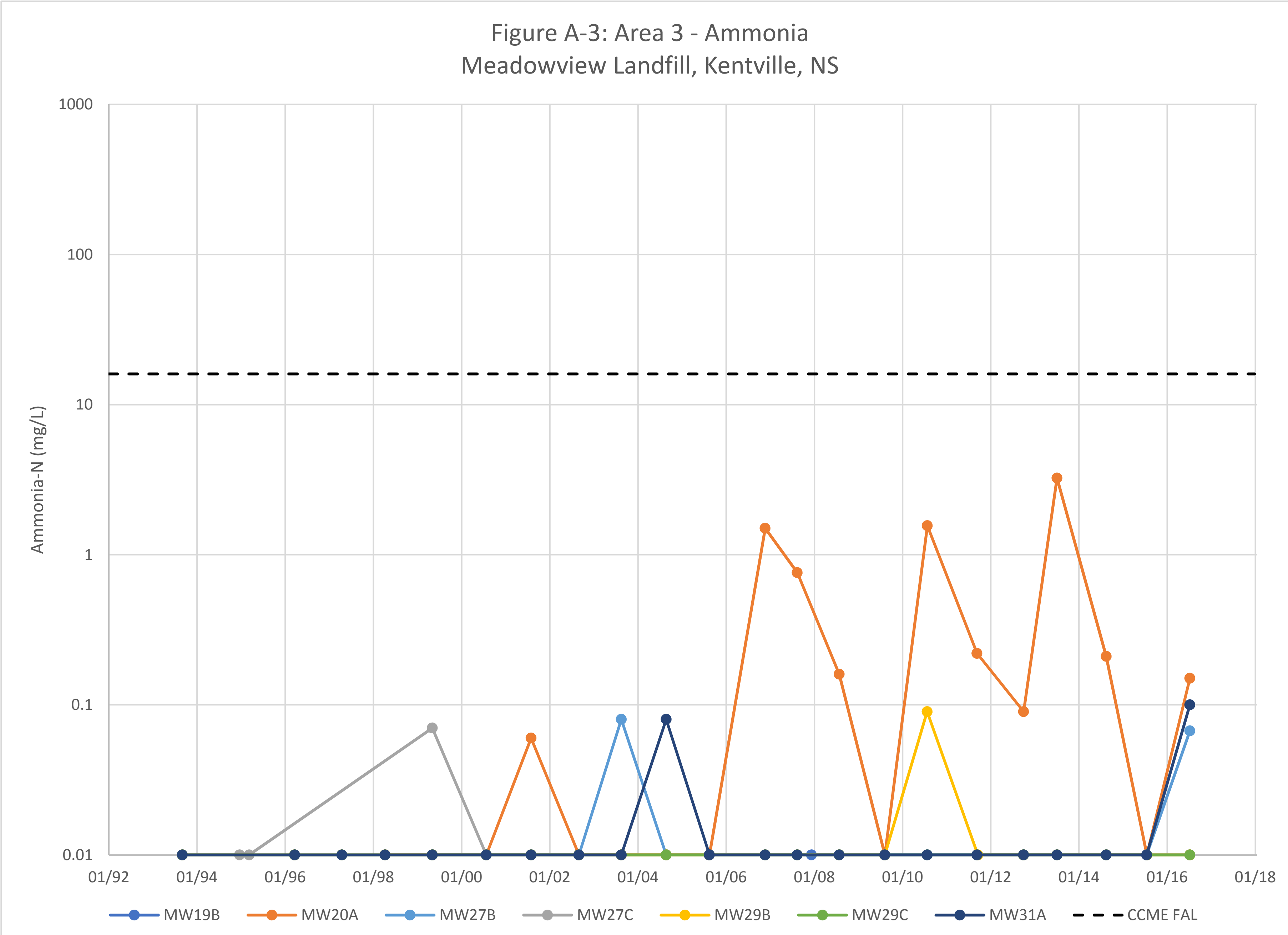
Figure A-3: Area 3 - Ammonia
Meadowview Landfill, Kentville, NS
Ammonia-N (mg/L)
1000
100
10
1
0.1
0.01
01/92
01/94
01/96
01/98
01/00
01/02
01/04
01/06
01/08
01/10
01/12
01/14
01/16
01/18
MW19B
MW20A
MW27B
MW27C
MW29B
MW29C
MW31A
CCME FAL

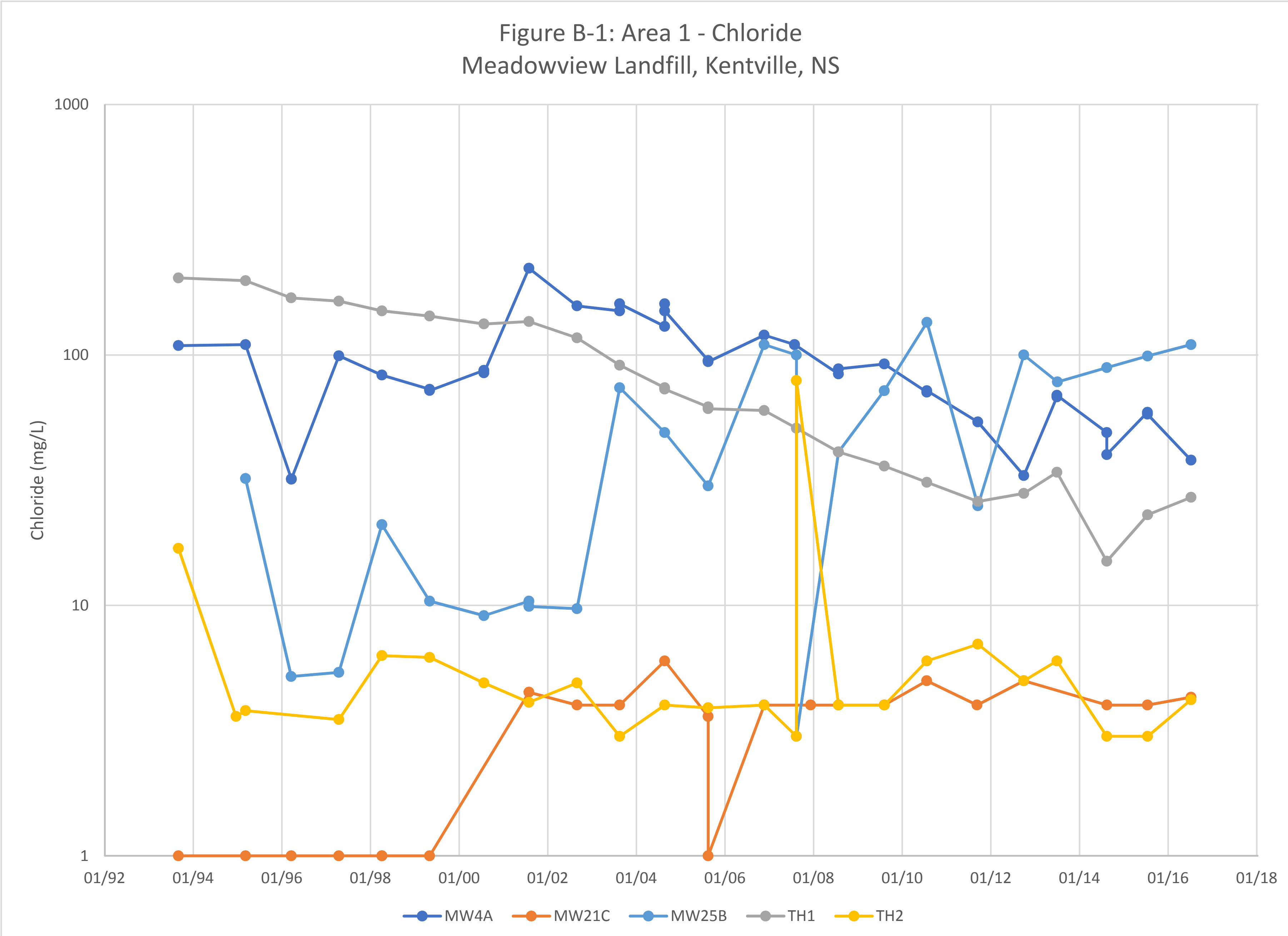

Figure B-1: Area 1 - Chloride
Meadowview Landfill, Kentville, NS
Chloride (mg/L)
1000
100
10
1
01/92
01/94
01/96
01/98
01/00
01/02
01/04
01/06
01/08
01/10
01/12
01/14
01/16
01/18
MW4A
MW21C
MW25B
TH1
TH2

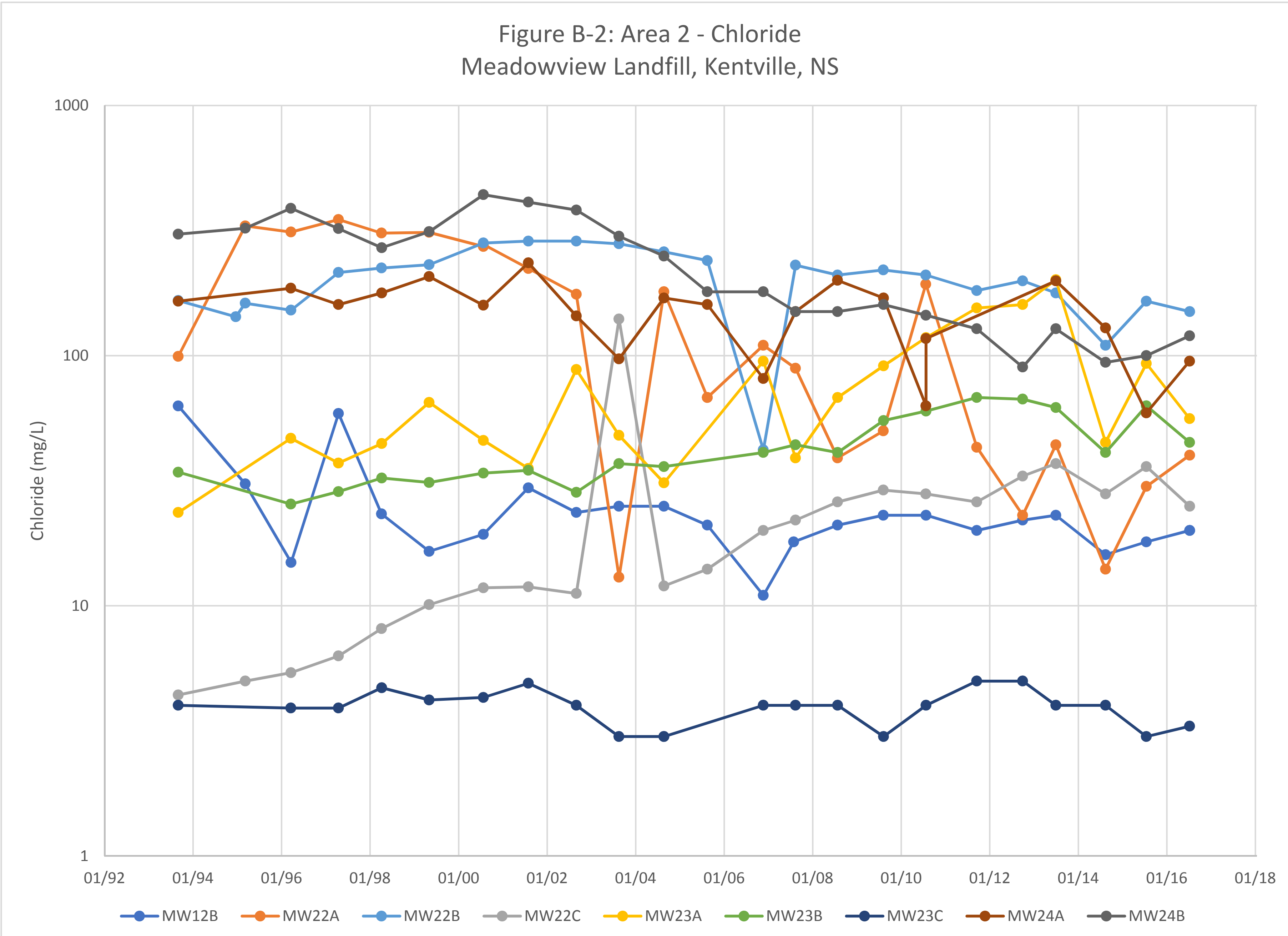

Figure B-2: Area 2 - Chloride
Meadowview Landfill, Kentville, NS
Chloride (mg/L)
1000
100
10
1
01/92
01/94
01/96
01/98
01/00
01/02
01/04
01/06
01/08
01/10
01/12
01/14
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MW22B
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MW23B
MW23C
MW24A
MW24B

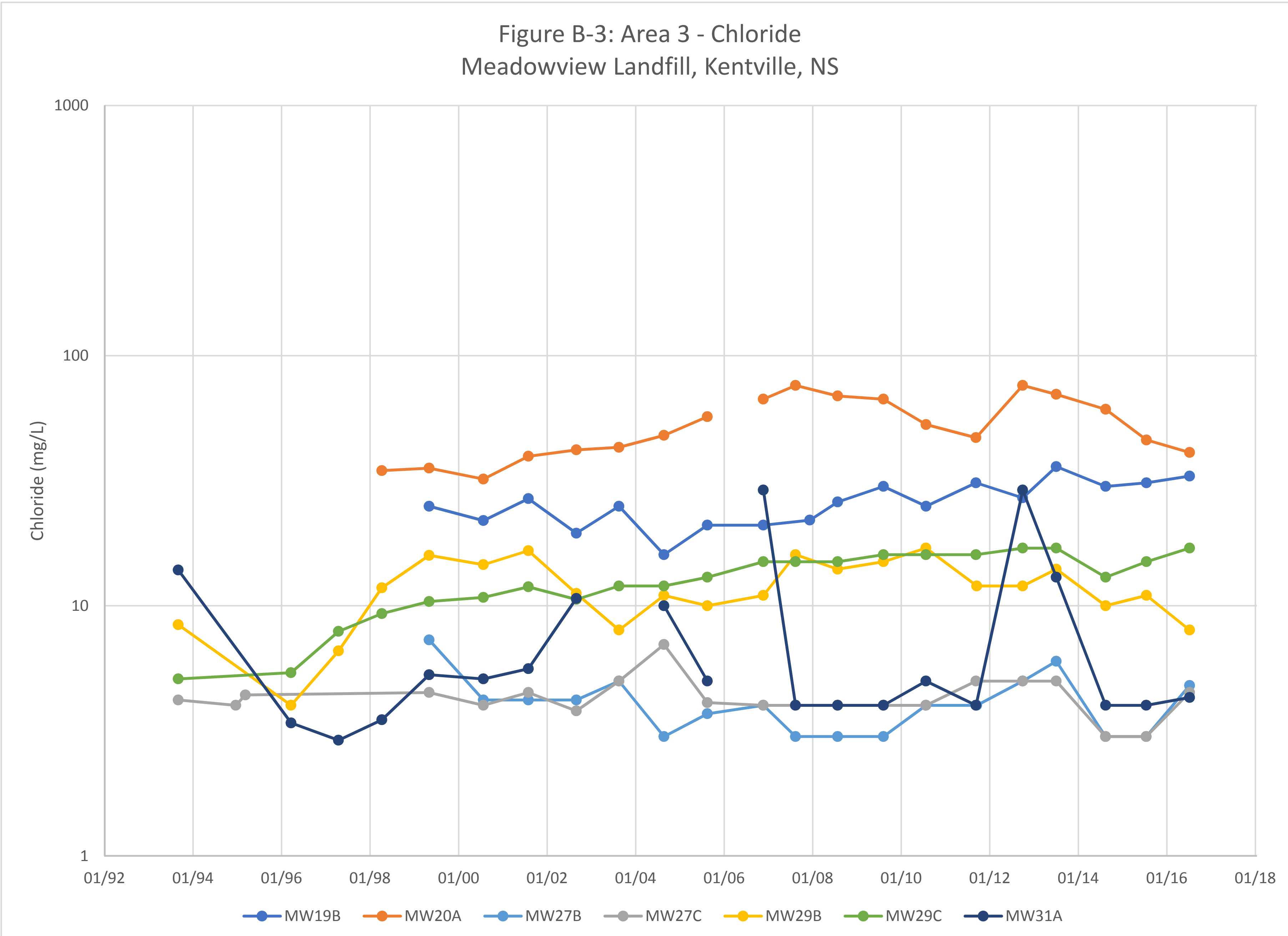
Figure B-3: Area 3 - Chloride
Meadowview Landfill, Kentville, NS
Chloride (mg/L)
1000
100
10
1
01/92
01/94
01/96
01/98
01/00
01/02
01/04
01/06
01/08
01/10
01/12
01/14
01/16
01/18
MW19B
MW20A
MW27B
MW27C
MW29B
MW29C
MW31A

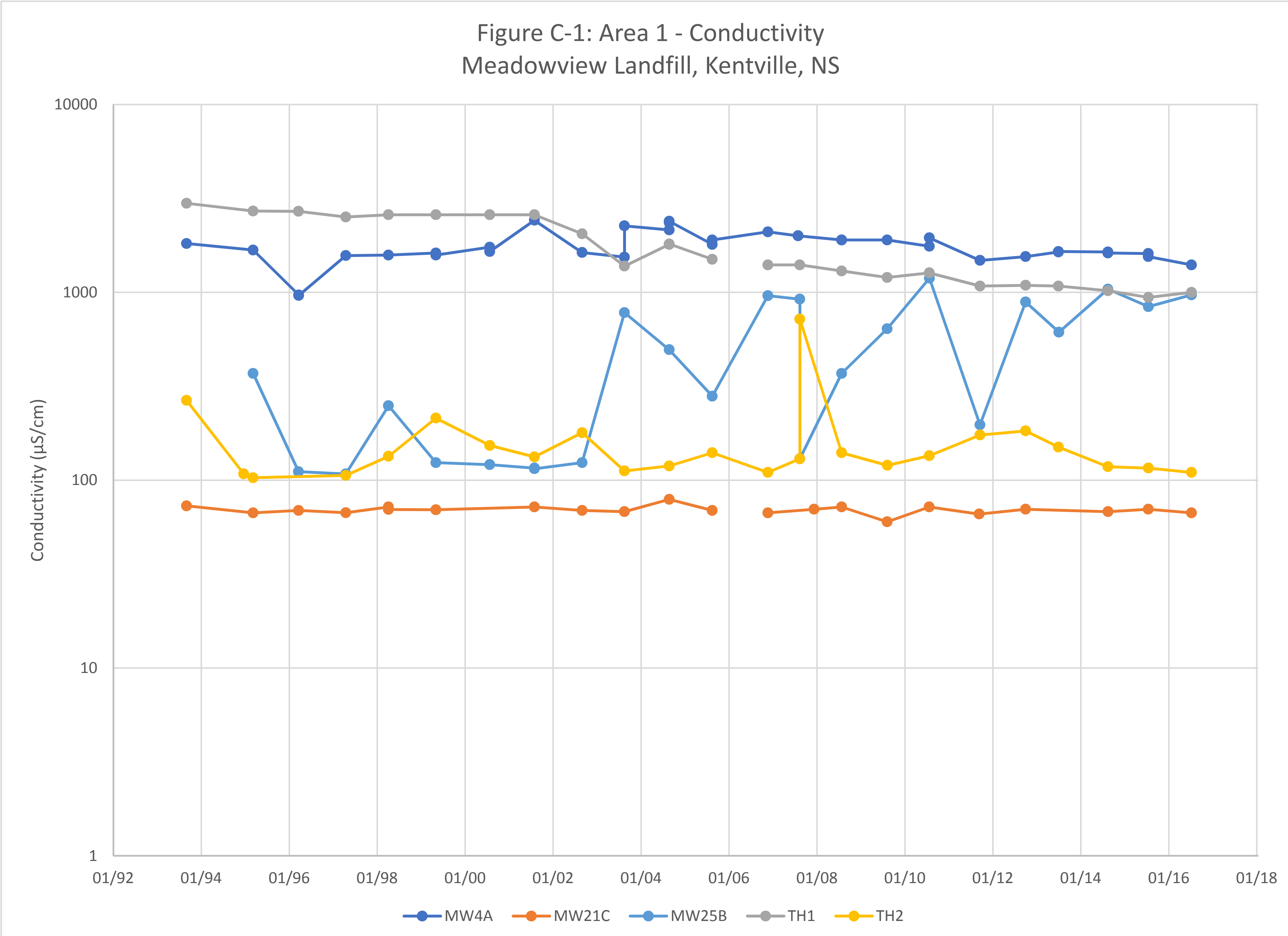
Figure C-1: Area 1 - Conductivity
Meadowview Landfill, Kentville, NS
10000
1000
100
10
1
Conductivity (µS/cm)
01/92
01/94
01/96
01/98
01/00
01/02
01/04
01/06
01/08
01/10
01/12
01/14
01/16
01/18
MW4A
MW21C
MW25B
TH1
TH2

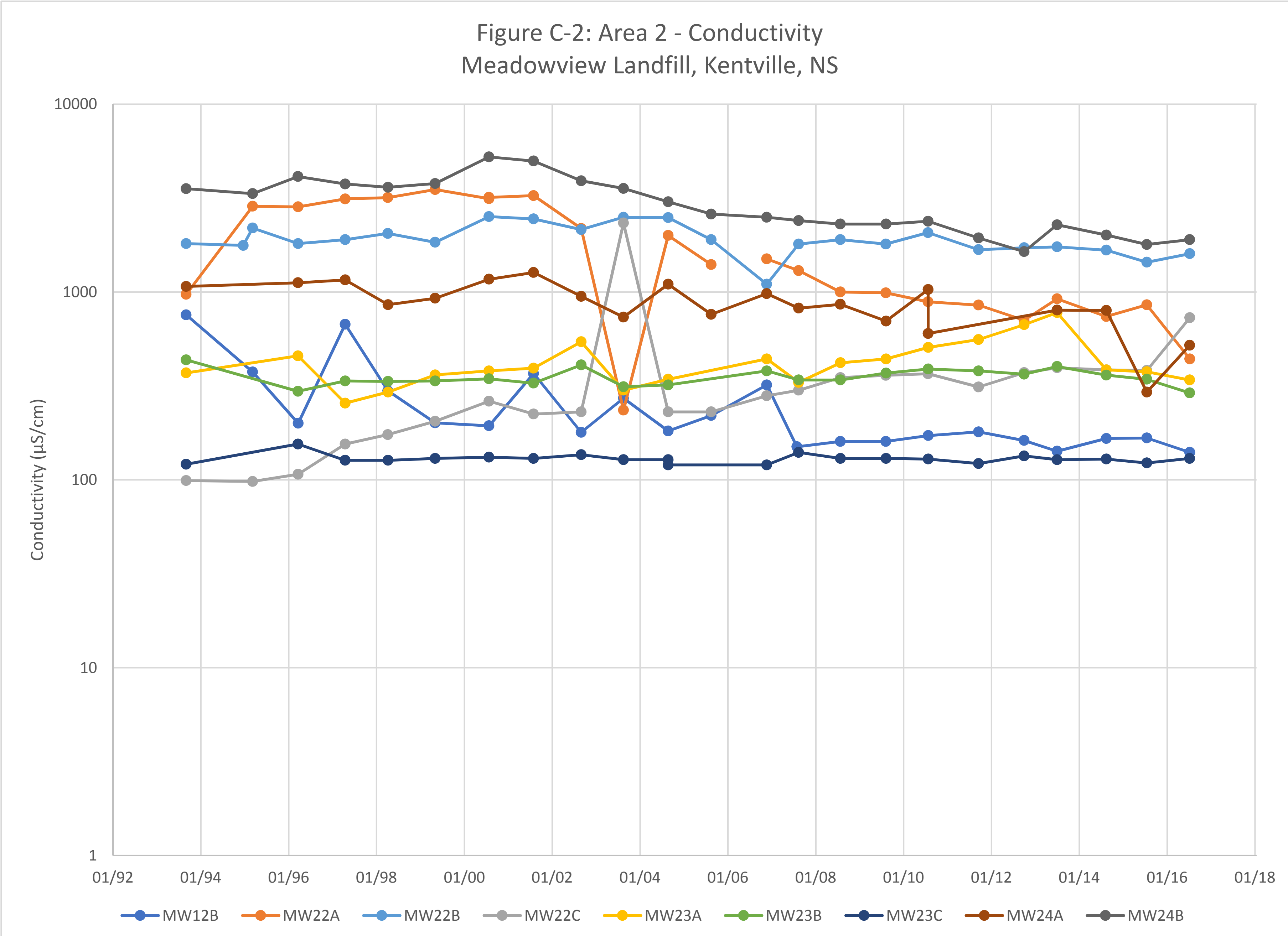
Figure C-2: Area 2 - Conductivity
Meadowview Landfill, Kentville, NS
Conductivity (µS/cm)
10000
1000
100
10
1
01/92
01/94
01/96
01/98
01/00
01/02
01/04
01/06
01/08
01/10
01/12
01/14
01/16
01/18
MW12B
MW22A
MW22B
MW22C
MW23A
MW23B
MW23C
MW24A
MW24B

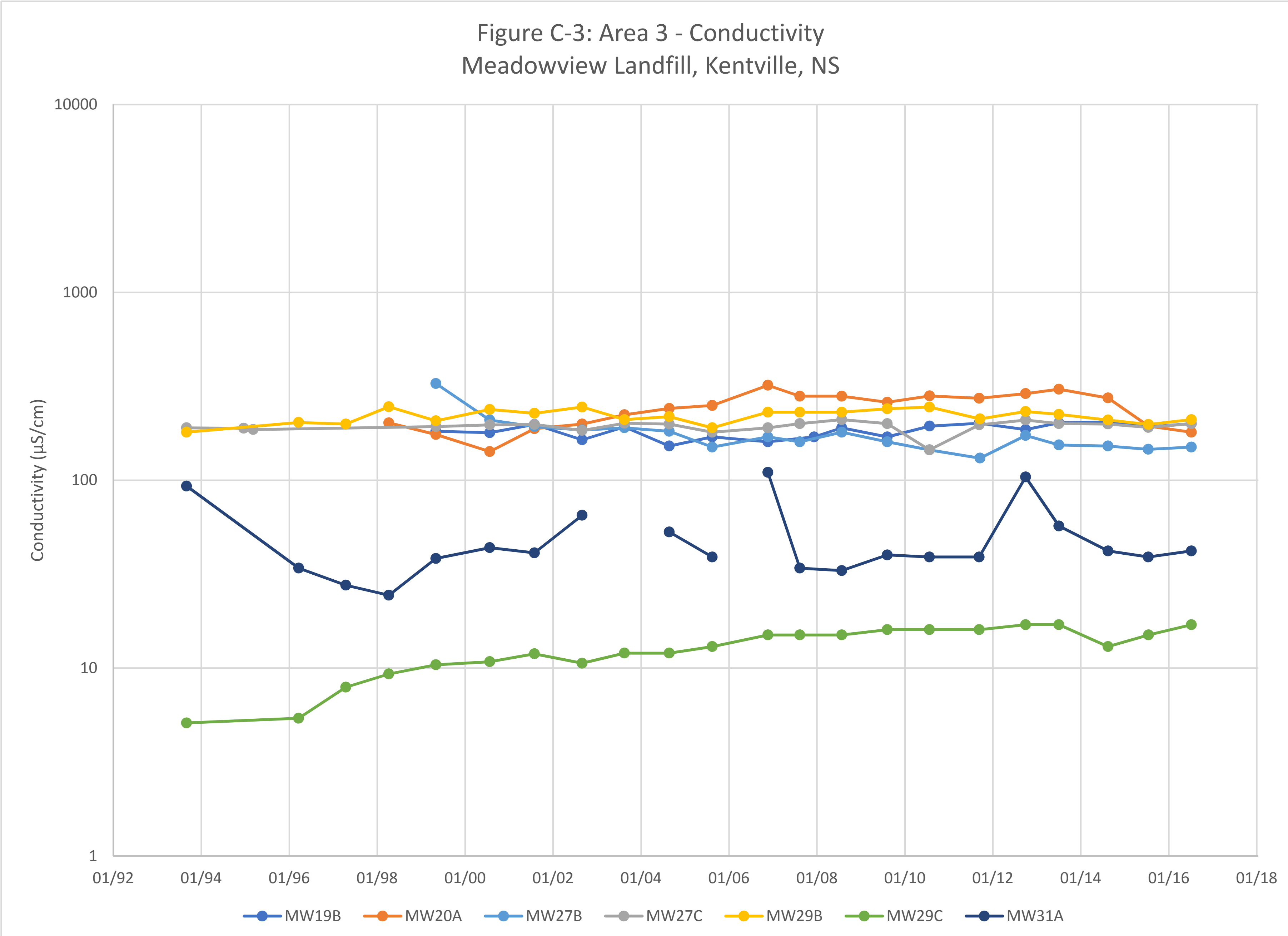
Figure C-3: Area 3 - Conductivity
Meadowview Landfill, Kentville, NS
Conductivity (µS/cm)
10000
1000
100
10
1
01/92
01/94
01/96
01/98
01/00
01/02
01/04
01/06
01/08
01/10
01/12
01/14
01/16
01/18
MW19B
MW20A
MW27B
MW27C
MW29B
MW29C
MW31A

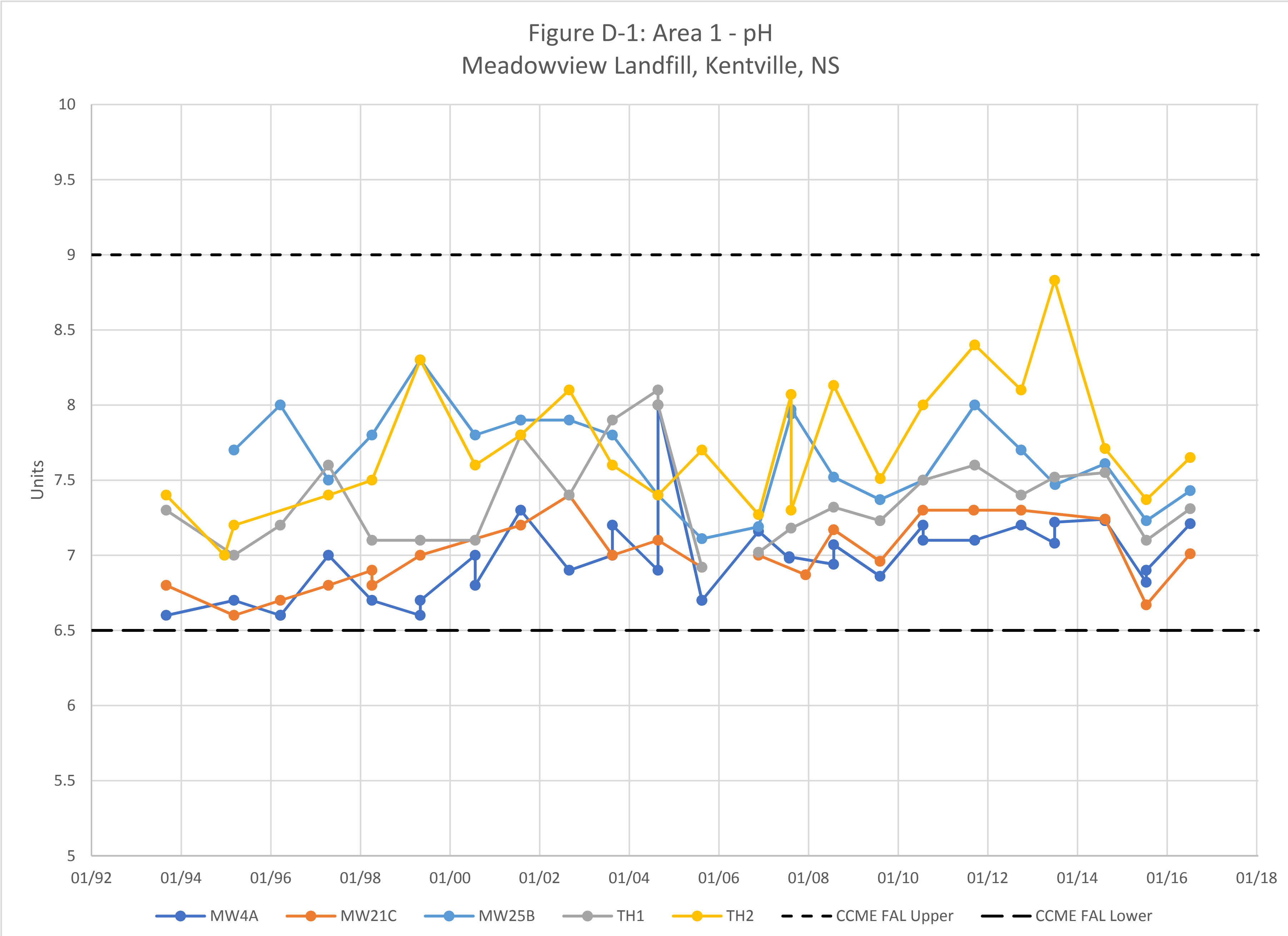

Figure D-1: Area 1 - pH
Meadowview Landfill, Kentville, NS
Units
10
9.5
9
8.5
8
7.5
7
6.5
6
5.5
5
01/92
01/94
01/96
01/98
01/00
01/02
01/04
01/06
01/08
01/10
01/12
01/14
01/16
01/18
MW4A
MW21C
MW25B
TH1
TH2
CCME FAL Upper
CCME FAL Lower

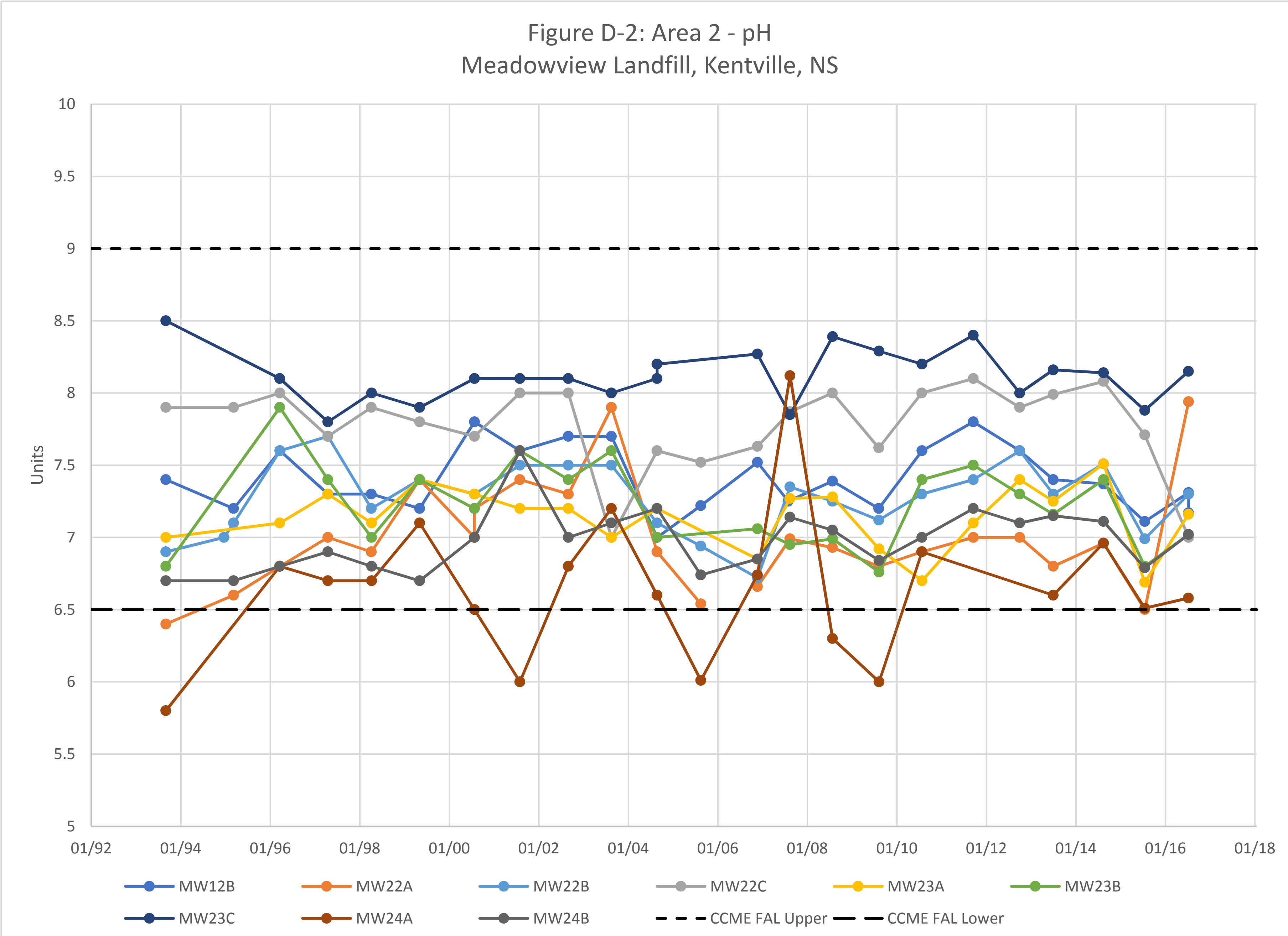
Figure D-2: Area 2 - pH
Meadowview Landfill, Kentville, NS
Units
10
9.5
9
8.5
8
7.5
7
6.5
6
5.5
5
01/92
01/94
01/96
01/98
01/00
01/02
01/04
01/06
01/08
01/10
01/12
01/14
01/16
01/18
MW12B
MW22A
MW22B
MW22C
MW23A
MW23B
MW23C
MW24A
MW24B
CCME FAL Upper
CCME FAL Lower

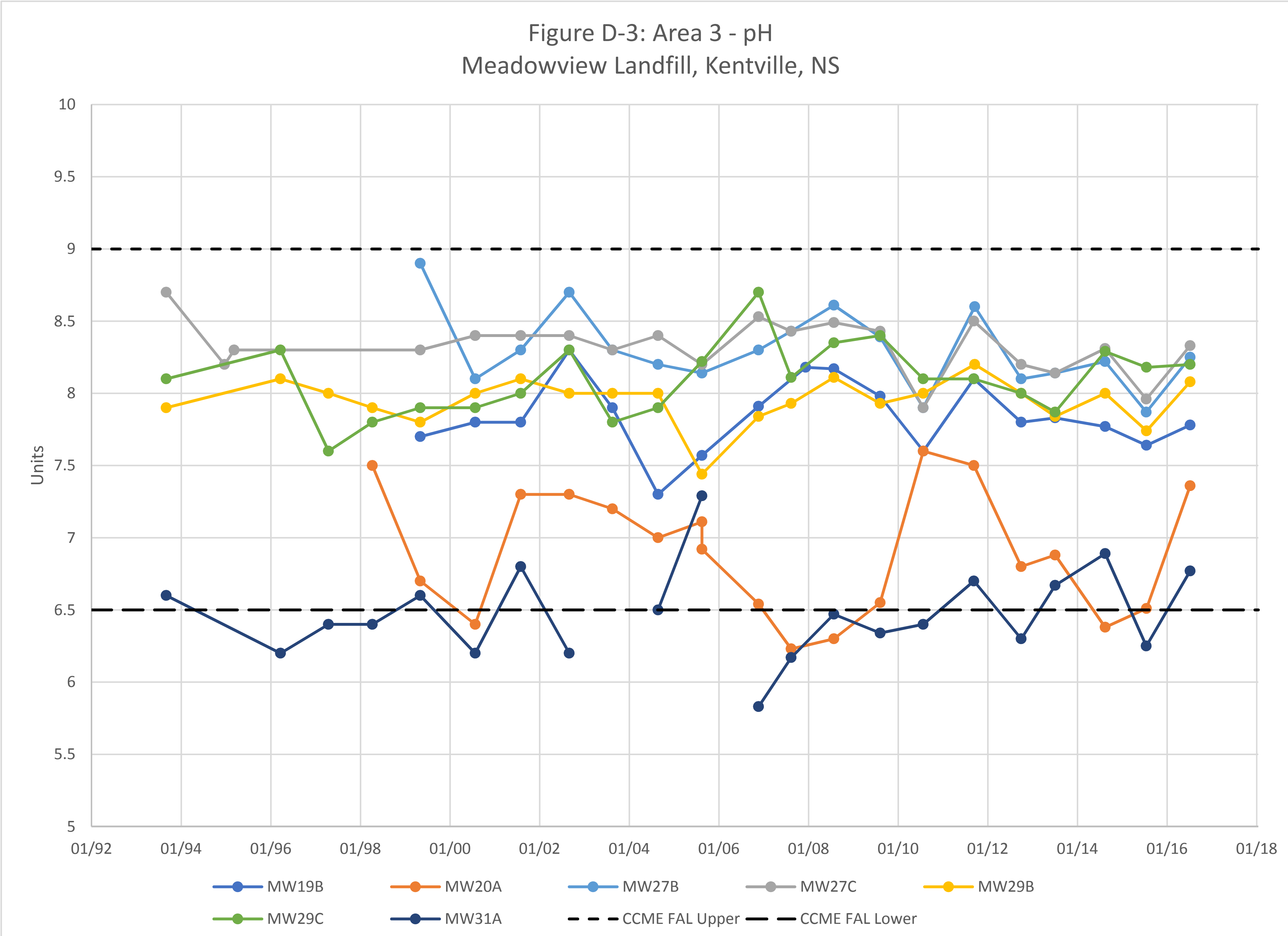

Figure D-3: Area 3 - pH
Meadowview Landfill, Kentville, NS
Units
10
9.5
9
8.5
8
7.5
7
6.5
6
5.5
5
01/92
01/94
01/96
01/98
01/00
01/02
01/04
01/06
01/08
01/10
01/12
01/14
01/16
01/18
MW19B
MW20A
MW27B
MW27C
MW29B
MW29C
MW31A
CCME FAL Upper
CCME FAL Lower

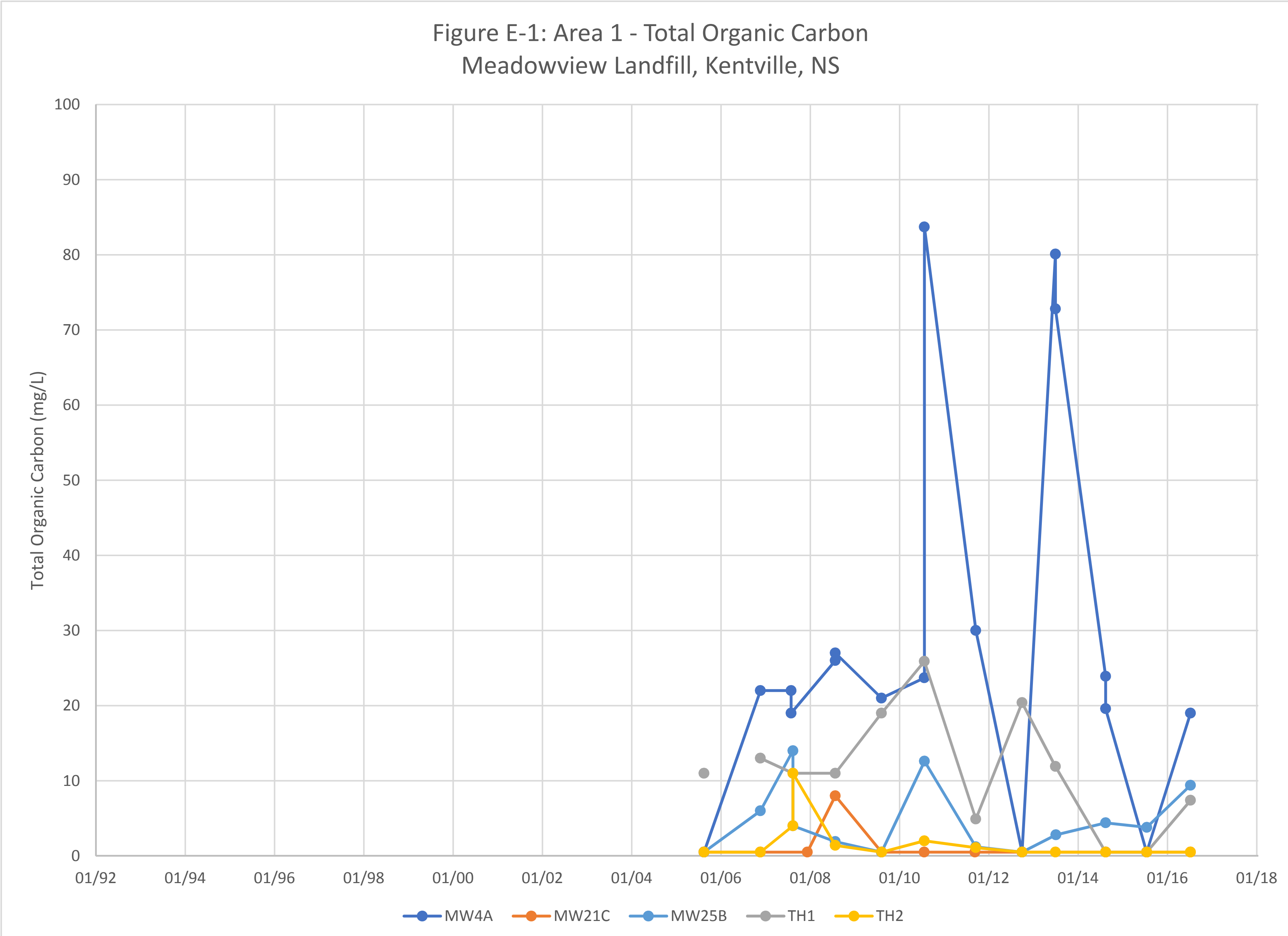
Figure E-1: Area 1 - Total Organic Carbon
Meadowview Landfill, Kentville, NS
Total Organic Carbon (mg/L)
100
90
80
70
60
50
40
30
20
10
0
01/92
01/94
01/96
01/98
01/00
01/02
01/04
01/06
01/08
01/10
01/12
01/14
01/16
01/18
MW4A
MW21C
MW25B
TH1
TH2

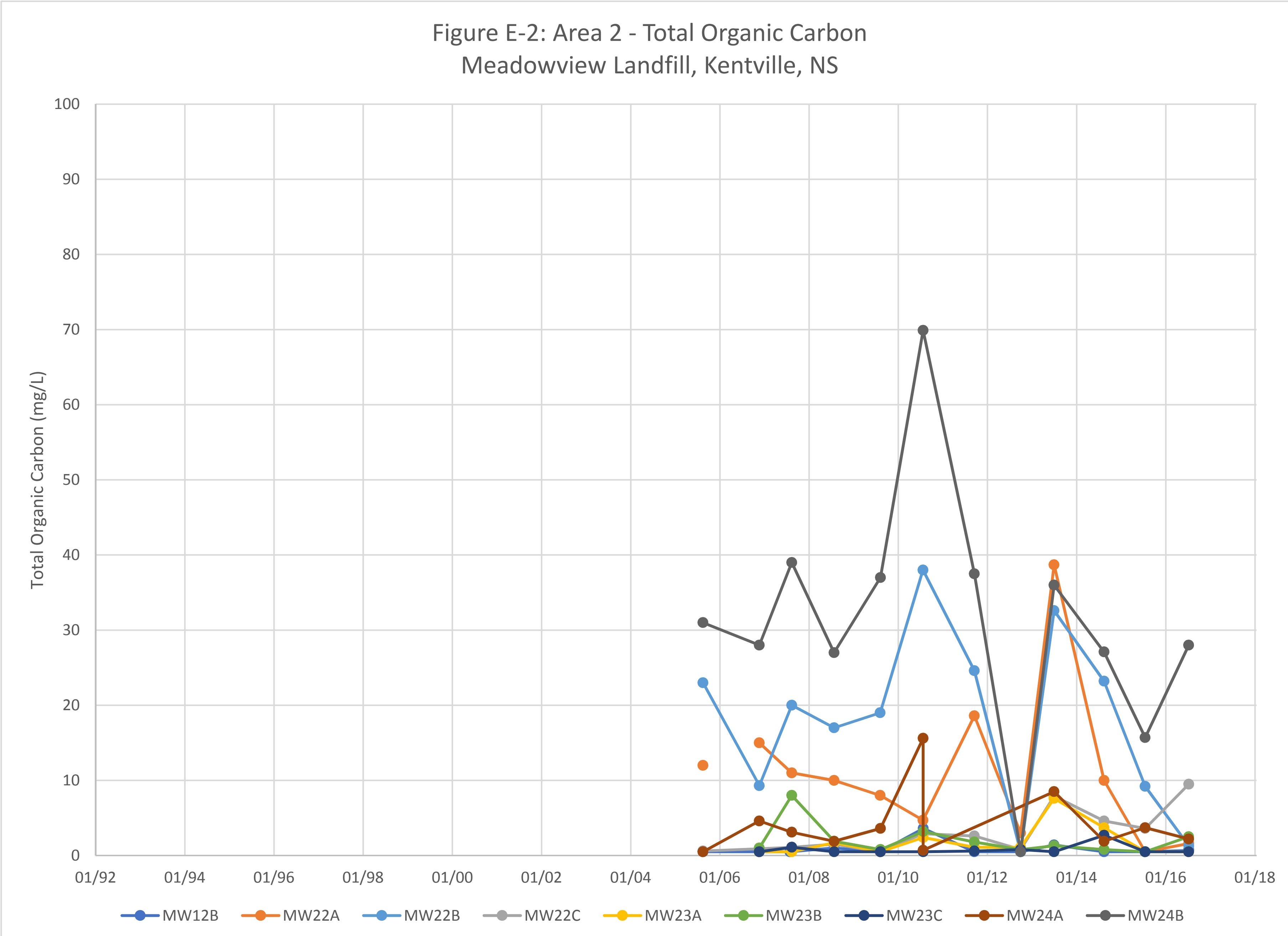
Figure E-2: Area 2 - Total Organic Carbon
Meadowview Landfill, Kentville, NS
Total Organic Carbon (mg/L)
0
10
20
30
40
50
60
70
80
90
100
01/92
01/94
01/96
01/98
01/00
01/02
01/04
01/06
01/08
01/10
01/12
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MW23C
MW24A
MW24B

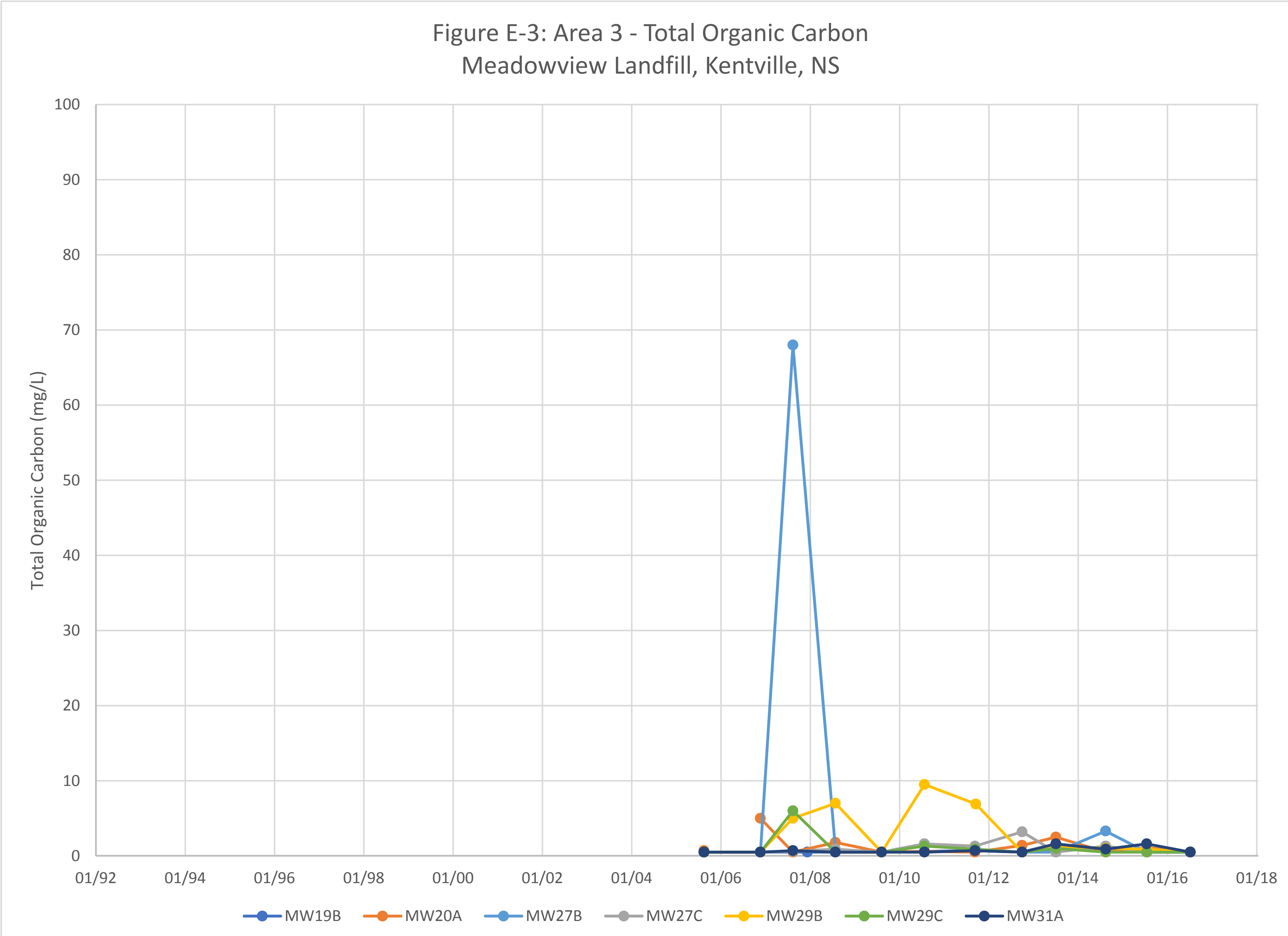
Figure E-3: Area 3 - Total Organic Carbon
Meadowview Landfill, Kentville, NS
Total Organic Carbon (mg/L)
100
90
80
70
60
50
40
30
20
10
0
01/92
01/94
01/96
01/98
01/00
01/02
01/04
01/06
01/08
01/10
01/12
01/14
01/16
01/18
MW19B
MW20A
MW27B
MW27C
MW29B
MW29C
MW31A

TABLE A-1

GROUNDWATER GENERAL CHEMISTRY - MW-4A
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	8-Mar-95	21-Mar-96	21-Mar-96	16-Apr-97	6-Apr-98	5-May-99	5-May-99	26-Jul-00	26-Jul-00 Field Dup.	Aug-01	Sep-02	19-Aug-03	19-Aug-03 MW-40D DUP	25-Aug-04	25-Aug-04 MW-40D	25-Aug-04 MW-40D DUP	18-Aug-05	18-Aug-05 MW-40D
Anion Sum	me/L	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19.8	23.1	22.8	19.2	20.8
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	1	-	-	737	621	452	429	696	681	720	718	685	664	737	679.49	739	799	799	911	911	810	890
Calculated TDS	mg/L	1	-	-	968		545	520	900	835	856	845	862	820	1150	907.36	1100	1170	1030	1190	1200	1080	1110
Carb. Alkalinity (calc. as CaCO3)	mg/L	1	-	-	0.28	0	0.2	0.2	< 1	0.3	0.3	0.3	< 1	< 1	1	0.51	< 1	1	<1	9	9	ND	ND
Cation Sum	me/L	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18.8	22	22.7	22	21.4
Hardness (CaCO3)	mg/L	1	-	-	703	565	389	374	598	508	567	577	597	519	751	538.12	576	602	547	631	663	580	580
Ion Balance (% Difference)	%	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.57	2.42	0.13	6.68	1.52
Langelier Index (@ 20C)	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	1.72	1.74	0.329	0.374
Langelier Index (@ 4C)	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	1.32	1.34	0.083	0.128
Nitrate (N)	mg/L	0.05	-	-															0.06	<0.05	<0.05	ND	ND
Saturation pH (@ 20C)	Units	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.4	6.28	6.26	6.37	6.33
Saturation pH (@ 4C)	Units	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.8	6.68	6.66	6.62	6.57
Total Alkalinity (Total as CaCO3)	mg/L	100	-	-	737	621	452	429	696	681	720	718	686	664	738	680	740	800	800	920	920	810	890
Dissolved Chloride (Cl)	mg/L	1	-	15000	109	110	31.9	32	99.2	83.1	72.9	72.1	86.8	84.8	222	157	150	160	130	160	150	95	94
Colour	TCU	5	-	-	160	55	130	70	17	20	100	93	11	10	15	98	26	37	18	19	19	34	31
Nitrate + Nitrite (N)	mg/L	0.05	-	-	< 0.05	< 0.05	0.11	0.17	0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.06	<0.05	1.66	< 0.05	< 0.05	0.08	<0.05	<0.05	ND	ND
Nitrite (N)	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.02	<0.01	<0.01	ND	ND
Nitrogen (Ammonia Nitrogen)	mg/L	0.05	-	-	13.2	11.2	11.3	10.7	16.8	18.4	10.6	10.3	27.5	26.6	31.4	<0.1	39	39	42	52	49	49	45
Total Organic Carbon (C)	mg/L	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			ND	ND
Orthophosphate (P)	mg/L	0.01	-	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.04	<0.3	0.04	0.01	0.06	0.06	<0.01	ND	0.01
pH	Units	N/A	-	-	6.6	6.7	6.6	6.6	7	6.7	6.6	6.7	7	6.8	7.3	6.9	7	7.2	6.9	8	8	6.7	6.7
Reactive Silica (SiO2)	mg/L	2.5	-	-	49	49.5	26.5	27	48	44.4	44.4	44.8	38.4	37.5	41.1	44.1	37	36	35	36	36	38	37
Dissolved Sulphate (SO4)	mg/L	2	-	-	< 2	< 2	< 2	2	< 2	< 2	< 2	< 2	3	2	8	4.3	10	15	7	8	8	16	16
Turbidity	NTU	1	-	-	300	> 1000	3.2	3.9	1.6	3	20.9	18.8	0.4	0.4	>1000	>1000	755	322	55.1	>1000	>1000	>1000	>1000
Conductivity	uS/cm	1	-	-	1820	1680	968	963	1570	1580	1620	1580	1740	1650	2420	1630	1540	2260	2150	2350	2390	1800	1900
Dissolved Organic Carbon	mg/L	0.5	-	-	24	22.2	7.5	7.5	19	15.8	1600	1570	17.1	17.6	19.1	-	-	-	<50	<500	<500	-	-
Dissolved Calcium	mg/L	0.1	-	-	210	173	128	120	179	158	179	176	191	164	227	169	182	191	170	196	207	190	190
Dissolved Magnesium	mg/L	0.1	-	-	43.4	32.3	16.9	18	36.8	25.9	34.1	33.5	29.2	26.6	44.8	28.2	29.5	30.4	29.8	34.4	35.5	25	26
Phosphorus	mg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	ND	ND
Potassium	mg/L	0.1	-	-	8.8	7.9	14	11.8	11.9	9.6	7.9	7.6	19.9	26.2	14.7	18.3	15.7	17	17.7	17.5	18.3	17	17
Sodium	mg/L	0.1	-	-	87.8	83.2	39.7	37.6	83.6	78.4	70	64.4	46.1	45.7	107	76.8	181	192	102	120	127	140	140

Notes:

(1) Reporting limit was increased due to turbidity.

RDL - Reported Detection Limit (updated in 2016)

ND - Values below RDL

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 EQS

MW-40D = Duplicate of MW-4A

Action Level = average between 2007 and 2016 (excluding duplicates) plus three standard deviations

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE A-1

GROUNDWATER GENERAL CHEMISTRY - MW-4A
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL	NS Tier 1 EQS	NS Tier 2 PSS	23-Nov-06	1-Aug-07	1-Aug-07 MW-4ALF	28-Jul-08	28-Jul-08 Dup-A	10-Aug-09	27-Jul-10	27-Jul-10 MW- 40D	21-Sep-11	4-Oct-12	4-Jul-13	4-Jul-13 MW-40D	19-Aug-14	19-Aug-14 MW-40D	21-Jul-15	21-Jul-15 MW-40D	14-Jul-16	Average 2007 through 2016
Anion Sum	me/L	N/A	-	-	18.6	19.4	16.2	15.8	17.9	19.7	17.4	17.8	16	16.0	17.0	17.1	15.6	15.3	15.8	15.8	14.1	-
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	1	-	-	753	812	649	670	770	856	765	782	722	753	751	751	712	708	703	706	650	-
Calculated TDS	mg/L	1	-	-	1060	1110	1030	943	1020	1050	885	892	865	902	898	897	875	868	920	911	780	-
Carb. Alkalinity (calc. as CaCO3)	mg/L	1	-	-	1	<1	<1	<1	<1	<1	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<1.0	-
Cation Sum	me/L	N/A	-	-	22.2	23.5	24.1	20.6	21.1	19.9	17.3	17.1	18.3	20.8	18.3	18.2	19	19.3	21.2	20.7	15.6	-
Hardness (CaCO3)	mg/L	1	-	-	610	670	680	540	540	570	425	421	442	493	467	464	407	420	555	536	350	-
Ion Balance (% Difference)	%	N/A	-	-	8.76	9.7	19.8	13.3	8.11	0.280	0.3	1.9	1.9	13.0	3.7	3.3	9.9	11.6	14.6	13.3	5.360	-
Langelier Index (@ 20C)	-	N/A	-	-	0.751	0.638	0.575	0.443	0.624	0.459	0.51	0.42	0.5	0.52	0.42	0.56	0.49	0.5	0.18	0.25	0.508	-
Langelier Index (@ 4C)	-	N/A	-	-	0.506	0.393	0.329	0.197	0.378	0.213	0.19	0.1	0.18	0.20	0.10	0.24	0.17	0.18	-0.14	-0.07	0.262	-
Nitrate (N)	mg/L	0.05	-	-	ND	-	-	0.05	0.05	0.07	0.09	0.11	0.38	0.32	0.48	0.47	<0.05	<0.05	0.08	0.1	<0.050	-
Saturation pH (@ 20C)	Units	N/A	-	-	6.41	6.34	6.42	6.50	6.45	6.40	6.69	6.68	6.7	6.68	6.66	6.66	6.75	6.73	6.64	6.65	6.70	-
Saturation pH (@ 4C)	Units	N/A	-	-	6.65	6.59	6.66	6.74	6.69	6.65	7.01	7	7.02	7.00	6.98	6.98	7.07	7.05	6.96	6.97	6.95	-
Total Alkalinity (Total as CaCO3)	mg/L	100	-	-	750	810	650	670	770	860	765	782	722	753	751	751	712	708	703	706	650	-
Dissolved Chloride (Cl)	mg/L	1	-	15000	120	110	110	84	88	92	71	72	54	33	68	69	49	40	59	58	38	66
Colour	TCU	5	-	-	25	23	21	17	19	21	11	14	17	18	17	18	6	12	10	18	11	-
Nitrate + Nitrite (N)	mg/L	0.05	-	-	ND	<0.05	<0.05	0.05	0.05	0.07	0.09	0.11	0.38	0.32	0.48	0.47	<0.05	<0.05	0.08	0.1	<0.050	-
Nitrite (N)	mg/L	0.01	-	-	ND	-	-	<0.01	<0.01	ND	<0.05	<0.05	<0.05	<0.25	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.010	-
Nitrogen (Ammonia Nitrogen)	mg/L	0.05	-	-	46	46	46	49	47	38	60.4	65	63.2	85.9	59.0	58.6	76.3	76.4	64.2	63.8	74	62
Total Organic Carbon (C)	mg/L	0.5	-	-	22	22	19	26	27	21 (1)	23.7	83.7	30	<0.5	80.1	72.8	23.9	19.6	<0.5	<0.5	19 (1)	-
Orthophosphate (P)	mg/L	0.01	-	-	0.01	<0.01	0.01	0.01	0.01	0.01	0.02	0.03	0.02	0.02	0.01	0.02	0.02	0.02	<0.01	<0.01	0.034	-
pH	Units	N/A	-	-	7.16	6.98	6.99	6.94	7.07	6.86	7.2	7.1	7.1	7.2	7.1	7.2	7.24	7.23	6.82	6.9	7.21	-
Reactive Silica (SiO2)	mg/L	2.5	-	-	38	40	40	37	37	37	36.1	34.1	34.1	35.5	38.9	37.7	34.6	33.7	36	35.2	35	-
Dissolved Sulphate (SO4)	mg/L	2	-	-	6	4	3	<2	<2	ND	5	5	2	<10	3	3	<2	<2	2	2	<2.0	-
Turbidity	NTU	1	-	-	350	290	210	>1000	>1000	480	176	3930	3200	640	5610	5150	869	1150	3730	5750	>1000	-
Conductivity	uS/cm	1	-	-	2100	2000	2000	1900	1900	1900	1760	1950	1480	1550	1640	1650	1640	1620	1610	1550	1400	1688
Dissolved Organic Carbon	mg/L	0.5	-	-	-	-	-	-	-	-	8.9	54.2	54.2	<0.5	10.4	<0.5	23.9	18	<0.5	<0.5	-	-
Dissolved Calcium	mg/L	0.1	-	-	190	210	210	170	170	170	127	129	132	135	140	139	121	125	158	152	100	-
Dissolved Magnesium	mg/L	0.1	-	-	34	36	36	31	31	36	26.1	23.9	27.2	37.9	28.4	28.3	25.4	26.2	39	38.1	23	-
Phosphorus	mg/L	0.1	-	-	ND	-	-	0.2	0.1	0.1	0.1	<0.1	<0.1	<0.02	0.06	0.06	0.18	0.22	<0.02	<0.02	0.12	-
Potassium	mg/L	0.1	-	-	26	23	22	37	43	45	30.5	29	41.9	52.2	40.8	40.8	61.7	62.9	63	63	50	-
Sodium	mg/L	0.1	-	-	140	130	140	110	120	93	73.1	63.7	75	79.4	70.7	70.7	75.9	75.7	67	66.3	33	-

Notes:
(1) Reporting limit was increased due to turbidity.
RDL - Reported Detection Limit (updated in 2016)
ND - Values below RDL
Bold indicates exceedance of NS Tier 1 EQS
Bold and shaded indicates exceedance of NS Tier 2 EQS
MW-40D = Duplicate of MW-4A
Action Level = average between 2007 and 2016 (excluding duplicates) plus three standard deviations
NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)
NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE A-1

GROUNDWATER GENERAL CHEMISTRY - MW-4A
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL	NS Tier 1 EQS	NS Tier 2 PSS	Action Level
Anion Sum	me/L	N/A	-	-	-
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	1	-	-	-
Calculated TDS	mg/L	1	-	-	-
Carb. Alkalinity (calc. as CaCO3)	mg/L	1	-	-	-
Cation Sum	me/L	N/A	-	-	-
Hardness (CaCO3)	mg/L	1	-	-	-
Ion Balance (% Difference)	%	N/A	-	-	-
Langelier Index (@ 20C)	-	N/A	-	-	-
Langelier Index (@ 4C)	-	N/A	-	-	-
Nitrate (N)	mg/L	0.05	-	-	-
Saturation pH (@ 20C)	Units	N/A	-	-	-
Saturation pH (@ 4C)	Units	N/A	-	-	-
Total Alkalinity (Total as CaCO3)	mg/L	100	-	-	-
Dissolved Chloride (Cl)	mg/L	1	-	15000	139
Colour	TCU	5	-	-	-
Nitrate + Nitrite (N)	mg/L	0.05	-	-	-
Nitrite (N)	mg/L	0.01	-	-	-
Nitrogen (Ammonia Nitrogen)	mg/L	0.05	-	-	106
Total Organic Carbon (C)	mg/L	0.5	-	-	-
Orthophosphate (P)	mg/L	0.01	-	-	-
pH	Units	N/A	-	-	-
Reactive Silica (SiO2)	mg/L	2.5	-	-	-
Dissolved Sulphate (SO4)	mg/L	2	-	-	-
Turbidity	NTU	1	-	-	-
Conductivity	uS/cm	1	-	-	2278
Dissolved Organic Carbon	mg/L	0.5	-	-	-
Dissolved Calcium	mg/L	0.1	-	-	-
Dissolved Magnesium	mg/L	0.1	-	-	-
Phosphorus	mg/L	0.1	-	-	-
Potassium	mg/L	0.1	-	-	-
Sodium	mg/L	0.1	-	-	-

Notes:
(1) Reporting limit was increased due to turbidity.
RDL - Reported Detection Limit (updated in 2016)
ND - Values below RDL
Bold indicates exceedance of NS Tier 1 EQS
Bold and shaded indicates exceedance of NS Tier 2 EQS
MW-40D = Duplicate of MW-4A
Action Level = average between 2007 and 2016 (excluding duplicates) plus three standard deviations
NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)
NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE A-2

GROUNDWATER GENERAL CHEMISTRY - MW-12B
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	8-Mar-95	21-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Sep-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	1-Aug-07	28-Jul-08	10-Aug-09	29-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14
Anion Sum	me/L	N/A	-	-	-	-	-	-	-	-	-	-	-	-	1.73	2.15	2.65	19.4	1.52	1.55	1.57	1.8	1.92	1.63	1.35
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	1	-	-	253	139	71.7	254	113	67.9	64	150	52.73	93	47	73.9	111	812	41	40	41	57	42	44	41
Calculated TDS	mg/L	1	-	-	372		110	370	170	111	111	236	102.45	153	105	125	149	108	116	98	81	94	107	88	83
Carb. Alkalinity (calc. as CaCO3)	mg/L	1	-	-	0.6	0	0.3	< 1	0.2	0.1	< 1	<1	0.25	< 1	<1	ND	ND	<1	<1	<1	<10	<10	<10	<10	<10
Cation Sum	me/L	N/A	-	-	-	-	-	-	-	-	-	-	-	-	1.75	2.28	2.77	2.16	2.22	1.53	1.33	1.75	1.86	1.59	1.75
Hardness (CaCO3)	mg/L	1	-	-	272	150	77	222	107	69.1	71.3	157	56.41	101	70.8	97	120	65	52	54	43.7	75.3	77.2	47.0	51.4
Ion Balance (% Difference)	%	N/A	-	-	-	-	-	-	-	-	-	-	-	-	0.48	2.9	2.22	19.7	18.7	0.650	8.2	1.4	1.8	1.3	12.8
Langelier Index (@ 20C)	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-1.37	-0.723	-0.149	-1.12	-1.11	-1.26	-1.18	-0.59	-0.93	-1.32	-1.35
Langelier Index (@ 4C)	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-1.77	-0.974	-0.399	-1.37	-1.36	-1.52	-1.5	-0.91	-1.25	-1.64	-1.67
Nitrate (N)	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	0.07	ND	0.07	-	0.05	0.12	0.22	0.11	0.65	<0.05	<0.05
Saturation pH (@ 20C)	Units	N/A	-	-	-	-	-	-	-	-	-	-	-	-	8.37	7.94	7.67	8.37	8.50	8.46	8.78	8.39	8.53	8.72	8.72
Saturation pH (@ 4C)	Units	N/A	-	-	-	-	-	-	-	-	-	-	-	-	8.77	8.19	7.92	8.62	8.75	8.72	9.1	8.71	8.85	9.04	9.04
Total Alkalinity (Total as CaCO3)	mg/L	100	-	-	254	139	72	254	113	68	64	151	53	93	47	74	110	43	41	40	41	57	42	44	41
Dissolved Chloride (Cl)	mg/L	1	-	15000	62.9	30.7	14.9	58.7	23.3	16.5	19.3	29.6	23.6	25	25	21	11	18	21	23	23	20	22	23	16
Colour	TCU	5	-	-	5	4	11	7	< 5	0.9	< 5	8	56	6	6	ND	ND	<5	<5	ND	6	<5	<5	5	<5
Nitrate + Nitrite (N)	mg/L	0.05	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.08	< 0.05	1.94	0.49	0.65	0.07	ND	0.07	<0.05	0.05	0.12	0.22	0.11	0.65	<0.05	<0.05
Nitrite (N)	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	ND	ND	-	<0.01	ND	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrogen (Ammonia Nitrogen)	mg/L	0.05	-	-	0.12	0.25	0.09	0.48	0.46	0.18	0.3	0.26	<0.1	0.05	0.12	0.12	ND	46	0.07	ND	<0.05	<0.05	<0.03	0.03	<0.03
Total Organic Carbon (C)	mg/L	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	ND	<3	1.0	ND (1)	3.6	<0.5	<0.5	1.4	<0.5
Orthophosphate (P)	mg/L	0.01	-	-	< 0.01	< 0.01	< 0.01	< 0.01	0.01	0.01	< 0.01	<0.01	<0.3	0.01	<0.01	ND	0.02	<0.01	<0.01	ND	0.01	<0.01	0.02	<0.01	<0.01
pH	Units	N/A	-	-	7.4	7.2	7.6	7.3	7.3	7.2	7.8	7.6	7.7	7.7	7	7.22	7.52	7.25	7.39	7.20	7.6	7.8	7.6	7.4	7.37
Reactive Silica (SiO2)	mg/L	2.5	-	-	10.9	12	8.3	14.5	13.7	12.8	11	12.8	12.1	13	12	10	10	12	12	11	11.9	10.7	10.7	12.1	12.5
Dissolved Sulphate (SO4)	mg/L	2	-	-	< 2	8	4	6	5	3	5	9	4.2	5	4	3.7	5	4	6	4	4	20	20	5	4
Turbidity	NTU	1	-	-	264	449	5.1	0.8	0.4	0.9	0.3	>1000	3.8	288	82.2	110	890	280	170	290	108	101	222	344	140
Conductivity	uS/cm	1	-	-	756	375	200	673	298	201	194	368	179	272	182	220	320	150	160	160	172	180	162	142	166
Dissolved Organic Carbon	mg/L	0.5	-	-	51.9	2.2	0.6	7.6	1.3	194	< 0.5	2.8	1.5	-	<10	-	-	-	-	-	1.1	<0.5	<0.5	<0.5	<0.5
Dissolved Calcium	mg/L	0.1	-	-	93	50.5	26.7	76.1	38.9	23.9	24.6	53.5	18.7	34.4	24.9	35	45	22	17	19	15.2		27.6	16.5	17.8
Magnesium	mg/L	0.1	-	-	9.6	5.7	2.5	7.8	3.5	2.3	2.4	5.7	2.36	3.6	2.1	2.5	2.7	2.4	2.1	1.7	1.4	1.6	2.0	1.4	1.7
Phosphorus	mg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	ND	ND	-	<0.1	ND	<0.1	<0.1	<0.02	0.05	0.04
Potassium	mg/L	0.1	-	-	3.2	1.9	1.4	3.4	2	1.3	1.5	3.1	1.2	1.7	1	1	1.2	1.9	8.8	1.2	0.9	0.8	0.8	0.9	1.3
Sodium	mg/L	0.1	-	-	39.7	14.4	8.5	49.9	17.4	9.5	8	22.6	8	11.4	6.9	6.7	6.3	16	20	8.1	6.2	5	6.6	9.8	8.8

Notes:

(1) Reporting limit was increased due to turbidity.

RDL - Reported Detection Limit (updated in 2016)

ND - Values below RDL

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 EQS

MW-40D = Duplicate of MW-12B

Action Level = average between 2007 and 2016 (excluding duplicates) plus three standard deviations

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE A-2 **GROUNDWATER GENERAL CHEMISTRY - MW-12B**
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL	NS Tier 1 EQS	NS Tier 2 PSS	22-Jul-15	14-Jul-16	14-Jul-16 MW-40D	Average 2007 through 2016	Action Level
Anion Sum	me/L	N/A	-	-	1.53	1.38	1.41	-	-
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	1	-	-	45	35	37	-	-
Calculated TDS	mg/L	1	-	-	89	93	94	-	-
Carb. Alkalinity (calc. as CaCO3)	mg/L	1	-	-	<10	<1.0	<1.0	-	-
Cation Sum	me/L	N/A	-	-	1.77	1.35	1.32	-	-
Hardness (CaCO3)	mg/L	1	-	-	60.1	39	37	-	-
Ion Balance (% Difference)	%	N/A	-	-	7.2	1.1	3.300	-	-
Langelier Index (@ 20C)	-	N/A	-	-	-1.47	-1.35	-1.49	-	-
Langelier Index (@ 4C)	-	N/A	-	-	-1.79	-1.61	-1.74	-	-
Nitrate (N)	mg/L	0.05	-	-	<0.05	<0.050	<0.050	-	-
Saturation pH (@ 20C)	Units	N/A	-	-	8.58	8.66	8.66	-	-
Saturation pH (@ 4C)	Units	N/A	-	-	8.9	8.91	8.91	-	-
Total Alkalinity (Total as CaCO3)	mg/L	100	-	-	45	35	37	-	-
Dissolved Chloride (Cl)	mg/L	1	-	15000	18	20	20	20	28
Colour	TCU	5	-	-	12	22	8.8	-	-
Nitrate + Nitrite (N)	mg/L	0.05	-	-	<0.05	<0.050	<0.050	-	-
Nitrite (N)	mg/L	0.01	-	-	<0.05	<0.010	<0.010	-	-
Nitrogen (Ammonia Nitrogen)	mg/L	0.05	-	-	<0.03	<0.050	<0.050	15	95
Total Organic Carbon (C)	mg/L	0.5	-	-	<0.5	0.67	0.8	-	-
Orthophosphate (P)	mg/L	0.01	-	-	<0.01	0.016	0.013	-	-
pH	Units	N/A	-	-	7.11	7.31	7.17	-	-
Reactive Silica (SiO2)	mg/L	2.5	-	-	12.2	13	13	-	-
Dissolved Sulphate (SO4)	mg/L	2	-	-	6	5.8	5.3	-	-
Turbidity	NTU	1	-	-	334	78	78	-	-
Conductivity	uS/cm	1	-	-	167	140	140	160	198
Dissolved Organic Carbon	mg/L	0.5	-	-	0.6	-	-	-	-
Dissolved Calcium	mg/L	0.1	-	-	22.4	14	13	-	-
Magnesium	mg/L	0.1	-	-	1	1	0.98	-	-
Phosphorus	mg/L	0.1	-	-	<0.02	<0.1	<0.1	-	-
Potassium	mg/L	0.1	-	-	0.7	0.89	0.94	-	-
Sodium	mg/L	0.1	-	-	6.2	8	8	-	-

Notes:

(1) Reporting limit was increased due to turbidity.

RDL - Reported Detection Limit (updated in 2016)

ND - Values below RDL

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 EQS

MW-40D = Duplicate of MW-12B

Action Level = average between 2007 and 2016 (excluding duplicates) plus three standard deviations

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE A-3

GROUNDWATER GENERAL CHEMISTRY - MW-19B
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL	AO	MAC	NS Tier 1 EQS	NS Tier 2 PSS	5-May-99	26-Jul-00	Aug-01	Sep-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	12-Dec-07	29-Jul-08	11-Aug-09	29-Jul-10	14-Sep-11	4-Oct-12	8-Jul-13	20-Aug-14	23-Jul-15	13-Jul-16
Anion Sum	me/L	N/A			-	-	-	-	-	-	-	1.46	1.57	1.57	1.55	1.71	1.82	1.7	1.82	1.78	1.96	1.8	1.78	2
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	1			-	-	39.8	31	42	45.06	38	40	37.9	37	35	37	36	31	36	37	31	35	32	40
Calculated TDS	mg/L	1	500		-	-	103	111	134	94.68	109	97	100	101	101	108	113	94	103	101	110	107	102	120
Carb. Alkalinity (calc. as CaCO3)	mg/L	1			-	-	0.2	< 1	<1	0.85	< 1	<1	ND	ND	ND	<1	<1	<10	<10	<10	<10	<10	<10	<1.0
Cation Sum	me/L	N/A			-	-						1.62	1.62	1.6	1.6	1.72	1.77	1.4	1.81	1.72	1.80	2	1.81	1.8
Hardness (CaCO3)	mg/L	1			-	-	49.4	49.7	108	44.52	55	48.5	50	50	47	53	56	46.4	57.8	54.6	58.6	67.6	66.9	61
Ion Balance (% Difference)	%	N/A			-	-	-	-	-	-	-	5.45	1.57	0.98	1.59	0.290	1.39	9.5	0.2	1.6	4.3	5.2	0.9	5.26
Langelier Index (@ 20C)	-	N/A			-	-	-	-	-	-	-	-1.31	-0.972	-0.642	-0.426	-0.360	-0.534	-1.3	-0.63	-0.95	-0.98	-0.92	-1.07	-0.666
Langelier Index (@ 4C)	-	N/A			-	-	-	-	-	-	-	-1.71	-1.22	-0.893	-0.677	-0.611	-0.785	-1.62	-0.95	-1.27	-1.30	-1.24	-1.39	-0.917
Nitrate (N)	mg/L	0.05		10	-	-	-	-	-	-	-	1.68	1.8	1.9	2	1.8	1.9	3.74	1.74	2.14	2.26	1.8	1.96	2
Saturation pH (@ 20C)	Units	N/A			-	-	-	-	-	-	-	8.61	8.54	8.55	8.61	8.53	8.51	8.9	8.73	8.75	8.81	8.69	8.71	8.44
Saturation pH (@ 4C)	Units	N/A			-	-	-	-	-	-	-	9.01	8.79	8.8	8.86	8.78	8.77	9.22	9.05	9.07	9.13	9.01	9.03	8.69
Total Alkalinity (Total as CaCO3)	mg/L	100			-	-	40	31	42	46	38	40	38	37	35	37	37	31	31	37	31	35	32	40
Dissolved Chloride (Cl)	mg/L	1	250		-	15000	25	21.9	26.8	19.5	25	16	21	21	22	26	30	25	31	27	36	30	31	33
Colour	TCU	5	15		-	-	8	< 5	<5	198	11	<5	ND	ND	ND	<5	ND	<5	<5	7	<5	<5	<5	<5.0
Nitrate + Nitrite (N)	mg/L	0.05			-	-	1.5	1.6	1.64	1.76	1.6	1.7	1.8	1.9	2	1.8	1.9	3.74	1.74	2.14	2.26	1.8	1.96	2
Nitrite (N)	mg/L	0.01		1	-	-	-	-	-	-	-	0.02	ND	ND	ND	<0.01	ND	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	0.05			-	-	< 0.05	< 0.05	<0.05	<0.1	< 0.05	<0.05	ND	ND	ND	<0.05	ND	<0.05	<0.05	<0.03	<0.03	<0.03	<0.03	<0.050
Total Organic Carbon (C)	mg/L	0.5			-	-	-	-	-	-	-	-	ND	ND	ND	<0.05	ND	0.6	0.7	<0.5	0.6	1.2	0.5	<5.0 (1)
Orthophosphate (P)	mg/L	0.01			-	-	0.02	0.11	0.02	<0.3	0.03	<0.01	0.03	0.03	0.02	0.03	0.03	0.04	0.03	0.03	0.03	0.03	0.03	0.036
pH	Units	N/A	6.5-8.5		-	-	7.7	7.8	7.8	8.3	7.9	7.3	7.57	7.91	8.18	8.17	7.98	7.6	8.1	7.8	7.83	7.77	7.64	7.78
Reactive Silica (SiO2)	mg/L	2.5			-	-	9.9	9.8	9.8	10	10	11	10	11	11	10	10	10.7	10.4	10.9	10.6	10.4	9.9	10
Dissolved Sulphate (SO4)	mg/L	2	500		-	-	4	19	6	4.3	6	4	4.2	4	4	4	5	5	5	6	8	6	6	5.4
Turbidity	NTU	1	0.1-1	0.1-1	-	-	4.4	14.1	>1000	36	282	8.4	120	200	490	63	8.5	14.5	224	174	84	136	50.8	360
Conductivity	uS/cm	1			-	-	182	179	198	164	192	152	170	160	170	190	170	194	201	186	202	204	192	200
Dissolved Organic Carbon	mg/L	0.5			-	-	184	< 0.5	<0.5	1	-	0.5	-	-	-	-	-	<0.5	0.7	<0.5	<0.5	<0.5	<0.5	-
Dissolved Calcium	mg/L	0.1			-	-	16.5	14.8	35.6	14.5	18.4	16.8	17	17	16	18	19	15.6	20	18.4	19.5	22.6	23.5	20
Magnesium	mg/L	0.1			-	-	2	3.1	4.7	2.02	2.2	1.6	2	1.9	1.9	2.2	2.1	1.8	1.9	2.1	2.4	2.7	2	2.4
Phosphorus	mg/L	0.1			-	-	-	-	-	-	-	<0.1	ND	ND	ND	<0.1	ND	<0.1	<0.02	0.02	0.04	0.04	<0.02	<0.1
Potassium	mg/L	0.1			-	-	2.3	3	4.3	2.3	3.1	3.3	2.6	2.7	2.9	3.0	3.0	2.4	1.5	2.6	3.0	3.5	2.3	2.9
Sodium	mg/L	0.1	200		-	-	12.4	13.2	13.9	12.7	13.9	13	13	12	13	13	13	9.5	13.8	13.0	12.7	12.8	9.5	12

Notes:

RDL - Reported Detection Limit (updated in 2016)

ND - Values below RDL

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 EQS

** Something stuck in Well could not sample in August 07. Cleared well for sampling in December 07.

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE A-4

GROUNDWATER GENERAL CHEMISTRY - MW-20A
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL	NS Tier 1 EQS	NS Tier 2 PSS	9-Apr-98	5-May-99	26-Jul-00	Aug-01	Sep-02	19-Aug-03	25-Aug-04	18-Aug-05	18-Aug-05 MW-20a Dup	23-Nov-06	16-Aug-07	29-Jul-08	11-Aug-09	29-Jul-10	14-Sep-11	4-Oct-12	8-Jul-13	20-Aug-14	23-Jul-15	13-Jul-16
Anion Sum	me/L	N/A	-	-	-	-	-	-	-	-	2.05	2.11		2.85	2.36	2.23	2.26	2.35	2.03	2.59	2.61	1.96	1.75	1.76
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	1	-	-	25.9	13	6	12	24.94	18	22	13.1	-	26	6	7	8	28	26	13	23	6	11	24
Calculated TDS	mg/L	1	-	-	113	92	68	97	105.11	115	126	131	-	175	160	139	134	131	127	146	147	119	107	110
Carb. Alkalinity (calc. as CaCO3)	mg/L	1	-	-	0.1	0	< 1	<1	0.05	< 1	<1	ND	-	ND	<1	<1	<1	<10	<10	<10	<10	<10	<10	<1.0
Cation Sum	me/L	N/A	-	-	-	-	-	-	-	-	2.13	2.29	-	2.93	3.21	2.49	2.20	2.18	2.62	2.48	2.56	2.28	2	1.75
Hardness (CaCO3)	mg/L	1	-	-	68.2	53.8	36.7	51.5	53.84	64	69.9	77	-	95	81	72	68	64.1	79.6	71.2	68.3	66.2	57.1	49
Ion Balance (% Difference)	%	N/A	-	-	-	-	-	-	-	-	2	4.14	-	1.42	15.3	5.51	1.35	3.9	12.8	2.1	1.0	7.6	6.7	0.28
Langelier Index (@ 20C)	-	N/A	-	-	-	-	-	-	-	-	-1.71	-1.73	-	-1.92	-2.93	-2.79	-2.55	-1.22	-1.23	-2.28	-2.00	-3.08	-2.74	-1.38
Langelier Index (@ 4C)	-	N/A	-	-	-	-	-	-	-	-	-2.11	-1.98	-	-2.17	-3.18	-3.05	-2.80	-1.54	-1.55	-2.60	-2.32	-3.4	-3.06	-1.64
Nitrate (N)	mg/L	0.05	-	-	-	-	-	-	-	-	1.2	1.2	-	3.4	-	0.30	1.4	1.5	0.5	0.58	1.05	0.75	1.45	0.32
Saturation pH (@ 20C)	Units	N/A	-	-	-	-	-	-	-	-	8.71	8.84	-	8.46	9.16	9.09	9.10	8.82	8.73	9.08	8.88	9.46	9.25	8.74
Saturation pH (@ 4C)	Units	N/A	-	-	-	-	-	-	-	-	9.11	9.09	-	8.71	9.41	9.35	9.35	9.14	9.05	9.40	9.20	9.78	9.57	8.99
Total Alkalinity (Total as CaCO3)	mg/L	100	-	-	26	13	6	12	25	18	22	13	-	26	6	7	8	28	7	13	23	6	11	24
Dissolved Chloride (Cl)	mg/L	1	-	15000	34.7	35.5	32.1	39.6	42	43	48	57	-	67	76	69	67	53	47	76	70	61	46	41
Colour	TCU	5	-	-	< 5	< 5	< 5	<5	15	< 5	<5	ND	-	7	6	20	ND	<5	<5	<5	<5	<5	<5	<5.0
Nitrate + Nitrite (N)	mg/L	0.05	-	-	1.59	1.34	0.41	1.04	1.19	1.1	1.2	1.2	-	3.4	0.22	0.31	1.4	1.5	0.5	0.58	1.05	0.75	1.45	0.32
Nitrite (N)	mg/L	0.01	-	-	-	-	-	-	-	-	<0.01	ND	-	0.06	-	0.01	0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	0.05	-	-	< 0.05	< 0.05	< 0.05	0.06	<0.1	< 0.05	<0.05	ND	-	1.5	0.76	0.16	ND	1.56	0.22	0.09	3.24	0.21	<0.03	0.15
Total Organic Carbon (C)	mg/L	0.5	-	-	-	-	-	-	-	-	-	0.7	-	5	<0.5	1.8 (2)	ND (1)	0.6	0.5	1.4	2.5	<0.5	1.1	<0.50
Orthophosphate (P)	mg/L	0.01	-	-	< 0.01	< 0.01	< 0.01	<0.01	<0.3	0.01	<0.01	ND	-	0.04	<0.01	<0.01	ND	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01
pH	Units	N/A	-	-	7.5	6.7	6.4	7.3	7.3	7.2	7	7.11	6.92	6.54	6.23	6.30	6.55	7.6	7.5	6.8	6.9	6.38	6.51	7.36
Reactive Silica (SiO2)	mg/L	2.5	-	-	8.3	6.9	3.9	6.3	5.9	7.4	6.9	6.4	-	7.3	4.7	4.9	4.3	7.1	7.5	4.9	4.9	2.7	4	5.7
Dissolved Sulphate (SO4)	mg/L	2	-	-	8	5	5	8	6.9	9	8	6.8	-	9	4	5	5	9	<0.1	7	5	3	6	5
Turbidity	NTU	1	-	-	0.6	2.6	< 0.1	225	25	21.4	42.8	36	-	200	110	>1000	96	25.3	39.4	638	187	75.5	6.5	21
Conductivity	uS/cm	1	-	-	202	175	142	188	199	223	241	250	250	320	280	280	260	281	273	289	305	274	194	180
Dissolved Organic Carbon	mg/L	0.5	-	-	< 0.5	1.79	< 0.5	<0.5	1.3	-	<5	-	-	-	-	-	-	<0.5	0.5	<0.5	1.4	0.6	0.9	-
Dissolved Calcium	mg/L	0.1	-	-	23.2	17.6	12.4	16.5	17.9	21.5	24.7	25	-	32	28	25	24	21.7	28.1	25.4	22.9	22.9	19.9	17
Magnesium	mg/L	0.1	-	-	2.5	2.4	1.4	2.5	2.22	2.5	2	3.3	-	3.6	2.8	2.4	2.1	2.4	2.3	1.9	2.7	2.2	1.8	1.8
Phosphorus	mg/L	0.1	-	-	-	-	-	-	-	-	<0.1	ND	-	ND	-	<0.1	ND	<0.1	<0.02	<0.02	0.02	<0.02	<0.02	<0.1
Potassium	mg/L	0.1	-	-	1.5	1.1	0.9	1.3	1.3	1.5	1.6	1.8	-	2.9	2	1.7	2.3	2.4	1.5	2.0	4.1	2.9	1.8	1.4
Sodium	mg/L	0.1	-	-	12.5	9.4	7.3	10.5	12.7	14.3	15.8	16	-	19	23	18	18	15.5	20.9	22.7	19.7	17.8	18.6	15

Notes:

RDL - Reported Detection Limit (updated in 2016)

ND - Values below RDL

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 EQS

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE A-5 **GROUNDWATER GENERAL CHEMISTRY - MW-21C**
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	8-Mar-95	20-Mar-96	16-Apr-97	6-Apr-98	6-Apr-98	5-May-99	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	18-Aug-05 MW-21C Dup	23-Nov-06	12-Dec-07	28-Jul-08	10-Aug-09	26-Jul-10	14-Sep-11	4-Oct-12	20-Aug-14	21-Jul-15	14-Jul-16
Anion Sum	me/L	N/A	-	-	-	-	-	-	-	-	-	-	-	-	0.9	0.526	-	0.636	0.6	0.660	0.61	0.69	0.67	0.70	0.65	0.61	0.71
Bicarb. Alkalinity (calc. as CaC(	mg/L	1	-	-	0.02	0	0	< 1	0	0	0	23	25.93	23	33	13.3	-	25	23	27	24	26	27	27	26	24	27
Calculated TDS	mg/L	1	-	-	47	-	49	48	48	49	50	62	48.98	50	58	40.6	-	48	47	71	47	34	32	35	35	30	48
Carb. Alkalinity (calc. as CaCO:	mg/L	1	-	-	27	25	25	22	24	24	27	<1	0.06	< 1	<1	ND	-	ND	ND	<1	<1	<10	<10	<10	<10	<10	<1.0
Cation Sum	me/L	N/A	-	-	-	-	-	-	-	-	-	-	-	-	0.79	0.705	-	0.733	0.72	1.54	0.68	0.57	0.51	0.62	0.71	0.52	0.66
Hardness (CaCO3)	mg/L	1	-	-	27	25	25	22	24	24	27	58.5	23.81	22.4	27.7	24	-	25	25	26	23	19.7	18.1	20.8	25	18.3	23
Ion Balance (% Difference)	%	N/A	-	-	-	-	-	-	-	-	-	-	-	-	6.82	14.5	-	7.1	9.09	40.0	5.43	9.2	13.3	6.1	4.3	7.7	3.65
Langelier Index (@ 20C)	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-1.89	-2.42	-	-2.06	-2.22	-1.85	-2.15	-2.08	-2.1	-2.05	-2.03	-2.79	-2.05
Langelier Index (@ 4C)	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-2.29	-2.67	-	-2.31	-2.47	-2.11	-2.4	-2.4	-2.42	-2.37	-2.35	-3.11	-2.3
Nitrate (N)	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	0.42	0.31	-	0.33	0.35	0.32	0.31	0.4	0.26	0.32	0.25	0.27	0.34
Saturation pH (@ 20C)	Units	N/A	-	-	-	-	-	-	-	-	-	-	-	-	8.99	9.34	-	9.06	9.09	9.02	9.11	9.38	9.4	9.35	9.27	9.46	9.06
Saturation pH (@ 4C)	Units	N/A	-	-	-	-	-	-	-	-	-	-	-	-	9.39	9.59	-	9.31	9.34	9.28	9.37	9.7	9.72	9.67	9.59	9.78	9.31
Total Alkalinity (Total as CaCO:	mg/L	100	-	-	0.02	0	0	<1	0	0	0	23	26	23	33	13	-	25	23	27	24	26	27	27	26	24	27
Dissolved Chloride (Cl)	mg/L	1	-	15000	< 2	< 2	< 2	< 2	< 2	< 2	< 2	4.5	4	4	6	3.6	-	4	4	4	4	5	4	5	4	4	4.3
Colour	TCU	5	-	-	< 3	26	19	26	71	80	41	16	>1000	41	12	ND	-	ND	8	31	18	8	23	12	<5	<5	<5.0
Nitrate + Nitrite (N)	mg/L	0.05	-	-	0.31	0.32	0.4	0.48	0.41	0.38	0.38	0.33	0.3	0.24	0.42	0.31	0.29	0.33	0.35	0.32	0.31	0.4	0.26	0.32	0.25	0.27	0.34
Nitrite (N)	mg/L	0.01	-	-											<0.01	ND	-	ND	ND	<0.01	ND	<0.05	<0.05	<0.05	<0.05	<0.05	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	0.05	-	-	0.24	0.15	0.28	0.31	0.3	0.3	0.26	<0.05	<0.1	< 0.05	<0.05	ND	ND	ND	ND	<0.05	ND	<0.05	<0.03	<0.03	<0.03	<0.03	<0.050
Total Organic Carbon (C)	mg/L	0.5	-	-	-	-	-	-	-	-	-	-	-	-		ND	-	ND	ND	8 (1)	ND (1)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
Orthophosphate (P)	mg/L	0.01	-	-	11.8	12.2	12.3	12.4	11.6	11.6	11.5	0.35	<0.3	0.59	0.14	ND	-	0.35	0.38	0.06	0.38	0.41	0.4	0.31	0.39	0.2	0.37
pH	Units	N/A	-	-	6.8	6.6	6.7	6.8	6.9	6.8	7	7.2	7.4	7	7.1	6.92	-	7	6.87	7.17	6.96	7.3	7.3	7.3	7.24	6.67	7.01
Reactive Silica (SiO2)	mg/L	2.5	-	-	4	4	4	4.6	4.2	4.6	5.1	11.7	11.8	11	12	6.5	-	12	12	12	12	12.2	12.6	12.2	11.9	10.4	12
Dissolved Sulphate (SO4)	mg/L	2	-	-	27	25	25	22	24	24	27	4	<2.0	6	<2	6.6	-	ND	ND	<2	ND	<2	<2	<2	<2	<2	<2.0
Turbidity	NTU	1	-	-	1.1	518	55	97	45.8	46.1	32.6	>1000	7.7	> 1000	291	920	-	50	>1000	910	190	42.9	4.5	220	923	7390	54
Conductivity	uS/cm	1	-	-	73	67	69	67.1	72	69.8	69.6	72	69	68	79	69	-	67	70	72	60	72	66	70	68	70	67
Dissolved Organic Carbon	mg/L	0.5	-	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	74	0.5	0.5	-	<50		-	-	-	-	-	<0.5	<0.5	<0.5	1	<0.5	-
Dissolved Calcium	mg/L	0.1	-	-	6.5	5.9	7.4	7	6.5	6.5	6.4	14.2	6.6	6.5	8.3	6.9	-	7.1	7.2	7.4	6.5	5.6	5.1	5.7	7.2	5	6.6
Magnesium	mg/L	0.1	-	-	22	21	27	24.9	23.2	23.6	22.2	5.6	1.78	1.5	1.7	1.6	-	1.7	1.6	1.7	1.5	1.4	1.3	1.6	1.7	1.4	1.7
Phosphorus	mg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	0.4	0.4	-	0.4	0.4	0.2	0.4	0.3	0.28	0.35	0.45	0.07	0.4
Potassium	mg/L	0.1	-	-	2	1.3	1.6	1.4	1.5	1.5	1.2	4.1	2.6	1.9	1.6	1.7	-	1.7	1.6	10	1.6	1.2	1	1.3	1.8	1.1	1.3
Sodium	mg/L	0.1	-	-	4.1	3.5	3.5	4	4.6	4.6	4.7	2.2	4.3	4.6	4.3	4.3	-	4.5	4.2	17	4.3	3.4	2.9	4.0	3.7	3	3.6

Notes:

RDL - Reported Detection Limit (updated in 2016)

ND - Values below RDL

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 EQS

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE A-6

GROUNDWATER GENERAL CHEMISTRY - MW-22A
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	8-Mar-95	20-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	26-Jul-00 Lab Dup.	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	18-Aug-05 MW-22A Dup	23-Nov-06	16-Aug-07	28-Jul-08	10-Aug-09	27-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	14-Jul-16	Average 2007	Action Level
Anion Sum	me/L	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	22.8	15.7	-	15	13	10.3	10.4	7.79	9.13	347	9.46	6.95	8.43	4.53	-	-
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	1	-	-	309	1080	1020	1010	1030	1130	1020	1020	1170	931.24	99	879	689	-	597	524	460	450	72	395	347	411	328	379	170	-	-
Calculated TDS	mg/L	1	-	-	495	-	1590	1610	1570	1620	1550	1560	1540	1215.26	133	1110	836	-	834	774	611	574	413	501	416	527	409	516	240	-	-
Carb. Alkalinity (calc. as CaCO3)	mg/L	1	-	-	0.07	0	0.6	< 1	0.8	2.7	< 1	2	3	1.75	< 1	<1	ND	-	ND	<1	<1	<1	<10	<10	<10	<10	<10	<10	1.4	-	-
Cation Sum	me/L	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	18.8	16	-	16.3	16.3	12.8	10.7	5.57	9.86	8.85	10.80	9.1	11.3	4.46	-	-
Hardness (CaCO3)	mg/L	1	-	-	325	858	879	762	712	666	611	617	516	397.23	93.8	467	380	-	360	360	270	250	71.7	223	282	244	212	256	190	-	-
Ion Balance (% Difference)	%	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	9.71	0.883	-	3.93	11.4	10.6	1.51	16.6	3.8	7.6	6.5	13.4	14.6	0.78	-	-
Langelier Index (@ 20C)	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	0.38	-0.141	-	-0.101	0.19	-0.0290	-0.165	-1.61	-0.19	-0.22	-0.38	-0.37	-0.63	0.554	-	-
Langelier Index (@ 4C)	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-0.02	-0.388	-	-0.348	-0.057	-0.276	-0.413	-1.93	-0.51	-0.54	-0.70	-0.69	-0.95	0.304	-	-
Nitrate (N)	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	ND	-	ND	-	<0.05	<0.05	9.48	0.18	0.20	<0.05	<0.05	<0.05	<0.050	-	-
Saturation pH (@ 20C)	Units	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	6.52	6.68	-	6.76	6.8	6.96	6.97	8.51	7.19	7.22	7.18	7.33	7.13	7.39	-	-
Saturation pH (@ 4C)	Units	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	6.92	6.93	-	7.01	7.05	7.21	7.21	8.83	7.51	7.54	7.50	7.65	7.45	7.64	-	-
Total Alkalinity (Total as CaCO3)	mg/L	100	-	-	309	1080	1020	1010	1030	1130	1020	1020	1170	933	100	880	690	710	600	520	460	450	72	395	-	411	328	379	170	-	-
Dissolved Chloride (Cl)	mg/L	1	-	15000	99.3	330	312	350	309	311	273	278	223	176	13	180	68	68	110	89	39	50	193	43	23	44	14	30	40	57	212
Colour	TCU	5	-	-	45	32	140	34	45	28	31	32	26	334	< 5	44	35	30	16	11	9	10	<5	132	<5	7	64	10	<5.0	-	-
Nitrate + Nitrite (N)	mg/L	0.05	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.05	<0.06	< 0.05	<0.05	ND	-	ND	<0.05	<0.05	<0.05	9.48	0.18	0.20	<0.05	<0.05	<0.05	<0.050	-	-
Nitrite (N)	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	0.04	ND	ND	ND	-	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.010	-	-
Nitrogen (Ammonia Nitrogen)	mg/L	0.05	-	-	4.4	32	34.5	39	60	69.5	69.5	71.4	72	<0.1	< 0.05	58	42	-	31	31	27	19	6.02	22.3	-	19.4	20.4	12	<0.050	16	48
Total Organic Carbon (C)	mg/L	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-		12	-	15	11	10	8	4.7	18.6	3.0	38.7	10	<0.5	1.6	-	-
Orthophosphate (P)	mg/L	0.01	-	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.07	0.01	<0.01	<0.3	< 0.01	<0.01	ND	ND	ND	<0.01	<0.01	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	0.013	-	-
pH	Units	N/A	-	-	6.4	6.6	6.8	7	6.9	7.4	7	7.2	7.4	7.3	7.9	6.9	6.54	-	6.66	6.99	6.93	6.8	6.9	7	7.0	6.8	6.96	6.5	7.94	-	-
Reactive Silica (SiO2)	mg/L	2.5	-	-	14.2	23	24	21	19.5	20.3	18	18	17.6	20.5	8.5	19	21	20	21	19	20	19	12.1	17.2	18.6	18.4	18.1	16.8	10	-	-
Dissolved Sulphate (SO4)	mg/L	2	-	-	4	< 2	< 2	3	< 2	< 2	5	7	2	3.5	< 2	7	ND	ND	ND	<2	<2	<2	11	<2	<2	<2	<2	<2	<2.0	-	-
Turbidity	NTU	1	-	-	342	671	66	6.3	6.4	3.1	4	4.8	>1000	96	0.6	666	490	-	400	500	400	450	469	256	272	385	233	4780	0.87	-	-
Conductivity	uS/cm	1	-	-	971	2860	2840	3130	3180	3510	3140	3190	3260	2180	235	2000	1400	-	1500	1300	1000	990	887	852	707	920	740	854	440	869	1538
Dissolved Organic Carbon	mg/L	0.5	-	-	36.3	44.5	35.1	38.5	34	3270	41.5	41	31.1	49	-	294	-	-	-	-	-	-	2.3	12.6	<0.5	13.2	<0.5	<0.5	-	-	-
Dissolved Calcium	mg/L	0.1	-	-	105	229	230	201	179	163	156	158	127	104	30.3	117	100	100	98	99	74	73	19.3	73.4	77.2	73.4	62.8	89.3	61	-	-
Magnesium	mg/L	0.1	-	-	15.2	69.6	74	63.2	64.3	63	53.8	54	48.7	33.4	4.4	42.5	30	30	28	28	20	17	5.7	9.6	21.6	14.7	13.4	7.9	9.2	-	-
Phosphorus	mg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	ND	ND	ND	-	0.2	0.2	<0.1	<0.01	<0.02	0.18	0.31	<0.02	<0.1	-	-
Potassium	mg/L	0.1	-	-	5.9	23.9	34.1	38.2	50.7	68.6	69	70.3	72.8	51	4.9	52.3	43	43	42	37	36	30	14.5	25.3	25.6	21.9	25.6	22.1	6.3	-	-
Sodium	mg/L	0.1	-	-	59.9	208	252	276	254	225	270	267	258	267	9.4	91.2	83	82	120	96	78	50	76.2	22.4	52.7	41.4	30.3	41.9	12	-	-

Notes:

RDL - Reported Detection Limit (updated in 2016)

ND - Values below RDL

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 EQS

Action Level = average between 2007 and 2016 (excluding duplicates) plus three standard deviations

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE A-7 **GROUNDWATER GENERAL CHEMISTRY - MW-22B**
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	20-Dec-94	8-Mar-95	20-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	10-Aug-09	27-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	14-Jul-16	Average 2007 through 2016	Action Level
Anion Sum	me/L	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	23.2	22.8	10.2	14.6	14.5	16.5	20	19	19.8	18.9	15.7	16.9	17.9	-	-
Bicarb. Alkalinity (calc. as CaC(	mg/L	1	-	-	683	703	856	725	762	596	445	710	683	780.66	399	789	797	444	404	428	519	704	693	710	691	632	612	690	-	-
Calculated TDS	mg/L	1	-	-	1010	-	-	982	1090	972	831	1180	1110	1109.66	987	1190	1210	549	982	929	954	1070	1020	1050	982	887	939	930	-	-
Carb. Alkalinity (calc. as CaCO:	mg/L	1	-	-	0.51	1	1	2.7	3.6	0.9	1.1	1	2	2.32	1	<1	ND	ND	<1	<1	<1	<10	<10	<10	<10	<10	<10	1.3	-	-
Cation Sum	me/L	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	21.8	23.6	10.2	24.5	21.9	20.2	22.1	21	21.5	19.2	19.8	19.9	17.6	-	-
Hardness (CaCO3)	mg/L	1	-	-	624	726	865	793	882	812	661	968	845	684.38	892	856	940	260	950	830	780	842	812	827	724	762	746	690	-	-
Ion Balance (% Difference)	%	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	2.97	1.68	0.148	25.3	20.2	10.1	4.8	5	4.0	0.9	11.5	8.2	0.76	-	-
Langelier Index (@ 20C)	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	0.92	0.796	-0.252	0.913	0.786	0.713	0.9	0.99	1.19	0.84	1.04	0.52	0.965	-	-
Langelier Index (@ 4C)	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	0.52	0.551	-0.5	0.667	0.540	0.467	0.58	0.67	0.87	0.52	0.72	0.2	0.719	-	-
Nitrate (N)	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	0.05	1.5	-	<0.05	0.08	0.14	0.08	0.33	0.59	<0.05	<0.05	0.12	-	-
Saturation pH (@ 20C)	Units	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	6.18	6.14	6.97	6.44	6.46	6.41	6.4	6.41	6.41	6.46	6.47	6.47	6.34	-	-
Saturation pH (@ 4C)	Units	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	6.58	6.39	7.22	6.68	6.71	6.65	6.72	6.73	6.73	6.78	6.79	6.79	6.58	-	-
Total Alkalinity (Total as CaCO:	mg/L	100	-	-	684	704	857	728	766	597	446	711	685	783	400	790	800 (1)	440	400	430	520	704	693	710	691	632	612	690	-	-
Dissolved Chloride (Cl)	mg/L	1	-	15000	166	143	162	152	215	224	231	282	287	287	280	260	240	42	230	210	220	210	182	199	178	110	165	150	185	295
Colour	TCU	5	-	-	13	86	12	15	8	15	10	11	19	90	43	13	22	7	16	10	13	15	14	9	11	10	<5	13	-	-
Nitrate + Nitrite (N)	mg/L	0.05	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.05	<0.06	< 0.05	<0.05	0.07	1.5	<0.05	<0.05	0.080	0.14	0.08	0.33	0.59	<0.05	<0.05	0.12	-	-
Nitrite (N)	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.02	0.03	-	<0.01	<0.01	<0.05	<0.05	<0.25	<0.05	<0.05	<0.05	<0.010	-	-
Nitrogen (Ammonia Nitrogen)	mg/L	0.05	-	-	4.1	0.48	0.08	0.17	< 0.05	0.15	< 0.05	0.37	<0.05	<0.1	0.18	0.62	0.06	27	0.28	0.38	0.24	1.1	1.34	1.95	2.25	1.56	1.82	1.2	1.2	3.4
Total Organic Carbon (C)	mg/L	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23	9.3	20	17	19	38	24.6	<0.5	32.6	23.2	9.2	1.3	-	-
Orthophosphate (P)	mg/L	0.01	-	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	<0.01	<0.3	< 0.01	0.01	ND	ND	<0.01	<0.01	<0.01	0.01	0.01	<0.01	<0.01	<0.01	<0.01	0.019	-	-
pH	Units	N/A	-	-	6.9	7	7.1	7.6	7.7	7.2	7.4	7.3	7.5	7.5	7.5	7.1	6.94	6.72	7.35	7.25	7.12	7.3	7.4	7.6	7.3	7.51	6.99	7.3	-	-
Reactive Silica (SiO2)	mg/L	2.5	-	-	13.6	13.6	15.5	17.1	17.1	16.2	15	16.2	14.8	17.1	12	17	18	19	17	18	18	18.5	20.3	18.6	18.9	17.8	15.9	19	-	-
Dissolved Sulphate (SO4)	mg/L	2	-	-	14	< 2	< 2	< 2	< 2	< 2	< 2	2	3	<2.0	11	<2	ND	ND	<2	<2	<2	<2	<2	<10	<2	<2	<2	<2.0	-	-
Turbidity	NTU	1	-	-	459	< 1000	420	14.7	0.4	2.4	1.7	0.3	>1000	26	> 1000	>1000	180	390	190	180	330	265	147	69.6	138.0	4170	589	120	-	-
Conductivity	uS/cm	1	-	-	1810	1770	2190	1810	1900	2050	1840	2520	2450	2150	2500	2490	1900	1100	1800	1900	1800	2070	1680	1720	1740	1670	1440	1600	1742	2252
Dissolved Organic Carbon	mg/L	0.5	-	-	106	99	250	12.1	18.4	14.7	1710	24.4	16.4	28.3	-	<500	-	-	-	-	-	37.6	27	<0.5	<0.5	23.4	9.2	-	-	-
Dissolved Calcium	mg/L	0.1	-	-	207	242	291	262	293	270	209	316	270	219	298	286	320	72	320	280	260	280	274	270	245	259	270	230	-	-
Magnesium	mg/L	0.1	-	-	26	29.5	33.7	33.1	36.5	33.4	33.7	43.4	41.5	33.4	36	34.4	36	18	37	33	31	34.7	31.1	37.2	27.3	28.1	17.5	27	-	-
Phosphorus	mg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	ND	ND	-	<0.1	<0.1	<0.1	<0.1	<0.02	<0.02	<0.02	<0.02	<0.1	-	-
Potassium	mg/L	0.1	-	-	14.1	7.5	7.5	7.7	8	7.4	8.5	9.4	8.4	8.3	11.4	8.3	8	35	8.7	14	8.2	5.6	5.6	6.1	8.4	9.4	4.9	8.1	-	-
Sodium	mg/L	0.1	-	-	152	90.1	76.8	71.1	59.7	60.2	64.4	80.8	69.8	73	98.5	103	100	46	110	100	92	98.1	89.7	103	84.8	84.7	93.1	78	-	-

Notes:

RDL - Reported Detection Limit (updated in 2016)

ND - Values below RDL

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 EQS

Action Level = average between 2007 and 2016 (excluding duplicates) plus three standard deviations

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE A-8 **GROUNDWATER GENERAL CHEMISTRY - MW-22C**
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	8-Mar-95	20-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	10-Aug-09	27-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	14-Jul-16	Average 2007 through 2016	Action Level
Anion Sum	me/L	N/A	-	-	-	-	-	-	-	-	-	-	-	-	2.28	2.4	2.82	3.09	3.49	3.56	3.46	3.26	3.87	3.94	3.41	3.68	7.69	-	-
Bicarb. Alkalinity (calc. as CaC(	mg/L	1	-	-	41.6	42	43.5	67.7	75.4	87.4	117	97	101.99	819	95	99.4	112	123	137	137	133	126	147	145	131	133	350	-	-
Calculated TDS	mg/L	1	-	-	60	-	58	91	102	117	148	128	131.53	1110	128	137	158	175	195	193	173	176	199	207	193	202	450	-	-
Carb. Alkalinity (calc. as CaCO	mg/L	1	-	-	0.31	0	0.4	< 1	0.6	0.5	< 1	<1	0.96	< 1	<1	ND	ND	<1	1	<1	<10	<10	<10	<10	<10	<10	<1.0	-	-
Cation Sum	me/L	N/A	-	-	-	-	-	-	-	-	-	-	-	-	2.36	2.65	3.03	3.42	3.78	3.62	3.24	3.74	3.90	4.12	4.34	4.35	8.89	-	-
Hardness (CaCO3)	mg/L	1	-	-	29	32	42	59.4	69	82	113	86.3	88.59	506	89.5	100	120	130	150	150	134	162	162	163	183	190	190	-	-
Ion Balance (% Difference)	%	N/A	-	-	-	-	-	-	-	-	-	-	-	-	1.55	4.92	3.71	5.07	3.99	0.84	3.2	6.9	0.4	2.2	12	8.4	7.24	-	-
Langelier Index (@ 20C)	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-0.41	-0.306	-0.102	0.19	0.417	0.047	0.15	0.33	0.17	0.25	0.35	0.03	-0.139	-	-
Langelier Index (@ 4C)	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-0.81	-0.557	-0.352	-0.06	0.167	-0.203	-0.17	0.01	-0.15	-0.07	0.03	-0.29	-0.388	-	-
Nitrate (N)	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	ND	ND	-	<0.05	<0.05	0.09	0.07	<0.05	<0.05	<0.05	<0.05	<0.050	-	-
Saturation pH (@ 20C)	Units	N/A	-	-	-	-	-	-	-	-	-	-	-	-	8.01	7.83	7.73	7.68	7.58	7.57	7.85	7.77	7.73	7.74	7.73	7.68	7.13	-	-
Saturation pH (@ 4C)	Units	N/A	-	-	-	-	-	-	-	-	-	-	-	-	8.41	8.08	7.98	7.93	7.83	7.82	8.17	8.09	8.05	8.06	8.05	8	7.38	-	-
Total Alkalinity (Total as CaCO	mg/L	100	-	-	42	42	44	68	76	88	118	98	103	820	95	100	110	120	140	140	133	126	147	145	131	133	350	-	-
Dissolved Chloride (Cl)	mg/L	1	-	15000	4.4	5	5.4	6.3	8.1	10.1	11.8	11.9	11.2	140	12	14	20	22	26	29	28	26	33	37	28	36	25	29	44
Colour	TCU	5	-	-	< 3	5	15	21	24	7	< 5	<5	68	25	8	ND	ND	<5	<5	<5	<5	<5	<5	<5	<5	<5	26	-	-
Nitrate + Nitrite (N)	mg/L	0.05	-	-	< 0.05	< 0.05	0.06	< 0.05	< 0.05	< 0.05	< 0.05	0.08	<0.06	< 0.05	<0.05	ND	ND	<0.05	<0.05	<0.05	0.09	0.07	<0.05	<0.05	<0.05	<0.05	<0.050	-	-
Nitrite (N)	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	ND	ND	-	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.010	-	-
Nitrogen (Ammonia Nitrogen)	mg/L	0.05	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.19	<0.1	49	<0.05	ND	ND	<0.05	<0.05	<0.05	0.07	<0.05	<0.03	0.04	<0.03	<0.03	14	1.4	14.7
Total Organic Carbon (C)	mg/L	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	0.6	0.9	1.1	1.5	<5	2.9	2.6	0.8	7.9	4.6	3.6	9.5	-	-
Orthophosphate (P)	mg/L	0.01	-	-	< 0.01	< 0.01	0.02	0.02	< 0.01	< 0.01	0.02	0.02	<0.3	< 0.01	0.11	ND	ND	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.016	-	-
pH	Units	N/A	-	-	7.9	7.9	8	7.7	7.9	7.8	7.7	8	8	7	7.6	7.52	7.63	7.87	8.00	7.62	8	8.1	7.9	8.0	8.08	7.71	7	-	-
Reactive Silica (SiO2)	mg/L	2.5	-	-	8.3	8.1	8.3	9	8.3	8.1	7.6	8.4	8.8	19	8.6	8.7	8.9	9	9.4	9.4	9.7	9.5	9.9	9.8	9.6	9.2	15	-	-
Dissolved Sulphate (SO4)	mg/L	2	-	-	2	2	< 2	< 2	2	2	2	4	3.5	6	<2	ND	ND	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2.0	-	-
Turbidity	NTU	1	-	-	1.5	505	41	17	5.2	3.8	0.2	398	12	322	3.2	2.2	1.3	3.8	1.1	16	1.3	15.8	4.9	41.5	8.6	70.1	450	-	-
Conductivity	uS/cm	1	-	-	99	98	107	155	174	205	262	224	230	2330	230	230	280	300	350	360	367	312	372	395	385	382	730	395	760
Dissolved Organic Carbon	mg/L	0.5	-	-	9.9	0.8	< 0.5	< 0.05	< 0.05	214	< 0.5	<0.5	1.2	-	1.2	-	-	-	-	-	1.5	2.7	<0.5	1.7	<0.5	3.4	-	-	-
Dissolved Calcium	mg/L	0.1	-	-	9.2	10.4	13.7	19	22.2	26.1	36.5	27.3	28.6	132	28.9	34	39	41	46	47	43.8	55.2	52.5	52.4	59.1	64.9	60	-	-
Magnesium	mg/L	0.1	-	-	1.4	1.5	2	2.9	3.3	4.1	5.4	4.4	4.17	42.8	4.2	4.8	5.9	6	7.1	7.1	6.1	5.9	7.5	7.8	8.5	6.9	8.6	-	-
Phosphorus	mg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	ND	ND	-	<0.1	<0.1	<0.1	<0.1	<0.02	<0.02	0.02	<0.02	0.28	-	-
Potassium	mg/L	0.1	-	-	2.9	2.9	2.9	3.6	4.2	4.1	5	4.4	4.5	61.7	4.7	4.9	5.4	5.8	8.1	6.1	4.8	5	5.3	6.5	6.9	5.1	16	-	-
Sodium	mg/L	0.1	-	-	7.1	6	6.8	7.6	8.1	9.9	8.8	8.2	8.9	151	10.2	10	11	17	15	12	9.6	8.3	12.1	15.7	11.6	9.3	52	-	-

Notes:

RDL - Reported Detection Limit (updated in 2016)

ND - Values below RDL

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 EQS

Action Level = average between 2007 and 2016 (excluding duplicates) plus three standard deviations

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE A-9

GROUNDWATER GENERAL CHEMISTRY - MW-23A
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	19-Mar-96	16-Apr-97	8-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	23-Nov-06	16-Aug-07	29-Jul-08	12-Aug-09	29-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	13-Jul-16	Average 2007 through 2016	Action Level
Anion Sum	me/L	N/A	-	-	-	-	-	-	-	-	-	-	-	3.29	4.13	3.31	3.85	4.04	4.49	5.19	6.52	7.40	3.04	3.61	3.44	-	-
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	1	-	-	145	121	65.9	70.9	51.9	97	118	131.8	61	110	62	99	88	64	49	34	81	75	76	37	81	-	-
Calculated TDS	mg/L	1	-	-	205	227	148	163	180	198	207	312.82	164	185	240	201	243	229	228	288	363	398	181	216	190	-	-
Carb. Alkalinity (calc. as CaCO3)	mg/L	1	-	-	0.14	0.1	< 1	0.1	0.1	< 1	<1	0.2	< 1	<1	ND	<1	<1	<1	<10	<10	<10	<10	<10	<10	<1.0	-	-
Cation Sum	me/L	N/A	-	-	-	-	-	-	-	-	-	-	-	3.32	4.11	3.93	4.66	3.69	3.52	4.91	6.76	6.90	3.77	4.13	3.15	-	-
Hardness (CaCO3)	mg/L	1	-	-	141	140	72.5	90.4	96.1	129	156	210.87	66.7	118	130	130	130	110	110	90	197	199	104	89.9	93	-	-
Ion Balance (% Difference)	%	N/A	-	-	-	-	-	-	-	-	-	-	-	0.53	0.267	8.56	9.52	4.53	12	2.8	1.8	3.5	10.7	6.7	4.4	-	-
Langelier Index (@ 20C)	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-0.61	-1.13	-0.485	-0.574	-1.12	-1.67	-1.54	-0.59	-0.74	-0.71	-1.86	-0.824	-	-
Langelier Index (@ 4C)	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-1.01	-1.38	-0.735	-0.823	-1.37	-1.99	-1.86	-0.91	-1.06	-1.03	-2.18	-1.07	-	-
Nitrate (N)	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	0.07	0.06	-	0.06	0.11	0.17	0.12	0.14	<0.05	<0.05	<0.05	<0.050	-	-
Saturation pH (@ 20C)	Units	N/A	-	-	-	-	-	-	-	-	-	-	-	7.81	7.98	7.76	7.85	8.04	8.37	8.64	7.99	7.99	8.22	8.55	7.99	-	-
Saturation pH (@ 4C)	Units	N/A	-	-	-	-	-	-	-	-	-	-	-	8.21	8.23	8.01	8.10	8.29	8.69	8.96	8.31	8.31	8.54	8.87	8.24	-	-
Total Alkalinity (Total as CaCO3)	mg/L	100	-	-	145	121	66	71	52	97	118	132	61	110	62	100	88	64	49	34	81	75	76	37	81	-	-
Dissolved Chloride (Cl)	mg/L	1	-	15000	23.6	46.7	37.2	44.5	65	45.8	35.4	88	48	31	95	39	68	91	118	155	160	201	45	93	56	103	267
Colour	TCU	5	-	-	4	19	10	7	9	< 5	<5	33	9	<5	ND	<5	<5	5	<5	<5	<5	<5	<5	6	<5.0	-	-
Nitrate + Nitrite (N)	mg/L	0.05	-	-	< 0.05	0.06	< 0.05	0.06	< 0.05	0.05	0.06	0.18	< 0.05	0.07	0.06	0.06	0.06	0.11	0.17	0.12	0.14	<0.05	<0.05	<0.05	<0.050	-	-
Nitrite (N)	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	<0.01	ND	-	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.010	-	-
Nitrogen (Ammonia Nitrogen)	mg/L	0.05	-	-	< 0.05	0.06	< 0.05	0.06	< 0.05	< 0.05	<0.05	<0.1	0.06	<0.05	ND	<0.05	<0.05	<0.05	<0.05	<0.05	<0.03	0.03	<0.03	<0.03	<0.050	0.02	0.04
Total Organic Carbon (C)	mg/L	0.5	-	-	-	-	-	-	-	-	-	-	-	-	ND	<5	1.7	<5	2.4	1.1	1.1	7.6	3.7	<0.5	<25 (1)	-	-
Orthophosphate (P)	mg/L	0.01	-	-	< 0.01	< 0.01	0.03	0.02	0.03	0.04	0.03	<0.3	0.02	0.03	0.04	0.04	0.03	0.04	0.04	0.03	0.03	0.03	0.04	0.03	0.043	-	-
pH	Units	N/A	-	-	7	7.1	7.3	7.1	7.4	7.3	7.2	7.2	7	7.2	6.85	7.27	7.28	6.92	6.7	7.1	7.4	7.3	7.51	6.69	7.16	-	-
Reactive Silica (SiO2)	mg/L	2.5	-	-	15	10.4	13	8.7	10.7	11.2	1.5	13.2	13	11	12	10	12	13	12.1	11.9	10.9	9.0	12	10.2	11	-	-
Dissolved Sulphate (SO4)	mg/L	2	-	-	10	13	6	9	8	10	14	13.7	6	10	11	11	9	9	8	6	18	11	12	12	11	-	-
Turbidity	NTU	1	-	-	47.9	13.1	6	3.7	2.2	11.3	>1000	720	568	514	490	670	290	240.00	322	462	106	1620	1940	2430	>1000	-	-
Conductivity	uS/cm	1	-	-	371	457	256	293	362	380	393	543	300	343	440	330	420	440	507	558	670	777	385	376	340	480	926
Dissolved Organic Carbon	mg/L	0.5	-	-	2.9	< 0.5	< 0.5	< 0.5	355	< 0.5	0.6	2.7	-	<50	-	-	-	-	1.5	1.5	0.8	7.6	<0.5	<0.5	-	-	-
Dissolved Calcium	mg/L	0.1	-	-	51.9	47.8	25.4	31.1	32.9	43.4	5.8	70.2	22.6	39.7	42	43	40	36	36.4	28.8	55.4	60.2	32.4	31.7	31	-	-
Magnesium	mg/L	0.1	-	-	2.8	4.9	2.2	3.1	3.4	5	5.9	8.64	2.5	4.6	6.2	6	6.0	4.5	4.7	4.4	14.3	11.7	5.5	2.6	3.9	-	-
Phosphorus	mg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	<0.1	ND	-	<0.1	<0.1	<0.1	<0.1	0.02	0.03	0.04	<0.02	<0.1	-	-
Potassium	mg/L	0.1	-	-	1.5	1.9	1.1	1.3	1.6	1.7	1.6	2.9	1.5	1.6	2	2	9.8	1.9	1.6	1.8	2.0	2.4	1.9	1.1	1.4	-	-
Sodium	mg/L	0.1	-	-	12.9	28.9	23.2	22.4	26.6	22.1	13.9	36.8	33.3	21.1	33	28	44	34	28.4	69.5	61.9	64.1	37.1	52.1	29	-	-

Notes:

(1) Reporting limit was increased due to turbidity.

RDL - Reported Detection Limit (updated in 2016)

ND - Values below RDL

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 EQS

Action Level = average between 2007 and 2016 (excluding duplicates) plus three standard deviations

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE A-10 **GROUNDWATER GENERAL CHEMISTRY - MW-23B**
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	19-Mar-96	16-Apr-97	8-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	23-Nov-06	16-Aug-07	29-Jul-08	12-Aug-09	29-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	13-Jul-16	Average 2007 through 2016	Action Level
Anion Sum	me/L	N/A	-	-	-	-	-	-	-	-	-	-	-	3.13	3.78	3.35	3.20	3.61	3.47	3.64	3.55	3.50	2.95	3.31	2.92	-	-
Bicarb. Alkalinity (calc. as CaC	mg/L	1	-	-	152	98.2	114	102	88.8	92	93	166.59	84	93	117	91	88	88	73	71	65	74	76	62	69	-	-
Calculated TDS	mg/L	1	-	-	225	175	187	182	170	179	178	247.91	169	174	220	215	192	210	188	288	213	204	176	198	170	-	-
Carb. Alkalinity (calc. as CaCO	mg/L	1	-	-	0.09	0.7	< 1	0.1	0.2	< 1	<1	0.39	< 1	<1	ND	<1	<1	<1	<10	<10	<10	<10	<10	<10	<1.0	-	-
Cation Sum	me/L	N/A	-	-	-	-	-	-	-	-	-	-	-	2.92	3.98	4.23	3.36	3.50	3.27	4	4.40	3.96	3.65	3.9	2.67	-	-
Hardness (CaCO3)	mg/L	1	-	-	158	114	123	118	102	122	111	196.73	103	101	150	130	99	110	97.8	90	163	105	103	103	78	-	-
Ion Balance (% Difference)	%	N/A	-	-	-	-	-	-	-	-	-	-	-	3.54	2.59	11.6	2.44	1.55	2.9	2.8	10.6	6.0	10.6	8.1	4.47	-	-
Langelier Index (@ 20C)	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-0.97	-0.581	-0.877	-0.953	-1.15	-0.84	-1.54	-0.76	-1.06	-0.81	-1.47	-1.11	-	-
Langelier Index (@ 4C)	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-1.37	-0.831	-1.13	-1.20	-1.4	-1.16	-1.86	-1.08	-1.38	-1.13	-1.79	-1.36	-	-
Nitrate (N)	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	<0.05	ND	-	<0.18	0.06	0.33	0.09	0.67	<0.05	<0.05	<0.05	<0.050	-	-
Saturation pH (@ 20C)	Units	N/A	-	-	-	-	-	-	-	-	-	-	-	7.97	7.64	7.83	7.94	7.91	8.24	8.64	8.06	8.22	8.21	8.27	8.13	-	-
Saturation pH (@ 4C)	Units	N/A	-	-	-	-	-	-	-	-	-	-	-	8.37	7.89	8.08	8.19	8.16	8.56	8.96	8.38	8.54	8.53	8.59	8.38	-	-
Total Alkalinity (Total as CaCO	mg/L	100	-	-	152	99	114	102	89	92	93	167	84	93	120	91	88	88	73	71	65	74	76	62	69	-	-
Dissolved Chloride (Cl)	mg/L	1	-	15000	34.2	25.5	28.6	32.4	31.1	33.9	34.8	28.4	37	36	41	44	41	55	60	68	67	62	41	63	45	55	87
Colour	TCU	5	-	-	< 1	9	< 5	< 5	< 5	< 5	<5	37	< 5	<5	ND	<5	9	18	<5	<5	<5	<5	9	<5	<5.0	-	-
Nitrate + Nitrite (N)	mg/L	0.05	-	-	< 0.05	1.37	0.15	0.05	0.57	0.07	0.26	0.23	0.22	0.08	ND	<0.05	<0.18	0.06	0.33	0.09	0.67	0.07	<0.05	0.08	0.085	-	-
Nitrite (N)	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	0.06	0.02	-	<0.01	<0.01	<0.05	<0.05	<0.05	0.07	<0.05	0.08	0.048	-	-
Nitrogen (Ammonia Nitrogen)	mg/L	0.05	-	-	0.7	< 0.05	1.07	1	0.53	0.96	0.78	0.4	0.67	0.74	0.68	0.79	0.81	0.71	0.61	0.79	<0.03	0.72	0.75	0.49	0.59	0.6	1.3
Total Organic Carbon (C)	mg/L	0.5	-	-	-	-	-	-	-	-	-	-	-	-	1	8	1.9	0.8	3.2	1.8	0.8	1.3	0.8	<0.5	2.5	-	-
Orthophosphate (P)	mg/L	0.01	-	-	< 0.01	0.02	< 0.01	< 0.01	< 0.01	< 0.01	<0.01	<0.3	< 0.01	<0.01	ND	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.013	-	-
pH	Units	N/A	-	-	6.8	7.9	7.4	7	7.4	7.2	7.6	7.4	7.6	7	7.06	6.95	6.99	6.76	7.4	7.5	7.3	7.2	7.4	6.8	7.02	-	-
Reactive Silica (SiO2)	mg/L	2.5	-	-	11	11.5	11.4	11.4	10.6	10.2	10.8	13.3	11	11	11	11	12	12	11.8	11.5	11.7	11.5	11.5	11.6	12	-	-
Dissolved Sulphate (SO4)	mg/L	2	-	-	10	11	13	15	14	14	14	11.6	10	12	14	15	14	14	14	14	15	13	13	14	13	-	-
Turbidity	NTU	1	-	-	33	4	3.1	2.1	4.3	0.3	<1000	920	203	220	98	810	110	100	365	355	165	431	78.4	230	190	-	-
Conductivity	uS/cm	1	-	-	435	296	336	334	336	345	327	409	313	320	380	340	340	370	389	380	365	401	361	343	290	358	453
Dissolved Organic Carbon	mg/L	0.5	-	-	0.7	, 0.5	0.6	< 0.5	317	< 0.5	1.1	2.3	-	<5	-	-	-	-	1.7	1.9	365	1.3	1.1	<0.5	-	-	-
Dissolved Calcium	mg/L	0.1	-	-	50.3	37	38.9	37	32.4	39.1	34.8	68.1	33.2	33	48	41	32	34	32.4	38.9	56.1	33.9	32.9	35.8	25	-	-
Magnesium	mg/L	0.1	-	-	7.4	5.3	6.3	6.2	5.1	5.8	5.8	6.48	4.9	4.6	6	6	4.9	4.9	4.1	4	5.5	4.9	5	3.4	3.6	-	-
Phosphorus	mg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	<0.1	ND	-	<0.1	<0.1	<0.1	<0.1	<0.02	0.05	0.05	<0.02	<0.1	-	-
Potassium	mg/L	0.1	-	-	2.5	3.1	3.6	3.4	3.1	3.6	3.5	3	3.3	3	3.1	3.6	3.6	3.3	2.4	2.6	2.4	3.3	3.4	2.3	2.5	-	-
Sodium	mg/L	0.1	-	-	17.1	14.2	15	14.3	17	15.8	16	16.6	17.1	17.5	22	31	24	25	20.8	28.2	21.5	33.1	27.7	32.3	20	-	-

Notes:
RDL - Reported Detection Limit (updated in 2016)
ND - Values below RDL
Bold indicates exceedance of NS Tier 1 EQS
Bold and shaded indicates exceedance of NS Tier 2 EQS
Action Level = average between 2007 and 2016 (excluding duplicates) plus three standard deviations
NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)
NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE A-11 **GROUNDWATER GENERAL CHEMISTRY - MW-23C**

Municipality of the County of Kings

Meadowview Landfill, Kentville, NS

Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	19-Mar-96	16-Apr-97	8-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	25-Aug-04 DUP	23-Nov-06	16-Aug-07	29-Jul-08	12-Aug-09	29-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	13-Jul-16	Average 2007 through 2016	Action Level
Anion Sum	me/L	N/A	-	-	-	-	-	-	-	-	-	-	-	1.46	1.28	1.27	1.42	1.30	1.28	1.21	9.01	1.46	1.40	1.21	1.08	1.39	-	-
Bicarb. Alkalinity (calc. as CaC(	mg/L	1	-	-	56.2	67.1	83.6	57.4	52.6	60	55	62.2	57	65	56	56	61	58	58	54	55	63	60	52	49	61	-	-
Calculated TDS	mg/L	1	-	-	78	99	84	82	79	88	81	89.21	81	84	79	79	95	100	78	62	69	76	78	68	61	81	-	-
Carb. Alkalinity (calc. as CaCO:	mg/L	1	-	-	1.67	0.8	< 1	0.5	0.4	< 1	<1	0.74	< 1	<1	<1	ND	<1	1	1	<10	<10	<10	<10	<10	<10	<1.0	-	-
Cation Sum	me/L	N/A	-	-	-	-	-	-	-	-	-	-	-	1.31	1.32	1.39	1.85	2.10	1.35	1.1	1.35	1.41	1.52	1.36	1.25	1.26	-	-
Hardness (CaCO3)	mg/L	1	-	-	23	63	25.5	30.1	30.9	35.9	41.6	55.17	32	29.2	27.7	33	50	26	31	21.9	39.3	39.1	30.9	33.5	25.7	32	-	-
Ion Balance (% Difference)	%	N/A	-	-	-	-	-	-	-	-	-	-	-	5.49	1.49	4.63	13.2	23.5	2.66	4.9	2.3	1.9	4.0	6.1	7.2	4.91	-	-
Langelier Index (@ 20C)	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-0.52	-0.51	-0.256	-0.471	-0.272	-0.262	-0.77	-0.29	-0.66	-0.62	-0.65	-1.05	-0.36	-	-
Langelier Index (@ 4C)	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-0.92	-0.91	-0.507	-0.722	-0.523	-0.514	-1.09	-0.61	-0.98	-0.94	-0.97	-1.37	-0.611	-	-
Nitrate (N)	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	0.23	0.24	0.32	-	0.18	0.24	0.27	0.36	0.27	0.52	0.18	0.22	0.22	-	-
Saturation pH (@ 20C)	Units	N/A	-	-	-	-	-	-	-	-	-	-	-	8.62	8.71	8.53	8.32	8.66	8.55	8.97	8.69	8.66	8.78	8.79	8.93	8.51	-	-
Saturation pH (@ 4C)	Units	N/A	-	-	-	-	-	-	-	-	-	-	-	9.02	9.11	8.78	8.57	8.91	8.8	9.29	9.01	8.98	9.10	9.11	9.25	8.76	-	-
Total Alkalinity (Total as CaCO:	mg/L	100	-	-	58	68	64	58	53	61	56	63	58	66	57	57	62	59	59.0	54	56	63	60	52	49	62	-	-
Dissolved Chloride (Cl)	mg/L	1	-	15000	4	3.9	3.9	4.7	4.2	4.3	4.9	4	3	3	3	4	4	4	3.00	4	5	5	4	4	3	3.3	3.9	6.0
Colour	TCU	5	-	-	< 3	50	34	82	7	11	11	490	21	7	8	ND	<5	10	19	6	<5	5	19	<5	5	<5.0	-	-
Nitrate + Nitrite (N)	mg/L	0.05	-	-	< 0.05	0.44	0.21	0.25	0.22	0.29	0.33	0.53	0.24	0.23	0.24	0.32	0.57	0.18	0.24	0.27	0.36	0.27	0.64	0.18	0.22	0.22	-	-
Nitrite (N)	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.01	ND	-	<0.01	<0.01	<0.05	<0.05	<0.05	0.12	<0.05	<0.05	<0.010	-	-
Nitrogen (Ammonia Nitrogen)	mg/L	0.05	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.05	<0.1	< 0.05	<0.05	<0.05	ND	<0.05	<0.05	<0.05	<0.05	<0.05	<0.03	<0.03	<0.03	<0.03	<0.050	none	none
Total Organic Carbon (C)	mg/L	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	1.1	<0.5	<5	<0.5	0.6	0.8	<5.0	2.7	<0.5	<0.50	-	-
Orthophosphate (P)	mg/L	0.01	-	-	< 0.01	0.05	0.02	0.03	0.03	0.06	0.04	<0.3	0.03	0.02	0.02	0.02	0.04	0.02	0.02	0.03	0.02	0.02	0.03	0.03	0.02	0.028	-	-
pH	Units	N/A	-	-	8.5	8.1	7.8	8	7.9	8.1	8.1	8.1	8	8.1	8.2	8.27	7.85	8.39	8.29	8.2	8.4	8.0	8.2	8.14	7.88	8.15	-	-
Reactive Silica (SiO2)	mg/L	2.5	-	-	8.6	10.5	9.1	8.7	8.6	8.9	10	11.6	9.6	9.3	9.2	9.5	10	9.0	9.2	9.2	10.2	9.8	9.3	9.5	8.1	9.7	-	-
Dissolved Sulphate (SO4)	mg/L	2	-	-	2	4	< 2	2	2	6	<2	2.5	4	<2	<2	ND	2	<2	<2	<2	<2	2	2	2	<2	2.2	-	-
Turbidity	NTU	1	-	-	1.9	24.1	20	60.6	5.8	24.3	>1000	>1000	226	71.4	70.8	80	22	78	370	16.5	1580	45.7	3150	887	929	38	-	-
Conductivity	uS/cm	1	-	-	121	155	127	127	130	132	130	136	128	128	120	120	140	130	130	129	122	134	128	129	123	130	130	145
Dissolved Organic Carbon	mg/L	0.5	-	-	1.5	< 0.5	< 0.5	< 0.5	133	< 0.5	<0.5	0.9	-	<5	<5	-	-	-	-	<0.5	<0.5	<0.5	3.2	<0.5	<0.5	-	-	-
Dissolved Calcium	mg/L	0.1	-	-	7.7	1.2	8.4	9.9	10.4	11.4	13.7	18.5	11	9.9	9.3	11	17	8.3	10	7.3	13.6	13.2	10.4	11.6	8.8	11	-	-
Magnesium	mg/L	0.1	-	-	1	2.4	1.1	1.3	1.2	1.8	1.8	2.18	1.1	1.1	1.1	1.2	1.8	1.3	1.1	0.9	1.3	1.5	1.2	1.1	0.9	1.2	-	-
Phosphorus	mg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	ND	-	<0.1	<0.1	<0.1	<0.1	<0.02	0.03	<0.02	<0.02	<0.1	-	-
Potassium	mg/L	0.1	-	-	1.7	3.8	3.3	3.7	3.1	4.5	3.6	3.4	2.7	2.9	3	2.9	2.8	11	3.0	2.7	2.7	2.7	3.1	3.1	2	2.7	-	-
Sodium	mg/L	0.1	-	-	18.1	10.2	17.2	16	18.8	13	10.1	8.7	13.8	14.9	15.8	15	18	30	15	13.6	11.3	12.8	18.8	14.1	15.7	13	-	-

Notes:

RDL - Reported Detection Limit (updated in 2016)

ND - Values below RDL

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 EQS

Action Level = average between 2007 and 2016 (excluding duplicates) plus three standard deviations

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE A-12 **GROUNDWATER GENERAL CHEMISTRY - MW-24A**
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	19-Mar-96	16-Apr-97	8-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	12-Aug-09	28-Jul-10	28-Jul-10	5-Jul-13	19-Aug-14	22-Jul-15	13-Jul-16
Anion Sum	me/L	N/A	-	-	-	-	-	-	-	-	-	-	-	9.85	6.98	10.2	7.29	7.39	6.37	9.86	5.73	7.16	4.73	2.72	4.94
Bicarb. Alkalinity (calc. as CaC(	mg/L	1	-	-	191	179	339	62	49.9	167	113	202.88	170	190	88.6	312	94	67	70	404	94	45	43	41	95
Calculated TDS	mg/L	1	-	-	564	517	630	424	432	589	661	521.3	380	574	438	598	476	471	378	545	341	422	320	165	290
Carb. Alkalinity (calc. as CaCO:	mg/L	1	-	-	0.11	0.1	< 1	0	0.1	< 1	<1	0.12	< 1	<1	ND	ND	1	<1	<1	<10	<10	<10	<10	<10	<1.0
Cation Sum	me/L	N/A	-	-	-	-	-	-	-	-	-	-	-	9.52	7.31	10.4	8	8.05	5.93	11.2	5.99	6.94	6.72	2.98	4.46
Hardness (CaCO3)	mg/L	1	-	-	243	200	320	105	83.7	154	227	294.9	139	225	180	280	92	95	93	244	86.2	63.1	75.1	7.9	87
Ion Balance (% Difference)	%	N/A	-	-	-	-	-	-	-	-	-	-	-	1.73	2.3	0.73	4.64	4.27	3.58	6.3	2.2	1.5	17.4	4.5	5.11
Langelier Index (@ 20C)	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-0.82	-1.78	-0.376	0.036	-1.97	-2.2	-0.3	-1.36	-2.17	-1.74	-3.19	-1.47
Langelier Index (@ 4C)	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-1.22	-2.03	-0.624	-0.212	-2.21	-2.45	-0.62	-1.68	-2.49	-2.06	-3.51	-1.72
Nitrate (N)	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	14.6	9.2	23	-	3.7	2.1	0.08	5.42	7.28	0.92	1.02	3.6
Saturation pH (@ 20C)	Units	N/A	-	-	-	-	-	-	-	-	-	-	-	7.42	7.79	7.12	8.08	8.27	8.20	7.2	8.26	8.77	8.7	9.7	8.05
Saturation pH (@ 4C)	Units	N/A	-	-	-	-	-	-	-	-	-	-	-	7.82	8.04	7.36	8.33	8.51	8.45	7.52	8.58	9.09	9.02	10	8.3
Total Alkalinity (Total as CaCO:	mg/L	100	-	-	191	179	339	62	50	167	113	203	170	190	89	310	95	67	70	404	94	45	43	41	96
Dissolved Chloride (Cl)	mg/L	1	-	15000	165	186	160	178	207	159	235	144	97	170	160	81	150	200	170	63	117	199	129	59	95
Colour	TCU	5	-	-	< 3	13	6	< 5	7	6	7	51	10	13	ND	ND	<5	<5	<5	5	<5	<5	<5	<5	<5.0
Nitrate + Nitrite (N)	mg/L	0.05	-	-	15.2	3.8	1.48	10.4	4.01	20.02	20.66	11.7	2.2	15	9.2	23	15	3.7	2.1	0.08	5.42	7.28	0.92	1.02	3.7
Nitrite (N)	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	0.41	0.03	0.02	-	0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	0.068
Nitrogen (Ammonia Nitrogen)	mg/L	0.05	-	-	0.77	9.7	2.88	9.4	2.14	6	3.49	<0.1	0.05	8.4	3.8	17	8.4	2.2	0.37	28.5	1.8	2.18	<0.03	<0.03	5.9
Total Organic Carbon (C)	mg/L	0.5	-	-	-	-	-	-	-	-	-	-	-	-	ND	4.6	3.1	1.9	3.6	15.6	0.7	8.5	1.9	3.7	2.2
Orthophosphate (P)	mg/L	0.01	-	-	< 0.01	0.01	0.01	< 0.01	< 0.01	0.03	0.02	<0.3	0.01	0.02	0.02	0.03	0.03	0.02	0.02	0.01	0.01	0.02	0.03	0.02	0.016
pH	Units	N/A	-	-	5.8	6.8	6.7	6.7	7.1	6.5	6	6.8	7.2	6.6	6.01	6.74	8.12	6.30	6	6.9	6.9	6.6	6.96	6.51	6.58
Reactive Silica (SiO2)	mg/L	2.5	-	-	9.1	10.3	9.9	8.6	8.4	14.2	16.6	14.8	11	13	21	11	16	20	18	18.9	9.6	16.9	14.3	9.4	16
Dissolved Sulphate (SO4)	mg/L	2	-	-	7	6	8	6	10	16	16	20	13	9	7.2	3	8	8	7	<2	8	6	8	8	3.9
Turbidity	NTU	1	-	-	0.5	5	1.8	2.7	4.3	5	66.5	48	31.8	55	120	27	4.8	14	14	308	27.6	4.5	195	542	4.8
Conductivity	uS/cm	1	-	-	1070	1120	1160	856	926	1170	1270	948	735	1100	760	980	820	860	700	1030	601	801	798	293	520
Dissolved Organic Carbon	mg/L	0.5	-	-	18.7	0.5	6.8	0.8	884	4.9	3.3	-	-	<50	-	-	-	-	-	12	0.6	5.3	1.9	0.8	-
Dissolved Calcium	mg/L	0.1	-	-	70	55	89	27.2	23.3	42.2	59.6	80.5	37.1	62.6	48	75	26	24	25	71.9	25.3	16.7	20	2	24
Magnesium	mg/L	0.1	-	-	16.6	15.2	23.8	8.9	6.2	11.7	19.1	22.8	11.2	16.8	15	22	6.8	8.8	7.6	15.6	5.6	5.2	6.1	0.7	6.5
Phosphorus	mg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	<0.1	ND	ND	-	<0.1	<0.1	0.2	<0.1	0.05	0.02	<0.02	<0.1
Potassium	mg/L	0.1	-	-	3.6	18	12.2	15.4	13	27.4	31	38.2	16.9	24.6	22	35	22	30	20	23.1	16.3	15.3	16.7	3.5	15
Sodium	mg/L	0.1	-	-	110	90	112	85	114	122	120	67.5	81.9	86.9	66	61	110	120	81	50.2	84.6	117	110	62.8	44

Notes:
RDL - Reported Detection Limit (updated in 2016)
ND - Values below RDL
Bold indicates exceedance of NS Tier 1 EQS
Bold and shaded indicates exceedance of NS Tier 2 EQS
NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)
NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE A-13 **GROUNDWATER GENERAL CHEMISTRY - MW-24B**
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	8-Mar-95	19-Mar-96	16-Apr-97	8-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	12-Aug-09	28-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	13-Jul-16
Anion Sum	me/L	N/A	-	-	-	-	-	-	-	-	-	-	-	-	33.2	24	25.6	22.2	22.0	24.3	21.7	20.7	17.3	22.5	18.8	18	20.1
Bicarb. Alkalinity (calc. as CaC	mg/L	1	-	-	938	1150	1410	1350	1290	1260	1660	1170	1698.4	1100	1300	952	1030	895	896	993	882	854	732	942	806	758	840
Calculated TDS	mg/L	1	-	-	1460	-	2020	1940	1800	1740	2450	2040	2224.96	1730	1640	1340	1390	1320	1240	1260	1200	1170	926	1250	1110	1020	1100
Carb. Alkalinity (calc. as CaCO	mg/L	1	-	-	0.44	1	0.8	1	0.8	0.6	2	4	1.6	1	2	ND	ND	1	<1	<1	<10	<10	<10	<10	<10	<10	<1.0
Cation Sum	me/L	N/A	-	-	-	-	-	-	-	-	-	-	-	-	27.6	27.1	27.3	29	25.0	21.9	24.5	24.7	18.7	26.0	24.6	20.7	22.5
Hardness (CaCO3)	mg/L	1	-	-	781	783	951	910	834	639	954	851	954.64	656	436	510	510	530	420	440	431	454	400	444	463	430	380
Ion Balance (% Difference)	%	N/A	-	-	-	-	-	-	-	-	-	-	-	-	9.29	6.07	3.29	13.2	6.29	5.14	6	8.9	4.0	7.3	13.4	6.9	5.52
Langelier Index (@ 20C)	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-	0.78	0.253	0.375	0.638	0.450	0.307	0.29	0.5	0.25	0.49	0.42	0.02	0.387
Langelier Index (@ 4C)	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-	0.38	0.008	0.13	0.393	0.205	0.062	-0.03	0.18	-0.07	0.17	0.1	-0.3	0.141
Nitrate (N)	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	ND	ND	-	<0.05	<0.05	0.16	0.13	1.10	0.44	0.06	0.09	<0.050
Saturation pH (@ 20C)	Units	N/A	-	-	-	-	-	-	-	-	-	-	-	-	6.42	6.49	6.48	6.5	6.60	6.53	6.71	6.7	6.85	6.66	6.69	6.77	6.63
Saturation pH (@ 4C)	Units	N/A	-	-	-	-	-	-	-	-	-	-	-	-	6.82	6.73	6.72	6.75	6.85	6.78	7.03	7.02	7.17	6.98	7.01	7.09	6.88
Total Alkalinity (Total as CaCO	mg/L	100	-	-	938	1150	1410	1350	1290	1260	1660	1170	1700	1100	1300	950	1000	900	900	990	882	854	732	942	806	758	840
Dissolved Chloride (Cl)	mg/L	1	-	15000	306	323	388	322	270	313	440	411	382	300	250	180	180	150	150	160.0	145	128	90	128	94	100	120
Colour	TCU	5	-	-	20	23	4	29	48	46	39	49	>1000	45	29	40	33	29	25	35	18	23	13	29	112	18	45
Nitrate + Nitrite (N)	mg/L	0.05	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.05	<0.06	< 0.05	<0.05	ND	ND	<0.05	<0.05	<0.05	0.16	0.13	1.10	0.44	0.06	0.09	<0.050
Nitrite (N)	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	0.03	ND	ND	-	<0.01	<0.01	<0.05	<0.05	<0.25	<0.05	<0.05	<0.05	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	0.05	-	-	64.5	77	78.5	82.5	89	76	121	100	<0.1	110	95	92	94	99	88	39	98.3	87.3	58.5	100.9	84.6	40.9	95
Total Organic Carbon (C)	mg/L	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	31	28	39	27	37.00	69.9	37.5	<0.5	36	27.1	15.7	28 (2)
Orthophosphate (P)	mg/L	0.01	-	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.09	0.06	<0.3	0.07	0.11	ND	ND	<0.01	<0.01	<0.01	0.02	0.01	<0.01	<0.01	0.01	<0.01	0.02
pH	Units	N/A	-	-	6.7	6.7	6.8	6.9	6.8	6.7	7	7.6	7	7.1	7.2	6.74	6.85	7.14	7.05	6.84	7	7.2	7.1	7.2	7.11	6.79	7.02
Reactive Silica (SiO2)	mg/L	2.5	-	-	15.7	16.2	16	17.6	15.5	15.2	15.2	14.8	19	18	17	17	17	17	17	18	17.9	15.7	19.1	16.6	15.5	14.7	17
Dissolved Sulphate (SO4)	mg/L	2	-	-	2	< 2	< 2	< 2	< 2	< 2	8	12	<2.0	12	8	ND	ND	<2	<2	<2	<2	<2	<10	<2	<2	3	<2.0
Turbidity	NTU	1	-	-	335	573	39	3	2.2	15.5	1	3.7	>1000	383	936	620	790	450	500	460	199	650	504	1040	14200	1400	520
Conductivity	uS/cm	1	-	-	3550	3340	4120	3760	3610	3780	5240	4980	3910	3560	3020	2600	2500	2400	2300	2300	2380	1940	1640	2280	2010	1790	1900
Dissolved Organic Carbon	mg/L	0.5	-	-	35.7	45.5	57	43	43.5	3460	70	53.6	-	-	<100	-	-	-	-	-	50.2	37.5	<0.5	3.3	26.6	6	-
Dissolved Calcium	mg/L	0.1	-	-	211	207	249	242	209	177	236	206	239	162	105	130	130	140	110	110	110	115	93.5	115.0	124	109	100
Magnesium	mg/L	0.1	-	-	61.8	64.7	79.9	74.3	75.8	47.9	88.5	81.8	86.9	61	48.9	43	47	46	37	38	38	40.5	40.4	38.1	37.3	38.3	32
Phosphorus	mg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	ND	ND	-	0.4	0.4	0.6	0.4	<0.02	0.31	0.03	0.17	0.58
Potassium	mg/L	0.1	-	-	5.3	72.3	93.5	109	108	106	135	137	132	123	98.4	110	110	99	100	110	90.4	90.5	77.7	84.2	106	92	74
Sodium	mg/L	0.1	-	-	214	175	246	252	230	216	376	350	344	253	207	170	170	170	150	150	118	130	102	140	132	122	110

Notes:
RDL - Reported Detection Limit (updated in 2016)
ND - Values below RDL
Bold indicates exceedance of NS Tier 1 EQS
Bold and shaded indicates exceedance of NS Tier 2 EQS
NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)
NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE A-14 **GROUNDWATER GENERAL CHEMISTRY - MW-25B**

Municipality of the County of Kings

Meadowview Landfill, Kentville, NS

Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL	Sep-93	NS Tier 1 EQS	NS Tier 2 PSS	8-Mar-95	19-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Aug-01 Duplicate	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	16-Aug-07 Dup B	28-Jul-08	10-Aug-09	28-Jul-10	21-Sep-11	4-Oct-12	8-Jul-13	19-Aug-14	22-Jul-15	14-Jul-16	Average 2007 through 2016	Action Level
Anion Sum	me/L	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	5.03	2.9	10	8.45	1.37	3.55	6.35	11.7	1.95	9.49	6.28	9.57	8.63	10.8	-	-
Bicarb. Alkalinity (calc. as CaC	mg/L	1	75.4	-	-	143	44.5	49.8	91.4	46	42	42	41	43.63	229	180	102	344	274	63	120	215	393	62	333	204	353	292	380	-	-
Calculated TDS	mg/L	1	111	-	-		67	69	137	74	74	68	68	69.17	369	261	164	541	480	89	232	352	560	100	454	331	515	484	560	-	-
Carb. Alkalinity (calc. as CaCO	mg/L	1	0.56	-	-	1	0.4	< 1	0.5	0.9	< 1	<1	<1	0.33	1	<1	ND	ND	2	<1	<1	<1	<10	<10	<10	<10	<10	<10	<1.0	-	-
Cation Sum	me/L	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	4.6	3.14	10.6	10	1.55	5.20	7.03	9.62	1.81	7.93	6.62	10.8	10.8	10.2	-	-
Hardness (CaCO3)	mg/L	1	71	-	-	166	44	40.8	105	47.3	52.3	40.7	40.4	41.33	321	199	130	470	440	5	190	300	421	74.8	337	279	460	466	440	-	-
Ion Balance (% Difference)	%	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	4.42	3.89	2.72	8.6	6.16	18.9	5.08	9.7	3.9	8.9	2.6	6.2	11.2	2.72	-	-
Langelier Index (@ 20C)	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01	-0.589	0.448	1.08	-1.36	-0.0140	0.267	0.59	-0.4	0.61	0.11	0.68	0.22	0.694	-	-
Langelier Index (@ 4C)	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-0.39	-0.84	0.2	0.836	-1.61	-0.264	0.018	0.27	-0.72	0.29	-0.21	0.36	-0.1	0.446	-	-
Nitrate (N)	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	ND	ND	-	-	<0.05	<0.05	0.09	0.11	0.06	<.05	<0.05	<0.05	<0.050	-	-
Saturation pH (@ 20C)	Units	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	7.39	7.7	6.74	6.86	9.33	7.53	7.1	6.91	8.4	7.09	7.36	6.93	7.01	6.73	-	-
Saturation pH (@ 4C)	Units	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	7.79	7.95	6.99	7.1	9.58	7.78	7.35	7.23	8.72	7.41	7.68	7.25	7.33	6.98	-	-
Total Alkalinity (Total as CaCO	mg/L	25	76	-	-	144	45	50	92	47	42	42	41	44	230	180	100	340	280	64	120	220	393	62	333	204	353	292	380	-	-
Dissolved Chloride (Cl)	mg/L	1	11.5	-	15000	32.1	5.2	5.4	21	10.4	9.1	10.4	9.9	9.7	74	49	30	110	100	3	41	72	135	25	100	78	89	99	110	85	183
Colour	TCU	5	< 3	-	-	5	8	40	6	24	15	<5	<5	176	6	5	ND	6	6	<5	9	6	8	<5	<5	<5	<5	5	<5.0	-	-
Nitrate + Nitrite (N)	mg/L	0.05	< 0.05	-	-	< 0.05	0.08	0.06	< 0.05	< 0.05	0.06	<0.05	<0.05	0.52	< 0.05	<0.05	ND	ND	<0.05	0.1	<0.05	<0.05	0.09	0.11	0.06	<.05	<0.05	<0.05	<0.050	-	-
Nitrite (N)	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	ND	ND	-	-	<0.01	<0.01	<0.05	<0.05	<0.05	<.05	<0.05	<0.05	<0.010	-	-
Nitrogen (Ammonia Nitrogen)	mg/L	0.05	< 0.05	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.05	<0.05	<0.1	0.09	0.22	0.06	ND	<0.05	0.08	<0.05	<0.05	<0.05	<0.05	<0.03	0.03	0.04	0.5	<0.050	-	-
Total Organic Carbon (C)	mg/L	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	6	14	4	1.9	<5	12.6	1.2	<0.5	2.8	4.4	3.8	9.4 (2)	-	-
Orthophosphate (P)	mg/L	0.01	< 0.01	-	-	< 0.01	0.01	0.01	< 0.01	< 0.01	0.04	<0.01	<0.01	<0.3	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	0.021	-	-
pH	Units	N/A	7.9	-	-	7.7	8	7.5	7.8	8.3	7.8	7.9	7.9	7.9	7.8	7.4	7.11	7.19	7.94	7.97	7.52	7.37	7.5	8	7.7	7.47	7.61	7.23	7.43	-	-
Reactive Silica (SiO2)	mg/L	0.5	9	-	-	11	7.8	8.1	9	7.8	7.2	7.8	7.7	7.6	13	11	9.2	15	14	11	9.5	12	15.9	8.4	14.3	11.7	15.1	11.8	15	-	-
Dissolved Sulphate (SO4)	mg/L	2	4	-	-	< 2	2	< 2	< 2	< 2	5	<2	4	<2.0	< 2	<2	ND	ND	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2.0	-	-
Turbidity	NTU	0.1	0.8	-	-	798	8.3	22	4	30.4	4	835	339	95	99.2	95.4	220	330	210	190	290	160	55	111	113	4070	699	956	1.5	-	-
Conductivity	uS/cm	1	190	-	-	370	111	108	249	124	121	116	115	124	780	495	280	960	920	130	370	640	1190	197	889	614	1040	839	970	767	1694
Dissolved Organic Carbon	mg/L	0.5	2.4	-	-	1.8	< 0.5	< 0.5	0.3	132	1.2	<0.5	0.6	0.6	-	<5	-	-	-	-	-	-	11.6	1.8	<0.5	<0.5	4.4	3.3	-	-	-
Dissolved Calcium	mg/L	0.1	23.3	-	-	55.1	14.4	13.2	33.7	15.3	17	13	12.9	13.5	107	65.5	45	160	150	1.6	61	100	144	25	109	92.3	153	152	150	-	-
Magnesium	mg/L	0.1	3.2	-	-	6.8	2	1.9	5.1	2.2	2.4	2	2	1.85	13.1	8.7	5.5	18	18	0.2	8.1	13	15	3	15.7	11.8	18.9	20.9	18	-	-
Phosphorus	mg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	ND	ND	-	-	<0.1	<0.1	<0.1	<0.1	<0.02	0.02	0.04	<0.02	<0.1	-	-
Potassium	mg/L	0.1	5.3	-	-	6	3.5	3.6	4.8	3.4	3.9	3.6	3.6	3.8	6.4	5.8	4.7	7	7.7	1.8	14	7.6	5.2	4	4.6	7.0	8.6	5.1	6.6	-	-
Sodium	mg/L	0.1	9.3	-	-	6.1	4.6	3.9	5.6	4.6	3.8	3.6	3.5	3.8	15.5	10.4	7.5	24	24	32	26	18	24	4.8	24.5	19.6	28.8	30.2	29	-	-

Notes:

RDL - Reported Detection Limit (updated in 2016)

ND - Values below RDL

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 EQS

Action Level = average between 2007 and 2016 (excluding duplicates) plus three standard deviations

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE A-15 **GROUNDWATER GENERAL CHEMISTRY - MW-27B**
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL	NS Tier 1 EQS	NS Tier 2 PSS	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	29-Jul-08	11-Aug-09	28-Jul-10	21-Sep-11	4-Oct-12	8-Jul-13	19-Aug-14	21-Jul-15	13-Jul-16
Anion Sum	me/L	N/A	-	-	-	-	-	-	-	2.01	1.67	1.68	1.67	1.82	1.56	1.41	1.41	1.83	1.57	1.41	1.28	1.73
Bicarb. Alkalinity (calc. as CaC(	mg/L	1	-	-	109	76	75	91.44	44	85	71.6	73	76	80	71	63	60	84	69	66	59	75
Calculated TDS	mg/L	1	-	-	-	128	141	118.36	128	116	102	105	102	108	97	76	79	99	59	86	67	100
Carb. Alkalinity (calc. as CaCO:	mg/L	1	-	-	8.1	< 1	1	4.31	< 1	1	ND	1	2	3	2	<10	<10	<10	<10	<10	<10	1.3
Cation Sum	me/L	N/A	-	-	-	-	-	-	-	1.83	1.66	1.81	1.8	1.91	1.76	1.38	1.51	1.88	0.51	1.83	1.22	1.52
Hardness (CaCO3)	mg/L	1	-	-	14.5	33.5	78.9	11.21	17	17.3	13	15	15	11	17	15.5	12.3	15.4	17.7	17.1	11.5	15
Ion Balance (% Difference)	%	N/A	-	-	-	-	-	-	-	4.49	0.36	3.63	3.75	2.41	6.02	0.9	3.5	1.3	50.9	12.9	2.6	6.46
Langelier Index (@ 20C)	-	N/A	-	-	-	-	-	-	-	-0.56	-0.724	-0.495	-0.353	-0.276	-0.347	-1.14	-0.56	-0.86	-0.84	-0.79	-1.35	-0.541
Langelier Index (@ 4C)	-	N/A	-	-	-	-	-	-	-	-0.96	-0.975	-0.746	-0.604	-0.527	-0.598	-1.46	-0.88	-1.18	-1.16	-1.11	-1.67	-0.792
Nitrate (N)	mg/L	0.05	-	-	-	-	-	-	-	-	-	0.27	-	nt		0.46	0.27	0.11	0.23	0.14	0.2	N/A
Saturation pH (@ 20C)	Units	N/A	-	-	-	-	-	-	-	8.76	8.86	8.8	8.78	8.89	8.74	9.04	9.16	8.96	8.98	9.01	9.22	8.79
Saturation pH (@ 4C)	Units	N/A	-	-	-	-	-	-	-	9.16	9.12	9.05	9.03	9.14	8.99	9.36	9.48	9.28	9.30	9.33	9.54	9.04
Total Alkalinity (Total as CaCO:	mg/L	100	-	-	117	77	77	96	45	86	73	75	79	83	73	63	64	84	69	66	59	76
Dissolved Chloride (Cl)	mg/L	1	-	15000	7.3	4.2	4.2	4.2	5	3	3.7	4	3	3	3.00	4	4	5	6	3	3	4.8
Colour	TCU	5	-	-	12	5	6	48	11	20	7.2	ND	<5	33	11	<5	<5	<5	<5	<5	9	<5.0
Nitrate + Nitrite (N)	mg/L	0.05	-	-	< 0.05	0.24	0.34	<0.06	0.42	0.5	0.34	0.27	0.13	0.06	0.11	0.46	0.27	0.11	0.23	0.14	0.2	0.27
Nitrite (N)	mg/L	0.01	-	-	-	-	-	-	-	-	-	ND	-	nt		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	N/A
Nitrogen (Ammonia Nitrogen)	mg/L	0.05	-	-	< 0.05	< 0.05	<0.05	<0.1	0.08	<0.05	ND	ND	<0.05	<0.05	<0.05	<0.05	<0.05	<0.03	<0.03	<0.03	<0.03	0.067
Total Organic Carbon (C)	mg/L	0.5	-	-	-	-	-	-	-	-	ND	ND	68	0.8	<5	1.6	0.8	<0.5	<0.5	3.3	<0.5	<5.0 (1)
Orthophosphate (P)	mg/L	0.01	-	-	< 0.01	0.02	<0.01	<0.3	0.14	0.05	0.02	0.01	0.01	0.01	<0.01	0.02	0.01	<0.01	0.01	<0.01	0.02	0.02
pH	Units	N/A	-	-	8.9	8.1	8.3	8.7	8.3	8.2	8.14	8.3	8.43	8.61	8.39	7.9	8.6	8.1	8.1	8.22	7.87	8.25
Reactive Silica (SiO2)	mg/L	2.5	-	-	10.1	7.1	8.6	6.2	9.4	8.7	9.5	9.5	8.8	6.9	8.1	7	8.4	8.1	7.9	8.5	9	11
Dissolved Sulphate (SO4)	mg/L	2	-	-	33	20	14	<2.0	41	8	4.5	3	<2	2	<2	<2	<2	<2	<2	<2	<2	2.4
Turbidity	NTU	1	-	-	0.92	21.8	715	50	560	975	860	>1000	>1000	>1000	92	103	548	844	548	526	667	310
Conductivity	uS/cm	1	-	-	327	209	193	185	190	182	150	170	160	180	160	145	131	173	154	152	146	150
Dissolved Organic Carbon	mg/L	0.5	-	-	-	< 0.5	<0.5	1.1	-	<50	-	-	-	-	-	<0.5	0.7	<0.5	<0.5	2.5	<0.5	-
Dissolved Calcium	mg/L	0.1	-	-	5	11.1	24	3.5	5.5	5.6	4.2	4.8	4.7	3.6	5.6	5.4	4.1	5.0	5.6	5.7	3.8	4.8
Magnesium	mg/L	0.1	-	-	0.5	1.4	4.6	0.6	0.8	0.8	0.7	0.7	0.7	0.5	0.7	0.5	0.5	0.7	0.9	0.7	0.5	0.63
Phosphorus	mg/L	0.1	-	-	-	-	-	-	-	-	-	ND	-	-		<0.1	<0.1	<0.02	<0.02	<0.02	<0.02	-
Potassium	mg/L	0.1	-	-	3.8	4.8	6.8	3	4.9	4.5	4	4.8	4.6	5.2	4.3	3.1	3.3	3.8	0.9	4.5	2.8	3.7
Sodium	mg/L	0.1	-	-	69.3	32.4	31.3	41.2	32.8	31.5	29	32	32	35	30	22.7	27.2	33.8	3.0	31.5	20.9	26

Notes:

(1) Reporting limit was increased due to turbidity.

RDL - Reported Detection Limit (updated in 2016)

ND - Values below RDL

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 EQS

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE A-16 GROUNDWATER GENERAL CHEMISTRY - MW-27C

Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	20-Dec-94	9-Mar-95	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	29-Jul-08	11-Aug-09	28-Jul-10	14-Sep-11	4-Oct-12	8-Jul-13	19-Aug-14	21-Jul-15	13-Jul-16
Anion Sum	me/L	N/A	-	-	-	-	-	-	-	-	-	-	2.19	1.99	1.96	2.07	2.03	2.03	1.41	1.97	2.18	1.94	1.8	1.66	2.06
Bicarb. Alkalinity (calc. as CaC	mg/L	1	-	-	89.5	96	89	87	91	99	76.08	92	92	92	89	96	93	94	63	87	102	90	85	79	94
Calculated TDS	mg/L	1	-	-	11	-	-	111	116	127	126.63	125	125	114	113	122	121	121	76	112	124	98	110	93	120
Carb. Alkalinity (calc. as CaCO	mg/L	1	-	-	4.22	1	2	1.6	2	2	1.8	2	2	1	3	2	3	2	<10	<10	<10	<10	<10	<10	1.9
Cation Sum	me/L	N/A	-	-	-	-	-	-	-	-	-	-	2.19	2.06	2.07	2.31	2.28	2.29	1.38	2.26	2.52	1.66	2.4	1.83	2.09
Hardness (CaCO3)	mg/L	1	-	-	12	12	10	14	12.5	17.6	30.64	10.3	11.3	13	11	12	11	12	15.5	10.1	11.5	9.4	13.5	9.9	12
Ion Balance (% Difference)	%	N/A	-	-	-	-	-	-	-	-	-	-	0.01	1.66	2.7	5.48	5.80	6.02	0.9	6.9	7.3	7.9	14.2	4.8	0.72
Langelier Index (@ 20C)	-	N/A	-	-	-	-	-	-	-	-	-	-	-0.5	-0.571	-0.303	-0.339	-0.325	-0.377	-1.14	-0.6	-0.83	-1.00	-0.7	-1.21	-0.448
Langelier Index (@ 4C)	-	N/A	-	-	-	-	-	-	-	-	-	-	-0.9	-0.822	-0.554	-0.59	-0.575	-0.627	-1.46	-0.92	-1.15	-1.32	-1.02	-1.53	-0.699
Nitrate (N)	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	ND	-	nt		0.46	0.08	<0.05	<0.05	<0.05	<0.05	N/A
Saturation pH (@ 20C)	Units	N/A	-	-	-	-	-	-	-	-	-	-	8.9	8.77	8.83	8.77	8.82	8.81	9.04	9.1	9.03	9.14	9.01	9.17	8.77
Saturation pH (@ 4C)	Units	N/A	-	-	-	-	-	-	-	-	-	-	9.3	9.02	9.08	9.02	9.07	9.06	9.36	9.42	9.35	9.46	9.33	9.49	9.02
Total Alkalinity (Total as CaCO	mg/L	100	-	-	94	98	91	89	93	101	78	94	94	93	92	98	96	96	63	91	102	90	86	79	96
Dissolved Chloride (Cl)	mg/L	1	-	15000	4.2	4	4.4	4.5	4	4.5	3.8	5	7	4.1	4	4	4	4	4	5	5	5	3	3	4.5
Colour	TCU	5	-	-	6	39	43	20	12	<5	480	18	25	ND	ND	<5	8	5	<5	8	9	<5	<5	14	<5.0
Nitrate + Nitrite (N)	mg/L	0.05	-	-	< 0.05	< 0.05	< 0.05	0.08	< 0.05	<0.05	0.51	< 0.05	0.06	0.07	ND	<0.05	0.06	0.06	0.46	0.08	<0.05	<0.05	<0.05	<0.05	0.054
Nitrite (N)	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	ND	-	nt		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	N/A
Nitrogen (Ammonia Nitrogen)	mg/L	0.05	-	-	< 0.05	< 0.05	< 0.05	0.07	< 0.05	<0.05	<0.1	< 0.05	<0.05	ND	ND	<0.05	<0.05	<0.05	<0.05	<0.03	<0.03	<0.03	<0.03	<0.03	<0.050
Total Organic Carbon (C)	mg/L	0.5	-	-	-	-	-	-	-	-	-	-	-	ND	ND	0.6	0.9	<5	1.6	1.3	3.2	<0.5	1.3	<0.5	<5.0 (1)
Orthophosphate (P)	mg/L	0.01	-	-	< 0.01	< 0.01	< 0.01	< 0.01	0.03	<0.01	<0.3	0.02	0.01	0.02	ND	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	0.04	<0.01	0.017
pH	Units	N/A	-	-	8.7	8.2	8.3	8.3	8.4	8.4	8.4	8.3	8.4	8.2	8.53	8.43	8.49	8.43	7.9	8.5	8.2	8.1	8.31	7.96	8.33
Reactive Silica (SiO2)	mg/L	2.5	-	-	6.3	6.5	6.2	5.7	5.6	6.2	14.1	6.4	6	5.9	5.9	6	6.1	6.1	7	6.4	5.9	6.2	6.2	5.3	6.1
Dissolved Sulphate (SO4)	mg/L	2	-	-	2	2	2	< 2	4	4	14.1	7	5	ND	ND	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2.0
Turbidity	NTU	1	-	-	2	166	359	4.6	3.9	64	94	204	45.4	37	0.6	49	67	78	103	149	194	225	250	67.7	34
Conductivity	uS/cm	1	-	-	190	189	186	193	197	198	184	201	199	180	190	200	210	200	145	197	209	200	199	191	200
Dissolved Organic Carbon	mg/L	0.5	-	-	0.5	< 0.5	0.5	190	< 0.5	<0.5	1.4	-	<10	-	-	-	-	-	<0.5	0.6	2.3	<0.5	0.7	<0.5	-
Dissolved Calcium	mg/L	0.1	-	-	4	4	3.2	4.7	4	5.4	9.6	3.3	3.7	4.1	3.7	4	3.7	3.8	5.4	3.4	3.6	3.1	4.4	3.3	4
Magnesium	mg/L	0.1	-	-	0.5	0.5	0.5	0.6	0.6	1	1.62	0.5	0.5	0.6	0.5	0.5	0.5	0.5	0.5	0.4	0.6	0.4	0.6	0.4	0.51
Phosphorus	mg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	ND	-	-		<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	-
Potassium	mg/L	0.1	-	-	3.4	2.6	2.9	3.1	3.4	3.6	4.3	3.5	3.5	3.4	3.4	3.3	3.6	3.7	3.1	2.8	3.1	3.2	3.9	3	3.3
Sodium	mg/L	0.1	-	-	40.6	41.4	38	36.4	38.8	41	31.8	42.4	42.9	39	40	46	45	45	22.7	45.6	50.9	31.9	46.7	35.8	40

Notes:

(1) Reporting limit was increased due to turbidity.

RDL - Reported Detection Limit (updated in 2016)

ND - Values below RDL

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 EQS

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE A-17 **GROUNDWATER GENERAL CHEMISTRY - MW-29B**
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	20-Mar-96	16-Apr-97	9-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	29-Jul-08	11-Aug-09	28-Jul-10	21-Sep-11	4-Oct-12	8-Jul-13	20-Aug-14	23-Jul-15	13-Jul-16	Average 2007 through 2016	Action Level
Anion Sum	me/L	N/A	-	-	-	-	-	-	-	-	-	-	-	2.31	2.04	2.35	2.3	2.22	2.47	2.42	2.31	2.51	2.17	1.95	1.86	2.16	-	-
Bicarb. Alkalinity (calc. as CaC(	mg/L	1	-	-	63.5	94.8	84.2	105	77.5	75	91	101	82	94	83.1	97	88	85	95	92	95	104	84	79	74	91	-	-
Calculated TDS	mg/L	1	-	-	112	131	123	149	116	133	132	143.17	123	125	114	128	145	130	136	119	120	127	115	106	102	120	-	-
Carb. Alkalinity (calc. as CaCO:	mg/L	1	-	-	0.47	1.1	< 1	0.8	0.5	< 1	1	0.95	< 1	<1	ND	ND	<1	1	<1	<10	<10	<10	<10	<10	<10	1	-	-
Cation Sum	me/L	N/A	-	-	-	-	-	-	-	-	-	-	-	2.14	2.07	2.27	3.16	2.43	2.36	2.03	2.35	2.37	2.24	2.16	2.13	2.12	-	-
Hardness (CaCO3)	mg/L	1	-	-	29	58	53.8	70.5	75.5	89.1	80.8	99.81	76.5	78.6	79	87	110	87	90	80	97.3	95.1	89.0	87	90.8	86	-	-
Ion Balance (% Difference)	%	N/A	-	-	-	-	-	-	-	-	-	-	-	3.83	0.876	1.74	15.8	4.52	2.28	8.7	0.9	2.9	1.5	5.1	6.9	0.93	-	-
Langelier Index (@ 20C)	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-0.05	-0.56	-0.06	0.074	0.140	0.026	-0.2	0.11	-0.08	-0.36	-0.23	-0.47	0.143	-	-
Langelier Index (@ 4C)	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-0.45	-0.811	-0.311	-0.177	-0.110	-0.23	-0.52	-0.21	-0.40	-0.68	-0.55	-0.79	-0.108	-	-
Nitrate (N)	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	0.19	0.17	0.17	-	0.09	0.2	0.26	0.15	0.12	0.19	0.12	0.07	0.066	-	-
Saturation pH (@ 20C)	Units	N/A	-	-	-	-	-	-	-	-	-	-	-	8.05	8	7.9	7.86	7.97	7.9	8.2	8.09	8.08	8.20	8.23	8.21	7.93	-	-
Saturation pH (@ 4C)	Units	N/A	-	-	-	-	-	-	-	-	-	-	-	8.45	8.25	8.15	8.11	8.22	8.16	8.52	8.41	8.40	8.52	8.55	8.53	8.19	-	-
Total Alkalinity (Total as CaCO:	mg/L	100	-	-	64	96	85	106	78	76	92	102	83	95	83	98	88	86	96	92	95	104	84	79	74	92	-	-
Dissolved Chloride (Cl)	mg/L	1	-	15000	8.4	4	6.6	11.8	15.9	14.6	16.6	11.2	8	11	10	11	16	14	15	17	12	12	14	10	11	8	13	21
Colour	TCU	5	-	-	7	15	9	180	< 5	< 5	<5	235	54	280	ND	ND	<5	<5	<5	<5	<5	<5	7	<5	19	<5.0	-	-
Nitrate + Nitrite (N)	mg/L	0.05	-	-	< 0.05	0.45	0.39	0.42	0.06	0.12	0.08	0.42	0.12	0.21	0.17	0.17	0.1	0.09	0.2	0.26	0.15	0.12	0.19	0.12	0.07	0.066	-	-
Nitrite (N)	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	0.02	ND	ND	-	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.010	-	-
Nitrogen (Ammonia Nitrogen)	mg/L	0.05	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.05	<0.1	< 0.05	<0.05	ND	ND	<0.05	<0.05	<0.05	0.09	<0.05	<0.03	<0.03	<0.03	<0.03	<0.050	none	none
Total Organic Carbon (C)	mg/L	0.5	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	5	7 (1)	<0.5	9.5	6.9	<5.0	1.3	1	0.9	<5.0 (1)	-	-
Orthophosphate (P)	mg/L	0.01	-	-	< 0.01	0.02	0.01	< 0.01	< 0.01	0.09	0.01	<0.3	0.04	<0.01	0.02	0..04	0.04	0.03	0.02	0.04	0.03	0.03	<0.01	0.03	0.02	0.028	-	-
pH	Units	N/A	-	-	7.9	8.1	8	7.9	7.8	8	8.1	8	8	8	7.44	7.84	7.93	8.11	7.93	8	8.2	8.0	7.8	8	7.74	8.08	-	-
Reactive Silica (SiO2)	mg/L	2.5	-	-	10.8	7.5	8.7	7.8	6.9	6.3	8.3	8	8.1	8.2	7.3	7.6	7.1	7.8	7.5	8	8.5	9.3	8.8	8.3	6.8	9	-	-
Dissolved Sulphate (SO4)	mg/L	2	-	-	14	5	9	6	3	16	5	4.5	12	4	3.3	3	3	5	5	4	3	4	4	4	3	4.1	-	-
Turbidity	NTU	1	-	-	2.8	26	48	93.2	16.2	13.5	>1000	>1000	> 1000	>1000	860	200	150	>1000	570	3940	3580	4740	3730	4760	4470	410	-	-
Conductivity	uS/cm	1	-	-	180	203	199	246	207	238	227	245	210	218	190	230	230	230	240	245	212	232	224	209	198	210	223	268
Dissolved Organic Carbon	mg/L	0.5	-	-	6.3	0.5	1.4	0.3	215	< 0.5	0.7	1.8	-	<500	-	-	-	-	-	3.6	4.9	6.2	<0.5	0.7	<0.5	-	-	-
Dissolved Calcium	mg/L	0.1	-	-	9.9	19.5	17.9	23.6	25.3	29.1	26.6	32.8	25.7	26.2	27	30	37	8.0	30	27.1	34	32.0	29.7	28.9	31.9	29	-	-
Magnesium	mg/L	0.1	-	-	1.1	2.2	2.2	2.8	3	4	3.5	4.35	3	3.2	3.1	3.3	4.5	3.7	3.5	3	3	3.7	3.6	3.6	2.7	3.4	-	-
Phosphorus	mg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	<0.1	ND	ND	-	<0.1	<0.1	<0.1	<.1	0.03	0.04	0.03	<0.02	<0.1	-	-
Potassium	mg/L	0.1	-	-	2.7	3.2	3.2	3.9	2.9	4.4	3.6	4.5	3.6	3.5	3.2	3.8	4.3	5.8	3.7	2.8	2.9	2.9	3.6	3.8	2.5	3.3	-	-
Sodium	mg/L	0.1	-	-	27.2	29.6	22.9	27.3	10.7	12.1	12.7	16.2	12.2	10.9	9.4	9.7	19	13	11	7.8	7.7	9.0	8.4	7.5	5.8	7.6	-	-

Notes:

(1) Reporting limit was increased due to turbidity.

RDL - Reported Detection Limit (updated in 2016)

ND - Values below RDL

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 EQS

Action Level = average between 2007 and 2016 (excluding duplicates) plus three standard deviations

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE A-18 **GROUNDWATER GENERAL CHEMISTRY - MW-29C**
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	20-Mar-96	16-Apr-97	9-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	29-Jul-08	11-Aug-09	28-Jul-10	14-Sep-11	4-Oct-12	8-Jul-13	20-Aug-14	23-Jul-15	13-Jul-16	Average 2007 through 2016	Action Level
Anion Sum	me/L	N/A	-	-	-	-	-	-	-	-	-	-	-	1.28	1.3	1.35	1.34	1.34	1.35	1.3	1.36	1.49	1.36	1.26	1.31	1.57	-	-
Bicarb. Alkalinity (calc. as C	mg/L	1	-	-	50.3	39.2	39.8	37.7	39.7	40	40	42.11	36	43	41.6	39	41	40	39	37	40	45	39	40	38	47	-	-
Calculated TDS	mg/L	1	-	-	75	68	56	70	67	84	70	76.59	70	79	79.8	83	84	89	82	68	73	83	75	74	76	90	-	-
Carb. Alkalinity (calc. as Ca	mg/L	1	-	-	0.6	0.7	< 1	0.2	0.3	< 1	<1	0.79	< 1	<1	ND	2	<1	<1	<1	<10	<10	<10	<10	<10	<10	<1.0	-	-
Cation Sum	me/L	N/A	-	-	-	-	-	-	-	-	-	-	-	1.33	1.36	1.38	1.54	1.64	1.34	1.1	1.26	1.51	1.33	1.44	1.42	1.38	-	-
Hardness (CaCO3)	mg/L	1	-	-	26	38	33.1	33.4	28.3	46.9	33.6	34.68	34.6	19.3	29	22	43	25	26	29.8	28.2	22.2	31.7	23.2	19.9	23	-	-
Ion Balance (% Difference)	%	N/A	-	-	-	-	-	-	-	-	-	-	-	2.07	2.11	1.32	6.94	10.1	0.37	8.1	3.8	0.7	1.1	6.3	4.1	6.44	-	-
Langelier Index (@ 20C)	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-1.09	-0.504	-0.183	-0.461	-0.473	-0.406	-0.91	-0.9	-1.09	-1.10	-0.79	-1	-0.582	-	-
Langelier Index (@ 4C)	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-1.49	-0.755	-0.434	-0.712	-0.724	-0.657	-1.23	-1.22	-1.41	-1.42	-1.11	-1.32	-0.833	-	-
Nitrate (N)	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	0.24	0.24	0.27	-	0.29	0.300	0.35	0.29	0.32	0.28	0.2	0.28	0.3	-	-
Saturation pH (@ 20C)	Units	N/A	-	-	-	-	-	-	-	-	-	-	-	8.99	8.72	8.88	8.57	8.82	8.81	9.01	9	9.09	8.97	9.08	9.18	8.78	-	-
Saturation pH (@ 4C)	Units	N/A	-	-	-	-	-	-	-	-	-	-	-	9.39	8.98	9.13	8.82	9.07	9.06	9.33	9.32	9.41	9.29	9.4	9.5	9.03	-	-
Total Alkalinity (Total as Ca	mg/L	100	-	-	51	40	40	38	40	40	40	43	36	43	42	42	41	41	40	37	40	45	39	40	38	48	-	-
Dissolved Chloride (Cl)	mg/L	1	-	15000	5.1	5.4	7.9	9.3	10.4	10.8	11.9	10.6	12	12	13	15	15	15	16	16	16	17	17	13	15	17	16	19
Colour	TCU	5	-	-	10	7	44	85	10	31	<5	310	< 5	13	ND	ND	<5	22	17	<5	<5	<5	6	<5	17	<5.0	-	-
Nitrate + Nitrite (N)	mg/L	0.05	-	-	< 0.05	0.16	0.14	0.75	0.15	0.2	0.14	0.22	0.27	0.24	0.24	0.27	0.27	0.29	0.300	0.35	0.29	0.32	0.28	0.2	0.33	0.3	-	-
Nitrite (N)	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	<0.01	ND	ND	-	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	<0.010	-	-
Nitrogen (Ammonia Nitroger	mg/L	0.05	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.05	<0.1	< 0.05	<0.05	ND	ND	<0.05	<0.05	<0.05	<0.05	<0.03	<0.03	<0.03	<0.03	<0.03	<0.050	none	none
Total Organic Carbon (C)	mg/L	0.5	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	6	<0.5	<0.5	1.3	0.9	<0.5	1	<0.5	<0.5	<25 (1)	-	-
Orthophosphate (P)	mg/L	0.01	-	-	< 0.01	0.02	< 0.01	0.02	< 0.01	0.06	<0.01	<0.3	< 0.01	0.02	0.02	0.01	0.01	0.02	0.01	0.02	<0.01	<0.01	0.01	0.01	<0.01	0.012	-	-
pH	Units	N/A	-	-	8.1	8.3	7.6	7.8	7.9	7.9	8	8.3	7.8	7.9	8.22	8.7	8.11	8.35	8.4	8.1	8.1	8.0	7.9	8.29	8.18	8.2	-	-
Reactive Silica (SiO2)	mg/L	2.5	-	-	8.4	7.3	7.4	6.7	6.4	6.6	7	7.5	6.9	6.9	6.9	6.9	6.9	6.9	6.9	7	7.1	7.1	7.1	7	6.6	6.9	-	-
Dissolved Sulphate (SO4)	mg/L	2	-	-	4	3	2	4	< 2	11	3	3.1	2	3	2.9	3	3	3	4	4	4	4	4	4	5	5.1	-	-
Turbidity	NTU	1	-	-	4.6	16.5	20	14.9	21.8	5.6	187	600	821	100	250	>1000	220	240	30	109	64.9	65.6	207	1010	873	830	-	-
Conductivity	uS/cm	1	-	-	117	107	112	117	115	125	126	125	133	133	130	140	140	140	140	142	145	147	145	150	141	150	144	156
Dissolved Organic Carbon	mg/L	0.5	-	-	2.2	< 0.5	< 0.5	< 0.5	117	< 0.5	<0.5	0.9	-	<25	-	-	-	-	-	0.8	0.9	0.7	<0.5	<0.5	<0.5	-	-	-
Dissolved Calcium	mg/L	0.1	-	-	8.4	12.6	10.8	10.9	9.2	16	11	11.3	11.4	6.4	9.5	7.1	14	8.0	8.6	9.8	9.3	6.9	10.4	7.8	6.5	7.7	-	-
Magnesium	mg/L	0.1	-	-	1.1	1.6	1.5	1.5	1.3	1.7	1.5	1.57	1.5	0.8	1.2	1	2	1.3	1.1	1.3	1.2	1.2	1.4	0.9	0.9	0.99	-	-
Phosphorus	mg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	<0.1	ND	ND	-	<0.1	<0.1	<0.1	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	-	-
Potassium	mg/L	0.1	-	-	3.3	4.1	3.4	3.5	3.4	3.6	3.5	3.9	3.6	3.2	3.4	3.4	3.7	6.6	3.6	3	2.8	3.0	3.6	3.6	2.8	2.9	-	-
Sodium	mg/L	0.1	-	-	14.4	7.8	8.4	8	9.4	9.4	7.9	12.6	9.8	19.8	16	19	13	22	17	9.9	14.3	22.7	13.9	20.2	21.9	19	-	-

Notes:
(1) Reporting limit was increased due to turbidity.
RDL - Reported Detection Limit (updated in 2016)
ND - Values below RDL
Bold indicates exceedance of NS Tier 1 EQS
Bold and shaded indicates exceedance of NS Tier 2 EQS
Action Level = average between 2007 and 2016 (excluding duplicates) plus three standard deviations
NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)
NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE A-19

GROUNDWATER GENERAL CHEMISTRY - MW-31A
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	21-Mar-96	16-Apr-97	9-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	18-Aug-05 MW-31A Dup	23-Nov-06	16-Aug-07	29-Jul-08	11-Aug-09	28-Jul-10	14-Sep-11	4-Oct-12	8-Jul-13	20-Aug-14	21-Jul-15	13-Jul-16	Average 2007 through 2016	Action Level
Anion Sum	me/L	N/A	-	-	-	-	-	-	-	-	-	-		0.45	0.344	-	0.813	0.23	0.290	0.35	0.34	0.34	0.82	0.69	0.44	0.29	0.43	-	-
Bicarb. Alkalinity (calc. as CaC	mg/L	1	-	-	20	5	5	4	7	5	3	3.2	**	6	8	-	ND	6	7	9	7	9	<5	14	14	7	12	-	-
Calculated TDS	mg/L	1	-	-	49	24	19	21	24	42	30	34.95	**	33	26.8	-	56	31	44	26	18	18	45	33	22	19	28	-	-
Carb. Alkalinity (calc. as CaCO	mg/L	1	-	-	0.01	0	< 1	0	0	< 1	<1	0	**	<1	ND	-	ND	<1	<1	<1	<10	<10	<10	<10	<10	<10	<1.0	-	-
Cation Sum	me/L	N/A	-	-	-	-	-	-	-	-	-	-		0.48	0.383	-	0.932	0.79	1.11	0.340	0.31	0.31	0.84	0.47	0.38	0.42	0.37	-	-
Hardness (CaCO3)	mg/L	1	-	-	28	11	7.6	6.1	11.2	16.5	13	17.8	**	14.9	10	-	32	16	10	9	8.9	9.1	28.1	16.0	12.9	13.9	13	-	-
Ion Balance (% Difference)	%	N/A	-	-	-	-	-	-	-	-	-	-	-	3.62	5.4	-	6.83	54.9	58.6	1.45	5.3	4	1.3	18.7	7.2	17	7.5	-	-
Langelier Index (@ 20C)	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-3.46	-2.56	-	ND	-3.7	-3.58	-3.56	-3.89	-3.46	-3.67	-3.02	-2.88	-3.78	-2.86	-	-
Langelier Index (@ 4C)	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-3.86	-2.81	-	ND	-3.95	-3.83	-3.81	-4.21	-3.78	-3.99	-3.34	-3.2	-4.1	-3.11	-	-
Nitrate (N)	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	0.05	ND	-	ND	-	<0.05	0.31	0.24	0.07	<0.05	<0.05	0.06	<0.05	<0.050	-	-
Saturation pH (@ 20C)	Units	N/A	-	-	-	-	-	-	-	-	-	-	-	9.96	9.85	-	ND	9.87	10.1	9.9	10.3	10.2	9.97	9.69	9.77	10	9.63	-	-
Saturation pH (@ 4C)	Units	N/A	-	-	-	-	-	-	-	-	-	-	-	10.4	10.1	-	ND	10.1	10.3	10.2	10.6	10.5	10.3	10.0	10.1	10.3	9.88	-	-
Total Alkalinity (Total as CaCO	mg/L	100	-	-	20	5	5	4	7	5	3	3.2	**	6	8	-	ND	6	7	9	7	9	<5	14	14	7	12	-	-
Dissolved Chloride (Cl)	mg/L	1	-	15000	13.9	3.4	2.9	3.5	5.3	5.1	5.6	10.7	**	10	5	-	29	4	4	4	5	4	29	13	4	4	4.3	7.5	31.7
Colour	TCU	5	-	-	< 3	< 3	7	31	< 5	43	<5	77	**	47	ND	-	ND	<5	<5	<5	<5	<5	<5	<5	<5	12	<5.0	-	-
Nitrate + Nitrite (N)	mg/L	0.05	-	-	< 0.05	0.37	< 0.05	< 0.05	0.05	< 0.05	<0.05	<0.06	**	0.08	ND	-	ND	<0.05	<0.05	0.31	0.24	0.07	<0.05	<0.05	0.06	<0.05	<0.050	-	-
Nitrite (N)	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	0.03	ND	-	ND	-	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.010	-	-
Nitrogen (Ammonia Nitrogen)	mg/L	0.05	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.05	<0.1	**	0.08	ND	-	ND	<0.05	<0.05	<0.05	<0.05	<0.03	<0.03	<0.03	<0.03	<0.03	0.1	none	none
Total Organic Carbon (C)	mg/L	0.5	-	-	-	-	-	-	-	-	-	-	-	-	ND	-	ND	0.7	<5	<5	<0.5	0.7	<0.5	1.6	0.9	1.6	<5.0 (1)	-	-
Orthophosphate (P)	mg/L	0.01	-	-	< 0.01	0.01	< 0.01	0.02	< 0.01	0.13	<0.01	<0.3	**	0.08	ND	-	ND	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.011	-	-
pH	Units	N/A	-	-	6.6	6.2	6.4	6.4	6.6	6.2	6.8	6.2	**	6.5	7.29	-	5.83	6.17	6.47	6.34	6.4	6.7	6.3	6.67	6.89	6.25	6.77	-	-
Reactive Silica (SiO2)	mg/L	2.5	-	-	7.5	5.5	5.2	4	5.1	6.1	6.3	7.8	**	7	6.5	-	8.1	6.3	6.3	6.4	6.6	7.4	7.5	5.8	6.6	5.9	6.3	-	-
Dissolved Sulphate (SO4)	mg/L	2	-	-	< 2	4	< 2	3	2	14	6	<2.0	**	<2	2.1	-	ND	<2	2	2	2	2	<2	2	2	2	3.5	-	-
Turbidity	NTU	1	-	-	1.7	12.5	3.6	74	16.2	9.5	505	70	**	759	>1000	-	770	82	570	48	24.4	24.0	2.1	291.0	181	119	65	-	-
Conductivity	uS/cm	1	-	-	93	34	27.6	24.4	38.3	43.7	41	65	**	53	39	-	110	34	33	40	39	39	104	57	42	39	42	47	110
Dissolved Organic Carbon	mg/L	0.5	-	-	0.7	< 0.5	0.5	< 0.5	40	3.2	1.2	-	-	<50	-	-	-	-	-	-	<0.5	0.8	<0.5	0.6	<0.5	1	-	-	-
Dissolved Calcium	mg/L	0.1	-	-	9.5	3.4	2.2	1.8	3.5	4.8	4.2	5.2	**	4.8	3.4	3.4	9.4	4.5	2.6	2.8	2.4	2.5	7.8	5.1	4	4.4	3.9	-	-
Magnesium	mg/L	0.1	-	-	1.1	0.6	0.5	0.4	0.6	1.1	0.6	1.17	**	0.7	0.5	0.5	2	1.1	0.7	0.6	0.7	0.7	2.1	0.8	0.7	0.7	0.7	-	-
Phosphorus	mg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	<0.1	ND	ND	ND	-	<0.1	<0.1	<0.1	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	-	-
Potassium	mg/L	0.1	-	-	0.6	0.3	0.2	0.2	0.6	5	1.4	<0.6	**	0.4	0.7	0.6	0.3	0.5	8.4	0.3	<0.1	<0.1	0.1	0.7	0.2	0.4	<0.1	-	-
Sodium	mg/L	0.1	-	-	4.1	2.3	2.7	5.5	2.8	3	3.7	5.5	**	3.9	3.6	3.5	6.6	11	16	3.1	2.8	2.7	5.8	3.0	2.5	2.7	2.7	-	-

Notes:

(1) Reporting limit was increased due to turbidity.

RDL - Reported Detection Limit (updated in 2016)

ND - Values below RDL

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 EQS

Action Level = average between 2007 and 2016 (excluding duplicates) plus three standard deviations

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE A-20 **GROUNDWATER GENERAL CHEMISTRY - TH-1**
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	8-Mar-95	19-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03
Anion Sum	me/L	N/A	-	-	-	-	-	-	-	-	-	-	-	-
Bicarb. Alkalinity (calc. as CaC	mg/L	1	-	-	1100	1020	1080	1140	999	995	934	836	937.77	655
Calculated TDS	mg/L	1	-	-	1450		1400	1430	1270	1240	1220	1160	1116.86	903
Carb. Alkalinity (calc. as CaCO	mg/L	1	-	-	2.06	1	1.6	4.3	1.2	0.9	1	5	2.21	5
Cation Sum	me/L	N/A	-	-	-	-	-	-	-	-	-	-	-	-
Hardness (CaCO3)	mg/L	1	-	-	634	546	636	650	550	531	533	556	479.61	409
Ion Balance (% Difference)	%	N/A	-	-	-	-	-	-	-	-	-	-	-	-
Langelier Index (@ 20C)	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-
Langelier Index (@ 4C)	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate (N)	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-
Saturation pH (@ 20C)	Units	N/A	-	-	-	-	-	-	-	-	-	-	-	-
Saturation pH (@ 4C)	Units	N/A	-	-	-	-	-	-	-	-	-	-	-	-
Total Alkalinity (Total as CaCO	mg/L	100	-	-	1100	1020	1080	1140	1000	996	935	841	940	660
Dissolved Chloride (Cl)	mg/L	1	-	15000	203	198	169	164	150	143	133	136	117	91
Colour	TCU	5	-	-	31	90	70	27	27	27	20	21	128	25
Nitrate + Nitrite (N)	mg/L	0.05	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.08	<0.06	< 0.05
Nitrite (N)	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-
Nitrogen (Ammonia Nitrogen)	mg/L	0.05	-	-	48.9	71	67	62.5	72.5	72.1	73.4	72.4	<0.1	58
Total Organic Carbon (C)	mg/L	0.5	-	-	-	-	-	-	-	-	-	-	-	-
Orthophosphate (P)	mg/L	0.01	-	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01	<0.01	<0.3	< 0.01
pH	Units	N/A	-	-	7.3	7	7.2	7.6	7.1	7.1	7.1	7.8	7.4	7.9
Reactive Silica (SiO2)	mg/L	2.5	-	-	19.8	27.6	28.5	28	26.9	27.9	27.8	29.5	31.1	30
Dissolved Sulphate (SO4)	mg/L	2	-	-	2	< 2	< 2	3	< 2	< 2	5	9	3.3	7
Turbidity	NTU	1	-	-	308	524	12.5	0.8	1.3	1.3	0.3	375	36	330
Conductivity	uS/cm	1	-	-	2980	2710	2700	2520	2590	2590	2590	2590	2050	1380
Dissolved Organic Carbon	mg/L	0.5	-	-	58	46	38.7	36	30	30	27	22.6	34.9	-
Dissolved Calcium	mg/L	0.1	-	-	248	169	197	199	171	167	164	170	152	126
Magnesium	mg/L	0.1	-	-	3.5	30.1	34.9	37.3	29.8	27.6	29.9	31.9	24.3	23
Phosphorus	mg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-
Potassium	mg/L	0.1	-	-	19.4	35.9	41.7	45.2	42.1	42	52.6	51.6	49.1	47.8
Sodium	mg/L	0.1	-	-	230	176	188	186	159	138	149	132	176	107

Compound	25-Aug-04	25-Aug-04 DUP	18-Aug-05	18-Aug-05 TH1 Dup	23-Nov-06	16-Aug-07	28-Jul-08	10-Aug-09	27-Jul-10	21-Sep-11	4-Oct-12	4-Jul-13	19-Aug-14	22-Jul-15	14-Jul-16	Average 2007 through 2016	Action Level
Anion Sum	17.1	17.1	16.9	-	15.1	11.8	13.7	12.9	12.2	11.4	11.6	11.0	9.55	9.49	10.2	-	-
Bicarb. Alkalinity (calc. as CaC	741	743	755	-	666	516	625	588	552	529	537	502	453	442	470	-	-
Calculated TDS	903	907	882	-	819	744	737	694	679	612	645	634	533	518	580	-	-
Carb. Alkalinity (calc. as CaCO	9	7	ND	-	ND	<1	1	<1	<10	<10	<10	<10	<10	<10	<1.0	-	-
Cation Sum	16.6	16.9	16.3	-	15.6	16.9	13.6	12.5	14.1	12.6	14.1	13.9	11.5	10.4	11.6	-	-
Hardness (CaCO3)	362	369	380	-	350	380	290	290	257	294	312	262	273	279	280	-	-
Ion Balance (% Difference)	1.64	0.69	1.78	-	1.5	17.8	0.400	1.85	7.4	5.2	9.8	11.6	9.3	4.4	6.1	-	-
Langelier Index (@ 20C)	1.5	1.41	0.346	-	0.361	0.453	0.563	0.446	0.45	0.62	0.42	0.46	0.48	0.09	0.451	-	-
Langelier Index (@ 4C)	1.1	1.01	0.099	-	0.114	0.206	0.317	0.199	0.13	0.3	0.10	0.14	0.16	-0.23	0.203	-	-
Nitrate (N)	<0.05	<0.05	ND	-	0.55	-	<0.05	0.34	2.94	0.29	0.54	<0.05	<0.05	<0.05	<0.050	-	-
Saturation pH (@ 20C)	6.6	6.59	6.57	-	6.66	6.73	6.76	6.78	7.05	6.98	6.98	7.06	7.07	7.01	6.86	-	-
Saturation pH (@ 4C)	7	6.99	6.82	-	6.91	6.97	7.00	7.03	7.37	7.3	7.30	7.38	7.39	7.33	7.11	-	-
Total Alkalinity (Total as CaCO	750	750	760	750	670	520	630	590	552	529	537	502	453	442	470	-	-
Dissolved Chloride (Cl)	74	73	62	61	60	51	41	36	31	26	28	34	15	23	27	31	61
Colour	16	17	18	18	15	13	15	21	11	9	13	11	<5	8	7.6	-	-
Nitrate + Nitrite (N)	<0.05	<0.05	ND	-	0.57	<0.05	<0.05	1.3	2.94	0.29	0.69	<0.05	<0.05	<0.05	<0.050	-	-
Nitrite (N)	<0.01	0.01	ND	ND	0.02	-	<0.01	0.95	<0.05	<0.05	0.15	<0.05	<0.05	<0.05	<0.010	-	-
Nitrogen (Ammonia Nitrogen)	54	55	49	-	50	54	42	32	58.3	43.8	58.3	44.0	37.6	16.7	40	43	81
Total Organic Carbon (C)	-	-	11	-	13	11	11	19	25.9	4.9	20.4	11.9	<0.5	<0.5	7.4 (1)	-	-
Orthophosphate (P)	0.01	<0.01	ND	ND	ND	<0.01	<0.01	<0.01	0.02	0.02	0.01	0.01	0.01	<0.01	0.027	-	-
pH	8.1	8	6.92	-	7.02	7.18	7.32	7.23	7.5	7.6	7.4	7.5	7.55	7.1	7.31	-	-
Reactive Silica (SiO2)	30	30	30	30	31	32	32	30	28.8	22.6	30.9	32.5	28.6	24.5	31	-	-
Dissolved Sulphate (SO4)	<2	<2	ND	ND	3	<2	2	3	4	2	2	2	3	<2	<2.0	-	-
Turbidity	302	294	230	-	210	220	220	84	127	240	286	232	2880	1160	160	-	-
Conductivity	1800	1810	1500	-	1400	1400	1300	1200	1270	1080	1090	1080	1020	940	1000	1138	1582
Dissolved Organic Carbon	<50	<50	-	-	-	-	-	-	21.2	0.8	15.2	<0.5	<0.5	<0.5	-	-	-
Dissolved Calcium	112	114	120	-	110	120	91	89	76.2	92.6	91.6	81.6	85.4	100	88	-	-
Magnesium	20.1	20.5	20	-	19	20	16	15	16.1	15.2	20.3	14.2	14.6	7.2	16	-	-
Phosphorus	<0.1	<0.1	ND	-	ND	-	<0.1	<0.1	<0.1	<0.1	<0.02	0.05	0.1	<0.02	0.1	-	-
Potassium	45.9	45.8	43	-	46	45	43	43	45	39	39.8	35.1	39	37.7	33	-	-
Sodium	99	101	94	-	87	87	73	68	77.4	51.7	61.4	96.4	44.7	47.8	41	-	-

Notes:
(1) Reporting limit was increased due to turbidity.
RDL - Reported Detection Limit (updated in 2016)
ND - Values below RDL
Bold indicates exceedance of NS Tier 1 EQS
Bold and shaded indicates exceedance of NS Tier 2 EQS
Action Level = average between 2007 and 2016 (excluding duplicates) plus three standard deviations
NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)
NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE A-21 **GROUNDWATER GENERAL CHEMISTRY - TH-2**
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	20-Dec-94	8-Mar-95	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	16-Aug-07 Dup A	28-Jul-08	12-Aug-09	27-Jul-10	21-Sep-11	4-Oct-12	4-Jul-13	19-Aug-14	22-Jul-15	14-Jul-16
Anion Sum	me/L	N/A	-	-	-	-	-	-	-	-	-	-	-	-	0.99	1.59	1.12	1.45	7.45	1.37	1.21	1.38	1.95	2.01	1.76	1.07	1.07	1.25
Bicarb. Alkalinity (calc. as CaC	mg/L	1	-	-	107	49	47	50.9	51.8	103	62	74	89.87	48	25	73.6	50	67	260	62	55	59	84	93	67	49	49	56
Calculated TDS	mg/L	1	-	-	148	-	-	72	80	136	101	98	313.4	71	76	95.9	70	103	406	105	74	64	93	115	90	60	60	74
Carb. Alkalinity (calc. as CaCO	mg/L	1	-	-	0.25	0	0	< 1	0.2	1.9	< 1	<1	1.06	< 1	<1	ND	ND	<1	<1	<1	<1	<10	<10	<10	<10	<10	<10	<1.0
Cation Sum	me/L	N/A	-	-	-	-	-	-	-	-	-	-	-	-	1.27	1.6	1.16	2.08	7.96	2.17	1.20	0.98	1.45	2.36	1.51	1.26	1.21	1.15
Hardness (CaCO3)	mg/L	1	-	-	102	30	31	31.1	30.9	16.4	12.6	23	21.51	24.9	26.3	9.9	29	13	330	3	24	23.8	3.7	6.7	2.5	23	12.5	31
Ion Balance (% Difference)	%	N/A	-	-	-	-	-	-	-	-	-	-	-	-	12.3	0.0627	1.58	17.9	3.31	22.6	0.41	17.1	14.5	8.0	7.6	8	6.3	4.17
Langelier Index (@ 20C)	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-1.7	-1.25	-1.37	-0.883	0.309	-1.71	-1.17	-0.91	-1.13	-1.18	-0.87	-1.3	-1.9	-0.948
Langelier Index (@ 4C)	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-2.1	-1.5	-1.62	-1.13	0.061	-1.97	-1.420	-1.23	-1.45	-1.50	-1.19	-1.62	-2.22	-1.2
Nitrate (N)	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	0.08	0.06	0.09	-	-	0.12	0.12	0.41	0.12	0.10	0.51	0.06	0.07	0.098
Saturation pH (@ 20C)	Units	N/A	-	-	-	-	-	-	-	-	-	-	-	-	9.1	8.95	8.64	8.95	6.99	9.84	8.68	8.91	9.53	9.28	9.70	9.01	9.27	8.59
Saturation pH (@ 4C)	Units	N/A	-	-	-	-	-	-	-	-	-	-	-	-	9.5	9.2	8.89	9.2	7.24	10.1	8.93	9.23	9.85	9.60	10.00	9.33	9.59	8.85
Total Alkalinity (Total as CaCO	mg/L	100	-	-	107	49	47	51	52	105	62	74	91	48	25	74	50	67	260	63	55	59	87	93	77	49	49	56
Dissolved Chloride (Cl)	mg/L	1	-	15000	16.9	3.6	3.8	3.5	6.3	6.2	4.9	4.1	4.9	3	4	3.9	4	3	79	4	4	6	7	5	6	3	3	4.2
Colour	TCU	5	-	-	3	8	7	< 5	38	450	34	<5	>1000	26	<5	ND	ND	<5	5	<5	<5	8	<5	7	29	<5	6	<5.0
Nitrate + Nitrite (N)	mg/L	0.05	-	-	< 0.05	< 0.05	< 0.05	0.07	0.07	0.05	0.07	<0.05	<0.06	0.06	0.08	0.06	0.09	0.1	0.07	0.12	0.12	0.41	0.12	0.10	0.68	0.06	0.07	0.098
Nitrite (N)	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	ND	ND	-	-	<0.01	<0.01	<0.05	<0.05	<0.05	0.17	<0.05	<0.05	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	0.05	-	-	0.05	< 0.05	0.06	< 0.05	0.05	< 0.05	0.06	<0.05	<0.1	< 0.05	<0.05	0.19	ND	0.09	<0.05	0.11	<0.05	0.08	<0.05	<0.03	0.22	<0.03	<0.03	<0.050
Total Organic Carbon (C)	mg/L	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	4	11	1.4	<5	2	1.1	0.5	<5.0	<0.5	<0.5	<0.50
Orthophosphate (P)	mg/L	0.01	-	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.06	<0.01	<0.3	0.01	<0.01	ND	ND	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	0.013
pH	Units	N/A	-	-	7.4	7	7.2	7.4	7.5	8.3	7.6	7.8	8.1	7.6	7.4	7.7	7.27	8.07	7.3	8.13	7.51	8	8.4	8.1	8.8	7.71	7.37	7.65
Reactive Silica (SiO2)	mg/L	2.5	-	-	11.4	10.6	11.6	10.8	10.1	10.1	8.6	9.5	205	10	11	11	10	11	13	9.8	10	9.8	12.1	12.7	8.3	10.1	10.2	11
Dissolved Sulphate (SO4)	mg/L	2	-	-	< 2	< 2	< 2	< 2	< 2	2	10	5	<2.0	5	18	ND	ND	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2.0
Turbidity	NTU	1	-	-	27.9	96	62.5	1.4	26.5	155	2.4	471	2.2	108	233	350	12	230	360	390	23.00	162	136	130	1700	710	452	17
Conductivity	uS/cm	1	-	-	266	108	103	106	134	214	153	133	179	112	119	140	110	130	720	140	120	135	174	183	150	118	116	110
Dissolved Organic Carbon	mg/L	0.5	-	-	4.5	< 0.5	0.7	0.5	< 0.5	229	< 0.5	1	1	-	<50	-	-	-	-	-	-	0.7	1.5	<0.5	1.7	<0.5	1.6	-
Dissolved Calcium	mg/L	0.1	-	-	32	9.6	9.7	10	9.9	5.4	3.9	7.4	3.6	8	8.7	3.3	9.5	3.7	110	0.5	8.1	7.7	1.3	2.2	1.0	7.4	4	9.7
Magnesium	mg/L	0.1	-	-	5.3	1.4	1.6	1.5	1.5	0.7	0.7	1.1	3.04	1.2	1.1	0.4	1.3	0.8	14	0.4	1.0	1.1	0.1	0.3	<0.1	1.1	0.6	1.6
Phosphorus	mg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	ND	ND	-	-	<0.1	<0.1	<0.1	<0.1	<0.02	0.02	<0.02	<0.02	<0.1
Potassium	mg/L	0.1	-	-	2.4	1	1.4	1.7	1.8	1.8	2.3	2.5	1.6	1.9	1.8	1.6	2	2.8	7.7	9.8	1.9	1.5	0.9	0.9	0.5	2.2	1.3	1.9
Sodium	mg/L	0.1	-	-	15.3	11.6	11.4	11.9	16.5	46.3	33.1	23.3	38.6	13.2	16	31	12	40	26	42	15	10	31.2	50.6	32.7	16.5	21.1	11

Notes:

(1) Reporting limit was increased due to turbidity.

RDL - Reported Detection Limit (updated in 2016)

ND - Values below RDL

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 EQS

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE B-1 **GROUNDWATER METALS CHEMISTRY - MW-4A**
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL*	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	21-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	26-Jul-00 Dup.	Aug-01	Sep-02	Sep-02 Duplicate
Aluminum	ug/L	5	-	50	9	13	33	33	< 5	**4000**	**2500**	14	<20	<20
Antimony	ug/L	1	-	200	3	< 2	< 2	< 2	< 2	< 20	< 20	<2	<0.4	<0.4
Arsenic	ug/L	1	-	50	**170**	39	**93**	**81**	**59**	**100**	**67**	33	**61.9**	**64.4**
Barium	ug/L	10	-	10000	2900	1800	2700	2300	2200	3300	2900	1400	4560	4570
Beryllium	ug/L	1	-	53	< 5	< 5	< 5	< 5	< 5	< 50	< 50	<5	<0.5	<0.5
Bismuth	ug/L	2	-	-	-	-	-	-	-	-	-	-	-	-
Boron	ug/L	50	-	12000	540	250	400	420	440	390	390	200	450	450
Cadmium	ug/L	0.01	-	0.1	*< 0.5*	*< 0.3*	*< 0.3*	*< 0.3*	*< 0.3*	**1.6**	**1.1**	0.09	*<0.3*	*<0.3*
Chromium	ug/L	1	-	-	4	5	< 2	4	5	24	< 20	<2	2	3
Cobalt	ug/L	0.4	-	100	29	21	26	22	20	91	56	15	21	22
Copper	ug/L	2	-	20	< 10	3	3	4	< 2	63	37	2	10	11
Iron	ug/L	50	-	3000	**24800**	**20000**	**28000**	**22000**	**13000**	**210000**	**94000**	**14000**	**25000**	**25500**
Lead	ug/L	0.5	-	10	0.1	0.4	0.4	0.5	< 0.5	**51**	**29**	<.5	<1	<1
Manganese	ug/L	2	-	8200	420	5400	900	890	450	**33000**	**17000**	3500	785	811
Mercury	ug/L	0.026	-	0.26	-	-	-	-	-	-	-	-	-	-
Molybdenum	ug/L	2	-	730	< 2	< 2	< 2	< 2	< 2	< 20	< 20	<2	<4	<4
Nickel	ug/L	2	-	250	47	28	36	39	26	120	69	12	41	42
Selenium	ug/L	1	-	10	< 2	< 2	< 2	< 2	< 2	< 10	< 10	<1	2	3
Silver	ug/L	0.1	-	1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	*< 5*	*< 5*	<0.1	*<2*	*<2*
Strontium	ug/L	2	-	210000	730	370	580	510	580	600	550	350	859	876
Thallium	ug/L	0.1	-	8	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1	< 1	<0.1	<0.8	<0.8
Tin	ug/L	2	-	-	< 2	< 2	< 2	< 2	< 2	< 20	< 20	<2	,20	<20
Titanium	ug/L	2	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	ug/L	0.1	-	3000	0.1	0.1	0.2	0.2	0.1	6.6	3.5	0.2	0.21	0.21
Vanadium	ug/L	2	-	60	< 2	< 2	< 2	< 2	< 2	50	22	<2	4	5
Zinc	ug/L	5	-	300	< 10	43	21	14	12	< 200	< 200	22	7	7

Compound	19-Aug-03	25-Aug-04	25-Aug-04 MW-40D	25-Aug-04 Lab Dup	18-Aug-05	18-Aug-05 MW-40D	23-Nov-06	1-Aug-07	16-Aug-07 MW-4ALF	28-Jul-08	28-Jul-08 Dup-A	12-Aug-09	12-Aug-09 MW-40D
Aluminum	*< 100*	*<100*	*<100*	*<101*	*<100*	*<100*	ND	<50	<50	<50	<50	<50	<50
Antimony	< 20	<20	<20	<21	<20	<20	ND	<20	<20	<20	<20	<20	<20
Arsenic	23	<20	25	24	**51**	47	ND	**76**	**69**	**68**	**68**	**67**	**62**
Barium	2800	2800	3200	3200	3200	3200	3000	3760	3860	3740	3990	4030	3760
Beryllium	< 20	<20	<20	<20	<20	<20	ND	<20	<20	<20	<20	<20	<20
Bismuth	< 20	<20	<20	<20	<20	<20	ND	<20	<20	<20	<20	<20	<20
Boron	780	660	790	860	980	990	900	845	867	734	727	548	565
Cadmium	*< 3*	*<3*	*<3*	*<3*	*<3*	*<3*	ND	**0.21**	*<0.17*	*<0.17*	*<0.17*	*<0.17*	*<0.17*
Chromium	< 20	<20	<20	<20	<20	<20	ND	<20	<20	<20	<20	<10	<10
Cobalt	20	24	24	23	17	18	18	14.8	13.8	15.6	15.6	15.8	15.5
Copper	< 20	<20	<20	<20	<20	<20	ND	<20	<20	35	<20	<20	<20
Iron	< 500	<500	1300	1300	**11000**	**7800**	ND	**20500**	**20900**	**18800**	**18600**	**16600**	**17600**
Lead	< 5	<5	<5	<5	<5	<5	ND	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Manganese	480	1100	550	550	480	470	540	493	481	497	515	497	520
Mercury	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum	< 20	<20	<20	<20	<20	<20	ND	<20	<20	<20	<20	<20	<20
Nickel	50	56	68	69	48	51	45	32	31	33	33	32	28
Selenium	*< 20*	*<20*	*<20*	*<20*	*<20*	*<20*	ND	<10	<10	<10	<10	<10	<10
Silver	*< 5*	*<5*	*<5*	*<5*	*<5*	*<5*	ND	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Strontium	950	940	1100	1100	960	960	1000	1080	1090	970	1010	1040	1040
Thallium	< 1	<1	<1	<1	<1	<1	ND	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tin	< 20	<20	<20	<20	<20	<20	ND	<20	<20	<20	<20	<20	<20
Titanium	< 20	<20	<20	<20	<20	<20	ND	<20	<20	<20	<20	<20	<20
Uranium	< 1	<1	<1	<1	<1	<1	1	1.2	<1.0	<1.0	<1.0	<1.0	<1.0
Vanadium	< 20	<20	<20	<20	<20	<20	ND	<20	<20	<20	<20	<20	<20
Zinc	< 50	<50	<50	<50	<50	<50	ND	<50	<50	<50	<50	<50	<50

Compound	27-Jul-10	27-Jul-10 MW-40D	21-Sep-11	4-Oct-12	4-Jul-13	4-Jul-13 MW-40D	19-Aug-14	19-Aug-14 MW-40D	21-Jul-15	21-Jul-15 MW-40D	14-Jul-16
Aluminum	<10	<10	<10	<5	**347**	**62**	10	10	<5	<5	<5.0
Antimony	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1.0
Arsenic	**122**	**117**	**57**	43	**66**	**64**	**89**	**90**	**84**	**82**	**64**
Barium	2900	3000	3250	3420	3170	3200	4090	3980	4090	4110	3300
Beryllium	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1.0
Bismuth	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2.0
Boron	624	610	690	773	591	681	726	704	801	651	390
Cadmium	*<0.3*	*<0.3*	*<0.3*	**0.452**	*<0.017*	0.029	<0.017	<0.017	<0.017	<0.017	<0.010
Chromium	2	3	<2	<1	3	<1	<1	<1	3	3	<1.0
Cobalt	6	7	7	9	11	11	10	10	6	6	12
Copper	<2	<2	<2	<2	<2	3	4	<2	<2	<2	<2.0
Iron	**14400**	**15200**	**15900**	<50	**17400**	**17200**	**15600**	**14800**	**25900**	**24400**	**19000**
Lead	1.9	1.8	<0.5	<0.5	<0.5	<0.5	3.4	<0.5	<0.5	<0.5	<0.50
Manganese	384	407	641	702	541	513	430	443	657	633	550
Mercury	-	-	-	-	0.101	<0.026	0.029	<0.026	<0.026	<0.026	-
Molybdenum	<2	<2	<2	5	<2	<2	<2	<2	<2	<2	<2.0
Nickel	17	15	15	39	27	25	19	18	9	9	18
Selenium	3	3	<2	2	<1	<1	<1	<1	7	7	<1.0
Silver	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10
Strontium	865	875	823	872	980	974	845	853	974	936	770
Thallium	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10
Tin	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2.0
Titanium	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2.0
Uranium	<0.1	0.1	<0.1	0.6	0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.10
Vanadium	4	4	2	<2	<2	<2	<2	<2	2	3	<2.0
Zinc	10	<5	<5	<5	35	20	9	<5	9	8	7.2

Notes:

RDL - Reported Detection Limit (updated in 2016, except for Mercury)

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 EQS

Shaded and italics indicates the detection limit exceeds NS Tier 2 PSS

MW-40D = Duplicate of MW-4A

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE B-2 GROUNDWATER METALS CHEMISTRY - MW-12B
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL*	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	20-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	12-Aug-09	29-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	14-Jul-16	14-Jul-16 MW-40D
Aluminum	ug/L	5	-	50	17	33	41	28	< 10	**810**	10	<20	< 10	<10	ND	18	<5.0	<5.0	6.3	<10	<10	<5	**56**	<5	<5	<5.0	<5.0
Antimony	ug/L	1	-	200	< 2	< 2	< 2	< 2	< 2	< 2	<2	<0.4	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0	<1.0
Arsenic	ug/L	1	-	50	43	5	2	14	10	10	2	6.4	2	<2	ND	ND	10.3	8	8.3	7	<2	<2	8	9	5	7.2	7.7
Barium	ug/L	1	-	10000	710	130	370	310	180	470	470	170	240	110	88	63	131	121	130	120	63	76	125	158	124	120	120
Beryllium	ug/L	1	-	53	< 5	< 5	< 5	< 5	< 5	< 5	<5	<0.5	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0	<1.0
Bismuth	ug/L	2	-	-	-	-	-	-	-	-	-	-	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0
Boron	ug/L	50	-	12000	190	28	200	95	41	28	95	<100	27	6	ND	ND	11.5	6.6	5.9	6	7	17	39	9	5	<50	<50
Cadmium	ug/L	0.01	-	0.1	*< 0.5*	*< 0.5*	*< 0.3*	*< 0.3*	*< 0.3*	**0.2**	0.02	*<0.3*	*< 0.3*	*<0.3*	ND	ND	<0.017	**0.21**	0.07	*<0.3*	*<0.3*	**0.114**	0.092	0.018	<0.017	<0.010	<0.010
Chromium	ug/L	1	-	-	2	< 2	< 2	< 2	< 2	2	<2	<2	< 2	<2	ND	ND	<2.0	<2.0	<1.0	<2	<2	<1	<1	<1	<1	<1.0	<1.0
Cobalt	ug/L	0.4	-	100	7	1	7	3	2	7	4.7	1	2	1	ND	ND	1.21	1.24	1.25	1	<1	<1	1	2	2	2.3	2.3
Copper	ug/L	2	-	20	< 10	6	2	< 2	2	15	<2	<2	< 2	<2	ND	ND	4.5	3.4	3.9	<2	<2	<2	<2	<2	<2	<2.0	<2.0
Iron	ug/L	50	-	3000	**4650**	1400	**4300**	**7000**	2400	**5500**	<20	760	< 50	<50	ND	ND	2560	2040	2220	1570	<50	<50	2250	**3630**	2960	**5700**	**6100**
Lead	ug/L	0.5	-	10	5	0.6	0.7	< 0.5	< 0.5	**11**	<0.5	<1	< 0.5	<0.5	ND	0.6	<0.50	<0.50	<0.50	1.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50
Manganese	ug/L	2	-	8200	6980	1400	**9000**	3200	1900	3500	6300	1380	3000	740	99	7	2500	2700	3120	2920	59	140	3070	4820	4790	4200	4400
Mercury	ug/L	0.026	-	0.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.026	<0.026	0.043	-	-
Molybdenum	ug/L	2	-	730	5	< 2	< 2	< 2	< 2	< 2	<2	<4	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0
Nickel	ug/L	2	-	250	11	2	10	4	3	7	5	<3	2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	2	<2	<2	<2.0	<2.0
Selenium	ug/L	1	-	10	< 2	< 2	< 2	< 2	< 2	< 1	<1	<1	< 2	<2	ND	ND	<1.0	<1.0	<1.0	<2	<2	<1	<1	<1	<1	<1.0	<1.0
Silver	ug/L	0.1	-	1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.1	*<2*	< 0.5	<0.5	ND	ND	<0.10	<0.10	<0.10	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10
Strontium	ug/L	2	-	210000	260	56	200	78	59	56	120	40	76	39	39	46	53.3	41.6	47.4	43	32	35	41	39	36	32	31
Thallium	ug/L	0.1	-	8	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1	<0.1	<0.8	0.1	<0.1	ND	ND	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10
Tin	ug/L	2	-	-	< 2	< 2	< 2	< 2	< 2	< 2	<2	<20	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0
Titanium	ug/L	2	-	-	-	-	-	-	-	-	-	-	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0
Uranium	ug/L	0.1	-	3000	1	0.1	0.7	0.1	< 0.1	0.2	0.1	<0.15	0.1	<0.1	ND	ND	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10
Vanadium	ug/L	2	-	60	< 2	< 2	< 2	< 2	< 2	6	<2	<2	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0
Zinc	ug/L	5	-	300	< 10	31	29	9	12	21	5	<2	< 5	<5	ND	ND	39.8	25.8	<5.0	<5	<5	<5	9	15	6	<5.0	<5.0

Notes:

RDL - Reported Detection Limit (updated in 2016, except for Mercury)

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 EQS

Shaded and italics indicates the detection limit exceeds NS Tier 2 PSS

MW-40D = Duplicate of MW-4A

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE B-3 **GROUNDWATER METALS CHEMISTRY - MW-19B**
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL*	NS Tier 1 EQS	NS Tier 2 PSS	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	12-Dec-07	29-Jul-08	11-Aug-09	29-Jul-10	14-Sep-11	4-Oct-12	8-Jul-13	20-Aug-14	23-Jul-15	13-Jul-16
Aluminum	ug/L	5	-	50	20	**940**	**4900**	<20	< 10	10	31	ND	15.5	7.2	<5.0	<10	-	<5	14	11	<5	<5.0
Antimony	ug/L	1	-	200	< 2	< 2	<2	<0.4	< 2	<2	ND	ND	ND	<2	<2.0	<2	<2	<2	<2	<2	<2	<1.0
Arsenic	ug/L	1	-	50	2	2	<2	1.7	2	<2	ND	ND	ND	<2	<2.0	<2	<2	<2	<2	<2	<2	1.2
Barium	ug/L	1	-	10000	7	11	57	1.1	< 5	<5	ND	ND	ND	<5	<5.0	<5	<5	<5	<5	<5	<5	1.6
Beryllium	ug/L	1	-	53	< 5	< 5	<5	<0.5	< 2	<2	ND	ND	ND	<2	<2.0	<2	<2	<2	<2	<2	<2	<1.0
Bismuth	ug/L	2	-	-	-	-	-	-	< 2	<2	ND	ND	ND	<2	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Boron	ug/L	50	-	12000	12	12	17	<100	11	10	9.4	10	9	9.5	9.5	10	19	17	9	13	12	<50
Cadmium	ug/L	0.01	-	0.1	*< 0.3*	**0.2**	**0.59**	*<0.3*	*< 0.3*	*<0.3*	ND	ND	ND	0.02	**0.996**	*<0.3*	0.019	0.057	<0.017	<0.017	<0.017	0.011
Chromium	ug/L	1	-	-	< 2	2	17	<2	< 2	<2	ND	ND	ND	<2	<1.0	<2	<1	<1	<1	<1	<1	<1.0
Cobalt	ug/L	0.4	-	100	< 1	1	5.2	<1	< 1	<1	ND	ND	ND	<0.4	<0.40	<1	<1	<1	<1	<1	<1	<0.40
Copper	ug/L	2	-	20	2	6	**25**	<2	< 2	2	ND	ND	2.3	<2	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Iron	ug/L	50	-	3000	< 50	**4800**	**64000**	<100	< 50	<50	ND	ND	ND	<50	<50	<50	<50	<50	<50	<50	<50	<50
Lead	ug/L	0.5	-	10	< 0.5	**11**	**49**	<1	< 0.5	<0.5	ND	ND	ND	<0.5	<0.50	2	<0.5	<0.5	<0.5	0.6	<0.5	<0.50
Manganese	ug/L	2	-	8200	6	60	530	<4	< 2	4	ND	ND	ND	<2	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Mercury	ug/L	0.026	-	0.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.026	<0.026	<0.026	-
Molybdenum	ug/L	2	-	730	< 2	< 2	<2	<4	< 2	<2	ND	ND	ND	<2	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Nickel	ug/L	2	-	250	< 2	< 2	11	<3	< 2	<2	ND	ND	ND	<2	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Selenium	ug/L	1	-	10	< 2	< 1	<1	<1	< 2	<2	ND	ND	ND	<1	<1.0	<2	<1	<1	<1	<1	<1	<1.0
Silver	ug/L	0.1	-	1	< 0.5	< 0.5	0.1	*<2*	< 0.5	<0.5	ND	ND	ND	<0.1	<0.10	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10
Strontium	ug/L	2	-	210000	170	290	370	152	190	140	160	150	169	185	208	184	226	188	213	218	230	220
Thallium	ug/L	0.1	-	8	< 0.1	< 0.1	0.2	<0.8	< 0.1	<0.1	ND	ND	ND	<0.1	<0.10	<0.1	<0.1	<0.1	0.4	<0.1	<0.1	<0.10
Tin	ug/L	2	-	-	< 2	< 2	<2	<20	< 2	<2	ND	ND	ND	<2	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Titanium	ug/L	2	-	-	-	-	-	-	< 2	<2	ND	ND	ND	<2	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Uranium	ug/L	0.1	-	3000	1.3	2.4	9	0.91	1.3	0.5	1.2	1.1	1.13	1.24	1.15	0.8	1.1	0.8	1.0	1.2	1.2	1.1
Vanadium	ug/L	2	-	60	2	11	31	2	2	<2	ND	ND	2.2	2	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Zinc	ug/L	5	-	300	5	34	120	<2	< 5	46	5.2	ND	7.3	<5	<5.0	9	<5	<5	7	6	<5	<5.0

Notes:
RDL - Reported Detection Limit (updated in 2016, except for Mercury)
Bold indicates exceedance of NS Tier 1 EQS
Bold and shaded indicates exceedance of NS Tier 2 EQS
Shaded and italics indicates the detection limit exceeds NS Tier 2 PSS
NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)
NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE B-4 **GROUNDWATER METALS CHEMISTRY - MW-20A**
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL*	NS Tier 1 EQS	NS Tier 2 PSS	9-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	29-Jul-08	11-Aug-09	29-Jul-10	14-Sep-11	4-Oct-12	8-Jul-13	20-Aug-14	23-Jul-15	13-Jul-16
Aluminum	ug/L	5	-	50	< 10	< 10	10	**140**	<20	< 10	<10	ND	13	<5.0	5.2	7.9	<10	-	<5	18	25	<5	<5.0
Antimony	ug/L	1	-	200	< 2	< 2	< 2	<2	<0.4	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0
Arsenic	ug/L	1	-	50	< 2	< 2	< 2	<2	<0.6	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0
Barium	ug/L	1	-	10000	170	270	220	380	224	240	190	280	170	314	272	265	181	182	229	245	258	118	120
Beryllium	ug/L	1	-	53	< 5	< 5	< 5	<5	<0.5	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0
Bismuth	ug/L	2	-	-	-	-	-	-	-	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Boron	ug/L	50	-	12000	7	6	6	6	<100	6	8	6.9	9	6.7	6.9	6.4	8	26	14	11	12	10	<50
Cadmium	ug/L	0.01	-	0.1	*< 0.3*	*< 0.3*	**0.3**	**0.35**	*<0.3*	*< 0.3*	*<0.3*	ND	**1.2**	0.046	0.053	**1.68**	*<0.3*	**1.05**	**0.766**	**1.690**	**3.18**	**1.19**	0.039
Chromium	ug/L	1	-	-	< 2	< 2	< 2	2	<2	< 2	<2	ND	ND	<2.0	<2.0	<1.0	<2	<1	<1	<1	<1	<1	<1.0
Cobalt	ug/L	0.4	-	100	< 1	< 1	1	2.2	<1	1	<1	ND	1	<0.40	<0.40	<0.40	<1	<1	<1	<1	<1	<1	<0.40
Copper	ug/L	2	-	20	3	< 2	2	3	<2	< 2	<2	ND	2	2.1	<2.0	<2.0	<2	<2	<2	3	<2	<2	<2.0
Iron	ug/L	50	-	3000	240	400	1500	**26000**	360	< 50	<50	690	270	**12100**	**5810**	105	1220	1780	<50	<50	2060	<50	1800
Lead	ug/L	0.5	-	10	0.9	< 0.5	0.6	3.9	<1	< 0.5	<0.5	ND	0.7	<0.50	<0.50	<0.50	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
Manganese	ug/L	2	-	8200	79	470	640	820	125	180	280	320	280	358	260	237	83	97	377	<2	286	7	150
Mercury	ug/L	0.026	-	0.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.026	<0.026	<0.026	-
Molybdenum	ug/L	2	-	730	< 2	< 2	< 2	<2	<4	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Nickel	ug/L	2	-	250	< 2	< 2	< 2	<2	<3	< 2	<2	ND	2	<2.0	<2.0	<2.0	<2	<2	2	3	<2	<2	<2.0
Selenium	ug/L	1	-	10	< 2	< 2	< 1	<1	<1	< 2	<2	ND	ND	<1.0	<1.0	<1.0	<2	<1	<1	<1	<1	<1	<1.0
Silver	ug/L	0.1	-	1	< 0.5	< 0.5	< 0.5	<0.1	<2	< 0.5	<0.5	ND	ND	<0.10	<0.10	<0.10	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10
Strontium	ug/L	2	-	210000	68	50	31	56	55	67	68	73	85	74	63.6	65.1	67	70	58	62	49	46	50
Thallium	ug/L	0.1	-	8	< 0.1	< 0.1	< 0.1	<0.1	<0.8	< 0.1	<0.1	ND	ND	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10
Tin	ug/L	2	-	-	< 2	< 2	< 2	<2	<20	< 2	<2	ND	3	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Titanium	ug/L	2	-	-	-	-	-	-	-	< 2	<2	ND	3	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Uranium	ug/L	0.1	-	3000	< 0.1	< 0.1	< 0.1	0.1	<0.15	< 0.1	<0.1	ND	ND	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10
Vanadium	ug/L	2	-	60	< 2	< 2	< 2	2	<2	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Zinc	ug/L	5	-	300	66	12	12	23	7	< 5	<5	9.9	100	42.6	5	39.8	<5	8	<5	31	30	13	<5.0

Notes:

RDL - Reported Detection Limit (updated in 2016, except for Mercury)

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 EQS

Shaded and italics indicates the detection limit exceeds NS Tier 2 PSS

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE B-5 **GROUNDWATER METALS CHEMISTRY - MW-21C**
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL*	NS Tier 1 EQS	NS Tier 2 PSS	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	12-Dec-07	28-Jul-08	10-Aug-09	26-Jul-10	14-Sep-11	4-Oct-12	20-Aug-14	21-Jul-15	14-Jul-16
Aluminum	ug/L	5	-	50	**200**	**110**	**220**	**67**	**74.9**	**53.4**	19.5	<10	-	<5	28	9	<5.0
Antimony	ug/L	1	-	200	< 2	<2	ND	ND	ND	<2.0	<2.0	<2	<2	<2	<2	<2	<1.0
Arsenic	ug/L	1	-	50	< 2	<2	ND	ND	ND	<2.0	<2.0	<2	<2	<2	<2	<2	<1.0
Barium	ug/L	1	-	10000	5	<5	5.9	ND	ND	18.7	<5.0	<5	<5	<5	<5	<5	1.8
Beryllium	ug/L	1	-	53	< 2	<2	ND	ND	ND	<2.0	<2.0	<2	<2	<2	<2	<2	<1.0
Bismuth	ug/L	2	-	-	< 2	<2	ND	ND	ND	<2.0	<2.0	<2	<2	<2	<2	<2	<2.0
Boron	ug/L	50	-	12000	< 5	<2	ND	6	5.3	6.0	6	12	10	10	7	14	<50
Cadmium	ug/L	0.01	-	0.1	< 0.3	**7**	**8**	ND	ND	0.034	**0.29**	*<0.3*	<0.017	0.062	<0.017	<0.017	<0.010
Chromium	ug/L	1	-	-	< 2	<0.3	ND	ND	ND	<2.0	<1.0	<2	<1	<1	<1	<1	<1.0
Cobalt	ug/L	0.4	-	100	< 1	<2	ND	ND	ND	1.09	<0.40	<1	<1	<1	<1	<1	<0.40
Copper	ug/L	2	-	20	< 2	<1	ND	ND	ND	2.8	<2.0	<2	<2	<2	<2	<2	4.3
Iron	ug/L	50	-	3000	320	<2	ND	ND	118	315	<50	<50	<50	<50	<50	<50	<50
Lead	ug/L	0.5	-	10	< 0.5	**120**	**230**	ND	ND	<0.50	<0.50	0.9	<0.5	<0.5	<0.5	<0.5	<0.50
Manganese	ug/L	2	-	8200	7	<0.5	ND	3	2.9	307	<2.0	<2	<2	<2	<2	<2	4.2
Mercury	ug/L	0.026	-	0.26	-	-	-	-	-	-	-	-	-	-	<0.026	0.028	-
Molybdenum	ug/L	2	-	730	< 2	8	8.9	ND	ND	<2.0	<2.0	<2	<2	<2	<2	<2	<2.0
Nickel	ug/L	2	-	250	< 2	<2	ND	ND	ND	<2.0	<2.0	<2	<2	<2	<2	<2	<2.0
Selenium	ug/L	1	-	10	< 2	<2	ND	ND	ND	<1.0	<1.0	<2	<1	<1	<1	<1	<1.0
Silver	ug/L	0.1	-	1	< 0.5	<2	ND	ND	ND	<0.10	<0.10	<0.5	<0.1	<0.1	<0.1	<0.1	<0.10
Strontium	ug/L	2	-	210000	58	<0.5	ND	69	70.6	78.7	70.7	66	59	69	69	61	66
Thallium	ug/L	0.1	-	8	< 0.1	**71**	**70**	ND	ND	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10
Tin	ug/L	2	-	-	< 2	<0.1	ND	ND	ND	<2.0	<2.0	<2	<2	<2	<2	<2	<2.0
Titanium	ug/L	2	-	-	19	<5	ND	4	5.6	3.8	<2.0	<2	<2	<2	<2	<2	<2.0
Uranium	ug/L	0.1	-	3000	0.1	<2	ND	ND	ND	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10
Vanadium	ug/L	2	-	60	< 2	10	15	ND	ND	<2.0	<2.0	<2	<2	<2	<2	<2	<2.0
Zinc	ug/L	5	-	300	< 5	<0.1	0.1	ND	ND	24.2	14.1	<5	<5	<5	7	<5	<5.0

Notes:

RDL - Reported Detection Limit (updated in 2016, except for Mercury)

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 EQS

Shaded and italics indicates the detection limit exceeds NS Tier 2 PSS

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE B-6 **GROUNDWATER METALS CHEMISTRY - MW-22A**
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL*	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	20-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	26-Jul-00 Lab Dup.	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	10-Aug-09	27-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	14-Jul-16
Aluminum	ug/L	5	-	50	5	*< 100*	< 10	< 10	< 10	**1000**	**3700**	**120**	20	< 10	<10	*<100*	ND	<5.0	<5.0	12.4	<10	<10	<5	21	<5	<5	<5.0
Antimony	ug/L	1	-	200	9	< 20	< 2	< 2	< 2	< 20	< 20	<2	<0.4	< 2	<2	<20	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0
Arsenic	ug/L	1	-	50	36	< 20	**100**	**110**	**97**	**61**	**92**	**110**	**106**	2	<2	27	ND	**101**	**104**	**111**	<2	**107**	<2	75	**88**	**106**	1.4
Barium	ug/L	1	-	10000	990	1800	4100	4000	4000	4300	4600	3500	602	6	150	1300	920	1230	1080	1090	357	815	730	938	910	1110	8.6
Beryllium	ug/L	1	-	53	< 5	< 50	< 5	< 5	< 5	< 50	< 50	<5	<0.5	< 2	<2	<20	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0
Bismuth	ug/L	2	-	-	-	-	-	-	-	-	-	-	-	< 2	<2	<20	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Boron	ug/L	50	-	12000	160	1000	1300	1400	1600	1800	1800	2100	830	7	780	470	630	387	429	295	135	212	336	291	229	322	<50
Cadmium	ug/L	0.01	-	0.1	*< 0.5*	*< 0.5*	*< 0.3*	*< 0.3*	*< 0.3*	*< 1*	*< 1*	0.05	*<0.3*	*< 0.3*	*<0.3*	*<3*	ND	0.023	<0.017	**0.358**	*<0.3*	*<0.3*	<0.017	0.022	<0.017	<0.017	<0.010
Chromium	ug/L	1	-	-	5	< 20	2	10	6	< 20	< 20	2	3	< 2	<2	<20	ND	2.2	3.3	1.4	3	<2	1	<1	<1	2	<1.0
Cobalt	ug/L	0.4	-	100	35	50	48	33	37	38	45	26	21	< 1	3	26	28	23	19.3	23.3	<1	18	18	26	17	16	<0.40
Copper	ug/L	2	-	20	10	< 20	< 2	2	7	**40**	**90**	4	21	< 2	<2	<20	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Iron	ug/L	50	-	3000	**118000**	1500	**76000**	**50000**	**50000**	**30000**	**53000**	**39000**	**41500**	< 50	1100	**22000**	**16000**	**45900**	**33700**	**37000**	<50	**56100**	990	**56000**	**36900**	**74400**	200
Lead	ug/L	0.5	-	10	0.2	< 1	0.5	< 0.5	< 0.5	**11**	**29**	1.1	<1	< 0.5	<0.5	<5	ND	<0.50	<0.50	<0.50	1.4	0.5	<0.5	<0.5	<0.5	<0.5	<0.50
Manganese	ug/L	2	-	8200	2290	4800	7200	4100	4300	3700	4800	3200	2740	39	350	3600	3300	4220	2570	4330	656	4800	5030	4220	3020	7770	57
Mercury	ug/L	0.026	-	0.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.049	<0.026	<0.026	-
Molybdenum	ug/L	2	-	730	< 2	< 20	3	3	3	< 20	< 20	3	<4	< 2	<2	<20	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Nickel	ug/L	2	-	250	29	60	48	47	49	53	60	44	30	< 2	4	25	25	18	17.3	15.4	3	9	12	19	10	10	<2.0
Selenium	ug/L	1	-	10	< 2	*< 20*	< 2	< 2	< 2	< 10	< 10	<1	1	< 2	<2	*<20*	ND	<1.0	<1.0	<1.0	<2	<2	<1	<1	<1	2	<1.0
Silver	ug/L	0.1	-	1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	*< 5*	*< 5*	<0.1	*<2*	< 0.5	<0.5	*<5*	ND	<0.10	<0.10	<0.10	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.10
Strontium	ug/L	2	-	210000	300	940	1100	1100	1200	1000	1100	1000	906	420	84	670	560	521	475	436	154	411	415	418	327	392	850
Thallium	ug/L	0.1	-	8	< 0.1	< 0.1	< 0.1	< 0.1	0.1	< 1	< 1	0.1	<0.8	< 0.1	<0.1	<1	ND	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10
Tin	ug/L	2	-	-	< 2	< 20	< 2	< 2	< 2	< 20	< 20	<2	<20	< 2	<2	<20	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Titanium	ug/L	2	-	-	-	-	-	-	-	-	-	-	-	< 2	<2	<20	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Uranium	ug/L	0.1	-	3000	0.1	< 0.1	0.2	0.3	0.4	3.2	5	1.2	1.04	10	0.1	<1	ND	<0.10	<0.10	0.12	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	33
Vanadium	ug/L	2	-	60	< 2	< 2	3	3	2	< 20	< 20	4	6	< 2	<2	<20	ND	<2.0	<2.0	<2.0	<2	3	3	<2	<2	2	<2.0
Zinc	ug/L	5	-	300	20	< 50	9	11	24	< 200	< 200	10	10	< 5	<5	160	ND	22.4	5.5	<5.0	5	5	<5	23	8	<5	<5.0

Notes:

RDL - Reported Detection Limit (updated in 2016, except for Mercury)

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 EQS

Shaded and italics indicates the detection limit exceeds NS Tier 2 PSS

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater,
commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater
>10 m from fresh surface water (NSE 2013b)

TABLE B-7 **GROUNDWATER METALS CHEMISTRY - MW-22B**
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL*	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	20-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	10-Aug-09	27-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	14-Jul-16
Aluminum	ug/L	5	-	50	5	**260**	26	< 20	30	**2300**	<50	<20	*< 100*	*<100*	*<100*	ND	<50	<50	<50	<10	<10	<5	29	<5	<5	<5.0
Antimony	ug/L	1	-	200	12	< 2	< 2	< 2	< 2	< 20	<20	<0.4	< 20	<20	<20	ND	<20	<20	<20	<2	<2	<2	<2	<2	<2	<1.0
Arsenic	ug/L	1	-	50	10	13	15	4	7	22	<20	14.2	< 20	<20	<20	ND	<20	<20	<20	41	**57**	12	23	26	36	4.1
Barium	ug/L	1	-	10000	1400	420	520	350	510	900	580	548	720	590	510	1000	596	581	572	735	3250	672	734	896	814	700
Beryllium	ug/L	1	-	53	< 5	< 5	< 5	< 5	< 5	< 50	<50	<0.5	< 20	<20	<20	ND	<20	<20	<20	<2	<2	<2	<2	<2	<2	<1.0
Bismuth	ug/L	2	-	-	-	-	-	-	-	-	-	-	< 20	<20	<20	ND	<20	<20	<20	<2	<2	<2	<2	<2	<2	<2.0
Boron	ug/L	50	-	12000	320	120	160	180	250	330	370	280	440	600	500	350	567	504	470	601	690	726	541	480	449	460
Cadmium	ug/L	0.01	-	0.1	*< 0.5*	*< 0.5*	*< 0.3*	*< 0.3*	*< 0.3*	*< 1*	*0.5*	*<0.3*	*< 3*	*<3*	*<3*	ND	<0.17	<0.17	**0.8**	*<0.3*	*<0.3*	0.023	<0.017	<0.017	<0.017	0.052
Chromium	ug/L	1	-	-	2	8	< 2	< 2	2	< 20	<20	<2	< 20	<20	<20	3	<20	<20	<10	4	<2	3	<1	<1	8	<1.0
Cobalt	ug/L	0.4	-	100	34	22	11	5	8	23	10	6	17	15	13	24	10.4	9.5	9.6	10	7	10	16	13	9	9.5
Copper	ug/L	2	-	20	10	14	< 2	2	4	**31**	<20	9	< 20	<20	<20	ND	<20	<20	<20	<2	<2	<2	<2	<2	<2	<2.0
Iron	ug/L	50	-	3000	**3200**	**9900**	**14000**	720	1600	**18000**	**8800**	**11500**	1300	<500	2400	**7100**	**10100**	**8820**	**8690**	**15500**	**15900**	<50	**14200**	**10400**	**14200**	2700
Lead	ug/L	0.5	-	10	0.2	2	1.1	< 0.5	0.9	**22**	<5.0	<1	< 5	<5	<5	ND	<5.0	<5.0	<5.0	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
Manganese	ug/L	2	-	8200	5280	3100	4300	270	1700	6900	2400	736	4300	4400	4500	4100	4070	4180	3650	4490	641	4520	4260	4270	4870	3400
Mercury	ug/L	0.026	-	0.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.026	<0.026	<0.026	-
Molybdenum	ug/L	2	-	730	20	6	5	3	4	< 20	<20	<4	23	<20	<20	ND	<20	<20	<20	<2	<2	<2	<2	<2	<2	<2.0
Nickel	ug/L	2	-	250	80	20	15	14	28	38	26	24	77	36	30	17	32	28	27	22	15	22	35	25	16	25
Selenium	ug/L	1	-	10	4	< 2	< 2	< 2	< 2	< 10	<10	3	*< 20*	*<20*	*<20*	ND	<10	<10	<10	5	<2	3	2	<1	11	<1.0
Silver	ug/L	0.1	-	1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	*< 5*	<1	*<2*	*< 5*	*<5*	*<5*	ND	<1.0	<1.0	<1.0	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.10
Strontium	ug/L	2	-	210000	1500	2400	2500	2400	2300	3000	2900	2840	3100	2800	2500	450	2540	2460	2410	2280	823	2190	1990	2030	1970	2000
Thallium	ug/L	0.1	-	8	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1	<1	<0.8	< 1	<1	<1	ND	<1.0	<1.0	<1.0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10
Tin	ug/L	2	-	-	< 2	< 2	< 2	< 2	< 2	< 20	<20	<20	< 20	<20	<20	ND	<20	<20	<20	<2	<2	<2	<2	<2	<2	<2.0
Titanium	ug/L	2	-	-	-	-	-	-	-	-	-	-	< 20	<20	<20	ND	<20	<20	<20	<2	<2	<2	<2	<2	<2	<2.0
Uranium	ug/L	0.1	-	3000	2	2.8	3.9	1.8	7.6	13	7.1	4.1	75	15	9.6	0.1	9.9	12.0	11	3.3	<0.1	22.2	5.0	11.5	7.8	12
Vanadium	ug/L	2	-	60	< 2	3	< 2	< 2	< 2	< 20	<20	3	< 20	<20	<20	ND	<20	<20	<20	5	2	3	<2	<2	3	<2.0
Zinc	ug/L	5	-	300	20	53	9	11	18	170	24	7	< 50	<50	<50	14	<50	<50	<50	<5	<5	<5	12	17	<5	8

Notes:

RDL - Reported Detection Limit (updated in 2016, except for Mercury)

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 EQS

Shaded and italics indicates the detection limit exceeds NS Tier 2 PSS

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE B-8 **GROUNDWATER METALS CHEMISTRY - MW-22C**
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL*	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	20-Mar-96	16-Apr-97	8-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	10-Aug-09	27-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	14-Jul-16
Aluminum	ug/L	5	-	50	18	**170**	**170**	**69**	**110**	**260**	19	<20	*< 100*	<10	ND	44	5.2	<5.0	<5.0	<10	<10	<5	18	6	<5	<5.0
Antimony	ug/L	1	-	200	6	< 2	< 2	< 2	< 2	< 2	<2	<0.4	< 20	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0
Arsenic	ug/L	1	-	50	< 20	2	< 2	2	2	3	2	2	32	2	ND	ND	<2.0	2.2	<2.0	2	<2	<2	<2	<2	2	62
Barium	ug/L	1	-	10000	6	13	6	5	61	19	11	12	1900	8	6.7	9	10.9	8.5	7.5	7	5	6	25	8	7	710
Beryllium	ug/L	1	-	53	< 5	< 5	< 5	< 5	< 5	< 5	<5	<0.5	< 20	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0
Bismuth	ug/L	2	-	-	-	-	-	-	-	-	-	-	< 20	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Boron	ug/L	50	-	12000	10	12	9	12	21	< 20	12	<100	1200	9	8.9	9	13.5	9.9	9.4	10	10	25	48	12	17	370
Cadmium	ug/L	0.01	-	0.1	*< 0.5*	*< 0.5*	*< 0.3*	*< 0.3*	*< 0.3*	*< 0.1*	0.02	*<0.3*	*< 3*	*<0.3*	ND	**0.3**	0.019	0.027	0.025	*<0.3*	*<0.3*	<0.017	<0.017	<0.017	<0.017	<0.010
Chromium	ug/L	1	-	-	< 2	3	< 2	< 2	< 2	< 2	<2	<2	< 20	<2	ND	ND	<2.0	<2.0	2.5	<2	<2	1	<1	<1	1	<1.0
Cobalt	ug/L	0.4	-	100	< 1	1	1	1	1	1	0.4	<1	28	<1	ND	ND	<0.40	<0.40	<0.40	<1	<1	<1	<1	<1	<1	15
Copper	ug/L	2	-	20	10	15	2	4	9	14	<2	6	< 20	<2	ND	ND	<2.0	<2.0	<2.0	2	<2	<2	35	<2	<2	<2.0
Iron	ug/L	50	-	3000	60	210	120	120	230	250	20	110	**23000**	<50	ND	ND	109	156	145	176	135	<50	150	156	94	**41000**
Lead	ug/L	0.5	-	10	0.1	1.1	0.6	0.7	0.5	1.2	<0.5	<1	< 5	<0.5	ND	ND	<0.50	<0.50	<0.50	1.5	<0.5	<0.5	2	<0.5	<0.5	<0.50
Manganese	ug/L	2	-	8200	40	41	15	15	93	94	100	83	3800	24	ND	46	62.4	54.2	51.4	47	47	10	51	44	43	3300
Mercury	ug/L	0.026	-	0.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.087	<0.026	<0.026	-
Molybdenum	ug/L	2	-	730	< 2	< 2	< 2	< 2	< 2	< 2	<2	<4	< 20	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Nickel	ug/L	2	-	250	< 2	2	< 2	< 2	2	2	<2	<3	35	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	3	<2	<2	12
Selenium	ug/L	1	-	10	< 2	< 2	< 2	< 2	< 2	< 1	<1	<1	< 20	<2	ND	ND	<1.0	<1.0	<1.0	<2	<2	<1	<1	<1	2	<1.0
Silver	ug/L	0.1	-	1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.1	*<2*	*< 5*	<0.5	ND	ND	<0.10	<0.10	<0.10	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.10
Strontium	ug/L	2	-	210000	130	150	230	270	330	460	380	429	850	400	400	470	534	589	630	580	753	721	740	697	786	280
Thallium	ug/L	0.1	-	8	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.8	< 1	<0.1	ND	ND	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10
Tin	ug/L	2	-	-	< 2	< 2	< 2	< 2	< 2	< 2	<2	<20	< 20	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Titanium	ug/L	2	-	-	-	-	-	-	-	-	-	-	< 20	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Uranium	ug/L	0.1	-	3000	1.5	5.1	8.3	7.2	8.7	12	40	20.8	< 1	8.6	28	24	19.4	18.7	23.8	17	25.2	26.5	27.4	33.6	34.7	<0.10
Vanadium	ug/L	2	-	60	< 2	2	< 2	< 2	< 2	6	4	3	< 20	<2	6.4	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Zinc	ug/L	5	-	300	< 10	37	5	22	18	13	6	7	< 50	<5	ND	5	50.8	10.8	<5.0	<5	<5	<5	29	6	<5	<5.0

Notes:

RDL - Reported Detection Limit (updated in 2016, except for Mercury)

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 EQS

Shaded and italics indicates the detection limit exceeds NS Tier 2 PSS

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE B-9 GROUNDWATER METALS CHEMISTRY - MW-23A
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL*	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	19-Mar-96	16-Apr-97	8-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	23-Nov-06	16-Aug-07	29-Jul-08	12-Aug-09	29-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	13-Jul-16
Aluminum	ug/L	5	-	50	9	**100**	47	**140**	20	**770**	40	<20	30	<10	ND	<5.0	<5.0	<5.0	<10	<10	<5	16	5	<5	6.2
Antimony	ug/L	1	-	200	8	< 2	< 2	< 2	< 2	< 2	<2	<0.4	<2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0
Arsenic	ug/L	1	-	50	4	< 2	< 2	< 2	< 2	< 2	<2	<0.6	<2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0
Barium	ug/L	1	-	10000	140	120	56	65	90	98	100	150	42	99	140	103	120	113	158	145	228	215	110	87	94
Beryllium	ug/L	1	-	53	< 5	< 5	< 5	< 5	< 5	< 5	<5	<0.5	<2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0
Bismuth	ug/L	2	-	-	-	-	-	-	-	-	-	-	<2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Boron	ug/L	50	-	12000	18	20	7	11	12	< 20	14	<100	8	11	9	11.1	10.7	10.1	8	8	20	42	12	9	<50
Cadmium	ug/L	0.01	-	0.1	*< 0.5*	*< 0.5*	*< 0.3*	*< 0.3*	*0.3*	**0.7**	*<0.3*	*<0.3*	*<0.3*	**0.4**	ND	0.086	**1.04**	**0.105**	*<0.3*	0.8	**1.44**	0.19	0.095	**0.112**	**0.15**
Chromium	ug/L	1	-	-	< 2	< 2	< 2	< 2	< 2	< 2	<2	<2	<2	<2	ND	<2.0	<2.0	2	<2	<2	2	<1	<1	<1	<1.0
Cobalt	ug/L	0.4	-	100	4	< 1	1	1	< 1	< 1	<1	<1	<1	<1	ND	<0.40	<0.40	<0.40	<1	<1	<1	<1	<1	<1	<0.40
Copper	ug/L	2	-	20	10	**23**	< 2	< 2	5	< 2	<2	3	<2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Iron	ug/L	50	-	3000	**5000**	180	71	200	140	540	60	160	<50	<50	ND	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Lead	ug/L	0.5	-	10	0.1	0.4	0.2	< 0.5	< 0.5	0.6	0.5	<1	<0.5	<0.5	ND	<0.50	<0.50	<0.50	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
Manganese	ug/L	2	-	8200	3120	1100	890	900	860	770	880	1120	680	870	1100	900	1040	813	1160	1070	2020	2240	1010	1160	820
Mercury	ug/L	0.026	-	0.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.026	0.058	<0.026	-
Molybdenum	ug/L	2	-	730	< 2	< 2	< 2	< 2	< 2	< 2	<2	<4	<2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Nickel	ug/L	2	-	250	3	4	< 2	2	2	2	<2	<3	<2	<2	3	<2.0	2.3	<2.0	3	3	4	7	<2	<2	<2.0
Selenium	ug/L	1	-	10	< 2	< 2	< 2	< 2	< 2	< 1	<2	<1	<2	<2	ND	<1.0	<1.0	<1.0	<2	<2	<1	<1	<1	<1	<1.0
Silver	ug/L	0.1	-	1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	*<2*	<0.5	<0.5	ND	<0.10	<0.10	<0.10	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.10
Strontium	ug/L	2	-	210000	46	54	23	31	37	44	52	68	22	46	56	55.6	48.4	46.1	55	36	83	98	42	36	39
Thallium	ug/L	0.1	-	8	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.8	<0.1	<0.1	ND	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10
Tin	ug/L	2	-	-	< 2	< 2	< 2	< 2	< 2	< 2	<2	<20	<2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Titanium	ug/L	2	-	-	-	-	-	-	-	-	-	-	4	2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Uranium	ug/L	0.1	-	3000	0.3	0.2	0.1	0.1	0.1	0.4	0.9	0.37	0.3	0.3	0.1	0.29	0.1	0.17	<0.1	<0.1	0.1	0.3	0.2	<0.1	0.22
Vanadium	ug/L	2	-	60	< 2	< 2	< 2	< 2	< 2	3	<2	<2	<200	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Zinc	ug/L	5	-	300	10	59	12	11	27	5	10	<2	<5	<5	ND	21.8	27.2	5.7	<5	8	<5	8	<5	5	7.5

Notes:
RDL - Reported Detection Limit (updated in 2016, except for Mercury)
Bold indicates exceedance of NS Tier 1 EQS
Bold and shaded indicates exceedance of NS Tier 2 EQS
Shaded and italics indicates the detection limit exceeds NS Tier 2 PSS
NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)
NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE B-10 GROUNDWATER METALS CHEMISTRY - MW-23B
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL*	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	20-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	23-Nov-06	16-Aug-07	29-Jul-08	12-Aug-09	29-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	13-Jul-16
Aluminum	ug/L	5	-	50	7	50	**65**	**72**	< 20	**760**	10	30	< 10	<10	ND	14.3	<5.0	<5.0	<10	<10	<5	34	5	<5	<5.0
Antimony	ug/L	1	-	200	3	< 2	< 2	< 2	< 2	< 2	<2	<0.4	< 2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0
Arsenic	ug/L	1	-	50	14	7	16	15	9	16	11	5.3	2	<2	ND	14	9.3	10.4	11	11	<2	9	8	8	5.9
Barium	ug/L	1	-	10000	280	290	320	270	290	550	280	199	270	220	260	269	257	267	234	255	276	258	312	238	200
Beryllium	ug/L	1	-	53	< 5	< 5	< 5	< 5	< 5	< 5	<5	<0.5	< 2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0
Bismuth	ug/L	2	-	-	-	-	-	-	-	-	-	-	< 2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Boron	ug/L	50	-	12000	28	28	27	24	27	21	19	<100	19	18	19	19	16.6	18.1	19	19	22	39	23	19	<50
Cadmium	ug/L	0.01	-	0.1	*< 0.5*	*< 0.5*	*< 0.3*	*< 0.3*	*< 0.3*	**1.8**	*<0.3*	*<0.3*	*< 0.3*	*<0.3*	ND	0.087	0.040	0.045	*<0.3*	1.4	**0.150**	**0.122**	0.057	0.096	0.055
Chromium	ug/L	1	-	-	< 2	< 2	< 2	< 2	< 2	< 2	<2	<2	< 2	<2	ND	<2.0	<2.0	2.2	<2	<2	1	<1	<1	<1	<1.0
Cobalt	ug/L	0.4	-	100	6	4	5	5	4	4	3	2	3	3	3	2.71	2.55	2.73	2	3	2	3	3	2	2.1
Copper	ug/L	2	-	20	10	8	< 2	< 2	4	18	<2	<2	< 2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Iron	ug/L	50	-	3000	**3950**	1700	**11000**	**8300**	**4900**	2900	**6200**	**3110**	130	<50	ND	**5370**	**4860**	**5010**	**5370**	**6520**	<50	**4480**	**3520**	**5020**	**3300**
Lead	ug/L	0.5	-	10	< 0.5	0.6	0.3	< 0.5	< 0.5	5.7	<0.5	<1	< 0.5	<0.5	ND	0.5	<0.50	<0.50	1.8	<0.5	<0.5	<0.5	<0.5	<0.5	4
Manganese	ug/L	2	-	8200	11400	3700	4900	4000	3600	3600	3500	3340	3300	2900	3400	3260	2820	3180	3160	4040	3950	3280	3350	4220	2700
Mercury	ug/L	0.026	-	0.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.026	0.038	<0.026	-
Molybdenum	ug/L	2	-	730	< 2	< 2	< 2	< 2	< 2	< 2	<2	<4	< 2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Nickel	ug/L	2	-	250	6	4	3	3	4	5	3	<3	4	3	2	3.6	2.8	3.3	3	3	<2	4	3	3	2.5
Selenium	ug/L	1	-	10	< 2	< 2	< 2	< 2	< 2	< 1	<2	<1	< 2	<2	ND	<1.0	<1.0	<1.0	<2	<2	<1	<1	<1	1	<1.0
Silver	ug/L	0.1	-	1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	*<2*	< 0.5	<0.5	ND	<0.10	<0.10	<0.10	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.10
Strontium	ug/L	2	-	210000	100	77	75	69	79	70	67	73	66	64	76	75.5	62.6	65.6	65	70	78	69	56	64	50
Thallium	ug/L	0.1	-	8	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1	<0.1	<0.8	< 0.1	<0.1	ND	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10
Tin	ug/L	2	-	-	< 2	< 2	< 2	< 2	< 2	< 2	<2	<20	< 2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Titanium	ug/L	2	-	-	-	-	-	-	-	-	-	-	< 2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Uranium	ug/L	0.1	-	3000	2	0.1	0.1	0.1	0.1	0.6	<0.1	0.66	< 0.1	<0.1	0.2	<0.10	<0.10	<0.10	<0.1	<0.1	0.3	<0.1	<0.1	<0.1	<0.10
Vanadium	ug/L	2	-	60	< 2	< 2	< 2	< 2	< 2	7	<2	<2	< 2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Zinc	ug/L	5	-	300	< 10	22	5	9	15	8	6	<2	5	<5	ND	31.2	6.1	<5.0	5	8	<5	10	6	6	<5.0

Notes:

RDL - Reported Detection Limit (updated in 2016, except for Mercury)

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 EQS

Shaded and italics indicates the detection limit exceeds NS Tier 2 PSS

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE B-11 **GROUNDWATER METALS CHEMISTRY - MW-23C**
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL*	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	19-Mar-96	16-Apr-97	8-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	25-Aug-04 Lab DUP	23-Nov-06	16-Aug-07	29-Jul-08	12-Aug-09	29-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	13-Jul-16
Aluminum	ug/L	5	-	50	26	**330**	**130**	**380**	< 20	**2400**	**100**	**80**	30	30	30	20	<5.0	7.3	<5.0	<10	<10	<5	24	15	<5	<5.0
Antimony	ug/L	1	-	200	< 2	< 2	< 2	< 2	< 2	< 2	<2	<0.4	< 2	<2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0
Arsenic	ug/L	1	-	50	8	3	7	7	10	10	6	2	6	6	6	6	4.6	6.7	6.3	7	5	5	6	7	7	6
Barium	ug/L	1	-	10000	5	52	13	18	230	290	28	33.9	29	18	18	33	49.5	16.4	28.9	17	33	40	36	41	43	43
Beryllium	ug/L	1	-	53	< 5	< 5	< 5	< 5	< 5	< 5	<5	<0.5	< 2	<2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0
Bismuth	ug/L	2	-	-	-	-	-	-	-	-	-	-	< 2	<2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Boron	ug/L	50	-	12000	16	16	14	14	100	14	13	<100	9	13	13	11	14.5	13.3	11.6	13	12	19	72	14	12	<50
Cadmium	ug/L	0.01	-	0.1	**0.5**	*< 0.5*	*< 0.3*	*< 0.3*	*< 0.3*	0.1	*<0.3*	*<0.3*	*< 0.3*	*<0.3*	*<0.3*	ND	0.021	<0.017	<0.017	*<0.3*	*<0.3*	**0.131**	<0.017	0.071	<0.017	<0.010
Chromium	ug/L	1	-	-	2	4	3	3	3	6	4	2	2	2	2	2	2.5	2.0	3	2	2	3	2	2	2	2.2
Cobalt	ug/L	0.4	-	100	1	< 1	1	1	2	4	<1	<1	< 1	<1	<1	ND	<0.40	<0.40	<0.40	<1	<1	<1	<1	<1	<1	<0.40
Copper	ug/L	2	-	20	< 10	< 2	< 2	< 2	6	10	<2	<2	< 2	<2	<2	ND	4.3	2.1	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Iron	ug/L	50	-	3000	40	180	140	310	2500	940	240	<100	< 50	<50	<50	ND	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Lead	ug/L	0.5	-	10	< 0.1	0.5	0.2	0.7	< 0.5	8	0.5	<1	< 0.5	<0.5	<0.5	ND	<0.50	<0.50	<0.50	1.4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
Manganese	ug/L	2	-	8200	20	66	13	33	260	250	5	11	2	<2	<2	4	4.8	<2.0	<2.0	<2	<2	2	<2	<2	3	<2.0
Mercury	ug/L	0.026	-	0.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.026	0.082	<0.026	-
Molybdenum	ug/L	2	-	730	< 2	< 2	< 2	< 2	< 2	< 2	<2	<4	< 2	<2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Nickel	ug/L	2	-	250	< 2	< 2	< 2	< 2	4	3	<2	<3	< 2	<2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Selenium	ug/L	1	-	10	< 2	< 2	< 2	< 2	< 2	< 1	<2	<1	< 2	<2	<2	ND	<1.0	<1.0	<1.0	<2	<2	<1	<1	<1	<1	<1.0
Silver	ug/L	0.1	-	1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	*<2*	< 0.5	<0.5	<0.5	ND	<0.10	<0.10	<0.10	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.10
Strontium	ug/L	2	-	210000	84	160	78	92	160	480	130	125	89	96	94	82	120	82.8	92	81	107	117	108	78	75	93
Thallium	ug/L	0.1	-	8	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.8	< 0.1	<0.1	<0.1	ND	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10
Tin	ug/L	2	-	-	< 2	< 2	< 2	< 2	< 2	< 2	<2	<20	< 2	<2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Titanium	ug/L	2	-	-	-	-	-	-	-	-	-	-	7	3	5	3	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Uranium	ug/L	0.1	-	3000	3.7	2.9	5.3	4.9	4.8	6.1	3.8	1.82	3.5	3.9	3.9	4.2	1.95	3.67	4.52	4.7	3	3.3	4.4	4.4	3.8	4
Vanadium	ug/L	2	-	60	< 2	2	6	6	5	18	4	<2	4	4	4	4	2.7	5.0	4	4	3	3	4	4	4	4.1
Zinc	ug/L	5	-	300	< 10	7	6	10	15	18	6	<2	< 5	<5	<5	ND	42.5	21.8	<5.0	6	<5	<5	8	8	<5	<5.0

Notes:

RDL - Reported Detection Limit (updated in 2016, except for Mercury)

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 EQS

Shaded and italics indicates the detection limit exceeds NS Tier 2 PSS

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE B-12 GROUNDWATER METALS CHEMISTRY - MW-24A
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL*	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	19-Mar-96	16-Apr-97	8-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	12-Aug-09	28-Jul-10	21-Sep-11	5-Jul-13	19-Aug-14	22-Jul-15	13-Jul-16
Aluminum	ug/L	5	-	50	**56**	36	30	10	**100**	**650**	20	<20	< 10	<10	13	ND	<5.0	8.9	<5.0	<10	<10	31	11	<5	6.4
Antimony	ug/L	1	-	200	8	< 2	< 2	< 2	< 2	< 2	<2	<0.4	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<1.0
Arsenic	ug/L	1	-	50	< 2	< 2	< 2	< 2	< 2	2	<2	1.1	< 2	<2	ND	ND	<2.0	<2.0	<2.0	**128**	<2	<2	<2	<2	<1.0
Barium	ug/L	1	-	10000	560	770	700	530	440	990	1200	983	600	1200	820	1100	522	579	515	900	383	378	529	53	400
Beryllium	ug/L	1	-	53	< 5	< 5	< 5	< 5	< 5	< 5	<5	<0.5	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<1.0
Bismuth	ug/L	2	-	-	-	-	-	-	-	-	-	-	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2.0
Boron	ug/L	50	-	12000	290	150	110	130	170	410	580	180	220	290	170	360	233	126	153	322	245	182	89	39	140
Cadmium	ug/L	0.01	-	0.1	**0.5**	*< 0.5*	*< 0.3*	*< 0.3*	*< 0.3*	**0.4**	**0.7**	**0.3**	**0.7**	**0.3**	**0.4**	ND	**0.19**	**0.357**	**0.36**	***<0.3***	**1.2**	**0.329**	**0.295**	<0.017	**0.22**
Chromium	ug/L	1	-	-	3	< 2	2	< 2	< 2	< 2	<2	<2	< 2	<2	ND	ND	<2.0	<2.0	<1.0	3	2	<1	<1	1	<1.0
Cobalt	ug/L	0.4	-	100	2	1	1	2	2	3	2	1	2	1	ND	ND	0.46	<0.40	<0.40	15	<1	<1	<1	<1	<0.40
Copper	ug/L	2	-	20	10	11	3	4	5	13	4	7	3	2	ND	5	2.1	2.1	<2.0	<2	<2	2	<2	<2	<2.0
Iron	ug/L	50	-	3000	< 20	120	< 20	60	150	1000	<50	<100	< 50	<50	ND	ND	<50	<50	<50	**39000**	<50	<50	<50	<50	65
Lead	ug/L	0.5	-	10	0.2	0.4	0.9	< 0.5	0.5	2.8	<0.5	<1	< 0.5	<0.5	ND	ND	<0.50	<0.50	<0.50	2.1	<0.5	<0.5	<0.5	<0.5	<0.50
Manganese	ug/L	2	-	8200	310	**8600**	2000	5400	5900	6800	8100	4020	2500	1600	4000	1600	937	1860	1370	2770	1270	1150	344	9	410
Mercury	ug/L	0.026	-	0.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.101	<0.026	<0.026	-
Molybdenum	ug/L	2	-	730	< 2	< 2	< 2	< 2	< 2	< 2	<2	<4	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2.0
Nickel	ug/L	2	-	250	7	4	4	3	5	9	12	7	8	7	5.2	7	3.7	3.8	4.7	12	6	3	3	<2	2.5
Selenium	ug/L	1	-	10	< 2	< 2	< 2	< 2	< 2	< 1	<2	2	< 2	<2	ND	ND	<1.0	<1.0	<1.0	2	<2	<1	<1	<1	<1.0
Silver	ug/L	0.1	-	1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<2	< 0.5	<0.5	ND	ND	<0.10	<0.10	<0.10	<0.5	<0.5	<0.1	<0.1	<0.1	<0.10
Strontium	ug/L	2	-	210000	350	290	310	170	160	230	340	353	210	400	260	420	144	158	161	430	140	112	125	17	150
Thallium	ug/L	0.1	-	8	< 0.1	0.1	< 0.1	0.1	< 0.1	0.2	0.2	<0.8	0.1	0.1	0.1	0.1	0.11	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10
Tin	ug/L	2	-	-	< 2	< 2	< 2	< 2	< 2	< 2	<2	<20	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2.0
Titanium	ug/L	2	-	-	-	-	-	-	-	-	-	-	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2.0
Uranium	ug/L	0.1	-	3000	0.3	0.2	0.2	< 0.1	0.2	0.3	0.1	0.16	0.1	0.1	0.1	0.2	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10
Vanadium	ug/L	2	-	60	2	< 2	< 2	< 2	< 2	3	<2	<2	< 2	<2	ND	ND	<2.0	<2.0	<2.0	4	<2	<2	<2	<2	<2.0
Zinc	ug/L	5	-	300	10	30	5	79	12	8	24	6	7	<5	ND	ND	27.7	23.3	11.9	<5	9	10	6	<5	6.1

Notes:
RDL - Reported Detection Limit (updated in 2016, except for Mercury)
Bold indicates exceedance of NS Tier 1 EQS
Bold and shaded indicates exceedance of NS Tier 2 EQS
Shaded and italics indicates the detection limit exceeds NS Tier 2 PSS
NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)
NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE B-13 GROUNDWATER METALS CHEMISTRY - MW-24B
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL*	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	19-Mar-96	16-Apr-97	8-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	12-Aug-09	28-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	13-Jul-16
Aluminum	ug/L	5	-	50	< 5	< 10	< 10	< 10	< 20	**1200**	*<100*	<20	*< 100*	*<100*	*<100*	ND	<50	<50	<50	<10	<10	<5	31	<5	<5	<5.0
Antimony	ug/L	1	-	200	< 2	< 2	< 2	< 2	< 2	< 20	<20	<0.4	< 20	<20	<20	ND	<20	<20	<20	<2	<2	<2	<2	<2	<2	<1.0
Arsenic	ug/L	1	-	50	14	39	**54**	**59**	35	46	43	39.2	< 20	<20	<20	12	**52**	**57**	**61**	**135**	**97**	8	**63**	12	**57**	**53**
Barium	ug/L	1	-	10000	3800	3600	4600	4200	3400	5700	4400	4010	1900	1900	1800	1500	2230	2090	2080	1900	1840	969	2050	2150	1810	1700
Beryllium	ug/L	1	-	53	< 5	< 5	< 5	< 5	< 5	< 50	<50	<0.5	< 20	<20	<20	ND	<20	<20	<20	<2	<2	<2	<2	<2	<2	<1.0
Bismuth	ug/L	2	-	-	-	-	-	-	-	-	-	-	< 20	<20	<20	ND	<20	<20	<20	<2	<2	<2	<2	<2	<2	<2.0
Boron	ug/L	50	-	12000	920	1400	1400	1400	1600	3200	2600	1300	1800	1500	1300	1400	1320	1030	970	1190	1060	899	1430	3130	949	970
Cadmium	ug/L	0.01	-	0.1	*< 0.5*	*< 0.5*	*< 0.3*	*< 0.3*	*< 0.3*	*< 1*	*<3*	*<0.3*	*< 3*	*<3*	*<3*	ND	<0.17	<0.17	<0.17	*<0.3*	*<0.3*	0.045	<0.017	0.029	0.105	<0.010
Chromium	ug/L	1	-	-	6	13	3	10	5	< 20	<20	4	< 20	<20	<20	7	<20	<20	12	4	4	3	30	<1	7	<1.0
Cobalt	ug/L	0.4	-	100	38	44	33	33	32	30	26	17	23	19	17	16	15.9	14.6	18.1	10	10	10	20	14	10	18
Copper	ug/L	2	-	20	< 10	3	4	2	4	**30**	<20	**28**	< 20	<20	**22**	ND	<20	<20	<20	<2	<2	<2	<2	4	<2	<2.0
Iron	ug/L	50	-	3000	**38200**	**48000**	**67000**	**62000**	**33000**	**36000**	**39000**	**47700**	< 500	<500	**7900**	ND	**37100**	**36800**	**35100**	**36900**	**37300**	<50	**44600**	**19000**	**42000**	**40000**
Lead	ug/L	0.5	-	10	0.3	0.1	0.8	< 0.5	< 0.5	**16**	<5	<1	< 5	<5	<5	ND	<5.0	<5.0	<5.0	2.4	<0.5	<0.5	<0.5	0.6	<0.5	<0.50
Manganese	ug/L	2	-	8200	6650	4800	4900	3800	3800	4500	3200	4810	3000	3600	3600	3000	3350	2860	3520	3630	3110	3290	3280	4440	1940	3000
Mercury	ug/L	0.026	-	0.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.026	<0.026	<0.026	-
Molybdenum	ug/L	2	-	730	2	2	< 2	< 2	< 2	< 20	<20	<4	< 20	<20	<20	ND	<20	<20	<20	<2	<2	<2	<2	<2	<2	<2.0
Nickel	ug/L	2	-	250	94	56	42	42	43	54	49	29	40	37	30	24	24	22	22	15	12	12	25	17	11	18
Selenium	ug/L	1	-	10	4	< 2	< 2	< 2	< 5	< 10	*<20*	4	*< 20*	*<20*	*<20*	ND	<10	<10	<10	5	3	2	2	<1	10	<1.0
Silver	ug/L	0.1	-	1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	*< 5*	*<5*	*<2*	*< 5*	*<5*	*<5*	ND	<1.0	<1.0	<1.0	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.10
Strontium	ug/L	2	-	210000	1500	1500	1400	1200	1100	1600	1500	1100	1100	1000	840	820	831	771	796	795	830	637	858	846	761	780
Thallium	ug/L	0.1	-	8	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1	<1	<0.8	< 1	<1	<1	ND	<1.0	<1.0	<1.0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10
Tin	ug/L	2	-	-	< 2	< 2	< 2	< 2	< 2	< 20	<20	<20	< 20	<20	<20	ND	<20	<20	<20	<2	<2	<2	<2	<2	<2	<2.0
Titanium	ug/L	2	-	-	-	-	-	-	-	-	-	-	< 20	<20	<20	ND	<20	<20	<20	<2	<2	<2	<2	<2	<2	<2.0
Uranium	ug/L	0.1	-	3000	2	0.2	0.2	0.2	0.8	4.2	<1	1.01	1.4	1.7	2.2	1.5	<1.0	<1.0	<1.0	0.2	0.2	<0.1	0.3	4.1	0.1	<0.10
Vanadium	ug/L	2	-	60	< 2	3	6	4	2	< 20	<20	9	< 20	<20	<20	ND	<20	<20	<20	8	6	4	<2	<2	4	2
Zinc	ug/L	5	-	300	20	27	9	63	21	22	44	6	50	<50	<50	ND	<50	<50	<50	5	<5	<5	8	<5	<5	<5.0

Notes:

RDL - Reported Detection Limit (updated in 2016, except for Mercury)

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 EQS

Shaded and italics indicates the detection limit exceeds NS Tier 2 PSS

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE B-14 GROUNDWATER METALS CHEMISTRY - MW-25B
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL*	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	19-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Aug-01 Duplicate	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	16-Aug-07 Dup A	28-Jul-08	10-Aug-09	28-Jul-10	21-Sep-11	4-Oct-12	8-Jul-13	19-Aug-14	22-Jul-15	14-Jul-16
Aluminum	ug/L	5	-	50	7	22	**160**	39	50	**450**	26	19	<20	< 10	<10	ND	ND	6.3	**98.4**	<5.0	<5.0	<10	<10	<5	15	9	<5	<5.0
Antimony	ug/L	1	-	200	2	< 2	< 2	< 2	< 2	< 2	<2	<2	<0.4	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0
Arsenic	ug/L	1	-	50	< 2	2	2	< 2	2	2	2	2	1.5	< 2	<2	ND	3	2	<2.0	<2.0	2.8	5	<2	3	3	5	8	3.6
Barium	ug/L	1	-	10000	12	23	5	11	16	11	6	5	5.3	24	13	7.2	42	22.1	<5.0	11.3	12.7	29	<5	27	14	77	35	27
Beryllium	ug/L	1	-	53	< 5	< 5	< 5	< 5	< 5	< 5	<5	<5	<0.5	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0
Bismuth	ug/L	2	-	-	-	-	-	-	-	-	-	-	-	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Boron	ug/L	50	-	12000	14	11	10	12	18	7	7	6	<100	63	41	21	140	93.4	11.8	44.0	78.9	186	18	170	100	162	165	160
Cadmium	ug/L	0.01	-	0.1	*< 0.5*	*< 0.5*	*< 0.3*	*< 0.3*	*< 0.3*	0.1	0.03	0.03	*<0.3*	*< 0.3*	*<0.3*	ND	ND	0.029	<0.017	<0.017	0.065	*<0.3*	1	**0.512**	**0.449**	<0.017	0.02	0.021
Chromium	ug/L	1	-	-	2	< 2	< 2	< 2	2	< 2	<2	<2	<2	< 2	<2	ND	2	<2.0	<2.0	<2.0	<1.0	3	<2	3	<1	<1	4	<1.0
Cobalt	ug/L	0.4	-	100	< 0.1	< 1	1	1	< 1	< 1	<0.4	<0.4	<1	< 1	<1	ND	ND	0.5	<0.40	<0.40	<0.40	<1	<1	<1	<1	2	1	0.84
Copper	ug/L	2	-	20	< 10	6	< 2	4	2	**21**	9	6	5	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Iron	ug/L	50	-	3000	30	18	130	57	80	200	<20	<20	<100	< 50	<50	ND	ND	<50	57	<50	<50	<50	<50	<50	<50	3270	83	<50
Lead	ug/L	0.5	-	10	0.1	0.4	0.4	< 0.5	< 0.5	1.4	<0.5	<0.5	<1	< 0.5	<0.5	ND	ND	<0.50	<0.50	<0.50	<0.50	1.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
Manganese	ug/L	2	-	8200	150	3	16	7	56	32	34	32	7	30	17	19	140	86.2	10.3	60.4	35.8	250	8	283	<2	1410	435	300
Mercury	ug/L	0.026	-	0.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.026	<0.026	<0.026	-
Molybdenum	ug/L	2	-	730	35	< 2	< 2	< 2	< 2	< 2	<2	<2	<4	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Nickel	ug/L	2	-	250	8	< 2	< 2	< 2	< 2	2	<2	<2	<3	3	2	ND	8	7.2	<2.0	3.8	6	10	<2	8	10	11	9	11
Selenium	ug/L	1	-	10	< 2	< 2	< 2	< 2	< 2	< 1	<1	<1	<1	< 2	<2	ND	ND	<1.0	<1.0	<1.0	<1.0	4	<2	2	<1	<1	10	<1.0
Silver	ug/L	0.1	-	1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.1	<0.1	<2	< 0.5	<0.5	ND	ND	<0.1	<0.10	<0.10	<0.10	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.10
Strontium	ug/L	2	-	210000	240	140	150	370	180	190	170	160	230	1100	780	440	1500	1310	23.2	632	1180	1510	262	1030	917	1520	1480	1600
Thallium	ug/L	0.1	-	8	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	<0.8	< 0.1	<0.1	ND	ND	<0.1	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10
Tin	ug/L	2	-	-	< 2	< 2	< 2	< 2	< 2	< 2	<2	<2	<20	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Titanium	ug/L	2	-	-	-	-	-	-	-	-	-	-	-	< 2	<2	ND	2	<2.0	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Uranium	ug/L	0.1	-	3000	1	3	2.9	4.3	2.7	3	3	2.8	2.98	9.8	5.9	4.6	15	13	<0.10	4.40	10.6	18.2	3.1	9.5	9.6	14	15.9	17
Vanadium	ug/L	2	-	60	< 2	2	2	< 2	2	2	<2	<2	<2	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2.0	3	<2	2	<2	<2	<2	<2.0
Zinc	ug/L	5	-	300	< 10	18	5	11	6	14	7	6	4	5	<5	ND	ND	12.5	<5.0	23.3	<5.0	<5	8	6	10	6	<5	<5.0

Notes:

RDL - Reported Detection Limit (updated in 2016, except for Mercury)

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 EQS

Shaded and italics indicates the detection limit exceeds NS Tier 2 PSS

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE B-15 **GROUNDWATER METALS CHEMISTRY - MW-27B**
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL*	NS Tier 1 EQS	NS Tier 2 PSS	23-Nov-06	16-Aug-07	28-Jul-10	21-Sep-11	4-Oct-12	13-Jul-16
Aluminum	ug/L	5	-	50	**120**	13.9	27	11	29	N/A
Antimony	ug/L	1	-	200	ND	<2.0	<2	<2	<2	N/A
Arsenic	ug/L	1	-	50	13	12.4	9	13	9	N/A
Barium	ug/L	1	-	10000	ND	<5.0	<5	<5	<5	N/A
Beryllium	ug/L	1	-	53	ND	<2.0	<2	<2	<2	N/A
Bismuth	ug/L	2	-	-	ND	<2.0	<2	<2	<2	N/A
Boron	ug/L	50	-	12000	110	122	96	99	158	N/A
Cadmium	ug/L	0.01	-	0.1	ND	<0.017	*<0.3*	**1.2**	0.024	N/A
Chromium	ug/L	1	-	-	ND	<2.0	<2	<2	2	N/A
Cobalt	ug/L	0.4	-	100	ND	<0.40	<1	<1	<1	N/A
Copper	ug/L	2	-	20	ND	<2.0	10	<2	<2	<2.0
Iron	ug/L	50	-	3000	67	<50	<50	<50	<50	<50
Lead	ug/L	0.5	-	10	ND	<0.50	<0.5	<0.5	<0.5	N/A
Manganese	ug/L	2	-	8200	7	<2.0	<2	<2	<2	<2.0
Mercury	ug/L	0.026	-	0.26						
Molybdenum	ug/L	2	-	730	3	2.5	<2	<2	<2	N/A
Nickel	ug/L	2	-	250	ND	<2.0	<2	<2	<2	N/A
Selenium	ug/L	1	-	10	ND	<1.0	<2	<2	<1	N/A
Silver	ug/L	0.1	-	1	ND	<0.10	<0.5	<0.5	<0.1	N/A
Strontium	ug/L	2	-	210000	56	54	61	48	70	N/A
Thallium	ug/L	0.1	-	8	ND	<0.10	<0.1	<0.1	<0.1	N/A
Tin	ug/L	2	-	-	ND	<2.0	<2	<2	<2	N/A
Titanium	ug/L	2	-	-	3	<2.0	<2	<2	<2	N/A
Uranium	ug/L	0.1	-	3000	3.8	4.05	2	2.2	3.1	N/A
Vanadium	ug/L	2	-	60	6	5.3	3.4	6	4	N/A
Zinc	ug/L	5	-	300	ND	<5.0	<5	11	<5	7.5

Notes:

RDL - Reported Detection Limit (updated in 2016, except for Mercury)

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 EQS

Shaded and italics indicates the detection limit exceeds NS Tier 2 PSS

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE B-16 **GROUNDWATER METALS CHEMISTRY - MW-27C**
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL*	NS Tier 1 EQS	NS Tier 2 PSS	23-Nov-06	16-Aug-07	28-Jul-10	14-Sep-11	4-Oct-12	13-Jul-16
Aluminum	ug/L	5	-	50	ND	17.6	**221**	-	<5	N/A
Antimony	ug/L	1	-	200	ND	<2.0	<2	<2	<2	N/A
Arsenic	ug/L	1	-	50	16	15.7	5	13	6	N/A
Barium	ug/L	1	-	10000	ND	<5.0	<5	<5	17	N/A
Beryllium	ug/L	1	-	53	ND	<2.0	<2	<2	<2	N/A
Bismuth	ug/L	2	-	-	ND	<2.0	<2	<2	<2	N/A
Boron	ug/L	50	-	12000	160	174	181	157	233	N/A
Cadmium	ug/L	0.01	-	0.1	ND	<0.017	*<0.3*	**1.13**	<0.017	N/A
Chromium	ug/L	1	-	-	2	2.7	<2	2	2	N/A
Cobalt	ug/L	0.4	-	100	ND	<0.40	<1	<1	<1	N/A
Copper	ug/L	2	-	20	ND	<2.0	<2	<2	<2	2.5
Iron	ug/L	50	-	3000	ND	<50	278	<50	<50	<50
Lead	ug/L	0.5	-	10	ND	<0.50	0.7	<0.5	<0.5	N/A
Manganese	ug/L	2	-	8200	ND	12	9	5	72	<2.0
Mercury	ug/L	0.026	-	0.26						N/A
Molybdenum	ug/L	2	-	730	ND	<2.0	6	<2	<2	N/A
Nickel	ug/L	2	-	250	ND	<2.0	9	<2	<2	N/A
Selenium	ug/L	1	-	10	ND	<1.0	2	<1	<1	N/A
Silver	ug/L	0.1	-	1	ND	<0.10	<0.5	<0.1	<0.1	N/A
Strontium	ug/L	2	-	210000	46	45.8	58	41	48	N/A
Thallium	ug/L	0.1	-	8	ND	<0.10	<0.1	<0.1	<0.1	N/A
Tin	ug/L	2	-	-	ND	<2.0	<2	<2	<2	N/A
Titanium	ug/L	2	-	-	ND	<2.0	2	<2	<2	N/A
Uranium	ug/L	0.1	-	3000	6.2	7.14	<0.1	6.2	6.1	N/A
Vanadium	ug/L	2	-	60	7	6.8	5	6	3	N/A
Zinc	ug/L	5	-	300	ND	<5.0	90	7	<5	6.4

Notes:
RDL - Reported Detection Limit (updated in 2016, except for Mercury)
Bold indicates exceedance of NS Tier 1 EQS
Bold and shaded indicates exceedance of NS Tier 2 EQS
Shaded and italics indicates the detection limit exceeds NS Tier 2 PSS
NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)
NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE B-17 GROUNDWATER METALS CHEMISTRY - MW-29B
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL*	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	20-Mar-96	16-Apr-97	9-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	19-Aug-03 LAB DUP	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	29-Jul-08	11-Aug-09	28-Jul-10	21-Sep-11	4-Oct-12	8-Jul-13	20-Aug-14	23-Jul-15	13-Jul-16
Aluminum	ug/L	5	-	50	**94**	**340**	**400**	**1600**	50	**3500**	26	30	20	20	<10	22	ND	12.2	18.2	42.1	35	<10	<5	16	8	8	<5.0
Antimony	ug/L	1	-	200	14	< 2	< 2	< 2	< 2	< 2	<2	<0.4	< 2	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0
Arsenic	ug/L	1	-	50	4	2	2	2	< 2	4	2	1.7	2	2	2	2	2	2.4	2.0	2.1	2	2	<2	<2	2	2	1.7
Barium	ug/L	1	-	10000	< 2	28	9	61	45	140	10	7.4	8	8	10	9.6	15	15.5	9.8	32	22	10	18	11	13	11	12
Beryllium	ug/L	1	-	53	< 5	< 5	< 5	< 5	< 5	< 5	<5	<0.5	< 2	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0
Bismuth	ug/L	2	-	-	-	-	-	-	-	-	-	-	< 2	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Boron	ug/L	50	-	12000	12	19	14	18	10	12	9	<100	7	6	7	7.5	9	13.4	6.4	6.1	5	6	14	7	7	6	<50
Cadmium	ug/L	0.01	-	0.1	< 0.5	< 0.5	< 0.3	< 0.3	< 0.3	0.1	0.09	<0.3	< 0.3	< 0.3	<0.3	ND	ND	<0.017	0.254	0.363	1	<0.3	0.019	<0.017	0.239	<0.017	0.016
Chromium	ug/L	1	-	-	< 2	2	< 2	< 2	< 2	< 2	<2	<2	< 2	< 2	2	ND	ND	<2.0	<2.0	<1.0	<2	<2	<1	<1	<1	<1	<1.0
Cobalt	ug/L	0.4	-	100	< 1	< 1	< 1	2	< 1	2	<0.4	<1	< 1	< 1	<1	ND	ND	<0.40	<0.40	<0.40	<1	<1	<1	<1	<1	<1	<0.40
Copper	ug/L	2	-	20	< 10	16	2	7	6	13	<2	<2	< 2	2	<2	ND	ND	2.2	<2.0	<2.0	2	<2	<2	<2	<2	<2	<2.0
Iron	ug/L	50	-	3000	80	200	210	670	< 20	840	<20	<100	< 50	< 50	<50	ND	ND	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Lead	ug/L	0.5	-	10	0.7	1.3	3.6	**15**	0.6	**20**	<0.5	<1	< 0.5	< 0.5	<0.5	ND	ND	<0.50	<0.50	2.73	1.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
Manganese	ug/L	2	-	8200	< 10	51	15	170	42	1400	7	7	4	2	2	7.3	120	3.6	5.4	855	334	3	32	<2	<2	<2	<2.0
Mercury	ug/L	0.026	-	0.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.026	<0.026	<0.026	-
Molybdenum	ug/L	2	-	730	7	4	3	2	5	2	3	<4	2	2	2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Nickel	ug/L	2	-	250	< 2	3	2	2	< 2	2	<2	<3	< 2	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Selenium	ug/L	1	-	10	< 2	< 2	< 2	< 2	< 2	< 1	<1	<1	< 2	< 2	<2	ND	ND	<1.0	<1.0	<1.0	<2	<2	<1	<1	<1	<1	<1.0
Silver	ug/L	0.1	-	1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.1	<2	< 0.5	< 0.5	<0.5	ND	ND	<0.10	<0.10	<0.10	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.10
Strontium	ug/L	2	-	210000	99	150	210	330	250	680	290	279	280	280	340	280	340	309	316	316	282	338	335	300	300	296	310
Thallium	ug/L	0.1	-	8	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.8	< 0.1	< 0.1	<0.1	ND	ND	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10
Tin	ug/L	2	-	-	< 2	< 2	< 2	< 2	< 2	< 2	<2	<20	< 2	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Titanium	ug/L	2	-	-	-	-	-	-	-	-	-	-	< 2	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Uranium	ug/L	0.1	-	3000	1.1	2.7	4.1	6.8	1.8	4.4	2.6	2.47	0.5	0.5	3.5	1.8	2.0	0.99	1.76	1.72	1.6	1.8	1.9	2.1	2.1	1.9	2
Vanadium	ug/L	2	-	60	< 2	2	< 2	6	< 2	8	<2	<2	< 2	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Zinc	ug/L	5	-	300	< 10	46	9	20	13	44	13	3	5	6	<5	ND	ND	22.8	15.1	40.3	9	<5	<5	7	6	<5	<5.0

Notes:

RDL - Reported Detection Limit (updated in 2016, except for Mercury)

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 EQS

Shaded and italics indicates the detection limit exceeds NS Tier 2 PSS

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE B-18 GROUNDWATER METALS CHEMISTRY - MW-29C
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL*	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	20-Mar-96	16-Apr-97	9-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	29-Jul-08	11-Aug-09	28-Jul-10	14-Sep-11	4-Oct-12	8-Jul-13	20-Aug-14	23-Jul-15	13-Jul-16
Aluminum	ug/L	5	-	50	**210**	**180**	**110**	**140**	40	**550**	48	50	30	50	**62**	**120**	11	7.5	**66.6**	<10	-	<5	15	11	<5	6.2
Antimony	ug/L	1	-	200	6	< 2	< 2	< 2	< 2	< 2	<2	<0.4	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0
Arsenic	ug/L	1	-	50	7	4	5	5	5	5	4	3.4	5	5	5.9	6	4.5	4.9	4.5	5	4	6	4	5	6	4.9
Barium	ug/L	1	-	10000	< 2	9	< 5	< 5	20	14	<5	4.3	< 5	<5	ND	ND	<5.0	<5.0	<5.0	<5	<5	<5	<5	<5	<5	2.9
Beryllium	ug/L	1	-	53	< 5	< 5	< 5	< 5	< 5	< 5	<5	<0.5	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0
Bismuth	ug/L	2	-	-	-	-	-	-	-	-	-	-	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Boron	ug/L	50	-	12000	32	12	7	10	11	12	9	<100	10	19	19	21	11.6	16.0	15.0	15	23	35	18	22	19	<50
Cadmium	ug/L	0.01	-	0.1	*< 0.5*	*< 0.5*	*< 0.3*	*< 0.3*	*< 0.3*	< 0.1	0.06	*<0.3*	*< 0.3*	*<0.3*	ND	ND	<0.017	0.068	0.02	**0.4**	0.087	**0.205**	<0.017	<0.017	<0.017	<0.010
Chromium	ug/L	1	-	-	< 2	2	< 2	< 2	< 2	< 2	<2	<2	< 2	<2	ND	ND	<2.0	<2.0	<1.0	<2	<1	<1	<1	<1	<1	<1.0
Cobalt	ug/L	0.4	-	100	< 1	< 1	1	< 1	< 1	< 1	<0.4	<1	< 1	<1	ND	ND	<0.40	<0.40	<0.40	<1	<1	<1	<1	<1	<1	<0.40
Copper	ug/L	2	-	20	< 10	11	2	3	4	4	<2	<2	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	2	<2	<2	<2.0
Iron	ug/L	50	-	3000	160	100	100	190	< 50	170	20	<100	< 50	70	68	130	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Lead	ug/L	0.5	-	10	0.9	1.1	0.4	0.5	0.8	1.9	<0.5	<1	< 0.5	<0.5	ND	ND	<0.50	<0.50	<0.50	2.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
Manganese	ug/L	2	-	8200	< 10	8	8	7	41	28	2	4	4	2	4.3	4	6.2	2.0	3.6	4	<2	<2	<2	<2	<2	<2.0
Mercury	ug/L	0.026	-	0.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.026	<0.026	<0.026	-
Molybdenum	ug/L	2	-	730	< 2	< 2	< 2	< 2	< 2	< 2	<2	<4	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Nickel	ug/L	2	-	250	< 2	2	< 2	< 2	< 2	< 2	<2	<3	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Selenium	ug/L	1	-	10	< 2	< 2	< 2	< 2	< 2	< 1	<1	<1	< 2	<2	ND	ND	<1.0	<1.0	<1.0	<2	<1	<1	<1	<1	<1	<1.0
Silver	ug/L	0.1	-	1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	>0.1	*<2*	< 0.5	<0.5	ND	ND	<0.10	<0.10	<0.10	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10
Strontium	ug/L	2	-	210000	99	120	140	130	120	160	140	113	150	82	110	87	154	102	107	135	127	100	125	91	95	94
Thallium	ug/L	0.1	-	8	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.8	0.1	<0.1	ND	ND	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10
Tin	ug/L	2	-	-	< 2	< 2	< 2	< 2	< 2	< 2	<2	<20	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Titanium	ug/L	2	-	-	-	-	-	-	-	-	-	-	2	6	3.1	9	<2.0	<2.0	3	<2	<2	<2	<2	<2	<2	<2.0
Uranium	ug/L	0.1	-	3000	1.3	1.3	0.8	1	1	1	0.9	0.89	0.9	0.8	1	0.9	0.87	0.91	0.85	0.9	0.9	0.9	0.9	1	0.9	0.98
Vanadium	ug/L	2	-	60	< 2	5	6	6	5	7	6	5	6	6	6.6	7	5.6	5.6	5.1	5	5	6	6	5	5	5.4
Zinc	ug/L	5	-	300	< 10	31	7	9	14	10	3	<2	< 5	<5	ND	ND	12	9.7	<5.0	11	<5	<5	<5	<5	<5	<5.0

Notes:

RDL - Reported Detection Limit (updated in 2016, except for Mercury)

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 EQS

Shaded and italics indicates the detection limit exceeds NS Tier 2 PSS

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE B-19 **GROUNDWATER METALS CHEMISTRY - MW-31A**
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL*	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	21-Mar-96	16-Apr-97	9-Apr-98	5-May-99	26-Jul-00	Aug.-01	Sept.-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	29-Jul-08	11-Aug-09	28-Jul-10	14-Sep-11	4-Oct-12	8-Jul-13	20-Aug-14	21-Jul-15	13-Jul-16
Aluminum	ug/L	5	-	50	8	**140**	**110**	12	30	**1000**	**160**	**60**	**	20	47	10	14.5	7.8	9.4	<10		14	22	10	10	5.1
Antimony	ug/L	1	-	200	7	< 2	< 2	< 2	< 2	< 2	<2	<0.4	**	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0
Arsenic	ug/L	1	-	50	< 2	< 2	< 2	< 2	< 2	2	<2	1.2	**	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0
Barium	ug/L	1	-	10000	9	14	< 5	< 5	19	49	17	14	**	8	8.7	32	8.2	8.0	6.2	<5	5	31	10	8	8	5.5
Beryllium	ug/L	1	-	53	< 0.5	< 5	< 5	< 5	< 5	< 5	<5	<0.5	**	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0
Bismuth	ug/L	2	-	-	-	-	-	-	-	-	-	-	**	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Boron	ug/L	50	-	12000	< 2	< 2	< 5	< 5	< 5	< 10	<5	<100	**	<5	ND	ND	<5.0	<5.0	<5.0	<5	52	<5	<5	<5	<5	<50
Cadmium	ug/L	0.01	-	0.1	*< 1*	*< 0.5*	*< 0.3*	*< 0.3*	*< 0.3*	< 0.1	0.07	*<0.3*	**	*<0.3*	ND	ND	0.034	<0.017	0.073	*<0.3*	<0.017	**0.184**	0.055	<0.017	<0.017	0.011
Chromium	ug/L	1	-	-	< 10	2	< 2	< 2	< 2	< 2	<2	<2	**	<2	ND	ND	<2.0	<2.0	<1.0	<2	<1	<1	<1	<1	<1	<1.0
Cobalt	ug/L	0.4	-	100	< 1	< 1	1	< 1	< 1	1	0.9	<1	**	1	1	2	<0.40	<0.40	<0.40	<1	<1	<1	<1	<1	<1	<0.40
Copper	ug/L	2	-	20	< 10	13	< 2	3	5	2	2	<2	**	<2	ND	ND	2.6	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Iron	ug/L	50	-	3000	20	120	60	< 20	< 50	400	270	1290	**	<50	ND	ND	92	<50	310	141	315	459	<50	171	199	<50
Lead	ug/L	0.5	-	10	< 0.1	1.9	0.1	< 0.5	0.5	2	0.5	<1	**	<0.5	ND	ND	<0.50	<0.50	<0.50	1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
Manganese	ug/L	2	-	8200	50	340	14	3	16	190	310	195	**	210	240	480	49.2	16.5	70.4	29	59	99	<2	30	45	22
Mercury	ug/L	0.026	-	0.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.026	<0.026	<0.026	-
Molybdenum	ug/L	2	-	730	< 2	2	< 2	< 2	< 2	< 2	<2	<4	**	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Nickel	ug/L	2	-	250	< 2	3	< 2	< 2	< 2	2	<2	<3	**	<2	ND	ND	<2.0	<2.0	<2.0	2	<2	<2	<2	<2	<2	<2.0
Selenium	ug/L	1	-	10	< 2	< 2	< 2	< 2	< 2	< 1	<1	<1	**	<2	ND	ND	<1.0	<1.0	<1.0	<2	<1	<1	<1	<1	<1	<1.0
Silver	ug/L	0.1	-	1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.1	<2	**	<0.5	ND	ND	<0.10	<0.10	<0.10	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10
Strontium	ug/L	2	-	210000	43	31	11	8	26	29	19	23	**	21	14	50	23.3	11.4	14.6	14	15	56	22	16	21	18
Thallium	ug/L	0.1	-	8	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.8	**	<0.1	ND	ND	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10
Tin	ug/L	2	-	-	< 2	< 2	< 2	< 2	< 2	< 2	<2	<20	**	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Titanium	ug/L	2	-	-	-	-	-	-	-	-	-	-	**	<2	2.5	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Uranium	ug/L	0.1	-	3000	-	0.4	< 0.1	< 0.1	< 0.1	1	0.1	<0.15	**	<0.1	ND	ND	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10
Vanadium	ug/L	2	-	60	< 2	< 2	< 2	< 2	< 2	2	<2	<2	**	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Zinc	ug/L	5	-	300	< 10	37	**1100**	45	15	6	20	6	**	<5	ND	ND	48.1	24.5	<5.0	<5	<5	<5	8	<5	<5	<5.0

Notes:

RDL - Reported Detection Limit (updated in 2016, except for Mercury)

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 EQS

Shaded and italics indicates the detection limit exceeds NS Tier 2 PSS

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE B-20 GROUNDWATER METALS CHEMISTRY - TH-1
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL*	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	19-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	25-Aug-04 Lab DUP	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	28-Jul-08 Dup-B	10-Aug-09	27-Jul-10	21-Sep-11	4-Oct-12	4-Jul-13	20-Aug-14	22-Jul-15	14-Jul-16
Aluminum	ug/L	5	-	50	5	**70**	< 10	< 10	< 10	**130**	<50	<20	< 10	*<100*	*<100*	ND	ND	<5.0	<5.0	<5.0	<5.0	<10	<10	<5	37	5	<5	<5.0
Antimony	ug/L	1	-	200	4	< 2	< 2	< 2	< 2	< 20	<20	<0.4	< 2	<20	<20	ND	ND	<2.0	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0
Arsenic	ug/L	1	-	50	43	26	34	8	27	27	30	22.6	10	<20	<20	11	4	35.9	49.7	43.1	36	35	25	10	28	33	21	26
Barium	ug/L	1	-	10000	3800	3300	3400	2800	2800	3100	3100	2460	2000	1600	1700	1400	1200	1500	1400	1400	1370	1030	1210	1090	1030	1170	1130	1000
Beryllium	ug/L	1	-	53	< 5	< 5	< 5	< 5	< 5	< 50	<50	<0.5	< 2	<20	<20	ND	ND	<2.0	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0
Bismuth	ug/L	2	-	-	-	-	-	-	-	-	-	-	< 2	<20	<20	ND	ND	<2.0	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Boron	ug/L	50	-	12000	1200	1000	950	1000	920	900	870	650	610	630	670	500	450	351	344	350	323	363	254	365	2210	244	240	220
Cadmium	ug/L	0.01	-	0.1	**0.5**	**1**	*< 0.3*	*< 0.3*	*< 0.3*	*< 1*	0.1	*<0.3*	*< 0.3*	*<3*	*<3*	ND	ND	<0.017	0.059	0.047	0.089	<0.3	**1**	<0.017	<0.017	<0.017	0.023	<0.010
Chromium	ug/L	1	-	-	7	5	5	4	7	< 20	<20	<2	3	<20	<20	3.3	3	<2.0	3.4	2.2	1.7	<2	<2	1	7	<1	1	<1.0
Cobalt	ug/L	0.4	-	100	21	17	18	14	14	12	16	10	16	12	13	9.9	16	7.89	11.2	10.7	8.29	4	5	4	6	6	4	6.3
Copper	ug/L	2	-	20	< 10	7	< 2	2	< 2	< 20	<20	15	< 2	<20	<20	ND	ND	<2.0	4.1	2.1	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Iron	ug/L	50	-	3000	**25300**	**13000**	**23000**	120	**13000**	**23000**	**26000**	**15200**	80	<500	<500	1700	78	**14100**	**12100**	**11900**	**11600**	**8630**	**9710**	<50	**11800**	**10400**	**14000**	**12000**
Lead	ug/L	0.5	-	10	0.3	1	0.2	< 0.5	< 0.5	< 5	<5	<1	< 0.5	<5	<5	ND	ND	<0.50	<0.50	<0.50	<0.50	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
Manganese	ug/L	2	-	8200	1740	1400	1600	1400	1300	1500	1500	1280	1100	990	1000	950	750	855	774	759	841	774	1030	1000	913	914	1200	1100
Mercury	ug/L	0.026	-	0.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.026	<0.026	<0.026	-
Molybdenum	ug/L	2	-	730	2	2	2	< 2	< 2	< 20	<20	<4	2	<20	<20	ND	4	<2.0	4.9	4.8	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Nickel	ug/L	2	-	250	41	29	33	21	18	< 20	21	16	25	<20	<20	15	25	10.8	21.8	20.3	8.9	6	5	5	9	5	4	6.5
Selenium	ug/L	1	-	10	< 2	< 2	< 2	< 2	< 2	< 10	<10	2	< 2	<20	<20	ND	ND	<1.0	<1.0	<1.0	<1.0	<2	<2	1	<1	<1	4	<1.0
Silver	ug/L	0.1	-	1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 5	<1	<2	< 0.5	<5	<5	ND	ND	<0.10	<0.10	<0.10	<0.10	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.10
Strontium	ug/L	2	-	210000	920	790	840	800	770	860	840	873	690	570	590	520	470	439	429	415	425	430	434	413	384	376	400	400
Thallium	ug/L	0.1	-	8	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1	<1	<0.8	< 0.1	<1	<1	ND	ND	<0.10	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10
Tin	ug/L	2	-	-	3	3	2	2	2	< 20	<20	<20	2	<20	<20	ND	3	<2.0	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Titanium	ug/L	2	-	-	-	-	-	-	-	-	-	-	< 2	<20	<20	ND	ND	<2.0	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Uranium	ug/L	0.1	-	3000	0.5	1	0.4	0.2	0.2	< 1	<1	0.18	0.2	<1	<1	0.1	0.5	<0.10	0.15	0.13	<0.10	0.2	0.2	<0.1	<0.1	<0.1	<0.1	<0.10
Vanadium	ug/L	2	-	60	2	2	3	< 2	< 2	< 20	<20	4	< 2	<20	<20	ND	ND	<2.0	<2.0	<2.0	<2.0	3	3	<2	<2	<2	<2	<2.0
Zinc	ug/L	5	-	300	180	44	12	6	9	27	<20	7	7	<50	<50	ND	ND	27.6	6.4	17.6	<5.0	8	<5	6	15	<5	<5	<5.0

Notes:

RDL - Reported Detection Limit (updated in 2016, except for Mercury)

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 EQS

Shaded and italics indicates the detection limit exceeds NS Tier 2 PSS

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE B-21 GROUNDWATER METALS CHEMISTRY - TH-2
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL*	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	12-Aug-09	27-Jul-10	21-Sep-11	4-Oct-12	4-Jul-13	20-Aug-14	22-Jul-15	14-Jul-16
Aluminum	ug/L	5	-	50	5	**56**	**160**	*< 100*	**350**	**1500**	**24900**	10	20	**93**	**66**	**552**	**52.4**	<5.0	<10	<10	<5	45	29	14	<5.0
Antimony	ug/L	1	-	200	40	< 2	< 2	< 20	< 2	<2	<0.4	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0
Arsenic	ug/L	1	-	50	3	2	< 2	< 20	< 2	4	1.6	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0
Barium	ug/L	1	-	10000	< 5	9	13	100	29	73	16	< 5	<5	ND	6	<5.0	<5.0	<5.0	<5	<5	<5	13	<5	<5	3.4
Beryllium	ug/L	1	-	53	< 5	< 5	< 5	< 50	< 5	<5	0.5	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0
Bismuth	ug/L	2	-	-	-	-	-	-	-	-	-	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Boron	ug/L	50	-	12000	40	12	14	54	16	11	<100	10	10	13	13	11.8	9.3	8.4	11	9	20	37	12	15	<50
Cadmium	ug/L	0.01	-	0.1	*< 0.5*	*< 0.3*	**0.4**	*< 3*	**0.4**	**0.3**	*<0.3*	*< 0.3*	*<0.3*	ND	ND	0.021	**0.136**	**0.186**	*<0.3*	*<0.3*	<0.017	0.028	<0.017	<0.017	<0.010
Chromium	ug/L	1	-	-	< 2	< 2	< 2	< 20	< 2	<2	<2	< 2	<2	ND	ND	<2.0	<2.0	<1.0	<2	<2	<1	<1	<1	<1	<1.0
Cobalt	ug/L	0.4	-	100	< 1	2	1	< 10	1	3.3	<1	< 1	<1	ND	ND	<0.40	<0.40	<0.40	<1	<1	<1	<1	<1	<1	<0.40
Copper	ug/L	2	-	20	< 10	2	5	< 20	< 2	7	10	< 2	<2	ND	ND	<2.0	2.5	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Iron	ug/L	50	-	3000	1990	1800	1400	370	**3400**	**20000**	**11800**	< 50	<50	78	ND	329	100	<50	522	<50	<50	92	449	317	650
Lead	ug/L	0.5	-	10	< 0.5	0.8	3.3	< 5	6.6	**33**	10	< 0.5	<0.5	ND	ND	0.7	<0.50	<0.50	0.5	<0.5	<0.5	0.6	0.8	<0.5	<0.50
Manganese	ug/L	2	-	8200	460	140	100	71	220	460	108	59	62	31	98	11	6.2	104	84	9	12	<2	48	39	59
Mercury	ug/L	0.026	-	0.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.14	<0.026	<0.026	-
Molybdenum	ug/L	2	-	730	< 2	< 2	< 2	< 20	< 2	<2	<4	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Nickel	ug/L	2	-	250	4	< 2	2	< 20	< 2	3	<3	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Selenium	ug/L	1	-	10	< 2	< 2	< 2	< 20	< 1	<1	<1	< 2	<2	ND	ND	<1.0	<1.0	<1.0	<2	<2	<1	<1	<1	<1	<1.0
Silver	ug/L	0.1	-	1	< 0.5	< 0.5	< 0.5	< 5	< 0.5	0.2	<2	< 0.5	<0.5	ND	ND	<0.10	<0.10	<0.10	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.10
Strontium	ug/L	2	-	210000	360	110	120	78	180	310	96	110	110	50	110	35.6	7.7	114	122	24	42	<5	82	76	130
Thallium	ug/L	0.1	-	8	< 0.1	< 0.1	< 0.1	< 1	< 0.1	0.1	<0.8	< 0.1	<0.1	ND	ND	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10
Tin	ug/L	2	-	-	< 2	< 2	< 2	< 20	< 2	<2	<20	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Titanium	ug/L	2	-	-	-	-	-	-	-	-	-	< 2	<2	ND	ND	3.8	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Uranium	ug/L	0.1	-	3000	0.1	< 0.1	0.2	< 1	0.3	3.6	2.02	< 0.1	<0.1	ND	ND	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10
Vanadium	ug/L	2	-	60	< 2	< 2	< 2	< 20	< 2	2	3	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Zinc	ug/L	5	-	300	< 10	48	18	< 50	7	38	12	5	<5	ND	ND	17.9	24.9	<5.0	<5	<5	<5	11	7	<5	<5.0

Notes:

RDL - Reported Detection Limit (updated in 2016, except for Mercury)

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 EQS

Shaded and italics indicates the detection limit exceeds NS Tier 2 PSS

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE C-1

GROUNDWATER VOLATILE ORGANIC COMPOUND CHEMISTRY - MW-4A
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	8-Mar-95	20-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Sep-02	Sep-02 40D dup 4A	19-Aug-03	25-Aug-04	25-Aug-04 MW-40D	25-Aug-04 MW-40D Lab Dup	18-Aug-05	18-Aug-05 MW-40D	23-Nov-06	16-Aug-07	16-Aug-07 MW-4ALF	28-Jul-08	28-Jul-08 Dup-A	27-Jul-10	21-Sep-11	4-Oct-12	4-Jul-13	4-Jul-13 MW-40D	19-Aug-14	19-Aug-14 MW-40D	21-Jul-15	21-Jul-15 MW-40D	14-Jul-16
1,1 - Dichloroethane	ug/L	2	6600	2000	-	-	-	2.33	1.6	2	2	2.5	2.1	0.7	2.4	<2	<2	<2	ND	ND	ND	<2	<2	<2	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2.0
1,1 - Dichloroethylene	ug/L	0.5	490	400	-	-	-	-	-	-	< 2	<2	<0.5	<0.5	< 2	<2	<2	<2	ND	ND	ND	<2	<2	<2	<2	<0.66	<0.66	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.50
1,1,1 - Trichloroethane	ug/L	1	13000	100	-	-	-	-	-	-	< 1	<1	<0.5	<0.5	< 1	<1	<1	<1	ND	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
1,1,2 - Trichloroethane	ug/L	1	910	-	-	-	-	-	-	-	< 1	<1	<0.5	<0.5	< 1	<1	<1	<1	ND	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
1,1,2 - Trichloroethene	ug/L	-	-	8000	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	ND	ND	ND	-	-	-	-	<1	ND		-	-	-	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/L	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
1,1,2,2-Tetrachloroethane	ug/L	0.5	630	700	-	-	-	-	-	-	< 1	<1	<1	<1	< 8	<1	<1	<1	ND	ND	ND	<1	<1	<1	<1		<1	<1	<1	<1	<1	<1	<1	<1	<0.50
1,1,2,2-Tetrachloroethene	ug/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	ND	ND	-	-	-	-	-		ND			-	-	-	-	-	-
1,2 - Dibromoethane	ug/L	-	-	-	n.a.	-	-	-	-	-	< 1	<1	n.a.	n.a.		<1	<1	<1	ND	ND	-	-	-	-	-	<1	<1	<1	<0.25	<0.25	<0.2	<0.2	<0.2	<0.2	-
1,2 - Dichlorobenzene	ug/L	0.5	64000	7	n.a.	1.3	1.5	2.57	3.4	2	< 1	1.4	1.4	0.6	< 1	<0.5	1.5	1.4	1.4	1.3	1.1	1.4	1.3	1.4	1.3	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.50
1,2 -Dichloroethane	ug/L	1	300	1000	-	-	-	-	-	-	< 1	<1	<0.5	<0.5	< 1	<1	<1	<1	ND	ND	ND	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1.0
1,2-Dichloropropane	ug/L	0.5	330	7	-	-	-	-	-	-	< 1	<1	<0.5	<0.5	< 1	<1	<1	<1	ND	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.7	<0.7	<0.7	<0.7	<0.50
1,2-Dichloroethene	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a	<1	n.a.	n.a.	< 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3 - Dichlorobenzene	ug/L	1	-	1500	n.a.	-	-	-	-	-	< 1	<1	<0.5	<0.5	6.2	<1	<1	<1	ND	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
1,4 - Dichlorobenzene	ug/L	1	2600	260	n.a.	-	-	1.87	1.6	1	< 1	2.3	4	0.8	< 1	<1	4.5	4.5	4.4	4.6	4	7	7	7	6	5	<1	4	5	4	3	4	5	4	2.6
1,4 Dichlorobutane	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a	n.a.	n.a.	n.a.	< 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1-Chloro 2-Bromopropane	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a	n.a.	n.a.	n.a.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,4 Chlorotoluene	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a	n.a.	n.a.	n.a.	1.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Chloroethylvinyl ether	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a	n.a.	n.a.	n.a.		<8	<8	<8	ND	ND		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	ug/L	1	20000	4600	8.8	-	1.1	2.99	2.57	3	2.7	3	2.7	<0.5	5.1	1.4	4.5	4.2	3.1	3.1	2	4	4	3	3	2	2	<1	3	3	1.93	2	2	2	1.6
Bromochloromethane	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a	n.a.	n.a.	n.a.	< 1	-						-	-	-	-	<1	-	-	-	-	-	-	-	-	-
Bromodichloromethane	ug/L	1	-	2000	-	-	-	-	-	-	< 1	<1	<0.2	<0.2	< 1	<1	<1	<1	ND	ND	ND	<1	<1	<1	<1	-	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
Bromoform	ug/L	1	84000	600	-	-	-	-	-	-	< 1	>1	>0.2	<0.2		<1	<1	<1	ND	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
Bromomethane	ug/L	0.89	33	9	n.a.	-	-	-	-	-	< 8	**20**	<3	<3	< 8	<8	<8	<8	ND	ND	ND	<8	<8	<8	<8	<3.7	<3.7	<3	<3	<3	<0.89	<0.89	<0.89	<0.89	<0.89
Carbon Tetrachloride	ug/L	0.5	7	133	**9.9**	-	-	-	-	-	< 1	<1	<1	<1	< 1	<1	<1	<1	ND	ND	ND	<1	<1	<1	<1	<1	<1	<1	<0.79	<0.79	<0.56	<0.56	<0.56	<0.56	<0.50
Chlorobenzene	ug/L	1	180	13	-	-	-	4.6	5.9	7	7.2	10	10	2.2	< 1	2	11	11	9.9	10	8	9	9	9	9	8	1	5	9	8	5	6	7	8	4.8
Chloroethane	ug/L	8	-	11000	n.a.	-	-	-	-	-	< 8	<8	<1	<1	< 8	<8	<8	<8	ND	ND	ND	<8	<8	<8	<8	<5	<5	<5	<5	<5	<5	<5	<5	<5	<8.0
Chloroform	ug/L	1	40	18	-	-	-	-	-	-	< 1	<1	<0.2	<0.2	< 1	<1	<1	<1	ND	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
Chloromethane	ug/L	8	-	7000	n.a.	47.8	6.8	-	-	-	< 8	<8	<2	<2	1	<8	<8	<8	ND	ND	ND	<8	<8	<8	<8	<1	<1	<1	<1	<1	<1	<1	<1	<1	<8.0
cis-1,2-Dichloroethene	ug/L	-	-	-	-	n.a.	n.a.	-	-	-	< 2	<2	<1	<1		<2	<2	<2	ND	ND		-	-	-	-	<2	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethylene	ug/L	0.5	30	2000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	<2	<2	<2	<2	-	<2	<2	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<0.50
cis-1,3-Dichloroethene	ug/L	-	-	-	n.a.	-	n.a.	-	n.a.	n.a.	n.a	n.a.	n.a.	n.a.	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis 1,3-Dichloropropene	ug/L	0.5	100	-	-	-	-	-	-	-	< 2	<2	<0.14	<0.14		<2	<2	<2	ND	ND	ND	<2	<2	<2	<2	<2	<2	<2	<2	<2	<0.5	<0.5	<0.5	<0.5	<0.50
Dibromochloromethane	ug/L	1	10000	400	-	-	-	-	-	-	< 1	<1	<0.2	<0.2	< 1	<1	<1	<1	ND	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
Dibromoethene	ug/L	-	-	-	-	-	-	-	-	-	< 3	<3	<1	<1	< 3	<3	<3	<3	ND	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichloromethane	ug/L	-	-	-	-						-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2	-	-	-	-	-	-	-
Ethylbenzene	ug/L	1	20000	-	-	-	-	-	-	-	< 1	<1	<0.5	<0.5	< 1	<1	<1	<1	ND	ND	ND	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1.0
Ethylene Dibromide	ug/L	0.2	51	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	<0.20
iso- Propylbenzene (Cumene)	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a	n.a.	n.a.	n.a.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methylene Chloride (Dichloromethane)	ug/L	3	43000	981	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	<3	<3	<3	<3	<2	9	<2	<2	<2	<2	<2	<2	<2	<3.0
m+p-Xylenes	ug/L	2			-	-	-	-	-	-	< 2	<2	<0.5	<0.5	< 1	<2	<2	<2	ND	ND	-	<2	<2	<2	<2	<4	<4	<4	<4	<4	<4	<4	<4	<4	<2.0
o-Xylene	ug/L	1	20000	-	-	-	-	-	-	-	< 1	<1	<0.5	<0.5	< 1	<1	<1	<1	ND	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
n - Propylbenzene	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a	n.a.	n.a.	n.a.	< 8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
sec-Butylbenzene	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a	n.a.	n.a.	n.a.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Styrene	ug/L	1	26000	720	-	-	-	-	-	-	< 1	<1	<0.5	<0.5	-	<1	<1	<1	ND	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
tert-Butylbenzene	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a	n.a.	n.a.	n.a.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	ug/L	-	-	-	-	-	-	-	-	-	< 1	<1	<0.5	<0.5	< 1	-	-	-	-	-	-	-	-	-	-	<2	-	-	-	-	-	-	-	-	-
Tetrachloroethylene	ug/L	1	1300	1110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	<1	<1	<1	<1		<2	<2	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.0
Toluene	ug/L	1	20000	-	-	-	-	-	-	-	1	<1	<0.5	<0.5	< 1	<1	<1	<1	2.7	2.4	1	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1.0
trans-1,2-Dichloroethene	ug/L	-	-	-	-	-	-	-	-	-	< 2	<2	<1	<1	< 2	<2	<2	<2	ND	ND		-	-	-	-	<2	-	-	-	-	-	-	-	-	-
trans-1,2-Dichloroethylene	ug/L	0.5	30	2000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	<2	<2	<2	<2		<2	<2	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<0.50
trans-1,3-Dichloropropane	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a	n.a.	n.a.	n.a.	< 1	-	-	-	-	-		-	-	-	-	<1	-	-	-	-	-	-	-	-	-
trans-1,3-Dichloropropene	ug/L	0.5	-	-	-	-	-	-	-	-	< 1	<1	<0.14	<0.14	< 2	<1	<1	<1	ND	ND	ND	-	<1	<1	<1	-	<1	<1	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.50
Trichloroethene	ug/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethylene	ug/L	1	250	210	-	-	-	-	-	-	< 1	<1	<0.5	<0.5	< 1	-	-	-	-	-	ND	-	<1	<1	<1	-	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
Trichlorofluoromethane	ug/L	8	-	-	-	-	-	-	-	-	< 8	<8	<2	<2	< 2	<8	<8	<8	ND	ND	ND	-	<8	<8	<8	<5	<5	<5	<5	<5	<5	<5	<5	<5	<8.0
Vinyl Chloride	ug/L	0.5	13	600	-	-	-	-	-	-	< 1	1.19	<0.5	<0.5		<1	<1	<1	ND	ND	ND	-	<1	<1	<1	1.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
TOTAL VOC's	ug/L				18.7	49.1	9.4	14.36	15.07	15	12.9	41.1	20.2	4.3	33.3	3.4	21.5	21.1	21.5	21.4	16.1	21.4	21.3	20.4	19.3	16.6	12	9	17	15	9.93	12	14	14	9

Notes:
RDL - Reported Detection Limit (updated in 2016)
ND - Values below RDL
n.a. - compound not analyzed
Bold indicates exceedance of NS Tier 1 EQS
Bold and shaded indicates exceedance of NS Tier 2 PSS
Bold and italics exceeds indicates both NS Tier and Tier 2
MW-40D = Duplicate of MW-4A
NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)
NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE C-2

GROUNDWATER VOLATILE ORGANIC COMPOUND CHEMISTRY - MW-12B
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	8-Mar-95	20-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Sep-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	29-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	14-Jul-16	14-Jul-16 MW-40D
1,1 - Dichloroethane	ug/L	2	6600	2000	2.3	-	-	1.57	-	-	< 2	<2	<0.4	< 2	<2	ND	ND	<2	<2	<1	<1	<1	<1	<1	<1	<2.0	<2.0
1,1 - Dichloroethylene	ug/L	0.5	490	400	-	-	-	-	-	-	< 2	<2	<0.5	< 2	<2	ND	ND	<2	<2	<0.66	<0.66	<0.6	<0.6	<0.6	<0.6	<0.50	<0.50
1,1,1 - Trichloroethane	ug/L	1	13000	100	-	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1.0	<1.0
1,1,2 - Trichloroethane	ug/L	1	910	-	-	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1.0	<1.0
1,1,2 - Trichloroethene	ug/L	-	-	8000							<1	<1	<0.5	<1	<1	ND	ND	-	-	<1			-	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/L	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				<0.5	<0.5	<0.5	-	-
1,1,2,2-Tetrachloroethane	ug/L	0.5	630	700	-	-	-	-	-	-	< 1	<1	<1	< 8	<1	ND	ND	<1	<1		<1	<1	<1	<1	<1	<0.50	<0.50
1,1,2,2-Tetrachloroethene	ug/L	-	-	-							<1	<1	<0.5	<1	<1	ND	ND	-	-				-	-	-	-	-
1,2 - Dibromoethane	ug/L	-	-	-	n.a.	-	-	-	-	-	< 1	<1	n.a.	-	<1	-	-	-	-	<1	<1	<1	<0.25	<0.2	<0.2	-	-
1,2 - Dichlorobenzene	ug/L	0.5	64000	7	n.a.	-	-	-	-	-	< 1	<1	<0.5	< 1	<0.5	ND	ND	<0.5	<0.5	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.50	<0.50
1,2 - Dichloroethane	ug/L	1	300	1000	-	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<2	<2	<2	<2	<2	<2	<1.0	<1.0
1,2 - Dichloropropane	ug/L	0.5	330	7	-	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<0.7	<0.7	<0.50	<0.50
1,2-Dichloroethene	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	< 2	-	-	-	<1	-		<1	<2	-	-	-	-	-
1,3 - Dichlorobenzene	ug/L	1	-	1500	n.a.	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1.0	<1.0
1,4 - Dichlorobenzene	ug/L	1	2600	260	n.a.	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1		<1	<1	<1	<1	<1	<1.0	<1.0
1,4 Dichlorobutane	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	< 1	-	-	-	-	-				-	-	-	-	-
1-Chloro 2-Bromopropane	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	< 1				-	-				-	-	-	-	-
2,4 Chlorotoluene	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	< 0.5				-	-				-	-	-	-	-
2-Chloroethylvinyl ether	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.					-	-	<1			-	-	-	-	-
Benzene	ug/L	1	20000	4600	-	-	-	-	-	-	< 1	<1	<0.5	< 1	<	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1.0	<1.0
Bromochloromethane	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	< 1				-	-				-	-	-	-	-
Bromodichloromethane	ug/L	1	-	2000	-	-	-	-	-	-	< 1	<1	<0.2	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1.0	<1.0
Bromoform	ug/L	1	84000	600	-	-	-	-	-	-	< 1	<1	<0.2		<1	ND	ND	<1	<1	<3.7	<1	<1	<1	<1	<1	<1.0	<1.0
Bromomethane	ug/L	0.89	33	9	n.a.	-	-	-	-	-	< 8	<8	<3	< 8	<8	ND	ND	<8	<8	<1	<3.7	<3	<3	<0.89	<0.89	<0.50	<0.89
Carbon Tetrachloride	ug/L	0.5	7	133	-	-	-	-	-	-	< 1	<1	<1	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<0.79	<0.56	<0.56	<0.50	<0.50
Chlorobenzene	ug/L	1	180	13	-	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1		<1	<1	<1	<1	<1	<1.0	<1.0
Chloroethane	ug/L	8	-	11000	n.a.	-	-	-	-	-	< 8	<8	<1	< 8	<8	ND	ND	<8	<8	<1	<5	<5	<5	<5	<5	<8.0	<8.0
Chloroform	ug/L	1	40	18	-	-	-	-	-	-	< 1	<1	<0.2	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1.0	<1.0
Chloromethane	ug/L	8	-	7000	n.a.	-	-	-	-	-	< 8	<8	<2	< 1	<8	ND	ND	<8	<8	<2	<1	<1	<1	<1	<1	<8.0	<8.0
cis-1,2-Dichloroethene	ug/L	-	-	-	-	n.a.	n.a.	-	-	-	< 2	<2	<1		<2	ND	ND	-	-				-	-	-	-	-
cis-1,2-Dichloroethylene	ug/L	0.5	30	2000													ND	<2	<2		<2	<2	<1.6	<1.6	<1.6	<0.50	<0.50
cis-1,3-Dichloroethene	ug/L	-	-	-	n.a.	-	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.		-	-	-	-	-	<1			-	-	-	-	-
cis 1,3-Dichloropropene	ug/L	0.5	100	-	-	-	-	-	-	-	< 2	<2	<0.14				ND	<2	<2	<2	<2	<2	<2	<0.5	<0.5	<0.50	<0.50
Dibromochloromethane	ug/L	1	10000	400	-	-	-	-	-	-	< 1	<1	<0.2	< 1	<1	ND	ND	<1	<1	<5	<1	<1	<1	<1	<1	<1.0	<1.0
Dibromoethene	ug/L	-	-	-														-	-				-	-	-	-	-
Dichloromethane	ug/L	-	-	-	-	-	-	-	-	-	< 3	<3	<1	< 3	<3	ND	ND	-	-	<2			-	-	-	-	-
Ethylbenzene	ug/L	1	20000	-	-	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1		<2	<2	<2	<2	<2	<1.0	<1.0
Ethylene Dibromide	ug/L	0.2	51	50													ND	<1	<1				-	-	-	<0.20	<0.20
iso- Propylbenzene (Cumene)	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.					-	-	<2			-	-	-	-	-
Methylene Chloride (Dichloromethane)	ug/L	3	43000	981			-	-	-	-	-	-	-	-			ND	<3	<3	<4	12	<2	<2	<2	<2	<3.0	<3.0
m+p-Xylenes	ug/L	2			1	-	-	-	-	-	< 2	<2	<0.5	< 1	<2	ND	ND	<2	<2		<4	<4	<4	<4	<4	<2.0	<2.0
o-Xylene	ug/L	1	20000	-	1	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1		<1	<1	<1	<1	<1	<1.0	<1.0
n - Propylbenzene	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	< 8				-	-	<1			-	-	-	-	-
sec-Butylbenzene	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.					-	-	<1			-	-	-	-	-
Styrene	ug/L	1	26000	720	-	-	-	-	-	-	< 1	<1	<0.5		<1	ND	ND	<1	<1		<1	<1	<1	<1	<1	<1.0	<1.0
tert-Butylbenzene	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.					-	-	<2			-	-	-	-	-
Tetrachloroethene	ug/L	-	-	-	-	-	-	-	-	-	< 1	<1	<0.5	< 1				-	-				-	-	-	-	-
Tetrachloroethylene	ug/L	1	1300	1110													ND	<1	<1	<2	<2	<2	<1.6	<1.6	<1.6	<1.0	<1.0
Toluene	ug/L	1	20000	-	164	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<2	<2	<2	<2	<2	<2	<1.0	<1.0
trans-1,2-Dichloroethene	ug/L	-	-	-	-	-	-	-	-	-	< 2	<2	<1	< 2	<2	ND		-	-				-	-	-	-	-
trans-1,2-Dichloroethylene	ug/L	0.5	30	2000													ND	<2	<2	<1	<2	<2	<1.6	<1.6	<1.6	<0.50	<0.50
trans-1,3-Dichloropropane	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	< 1	-	-	-	-	-				-	-	-	-	-
trans-1,3-Dichloropropene	ug/L	0.5	-	-	-	-	-	-	-	-	< 1	<1	<0.14	< 2	<1	ND	ND	<1	<1	<1	<1	<1	<1	<0.5	<0.5	<0.50	<0.50
Trichloroethene	ug/L	-	-	-																			-	-	-	-	-
Trichloroethylene	ug/L	1	250	210	-	-	-	-	-	-	< 1	<1	<0.5	< 1			ND	<1	<1		<1	<1	<1	<1	<1	<1.0	<1.0
Trichlorofluoromethane	ug/L	8	-	-	-	-	-	-	-	-	< 8	<8	<2	< 2	<8	ND	ND	<8	<8	<5	<5	<5	<5	<5	<5	<8.0	<8.0
Vinyl Chloride	ug/L	0.5	13	600	-	-	-	-	-	-	< 1	<1	<0.5		<1	ND	ND	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50
TOTAL VOC's					168.3	0	0	1.57	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0	0	0

Notes:
RDL - Reported Detection Limit (updated in 2016)
ND - Values below RDL
n.a. - compound not analyzed
Bold indicates exceedance of NS Tier 1 EQS
Bold and shaded indicates exceedance of NS Tier 2 PSS
Bold and italics exceeds indicates both NS Tier and Tier 2
MW-40D = Duplicate of MW-4A
NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)
NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE C-3

GROUNDWATER VOLATILE ORGANIC COMPOUND CHEMISTRY - MW-22A
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	8-Mar-95	20-Mar-96	16-Apr-97	8-Apr-98	5-May-99	26-Jul-00	Aug-01	Sep-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	27-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	14-Jul-16
1,1 - Dichloroethane	ug/L	2	6600	2000	n.a.	-	1.3	1.77	2	2	< 2	<2	1.1	< 2	<2	-	ND	<2	<2	<1	<1	<1	<1	<1	<1	<2.0
1,1 - Dichloroethylene	ug/L	0.5	490	400	-	-	-	-	-	-	< 2	<2	<0.5	< 2	<2	ND	ND	<2	<2	<0.66	<0.66	<0.6	<0.6	<0.6	<0.6	<0.50
1,1,1 - Trichloroethane	ug/L	1	13000	100	-	-	-	-	-	-	< 1	<1	<5	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
1,1,2 - Trichloroethane	ug/L	1	910	-	-	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	-	<1	<1	<1	<1	<1	<1	<1	<1.0
1,1,2-Trichloroethene	ug/L	-	-	8000	-	-	-	-	-	-	-	-	-	-	<1	ND	ND	<1	<1				-	-	-	-
1,1,1,2-Tetrachloroethane	µg/L	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	-
1,1,2,2-Tetrachloroethane	ug/L	0.5	630	700	-	-	-	-	-	-	< 1	<1	<1	< 8	<1	ND	ND	<1	-	<1	<1	<1	<1	<1	<1	<0.50
1,1,2,2-Tetrachloroethene	ug/L	-	-	-							<1	<1	<0.5	<1	<1	ND	ND	-	-				-	-	-	-
1,2 - Dibromoethane	ug/L	-	-	-	n.a.	-	-	-	-	-	< 1	<1	n.a	-	-	-	-		-	<1	<1	<1	<0.25	<0.2	<0.2	-
1,2 - Dichlorobenzene	ug/L	0.5	64000	7	n.a.	-	-	-	-	-	< 1	<1	<0.5	< 1	<0.5	ND	ND	<0.5	<0.5	<0.7	<0.7	<0.7	<0.7	1.1	<0.7	<0.50
1,2 - Dichloroethane	ug/L	1	300	1000	-	-	-	-	-	-	< 1	<1	<5	< 1	<1	ND	ND	<1	<1	<2	<2	<2	<2	<2	<2	<1.0
1,2 - Dichloropropane	ug/L	0.5	330	7	-	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<0.7	<0.7	<0.50
1,2-Dichloroethene	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a	n.a	< 2					-				-	-	-	-
1,3 - Dichlorobenzene	ug/L	1	-	1500	n.a.	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
1,4 - Dichlorobenzene	ug/L	1	2600	260	n.a.	-	-	1.23	-	2	1	2.4	1.6	< 1	1.7	ND	1	1	2	<1	<1	**2**	**2**	<1	1	<1.0
1,4 Dichlorobutane	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a	n.a	< 1	-	-	-	-	-	-	-	-	-	-	-	-
1-Chloro 2-Bromopropane	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a	n.a	< 1	-	-	-	-	-	-	-	-	-	-	-	-
2,4 Chlorotoluene	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a	n.a	< 0.5	-	-	-	-	-	-	-	-	-	-	-	-
2-Chloroethylvinyl ether	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a	n.a		-	-	-	-	-	-	-	-	-	-	-	-
Benzene	ug/L	1	20000	4600	-	-	3.7	4.39	4.92	6	4.2	4.2	3.2	< 1	3.8	1.7	3	2	2	<1	<1	2	3	<1	1	<1.0
Bromochloromethane	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a	n.a	< 1	-	-	-	-	-	<1			-	-	-	-
Bromodichloromethane	ug/L	1	-	2000	-	-	-	-	-	-	< 1	<1	<0.2	< 1	<1	ND	ND	<1	<1		<1	<1	<1	<1	<1	<1.0
Bromoform	ug/L	1	84000	600	-	-	-	-	-	-	< 1	<1	<0.2		<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
Bromomethane	ug/L	0.89	33	9	n.a.	-	-	-	-	-	< 8	**10**	<3	< 8	<8	ND	ND	<8	<8	<3.7	<3.7	<3	<3	<0.89	<0.89	<0.50
Carbon Tetrachloride	ug/L	0.5	7	133	-	-	-	-	-	-	< 1	<1	<1	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<0.79	<0.56	<0.56	<0.50
Chlorobenzene	ug/L	1	180	13	-	-	-	1.09	-	2	1.7	6.6	3	< 1	3.6	3.5	2	3	3	<1	<1	<1	2	2	4	<1.0
Chloroethane	ug/L	8	-	11000	n.a.	-	8.7	-	-	-	< 8	<8	<1	< 8	<8	ND	ND	<8	<8	<5	<5	<5	<5	<5	<5	<8.0
Chloroform	ug/L	1	40	18	-	-	-	-	-	-	< 1	<1	<0.2	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
Chloromethane	ug/L	8	-	7000	n.a.	-	-	-	-	-	< 8	<8	<2	< 1	<8	ND	ND	<8	<8	<1	<1	<1	<1	<1	<1	<8.0
cis-1,2-Dichloroethene	ug/L	-	-	-	-	n.a.	n.a.	-	-	-	< 2	<2	<1		<2	ND	ND		-	<2			-	-	-	-
cis-1,2-Dichloroethylene	ug/L	0.5	30	2000													ND	<2	<2		<2	<2	<1.6	<1.6	<1.6	<0.50
cis-1,3-Dichloroethene	ug/L	-	-	-	n.a.	-	n.a.	-	n.a.	n.a.	n.a.	n.a	n.a						-				-	-	-	-
cis 1,3-Dichloropropene	ug/L	0.5	100	-	-	-	-	-	-	-	< 2	<2	<0.14		<2	ND	ND	<2	<2	<2	<2	<2	<2	<0.5	<0.5	<0.50
Dibromochloromethane	ug/L	1	10000	400	-	-	-	-	-	-	< 1	<1	<0.2	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
Dibromoethene	ug/L	-	-	-												ND	ND		-				-	-	-	-
Dichloromethane	ug/L	-	-	-	-	-	-	-	-	-	< 3	<3	<1	< 3	<3	ND	ND	-	-				-	-	-	-
Ethylbenzene	ug/L	1	20000	-	-	-	5.2	5.68	9.3	12	1.5	<1	<0.5	< 1	<1	ND	ND	<1	<1	<2	<2	<2	<2	<2	<2	<1.0
Ethylene Dibromide	ug/L	0.2	51	50													ND	<1	<1				-	-	-	<0.20
iso- Propylbenzene (Cumene)	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a	n.a						-				-	-	-	-
Methylene Chloride (Dichloromethane)	ug/L	3	43000	981													ND	<3	<3	<2	3	<2	<2	<2	<2	<3.0
m+p-Xylenes	ug/L	2			-	16.2	11	8.45	8.6	20	3.8	13	5.8	< 1	2.1	ND	ND	<2	<2	<4	<4	<4	<4	<4	<4	<2.0
o-Xylene	ug/L	1	20000	-	13	-	5	1.08	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
n - Propylbenzene	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a	n.a	< 8					-				-	-	-	-
sec-Butylbenzene	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a	n.a		-	-	-	-	-				-	-	-	-
Styrene	ug/L	1	26000	720	-	-	-	-	-	-	< 1	<1	<0.5		<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
tert-Butylbenzene	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a	n.a		-	-	-	-	-				-	-	-	-
Tetrachloroethene	ug/L	-	-	-	-	-	-	-	-	-	< 1	<1	<0.5	< 1					-	<2			-	-	-	-
Tetrachloroethylene	ug/L	1	1300	1110													ND	<1	<1		<2	<2	<1.6	<1.6	<1.6	<1.0
Toluene	ug/L	1	20000	-	700	84.8	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<2	<2	<2	<2	<2	<2	<1.0
trans-1,2-Dichloroethene	ug/L	-	-	-	-	-	-	-	-	-	< 2	<2	<1	< 2	<2	ND	-	-	-	<2			-	-	-	-
trans-1,2-Dichloroethylene	ug/L	0.5	30	2000											-	-	ND	<2	<2		<2	<2	<1.6	<1.6	<1.6	<0.50
trans-1,3-Dichloropropane	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a	n.a	< 1	-	-	-	-	-	<1			-	-	-	-
trans-1,3-Dichloropropene	ug/L	0.5	-	-	-	-	-	-	-	-	< 1	<1	<0.14	< 2	<1	ND	ND	<1	<1		<1	<1	<1	<0.5	<0.5	<0.50
Trichloroethene	ug/L	-	-	-	-	-	-	-	-	-	< 1	<1	<0.5	< 1	-	-				<1			-	-	-	-
Trichloroethylene	ug/L	1	250	210											-	-	ND	<1	<1		<1	<1	<1	<1	<1	<1.0
Trichlorofluoromethane	ug/L	8	-	-	-	-	-	8.75	-	-	< 8	<8	<2	< 2	<8	ND	ND	<8	<8	<5	<5	<5	<5	<5	<5	<8.0
Vinyl Chloride	ug/L	0.5	13	600	-	-	-	-	-	-	< 1	<1	<0.5		<1	ND	ND	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
TOTAL VOC's					713	101	34.9	32.44	24.82	44	12.2	36.2	14.7	0	11.2	5.2	6	6	7	0	3	4	7	3.1	6	0

Notes:
RDL - Reported Detection Limit (updated in 2016)
ND - Values below RDL
n.a. - compound not analyzed
Bold indicates exceedance of NS Tier 1 EQS
Bold and shaded indicates exceedance of NS Tier 2 PSS
Bold and italics exceeds indicates both NS Tier and Tier 2
MW-40D = Duplicate of MW-4A
NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)
NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE C-4

GROUNDWATER VOLATILE ORGANIC COMPOUND CHEMISTRY - MW-22B
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	20-Dec-94	8-Mar-95	20-Mar-96	16-Apr-97	8-Apr-98	5-May-99	26-Jul-00	Aug-01	Sep-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	27-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	14-Jul-16
1,1 - Dichloroethane	ug/L	2	6600	2000	-	2.9	-	-	5.12	6	3	4.7	3	1.6	2.8	3.6	2.8	2	2	2	2	2	<1	<1	1	1	<2.0
1,1 - Dichloroethylene	ug/L	0.5	490	400	-	-	-	-	-	-	-	< 2	<2	<0.5	< 2	<2	ND	ND	<2	<2	2			<0.6	<0.6	<0.6	<0.50
1,1,1 - Trichloroethane	ug/L	1	13000	100	-	-	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
1,1,2 - Trichloroethane	ug/L	1	910	-	-	-	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<1	2	<1	<1	<1	<1	<1.0
1,1,2-Trichloroethene	ug/L	-	-	8000	-	-	-	-	-	-	-	<1	<1	<0.5	<1	<1	ND	ND	-	<1				-	-	-	-
1,1,1,2-Tetrachloroethane	µg/L	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	-
1,1,2,2-Tetrachloroethane	ug/L	0.5	630	700	-	-	-	-	-	-	-	< 1	<1	<1	< 8	<1	ND	ND	<1	-	<1	<1	<1	<1	<1	<1	<0.50
1,1,2,2-Tetrachloroethene	ug/L	-	-	-												<1	ND	ND	-	-				-	-	-	-
1,2 - Dibromoethane	ug/L	-	-	-	n.a.	-	-	-	-	-	-	< 1	<1	n.a.		<1				-	<1	<2	<1	<0.25	<0.2	<0.2	-
1,2 - Dichlorobenzene	ug/L	0.5	64000	7	n.a.	-	-	-	-	-	-	< 1	<1	<0.5	< 1	<0.5	ND	ND	<0.5	<0.5	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.50
1,2 - Dichloroethane	ug/L	1	300	1000	-	-	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<2	<2	<2	<2	<2	<2	<1.0
1,2 - Dichloropropane	ug/L	0.5	330	7	-	-	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<0.7	<0.7	<0.50
1,2-Dichloroethene	ug/L	-	-	-	n.a.	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	< 2					-				-	-	-	-
1,3 - Dichlorobenzene	ug/L	1	-	1500	n.a.	-	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
1,4 - Dichlorobenzene	ug/L	1	2600	260	n.a.	-	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	1	<1	1	2	<1	2	<1.0
1,4 Dichlorobutane	ug/L	-	-	-	n.a.	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	< 1	-	-	-	-	-	-	-	-	-	-	-	-
1-Chloro 2-Bromopropane	ug/L	-	-	-	n.a.	-	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	1	-	-	-	-	-	-	-	-	-	-	-	-
2,4 Chlorotoluene	ug/L	-	-	-	n.a.	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	< 0.5	-	-	-	-	-	-	-	-	-	-	-	-
2-Chloroethylvinyl ether	ug/L	-	-	-	n.a.	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.		-	-	-	-	-	-	-	-	-	-	-	-
Benzene	ug/L	1	20000	4600	7	2.8	-	-	2	-	1	3.1	<1	<0.5	2.6	3.5	3.2	3	3	3	3	2	<1	4	2	2	1.2
Bromochloromethane	ug/L	-	-	-	n.a.	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	< 1					-	<1			-	-	-	-
Bromodichloromethane	ug/L	1	-	2000	-	-	-	-	-	-	-	< 1	<1	<0.2	< 1	<1	ND	ND	<1	<1		<1	<1	<1	<1	<1	<1.0
Bromoform	ug/L	1	84000	600	-	-	-	-	-	-	-	< 1	<1	<0.2		<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
Bromomethane	ug/L	0.89	33	9	n.a.	-	-	-	-	-	-	9	<8	<3	< 8	<8	ND	ND	<8	<8	<3.7	<3.7	<3	<3	<0.89	<0.89	<0.50
Carbon Tetrachloride	ug/L	0.5	7	133	-	-	-	-	-	-	-	< 1	<1	<1	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<0.79	<0.56	<0.56	<0.50
Chlorobenzene	ug/L	1	180	13	-	-	-	-	-	-	-	< 1	<1	<0.5	< 1	1.7	1.8	2	2	3	3	<1	<1	4	2	4	1.9
Chloroethane	ug/L	8	-	11000	n.a.	21.7	-	9.9	8.94	-	-	< 8	<8	<1	< 8	<8	ND	ND	<8	<8	<5	<5	<5	<5	<5	<5	<8.0
Chloroform	ug/L	1	40	18	6	-	-	-	-	-	-	< 1	<1	<0.2	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
Chloromethane	ug/L	8	-	7000	n.a.	8.3	-	-	-	-	-	< 8	<8	<2	< 1	<8	ND	ND	<8	<8	<1	<1	<1	<1	<1	<1	<8.0
cis-1,2-Dichloroethene	ug/L	-	-	-	-	n.a.	n.a.	n.a.	-	-	-	< 2	<2	<1		<2	ND	ND	-	-	<2			-	-	-	-
cis-1,2-Dichloroethylene	ug/L	0.5	30	2000														ND	<2	<2		<2	<2	<1.6	<1.6	<1.6	<0.50
cis-1,3-Dichloroethene	ug/L	-	-	-	n.a.	-	-	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.						-				-	-	-	-
cis 1,3-Dichloropropene	ug/L	0.5	100	-	-	-	-	-	-	-	-	< 2	<2	<0.14		<2	ND	ND	<2	<2	<2	<2	<2	<2	<0.5	<0.5	<0.50
Dibromochloromethane	ug/L	1	10000	400	-	-	-	-	-	-	-	< 1	<1	<0.2	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
Dibromoethene	ug/L	-	-	-													ND			-				-	-	-	-
Dichloromethane	ug/L	-	-	-	29	59.8	-	-	-	-	-	< 3	<3	<1	< 3	<3	ND	ND	-	-				-	-	-	-
Ethylbenzene	ug/L	1	20000	-	-	2.2	-	-	3.3	2.7	2	2.4	<1	<0.5	< 1	<1	ND	ND	<1	<1	<2	<2	<2	<2	<2	<2	<1.0
Ethylene Dibromide	ug/L	0.2	51	50														ND	<1	<1				-	-	-	<0.20
iso- Propylbenzene (Cumene)	ug/L	-	-	-	n.a.	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.						-				-	-	-	-
Methylene Chloride (Dichloromethane)	ug/L	3	43000	981														ND	<3	<3	<2	<2	<2	<2	<2	<2	<3.0
m+p-Xylenes	ug/L	2			10	4.2	-	2.2	6.43	7.1	3	6.4	2.1	<0.5	< 1	5.4	2.6	ND	<2	<2	<4	<4	<4	<4	<4	<4	<2.0
n - Propylbenzene	ug/L	-	20000	-	n.a.	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	< 8					-				-	-	-	-
o-Xylene	ug/L	1	-	-	10	1.8	-	1.2	2.97	3.8	1	1.1	<1	<0.5	< 1	1.1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
sec-Butylbenzene	ug/L	-	-	-	n.a.	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.						-				-	-	-	-
Styrene	ug/L	1	26000	720	-	-	-	-	-	-	-	< 1	<	<0.5		<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
tert-Butylbenzene	ug/L	-	-	-	n.a.	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.						-				-	-	-	-
Tetrachloroethene	ug/L	-	-	-	-	-	-	-	-	-	-	< 1	<1	<0.5	< 1					-	<2			-	-	-	-
Tetrachloroethylene	ug/L	1	1300	1110															<1	<1		<2	<2	<1.6	<1.6	<1.6	<1.0
Toluene	ug/L	1	20000	-	420	122	286	-	9.52	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<2	<2	<2	<2	<2	<2	<1.0
trans-1,2-Dichloroethene	ug/L	-	-	-	-	-	-	-	-	-	-	< 2	<2	<1	< 2	<2	ND			-	<2			-	-	-	-
trans-1,2-Dichloroethylene	ug/L	0.5	30	2000														ND	<2	<2		<2	<2	<1.6	<1.6	<1.6	<0.50
trans-1,3-Dichloropropane	ug/L	-	-	-	n.a.	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	< 1					-	<1			-	-	-	-
trans-1,3-Dichloropropene	ug/L	0.5	-	-	-	-	-	-	-	-	-	< 1	<1	<0.14	< 2	<1	ND	ND	<1	<1		<1	<1	<1	<0.5	<0.5	<0.50
Trichloroethene	ug/L	-	-	-	-	-	-	-	-	-	-	< 1	<1	<0.5	< 1						<1			-	-	-	-
Trichloroethylene	ug/L	1	250	210															<1	<1		<1	<1	<1	<1	<1	<1.0
Trichlorofluoromethane	ug/L	8	-	-	-	-	-	-	-	-	-	< 8	<8	<2	5.4	<8	ND	ND	<8	<8	<5	<5	<5	<5	<5	<5	<8.0
Vinyl Chloride	ug/L	0.5	13	600	-	-	-	-	-	-	-	< 1	<1	<0.5		<1	ND	ND	<1	<1	1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
TOTAL VOC's					482	225.7	286	13.3	38.28	19.6	10	26.7	5.1	1.6	11.8	15.3	10.4	7	7	8	12	6	1	10	5	9	3.1

Notes:
RDL - Reported Detection Limit (updated in 2016)
ND - Values below RDL
n.a. - compound not analyzed
Bold indicates exceedance of NS Tier 1 EQS
Bold and shaded indicates exceedance of NS Tier 2 PSS
Bold and italics exceeds indicates both NS Tier and Tier 2
NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)
NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE C-5

GROUNDWATER VOLATILE ORGANIC COMPOUND CHEMISTRY - MW-24A
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	22-Mar-96	16-Apr-97	8-Apr-98	5-May-99	26-Jul-00	Aug-01	Sep-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	28-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	13-Jul-16
1,1 - Dichloroethane	ug/L	2	6600	2000	-	-	2.87	-	-	< 2	<2	<0.4	< 2	<2	ND	ND	<2	<2	<1	<1	ND	<1	<1	<1	<2.0
1,1 - Dichloroethylene	ug/L	0.5	490	400	-	-	-	-	-	< 2	<2	<0.5	< 2	<2	ND	ND	<2	<2	<0.66		ND	<0.6	<0.6	<0.6	<0.50
1,1,1 - Trichloroethane	ug/L	1	13000	100	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<1	<1	ND	<1	<1	<1	<1.0
1,1,2 - Trichloroethane	ug/L	1	910	-	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<1		ND	<1	<1	<1	<1.0
1,1,2-Trichloroethene	ug/L	-	-	8000	-	-	-	-	-					<1	ND	ND		<1			ND	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/L	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	-
1,1,2,2-Tetrachloroethane	ug/L	0.5	630	700	-	-	-	-	-	< 1	<1	<1	< 8	<1	ND	ND	<1	-	<1	<1	ND	<1	<1	<1	<0.50
1,1,2,2-Tetrachloroethene	ug/L	-	-	-	-	-	-	-	-	-	-	-	-	<1	ND	ND		-			ND	-	-	-	-
1,2 - Dibromoethane	ug/L	-	-	-	n.a.	-	-	-	-	< 1	<1	n.a.		<1	ND	ND		-	<1	<1	ND	<0.25	<0.2	<0.2	-
1,2 - Dichlorobenzene	ug/L	0.5	64000	7	n.a.	-	-	-	-	< 1	<1	<0.5	< 1	<0.5	ND	ND	<0.5	<0.5	<0.7	<0.7	ND	<0.7	<0.7	<0.7	<0.50
1,2 - Dichloroethane	ug/L	1	300	1000	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<2	<2	ND	<2	<2	<2	<1.0
1,2 - Dichloropropane	ug/L	0.5	330	7	-	-	-	-	-	< 1	<1	<.05	< 1	<1	ND	ND	<1	<1	<1	<1	ND	<1	<0.7	<0.7	<0.50
1,2-Dichloroethene	ug/L	-	-	-	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	< 2					-			ND	-	-	-	-
1,3 - Dichlorobenzene	ug/L	1	-	1500	n.a.	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<1	<1	ND	<1	<1	<1	<1.0
1,4 - Dichlorobenzene	ug/L	1	2600	260	n.a.	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	**2**	<1	ND	<1	<1	<1	<1.0
1,4 Dichlorobutane	ug/L	-	-	-	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	< 1	-	-	-	-	-	-	-	ND	-	-	-	-
1-Chloro 2-Bromopropane	ug/L	-	-	-	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	< 1	-	-	-	-	-	-	-	ND	-	-	-	-
2,4 Chlorotoluene	ug/L	-	-	-	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	< 0.5	-	-	-	-	-	-	-	ND	-	-	-	-
2-Chloroethylvinyl ether	ug/L	-	-	-	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.		-	-	-	-	-	-	-	ND	-	-	-	-
Benzene	ug/L	1	20000	4600	-	-	5.66	-	-	< 1	<1	<0.5	< 1	<1	ND	1	<1	<1	3	<1	ND	<1	<1	<1	<1.0
Bromochloromethane	ug/L	-	-	-	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	< 1					-	<1		ND	-	-	-	-
Bromodichloromethane	ug/L	1	-	2000	-	-	-	-	-	< 1	<1	<0.2	< 1	<1	ND	ND	<1	<1		<1	ND	<1	<1	<1	<1.0
Bromoform	ug/L	1	84000	600	-	-	-	-	-	< 1	<1	<0.2		<1	ND	ND	<1	<1	<1	<1	ND	<1	<1	<1	<1.0
Bromomethane	ug/L	0.89	33	9	n.a.	-	-	-	-	< 8	<8	<3	< 8	<8	ND	ND	<8	<8	<3.7	,3.7	ND	<3	<0.89	<0.89	<0.50
Carbon Tetrachloride	ug/L	0.5	7	133	-	-	-	-	-	< 1	<1	<1	< 1	<1	ND	ND	<1	<1	<1	<1	ND	<0.79	<0.56	<0.56	<0.50
Chlorobenzene	ug/L	1	180	13	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	2	<1	<1	4	<1	ND	<1	<1	<1	<1.0
Chloroethane	ug/L	8	-	11000	n.a.	-	-	-	-	< 8	<8	<1	< 8	<8	ND	ND	<8	<8	<5	<5	ND	<5	<5	<5	<8.0
Chloroform	ug/L	1	40	18	-	-	-	-	-	< 1	<1	<0.2	< 1	<1	ND	ND	<1	<1	<1	<1	ND	<1	<1	<1	<1.0
Chloromethane	ug/L	8	-	7000	n.a.	-	-	-	-	< 8	<8	<2	< 1	<8	ND	ND	<8	<8	<1	<1	ND	<1	<1	<1	<8.0
cis-1,2-Dichloroethene	ug/L	-	-	-	-	n.a.	-	-	-	< 2	<2	<1		<2	ND	ND		-	<2		ND	-	-	-	-
cis-1,2-Dichloroethylene	ug/L	0.5	30	2000													<2	<2		<2	ND	<1.6	<1.6	<1.6	<0.50
cis-1,3-Dichloroethene	ug/L	-	-	-	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.						-			ND	-	-	-	-
cis 1,3-Dichloropropene	ug/L	0.5	100	-	-	-	-	-	-	< 2	<2	<0.14		<2	ND	ND	<2	<2	<2	<2	ND	<2	<0.5	<0.5	<0.50
Dibromochloromethane	ug/L	1	10000	400	-	-	-	-	-	< 1	<1	<2	< 1	<1	ND	ND		<1	<1	<1	ND	<1	<1	<1	<1.0
Dibromoethene	ug/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichloromethane	ug/L	-	-	-	-	-	-	-	-	< 3	<3	<1	< 3	<3				-			ND	-	-	-	-
Ethylbenzene	ug/L	1	20000	-	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<2	<2	ND	<2	<2	<2	<1.0
Ethylene Dibromide	ug/L	0.2	51	50													<1	<1			ND	-	-	-	<0.20
iso- Propylbenzene (Cumene)	ug/L	-	-	-	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.						-			ND	-	-	-	-
Methylene Chloride (Dichloromethane)	ug/L	3	43000	981													<3	<3	<2		ND	<2	<2	<2	<3.0
m+p-Xylenes	ug/L	2			-	-	-	-	-	< 2	<2	<0.5	< 1	<1	ND	ND	<2	<2	<4	<4	ND	<4	<4	<4	<2.0
o-Xylene	ug/L	1	20000	-	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<1	<1	ND	<1	<1	<1	<1.0
n - Propylbenzene	ug/L	-	-	-	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	< 8					-			ND	-	-	-	-
sec-Butylbenzene	ug/L	-	-	-	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.						-			ND	-	-	-	-
Styrene	ug/L	1	26000	720	-	-	-	-	-	< 1	<1	<0.5		<1	ND	ND	<1	<1	<1	<1	ND	<1	<1	<1	<1.0
tert-Butylbenzene	ug/L	-	-	-	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.						-			ND	-	-	-	-
Tetrachloroethene	ug/L	-	-	-	-	-	-	-	-	< 1	<1	<0.5	< 1					-	<2		ND	-	-	-	-
Tetrachloroethylene	ug/L	1	1300	1110													<1	<1		<2	ND	<1.6	<1.6	<1.6	<1.0
Toluene	ug/L	1	20000	-	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<2	<2	ND	<2	<2	<2	<1.0
trans-1,2-Dichloroethene	ug/L	-	-	-	-	-	-	-	-	< 2	n.a.	n.a.	< 2	<2	ND	ND		-	<2		ND	-	-	-	-
trans-1,2-Dichloroethylene	ug/L	0.5	30	2000													<2	<2		<2	ND	<1.6	<1.6	<1.6	<0.50
trans-1,3-Dichloropropane	ug/L	-	-	-	n.a.	n.a.	-	n.a.	n.a.	n.a.	<2	<1	< 1					-	<1		ND	-	-	-	-
trans-1,3-Dichloropropene	ug/L	0.5	-	-	-	-	-	-	-	< 1	<1	<0.14	< 2	<1	ND	ND	<1	<1		<1	ND	<1	<0.5	<0.5	<0.50
Trichloroethene	ug/L	-	-	-	-	-	-	-	-	< 1	<1	<0.5	< 1						<1		ND	-	-	-	-
Trichloroethylene	ug/L	1	250	210													<1	<1		<1	ND	<1	<1	<1	<1.0
Trichlorofluoromethane	ug/L	8	-	-	-	-	8.75	-	-	< 8	<8	<2	< 2	<8	ND	ND	<8	<8	<5	<5	ND	<5	<5	<5	<8.0
Vinyl Chloride	ug/L	0.5	13	600	-	-	-	-	-	< 1	<1	<0.5		<1	ND	ND	<1	<1	<0.5	<0.5	ND	<0.5	<0.5	<0.5	<0.50
TOTAL VOC's					0	0	17.28	0	0	0	0	0	0	0	0	3	0	0	9	0	0	0	0	0	0

Notes:
RDL - Reported Detection Limit (updated in 2016)
ND - Values below RDL
n.a. - compound not analyzed
Bold indicates exceedance of NS Tier 1 EQS
Bold and shaded indicates exceedance of NS Tier 2 PSS
Bold and italics exceeds indicates both NS Tier and Tier 2
NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)
NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE C-6

GROUNDWATER VOLATILE ORGANIC COMPOUND CHEMISTRY - MW-24B
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	8-Mar-95	20-Mar-96	16-Apr-97	8-Apr-98	5-May-99	26-Jul-00	Aug-01	Sep-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	28-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	13-Jul-16
1,1 - Dichloroethane	ug/L	2	6600	2000	2.7	-	-	3.81	2	2	2.5	2.8	0.9	< 2	<2	ND	ND	<2	<2	<1	<1	<1	<1	<1	<1	<2.0
1,1 - Dichloroethylene	ug/L	0.5	490	400	-	-	-	-	-	-	< 2	<2	<0.5	< 2	<2	ND	ND	<2	<2	<0.66		<0.6	<0.6	<0.6	<0.6	<0.50
1,1,1 - Trichloroethane	ug/L	1	13000	100	-	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
1,1,2 - Trichloroethane	ug/L	1	910	-	-	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
1,1,2-Trichloroethene	ug/L	-	-	8000	-	-	-	-	-	-	-	-	-	-	<1	ND	ND		<1				-	-	-	-
1,1,1,2-Tetrachloroethane	µg/L	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	-
1,1,2,2-Tetrachloroethane	ug/L	0.5	630	700	-	-	-	-	-	-	< 1	<1	<1	< 8	<1	ND	ND		-		<1	<1	<1	<1	<1	<0.50
1,1,2,2-Tetrachloroethene	ug/L	-	-	-											<1	ND	ND	<1	-	<1			-	-	-	-
1,2 - Dibromoethane	ug/L	-	-	-	n.a.	-	-	-	-	-	< 1	<1	n.a		<1	ND	ND		-	<1	<1	<1	<0.25	<0.2	<0.2	-
1,2 - Dichlorobenzene	ug/L	0.5	64000	7	n.a.	-	1.2	-	-	-	< 1	<1	<0.5	< 1	<0.5	ND	ND	<0.5	<0.5	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.50
1,2 - Dichloroethane	ug/L	1	300	1000	-	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<2	<2	<2	<2	<2	<2	<1.0
1,2 - Dichloropropane	ug/L	0.5	330	7	-	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<0.7	<0.7	<0.50
1,2-Dichloroethene	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a	n.a	< 2					-				-	-	-	-
1,3 - Dichlorobenzene	ug/L	1	-	1500	n.a.	-	-	-	-	-	< 1	<1	<0.5	3.1	<1	ND	ND	<1	<1	3	<1	<1	<1	1.52	<1	<1.0
1,4 - Dichlorobenzene	ug/L	1	2600	260	n.a.	-	-	3.21	3.1	4	3	3.7	2.8	< 1	3.3	2.7	4	3	3	3	<1	4	3	<1	4	2.1
1,4 Dichlorobutane	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a	n.a	< 1	-	-	-	-	-	-	-	-	-	-	-	-
1-Chloro 2-Bromopropane	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a	n.a	8.1	-	-	-	-	-	-	-	-	-	-	-	-
2,4 Chlorotoluene	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a	n.a	< 0.5	-	-	-	-	-	-	-	-	-	-	-	-
2-Chloroethylvinyl ether	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a	n.a		-	-	-	-	-	-	-	-	-	-	-	-
Benzene	ug/L	1	20000	4600	-	-	5.3	7.74	7.87	7	6.1	5.9	4.2	5.8	5.5	4.5	5	<1	4	4	3	<1	4	3	3	2.7
Bromochloromethane	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a	n.a	< 1					-	<1			-	-	-	-
Bromodichloromethane	ug/L	1	-	2000	-	-	-	-	-	-	< 1	<1	<0.2	< 1	<1	ND	ND	<1	<1		<1	<1	<1	<1	<1	<1.0
Bromoform	ug/L	1	84000	600	-	-	-	-	-	-	< 1	<1	<0.2		<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
Bromomethane	ug/L	0.89	33	9	n.a.	-	-	-	-	-	< 8	**14**	<3	< 8	<8	ND	ND	<8	<8	<3.7	<3.7	<3	<3	<0.89	<0.89	<0.50
Carbon Tetrachloride	ug/L	0.5	7	133	-	-	-	-	-	-	< 1	<1	<1	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<0.79	<0.56	<0.56	<0.50
Chlorobenzene	ug/L	1	180	13	-	-	2.5	4.92	6.5	8	6.9	9.1	7.8	< 1	8.7	7.6	10	9	8	9	2	9	12	5.24	8	7
Chloroethane	ug/L	8	-	11000	n.a.	9.2	-	-	-	-	< 8	<8	<1	< 8	<8	ND	ND	<8	<8	<5	<5	<5	<5	<5	<5	<8.0
Chloroform	ug/L	1	40	18	-	-	-	-	-	-	< 1	<1	<0.2	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
Chloromethane	ug/L	8	-	7000	n.a.	23	1.5	-	-	-	< 8	<8	<2	< 1	<8	ND	ND	<8	<8	<1	<1	<1	<1	<1	<1	<8.0
cis-1,2-Dichloroethene	ug/L	-	-	-	-	n.a.	n.a.	-	-	-	< 2	<2	<1		<2	ND	ND		-	<2			-	-	-	-
cis-1,2-Dichloroethylene	ug/L	0.5	30	2000														<2	<2		<2	<2	<1.6	<1.6	<1.6	<0.50
cis-1,3-Dichloroethene	ug/L	-	-	-	n.a.	-	n.a.	-	n.a.	n.a.	n.a.	n.a	n.a						-				-	-	-	-
cis 1,3-Dichloropropene	ug/L	0.5	100	-	-	-	-	-	-	-	< 2	<2	<0.14		<2	ND	ND	<2	<2	<2	<2	<2	<2	<0.5	<0.5	<0.50
Dibromochloromethane	ug/L	1	10000	400	-	-	-	-	-	-	< 1	<1	<0.2	< 1	<1	ND	ND		<1	<1	<1	<1	<1	<1	<1	<1.0
Dibromoethene	ug/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichloromethane	ug/L	-	-	-	-	-	-	-	-	-	< 3	<3	<1	< 3	<3				-				-	-	-	-
Ethylbenzene	ug/L	1	20000	-	-	2.3	5.3	10.5	1.5	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<2	<2	<2	<2	<2	<2	<1.0
Ethylene Dibromide	ug/L	0.2	51	50														<1	<1				-	-	-	<0.20
iso- Propylbenzene (Cumene)	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a	n.a						-				-	-	-	-
Methylene Chloride (Dichloromethane)	ug/L	3	43000	981														<3	<3	<2	<2	<2	<2	<2	<2	<3.0
m+p-Xylenes	ug/L	2			-	4.6	13.7	17.5	13.8	11	6.7	20	<0.5	< 1	<1	ND	ND	<2	<2	<4	<4	<4	<4	<4	<4	<2.0
n - Propylbenzene	ug/L	-	20000	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a	n.a	< 8					-				-	-	-	-
o-Xylene	ug/L	1	-	-	-	-	1.6	2.24	1.2	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
sec-Butylbenzene	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a	n.a						-				-	-	-	-
Styrene	ug/L	1	26000	720	-	-	-	-	-	-	< 1	<1	<0.5		<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
tert-Butylbenzene	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a	n.a						-				-	-	-	-
Tetrachloroethene	ug/L	-	-	-	-	-	-	-	-	-	< 1	<1	<0.5	< 1					-	<2			-	-	-	-
Tetrachloroethylene	ug/L	1	1300	1110														<1	<1		<2	<2	<1.6	<1.6	<1.6	<1.0
Toluene	ug/L	1	20000	-	-	11	27.4	45	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<2	<2	<2	<2	<2	<2	<1.0
trans-1,2-Dichloroethene	ug/L	-	-	-	-	-	-	-	-	-	< 2	<2	<1	< 2	<2	ND	ND		-	<2			-	-	-	-
trans-1,2-Dichloroethylene	ug/L	0.5	30	2000														<2	<2		<2	<2	<1.6	<1.6	<1.6	<0.50
trans-1,3-Dichloropropane	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a	n.a	< 1					-	<1			-	-	-	-
trans-1,3-Dichloropropene	ug/L	0.5	-	-	-	-	-	-	-	-	< 1	<1	<0.14	< 2	<1	ND	ND	<1	<1		<1	<1	<1	<0.5	<0.5	<0.50
Trichloroethene	ug/L	-	-	-	-	-	-	-	-	-	< 1	<1	<0.5	< 1						<1			-	-	-	-
Trichloroethylene	ug/L	1	250	210														<1	<1		<1	<1	<1	<1	<1	<1.0
Trichlorofluoromethane	ug/L	8	-	-	-	-	-	-	-	-	< 8	<8	<2	< 2	<8	ND	ND	<8	<8	<5	<5	<5	<5	<5	<5	<8.0
Vinyl Chloride	ug/L	0.5	13	600	-	-	-	-	-	-	< 1	<1	<0.5		<1	ND	ND	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
TOTAL VOC's					2.7	50.1	58.5	94.92	35.97	32	25.2	55.5	15.7	17	17.5	14.8	19	12	15	16	5	13	19	9.76	15	11.8

Notes:
RDL - Reported Detection Limit (updated in 2016)
ND - Values below RDL
n.a. - compound not analyzed
Bold indicates exceedance of NS Tier 1 EQS
Bold and shaded indicates exceedance of NS Tier 2 PSS
Bold and italics exceeds indicates both NS Tier and Tier 2
NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)
NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE C-7 **GROUNDWATER VOLATILE ORGANIC COMPOUND CHEMISTRY - MW-25B**
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	8-Mar-95	20-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Aug-01 Duplicate	Sep-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	28-Jul-10	21-Sep-11	4-Oct-12	8-Jul-13	19-Aug-14	22-Jul-15	14-Jul-16
1,1 - Dichloroethane	ug/L	2	6600	2000	-	-	-	-	-	-	< 2	<2	<2	<0.4	< 2	<2	ND	ND	<2	<2	1	<1	<1	<1	<1	1	<2.0
1,1 - Dichloroethylene	ug/L	0.5	490	400	-	-	-	-	-	-	< 2	<2	<2	<0.5	< 2	<2	ND	ND	<2	<2	<0.66	<0.66	<0.6	<0.6	<0.6	<0.6	<0.50
1,1,1 - Trichloroethane	ug/L	1	13000	100	-	-	-	-	-	-	< 1	<1	<1	<5	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
1,1,2 - Trichloroethane	ug/L	1	910	-	-	-	-	-	-	-	< 1	<1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
1,1,2-Trichloroethene	ug/L	-	-	8000	-	-	-	-	-	-	-	-	-	-	-	<1	ND	ND	-	<1	-	-	-	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/L	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	-
1,1,2,2-Tetrachloroethane	ug/L	0.5	630	700	-	-	-	-	-	-	< 1	<1	<1	<1	< 8	<1	ND	ND	-	-	<1	<1	<1	<1	<1	<1	<0.50
1,1,2,2-Tetrachloroethene	ug/L	-	-	-	-	-	-	-	-	-				-	-	<1	ND	ND	<1	-	-	-	-	-	-	-	-
1,2 - Dibromoethane	ug/L	-	-	-	n.a.	-	-	-	-	-	< 1	<1	<1	n.a.	-	<1	ND	ND	-	-	<1	<1	<1	<0.25	<0.2	<0.2	-
1,2 - Dichlorobenzene	ug/L	0.5	64000	7	n.a.	-	-	-	-	-	< 1	<1	<1	<0.5	< 1	<0.5	ND	ND	<0.5	<0.5	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.50
1,2 - Dichloroethane	ug/L	1	300	1000	-	-	-	-	-	-	< 1	<1	<1	<5	< 1	<1	ND	ND	<1	<1	<2	<2	<2	<2	<2	<2	<1.0
1,2 - Dichloropropane	ug/L	0.5	330	7	-	-	-	-	-	-	< 1	<1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<0.7	<0.7	<0.50
1,2-Dichloroethene	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	< 2	-	-	-	-	-	-	-	-	-	-	-	-
1,3 - Dichlorobenzene	ug/L	1	-	1500	n.a.	-	-	-	-	-	< 1	<1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
1,4 - Dichlorobenzene	ug/L	1	2600	260	n.a.	-	-	-	-	-	< 1	<1	<1	<0.5	< 1	<1	ND	ND	<1	<1	1	<1	<1	<1	<1	**2**	<1.0
1,4 Dichlorobutane	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	< 1	-	-	-	-	-	-	-	-	-	-	-	-
1-Chloro 2-Bromopropane	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	< 1	-	-	-	-	-	-	-	-	-	-	-	-
2,4 Chlorotoluene	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	< 0.5	-	-	-	-	-	-	-	-	-	-	-	-
2-Chloroethylvinyl ether	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	ug/L	1	20000	4600	-	-	-	-	-	-	< 1	<1	<1	<5	< 1	<1	ND	ND	1	<1	1	<1	<1	<1	<1	<1	<1.0
Bromochloromethane	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	< 1	-	-	-	-	-	-	-	-	-	-	-	-
Bromodichloromethane	ug/L	1	-	2000	-	-	-	-	-	-	< 1	<1	<1	<0.2	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
Bromoform	ug/L	1	84000	600	-	-	-	-	-	-	< 1	<1	<	<0.2		<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
Bromomethane	ug/L	0.89	33	9	n.a.	-	-	-	-	-	< 8	<8	<8	<3	< 8	<8	ND	ND	<8	<8	<3.7	<3.7	<3	<3	<0.89	<0.89	<0.50
Carbon Tetrachloride	ug/L	0.5	7	133	-	-	-	-	-	-	< 1	<1	<1	<1	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<0.79	<0.56	<0.56	<0.50
Chlorobenzene	ug/L	1	180	13	-	-	-	-	-	-	< 1	<1	<1	<0.5	< 1	<1	ND	ND	1	<1	1	<1	<1	<1	<1	1	<1.0
Chloroethane	ug/L	8	-	11000	n.a.	-	-	-	-	-	< 8	<8	<8	<1	< 8	<8	ND	ND	<8	<8	<5	<5	<5	<5	<5	<5	<8.0
Chloroform	ug/L	1	40	18	-	-	-	-	-	-	< 1	<1	<1	<0.2	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
Chloromethane	ug/L	8	-	7000	n.a.	-	-	-	-	-	< 8	<8	<8	<2	< 1	<8	ND	ND	<8	<8	<1	<1	<1	<1	<1	<1	<8.0
cis-1,2-Dichloroethene	ug/L	-	-	-	-	n.a.	n.a.	n.a.	-	-	< 2	<2	<2	<1	-	<2	ND	ND	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethylene	ug/L	0.5	30	2000										-	-	-	-	-	<2	<2	<2	<2	<2	<1.6	<1.6	<1.6	<0.50
cis-1,3-Dichloroethene	ug/L	-	-	-	n.a.	-	-	n.a.	-	-	n.a.	n.a.	n.a.	n.a.	-	-	-	-	-	-	-	-	-	-	-	-	-
cis 1,3-Dichloropropene	ug/L	0.5	100	-	-	-	-	-	-	-	< 2	<2	<2	<0.14	-	<2	ND	ND	<2	<2	<2	<2	<2	<2	<0.5	<0.5	<0.50
Dibromochloromethane	ug/L	1	10000	400	-	-	-	-	-	-	< 1	<1	<1	<0.2	< 1	<1	ND	ND	-	<1	<1	<1	<1	<1	<1	<1	<1.0
Dibromoethene	ug/L	-	-	-										-	-	<3	ND	ND	-	-	-	-	-	-	-	-	-
Dichloromethane	ug/L	-	-	-	3	-	-	-	-	-	< 3	<3	<3	<1	< 3	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	ug/L	1	20000	-	-	-	-	-	-	-	< 1	<1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<2	<2	<2	<2	<2	<2	<1.0
Ethylene Dibromide	ug/L	0.2	51	50										-	-	-	-	-	<1	<1	-	-	-	-	-	-	<0.20
iso- Propylbenzene (Cumene)	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	-	-	-	-	-	-	-	-	-	-	-	-	-
Methylene Chloride (Dichloromethane)	ug/L	3	43000	981										-	-	-	-	-	<3	<3	<2	9	<2	<2	<2	<2	<3.0
m+p-Xylenes	ug/L	2			-	2	-	-	-	-	< 2	<2	<2	<0.5	< 1	<1	ND	ND	<2	<2	<4	<4	<4	<4	<4	<4	<2.0
o-Xylene	ug/L	1	20000	-	-	-	-	-	-	-	< 1	<1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
n - Propylbenzene	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	< 8	-	-	-	-	-	-	-	-	-	-	-	-
sec-Butylbenzene	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	-	-	-	-	-	-	-	-	-	-	-	-	-
Styrene	ug/L	1	26000	720	-	-	-	-	-	-	< 1	<1	<1	<0.5	-	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
tert-Butylbenzene	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	ug/L	-	-	-	-	-	-	-	-	-	< 1	<1	<1	<0.5	< 1	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethylene	ug/L	1	1300	1110										-	-	-	-	-	<1	<1	<2	<2	<2	<1.6	<1.6	<1.6	<1.0
Toluene	ug/L	1	20000	-	13	-	-	-	-	-	1.3	<1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<2	<2	<2	<2	<2	<2	<1.0
trans-1,2-Dichloroethene	ug/L	-	-	-	-	-	-	-	-	-	< 2	<2	<2	<1	< 2	<2	ND	-	-	-	-	-	-	-	-	-	-
trans-1,2-Dichloroethylene	ug/L	0.5	30	2000										-	-	-	-	ND	<2	<2	<2	<2	<2	<1.6	<1.6	<1.6	<0.50
trans-1,3-Dichloropropane	ug/L	-	-	-	n.a.	n.a.	n.a.	n.a.	-	-	n.a.	n.a.	n.a.	n.a.	< 1	-	-	-	-	-	<1	-	-	-	-	-	-
trans-1,3-Dichloropropene	ug/L	0.5	-	-	-	-	-	-	-	-	< 1	<1	<1	<0.14	< 2	<1	ND	ND	<1	<1	<1	<1	<1	<1	<0.5	<0.5	<0.50
Trichloroethene	ug/L	-	-	-	-	-	-	-	-	-	< 1	<1	<1	<0.5	< 1	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethylene	ug/L	1	250	210	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
Trichlorofluoromethane	ug/L	8	-	-	-	-	-	-	-	-	< 8	<8	<8	<2	< 2	<8	ND	ND	<8	<8	<5	<5	<5	<5	<5	<5	<8.0
Vinyl Chloride	ug/L	0.5	13	600	-	-	-	-	-	-	< 1	<1	<1	<0.5	-	<1	ND	ND	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
TOTAL VOC's					16	2	0	0	0	0	1.3	0	0	0	0	0	0	0	0	0	3	9	0	0	0	4	0

Notes:
RDL - Reported Detection Limit (updated in 2016)
ND - Values below RDL
n.a. - compound not analyzed
Bold indicates exceedance of NS Tier 1 EQS
Bold and shaded indicates exceedance of NS Tier 2 PSS
Bold and italics exceeds indicates both NS Tier and Tier 2
NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)
NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE C-8

GROUNDWATER VOLATILE ORGANIC COMPOUND CHEMISTRY - TH-1
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	8-Mar-95	20-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Sep-02	19-Aug-03	25-Aug-04	25-Aug-04 TH-1 Dup	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	27-Jul-10	21-Sep-11	4-Oct-12	4-Jul-13	19-Aug-14	22-Jul-15	14-Jul-16
1,1 - Dichloroethane	ug/L	2	6600	2000	4.3	-	1.2	1.57	-	-	< 2	<2	<4.3	< 2	2.4	2.5	ND	ND	<2	<2	<1	<1	<1	<1	<1	<1	<2.0
1,1 - Dichloroethylene	ug/L	0.5	490	400	-	-	-	-	-	-	< 2	<2	<0.5	3.9	<2	<2	ND	ND	<2	<2	<0.66	<0.66	<0.6	<0.6	<0.6	<0.6	<0.50
1,1,1 - Trichloroethane	ug/L	1	13000	100	-	-	-	-	-	-	< 1	<1	<5	< 1	<1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
1,1,2 - Trichloroethane	ug/L	1	910	-	-	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
1,1,2-Trichloroethene	ug/L	-	-	8000	-	-	-	-	-	-	-	-	-	-	<1	<1	ND	ND		<1				-	-	-	-
1,1,1,2-Tetrachloroethane	µg/L	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	-
1,1,2,2-Tetrachloroethane	ug/L	0.5	630	700	-	-	-	-	-	-	-	-	-	-	<1	<1	ND	ND		-			<1	<1	<1	<1	<0.50
1,1,2,2-Tetrachloroethene	ug/L	-	-	-	-	-	-	-	-	-	< 1	<1	<1	< 8	<1	<1	ND	ND	<1	-	<1	<1		-	-	-	-
1,2 - Dibromoethane	ug/L	-	-	-	n.a.	-	-	-	-	-	< 1	<1	n.a.		<1	<1	ND	ND		-	<1	<1	<1	<0.25	<0.2	<0.2	-
1,2 - Dichlorobenzene	ug/L	0.5	64000	7	n.a.	5.3	-	1.26	-	-	< 1	<1	<0.5	< 1	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.50
1,2 - Dichloroethane	ug/L	1	300	1000	-	-	-	-	-	-	< 1	<1	<5	< 1	<1	<1	ND	ND	<1	<1	<2	<2	<2	<2	<2	<2	<1.0
1,2 - Dichloropropane	ug/L	0.5	330	7	-	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<0.7	<0.7	<0.50
1,2-Dichloroethene	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	< 2						-				-	-	-	-
1,3 - Dichlorobenzene	ug/L	1	-	1500	n.a.	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	<1	ND	ND	<1	<1	<1	<1	<1	<1	2	<1	<1.0
1,4 - Dichlorobenzene	ug/L	1	2600	260	n.a.	1.6	3.5	7.3	8.5	8	5.3	<1	6.4	6.5	3.2	3.3	4.1	5	4	4	3	<1	4	3	<1	3	1.9
1,4 Dichlorobutane	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	< 1	-	-	-	-	-	-	-	-	-	-	-	-	-
1-Chloro 2-Bromopropane	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	< 1	-	-	-	-	-	-	-	-	-	-	-	-	-
2,4 Chlorotoluene	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	< 0.5	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Chloroethylvinyl ether	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.		-	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	ug/L	1	20000	4600	18.3	9.8	6.6	6.05	13	10	8	<1	<4.4	4.2	2.3	2.4	1.9	1	1	1	<1	<1	<1	1	<1	<1	<1.0
Bromochloromethane	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	< 1						-				-	-	-	-
Bromodichloromethane	ug/L	1	-	2000	-	-	-	-	-	-	< 1	<1	<0.2	< 1	<1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
Bromoform	ug/L	1	84000	600	-	-	-	-	-	-	< 1	<1	<0.2		<1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
Bromomethane	ug/L	0.89	33	9	n.a.	-	-	-	-	-	< 8	<8	<3	< 8	<8	<8	ND	ND	<8	<8	<3.7	<3.7	<3	<3	<0.89	<0.89	<0.50
Carbon Tetrachloride	ug/L	0.5	7	133	-	-	-	-	-	-	< 1	<1	<1	< 1	<1	<1	ND	ND	<1	<1	<1	<1	<1	<0.79	<0.56	<0.56	<0.50
Chlorobenzene	ug/L	1	180	13	30.2	17.2	14	16.5	**30.4**	29	24	<1	19	18	9.4	9.5	9.3	6	6	5	4	1	6	4	2	4	3.1
Chloroethane	ug/L	8	-	11000	n.a.	-	-	-	-	-	< 8	<8	<1	< 8	<8	<8	ND	ND	<8	<8	<5	<5	<5	<5	<5	<5	<8.0
Chloroform	ug/L	1	40	18	-	-	-	-	-	-	< 1	<1	<0.2	< 1	<1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
Chloromethane	ug/L	8	-	7000	n.a.	16.7	-	-	-	-	< 8	<8	<2	< 1	<8	<8	ND	ND	<8	<8	<1	<1	<1	<1	<1	<1	<8.0
cis-1,2-Dichloroethene	ug/L	-	-	-											<2	<2	ND	ND		-				-	-	-	-
cis-1,2-Dichloroethylene	ug/L	0.5	30	2000	-	n.a.	n.a.	-	-	-	< 2	<2	<1						<2	<2	<2	<2	<2	<1.6	<1.6	<1.6	<0.50
cis-1,3-Dichloroethene	ug/L	-	-	-	n.a.	-	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.							-				-	-	-	-
cis 1,3-Dichloropropene	ug/L	0.5	100	-	-	-	-	-	-	-	< 2	<2	<0.14		<2	<2	ND	ND	<2	<2	<2	<2	<2	<2	<0.5	<0.5	<0.50
Dibromochloromethane	ug/L	1	10000	400	-	-	-	-	-	-	< 1	<1	<0.2	< 1	<1	<1	ND	ND		<1	<1	<1	<1	<1	<1	<1	<1.0
Dibromoethene	ug/L	-	-	-											<3	<3	ND	ND		-				-	-	-	-
Dichloromethane	ug/L	-	-	-	-	-	-	-	-	-	< 3	<3	<1	< 3						-				-	-	-	-
Ethylbenzene	ug/L	1	20000	-	8.9	4.4	1.2	1.19	-	-	< 1	<1	<0.5	< 1	<1	<1	ND	ND	<1	<1	<2	<2	<2	<2	<2	<2	<1.0
Ethylene Dibromide	ug/L	0.2	51	50		-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1				-	-	-	<0.20
iso- Propylbenzene (Cumene)	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methylene Chloride (Dichloromethane)	ug/L	3	43000	981	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<3	<3	<2	2	<2	<2	<2	<2	<3.0
m+p-Xylenes	ug/L	2			-	-	-	-	-	-	< 2	<2	<0.5	< 1	<1	<1	ND	ND	<2	<2	<4	<4	<4	<4	<4	<4	<2.0
n - Propylbenzene	ug/L	-	20000	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	< 8						-				-	-	-	-
o-Xylene	ug/L	1	-	-	-	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
sec-Butylbenzene	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Styrene	ug/L	1	26000	720	-	-	-	-	-	-	< 1	<1	<0.5		<1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
tert-Butylbenzene	ug/L	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	ug/L	-	-	-	-	-	-	-	-	-	< 1	<1	<0.5	< 1	-	-	-	-	-	-	<2	<2		-	-	-	-
Tetrachloroethylene	ug/L	1	1300	1110											-	-	-	-	<1	<1			<2	<1.6	<1.6	<1.6	<1.0
Toluene	ug/L	1	20000	-	102	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	<1	ND	ND	<1	<1	<2	<2	<2	<2	<2	<2	<1.0
trans-1,2-Dichloroethene	ug/L	-	-	-	-	-	-	-	-	-	< 2	<2	<1	< 2	<2	<2	ND	ND		-				-	-	-	-
trans-1,2-Dichloroethylene	ug/L	0.5	30	2000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2	<2	<2	<2	<2	<1.6	<1.6	<1.6	<0.50
trans-1,3-Dichloropropane	ug/L	-	-	-	-	-	-	-	-	-	< 1	<1	<0.14	< 2	-	-	-	-		-				-	-	-	-
trans-1,3-Dichloropropene	ug/L	0.5	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	< 1	<1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<0.5	<0.5	<0.50
Trichloroethene	ug/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethylene	ug/L	1	250	210	-	-	-	-	-	-	< 1	<1	<0.5	< 1	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1.0
Trichlorofluoromethane	ug/L	8	-	-	-	-	-	-	-	-	< 8	<8	<2	< 2	<8	<8	ND	ND	<8	<8	<5	<5	<5	<5	<5	<5	<8.0
Vinyl Chloride	ug/L	0.5	13	600	-	-	-	-	-	-	< 1	<1	<0.5		<1	<1	ND	ND	<1	<1	0.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
TOTAL VOC's					163.7	55	26.5	33.87	51.9	47	37.3	0	34.1	32.6	17.3	17.7	15.3	12	11	10	7.8	3	10	8	4	7	5

Notes:
RDL - Reported Detection Limit (updated in 2016)
ND - Values below RDL
n.a. - compound not analyzed
Bold indicates exceedance of NS Tier 1 EQS
Bold and shaded indicates exceedance of NS Tier 2 PSS
Bold and italics exceeds indicates both NS Tier and Tier 2
NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)
NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE D-1

GROUNDWATER SEMI-VOLATILE ORGANIC COMPOUND CHEMISTRY
MW-4A
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	RDL	Units	NS Tier 1 EQS	NS Tier 2 PSS	20-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Aug-01 Dup-MW40D	Sep-02	16-Aug-03	16-Aug-03 Dup-MW40D	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	28-Jul-08 DUP-A	12-Aug-09 MW-4A	27-Jul-10	21-Sep-11	4-Oct-12	4-Jul-13	19-Aug-14	21-Jul-15	14-Jul-16
1,2,3,4 - Tetrachlorobenzene	0.50	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.05	<0.5	<0.05	<0.05	-	<0.05	<0.50
1,2,3,5 - Tetrachlorobenzene	0.50	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	<0.5	<0.5	<0.5	<0.5	<0.05	<0.5	<0.05	<0.05	-	<0.05	<0.50
1,2,3 - Trichlorobenzene	0.50	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.05	<0.5	<0.05	<0.05	-	<0.05	<0.50
1,2,4,5 - Tetrachlorobenzene	0.50	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	<0.5	<0.5	<0.5	<0.5	<0.05	<0.5	<0.05	<0.05	-	<0.05	<0.50
1,2,4 - Trichlorobenzene	0.50	µg/L	-	-	-	-	-	-	ND	ND	ND	< 2	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.05	<0.5	<0.05	<0.05	<0.5	<0.05	<0.50
1,2 - Dichlorobenzene	0.5	µg/L	-	-	2.56	2.59	2.1	1.3	1.1	1.0	0.6	-	1.4	1.4	1.1	0.8	1.3	<0.5	0.8	0.9	0.6	<0.5	<0.5	<0.7	<0.7	<0.7	<0.7	<0.50
1,3,5 - Trichlorobenzene	0.50	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.05	<0.5	<0.05	<0.05	-	<0.05	<0.50
1,3 - Dichlorobenzene	0.5	µg/L	-	-	tr	tr	-	-	ND	ND	ND	-	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	<1	<1	<0.50
1,4 - Dichlorobenzene	0.5	µg/L	-	-	1.14	1.59	-	1	1.3	2.3	0.7	-	5.4	5.5	3.5	3.3	4.8	1.6	4.6	3.9	3.4	<0.5	<0.5	4	4	3	5	1.8
1 - Chloronaphthalene	1.0	µg/L	-	-	-	-	n.a.	n.a.	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a	ND	ND	<1	<1	<1	<1	<0.5	<0.5		<0.5	<0.5	<0.5	<1.0
1 - Methylnaphthalene	0.20	µg/L	38000	20	-	-	-	-	ND	ND	ND	-	ND	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.2	0.03	<0.01	<0.01	<0.5	<0.2	0.02	<0.20
2,3,4,5 - Tetrachlorophenol	0.4	µg/L	-	-	-	-	n.a.	n.a.	ND	ND	ND	-	ND	ND	ND	ND	ND	<0.4	<0.4	<0.4	<0.4	<0.5	<0.5			-	<0.5	<0.40
2,3,4,6 - Tetrachlorophenol	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
2,3,4 - Trichlorophenol	0.5	µg/L	-	-	-	-	n.a.	n.a.	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.50
2,3,5,6 - Tetrachlorophenol	0.5	µg/L	-	-	-	-	n.a.	n.a.	ND	ND	ND	-	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.50
2,3,5 - Trichlorophenol	0.5	µg/L	-	-	-	-	n.a.	n.a.	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
2,3,6 - Trichlorophenol	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.50
2,3 - Dichlorophenol	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.2	-	-	<0.50
2,4,5 - Trichlorophenol	0.5	µg/L	-	-	-	-	-	-	ND	ND	ND	-	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5		<0.5	<0.2	<0.2	<0.5	<0.2	<0.50
2,4,6 - Trichlorophenol	0.5	µg/L	-	-	-	-	-	-	ND	ND	ND	< 2	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.5	<0.2	<0.50
2,4 - Dichlorophenol	0.3	µg/L	-	-	-	-	-	-	ND	ND	ND	< 2	ND	ND	ND	ND	ND	<0.3	<0.3	<0.3	<0.3	<0.5	<0.5	<0.3	<0.3	<0.3	<0.3	<0.30
2,4 - Dimethylphenol	0.5	µg/L	-	-	-	-	0.2	-	ND	ND	ND	< 2	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
2,4 - Dinitrophenol	2.0	µg/L	-	-	-	-	-	-	ND	ND	ND	< 5	ND	ND	ND	ND	ND	<2	<2	<2	<6	<0.5	<10	<10	<10	<0.5	<10	<2.0
2,4 - Dinitrotoluene	0.5	µg/L	-	-	-	-	-	-	ND	ND	ND	< 2	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
2,5 - Dichlorophenol	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.3	<0.3	<0.3	<0.2	-	-	<0.50
2,6 - Dichlorophenol	0.5	µg/L	-	-	-	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	ND	n.a	n.a	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.50
2,6 - Dinitrotoluene	0.5	µg/L	-	-	-	-	-	-	ND	ND	ND	< 2	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<5	<5	<0.5	<0.5	<0.5	<0.5	<0.50
2 - Chloronaphthalene	0.5	µg/L	-	-	-	-	-	-	ND	ND	ND	< 2	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.50
2 - Chlorophenol	0.3	µg/L	-	-	-	-	-	-	ND	ND	ND	n.a.	ND	ND	ND	ND	ND	<0.3	<0.3	<0.3	<0.3	<0.5	<0.5	<0.5	<0.3	<0.3	<0.3	<0.30
2 - Methylnaphthalene	0.20	µg/L	38000	20	-	-	0.2	-	ND	0.4	0.2	n.a.	ND	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.2	0.05	0.02	<0.01	<0.5	<0.5	0.01	<0.20
2 - Nitrophenol	0.5	µg/L	-	-	-	-	-	-	ND	ND	ND	< 2	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.50
3,3' - Dichlorobenzidine	0.5	µg/L	-	-	-	-	-	-	ND	ND	ND	n.a.	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
3,4,5 - Trichlorophenol	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.5			<0.5	<0.5	-	-	<0.50
3,4 - Dichlorophenol	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.2	-	-	<0.50
3,5 - Dichlorophenol	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.2	-	-	<0.50
4,6-Dinitro-2-methylphenol	2.0	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2	<2	<6				<1.0	<0.5	<1.0	<2.0
4 - Bromophenyl Phenyl Ether	0.3	µg/L	-	-	-	-	-	-	ND	ND	ND	<2	ND	ND	ND	ND	ND	<0.5	<0.3	<0.3	<0.3	<0.5	<0.5		<0.3	<0.5	<0.3	<0.30
4 - Chloro - 3 - Methylphenol	0.5	µg/L	-	-	-	-	-	0.8	ND	ND	ND	n.a.	ND	ND	ND	2.4	2.3	0.9	1.7	1.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.50
4 - Chlorophenyl Phenyl Ether	0.5	µg/L	-	-	-	-	-	-	ND	ND	ND	< 2	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.50
4 - Nitrophenol	1.4	µg/L	-	-	-	-	-	-	ND	ND	ND	< 5	ND	ND	ND	ND	ND	<1	<1	<1	<1	<0.5	<0.5		<0.5	<0.5	<0.5	<1.4
Acenaphthene	0.20	µg/L	750	58	-	-	-	-	ND	ND	ND	< 1	ND	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.2	<0.01	<0.01	<0.30	<0.30	<0.3	<0.01	<0.20
Acenaphthylene	0.20	µg/L	-	46	-	-	-	-	ND	ND	ND	< 1	ND	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.2	<0.01	<0.01	<0.31	<0.31	<0.3	<0.01	<0.20
Anthracene	0.200	µg/L	-	0.12	-	-	-	-	ND	ND	ND	< 1	ND	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.2	0.02	<0.01	<0.30	<0.30	<0.3	<0.012	<0.20
Benzo(a)anthracene	0.200	µg/L	-	-	-	-	-	-	ND	ND	ND	< 1	ND	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.2	<0.01	<0.01	<0.20	<0.20	<0.3	<0.018	<0.20
Benzo(a)pyrene	0.200	µg/L	-	-	-	-	-	-	ND	ND	ND	< 1	ND	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.2	<0.01	<0.01	<0.09	<0.09	<0.01	<0.015	<0.20
Benzo(b/j)fluoranthene	0.20	µg/L	-	-	-	-	-	-	ND	ND	ND	< 1	ND	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.2		<0.5	<0.20	<0.20	<0.5	<0.01	<0.20
Benzo(ghi)perylene	0.20	µg/L	-	-	-	-	-	-	ND	ND	ND	< 2	ND	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.2	<0.01	<0.01	<0.20	<0.20	<0.2	<0.01	<0.20
Benzo(k)fluoranthene	0.20	µg/L	-	-	-	-	-	-	ND	ND	ND	< 1	ND	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.2	<0.01	<0.01	<0.20	<0.20	<0.5	<0.01	<0.20
Benzyl Butyl Phthalate	0.5	µg/L	-	-	-	-	-	-	ND	ND	ND	n.a.	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.50
Biphenyl	0.5	µg/L	-	-	-	-	-	-	ND	ND	ND	n.a.	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5				<0.5	<1.0	<0.5	<0.50
bis (2 - Chloroethoxy)methane	0.5	µg/L	-	-	-	-	-	-	ND	ND	ND	< 2	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.50
bis (2 - Chloroethyl)ether	0.5	µg/L	-	-	-	-	-	-	ND	ND	ND	< 2	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
bis (2 - Chloroisopropyl)ether	0.5	µg/L	-	-	-	-	-	-	ND	ND	ND	< 2	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
bis (2 - ethylhexyl)phthalate	2.0	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	<2	<2	3	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
Chrysene	0.20	µg/L	-	-	-	-	-	-	ND	ND	ND	< 1	ND	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.2	<0.01	<0.01	<0.27	<0.27	<0.3	<0.01	<0.20
Dibenzo(a,h)anthracene	0.20	µg/L	-	-	-	-	-	-	ND	ND	ND	< 2	ND	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.2	<0.01	<0.01	<0.20	<0.20	<0.2	<0.01	<0.20
Diethyl Phthalate	1.0	µg/L	-	-	10	15.6	12.8	11	10.8	9.3	11.4	23	14.2	13.7	9.2	10.6	ND	4	6	6	4	<0.5	3.1	<0.5	2.3	2.3	<0.5	1.6
Dimethyl Phthalate	1.0	µg/L	-	-	-	-	-	-	ND	ND	ND	< 2	ND	ND	ND	ND	ND	<1	<1	<1	<1	<2	<2	<0.5	<0.5	<0.5	<0.5	<1.0
di - n - Butyl Phthalate	2.0	µg/L	-	-	tr	1.4	-	-	ND	ND	ND	< 2	ND	ND	ND	ND	ND	<2	<2	<2	<2	<0.5	<0.5		<0.5	<0.5	<0.5	<2.0

TABLE D-1

GROUNDWATER SEMI-VOLATILE ORGANIC COMPOUND CHEMISTRY
MW-4A
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	RDL	Units	NS Tier 1 EQS	NS Tier 2 PSS	20-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Aug-01 Dup-MW40D	Sep-02	16-Aug-03	16-Aug-03 Dup-MW40D	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	28-Jul-08 DUP-A	12-Aug-09 MW-4A	27-Jul-10	21-Sep-11	4-Oct-12	4-Jul-13	19-Aug-14	21-Jul-15	14-Jul-16
di - n - Octyl Phthalate	0.8	µg/L	-	-	-	-	-	-	ND	ND	ND	< 2	ND	ND	ND	ND	ND	<0.8	<0.8	<0.8	<0.8	<0.5	<0.5		<0.5	<0.5	<0.5	<0.80
Diphenyl Ether	0.3	µg/L	-	-	-	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	ND	ND	<0.3	<0.3	<0.3	<0.3				<0.3	<0.5	2.1	<0.30
Fluoranthene	0.20	µg/L	-	0.4	-	-	-	-	ND	ND	ND	< 1	ND	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.2	<0.01	<0.01	<0.27	<0.27	<0.3	<0.01	<0.20
Fluorene	0.20	µg/L	-	30	-	-	-	-	ND	ND	ND	< 2	ND	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.2	0.03	<0.01	<0.31	<0.31	<0.3	<0.01	<0.20
Hexachlorobenzene	0.50	µg/L	-	-	-	-	-	-	ND	ND	ND	< 2	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<0.5	<0.5	<0.5	<0.01	<0.50
Hexachlorobutadiene	0.40	µg/L	-	-	-	-	-	-	ND	ND	ND	< 2	ND	ND	ND	ND	ND	<0.4	<0.4	<0.4	<0.4	<0.01	<0.01	<0.4	<0.4	<0.4	<0.01	<0.40
Hexachlorocyclopentadiene	2.0	µg/L	-	-	-	-	-	-	ND	ND	ND	n.a.	ND	ND	ND	ND	ND	<2	<2	<2	<2	<0.5	<0.5		<0.5	<0.5	<0.5	<2.0
Hexachloroethane	0.50	µg/L	-	-	-	-	-	-	ND	ND	ND	< 2	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<0.5	<0.5	<0.5	<0.01	<0.50
Indeno(1,2,3 - cd)pyrene	0.20	µg/L	-	-	-	-	-	-	ND	ND	ND	< 2	ND	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.2	<0.01	<0.01	<0.27	<0.27	<0.2	<0.01	<0.20
Isophorone	0.5	µg/L	-	-	tr	-	-	-	ND	ND	ND	< 2	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.50
m-Cresol & p-Cresol	0.5	µg/L	-	-	-	-	-	-	ND	ND	ND	n.a.	ND	ND	ND	2.8	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
Naphthalene	0.20	µg/L	7000	11	-	-	-	-	ND	ND	ND	< 1	ND	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.2	0.16	<0.01	<0.30	<0.30	<0.5	<0.01	<0.20
Nitrobenzene	0.5	µg/L	-	-	-	-	-	-	ND	ND	ND	n.a.	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.50
N - Nitrosodi - n - Propylamine	0.5	µg/L	-	-	-	-	-	-	ND	ND	ND	< 5	ND	ND	ND	ND	ND	-	<1	<1	<1	<0.5	<0.5		<0.5	<0.5	<0.5	<0.50
N - Nitrosodiphenylamine & DPA	1.0	µg/L	-	-	-	-	-	-	ND	ND	ND	< 10	ND	ND	ND	ND	ND	<1	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<1.0
o - Cresol	0.5	µg/L	-	-	-	-	-	-	ND	ND	ND	n.a.	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
p - Chloroaniline	1.0	µg/L	-	-	-	-	-	-	-	-	-	-	ND	ND	ND	ND	ND	<1	<1	<1	<1	<1.0	<1	<1.0	<1.0	<1.0	<1.0	<1.0
Pentachlorobenzene	0.50	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.05	<0.5	<0.05	<0.05	-	<0.05	<0.50
Pentachlorophenol	1.0	µg/L	-	-	-	-	-	-	ND	ND	ND	< 2	ND	ND	ND	ND	ND	<1	<1	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0
Perylene	0.20	µg/L	-	-	-	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	ND	-	ND	<0.2	<0.2	<0.2	<0.2	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.20
Phenanthrene	0.20	µg/L	-	4	-	-	-	-	ND	ND	ND	< 1	ND	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.2	0.05	<0.01	<0.32	<0.32	<0.3	<0.01	<0.20
Phenol	0.5	µg/L	-	-	-	-	-	-	ND	ND	ND	< 2	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<1.0	<1.0	<0.50
Pyrene	0.20	µg/L	-	0.25	-	-	-	-	ND	ND	ND	< 1	ND	ND	n.a.	ND	ND	<0.2	<0.2	<0.2	<0.2	<0.01	<0.01	<0.20	<0.20	<0.3	<0.01	<0.20
Quinoline		µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<2	<2	<2	<2	0.06	<0.01	<0.01	<0.01	-	<0.01	-

Notes:
RDL - Reported Detection Limit (updated in 2016)
ND - Values below RDL
n.a. - compound not analyzed
Bold indicates exceedance of NS Tier 1 EQS
Bold and shaded indicates exceedance of NS Tier 2 PSS
Bold and italics exceeds indicates both NS Tier and Tier 2
MW-40D = Duplicate of MW-4A
NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)
NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE D-2

GROUNDWATER SEMI-VOLATILE ORGANIC COMPOUND CHEMISTRY
MW-22B
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	RDL	Units	NS Tier 1 EQS	NS Tier 2 PSS	20-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Sep-02	16-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	10-Aug-09	27-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	14-Jul-16
1,2,3,4 - Tetrachlorobenzene	0.50	µg/L	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.50
1,2,3,5 - Tetrachlorobenzene	0.50	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	ND	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.50
1,2,3 - Trichlorobenzene	0.50	µg/L	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.50
1,2,4,5 - Tetrachlorobenzene	0.50	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	ND	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.50
1,2,4 - Trichlorobenzene	0.50	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.05	<0.5	<0.05	<0.50
1,2 - Dichlorobenzene	0.5	µg/L	-	-	-	-	-	-	ND	ND	n.a.	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.05	<0.7	<0.7	<0.7	<0.7	<0.50
1,3,5 - Trichlorobenzene	0.50	µg/L	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.50
1,3 - Dichlorobenzene	0.5	µg/L	-	-	-	-	-	-	ND	ND	n.a.	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.05	<1	<1	<1	<1	<0.50
1,4 - Dichlorobenzene	0.5	µg/L	-	-	-	-	-	-	ND	ND	n.a.	ND	ND	ND	0.7	0.8	0.7	0.7	<0.5	<0.05	1	2	<1	2	<0.50
1 - Chloronaphthalene	1.0	µg/L	-	-	-	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	ND	ND	<1	<1	<1	<0.5	<0.05		<0.5	<0.5	<1.0	<1.0
1 - Methylnaphthalene	0.20	µg/L	38000	20	-	-	-	-	ND	ND	n.a.	ND	ND	ND	ND	<0.2	<0.2	<0.2	0.07	<0.01	<0.01	<0.5	<0.2	<0.01	<0.20
2,3,4,5 - Tetrachlorophenol	0.4	µg/L	-	-	-	-	n.a.	n.a.	ND	ND	n.a.	ND	ND	ND	ND	<0.4	<0.4	<0.4	<0.5	<0.05			-	<0.5	<0.40
2,3,4,6 - Tetrachlorophenol	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.05	<0.5	<0.5	<0.5	<0.5	<0.50
2,3,4 - Trichlorophenol	0.5	µg/L	-	-	-	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.05	<0.5	<0.5	<0.5	-	<0.50
2,3,5,6 - Tetrachlorophenol	0.5	µg/L	-	-	-	-	n.a.	n.a.	ND	ND	n.a.	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.05		<0.5	<0.5	<0.5	<0.50
2,3,5 - Trichlorophenol	0.5	µg/L	-	-	-	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.05	<0.5	<0.5	<0.5	<0.5	<0.50
2,3,6 - Trichlorophenol	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.05	<0.5	<0.5	<0.5	-	<0.50
2,3 - Dichlorophenol	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.2	-	-	<0.50
2,4,5 - Trichlorophenol	0.5	µg/L	-	-	-	-	-	-	ND	ND	n.a.	ND	ND	ND	ND	<0.5	<0.5	<0.5		<0.5	<0.2	<0.2	<0.5	<0.2	<0.50
2,4,6 - Trichlorophenol	0.5	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.5	<0.2	<0.50
2,4 - Dichlorophenol	0.3	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.3	<0.3	<0.3	<0.5	<0.5	<0.3	<0.3	<0.3	<0.3	<0.30
2,4 - Dimethylphenol	0.5	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
2,4 - Dinitrophenol	2.0	µg/L	-	-	-	-	-	-	ND	ND	< 5	ND	ND	ND	ND	<2	<2	<6	<0.5	<10	<10	<10	<0.5	<10	<2.0
2,4 - Dinitrotoluene	0.5	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
2,5 - Dichlorophenol	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.3	<0.3	<0.3	<0.2	-	-	<0.50
2,6 - Dichlorophenol	0.5	µg/L	-	-	-	-	n.a.	n.a.	n.a.	n.a.	n.a.	ND	n.a.	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.50
2,6 - Dinitrotoluene	0.5	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<5	<5	<0.5	<0.5	<0.5	<0.5	<0.50
2 - Chloronaphthalene	0.5	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.05		<0.5	<0.5	<0.5	<0.50
2 - Chlorophenol	0.3	µg/L	-	-	-	-	-	-	ND	ND	n.a.	ND	ND	ND	ND	<0.3	<0.3	<0.3	<0.5	<0.05	<0.5	<0.3	<0.3	<0.3	<0.30
2 - Methylnaphthalene	0.20	µg/L	38000	20	-	-	-	-	ND	ND	n.a.	ND	ND	ND	ND	<0.2	<0.2	<0.2	0.09	0.02	<0.01	<0.5	<0.5	<0.01	<0.20
2 - Nitrophenol	0.5	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.05		<0.5	<0.5	<0.5	<0.50
3,3' - Dichlorobenzidine	0.5	µg/L	-	-	-	-	-	-	ND	ND	n.a.	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.05	<0.5	<0.5	<0.5	<0.5	<0.50
3,4,5 - Trichlorophenol	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5		<0.05	<0.5	<0.5	-	-	<0.50
3,4 - Dichlorophenol	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.2	-	-	<0.50
3,5 - Dichlorophenol	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.2	-	-	<0.50
4,6-Dinitro-2-methylphenol	2.0	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2	<6				<1.0	<0.5	<1.0	<2.0
4 - Bromophenyl Phenyl Ether	0.3	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.3	<0.3	<0.3	<0.5	<0.5		<0.3	<0.5	<0.3	<0.30
4 - Chloro - 3 - Methylphenol	0.5	µg/L	-	-	-	-	-	-	1.4	ND	n.a.	ND	ND	ND	ND	0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.50
4 - Chlorophenyl Phenyl Ether	0.5	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.50
4 - Nitrophenol	1.4	µg/L	-	-	-	-	-	-	ND	ND	< 5	ND	ND	ND	ND	<1	<1	<1	<0.5	<0.5		<0.5	<0.5	<0.5	<1.4
Acenaphthene	0.20	µg/L	750	58	-	-	-	-	ND	ND	< 1	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.01	<0.01	<0.30	<0.30	<0.3	<0.01	<0.20
Acenaphthylene	0.20	µg/L	-	46	-	-	-	-	ND	ND	< 1	ND	ND	ND	ND	<0.2	<0.2	<0.2	0.03	<0.01	<0.31	<0.31	<0.3	<0.01	<0.20
Anthracene	0.200	µg/L	-	0.12	-	-	-	-	ND	ND	< 1	ND	ND	ND	ND	<0.2	<0.2	<0.2	0.04	<0.01	<0.30	<0.30	<0.3	<0.012	<0.20
Benzo(a)anthracene	0.200	µg/L	-	-	-	-	-	-	ND	ND	< 1	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.01	<0.01	<0.20	<0.20	<0.3	<0.018	<0.20
Benzo(a)pyrene	0.200	µg/L	-	-	-	-	-	-	ND	ND	< 1	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.01	<0.01	<0.09	<0.09	<0.01	<0.015	<0.20
Benzo(b/j)fluoranthene	0.20	µg/L	-	-	-	-	-	-	ND	ND	< 1	ND	ND	ND	ND	<0.2	<0.2	<0.2		<0.5	<0.20	<0.20	<0.5	<0.01	<0.20
Benzo(ghi)perylene	0.20	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.01	<0.01	<0.20	<0.20	<0.2	<0.01	<0.20
Benzo(k)fluoranthene	0.20	µg/L	-	-	-	-	-	-	ND	ND	< 1	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.01	<0.01	<0.20	<0.20	<0.5	<0.01	<0.20
Benzyl Butyl Phthalate	0.5	µg/L	-	-	-	-	-	-	ND	ND	n.a.	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.50
Biphenyl	0.5	µg/L	-	-	-	-	-	-	ND	ND	n.a.	ND	ND	ND	ND	<0.5	<0.5	<0.5				<0.5	<1.0	<0.5	<0.50
bis (2 - Chloroethoxy)methane	0.5	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.50
bis (2 - Chloroethyl)ether	0.5	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
bis (2 - Chloroisopropyl)ether	0.5	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
bis (2 - Ethylhexyl)phthalate	2.0	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	3.0	<2	<2	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
Chrysene	0.20	µg/L	-	-	-	-	-	-	ND	ND	< 1	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.01	<0.01	<0.27	<0.27	<0.3	<0.01	<0.20
Dibenzo(a,h)anthracene	0.20	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.01	<0.5	<0.20	<0.20	<0.2	<0.01	<0.20
Diethyl Phthalate	1.0	µg/L	-	-	7.1	9.7	-	3.6	2.2	5.9	10.0	5.8	5.1	6.0	1.0	6	5	4	<0.5	2.4	<0.5	2.1	2.6	0.74	<1.0
Dimethyl Phthalate	1.0	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<1	<1	<1	<2	<2	<0.5	<0.5	<0.5	<0.5	<1.0
di - n - Butyl Phthalate	2.0	µg/L	-	-	tr	2	-	-	ND	ND	< 2	ND	ND	ND	ND	<2	<2	<2	<0.5	<0.5		<0.5	<0.5	<0.5	<2.0
di - n - Octyl Phthalate	0.8	µg/L	-	-	-	4.1	-	-	ND	ND	< 2	21.4	ND	1.2	ND	<0.8	<0.8	<0.8	<0.5	<0.5		<0.5	<0.5	<0.5	<0.80
Diphenyl Ether	0.3	µg/L	-	-	-	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	ND	ND	<0.3	<0.3	<0.3				<0.3	<0.5	<0.3	<0.30

TABLE D-2

GROUNDWATER SEMI-VOLATILE ORGANIC COMPOUND CHEMISTRY
MW-22B
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	RDL	Units	NS Tier 1 EQS	NS Tier 2 PSS	20-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Sep-02	16-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	10-Aug-09	27-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	14-Jul-16
Fluoranthene	0.20	µg/L	-	0.4	-	-	-	-	ND	ND	< 1	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.01	<0.01	<0.27	<0.27	<0.3	<0.01	<0.20
Fluorene	0.20	µg/L	-	30	-	-	-	-	ND	ND	< 1	ND	ND	ND	ND	<0.2	<0.2	<0.2	0.02	<0.01	<0.31	<0.31	<0.3	<0.01	<0.20
Hexachlorobenzene	0.50	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.01	<0.01	<0.5	<0.5	<0.5	<0.01	<0.50
Hexachlorobutadiene	0.40	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.4	<0.4	<0.4	<0.01	<0.01	<0.4	<0.4	<0.4	<0.01	<0.40
Hexachlorocyclopentadiene	2.0	µg/L	-	-	-	-	-	-	ND	ND	n.a.	ND	ND	ND	ND	<2	<2	<2	<0.5	<0.5		<0.5	<0.5	<0.5	<2.0
Hexachloroethane	0.50	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.01	<0.01	<0.5	<0.5	<0.5	<0.01	<0.50
Indeno(1,2,3-cd)pyrene	0.20	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.01	<0.01	<0.27	<0.27	<0.2	<0.01	<0.20
Isophorone	0.5	µg/L	-	-	-	tr	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.50
m - Cresol & p - Cresol	0.5	µg/L	-	-	19.7	8.1	-	-	ND	ND	n.a.	2.7	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
Naphthalene	0.20	µg/L	7000	11	-	-	-	-	ND	ND	< 1	0.2	ND	ND	ND	0.2	<0.2	<0.2	0.2	<0.01	<0.30	<0.30	<0.5	<0.01	<0.20
Nitrobenzene	0.5	µg/L	-	-	-	-	-	-	ND	ND	n.a.	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.50
N - Nitrosodi - n - Propylamine	0.5	µg/L	-	-	-	-	-	-	ND	ND	< 5	ND	ND	ND	ND	-	<1	<1	<0.5	<0.5		<0.5	<0.5	<0.5	<0.50
N - Nitrosodiphenylamine & DPA	1.0	µg/L	-	-	-	-	-	-	ND	ND	< 10	ND	ND	ND	ND	<1	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<1.0
o - Cresol	0.5	µg/L	-	-	7	2.4	-	-	ND	ND	n.a.	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
p - Chloroaniline	1.0	µg/L	-	-	-	-	-	-	-	-	-	ND	ND	ND	ND	<1	<1	<1	<1.0	<0.1	<1.0	<1.0	<1.0	<1.0	<1.0
Pentachlorobenzene	0.50	µg/L	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.05	<0.5		<0.05	-	<0.05	<0.50
Pentachlorophenol	1.0	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<1	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0
Perylene	0.20	µg/L	-	-	-	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	ND	-	ND	<0.2	<0.2	<0.2	<0.01	<0.01	<0.01	< 0.01	<0.5	<0.01	<0.20
Phenanthrene	0.20	µg/L	-	4	-	-	-	-	ND	ND	< 1	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.01	<0.01	<0.32	<0.32	<0.3	<0.01	<0.20
Phenol	0.5	µg/L	-	-	-	-	-	-	ND	ND	< 0.05	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<1.0	<1.0	<0.50
Pyrene	0.20	µg/L	-	0.25	-	-	-	-	ND	ND	< 1	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.01	<0.01	<0.20	<0.20	<0.3	<0.01	<0.20
Quinoline		µg/L	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<2	<2	<2	<0.01	<0.01	< 0.01	< 0.01	-	<0.01	-

Notes:

RDL - Reported Detection Limit (updated in 2016)

ND - Values below RDL

n.a. - compound not analyzed

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 PSS

Bold and italics exceeds indicates both NS Tier and Tier 2

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE D-3 **GROUNDWATER SEMI-VOLATILE ORGANIC COMPOUND CHEMISTRY**
MW-24B
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	RDL	Units	NS Tier 1 EQS	NS Tier 2 PSS	20-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	16-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	12-Aug-09	28-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	13-Jul-16
1,2,3,4 - Tetrachlorobenzene	0.50	µg/L	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.50
1,2,3,5 - Tetrachlorobenzene	0.50	µg/L	-	-	-	-	-	-	-	-	-	-	-		ND	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.50
1,2,3 - Trichlorobenzene	0.50	µg/L	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.50
1,2,4,5 - Tetrachlorobenzene	0.50	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	ND	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.50
1,2,4 - Trichlorobenzene	0.50	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.05	<0.5	<0.05	<0.50
1,2 - Dichlorobenzene	0.5	µg/L	-	-	-	-	-	-	ND	ND	n.a.	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.7	<0.7	<0.7	<0.7	<0.50
1,3,5 - Trichlorobenzene	0.50	µg/L	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.50
1,3 - Dichlorobenzene	0.5	µg/L	-	-	-	-	-	-	ND	ND	n.a.	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	1.52	<1	<0.50
1,4 - Dichlorobenzene	0.5	µg/L	-	-	-	2.47	1.5	2.3	2.2	1.9	n.a.	2.0	2.2	2.9	1.8	2.4	2.3	1.8	<0.5	<0.5	4	3	<1	4	1.3
1 - Chloronaphthalene	1.0	µg/L	-	-	-	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	ND	ND	<1	<1	<1	<0.5	<0.5		<0.5	<0.5	<1.0	<1.0
1 - Methylnaphthalene	0.20	µg/L	38000	20	-	-	-	-	0.3	0.3	n.a.	0.3	0.3	0.4	0.4	0.3	0.3	0.3	0.49	0.12	0.07	<0.5	0.25	0.24	0.25
2,3,4,5 - Tetrachlorophenol	0.4	µg/L	-	-	-	-	n.a.	n.a.	ND	ND	n.a.	ND	ND	ND	ND	<0.4	<0.4	<0.4	<0.5	<0.5			-	<0.5	<0.40
2,3,4,6 - Tetrachlorophenol	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
2,3,4 - Trichlorophenol	0.5	µg/L	-	-	-	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.50
2,3,5,6 - Tetrachlorophenol	0.5	µg/L	-	-	-	-	n.a.	n.a.	ND	ND	n.a.	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.50
2,3,5 - Trichlorophenol	0.5	µg/L	-	-	-	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
2,3,6 - Trichlorophenol	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.50
2,3 - Dichlorophenol	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.2	-	-	<0.50
2,4,5 - Trichlorophenol	0.5	µg/L	-	-	-	-	-	-	ND	ND	n.a.	ND	ND	ND	ND	<0.5	<0.5	<0.5		<0.5	<0.2	<0.2	<0.5	<0.2	<0.50
2,4,6 - Trichlorophenol	0.5	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.5	<0.2	<0.50
2,4 - Dichlorophenol	0.3	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.3	<0.3	<0.3	<0.5	<0.5	<0.3	<0.3	<0.3	<0.3	<0.30
2,4 - Dimethylphenol	0.5	µg/L	-	-	-	-	-	-	ND	0.7	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
2,4 - Dinitrophenol	2.0	µg/L	-	-	-	-	-	-	ND	ND	< 5	ND	ND	ND	ND	<2	<2	<6	<0.5	<10	<10	<10	<0.5	<10	<2.0
2,4 - Dinitrotoluene	0.5	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
2,5 - Dichlorophenol	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.3	<0.3	<0.3	<0.2	-	-	<0.50
2,6 - Dichlorophenol	0.5	µg/L	-	-	-	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.50
2,6 - Dinitrotoluene	0.5	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<5	<5	<0.5	<0.5	<0.5	<0.5	<0.50
2 - Chloronaphthalene	0.5	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.50
2 - Chlorophenol	0.3	µg/L	-	-	-	-	-	-	ND	ND	n.a.	ND	ND	ND	ND	<0.3	<0.3	<0.3	<0.5	<0.5	<0.5	<0.3	<0.3	<0.3	<0.30
2 - Methylnaphthalene	0.20	µg/L	38000	20	-	-	-	0.2	0.2	0.6	n.a.	0.3	0.3	0.6	0.5	0.3	0.4	0.3	0.57	0.02	0.18	<0.5	<0.5	0.36	<0.20
2 - Nitrophenol	0.5	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.50
3,3' - Dichlorobenzidine	0.5	µg/L	-	-	-	-	-	-	ND	ND	n.a.	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
3,4,5 -Trichlorophenol	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	-	-	<0.50
3,4 - Dichlorophenol	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.2	-	-	<0.50
3,5 - Dichlorophenol	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.2	-	-	<0.50
4,6-Dinitro-2-methylphenol	2.0	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2	<6				<1.0	<0.5	<1.0	<2.0
4 - Bromophenyl Phenyl Ether	0.3	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.3	<0.3	<0.3	<0.5	<0.5		<0.3	<0.5	<0.3	<0.30
4 - Chloro - 3 - Methylphenol	0.5	µg/L	-	-	4.6	-	-	-	ND	ND	n.a.	ND	ND	ND	ND	1.7	0.9	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.50
4 - Chlorophenyl Phenyl Ether	0.5	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.50
4 - Nitrophenol	1.4	µg/L	-	-	-	-	-	-	ND	ND	< 5	ND	ND	ND	ND	<1	<1	<1	<0.5	<0.5		<0.5	<0.5	<0.5	<1.4
Acenaphthene	0.20	µg/L	750	58	-	-	-	-	ND	ND	< 1	ND	ND	ND	ND	<0.2	<0.2	<0.2	0.19	<0.01	<0.30	<0.30	<0.3	0.15	<0.20
Acenaphthylene	0.20	µg/L	-	46	-	-	-	-	ND	ND	< 1	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.01	<0.01	<0.31	<0.31	<0.3	<0.01	<0.20
Anthracene	0.200	µg/L	-	0.12	-	-	-	-	ND	ND	< 1	ND	ND	ND	ND	<0.2	<0.2	<0.2	0.02	<0.01	<0.30	<0.30	<0.3	0.015	<0.20
Benzo(a)anthracene	0.200	µg/L	-	-	-	-	-	-	ND	ND	< 1	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.01	<0.01	<0.20	<0.20	<0.3	<0.018	<0.20
Benzo(a)pyrene	0.200	µg/L	-	-	-	-	-	-	ND	ND	< 1	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.01	<0.01	<0.09	<0.09	<0.01	<0.015	<0.20
Benzo(b/j)fluoranthene	0.20	µg/L	-	-	-	-	-	-	ND	ND	< 1	ND	ND	ND	ND	<0.2	<0.2	<0.2		<0.5	<0.20	<0.20	<0.5	<0.01	<0.20
Benzo(ghi)perylene	0.20	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.01	<0.01	<0.20	<0.20	<0.2	<0.01	<0.20
Benzo(k)fluoranthene	0.20	µg/L	-	-	-	-	-	-	ND	ND	< 1	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.01	<0.01	<0.20	<0.20	<0.5	<0.01	<0.20
Benzyl Butyl Phthalate	0.5	µg/L	-	-	-	-	-	-	ND	ND	n.a.	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.50
Biphenyl	0.5	µg/L	-	-	-	-	-	-	ND	ND	n.a.	ND	ND	ND	ND	<0.5	<0.5	<0.5				<0.5	<1.0	<0.5	<0.50
bis (2 - Chloroethoxy)methane	0.5	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.50
bis (2 - Chloroethyl)ether	0.5	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
bis (2 - Chloroisopropyl)ether	0.5	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50

TABLE D-3

GROUNDWATER SEMI-VOLATILE ORGANIC COMPOUND CHEMISTRY
MW-24B
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	RDL	Units	NS Tier 1 EQS	NS Tier 2 PSS	20-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	16-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	12-Aug-09	28-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	13-Jul-16
bis (2 - Ethylhexyl)phthalate	2.0	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	21	<2	<2	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
Chrysene	0.20	µg/L	-	-	-	-	-	-	ND	ND	< 1	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.01	<0.01	<0.27	<0.27	<0.3	<0.01	<0.20
Dibenzo(a,h)anthracene	0.20	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.01	<0.01	<0.20	<0.20	<0.2	<0.01	<0.20
Diethyl Phthalate	1.0	µg/L	-	-	10.3	9.7	-	5.2	5.1	4	4.7	3.6	3.6	3.0	3	2	2	1	<0.5	0.9	<0.5	<0.5	2.6	0.84	<1.0
Dimethyl Phthalate	1.0	µg/L	-	-	-	-	7	-	ND	ND	< 2	ND	ND	ND	ND	<1	<1	<1	<2	<2	<0.5	<0.5	<0.5	<0.5	<1.0
di - n - Butyl Phthalate	2.0	µg/L	-	-	-	2.6	-	-	ND	ND	< 2	ND	ND	ND	ND	<2	<2	<2	<0.5	<0.5		<0.5	<0.5	<0.5	<2.0
di - n - Octyl Phthalate	0.8	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.8	<0.8	<0.8	<0.5	<0.5		<0.5	<0.5	<0.5	<0.80
Diphenyl Ether	0.3	µg/L	-	-	-	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	ND	ND	<0.3	<0.3	<0.3				<0.3	<0.5	<0.3	<0.30
Fluoranthene	0.20	µg/L	-	0.4	-	-	-	-	ND	ND	< 1	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.01	<0.01	<0.27	<0.27	<0.3	<0.01	<0.20
Fluorene	0.20	µg/L	-	30	-	-	-	-	ND	ND	< 1	ND	ND	ND	ND	<0.2	<0.2	<0.2	0.05	<0.01	<0.31	<0.31	<0.3	0.05	<0.20
Hexachlorobenzene	0.50	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.01	<0.01	<0.5	<0.5	<0.5	<0.01	<0.50
Hexachlorobutadiene	0.40	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.4	<0.4	<0.4	<0.01	<0.01	<0.4	<0.4	<0.4	<0.01	<0.40
Hexachlorocyclopentadiene	2.0	µg/L	-	-	-	-	-	-	ND	ND	n.a.	ND	ND	ND	ND	<2	<2	<2	<0.5	<0.5		<0.5	<0.5	<0.5	<2.0
Hexachloroethane	0.50	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.01	<0.01	<0.5	<0.5	<0.5	<0.01	<0.50
Indeno(1,2,3-cd)pyrene	0.20	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.2	<0.2	<1	<0.01	<0.01	<0.27	<0.27	<0.2	<0.01	<0.20
Isophorone	0.5	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.50
m - Cresol & p - Cresol	0.5	µg/L	-	-	6.5	2.2	-	-	ND	ND	n.a.	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
Naphthalene	0.20	µg/L	7000	11	1.7	3.2	2.1	3.1	3.2	2.8	2.8	1.6	1.6	1.9	1.5	1.6	1.3	0.8	1.7	<0.01	<0.30	<0.30	0.52	0.82	0.58
Nitrobenzene	0.5	µg/L	-	-	-	-	-	-	ND	ND	n.a.	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.50
N - Nitrosodi - n - Propylamine	0.5	µg/L	-	-	-	-	-	-	ND	ND	< 5	ND	ND	ND	ND		<1	<1	<0.5	<0.5		<0.5	<0.5	<0.5	<0.50
N - Nitrosodiphenylamine & DPA	1.0	µg/L	-	-	-	-	-	-	ND	ND	< 10	ND	ND	ND	ND	<1	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<1.0
o - Cresol	0.5	µg/L	-	-	-	-	-	-	ND	ND	n.a.	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
p - Chloroaniline	1.0	µg/L	-	-	-	-	-	-	-	-	-	ND	ND	ND	ND	<1	<1	<1	<1.0	<1	<1.0	<1.0	<1.0	<1.0	<1.0
Pentachlorobenzene	0.50	µg/L	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.05	<0.05		<0.05	-	<0.05	<0.50
Pentachlorophenol	1.0	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<1	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0
Perylene	0.20	µg/L	-	-	-	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	ND	-	ND	<0.2	<0.2	<0.2	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.20
Phenanthrene	0.20	µg/L	-	4	-	-	-	-	ND	ND	< 1	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.01	<0.01	<0.32	<0.32	<0.3	0.03	<0.20
Phenol	0.5	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<1.0	<1.0	<0.50
Pyrene	0.20	µg/L	-	0.25	-	-	-	-	ND	ND	< 1	ND	n.a.	ND	ND	<0.2	<0.2	<0.2	<0.01	<0.01	<0.20	<0.20	<0.3	<0.01	<0.20
Quinoline		µg/L	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<2	<2	<2	0.1	<0.01	<0.01	<0.01	-	<0.01	-

Notes:
RDL - Reported Detection Limit (updated in 2016)
ND - Values below RDL
n.a. - compound not analyzed
Bold indicates exceedance of NS Tier 1 EQS
Bold and shaded indicates exceedance of NS Tier 2 PSS
Bold and italics exceeds indicates both NS Tier and Tier 2
NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)
NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE D-4

GROUNDWATER SEMI-VOLATILE ORGANIC COMPOUND CHEMISTRY
TH-1
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	RDL	Units	NS Tier 1 EQS	NS Tier 2 PSS	20-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	16-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	10-Aug-09	27-Jul-10	21-Sep-11	4-Oct-12	4-Jul-13	19-Aug-14	22-Jul-15	14-Jul-16
1,2,3,4 - Tetrachlorobenzene	0.50	µg/L	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.50
1,2,3,5 - Tetrachlorobenzene	0.50	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	ND	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.50
1,2,3 - Trichlorobenzene	0.50	µg/L	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.50
1,2,4,5 - Tetrachlorobenzene	0.50	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	ND	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.50
1,2,4 - Trichlorobenzene	0.50	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.05	<0.5	<0.05	<0.50
1,2 - Dichlorobenzene	0.5	µg/L	-	-	-	-	0.3	-	ND	ND	n.a.	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.7	<0.7	<0.7	<0.7	<0.50
1,3,5 - Trichlorobenzene	0.50	µg/L	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.50
1,3 - Dichlorobenzene	0.5	µg/L	-	-	-	-	2.8	-	ND	ND	n.a.	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	2	<1	<0.50
1,4 - Dichlorobenzene	0.5	µg/L	-	-	-	6.78	3.4	4	3.6	ND	n.a.	4.4	3.3	3.7	3.2	3.9	0.8	0.7	<0.5	<0.5	4	3	<1	3	1.2
1 - Chloronaphthalene	1.0	µg/L	-	-	-	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	ND	ND	<1	<1	<1	<0.5	<0.5		<0.5	<0.5	<1.0	<1.0
1 - Methylnaphthalene	0.20	µg/L	38000	20	-	-	0.2	0.3	0.2	ND	n.a.	0.3	0.2	0.2	0.2	<0.2	<0.2	<0.2	0.18	0.04	0.02	<0.5	<0.2	0.03	<0.20
2,3,4,5 - Tetrachlorophenol	0.4	µg/L	-	-	-	-	n.a.	n.a.	ND	ND	n.a.	ND	ND	ND	ND	<0.4	<0.4	<0.4	<0.5	<0.5			-	<0.5	<0.40
2,3,4,6 - Tetrachlorophenol	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
2,3,4 - Trichlorophenol	0.5	µg/L	-	-	-	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.50
2,3,5,6 - Tetrachlorophenol	0.5	µg/L	-	-	-	-	n.a.	n.a.	ND	ND	n.a.	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.50
2,3,5 - Trichlorophenol	0.5	µg/L	-	-	-	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
2,3,6 - Trichlorophenol	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.50
2,3 - Dichlorophenol	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.2	-	-	<0.50
2,4,5 - Trichlorophenol	0.5	µg/L	-	-	-	-	-	-	ND	ND	n.a.	ND	ND	ND	ND	<0.5	<0.5	<0.5		<0.5	<0.2	<0.2	<0.5	<0.2	<0.50
2,4,6 - Trichlorophenol	0.5	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.5	<0.2	<0.50
2,4 - Dichlorophenol	0.3	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.3	<0.3	<0.3	<0.5	<0.5	<0.3	<0.3	<0.3	<0.3	<0.30
2,4 - Dimethylphenol	0.5	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
2,4 - Dinitrophenol	2.0	µg/L	-	-	-	-	-	-	ND	ND	< 5	ND	ND	ND	ND	<2	<2	<6	<0.5	<10	<10	<10	<0.5	<10	<2.0
2,4 - Dinitrotoluene	0.5	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
2,5 - Dichlorophenol	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.3	<0.3	<0.3	<0.2	-	-	<0.50
2,6 - Dichlorophenol	0.5	µg/L	-	-	-	-	n.a.	n.a.	n.a.	n.a.	n.a.	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.50
2,6 - Dinitrotoluene	0.5	µg/L	-	-	-	-	0.9	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<5	<5	<0.5	<0.5	<0.5	<0.5	<0.50
2 - Chloronaphthalene	0.5	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.50
2 - Chlorophenol	0.3	µg/L	-	-	-	-	-	-	ND	ND	n.a.	ND	ND	ND	ND	<0.3	<0.3	<0.3	<0.5	<0.5	<0.5	<0.3	<0.3	<0.3	<0.30
2 - Methylnaphthalene	0.20	µg/L	38000	20	-	-	1.7	0.4	0.4	ND	n.a.	0.3	0.2	ND	ND	<0.2	<0.2	<0.2	0.04	0.04	<0.01	<0.5	<0.5	0.02	<0.20
2 - Nitrophenol	0.5	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.50
3,3' - Dichlorobenzidine	0.5	µg/L	-	-	-	-	-	-	ND	ND	n.a.	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
3,4,5 - Trichlorophenol	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	-	-	<0.50
3,4 - Dichlorophenol	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.2	-	-	<0.50
3,5 - Dichlorophenol	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.2	-	-	<0.50
4,6-Dinitro-2-methylphenol	2.0	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2	<6				<1.0	<0.5	<1.0	<2.0
4 - Bromophenyl Phenyl Ether	0.3	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	0.9	ND	<0.3	<0.3	<0.3	<0.5	<0.5		<0.3	<0.5	<0.3	<0.30
4 - Chloro - 3 - Methylphenol	0.5	µg/L	-	-	7.9	-	-	3.4	ND	ND	n.a.	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.50
4 - Chlorophenyl Phenyl Ether	0.5	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.50
4 - Nitrophenol	1.4	µg/L	-	-	-	-	-	-	ND	ND	< 5	ND	ND	ND	ND	<1	<1	<1	<0.5	<0.5		<0.5	<0.5	<0.5	<1.4
Acenaphthene	0.20	µg/L	750	58	-	-	-	-	ND	ND	< 1	ND	ND	ND	ND	<0.2	<0.2	<0.2	0.04	<0.01	<0.30	<0.30	<0.3	<0.01	<0.20
Acenaphthylene	0.20	µg/L	-	46	-	-	-	-	ND	ND	< 1	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.01	<0.01	<0.31	<0.31	<0.3	<0.01	<0.20
Anthracene	0.200	µg/L	-	0.12	-	-	-	-	ND	ND	< 1	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.01	<0.01	<0.30	<0.30	<0.3	<0.012	<0.20
Benzo(a)anthracene	0.200	µg/L	-	-	-	-	-	-	ND	ND	< 1	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.01	<0.01	<0.20	<0.20	<0.3	<0.018	<0.20
Benzo(a)pyrene	0.200	µg/L	-	-	-	-	-	-	ND	ND	< 1	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.01	<0.01	<0.09	<0.09	<0.01	<0.015	<0.20
Benzo(b/j)fluoranthene	0.20	µg/L	-	-	-	-	-	-	ND	ND	< 1	ND	ND	ND	ND	<0.2	<0.2	<0.2		<0.5	<0.20	<0.20	<0.5	<0.01	<0.20
Benzo(ghi)perylene	0.20	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.01	<0.01	<0.20	<0.20	<0.2	<0.01	<0.20
Benzo(k)fluoranthene	0.20	µg/L	-	-	-	-	-	-	ND	ND	< 1	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.01	<0.01	<0.20	<0.20	<0.5	<0.01	<0.20
Benzyl Butyl Phthalate	0.5	µg/L	-	-	-	-	-	-	ND	ND	n.a.	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.50
Biphenyl	0.5	µg/L	-	-	-	-	0.3	-	ND	ND	n.a.	ND	ND	ND	ND	<0.5	<0.5	<0.5				<0.5	<1.0	<0.5	<0.50
bis (2 - Chloroethoxy)methane	0.5	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.50
bis (2 - Chloroethyl)ether	0.5	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
bis (2 - Chloroisopropyl)ether	0.5	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50

TABLE D-4

GROUNDWATER SEMI-VOLATILE ORGANIC COMPOUND CHEMISTRY
TH-1
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	RDL	Units	NS Tier 1 EQS	NS Tier 2 PSS	20-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	16-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	10-Aug-09	27-Jul-10	21-Sep-11	4-Oct-12	4-Jul-13	19-Aug-14	22-Jul-15	14-Jul-16
bis (2 - Ethylhexyl)phthalate	2.0	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	ND	<2	<2	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
Chrysene	0.20	µg/L	-	-	-	-	-	-	ND	ND	< 1	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.01	<0.01	<0.27	<0.27	<0.3	<0.01	<0.20
Dibenzo(a,h)anthracene	0.20	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.01	<0.01	<0.20	<0.20	<0.2	<0.01	<0.20
Diethyl Phthalate	1.0	µg/L	-	-	10.7	tr	-	6.7	8.2	ND	6.9	5.7	3.9	4.0	4	3	2	1	<0.5	0.8	<0.5	0.8	0.65	0.56	<1.0
Dimethyl Phthalate	1.0	µg/L	-	-	-	-	8	-	ND	ND	< 2	ND	ND	ND	ND	<1	<1	<1	<2	<2	<0.5	<0.5	<0.5	<0.5	<1.0
di - n - Butyl Phthalate	2.0	µg/L	-	-	tr	tr	-	-	ND	ND	< 2	ND	ND	ND	ND	<2	<2	<2	<0.5	<0.5		<0.5	<0.5	<0.5	<2.0
di - n - Octyl Phthalate	0.8	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.8	<0.8	<0.8	<0.5	<0.5		<0.5	<0.5	<0.5	<0.80
Diphenyl Ether	0.3	µg/L	-	-	-	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	ND	ND	<0.3	<0.3	<0.3				<0.3	<0.5	<0.3	<0.30
Fluoranthene	0.20	µg/L	-	0.4	-	-	-	-	ND	ND	< 1	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.01	<0.01	<0.27	<0.27	<0.3	0.01	<0.20
Fluorene	0.20	µg/L	-	30	-	-	-	-	ND	ND	< 1	ND	ND	ND	ND	<0.2	<0.2	<0.2	0.06	<0.01	<0.31	<0.31	<0.3	0.03	<0.20
Hexachlorobenzene	0.50	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.01	<0.01	<0.5	<0.5	<0.5	<0.01	<0.50
Hexachlorobutadiene	0.40	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.4	<0.4	<0.4	<0.01	<0.01	<0.4	<0.4	<0.4	<0.01	<0.40
Hexachlorocyclopentadiene	2.0	µg/L	-	-	-	-	-	-	ND	ND	n.a.	ND	ND	ND	ND	<2	<2	<2	<0.5	<0.5		<0.5	<0.5	<0.5	<2.0
Hexachloroethane	0.50	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.01	<0.5	<0.5	<0.5	<0.5	<0.01	<0.50
Indeno(1,2,3-cd)pyrene	0.20	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.2	<0.2	<1	<0.01	<0.01	<0.27	<0.27	<0.2	<0.01	<0.20
Isophorone	0.5	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.50
m - Cresol & p - Cresol	0.5	µg/L	-	-	-	-	-	-	ND	ND	n.a.	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
Naphthalene	0.20	µg/L	7000	11	3.2	tr	1.4	1.8	1.3	ND	1.6	1.3	0.5	0.5	0.4	0.4	<0.2	<0.2	0.32	0.11	<0.30	<0.30	<0.5	0.18	<0.20
Nitrobenzene	0.5	µg/L	-	-	-	-	-	-	ND	ND	n.a.	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.50
N - Nitrosodi - n - Propylamine	0.5	µg/L	-	-	-	-	-	-	ND	ND	< 5	ND	ND	ND	ND		<1	<1	<0.5	<0.5		<0.5	<0.5	<0.5	<0.50
N - Nitrosodiphenylamine & DPA	1.0	µg/L	-	-	tr	-	2	1.8	1.8	ND	< 10	1.6	1.1	ND	ND	1	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<1.0
o - Cresol	0.5	µg/L	-	-	-	-	-	-	ND	ND	n.a.	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
p - Chloroaniline	1.0	µg/L	-	-	-	-	-	-	-	-	-	ND	ND	ND	ND	<1	<1	<1	<1.0	<1	<1.0	<1.0	<1.0	<1.0	<1.0
Pentachlorobenzene	0.50	µg/L	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.05	<0.05		<0.05	-	<0.05	<0.50
Pentachlorophenol	1.0	µg/L	-	-	-	-	-	-	ND	ND	< 2	ND	ND	ND	ND	<1	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0
Perylene	0.20	µg/L	-	-	-	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	ND	-	ND	<0.2	<0.2	<0.2	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.20
Phenanthrene	0.20	µg/L	-	4	-	-	-	-	ND	ND	< 1	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.01	<0.01	<0.32	<0.32	<0.3	0.04	<0.20
Phenol	0.5	µg/L	-	-	-	-	-	-	ND	ND	< 0.05	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<1.0	<1.0	<0.50
Pyrene	0.20	µg/L	-	0.25	-	-	-	-	ND	ND	< 1	ND	ND	ND	ND	<0.2	<0.2	<0.2	<0.01	<0.01	<0.20	<0.20	<0.3	0.01	<0.20
Quinoline		µg/L	-	-	-	-	-	-	-	-	-	-	-	ND	ND	<2	<2	<2	<0.01	<0.01	<0.01	<0.01	-	<0.01	-

Notes:

RDL - Reported Detection Limit (updated in 2016)

ND - Values below RDL

n.a. - compound not analyzed

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 PSS

Bold and italics exceeds indicates both NS Tier and Tier 2

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE E-1 **GROUNDWATER PETROLEUM HYDROCARBON CHEMISTRY - MW-4A**
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	RDL	Units	NS Tier 1 EQS	NS Tier 2 PSS	14-Jul-16
Benzene	0.001	mg/L	20	4.6	0.0018
Toluene	0.001	mg/L	20	4.2	<0.0010
Ethylbenzene	0.001	mg/L	20	3.2	<0.0010
Total Xylenes	0.002	mg/L	20	2.8	<0.0020
C6 - C10 (less BTEX)	0.01	mg/L	-	-	<0.010
>C10-C16 Hydrocarbons	0.05	mg/L	-	-	0.052
>C16-C21 Hydrocarbons	0.05	mg/L	-	-	<0.050
>C21-<C32 Hydrocarbons	0.1	mg/L	-	-	<0.10
Modified TPH (Tier1)	0.1	mg/L	20	2.0	<0.10

Notes:

RDL - Reported Detection Limit (updated in 2016)

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 PSS

Bold and italics exceeds indicates both NS Tier and Tier 2

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE E-2 **GROUNDWATER PETROLEUM HYDROCARBON CHEMISTRY - MW-12B**
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	RDL	Units	NS Tier 1 EQS	NS Tier 2 PSS	14-Jul-16	14-Jul-16 MW-40D
Benzene	0.001	mg/L	20	4.6	<0.0010	<0.0010
Toluene	0.001	mg/L	20	4.2	<0.0010	<0.0010
Ethylbenzene	0.001	mg/L	20	3.2	<0.0010	<0.0010
Total Xylenes	0.002	mg/L	20	2.8	<0.0020	<0.0020
C6 - C10 (less BTEX)	0.01	mg/L	-	-	<0.010	<0.010
>C10-C16 Hydrocarbons	0.05	mg/L	-	-	<0.050	<0.050
>C16-C21 Hydrocarbons	0.05	mg/L	-	-	<0.050	<0.050
>C21-<C32 Hydrocarbons	0.1	mg/L	-	-	<0.10	<0.10
Modified TPH (Tier1)	0.1	mg/L	20	2.0	<0.10	<0.10

Notes:
RDL - Reported Detection Limit (updated in 2016)
Bold indicates exceedance of NS Tier 1 EQS
Bold and shaded indicates exceedance of NS Tier 2 PSS
Bold and italics exceeds indicates both NS Tier and Tier 2
MW-40D = Duplicate of MW-12B
NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)
NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE E-3 **GROUNDWATER PETROLEUM HYDROCARBON CHEMISTRY - MW-22A**
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	RDL	Units	NS Tier 1 EQS	NS Tier 2 PSS	14-Jul-16
Benzene	0.001	mg/L	20	4.6	<0.0010
Toluene	0.001	mg/L	20	4.2	<0.0010
Ethylbenzene	0.001	mg/L	20	3.2	<0.0010
Total Xylenes	0.002	mg/L	20	2.8	<0.0020
C6 - C10 (less BTEX)	0.01	mg/L	-	-	<0.010
>C10-C16 Hydrocarbons	0.05	mg/L	-	-	<0.050
>C16-C21 Hydrocarbons	0.05	mg/L	-	-	<0.050
>C21-<C32 Hydrocarbons	0.1	mg/L	-	-	<0.10
Modified TPH (Tier1)	0.1	mg/L	20	2.0	<0.10

Notes:

RDL - Reported Detection Limit (updated in 2016)

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 PSS

Bold and italics exceeds indicates both NS Tier and Tier 2

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE E-4 **GROUNDWATER PETROLEUM HYDROCARBON CHEMISTRY - MW-22B**

Municipality of the County of Kings

Meadowview Landfill, Kentville, NS

Stantec Consulting Ltd. Project No. 121414186.301

Compound	RDL	Units	NS Tier 1 EQS	NS Tier 2 PSS	14-Jul-16
Benzene	0.001	mg/L	20	4.6	0.0015
Toluene	0.001	mg/L	20	4.2	<0.0010
Ethylbenzene	0.001	mg/L	20	3.2	<0.0010
Total Xylenes	0.002	mg/L	20	2.8	<0.0020
C6 - C10 (less BTEX)	0.01	mg/L	-	-	<0.010
>C10-C16 Hydrocarbons	0.05	mg/L	-	-	<0.050
>C16-C21 Hydrocarbons	0.05	mg/L	-	-	<0.050
>C21-<C32 Hydrocarbons	0.1	mg/L	-	-	<0.10
Modified TPH (Tier1)	0.1	mg/L	20	2.0	<0.10

Notes:

RDL - Reported Detection Limit (updated in 2016)

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 PSS

Bold and italics exceeds indicates both NS Tier and Tier 2

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE E-5 **GROUNDWATER PETROLEUM HYDROCARBON CHEMISTRY - MW-24A**

Municipality of the County of Kings

Meadowview Landfill, Kentville, NS

Stantec Consulting Ltd. Project No. 121414186.301

Compound	RDL	Units	NS Tier 1 EQS	NS Tier 2 PSS	14-Jul-16
Benzene	0.001	mg/L	20	4.6	<0.0010
Toluene	0.001	mg/L	20	4.2	<0.0010
Ethylbenzene	0.001	mg/L	20	3.2	<0.0010
Total Xylenes	0.002	mg/L	20	2.8	<0.0020
C6 - C10 (less BTEX)	0.01	mg/L	-	-	<0.010
>C10-C16 Hydrocarbons	0.05	mg/L	-	-	<0.050
>C16-C21 Hydrocarbons	0.05	mg/L	-	-	<0.050
>C21-<C32 Hydrocarbons	0.1	mg/L	-	-	<0.10
Modified TPH (Tier1)	0.1	mg/L	20	2.0	<0.10

Notes:

RDL - Reported Detection Limit (updated in 2016)

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 PSS

Bold and italics exceeds indicates both NS Tier and Tier 2

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE E-6 **GROUNDWATER PETROLEUM HYDROCARBON CHEMISTRY - MW-24B**

Municipality of the County of Kings

Meadowview Landfill, Kentville, NS

Stantec Consulting Ltd. Project No. 121414186.301

Compound	RDL	Units	NS Tier 1 EQS	NS Tier 2 PSS	14-Jul-16
Benzene	0.001	mg/L	20	4.6	0.0031
Toluene	0.001	mg/L	20	4.2	<0.0010
Ethylbenzene	0.001	mg/L	20	3.2	<0.0010
Total Xylenes	0.002	mg/L	20	2.8	<0.0020
C6 - C10 (less BTEX)	0.01	mg/L	-	-	<0.010
>C10-C16 Hydrocarbons	0.05	mg/L	-	-	0.083
>C16-C21 Hydrocarbons	0.05	mg/L	-	-	<0.050
>C21-<C32 Hydrocarbons	0.1	mg/L	-	-	<0.10
Modified TPH (Tier1)	0.1	mg/L	20	2.0	<0.10

Notes:

RDL - Reported Detection Limit (updated in 2016)

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 PSS

Bold and italics exceeds indicates both NS Tier and Tier 2

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE E-7 **GROUNDWATER PETROLEUM HYDROCARBON CHEMISTRY - MW-25B**

Municipality of the County of Kings

Meadowview Landfill, Kentville, NS

Stantec Consulting Ltd. Project No. 121414186.301

Compound	RDL	Units	NS Tier 1 EQS	NS Tier 2 PSS	14-Jul-16
Benzene	0.001	mg/L	20	4.6	<0.0010
Toluene	0.001	mg/L	20	4.2	<0.0010
Ethylbenzene	0.001	mg/L	20	3.2	<0.0010
Total Xylenes	0.002	mg/L	20	2.8	<0.0020
C6 - C10 (less BTEX)	0.01	mg/L	-	-	<0.010
>C10-C16 Hydrocarbons	0.05	mg/L	-	-	<0.050
>C16-C21 Hydrocarbons	0.05	mg/L	-	-	<0.050
>C21-<C32 Hydrocarbons	0.1	mg/L	-	-	<0.10
Modified TPH (Tier1)	0.1	mg/L	20	2.0	<0.10

Notes:

RDL - Reported Detection Limit (updated in 2016)

Bold indicates exceedance of NS Tier 1 EQS

Bold and shaded indicates exceedance of NS Tier 2 PSS

Bold and italics exceeds indicates both NS Tier and Tier 2

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE E-8 **GROUNDWATER PETROLEUM HYDROCARBON CHEMISTRY - TH-1**
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	RDL	Units	NS Tier 1 EQS	NS Tier 2 PSS	14-Jul-16
Benzene	0.001	mg/L	20	4.6	<0.0010
Toluene	0.001	mg/L	20	4.2	<0.0010
Ethylbenzene	0.001	mg/L	20	3.2	<0.0010
Total Xylenes	0.002	mg/L	20	2.8	<0.0020
C6 - C10 (less BTEX)	0.01	mg/L	-	-	<0.010
>C10-C16 Hydrocarbons	0.057	mg/L	-	-	<0.057 (1)
>C16-C21 Hydrocarbons	0.057	mg/L	-	-	<0.057 (1)
>C21-<C32 Hydrocarbons	0.11	mg/L	-	-	<0.11 (1)
Modified TPH (Tier1)	0.11	mg/L	20	2.0	<0.11

Notes:
RDL - Reported Detection Limit (updated in 2016)
Bold indicates exceedance of NS Tier 1 EQS
Bold and shaded indicates exceedance of NS Tier 2 PSS
Bold and italics exceeds indicates both NS Tier and Tier 2
(1) Elevated TEH RDL(s) due to limited sample.
NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)
NS Tier 2 PSS = Nova Scotia Tier 2 Pathway Specific Standard for groundwater >10 m from fresh surface water (NSE 2013b)

TABLE F-1 SURFACE WATER GENERAL AND METALS CHEMISTRY - SW-1
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL	CCME FAL	NS Tier 1 EQS	1-May-96	1-Sep-96	1-Nov-96	1-May-97	1-Oct-97	1-Sep-98	1-Jul-00	1-Aug-01	1-Aug-01 Duplicate	1-Sep-02	19-Aug-03	25-Aug-04	14-Jan-06	23-Nov-06	1-Aug-07	11-Aug-09	1-Jul-11	1-Jul-13	1-Jul-15
Alkalinity (as CaCO3)	mg/L	5	-	-	35	69	40	38	57	55	60	62	63	52	57	64	27	46	57	57	54	49	47
Ammonia (as N)	mg/L	0.03	Fact Sheet	-	< 0.05	0.11	< 0.05	< 0.05	0.09	0.09	0.15	0.15	0.15	<0.1	0.08	<0.05	0.05	0.14	0.06	0.08	<0.03	0.16	0.06
Anion Sum	me/L		-	-	-	-	-	-	-	-	-	-	-	-	-	3.46	1.55	2.19	2.8	2.78	2.56	2.24	2.33
Bicarbonate (as CaCO3)	mg/L	5	-	-	34.9	68.8	39.9	37.9	56.9	54.9	60	62	62	51.66	57	64	27	46	56	57	54	49	47
Calcium	mg/L	0.1	-	-	22.4	32.1	22.7	22.7	38	35	29.3	29.3	28.9	30.7	31.1	38.8	18	28	34	32	35.8	28	36.6
Carbonate (as CaCO3)	mg/L	10	-	-	< 0.1	< 1	< 1	< 1	0.1	0.1	< 1	<1	<1	0.31	< 1	<1	<1	ND	<1	<1	<10	<10	<10
Cation Sum	me/L		-	-	-	-	-	-	-	-	-	-	-	-	-	3.46	1.64	2.30	3.01	2.70	2.84	2.27	3.07
Chloride	mg/L	1	120	-	19.5	30.4	18.5	18.2	57	**145**	**155**	34.9	34.9	32	30	43	22	26	38	38	32	25	30
Color	TCU	5	Narrative	-	30	20	29	34	18	17	71	8	6	73	21	9	23	18	12	19	7	55	<5
Conductivity (RCAp)	uS/cm	1	-	-	188	273	197	200	400	778	690	274	273	291	279	387	160	230	290	290	268	234	251
Dissolved Organic Carbon	mg/L	0.5	-	-	5.5		3.6	5.6	1.5	2.8	6.9	1.4	1.4	6		1.9	-	-	-	-	2.8	8.5	3.3
Hardness (as CaCO3)	mg/L		-	-	67	95	69	68.2	118	132	96.2	88.8	87.8	9.29	93.3	114	55	85	100	94	103	82.7	104
Ion Balance	%		-	-	-	-	-	-	-	-	-	-	-	-	-	0.06	2.66	2.25	3.61	1.46	5.2	0.6	13.6
Langelier Index (@ 4C)	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-0.86	-2.33	-1.11	-0.728	-0.817	-0.54	-1.19	-1.22
Langelier Index (@ 20C)	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-0.46	-2.08	-0.860	-0.478	-0.567	-0.22	-0.87	-0.9
Magnesium	mg/L	0.1	-	-	2.7	3.6	3	2.8	5.5	10.9	5.6	3.8	3.8	3.31	3.8	4.1	2.5	3.5	4.2	3.6	3.2	3.1	3
Nitrate	mg/L	0.05	2.9	-	-	-	-	-	-	-	-	-	-	-	-	1.83	1.6	1.9	-	1.8	1.7	1.85	1.75
Nitrate + Nitrite (as N)	mg/L	0.05	-	-	1.69	1.74	1.66	1.12	1.81	1.52	< 0.05	1.91	1.95	2.09	1.9	1.9	1.6	1.9	1.9	1.9	1.7	1.96	1.84
Nitrite	mg/L	0.05	0.06	-	-	-	-	-	-	-	-	-	-	-	-	**0.07**	ND	0.02	-	0.02	<0.05	**0.11**	**0.09**
Orthophosphate	mg/L	0.01	-	-	0.05	0.09	0.05	0.03	0.08	0.1	0.11	0.04	0.03	<0.3	0.09	0.18	0.04	0.06	0.05	0.05	<0.01	0.08	0.03
pH	-		6.5-9	-	7.3	7.4	7.2	7.5	7.4	7.4	7.1	7.8	7.9	7.8	7.5	7.6	6.58	7.39	7.61	7.55	8.1	7.59	7.47
Phosphorus	mg/L	0.02	Fact Sheet	-	-	-	-	-	-	-	-	-	-	-	-	0.2	<0.1	0.1	-	<0.1	0.04	0.12	0.26
Potassium	mg/L	0.1	-	-	1.3	2.6	1.8	1.6	3.6	6	3.9	2.2	2.2	3.1	2.9	3.4	1.9	2.2	2.6	2.2	2.1	2	1.7
Reactive Silica (as SiO2)	mg/L	0.5	-	-	5.4	7.4	8.8	4.3	5.6	7.6	6.5	5.3	5.3	8.9	10	5.8	6.5	9.4	6.4	8.3	4.8	8.1	7.7
Saturation pH (@ 20C)	-		-	-	-	-	-	-	-	-	-	-	-	-	-	8.06	8.66	8.25	8.09	8.12	8.32	8.46	8.37
Saturation pH (@ 4C)	-		-	-	-	-	-	-	-	-	-	-	-	-	-	8.46	8.91	8.50	8.34	8.37	8.64	8.78	8.69
Sodium	mg/L	0.1	-	-	9.9	14.8	9.4	10.8	31	76.7	91	15.2	14.8	13.5	16.4	25.1	11	12	20	17	16.4	11.2	21
Sulphate	mg/L	2	-	-	18	21	25	17	29	41	9	19	19	28.6	18	40	13	19	23	20	22	20	20
TDS (Calculated)	mg/L	1	-	-	-	-	-	-	-	-	337	156	156	153.4	155	207	99	138	171	165	152	129	149
Total Organic Carbon (C)	mg/L	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-		5.1	3.3	2.6	3.1	3	8.5	3.7
Turbidity	NTU	0.1	Narrative	-	4.1	1.3	1.9	1.6	4.4	4.2	1.8	2.2	2.1	7.1	4.9	2.7	10	2.8	8.8	1.6	3.1	7.7	4.2
Aluminum	ug/L	5	5	5	**76**	**64**	**85**	**39**	**319**	**1000**	**1900**	**39**	**33**	**70**	**10**	**10**	**160**	**200**	**169**	**50.5**	**71**	**285**	**84**
Antimony	ug/L	2	-	20	< 2	< 2	< 2	< 2	-	< 20	< 2	<2	<2	<0.4	< 2	<2	ND	ND	<2.0	<2.0	<2	<2	<2
Arsenic	ug/L	2	5	5	< 2	< 2	< 2	< 2	-	*< 20*	3	<2	2	1.9	2	2	ND	ND	<2.0	<2.0	<2	<2	<2
Barium	ug/L	5	-	1000	23	49	24	19	40	53	210	41	42	43.3	32	36	21	31	33.5	34.6	31	30	37
Beryllium	ug/L	2	-	2.3	*< 5*	*< 5*	*< 5*	*< 5*	*< 5*	*< 5*	*< 5*	*<5*	*<5*	<0.5	< 2	<2	ND	ND	<2.0	<2.0	<2	<2	<2
Bismuth	ug/L	2	-	-	-	-	-	-	-	-	-	-	-	-	< 2	<2	ND	ND	<2.0	<2.0	<2	<2	<2
Boron	ug/L	5	-	1200	12	19	8	10	20	54	32	16	17	<100	16	22	11	12	15.2	14.0	17.0	21.0	15.0
Cadmium	ug/L	0.017	0.017	0.01	*< 0.3*	*< 0.3*	*< 0.3*	*< 0.3*	*< 5*	*< 3*	**0.3**	**0.02**	**0.02**	*<0.3*	*< 0.3*	*<0.3*	ND	ND	*<0.017*	**0.026**	**0.171**	*<0.017*	*<0.017*
Chromium	ug/L	1	-	-	< 2	< 2	< 2	< 2	< 5	32	3	<2	<2	<2	< 2	<2	ND	ND	<2.0	<1.0	3	<1	<1
Cobalt	ug/L	1	-	10	< 1	< 1	< 1	< 1	< 5	< 10	1	<0.4	<0.4	<1	< 1	<1	ND	ND	<0.40	<0.40	<1	<1	<1
Copper	ug/L	2	2	2	**19**	< 2	< 2	< 2	*< 10*	*< 20*	**9**	<2	<2	**3**	< 2	<2	ND	ND	<2.0	<2.0	<2	**3**	1
Iron	ug/L	50	300	300	**310**	**600**	270	**330**	**480**	**2500**	**3600**	**510**	**490**	**740**	**510**	120	210	**610**	**425**	**426**	**392**	**760**	**436**
Lead	ug/L	0.5	1	1	0.2	0.2	0.2	< 1	*< 2.5*	*< 5*	**19**	<0.5	<0.5	<1	< 0.5	<0.5	ND	ND	<0.50	<0.50	<0.5	<0.5	<0.5
Manganese	ug/L	2	-	820	45	140	41	19	150	230	400	190	170	236	290	50	12	86	62.0	107	96	99	168
Molybdenum	ug/L	2	73	73	< 2	< 2	< 2	< 2	< 10	< 20	< 2	3	3	<4	< 2	<2	ND	ND	<2.0	<2.0	<2	<2	<2
Nickel	ug/L	2	25	25	**47**	< 2	< 2	< 2	< 10	< 20	2	<2	<2	<3	< 2	<2	ND	ND	<2.0	<2.0	<2	<2	<2
Selenium	ug/L	1	1	1	*< 2*	*< 2*	*< 2*	*< 2*	-	*< 20*	< 1	<1	<1	<1	*< 2*	*<2*	ND	ND	<1.0	<1.0	<1	<1	<1
Silver	ug/L	0.1	0.1	0.1	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*< 3*	*< 5*	*< 0.5*	<0.1	<0.1	*<2*	*< 0.5*	*<0.5*	ND	ND	<0.10	<0.10	<0.1	<0.1	<0.1
Strontium	ug/L	5	-	21000	75	100	71	72	-	170	140	100	100	159	110	170	57	88	108	111	125	109	111
Thallium	ug/L	0.1	0.8	0.8	< 0.1	< 0.1	< 0.1	< 0.1	-	*< 1*	< 0.1	<0.1	<0.1	<0.8	< 0.1	<0.1	ND	ND	<0.10	<0.10	<0.1	<0.1	<0.1
Tin	ug/L	2	-	-	< 2	< 2	< 2	< 2	< 50	< 20	< 2	<2	<2	<20	< 2	<2	ND	ND	<2.0	<2.0	<2	<2	<2
Titanium	ug/L	2	-	-	-	-	-	-	-	-	-	-	-	-	< 2	<2	6	7	4.0	<2.0	3	6	3
Uranium	ug/L	0.1	15	300	0.5	0.7	0.4	0.6	-	< 1	1	0.9	1	0.57	0.5	1	0.2	0.7	0.68	0.73	1.2	0.7	0.7
Vanadium	ug/L	2	-	6	< 2	< 2	< 2	< 2	*< 10*	*< 20*	**7**	<2	<2	<2	< 2	<2	ND	ND	<2.0	<2.0	<2	<2	<2
Zinc	ug/L	5	30	30	13	8	13	< 2	< 10	< 20	**80**	4	3	4	< 5	<5	ND	6	5.4	6.1	<5	<5	<5
Mercury	ug/L	0.013	0.026	0.026																			<0.026
Hydroxide	mg/L	5	-	-																	<5	<5	<5
Fluoride	mg/L	0.1	-	-																	<0.1	0.4	<0.1

Notes:
RDL - Reported Detection Limit (updated in 2016)
ND - Values below RDL
Bold indicates exceedance of CCME FAL
Bold and shaded indicates exceedance of NS Tier 1 EQS
Shaded and italics indicates the detection limit exceeds NS Tier 1 EQS
Bold, underlined and shaded indicates exceedance of both NS Tier 1 EQS and CCME FAL
NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)
CCME FAL = Canadian Council for the Ministers of the Environment, Canadian Environmental Quality Guidelines, Freshwater Aquatic Life (CCMW updates)

TABLE F-2 **SURFACE WATER GENERAL AND METALS CHEMISTRY - SW-2**

Municipality of the County of Kings

Meadowview Landfill, Kentville, NS

Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL	CCME FAL	NS Tier 1 EQS	Nov.-93	5/1/1996	Sept.-96	Nov.-96	5/1/1997	Oct.-97	Sept.-98	7/1/2000	Aug.-01	Sept.-02	Aug 19/03	8/25/2004	1/14/2006	1/14/2006 Field dup	11/23/2006	Aug 01/07	8/10/2009	7/3/1905	7/5/1905	7/7/1905
Alkalinity (as CaCO3)	mg/L	5	-	-	29	37	53	37	38	61	53	61	62	50	55	61	25	25	45	55	61	53	49	47
Ammonia (as N)	mg/L	0.03	Fact Sheet	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.05	< 0.05	< 0.05	<0.05	<0.1	< 0.05	<0.05	ND	ND	0.07	<0.05	0.34	<0.03	0.14	0.05
Anion Sum	me/L		-	-	-	-	-	-	-	-	-	-	-	-	-	3.41	1.45	1.45	2.16	-	2.79	2.56	2.34	2.36
Bicarbonate (as CaCO3)	mg/L	5	-	-	29	36.9	52.9	36.9	37.8	60.8	52.8	61	62	49.67	55	61	25	25	45	55	61	53	49	47
Calcium	mg/L	0.1	-	-	19.4	22.7	30.9	23	23.1	37.1	30.8	32	31.2	30.8	30.6	39.7	17	17	29	33	40	37.4	27.4	35.8
Carbonate (as CaCO3)	mg/L	10	-	-	0.03	0.1	< 1	< 1	< 1	0.2	0.2	< 1	<1	0.29	< 1	<1	ND	ND	ND	<1	<1	<10	<10	<10
Cation Sum	me/L		-	-	-	-	-	-	-	-	-	-	-	-	-	3.47	1.55	1.52	2.30	-	3.29	2.83	2.25	3
Chloride	mg/L	1	120	-	18.1	18.9	29.3	18.2	19.1	39.1	32.5	28.5	38.2	31.8	28	43	20	20	25	33	35	31	26	31
Color	TCU	5	Narrative	-	44	31	22	28	32	23	7	12	7	51	17	7	25	24	18	12	26	6	53	14
Conductivity (RCAp)	uS/cm	1	-	-	179	185	274	197	197	334	290	267	295	286	271	386	150	150	220	270	290	263	234	250
Dissolved Organic Carbon	mg/L	0.5	-	-	7.5	5.3		3.6	4.6	1.7	2.8	3	1.7	5.3		2			-	-	-	2.4	9.1	3.3
Hardness (as CaCO3)	mg/L		-	-	60.8	67.8	91.2	69.8	69.2	111	91.3	95.1	94	90.62	91.6	116	52	51	87	97	120	107	81.2	101
Ion Balance	%		-	-	-	-	-	-	-	-	-	-	-	-	-	0.94	3.38	2.35	3.19	2.39	8.22	5	2.1	11.9
Langelier Index (@ 4C)	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-0.97	-2.22	-2.49	-0.952	-0.878	-0.862	-0.53	-1.27	-1.19
Langelier Index (@ 20C)	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-0.57	-1.97	-2.24	-0.702	-0.627	-0.612	-0.21	-0.95	-0.87
Magnesium	mg/L	0.1	-	-	3	2.7	3.4	3	2.8	4.4	3.5	3.7	3.9	3.33	3.7	4.1	2.4	2.3	3.5	3.5	4.3	3.2	3.1	2.9
Nitrate	mg/L	0.05	2.9	-	-	-	-	-	-	-	-	-	-	-	-	1.94	1.5	1.5	2.0	-	1.8	1.8	1.99	1.72
Nitrate + Nitrite (as N)	mg/L	0.05	-	-	1.45	1.7	1.82	1.66	1.15	2	1.88	1.42	1.94	2.36	2	2	1.5	1.5	2.0	1.9	1.8	1.8	2.11	1.81
Nitrite	mg/L	0.05	0.06	-	-	-	-	-	-	-	-	-	-	-	-	0.06	ND	ND	0.02	-	0.03	<0.05	**0.12**	**0.09**
Orthophosphate	mg/L	0.01	-	-	0.05	0.05	0.09	0.05	0.03	0.08	0.12	0.05	0.04	<0.3	0.09	0.19	0.05	0.04	0.08	0.08	0.13	0.01	0.08	0.04
pH	-		6.5-9	-	7	7.5	7.4	7.2	7.6	7.5	7.5	7.6	7.9	7.8	7.5	7.5	6.74	6.48	7.55	7.49	7.38	8.1	7.52	7.51
Phosphorus	mg/L	0.02	Fact Sheet	-	-	-	-	-	-	-	-	-	-	-	-	0.2	<0.1	<0.1	0.1	-	1.4	0.03	0.11	0.25
Potassium	mg/L	0.1	-	-	2.6	1.4	2.5	2	1.5	3.2	2.6	1.9	2.7	2.7	2.9	3.3	1.8	1.8	2.1	2.6	4.6	2	2	1.7
Reactive Silica (as SiO2)	mg/L	0.5	-	-	7.7	5.3	7.4	8.8	4.2	4.9	7.3	3.8	4.8	9	10	5.9	6.2	6.2	9.5	6.3	8.1	5.1	8.1	7.3
Saturation pH (@ 20C)	-		-	-	-	-	-	-	-	-	-	-	-	-	-	8.07	8.71	8.72	8.25	8.12	7.99	8.31	8.47	8.38
Saturation pH (@ 4C)	-		-	-	-	-	-	-	-	-	-	-	-	-	-	8.47	8.96	8.97	8.50	8.37	8.24	8.63	8.79	8.7
Sodium	mg/L	0.1	-	-	8.7	9.7	13.6	9.4	10.1	21.1	15.5	12.5	18.7	12.8	15.2	24.5	10	10	11	18	16	14.5	11.3	20.7
Sulphate	mg/L	2	-	-	20	18	22	25	18	29	22	22	26	30.4	19	40	13	13	20	23	22	24	23	20
TDS (Calculated)	mg/L	1	-	-	-	-	-	-	-	-	-	147	171	153.19	151	206	93	93	137	162	181	152	133	149
Total Organic Carbon (C)	mg/L	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-		5.3	3.6	3.3	4	5.9	3	11.5	3.2
Turbidity	NTU	0.1	Narrative	-	7.1	3	< 0.1	1.3	1.3	6.8	0.5	< 0.1	1.17	6.2	3.8	1.1	11	14	2.5	5.2	3.9	21.9	2.5	4.3
Aluminum	ug/L	5	5	5	**420**	**60**	**79**	**100**	**42**	**193**	*< 100*	*< 10*	**77**	**60**	**10**	*<10*	**200**	**150**	**200**	**286**	**689**	**45**	**330**	**62**
Antimony	ug/L	2	-	20	< 2	< 2	< 2	< 2	< 2	-	< 20	< 2	<2	<0.4	< 2	<2	ND	ND	ND	<2.0	<2.0	<2	<2	<2
Arsenic	ug/L	2	5	5	< 2	< 2	< 2	< 2	< 2	-	< 20	< 2	<2	1.5	2	2	ND	ND	ND	<2.0	3.5	<2	<2	<2
Barium	ug/L	5	-	1000	27	20	28	22	17	29	< 50	22	38	32.7	25	30	18	18	27	38.3	107	27	30	36
Beryllium	ug/L	2	-	2.3	< 5	< 5	< 5	< 5	< 5	< 5	< 50	< 5	<5	<0.5	< 2	<2	ND	ND	ND	<2.0	<2.0	<2	<2	<2
Bismuth	ug/L	2	-	-	-	-	-	-	-	-	-	-	-	-	< 2	<2	ND	ND	ND	<2.0	<2.0	<2	<2	<2
Boron	ug/L	5	-	1200	12	11	14	8	9	30	< 50	11	16	<100	14	18	9	9	12	13.2	167	17	21	15
Cadmium	ug/L	0.017	0.017	0.01	*< 0.5*	*< 0.3*	*< 0.3*	*< 0.3*	*< 0.3*	*< 5*	*< 0.5*	< 0.1	**0.21**	*<0.3*	*< 0.3*	*<0.3*	ND	ND	ND	<0.017	**0.178**	**0.018**	<0.017	<0.017
Chromium	ug/L	1	-	-	< 2	< 2	< 2	< 2	< 2	< 5	< 20	< 2	<2	<2	< 2	<2	ND	ND	ND	<2.0	<1.0	2	<1	<1
Cobalt	ug/L	1	-	10	< 1	< 1	< 1	< 1	< 1	< 5	< 10	< 1	<0.4	<1	< 1	<1	ND	ND	ND	<0.40	1.98	<1	<1	<1
Copper	ug/L	2	2	2	*< 10*	< 2	< 2	< 2	< 2	*< 10*	*< 20*	< 2	2	**3**	< 2	<2	ND	ND	ND	<2.0	**2.9**	<2	**3**	<1
Iron	ug/L	50	300	300	**310**	**280**	**340**	**240**	**310**	**440**	**340**	**150**	**330**	**390**	**500**	**70**	**220**	**170**	**570**	**793**	**2460**	**271**	**850**	**390**
Lead	ug/L	0.5	1	1	**1.2**	0.2	0.4	0.2	< 1	*< 2.5*	*< 5*	< 0.5	0.8	<1	< 0.5	<0.5	ND	ND	ND	0.55	**1.85**	<0.5	<0.5	<0.5
Manganese	ug/L	2	-	820	20	31	69	26	27	70	52	94	100	125	370	21	7	7	72	138	**3140**	75	99	97
Molybdenum	ug/L	2	73	73	< 2	< 2	< 2	< 2	< 2	< 10	< 20	< 2	3	<4	< 2	<2	ND	ND	ND	<2.0	<2.0	<2	<2	<2
Nickel	ug/L	2	25	25	< 2	< 2	< 2	< 2	< 2	< 10	< 20	< 2	<2	<3	< 2	<2	ND	ND	ND	<2.0	<2.0	<2	<2	<0.026
Selenium	ug/L	1	1	1	< 2	< 2	< 2	< 2	< 2		< 20	< 1	<1	<1	< 2	<2	ND	ND	ND	<1.0	<1.0	<1	<1	<2
Silver	ug/L	0.1	0.1	0.1	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*< 3*	*< 5*	*< 0.5*	0.1	<2	*< 0.5*	*<0.5*	ND	ND	ND	<0.10	<0.10	<0.1	<0.1	*<1*
Strontium	ug/L	5	-	21000	93.1	72	0.1	75	70		120	120	100	160	110	170	54	54	91	116	144	111	108	<0.1
Thallium	ug/L	0.1	0.8	0.8	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		*< 1*	< 0.1	<0.1	<0.8	< 0.1	<0.1	ND	ND	ND	<0.10	<0.10	<0.1	<0.1	**111**
Tin	ug/L	2	-	-	< 2	< 2	< 2	< 2	< 2	< 50	< 20	< 2	<2	<20	< 2	<2	ND	ND	ND	<2.0	<2.0	<2	<2	<0.1
Titanium	ug/L	2	-	-	-	-	-	-	-	-	-	-	-	-	< 2	<2	8	5	5	7.1	13.3	<2	8	<2
Uranium	ug/L	0.1	15	300	0.4	0.5	0.7	0.5	0.6		< 1	0.6	0.7	0.61	0.5	0.9	0.2	0.2	0.8	0.81	1.73	1.2	0.7	2
Vanadium	ug/L	2	-	6	< 2	< 2	< 2	< 2	< 2	*< 10*	< 20	< 2	<2	<2	< 2	<2	ND	ND	ND	<2.0	3.8	<2	<2	0.7
Zinc	ug/L	5	30	30	< 10	5	15	17	< 2	< 10	< 20	5	30	8	5	<5	ND	6	6	10.2	21.1	<5	<5	<2
Mercury	ug/L	0.013	0.026	0.026																				
Fluoride	mg/L	5	-	-																		<0.1	0.4	<0.1
Hydroxide	mg/L	0.1	-	-																		<5	<5	<5

Notes:

RDL - Reported Detection Limit (updated in 2016)

ND - Values below RDL

Bold indicates exceedance of CCME FAL

Bold and shaded indicates exceedance of NS Tier 1 EQS

Shaded and italics indicates the detection limit exceeds NS Tier 1 EQS

Bold, underlined and shaded indicates exceedance of both NS Tier 1 EQS and CCME FAL

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

CCME FAL = Canadian Council for the Ministers of the Environment, Canadian Environmental Quality Guidelines, Freshwater Aquatic Life (CCMW updates)

TABLE F-3 **SURFACE WATER GENERAL AND METALS CHEMISTRY - SW-3**

Municipality of the County of Kings

Meadowview Landfill, Kentville, NS

Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL	CCME FAL	NS Tier 1 EQS	May-96	Sept.-96	Nov.-96	May-97	Oct.-97	Sept.-98	Jul-00	Jul-00 Dup	Aug.-01	Sept.-02	Aug 19/03	25-Aug-04	14-Jan-06	23-Nov-06	1-Aug-07	12-Aug-09	2011	2013	2015
Alkalinity (as CaCO3)	mg/L	5	-	-	36	6	38	38	53	56	63	61	60	52	57	60	27	46	180	210	55	52	22
Ammonia (as N)	mg/L	0.03	Fact Sheet	-	<0.05	< 0.05	0.05	< 0.05	0.07	0.09	0.07	0.07	0.17	<0.1	0.08	<0.05	0.09	0.13	13	6.1	<0.03	0.14	0.08
Anion Sum	me/L		-	-	-	-	-	-	-	-	-	-	-	-	-	3.38	1.52	2.19	5.59	5.69	2.58	2.34	2.4
Bicarbonate (as CaCO3)	mg/L	5	-	-	35.9	62.9	37.9	37.9	52.9	55.7	63	61	60	51.66	57	60	27	46	179	215	55	52	50
Calcium	mg/L	0.1	-	-	22.8	31.4	23.4	23.1	33.4	31.9	32.2	32.9	29.8	30.9	30.3	39.5	18	29	99	50	36.6	27.2	36.9
Carbonate (as CaCO3)	mg/L	10	-	-	<0.1	< 1	< 1	< 1	0.1	0.3	< 1	< 1	<1	0.31	< 1	<1	ND	ND	<1	<1	<10	<10	<10
Cation Sum	me/L		-	-	-	-	-	-	-	-	-	-	-	-	-	3.5	1.61	2.35	18.6	8.27	2.71	2.27	2.98
Chloride	mg/L	1	120	-	19	31.2	19.2	18.4	49.6	54	29.6	29.6	37.4	32.7	30	43	21	25	71	50	31	26	6.9
Color	TCU	5	Narrative	-	33	20	28	33	20	11	14	14	9	68	22	9	23	19	9	72	<5	60	50
Conductivity (RCAp)	uS/cm	1	-	-	187	267	203	199	377	375	274	274	284	291	283	388	160	220	590	510	265	238	3.9
Dissolved Organic Carbon	mg/L	0.5	-	-	5.8		3.9	4.6	1.3	2.8	3	3.2	1.9	8.6		2.2	-	-		-	2.9	8	3.2
Hardness (as CaCO3)	mg/L		-	-	68.5	92.4	70.8	69.2	102	99.4	95.6	97.4	90.1	90.83	91.3	116	54	88	340	160	104	81.5	104
Ion Balance	%		-	-	-	-	-	-	-	-	-	-	-	-	-	1.67	2.94	3.37	53.8	18.5	2.5	1.6	10.8
Langelier Index (@ 4C)	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-0.78	-2.12	-1.08	-0.658	-0.804	-0.52	-1.25	-1.08
Langelier Index (@ 20C)	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-0.38	-1.87	-0.824	-0.411	-0.555	-0.2	-0.93	-0.76
Magnesium	mg/L	0.1	-	-	2.8	3.4	3	2.8	4.5	4.8	3.7	3.7	3.8	3.32	3.8	4.1	2.5	3.7	22	7.5	3.1	3.3	2.9
Nitrate	mg/L	0.05	2.9	-	-	-	-	-	-	-	-	-	-	-	-	1.84	1.6	2.0		<0.05	1.76	2.06	1.73
Nitrate + Nitrite (as N)	mg/L	0.05	-	-	1.68	1.78	1.6	1.16	1.87	0.5	1.4	1.38	1.93	2.08	1.9	1.9	1.6	2.0	0.05	0.05	1.76	2.17	252
Nitrite	mg/L	0.05	0.06	-	-	-	-	-	-	-	-	-	-	-	-	0.06	ND	0.02		0.01	<0.05	**0.11**	**1.65**
Orthophosphate	mg/L	0.01	-	-	0.04	0.11	0.05	0.04	0.06	0.12	0.06	0.06	0.04	<0.3	0.09	0.18	0.04	0.07	<0.01	0.01	<0.01	0.04	0.03
pH	-		6.5-9	-	7.3	7.3	7.2	7.5	7.4	7.7	7.7	7.5	7.9	7.8	7.6	7.7	6.79	7.41	6.84	6.86	8.1	7.52	7.58
Phosphorus	mg/L	0.02	Fact Sheet	-	-	-	-	-	-	-	-	-	-	-	-	0.2	<0.1	0.2		1.5	0.04	0.11	0.24
Potassium	mg/L	0.1	-	-	1.6	2.5	1.9	1.6	3.3	3.5	1.9	1.9	2.2	2.9	2.8	3.4	1.9	2.3	25	15	2.1	2.2	1.6
Reactive Silica (as SiO2)	mg/L	0.5	-	-	5.2	7.3	8.9	4.2	5.4	7.4	4.1	4.1	5.1	9	10	5.8	6.4	9.5	23	18	4.9	8.5	7.58
Saturation pH (@ 20C)	-		-	-	-	-	-	-	-	-	-	-	-	-	-	8.08	8.66	8.23	7.25	7.42	8.3	8.45	8.34
Saturation pH (@ 4C)	-		-	-	-	-	-	-	-	-	-	-	-	-	-	8.48	8.91	8.49	7.5	7.66	8.62	8.77	8.66
Sodium	mg/L	0.1	-	-	9.8	14.1	9.6	-	-	-	-	-	-	-	-	25.2	11	11	35	35	12.5	11.9	18.8
Sulphate	mg/L	2	-	-	19	21	24	17	30	24	20	20	19	28.4	19	40	13	20	<2	<2	23	20	<0.1
TDS (Calculated)	mg/L	1	-	-	-	-	-	-	-	-	149	149	159	153.8	155	205	97	139	652	395	150	133	150
Total Organic Carbon (C)	mg/L	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-		4.8	3.4	59	27	3.2	10	0.08
Turbidity	NTU	0.1	Narrative	-	3.9	1.9	1	1.4	4	1.9	< 0.1	< 0.1	1.9	12	4.3	2.3	14	5.6	740	580	2.9	3.1	22
Aluminum	ug/L	5	5	5	**100**	**97**	**110**	**38**	**253**	**500**	**10**	**10**	**26**	**110**	**10**	**10**	**130**	**240**	**38800**	**1360**	**71**	**210**	**92**
Antimony	ug/L	2	-	20	<2	< 2	< 2	< 2	-	< 20	< 2	< 2	<2	<0.4	< 2	<2	ND	ND	<20	<2.0	<2	<2	<2
Arsenic	ug/L	2	5	5	<2	2	< 2	< 2	-	< 20	< 2	< 2	<2	1.8	2	2	ND	ND	**359**	**105**	<2	<2	<2
Barium	ug/L	5	-	1000	24	37	26	19	39	< 50	33	32	43	55.1	32	38	24	31	**2870**	**1070**	32	31	39
Beryllium	ug/L	2	-	2.3	<5	< 5	< 5	< 5	< 5	< 50	< 5	< 5	<5	<0.5	< 2	<2	ND	ND	<20	<2.0	<2	<2	<2
Bismuth	ug/L	2	-	-	-	-	-	-	-	-	-	-	-	-	< 2	<2	ND	ND	<20	<2.0	<2	<2	<2
Boron	ug/L	5	-	1200	10	18	10	8	20	< 50	15	15	18	<100	16	21	11	13	179	135	17	20	14
Cadmium - OWQP	ug/L	0.017	0.017	0.01	<0.3	< 0.3	< 0.3	< 0.3	< 5	< 3	< 0.1	< 0.1	**0.02**	<0.3	< 0.3	<0.3	ND	ND	**2.05**	**0.380**	**0.521**	**0.018**	<0.017
Chromium	ug/L	1	-	-	<2	< 2	< 2	< 2	< 5	< 20	< 2	< 2	<2	<2	< 2	<2	ND	ND	47	2.1	<1	<1	<1
Cobalt	ug/L	1	-	10	<1	< 1	< 1	< 1	< 5	< 10	< 1	< 1	<0.4	<1	< 1	<1	ND	ND	20.2	1.91	<1	<1	<1
Copper	ug/L	2	2	2	<2	< 2	< 2	< 2	< 10	< 20	< 2	< 2	<2	**4**	< 2	<2	ND	ND	**123**	**6.2**	<2	**3**	<1
Iron	ug/L	50	300	300	**340**	**500**	280	**320**	**340**	**1100**	**320**	**330**	**440**	**810**	**590**	150	190	**670**	**235000**	**78700**	**452**	**830**	**489**
Lead	ug/L	0.5	1	1	0.2	0.5	0.5	0.3	< 2.5	< 5	< 0.5	< 0.5	<0.5	<1	< 0.5	<0.5	ND	ND	**76.7**	**3.78**	<0.5	<0.5	<0.5
Manganese	ug/L	2	-	820	40	110	39	33	130	120	60	59	160	238	290	51	14	87	**7700**	**4860**	129	130	191
Molybdenum	ug/L	2	73	73	<2	< 2	< 2	< 2	< 10	< 20	< 2	< 2	3	<4	< 2	<2	ND	ND	<20	<2.0	<2	<2	<2
Nickel	ug/L	2	25	25	<2	< 2	< 2	< 2	< 10	< 20	< 2	< 2	<2	<3	< 2	<2	ND	ND	49	3.3	<2	<2	<2
Selenium - OWQP	ug/L	1	1	1	<2	< 2	< 2	< 2		< 20	< 1	< 1	<1	<1	< 2	<2	ND	ND	<10	<1.0	<1	<1	<1
Silver	ug/L	0.1	0.1	0.1	<0.5	< 0.5	< 0.5	< 0.5	< 3	< 5	< 0.5	< 0.5	<0.1	<2	< 0.5	<0.5	ND	ND	<1.0	<0.10	<0.1	<0.1	<0.1
Strontium	ug/L	5	-	21000	68	0.1	77	71	-	130	120	120	100	160	110	170	58	91	415	257	127	104	113
Thallium	ug/L	0.1	0.8	0.8	<0.1	< 0.1	< 0.1	< 0.1	-	< 1	< 0.1	< 0.1	<0.1	<0.8	< 0.1	<0.1	ND	ND	<1.0	<0.10	<0.1	<0.1	<0.1
Tin	ug/L	2	-	-	<2	< 2	< 2	< 2	< 50	< 20	< 2	< 2	<2	<20	< 2	<2	ND	ND	<20	<2.0	<2	<2	<2
Titanium	ug/L	2	-	-	-	-	-	-	-	-	-	-	-	-	< 2	<2	5	7	146	25.7	3	7	3
Uranium	ug/L	0.1	15	300	0.5	0.7	0.5	0.5	-	< 1	0.6	0.6	0.8	0.62	0.5	1	0.2	0.8	4.4	0.28	1.2	0.7	0.8
Vanadium	ug/L	2	-	6	<2	< 2	< 2	< 2	< 10	< 20	< 2	< 2	<2	<2	< 2	<2	ND	ND	**139**	**8.5**	<2	<2	<2
Zinc	ug/L	5	30	30	5	12	15	21	< 10	< 20	6	4	24	8	< 5	<5	8	5	**395**	**36.3**	<5	8	<5
Mercury	ug/L	0.013	0.026	0.026																			<0.026
Fluoride	mg/L	5	-	-																	<0.1	0.4	29
Hydroxide	mg/L	0.1	-	-																	<5	<5	<5

Notes:

RDL - Reported Detection Limit (updated in 2016)

ND - Values below RDL

Bold indicates exceedance of CCME FAL

Bold and shaded indicates exceedance of NS Tier 1 EQS

Shaded and italics indicates the detection limit exceeds NS Tier 1 EQS

Bold, underlined and shaded indicates exceedance of both NS Tier 1 EQS and CCME FAL

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

CCME FAL = Canadian Council for the Ministers of the Environment, Canadian Environmental Quality Guidelines, Freshwater Aquatic Life (CCMW updates)

TABLE F-4 **SURFACE WATER GENERAL AND METALS CHEMISTRY - SW-7**
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL	CCME FAL	NS Tier 1 EQS	May-93	Aug-93	Nov-93	May-96	Sep-96	Nov-96	May-97	Oct-97	Sep-98	Jul-00	Aug-01	Sep-02	19-Aug-03	19-Aug-03 Lab Dup
Alkalinity (as CaCO3)	mg/L	5	-	-	76	85	66	48	84	58	66	87	74	81	111	89	110	120
Ammonia (as N)	mg/L	0.03	Fact Sheet	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.59	1.66	<0.1	2.8	2.8
Anion Sum	me/L		-	-														
Bicarbonate (as CaCO3)	mg/L	5	-	-	75.9	84.8	65.9	47.9	83.7	57.9	65.7	85.9	73.9	81	110	88.44	109	119
Calcium	mg/L	0.1	-	-	25	30.9	24.3	20	28.7	24.7	23	27.3	22.9	26.6	34.7	26.7	32.3	32.8
Carbonate (as CaCO3)	mg/L	10	-	-	0.11	0.2	0.1	< 0.1	< 1	< 1	< 1	1	0.1	< 1	1	0.52	< 1	< 1
Cation Sum	me/L		-	-														
Chloride	mg/L	1	120	-	20.1	20.2	18.2	20.9	22.3	21.9	24.5	23.5	22.2	21.1	28.3	21.9	30	32
Color	TCU	5	Narrative	-	64	29	24	31	30	53	58	30	22	20	27	54	59	58
Conductivity (RCAp)	uS/cm	1	-	-	233	229	186	177	226	210	215	250	220	233	306	252	349	348
Dissolved Organic Carbon	mg/L	0.5	-	-	17	4.1	3.8	4.4		3.6	5.2	1.3	2.8	2.5	2	2.8		
Hardness (as CaCO3)	mg/L		-	-	76.8	91.6	71.8	59	83.6	72.8	68.1	80.5	67.5	77.5	102	76.68	97.1	98.4
Ion Balance	%		-	-														
Langelier Index (@ 20C)	-		-	-														
Langelier Index (@ 4C)	-		-	-														
Magnesium	mg/L	0.1	-	-	3.5	3.5	2.7	2.2	2.9	2.7	2.6	3	2.5	2.7	3.8	2.43	4	4
Nitrate	mg/L	0.05	2.9	-														
Nitrate + Nitrite (as N)	mg/L	0.05	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.06	< 0.05	< 0.05	< 0.05	< 0.05	<0.05	<0.06	0.18	0.16
Nitrite	mg/L	0.05	0.06	-														
Orthophosphate	mg/L	0.01	-	-	< 0.01	< 0.01	0.01	0.01	0.01	0.01	< 0.01	< 0.01	< 0.01	0.01	<0.01	<0.3	0.01	0.01
pH	-		6.5-9	-	7.2	7.4	7.2	7.1	7.5	7	7.6	8.1	7.3	7.6	8.1	7.8	7.7	7.8
Phosphorus	mg/L	0.02	Fact Sheet	-														
Potassium	mg/L	0.1	-	-	1.1	1	1	1	1.2	1.3	1.4	1.3	1.4	1.5	1.8	1.7	2.8	2.8
Reactive Silica (as SiO2)	mg/L	0.5	-	-	7.9	10.5	10.3	7.8	11.5	10	8.5	12	10.9	10.8	11.9	12	11	12
Saturation pH (@ 20C)	-		-	-														
Saturation pH (@ 4C)	-		-	-														
Sodium	mg/L	0.1	-	-	11.5	9.5	9.2	12.5	12.6	14	17	16.5	14.4	14.5	18.2	12.1	21.4	21.7
Sulphate	mg/L	2	-	-	< 2	< 2	4	8	6	10	< 2	5	< 2	6	4	4	10	< 5
TDS (Calculated)	mg/L	1	-	-										133	172	134.29	182	187
Total Organic Carbon (C)	mg/L	0.5	-	-														
Turbidity	NTU	0.1	Narrative	-	1.66	2.95	1.23	1.4	1.3	1	1.2	2.9	1.5	1.6	7.9	13	5	5.7
Aluminum	ug/L	5	5	5	28	< 5	14	22	27	31	40	< 25	< 50	10	6	20	10	30
Antimony	ug/L	2	-	20	< 2	< 2	< 2	< 2	< 2	< 2	< 2	-	< 20	< 2	<2	<0.4	< 2	< 2
Arsenic	ug/L	2	5	5	3	3	2	2	2	< 2	2	-	< 20	2	3	3.4	2	2
Barium	ug/L	5	-	1000	180	160	130	120	170	150	150	224	180	220	390	284	360	370
Beryllium	ug/L	2	-	2.3	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 50	< 5	<5	<0.5	< 2	< 2
Bismuth	ug/L	2	-	-													< 2	< 2
Boron	ug/L	5	-	1200	13	14	10	24	32	29	33	50	< 50	42	56	<100	47	46
Cadmium	ug/L	0.017	0.017	0.01	< 0.5	< 0.5	< 0.5	< 0.3	< 0.3	< 0.3	< 0.3	< 5	< 0.5	< 0.1	<0.017	<0.3	< 0.3	< 0.3
Chromium	ug/L	1	-	-	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 5	< 20	< 2	<2	<2	< 2	< 2
Cobalt	ug/L	1	-	10	1	1	< 1	< 1	< 1	< 1	< 1	< 5	< 10	< 1	1.3	<1	2	2
Copper	ug/L	2	2	2	< 10	< 10	< 10	< 2	< 2	< 2	< 2	< 10	< 20	< 2	<2	<	< 2	< 2
Iron	ug/L	50	300	300	2880	1650	1030	980	1500	1500	1700	2130	1800	1100	3100	2900	3000	3100
Lead	ug/L	0.5	1	1	0.1	< 0.1	0.1	0.2	0.1	0.3	< 0.1	< 2.5	< 5	< 0.5	<0.5	<1	< 0.5	< 0.5
Manganese	ug/L	2	-	820	2050	1060	920	700	1000	930	860	1380	960	470	1800	771	5000	5100
Molybdenum	ug/L	2	73	73	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 10	< 20	< 2	<2	<4	< 2	< 2
Nickel	ug/L	2	25	25	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 10	< 20	< 2	2	<3	2	2
Selenium	ug/L	1	1	1	< 2	< 2	< 2	< 2	< 2	< 2	< 2		< 20	< 1	<1	<1	< 2	< 2
Silver	ug/L	0.1	0.1	0.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 3	< 5	< 0.5	<0.1	<2	< 0.5	< 0.5
Strontium	ug/L	5	-	21000	70	74	73	43	57	48	47		52	56	80	80	84	84
Thallium	ug/L	0.1	0.8	0.8	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		< 1	< 0.1	<0.1	<0.8	< 0.1	< 0.1
Tin	ug/L	2	-	-	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 50	< 20	< 2	<2	<20	< 2	< 2
Titanium	ug/L	2	-	-													< 2	< 2
Uranium	ug/L	0.1	15	300	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		< 1	< 0.1	0.1	<0.15	0.1	0.1
Vanadium	ug/L	2	-	6	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 10	< 20	< 2	<2	<2	< 2	< 2
Zinc	ug/L	5	30	30	10	< 10	< 10	9	9	15	< 2	< 10	< 20	4	2	5	< 5	< 5
Mercury	ug/L	0.013	0.026	0.026														
Hydroxide	mg/L	5	-	-														
Fluoride	mg/L	0.1	-	-														

Compound	25-Aug-04	18-Aug-05	14-Jan-06	23-Nov-06	1-Aug-07	29-Jul-08	10-Aug-09	10-Aug-10	2011	2012	2013	27-Aug-14	2015	13-Jul-16
Alkalinity (as CaCO3)	88	93	54	68	72	72	89	66	70	53	50	68	71	85
Ammonia (as N)	2.5	2.5	1.3	1.8	1.9	1.4	1.1	1.91	2.04	0.86	0.72	1.23	0.99	1.2
Anion Sum	2.44	2.58	1.85	2.03	2.05	2.11	2.89	2.26	2.32	1.89	1.93	1.97	2.40	2.52
Bicarbonate (as CaCO3)	88	93.1	54	68	72	72	89	66	70	53	50	68	71	85
Calcium	25.2	28	18	23	23	23	28	19.3	27.4	20.9	18.8	28.3	29.4	25
Carbonate (as CaCO3)	<1	ND	ND	ND	<1	<1	<1	<10	<10	<10	<10	<10	<10	<1.0
Cation Sum	2.39	2.55	1.91	2.08	2.17	2.08	2.80	2.18	2.68	2.18	1.87	2.68	2.97	2.44
Chloride	21	23	24	20	19	21	32	29	29	25	27	19	31	26
Color	27	22	31	20	12	19	69	19	7	34	38	18	38	46
Conductivity (RCAp)	244	250	180	200	210	220	270	251	234	191	187	230	250	240
Dissolved Organic Carbon	1.1							4.3	3.1	4.0	6.6		3.8	
Hardness (as CaCO3)	74.9	82	56	68	69	69	87	57.3	78.3	61.2	56.0	85.1	84.1	76
Ion Balance	1.02	0.662	1.65	1.27	2.84	0.720	1.58	1.8	7.3	7.3	1.6	15.3	10.5	
Langelier Index (@ 20C)	-0.9	-0.846	-1.5	-0.794	-0.731	-0.593	-1.24	-0.99	-0.62	-0.95	-1.53	-1.29	-0.91	-0.79
Langelier Index (@ 4C)	-1.3	-1.1	-1.75	-1.05	-0.982	-0.844	-1.49	-1.31	-0.94	-1.27	-1.21	-0.97	-1.23	-1.04
Magnesium	2.9	3.3	2.5	2.7	2.6	2.7	4.2	2.2	2.4	2.2	2.2	3.5	2.6	3.2
Nitrate	0.1	0.14	0.11	0.19			2.1	0.48	0.22	0.19	0.67	0.12	0.09	0.16
Nitrate + Nitrite (as N)	0.1	0.14	0.11	0.19	0.15	0.17	2.1	0.48	0.22	0.26	0.67	0.12	0.09	0.16
Nitrite	<0.01	ND	ND	ND			0.02	<0.05	<0.05	**0.07**	<0.05	<0.05	<0.05	<0.010
Orthophosphate	<0.01	0.01	ND	0.01	0.01	0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.017
pH	7.2	7.1	6.85	7.37	7.4	7.54	6.74	7.5	7.7	7.6	7.4	7.3	7.4	7.25
Phosphorus	<0.1	<0.1	<0.1	ND			<0.1	0.08	0.02	0.02	0.04	<0.02	0.19	<100
Potassium	2.4	2.5	2	2.5	2.4	2.2	3.9	2	2.5	2	1.8	3.2	2	2.7
Reactive Silica (as SiO2)	12	12	8.8	11	12	12	12	11.7	11.8	11.5	10.3	11.3	9.0	11
Saturation pH (@ 20C)	8.1	7.95	8.35	8.16	8.13	8.13	7.98	8.49	8.32	8.55	8.62	8.31	8.28	8.04
Saturation pH (@ 4C)	8.5	8.2	8.6	8.42	8.38	8.38	8.23	8.81	8.64	8.87	8.94	8.63	8.60	8.29
Sodium	15.1	14	14	11	13	12	16	13.4	18.2	18	11.3	14.9	23	15
Sulphate	4	3.4	4	4	3	3	3	4	4	5	6	3	5	3.7
TDS (Calculated)	139	149	110	120	123	123	169	121	132	109	105	119	142	150
Total Organic Carbon (C)		1.7	4.6	1.9	1.6	2.1	27	4.8	2.9	4.0	9.2	3.1	4.5	2.9
Turbidity	3.7	3.4	2.2	1.2	1.6	2	260	9.4	6.4	3.2	1.6	4.2	5.7	11
Aluminum	<10	19	27	13	8.4	10.1	15.5	45	8	22	52	31	21	21
Antimony	<2	ND	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0
Arsenic	2	2.7	ND	ND	2.3	<2.0	3.9	9	2	<2	4	<2	<2	3.1
Barium	270	300	160	180	186	188	364	220	245	143	160	257	261	250
Beryllium	<2	ND	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0
Bismuth	<2	ND	ND	ND	<20	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Boron	35	26	20	19	15.5	11.9	19.6	15	17	12	9	11	12	<50
Cadmium	<0.3	ND	ND	ND	<0.017	0.049	<0.017	0.107	0.659	<0.017	0.165	<0.017	<0.017	<0.010
Chromium	<2	ND	ND	ND	<2.0	<2.0	<1.0	<1	1	<1	74	<1	<1	1.9
Cobalt	1	ND	ND	ND	0.41	<0.40	0.51	<1	<1	<1	<1	<1	<1	1.2
Copper	<2	ND	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<1	<1	<2.0
Iron	850	2200	860	1200	1050	855	4510	5450	1570	930	2680	1510	1920	3400
Lead	<0.5	ND	ND	ND	<0.50	<0.50	<0.50	0.8	<0.5	0.6	<0.5	<0.5	<0.5	<0.50
Manganese	1300	2000	480	670	571	514	1330	1670	1600	779	1700	2780	2550	2400
Molybdenum	<2	ND	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Nickel	<2	ND	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Selenium	<2	ND	ND	ND	<10	<2.0	<0.10	<1	<1	<1	<1	<1	<1	<1.0
Silver	<0.5	ND	ND	ND	<1.0	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10
Strontium	57	66	42	45	415	51.6	80.4	57	61	42	42	70	63	61
Thallium	<0.1	ND	ND	ND	<1.0	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10
Tin	<2	ND	ND	ND	<20	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Titanium	<2	ND	ND	ND	146	<2.0	<2.0	<2	<2	3	<2	<2	<2	<2.0
Uranium	0.1	ND	ND	ND	4.4	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	0	<0.10
Vanadium	<2	ND	ND	ND	139	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0
Zinc	<5	ND	11	6	395	9.2	<5.0	<5	<5	<5	<5	<5	<5	<5.0
Mercury													<0.026	
Hydroxide								<5	<5	<5	<5	<5	<5	
Fluoride								<0.1	<0.1	<0.1	0.4	<0.1	<0.1	

Notes:
RDL - Reported Detection Limit (updated in 2016)
ND - Values below RDL
Bold indicates exceedance of CCME FAL
Bold and shaded indicates exceedance of NS Tier 1 EQS
Shaded and italics indicates the detection limit exceeds NS Tier 1 EQS
Bold, underlined and shaded indicates exceedance of both NS Tier 1 EQS and CCME FAL
NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)
CCME FAL = Canadian Council for the Ministers of the Environment, Canadian Environmental Quality Guidelines, Freshwater Aquatic Life (CCMW updates)

TABLE F-5 **SURFACE WATER GENERAL AND METALS CHEMISTRY - SW-7A**
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL	CCME FAL	NS Tier 1 EQS	2013	2015
Alkalinity (as CaCO3)	mg/L	5	-	-	90	24.1
Ammonia (as N)	mg/L	0.03	Fact Sheet	-	5.07	108
Anion Sum	me/L		-	-	2.85	3.52
Bicarbonate (as CaCO3)	mg/L	5	-	-	90	3.13
Calcium	mg/L	0.1	-	-	27.1	38.1
Carbonate (as CaCO3)	mg/L	10	-	-	<10	214
Cation Sum	me/L		-	-	3.59	<10
Chloride	mg/L	1	120	-	33	5.11
Color	TCU	5	Narrative	-	68	26
Conductivity (RCAp)	uS/cm	1	-	-	277	325
Dissolved Organic Carbon	mg/L	0.5	-	-	5.7	34
Hardness (as CaCO3)	mg/L		-	-	89.5	112
Ion Balance	%		-	-	11.4	3.2
Langelier Index (@ 20C)	-		-	-	-0.79	-0.73
Langelier Index (@ 4C)	-		-	-	-1.11	-1.05
Magnesium	mg/L	0.1	-	-	5.3	4.2
Nitrate	mg/L	0.05	2.9	-	0.52	0.09
Nitrate + Nitrite (as N)	mg/L	0.05	-	-	0.52	0.09
Nitrite	mg/L	0.05	0.06	-	<0.05	<0.05
Orthophosphate	mg/L	0.01	-	-	<0.01	<0.01
pH	-		6.5-9	-	7.43	7.28
Phosphorus	mg/L	0.02	Fact Sheet	-	<0.02	0.23
Potassium	mg/L	0.1	-	-	7.7	5.3
Reactive Silica (as SiO2)	mg/L	0.5	-	-	11.5	9.5
Saturation pH (@ 20C)	-		-	-	8.22	8.01
Saturation pH (@ 4C)	-		-	-	8.54	8.33
Sodium	mg/L	0.1	-	-	17.6	28
Sulphate	mg/L	2	-	-	4	<2
TDS (Calculated)	mg/L	1	-	-	171	108
Total Organic Carbon (C)	mg/L	0.5	-	-	8.9	3
Turbidity	NTU	0.1	Narrative	-	14.2	98.3
Aluminum	ug/L	5	5	5	**21**	**48**
Antimony	ug/L	2	-	20	<2	<2
Arsenic	ug/L	2	5	5	**18**	**41**
Barium	ug/L	5	-	1000	437	578
Beryllium	ug/L	2	-	2.3	<2	<2
Bismuth	ug/L	2	-	-	<2	<2
Boron	ug/L	5	-	1200	71	82
Cadmium	ug/L	0.017	0.017	0.01	*<0.017*	*<0.017*
Chromium	ug/L	1	-	-	<1	<1
Cobalt	ug/L	1	-	10	2	2
Copper	ug/L	2	2	2	<2	<1
Iron	ug/L	50	300	300	**11400**	**31700**
Lead	ug/L	0.5	1	1	<0.5	<0.5
Manganese	ug/L	2	-	820	**1700**	**3270**
Molybdenum	ug/L	2	73	73	<2	<2
Nickel	ug/L	2	25	25	<2	<2
Selenium	ug/L	1	1	1	<1	1
Silver	ug/L	0.1	0.1	0.1	<0.1	<0.1
Strontium	ug/L	5	-	21000	113	131
Thallium	ug/L	0.1	0.8	0.8	<0.1	<0.1
Tin	ug/L	2	-	-	<2	<2
Titanium	ug/L	2	-	-	<2	<2
Uranium	ug/L	0.1	15	300	<0.1	0.1
Vanadium	ug/L	2	-	6	<2	<2
Zinc	ug/L	5	30	30	<5	<5
Mercury	ug/L	0.013	0.026	0.026	-	**0.027**
Fluoride	mg/L	5	-	-	<0.1	<0.1
Hydroxide	mg/L	0.1	-	-	<5	<5

Notes:

RDL - Reported Detection Limit (updated in 2016)

ND - Values below RDL

Bold indicates exceedance of CCME FAL

Bold and shaded indicates exceedance of NS Tier 1 EQS

Shaded and italics indicates the detection limit exceeds NS Tier 1 EQS

Bold, underlined and shaded indicates exceedance of both NS Tier 1 EQS and CCME FAL

NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)

CCME FAL = Canadian Council for the Ministers of the Environment, Canadian Environmental Quality Guidelines, Freshwater Aquatic Life (CCMW updates)

TABLE F-6 **SURFACE WATER GENERAL AND METALS CHEMISTRY - SW-7A**
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL	CCME FAL	NS Tier 1 EQS	Aug. 03	14-Jan-06	1-Aug-07	12-Aug-09
Alkalinity (as CaCO3)	mg/L	5	-	-	< 5	ND	20	10
Ammonia (as N)	mg/L	0.03	Fact Sheet	-	< 0.5	ND	0.08	<0.05
Anion Sum	-		-	-		0.12		0.610
Bicarbonate (as CaCO3)	mg/L	5	-	-	< 50	ND	20	10
Calcium	mg/L	0.1	-	-	2.8	0.3	7.3	11
Carbonate (as CaCO3)	mg/L	10	-	-	< 50	ND	<1	<1
Cation Sum	-		-	-		0.244		1.76
Chloride	mg/L	1	120	-	51	4	8	14
Color	TCU	5	Narrative	-	470	220	45	270
Conductance (RCAp)	uS/cm	1	-	-	216	55	72	76
Dissolved Organic Carbon	mg/L	0.5	-	-				
Hardness (as CaCO3)	mg/L		-	-	13.6	2	24	34
Ion Balance	%		-	-		33.8		48.5
Langelier Index (@ 20C)	-		-	-		NC		-2.91
Langelier Index (@ 4C)	-		-	-		NC		-3.16
Magnesium	mg/L	0.1	-	-	1.6	NC	1.3	1.7
Nitrate (as NO3-)	mg/L	0.05	2.9	-		NC		0.11
Nitrate + Nitrite (as N)	mg/L	0.05	-	-	< 0.5	ND	0.12	0.11
Nitrite	mg/L	0.05	0.06	-		ND		<0.01
Orthophosphate	mg/L	0.01	-	-	0.1	ND	0.01	0.02
pH	Units		6.5-9	-	3.9	**3.93**	6.97	**6.39**
Phosphorus	mg/L	0.02	Fact Sheet	-		ND		0.5
Potassium	mg/L	0.1	-	-	1.3	0.2	1.1	1.3
Reactive Silica (as SiO2)	mg/L	0.5	-	-	12	0.9	12	14
Saturation pH @ 20C	Units		-	-		NC		9.30
Saturation pH @ 4C	Units		-	-		NC		9.55
Sodium	mg/L	0.1	-	-	26.5	1.6	6.7	12
Sulfate	mg/L	2	-	-	50	ND	<2	<2
TDS (Calculated)	mg/L	1	-	-	151	8	51	76
Total Organic Carbon (C)	mg/L	0.5	-	-		30		21
Turbidity	NTU	0.1	Narrative	-	4.1	0.4	7.2	230
Aluminum	ug/L	5	5	5	**800**	**260**	**84.9**	**2990**
Antimony	ug/L	2	-	20	< 2	ND	<2.0	<2.0
Arsenic	ug/L	2	5	5	2	ND	<2.0	**12.8**
Barium	ug/L	5	-	1000	45	ND	17.1	108
Beryllium	ug/L	2	-	2.3	< 2	ND	<2.0	<2.0
Bismuth	ug/L	2	-	-	< 2	ND	<2.0	<2.0
Boron	ug/L	5	-	1200	< 5	ND	<5.0	7.7
Cadmium	ug/L	0.017	0.017	0.01	< 0.3	ND	*<0.017*	**0.280**
Chromium	ug/L	1	-	-	2	ND	<2.0	7.1
Cobalt	ug/L	1	-	10	1	ND	0.42	2.91
Copper	ug/L	2	2	2	**5**	ND	<2.0	**7.0**
Iron	ug/L	50	300	300	**6300**	ND	**1220**	**14800**
Lead	ug/L	0.5	1	1	**3.8**	ND	**0.7**	**26.7**
Manganese	ug/L	2	-	820	540	21	170	480
Molybdenum	ug/L	2	73	73	< 2	ND	<2.0	<2.0
Nickel	ug/L	2	25	25	2	ND	<2.0	3.2
Selenium	ug/L	1	1	1	*< 2*	ND	<1.0	<0.10
Silver	ug/L	0.1	0.1	0.1	*< 0.5*	ND	<0.10	<0.10
Strontium	ug/L	5	-	21000	17	ND	36.9	63.3
Thallium	ug/L	0.1	0.8	0.8	< 0.1	ND	<0.10	<0.10
Tin	ug/L	2	-	-	< 2	ND	<2.0	<2.0
Titanium	ug/L	2	-	-	10	ND	<2.0	48.6
Uranium	ug/L	0.1	15	300	< 0.1	ND	<0.10	0.62
Vanadium	ug/L	2	-	6	< 2	ND	<2.0	**16.8**
Zinc	ug/L	5	30	30	**37**	ND	7.1	**41.5**
Mercury	ug/L	0.013	0.026	0.026				
Fluoride	mg/L	5	-	-				
Hydroxide	mg/L	0.1	-	-				

Notes:
RDL - Reported Detection Limit (updated in 2016)
ND - Values below RDL
Bold indicates exceedance of CCME FAL
Bold and shaded indicates exceedance of NS Tier 1 EQS
Shaded and italics indicates the detection limit exceeds NS Tier 1 EQS
Bold, underlined and shaded indicates exceedance of both NS Tier 1 EQS and CCME FAL
NS Tier 1 EQS = Nova Scotia Tier 1 EQS for groundwater, commercial/industrial, non-potable, coarde grained (NSE 2013a)
CCME FAL = Canadian Council for the Ministers of the Environment, Canadian Environmental Quality Guidelines, Freshwater Aquatic Life (CCMW updates)

TABLE F-7

SURFACE WATER GENERAL AND METALS CHEMISTRY - REF
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	RDL	CCME FAL	NS Tier 1 EQS	2013	2015
Alkalinity (as CaCO3)	mg/L	5	-	-	22	0.1
Ammonia (as N)	mg/L	0.03	Fact Sheet	-	0.03	30
Anion Sum	me/L		-	-	0.67	<0.03
Bicarbonate (as CaCO3)	mg/L	5	-	-	22	0.77
Calcium	mg/L	0.1	-	-	10.3	9.3
Carbonate (as CaCO3)	mg/L	10	-	-	<10	40
Cation Sum	me/L		-	-	0.89	<10
Chloride	mg/L	1	120	-	8	0.77
Color	TCU	5	Narrative	-	351	107
Conductivity (RCAp)	uS/cm	1	-	-	71	92
Dissolved Organic Carbon	mg/L	0.5	-	-	25.1	6
Hardness (as CaCO3)	mg/L		-	-	29.4	26.5
Ion Balance	%		-	-	14.2	11.9
Langelier Index (@ 20C)	-		-	-	-2.12	-1.91
Langelier Index (@ 4C)	-		-	-	-2.44	-2.23
Magnesium	mg/L	0.1	-	-	0.9	0.8
Nitrate	mg/L	0.05	2.9	-	<0.05	0.05
Nitrate + Nitrite (as N)	mg/L	0.05	-	-	<0.05	0.05
Nitrite	mg/L	0.05	0.06	-	<0.05	<0.05
Orthophosphate	mg/L	0.01	-	-	0.02	0.02
pH	-		6.5-9	-	7.07	7.19
Phosphorus	mg/L	0.02	Fact Sheet	-	0.04	0.18
Potassium	mg/L	0.1	-	-	0.5	0.5
Reactive Silica (as SiO2)	mg/L	0.5	-	-	9.6	9.3
Saturation pH (@ 20C)	-		-	-	9.19	9.10
Saturation pH (@ 4C)	-		-	-	9.51	9.42
Sodium	mg/L	0.1	-	-	4.9	4.1
Sulphate	mg/L	2	-	-	<2	<2
TDS (Calculated)	mg/L	1	-	-	39	30
Total Organic Carbon (C)	mg/L	0.5	-	-	27.7	11.8
Turbidity	NTU	0.1	Narrative	-	1.2	10.2
Aluminum	ug/L	5	5	5	**347**	**166**
Antimony	ug/L	2	-	20	<2	<2
Arsenic	ug/L	2	5	5	<2	<2
Barium	ug/L	5	-	1000	25	30
Beryllium	ug/L	2	-	2.3	<2	<2
Bismuth	ug/L	2	-	-	2	<2
Boron	ug/L	5	-	1200	<5	<5
Cadmium	ug/L	0.017	0.017	0.01	**0.019**	*<0.017*
Chromium	ug/L	1	-	-	<1	<1
Cobalt	ug/L	1	-	10	<1	<1
Copper	ug/L	2	2	2	<2	<1
Iron	ug/L	50	300	300	**790**	**636**
Lead	ug/L	0.5	1	1	0.6	**1.1**
Manganese	ug/L	2	-	820	52	218
Molybdenum	ug/L	2	73	73	<2	<2
Nickel	ug/L	2	25	25	<2	<2
Selenium	ug/L	1	1	1	<1	<1
Silver	ug/L	0.1	0.1	0.1	**0.2**	<0.1
Strontium	ug/L	5	-	21000	27	29
Thallium	ug/L	0.1	0.8	0.8	<0.1	<0.1
Tin	ug/L	2	-	-	<2	<2
Titanium	ug/L	2	-	-	4	2
Uranium	ug/L	0.1	15	300	0.3	0.1
Vanadium	ug/L	2	-	6	<2	<2
Zinc	ug/L	5	30	30	7	20
Mercury	ug/L	0.013	0.026	0.026		<0.026
Hydroxide	mg/L	5	-	-	<5	<5
Fluoride	mg/L	0.1	-	-	<0.1	<0.1

Notes:

RDL - Reported Detection Limit (updated in 2016)

ND - Values below RDL

Bold indicates exceedance of CCME FAL

Bold and shaded indicates exceedance of NS Tier 1 EQS

Shaded and italics indicates the detection limit exceeds NS Tier 1 EQS

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