



**DILLON**  
CONSULTING

NOVA SCOTIA LANDS

# Harbourside Commercial Park 2019 Long Term Maintenance and Monitoring Groundwater Event

Final Report



January 2020 – 14-1360-2500

January 24, 2020



Nova Scotia Lands  
P.O. Box 430, Station A  
Sydney, Nova Scotia  
B1P 6H2

ATTENTION: Mr. Frank Potter  
Executive Project Director

***Harbourside Commercial Park  
2019 Long Term Maintenance and Monitoring Groundwater Event (Final Report)***

Dear Mr. Potter:

Dillon Consulting Limited is pleased to submit the above referenced report for your review. Should you have any questions or comments, please contact the undersigned at (902) 562-9880 extension 5206.

Yours sincerely,

DILLON CONSULTING LIMITED

A handwritten signature in blue ink that reads "N. Wambolt".

Nadine J. Wambolt, B.Tech., CET  
Project Manager

NJW:kme

Enclosure

Our file: 14-1360-2500

275  
Charlotte Street  
Sydney  
Nova Scotia  
Canada  
B1P 1C6  
Telephone  
902.562.9880  
Fax  
902.562.9890

# Table of Contents

## Executive Summary

<b>1.0</b>	<b>Introduction</b>	<b>1</b>
	1.1 Scope of Work .....	1
<b>2.0</b>	<b>Project Methodologies</b>	<b>4</b>
	2.1 Health and Safety Processes .....	4
	2.2 Quality Control Process .....	4
	2.3 LTMM Groundwater Monitoring Program .....	5
	2.3.1 Measurement of Hydraulic Head Levels.....	5
	2.3.2 Sample Collection.....	5
	2.3.3 Groundwater Analysis .....	6
	2.4 Data Compilation/Assessment.....	6
	2.4.1 Regulatory Framework .....	7
	2.4.2 Groundwater Quality Trend Analysis – Mann Kendall .....	7
<b>3.0</b>	<b>Results</b>	<b>8</b>
	3.1 Weather Conditions and General Observations .....	8
	3.2 Groundwater Flow and Hydraulic Head Levels.....	8
	3.3 HCP Findings.....	8
	3.3.1 HCP Groundwater Quality.....	11
	3.3.2 Product Check .....	11
	3.3.3 Trend Analysis.....	12
	3.4 QC Summary .....	14
	3.4.1 Relative Percent Difference .....	14
	3.4.2 Laboratory Matrix Spikes, Spikes Blank and Method Blanks .....	14
	3.4.3 Trip Blank .....	14
	3.4.4 Field Blank.....	15
	3.4.5 Equipment Blank .....	15
	3.4.6 Holding Times.....	15
<b>4.0</b>	<b>Summary</b>	<b>15</b>

5.0	Recommendations	16
-----	-----------------	----

6.0	Disclaimer	16
-----	------------	----

### Figures

Figure 1-1 Site Location.....	2
Figure 1-2 Study Area.....	3
Figure 3-1 Equipotential Groundwater Contours Fill/Till.....	9
Figure 3-2 Area Features.....	10
Figure 3-3 HCP Indicator Parameter Concentration Trend .....	13

### Tables

Table 2-1 Water Quality Analytical Suite of Parameters .....	6
Table 3-1 HCP – Summary of Indicator Parameter Concentrations .....	11
Table 3-2 HCP Summary of Product Check .....	12
Table 3-3 HCP – Trend Analysis Summary.....	14

### Appendices

A	Analytical Tables
B	QC Tables
C	Laboratory Certificate
D	Mann-Kendall Tables

### References

# Executive Summary

---

Nova Scotia Lands (NS Lands) is a Crown Corporation of the Province of Nova Scotia responsible for the Long Term Maintenance and Monitoring Program (LTMM) implemented at Harbourside Commercial Park (HCP). NS Lands retained Dillon Consulting Limited (Dillon) to conduct the LTMM program, which consists of an annual groundwater sampling program. The LTMM event was completed December 6, 2019.

In accordance with the request for proposal (RFP) NSLAND57 Groundwater Monitoring Services, previous LTMM groundwater monitoring events initially included thirty-two water level measurements, checking eight monitor/recovery wells for product and the collection of twenty-five groundwater samples. However, following the sale of a portion of the HCP lands, and following approval from Nova Scotia Environment (NSE) and NS Lands, the 2017 LTMM program for HCP was reduced to include sampling of twelve monitor wells. In 2018, NS Lands confirmed that seven of the twelve monitor wells scheduled for sampling had been either decommissioned, destroyed or buried as a result of construction activity; thereby reducing the number of sampling wells to five. The five monitor wells (i.e., SCU10-001-MW, SCU10-004-MW, SCU18-007-MW, SCU31-002-MWB and SCU31-004-MW) scheduled for sampling (i.e., for petroleum hydrocarbons (PHCs), polycyclic aromatic hydrocarbon (PAHs) and metals) as part of the 2019 program were also monitored for water level measurements. In accordance with the 2014 RFP NSLAND57 Groundwater Monitoring Services, water level/product measurements were also collected at eight additional monitor/recovery wells on the HCP site. Based on discussions with NS Lands, Dillon understands that replacement wells for the decommissioned and destroyed wells will be installed during 2020.

Analytical data were assessed in comparison to the July 2013 Nova Scotia Contaminated Sites Regulations (NS CSR) Tier I Environmental Quality Standards (EQS) for groundwater. Where Tier I EQS are not available (e.g., for most PAHs and for metals in groundwater at non-potable sites), the Ontario Ministry of the Environment (MOE) Groundwater Standards for use under Ontario's Environmental Protection Act were used.

During the 2019 monitoring event, no groundwater concentrations above the Tier I EQS or the MOE standards were detected in the five monitor wells sampled (i.e., SCU10-001-MW, SCU10-004-MW, SCU18-007-MW, SCU31-002-MWB and SCU31-004-MW).

The groundwater quality trend analysis for the 2019 monitoring event was based on the available analytical results (i.e., four rounds of sampling events are required) for select parameters with concentrations above the applicable guidelines. In 2017, two monitor wells, SCU27-002-MW and SCU32-003-MW, contained concentrations of indicator parameters exhibiting an increasing or potentially increasing concentration trends (i.e., barium exhibited a potentially increasing trend in SCU27-002-MW and selenium exhibited an increasing trend in SCU32-003-MW). Monitor wells SCU27-002-MW and

SCU32-003-MW were decommissioned in 2018; therefore, trend analysis was not completed as part of the 2018 or 2019 LTMM programs. Results of the 2019 Mann-Kendall analysis for monitor well SCU10-004-MW indicate a fluctuating trend.

This report was prepared by Dillon Consulting Limited for the sole benefit of our client, NS Lands. The conclusions reflect Dillon's judgment in light of the information available to it at the time of preparation. Any use which a third party makes of this report or any reliance on or decisions made based on it are the responsibilities of such third parties. Dillon accepts no responsibilities for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

# Introduction

Nova Scotia Lands (NS Lands) is a Crown Corporation of the Province of Nova Scotia responsible for the Long Term Maintenance and Monitoring Program (LTMM) implemented at Harbourside Commercial Park (HCP) (Figure 1-1). NS Lands retained Dillon Consulting Limited (Dillon) to conduct the LTMM program, which consists of an annual groundwater sampling program that has been ongoing at HCP since 2003. Environmental Site Assessments (ESAs) conducted to date throughout the HCP have identified several groundwater constituents of interest in excess of evaluation criteria (i.e., petroleum hydrocarbons (PHCs), polycyclic aromatic hydrocarbons (PAHs), mercury, various other metals and vinyl chloride).

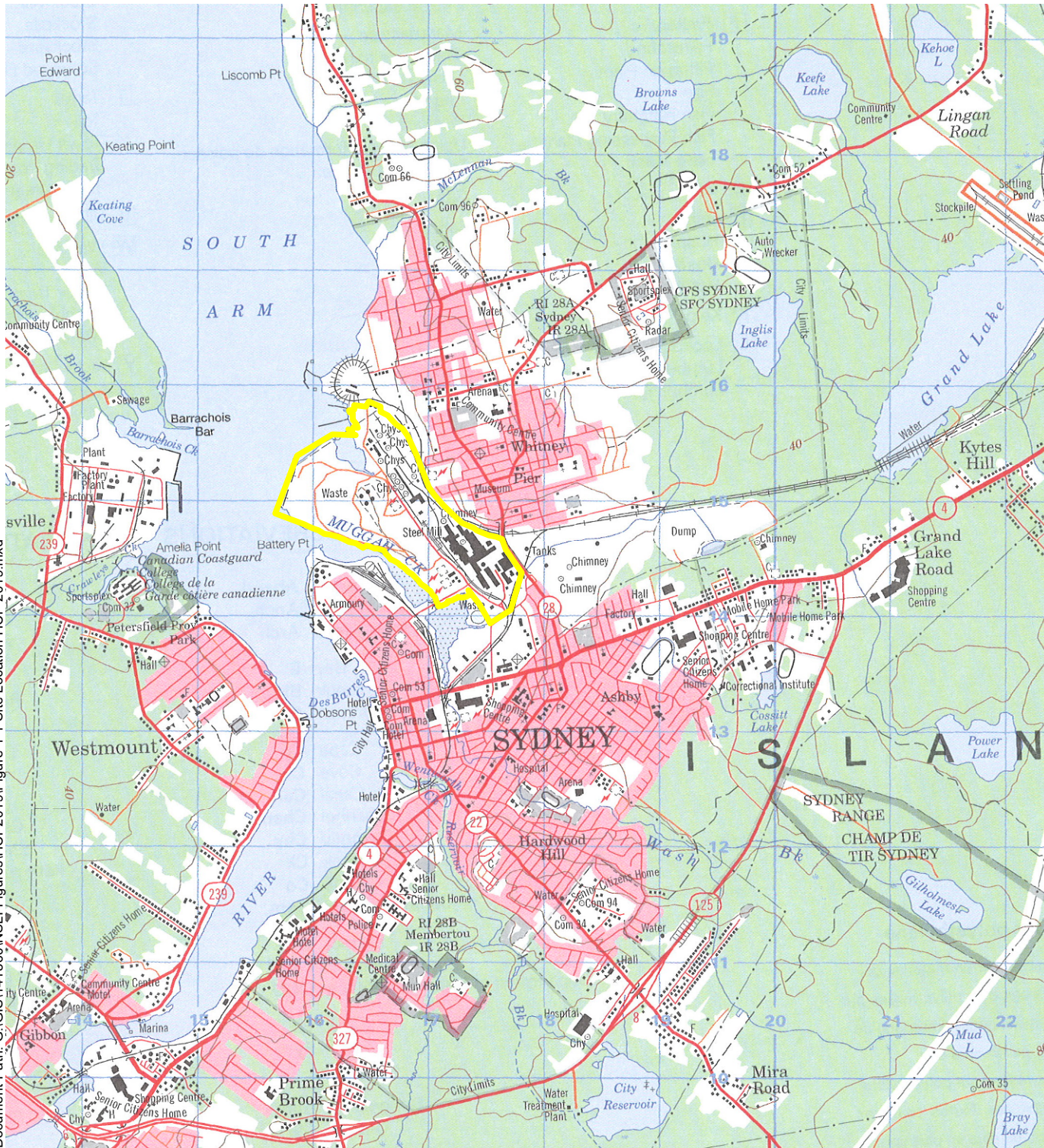
Groundwater monitoring was completed on December 6, 2019 and included measurement of hydraulic head levels and sample collection (i.e., for PHCs, PAHs and metals analysis) from select monitor wells at HCP.

This document details the 2019 groundwater monitoring event. Section 1.1 describes the scope of work. Methodologies are detailed in Section 2.0. Findings are presented in Section 3.0 and summarized in Section 4.0. Recommendations are provided in Section 5.0. Data tables and supporting information are found in appendices referenced throughout the document.

## 1.1 Scope of Work

The LTMM program for the HCP consists of an annual groundwater sampling program (Figure 1-2). In accordance with the request for proposal (RFP) NSLAND57 Groundwater Monitoring Services, previous LTMM groundwater monitoring events initially included thirty-two water level measurements, checking eight monitor/recovery wells for product and the collection of twenty-five groundwater samples. However, following the sale of a portion of the HCP lands, and following approval from Nova Scotia Environment (NSE) and NS Lands, the 2017 LTMM program for HCP was reduced to include sampling of twelve monitor wells (including two added monitor wells, SCU18-007-MW and SCU31-004-MW). In 2018, NS Lands confirmed that seven of the twelve monitor wells scheduled for sampling (i.e., SCU26-001-MW, SCU26-002-MW, SCU27-002-MW, SCU32-001-MWA, SCU32-002-MW, SCU32-003-MW and MCES-007-MW) had been either decommissioned, destroyed or buried as a result of construction activity; thereby reducing the number of wells to be sampled in 2018, and subsequently, in 2019, to five. The five monitor wells (i.e., SCU10-001-MW, SCU10-004-MW, SCU18-007-MW, SCU31-002-MWB and SCU31-004-MW) scheduled for sampling (i.e., for PHCs, PAHs and metals) as part of the 2019 program were also monitored for water level measurements. In accordance with the 2014 RFP NSLAND57 Groundwater Monitoring Services, water level/product measurements were also collected at eight additional monitor/recovery wells on the HCP site.

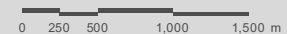
Document Path: G:\GIS\141360\NSLI\Figures\HCP2019\Figure 1-1 Site Location HCP 2019.mxd



**HARBOURSIDE COMMERCIAL PARK**  
**2019 GROUNDWATER MONITORING EVENT**

**SITE LOCATION**  
 Figure 1-1

Harbourside Commercial Park



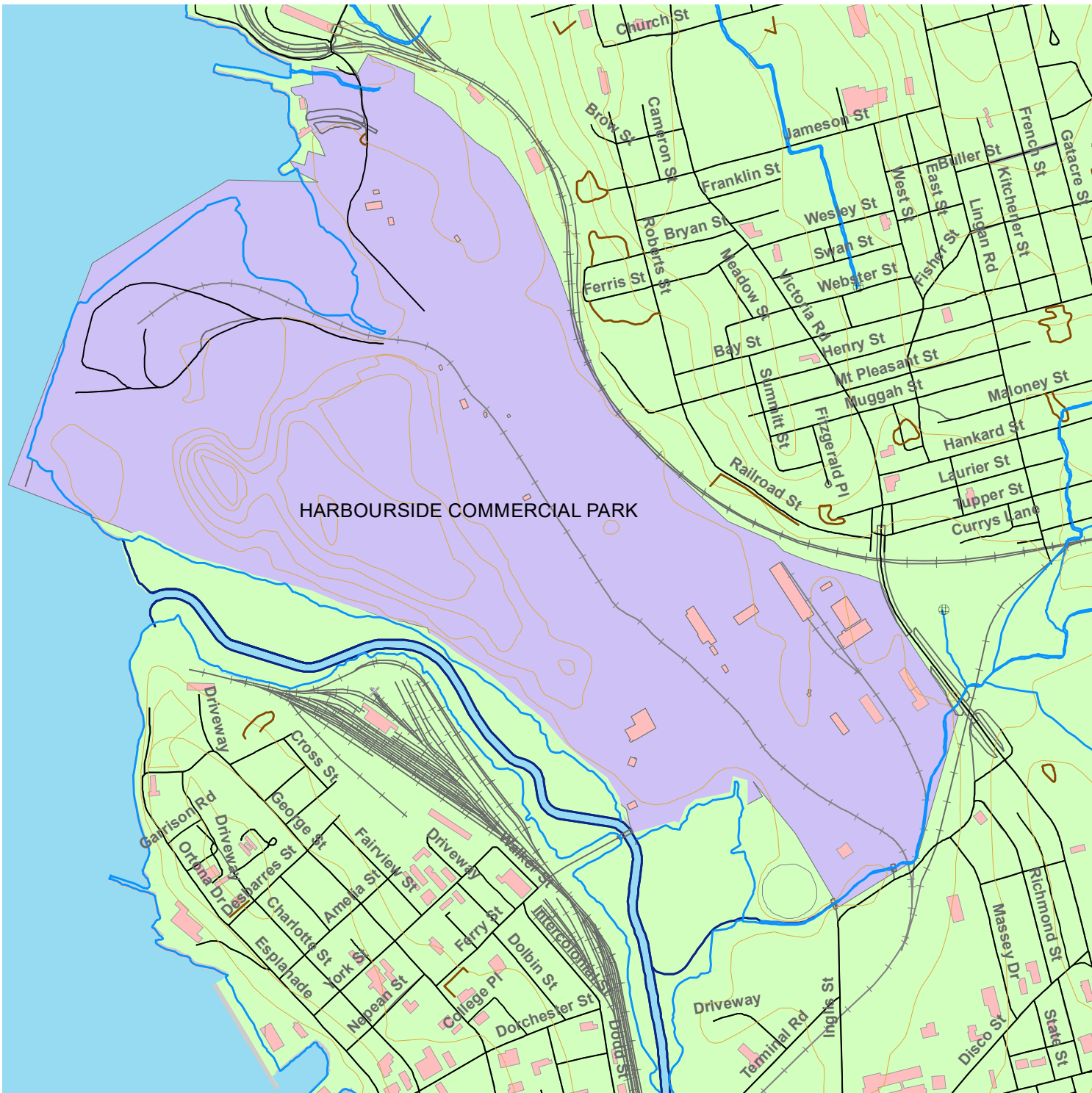
**MAP DRAWING INFORMATION:**  
 Government of Canada, Natural Resources Canada,  
 Earth Science Sector, Center for Topographic Information.  
 Sydney 11 K/1, ESRI Basemap  
 Information current as of 1994.

Province of Nova Scotia Mapping  
 MAP CREATED BY: SCM  
 MAP CHECKED BY: NJW  
 MAP PROJECTION: NAD 1983 UTM Zone 20N



PROJECT: 14-1360  
 STATUS: FINAL  
 Date: 2020-01-20





**HARBOURSIDE COMMERCIAL PARK**  
 2019 GROUNDWATER MONITORING EVENT

**STUDY AREA**  
 FIGURE 1-2

- STREETS
- Watercourse
- Contour
- Harbourside Commercial Park
- Buildings
- Waterbody

0 50 100 200 300 m



MAP DRAWING INFORMATION:  
 Province of Nova Scotia Mapping  
 SLR Monitoring Recommendations drawing dated April 17, 2014

MAP CREATED BY: SCM  
 MAP CHECKED BY: NJW  
 MAP PROJECTION: NAD 1983 UTM Zone 20N



PROJECT: 14-1360  
 STATUS: FINAL  
 Date: 2020-01-20

## 2.0 Project Methodologies

Methodologies are provided in the following sub-sections:

- Section 2.1 Health and Safety Processes
- Section 2.2 Quality Control (QC) Processes
- Section 2.3 Groundwater Sampling
- Section 2.4 Data Compilation/Assessment

### 2.1 Health and Safety Processes

Dillon developed a site-specific health and safety plan (HSP) for groundwater monitoring. The HSP includes site specific information, such as, local emergency contact information and hospital routes, as well as, but not limited to the following:

- Identification of site activities and potential hazards;
- Description of safe work practices and procedures;
- Description of Personal Protective Equipment (PPE);
- Identification of safety training and first aid requirements; and,
- Identification of emergency response procedures.

The project manager reviewed the HSP with field personnel prior to their mobilizing to the site. Field personnel were responsible for following the HSP, including conducting a job hazard analysis upon arrival to the site.

### 2.2 Quality Control Process

Data Quality Objectives (DQOs) and applicable Standard Operating Procedures (SOPs) were reviewed with the team prior to embarking on field work. Other QC measures included, but were not necessarily limited to, the following:

- Assignment of a coordinator to oversee field activities;
- Use of dedicated materials and equipment to reduce/prevent the potential of sample contamination;
- For equipment requiring use at multiple stations, appropriate decontamination prior to, and after, each deployment;
- Use of laboratory supplied sample bottles/containers;
- Collection of an appropriate number of duplicates and blanks;
- Proper storage of samples on ice in coolers immediately after collection;
- Transport of samples to the laboratory (see below) on a daily basis; and,
- Daily documentation/review of notes.

### Duplicate and Blank Collection

One field duplicate, one field blank and one equipment blank were collected during the 2019 LTMM event. Relative percent differences were calculated between sample and associated field duplicate results, as discussed in Section 3.4.

### Laboratory QC

Samples were delivered to Bureau Veritas (BV) Laboratories (formerly Maxxam Analytics Inc.) in Sydney, Nova Scotia for analysis. BV Laboratories are accredited through the Standard Council of Canada (SCC) and is a member of the Canadian Association for Laboratory Accreditation (CALA). BV also applied internal laboratory QC measures including:

- Laboratory duplicates;
- Matrix Spikes (MS);
- Spike Blanks (Process Recovery %); and,
- Method blanks.

Laboratory DQOs, including MS recoveries, process recoveries, relative percent differences, and holding times, were reviewed to assess the quality of the data.

## 2.3 LTMM Groundwater Monitoring Program

The HCP groundwater monitoring program has been ongoing since 2003, with the sampling program being reduced over time. The 2019 HCP program consists of five monitor wells requiring sampling. The field component of the 2019 groundwater monitoring event involved the following activities:

- Measurement of hydraulic head levels;
- Low flow groundwater sample collection; and,
- Data compilation/assessment and reporting.

### 2.3.1 Measurement of Hydraulic Head Levels

The number of monitor wells measured for water levels was thirteen (i.e., five sampling and eight monitor/recovery wells that were checked for product). Depth to water and the presence of light non-aqueous phase liquid (LNAPL) and/or dense non-aqueous phase liquid (DNAPL) in wells were manually measured using an interface probe. Measurements were taken from established reference points and water level information was recorded on field sampling sheets.

### 2.3.2 Sample Collection

Using a peristaltic pump, groundwater was removed from the five monitor wells sampled in the HCP area until select field parameters stabilized. The rate of flow (0.1 to 0.4 liters (L)/minute) at each well was controlled by an in-line valve. The water level was measured at 3-minute intervals and maintained at a constant head; if the water level started to drop, the flow rate was reduced to attempt to maintain a constant head. The sample tube was connected to a flow-through cell containing a Horiba U-52 multi-

parameter probe. The general stabilization of the following parameters was used as indication that water representative of the groundwater in the aquifer was being collected:

- pH (+/- 0.1 unit);
- Specific conductance (+ / - 3%);
- Temperature (+ / - 3%); and,
- Turbidity (+ / -10% for values greater than 1 NTU).

The time required for sampling generally ranged from 15 to 30 minutes, and typically 6 to 12 liters of water was removed. In instances where stabilization of turbidity provided some challenges, additional parameters including dissolved oxygen (DO) and oxidation reduction potential (ORP) were referenced to confirm stabilized conditions.

### 2.3.3 Groundwater Analysis

Pursuant to RFP NSLAND57 Groundwater Monitoring Services, groundwater samples were analyzed for PHCs, PAHs and metals, as listed below in Table 2-1. PHC and PAH sample bottles were filled with no head space. Metal aliquots were field filtered and preserved with nitric acid in order to maintain constituents in solution. Samples were delivered to BV in Sydney, Nova Scotia for analysis.

Table 2-1 Water Quality Analytical Suite of Parameters

PHC	PAHs		Metals (dissolved)	
Benzene	Acenaphthene	Naphthalene	Aluminum	Mercury (Total)
Toluene	Acenaphthylene	Perylene	Antimony	Molybdenum
Ethylbenzene	Anthracene	Phenanthrene	Arsenic	Nickel
Total Xylenes	Benzo(a)anthracene	Pyrene	Barium	Phosphorus
C6-C10 (Less BTEX)	Benzo(a)pyrene	1-Methylnaphthalene	Beryllium	Selenium
>C10-C16 Hydrocarbons	Benzo(b)fluoranthene	2-Methylnaphthalene	Bismuth	Silver
>C16-C21 Hydrocarbons	Benzo(j)fluoranthene		Boron	Strontium
>C21-<C32 Hydrocarbons	Benzo(k)fluoranthene		Cadmium	Thallium
Modified TPH (Tier I)	Benzo(g,h,i)perylene		Chromium	Tin
	Chrysene		Cobalt	Titanium
	Dibenz(a,h)anthracene		Copper	Uranium
	Fluoranthene		Iron	Vanadium
	Fluorene		Lead	Zinc
	Indeno(1,2,3-cd)pyrene		Manganese	

### 2.4 Data Compilation/Assessment

The laboratory, BV, provided analytical results in a database compatible format, alleviating potential errors associated with manual entry. Data tables generated as part of the 2019 program also include historical groundwater monitoring data. Based on historical data, the following parameters, with concentrations consistently observed above applicable standards, are used as indicator parameters for the HCP site:

- PAHs (i.e., anthracene and indeno(1,2,3-cd)pyrene); and,
- Metals (i.e., sodium, barium and/or selenium).

Trend analysis was not completed for PHCs, as benzene, toluene, ethylbenzene and xylene concentrations have remained below the Tier I EQS throughout the LTMM program. Further, modified total petroleum hydrocarbon (TPH) exceedances of the Tier I EQS have only been reported on three occasions at two monitor well locations (the last modified TPH exceedance was reported for SCU10-004-MW in 2015).

#### 2.4.1 Regulatory Framework

Pursuant to RFP NSLAND57 Groundwater Monitoring Services, the remedial criteria used for this assessment were the Tier I Environmental Quality Standards (EQS) for groundwater established pursuant to the July 2013 Nova Scotia Contaminated Sites Regulations (NS CSR). The subject property is classified as having commercial receptors, non-potable groundwater usage and coarse-grained soil. Where Tier I EQS are not available (e.g., for most PAHs and metals in groundwater at non-potable sites), the Ontario Ministry of the Environment (MOE) Groundwater Standards for use under Ontario's Environmental Protection Act were used.

#### 2.4.2 Groundwater Quality Trend Analysis – Mann Kendall

Mann-Kendall analysis as a non-parametric statistic test routinely used to assess the stability of solute plume. At least four independent sampling events are required to evaluate groundwater quality trends via Mann-Kendall analysis. The Mann-Kendall test procedure starts by comparing the most recent round of water quality data with the results of earlier rounds. Non-detect data values are typically assigned a value that is half the laboratory detection limit. The Mann-Kendall test is not designed to account for seasonal variation in data, rather Mann-Kendall identified the trend of concentrations in individual wells for individual parameters (e.g., stable, fluctuating, decreasing, increasing).

Select parameters with concentrations above, or historically above, applicable guidelines were selected for Mann-Kendall analysis. These include PAH indicator parameters anthracene and indeno (1, 2, 3-cd) pyrene in monitor well SCU10-004-MW. Historically, Mann-Kendall analysis completed as part of the LTMM has included additional monitor wells and parameters; however, due to the reduced number of sampling wells included in the program during 2018 and 2019, trend analysis was only completed for SCU10-004-MW as part of the 2019 LTMM.

Groundwater analytical data collected during historical monitoring events to the 2019 monitoring event were applied for performing the trend analysis. In certain situations, Mann-Kendall analysis results may be biased due to elevated laboratory detection limits. However, non-detected data used in the Mann-Kendall analysis of indicator parameters indicated that the influence of non-detected data is minimal. At least four rounds of groundwater monitoring data is required for Mann-Kendall analysis.

## Results

Results are presented in the following subsections:

- Section 3.1 Weather Conditions and General Observations;
- Section 3.2 Groundwater Flow and Hydraulic Head Levels
- Section 3.3 HCP Findings
- Section 3.4 QC Summary

### 3.1 Weather Conditions and General Observations

The current meteorological station (i.e., Sydney A, Climate ID: 8205700/8205701) is an official in-situ station established by Environment Canada since 1941. Historical precipitation recordings for the Sydney area can be traced back as far as 1870. Comparison of the recordings at the Sydney A station indicates that precipitation of approximately 1584.1 millimeters (mm) was recorded for 2019, which is slightly more than the normal value of yearly precipitation of 1517 mm (i.e., as recorded between 1981 and 2010) (<http://climate.weather.gc.ca>). The monthly precipitation recorded for November 2019 was 193.1 mm. The total precipitation recorded between December 1, 2019 and December 6, 2019 (the date of sampling) was 37.2 mm.

### 3.2 Groundwater Flow and Hydraulic Head Levels

NS Lands provided Dillon with elevation survey information for the majority of the monitor wells initially included in the LTMM program at the HCP site. Accordingly, the hydraulic heads of thirteen wells (i.e., the five sample wells and eight monitor/recovery wells that were checked for product) were calculated to plot the equipotential groundwater contours for the 2019 monitoring event. The groundwater contours were applied to evaluate the groundwater flow pattern and direction within the unconsolidated till and/or fill unit (Figure 3-1).

The available equipotential contour plot for the unconsolidated material (i.e., the fill/till) indicates that the groundwater flow direction is west toward Sydney Harbour.

### 3.3 HCP Findings

Historical environmental site assessments conducted to date throughout HCP (Figure 3-2) have identified elevated concentrations of organic and inorganic parameters in groundwater above the applicable guidelines (e.g., PHCs, PAHs, mercury, various other metals and vinyl chloride). As stated above, the LTMM for HCP was initially scheduled to include sampling of twenty-five monitor wells; however, following the sale of a portion of the HCP lands in 2017, the LTMM program for HCP was reduced to include sampling of twelve monitor wells (including two added monitor wells). Further, in 2018 NS Lands confirmed that seven of the twelve monitor wells had been either decommissioned,








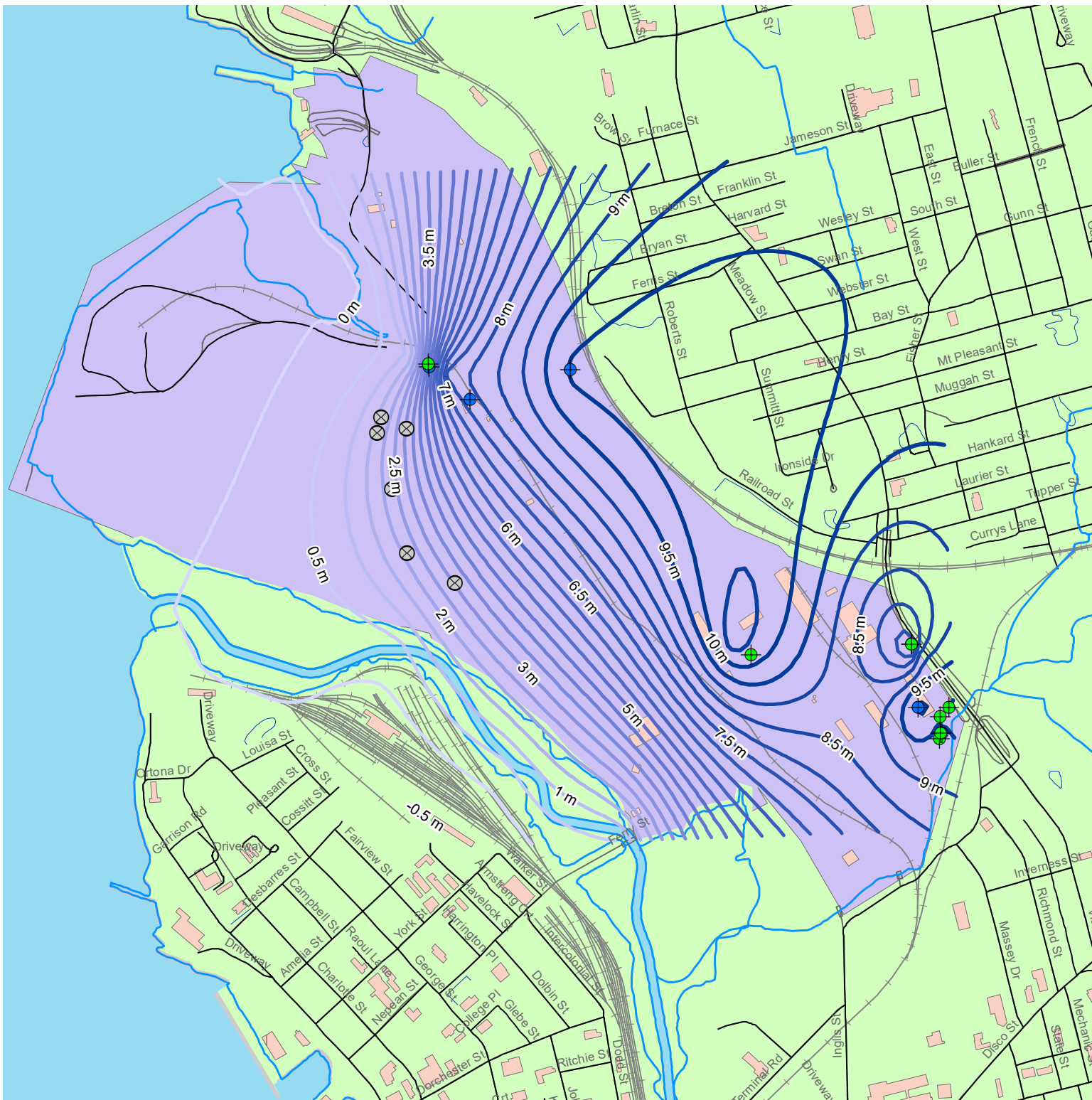
HARBOURSIDE COMMERCIAL PARK  
 2019 GROUNDWATER MONITORING EVENT

**Equipotential Groundwater Contours Fill TIII**

FIGURE 3 - 1

**Equipotential Groundwater Contours**

-  Groundwater Elevations are measured in meters above sea level (MASL)
-  Active Water Level Only
-  Active Sample and Water Level
-  Decommissioned/Destroyed or Buried
-  Harbourside Commercial Park

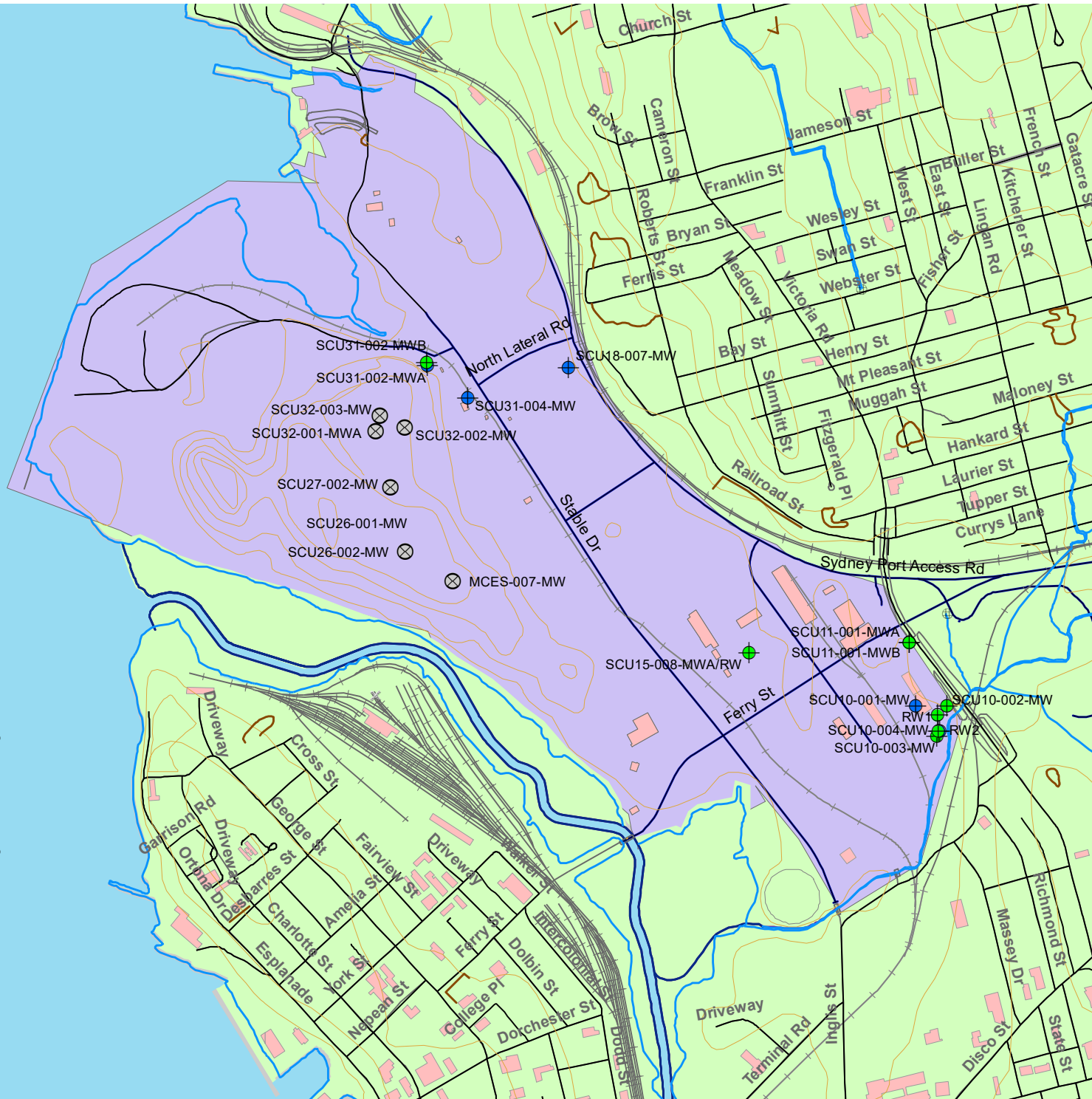


MAP DRAWING INFORMATION:  
 Province of Nova Scotia Mapping  
 SLR Monitoring Recommendations drawing dated April 17, 2014

MAP CREATED BY: SCM  
 MAP CHECKED BY: NJW  
 MAP PROJECTION: NAD 1983 UTM Zone 20N







PROJECT: 14-1360  
 STATUS: FINAL  
 Date: Jan 20 2020



HARBOURSIDE COMMERCIAL PARK  
 2019 GROUNDWATER MONITORING EVENT

**AREA FEATURES**  
 FIGURE 3-2

**Monitoring Wells**

-  Active Water Level Only
-  Active Sample and Water Level
-  Decommissioned/Destroyed or Buried
-  Harbourside Commercial Park

0 50 100 200 300 m



MAP DRAWING INFORMATION:  
 Province of Nova Scotia Mapping  
 SLR Monitoring Recommendations drawing dated April 17, 2014

MAP CREATED BY: SCM  
 MAP CHECKED BY: NJW  
 MAP PROJECTION: NAD 1983 UTM Zone 20N



PROJECT: 14-1360  
 STATUS: FINAL  
 Date: 2020-01-20



destroyed or buried as a result of construction activity; thereby reducing the number of wells to be sampled in 2018, and subsequently, in 2019, to five. Of the five remaining sampling wells included in the 2019 LTMM sampling program, four have not exhibited concentrations above the comparison criteria, therefore, Mann-Kendall analysis was completed for one monitor well only (i.e., SCU10-004-MW).

### 3.3.1 HCP Groundwater Quality

Analytical data, including available historical data for reference, are presented in Appendix A (i.e., Tables A-1 (PHCs), A-2 (PAHs) and A-3 (metals)). Table 3-1 summarizes the select indicator parameter concentrations for the only monitor well remaining in the LTMM that has historically exhibited concentrations above applicable comparison criteria.

Table 3-1 HCP – Summary of Indicator Parameter Concentrations

Well ID	Organic Parameter (ug/L)		
	Date	Anthracene	Indeno(1,2,3-cd)pyrene
MOE Table 3 <sup>1</sup>		2.4	0.2
SCU10-004-MW	Nov 2010	2.4	0.09
	Oct 2011	13	0.74
	Nov 2012	38	0.75
	Dec 2013	4.0	0.072
	Dec 2015	1100	67
	Nov 2016	18	<1.0
	Dec 2017	5.6	0.12
	Nov 2018	2.3	0.099
	Dec 2019	1.3	0.18

**Notes:**

1. MOE, Table 3 Full Depth Generic Site Condition Standards, Non-potable Groundwater (Coarse Grained Soil) 2011.
2. Nova Scotia Environment Tier I Environmental Quality Standards for Groundwater (Coarse Grained Soil, Non-potable Groundwater Commercial/Industrial Site) 2013. Note, there are no NSE Tier I EQS for Groundwater on a site with Coarse-Grained Soil, Non-potable Groundwater and Commercial/Industrial land use (2013) for anthracene and indeno(1,2,3-cd)pyrene.

*Italics* Laboratory detection limited elevated above comparison criteria.

**BOLD** Exceeds the MOE Table 3 standards.

During the 2019 monitoring event, no groundwater concentrations above the Tier I EQS or the MOE standards (the comparison criteria which are used when no Tier I EQS is available) were detected in the five monitor wells sampled (i.e., SCU10-001-MW, SCU10-004-MW, SCU18-007-MW, SCU31-002-MWB and SCU31-004-MW). This is consistent with the 2018 findings for the wells sampled.

### 3.3.2 Product Check

Observations recorded in the field during LNAPL and DNAPL checks are presented in Table 3-2.

Table 3-2 HCP Summary of Product Check

Well ID	Product Type/Thickness	Field Observations
SCU10-002-MW	No Product Detected	Oil/water interface probe did not detect product; however, probe had black product on it (appeared to be from PVC wall of the well) and a strong hydrocarbon odour.
SCU10-003-MW	No Product Detected	Oil/water interface probe did not detect product, no product observed and no petroleum hydrocarbon odour detected.
SCU10-004-MW*	No Product Detected	Oil/water interface probe did not detect product; however, a strong petroleum hydrocarbon odour was noted on the probe.
SCU11-001-MWA	No Product Detected	Oil/water interface probe did not detect product, no product observed and no petroleum hydrocarbon odour detected.
SCU11-001-MWB	No Product Detected	Oil/water interface probe did not detect product, no product observed and no petroleum hydrocarbon odour detected.
SCU15-008-MWA/RW	No Product Detected	Oil/water interface probe did not detect product, no product observed and no petroleum hydrocarbon odour detected.
SCU31-002-MWA	No Product Detected	Oil/water interface probe did not detect product, no product observed, no petroleum hydrocarbon odour detected.
RW1	No Product Detected	Oil/water interface probe did not detect product, no product observed and no petroleum hydrocarbon odour detected.
RW2	No Product Detected	Oil/water interface probe did not detect product, no product observed and no petroleum hydrocarbon odour detected.

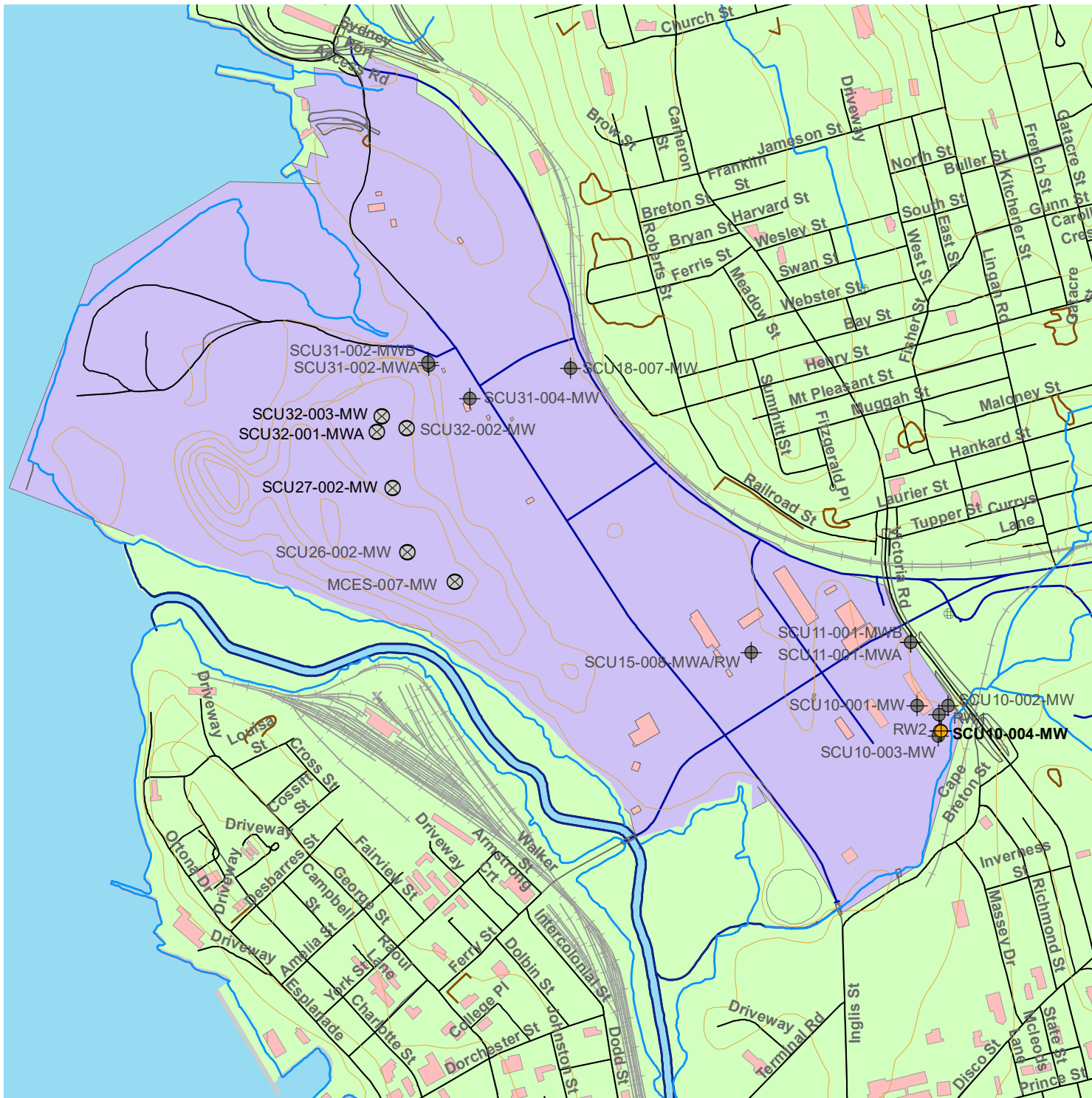
Notes:

1. \* Denotes sampling well
2. mm - millimeters

### 3.3.3 Trend Analysis

The groundwater quality trend analysis for the 2019 monitoring event was based on the available analytical results (i.e., four rounds of sampling events are required) for select parameters with concentrations above the applicable guidelines. In 2017, monitor wells SCU27-002-MW and SCU32-003-MW contained concentration(s) of indicator parameters exhibiting an increasing or potentially increasing concentration trend (i.e., barium exhibited a potentially increasing trend in SCU27-002-MW and selenium exhibited an increasing trend in SCU32-003-MW). Monitor wells SCU27-002-MW and SCU32-003-MW were decommissioned in 2018; therefore, trend analysis could not be completed as part of the 2018 or 2019 LTMM programs.

Results of Mann-Kendall analysis for monitor well SCU10-004-MW are presented below in Table 3-3 and on Figure 3-3. The Mann-Kendall analysis was conducted based on the available analytical data, including the 2019 analytical results.










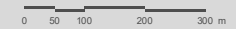
**HARBOURSIDE COMMERCIAL PARK**

2019 GROUNDWATER MONITORING EVENT

**INDICATOR PARAMETER CONCENTRATION TREND**  
FIGURE 3-3

**Trend Analysis**

-  Increasing/Potentially Increasing
-  Fluctuating
-  Stable
-  Decreasing
-  Monitoring Well
-  Decommissioned/Destroyed or Buried
-  Harbourside Commercial Park



MAP DRAWING INFORMATION:  
Province of Nova Scotia Mapping  
SLR Monitoring Recommendations drawing dated April 17, 2014

MAP CREATED BY: SCM  
MAP CHECKED BY: NW  
MAP PROJECTION: NAD 1983 UTM Zone 20N



PROJECT: 14-1360  
Date: 2020-01-20

Table 3-3 HCP – Trend Analysis Summary

Well ID	Parameters	Trend
SCU10-004-MW	Anthracene	Fluctuating
	Indeno(1,2,3-cd)pyrene	Fluctuating

### 3.4 QC Summary

Supporting QC data are found in Appendix B. The results are discussed in the following five sub-sections:

- Section 3.4.1 Relative Percent Difference (RPD)
- Section 3.4.2 Laboratory Matrix Spikes, Spikes Blank and Method Blanks
- Section 3.4.3 Trip Blanks
- Section 3.4.4 Equipment Blanks
- Section 3.5.5 Holding Times

One field duplicate, one trip blank, one field blank and one equipment blank were collected during the 2019 monitoring event, as presented in Table B-1 (Appendix B).

#### 3.4.1 Relative Percent Difference

One field duplicate sample was analyzed and had results suitable for quantitative calculation of Relative Percent Difference (RPD). The RPD was not calculated for those parameters where one or both of the results associated with the original and/or field duplicate sample exhibited concentrations less than five times the RDL.

Comparison of the field duplicate data to the original sample indicated the calculated RPDs were within established limits (i.e., less than 30% RPD), as presented in Tables B-2 to B-4 (Appendix B).

#### 3.4.2 Laboratory Matrix Spikes, Spikes Blank and Method Blanks

The laboratory analytical certificates have been reviewed for quality assurance/quality control purposes. The laboratory completes quality control analysis including duplicates, blanks, spikes, surrogate recoveries and spiked blanks to assess accuracy and precision as well as the potential for bias, contamination and degradation or matrix effects. The laboratory quality control reports have identified the following minor issues:

- Spike: <10% of compounds in multi-component analysis in violation: One analyte: silver.

Overall laboratory data quality is considered acceptable and the results representative with no identification of significant quality issues requiring further investigation or resampling. The quality assurance (QA) report is presented with the certificates of analysis in Appendix C.

#### 3.4.3 Trip Blank

Petroleum hydrocarbons were not detected in the trip blank.

#### 3.4.4 Field Blank

One field blank was collected during the 2019 HCP groundwater monitoring program. The field blank results are as follows:

- No petroleum hydrocarbons were detected in the field blank sample;
- No PAH concentrations were detected in the field blank; and,
- Aluminum (20 ug/L) and sodium (160 ug/L), were detected in the field blank sample. The remaining analyzed metals parameters did not have detectable concentrations.

#### 3.4.5 Equipment Blank

One equipment blank was collected during the 2019 HCP groundwater monitoring program. The equipment blank results are as follows:

- No petroleum hydrocarbons were detected in the equipment blank sample;
- No PAH concentrations were detected in the equipment blank; and,
- Sodium (320 ug/L) was detected in the equipment blank sample. The remaining analyzed metals parameters did not have detectable concentrations.

The field equipment used for the equipment blank was a stainless steel interface probe; which is the only piece of field equipment that interacts with each of the monitor wells (i.e., as each well has a dedicated pump or dedicated low flow tubing).

#### 3.4.6 Holding Times

Due to a shipping error (i.e., when BV shipped the samples from the Sydney lab to the Bedford lab they were temporarily misplaced by the courier), the PAH samples from HCP were analyzed after the recommended hold time. Further, the laboratory reported that the average cooler temperature reading was 12 °C when the samples arrived at the Bedford location. Review of the data, in comparison to historical findings, indicates that the 2019 concentrations are generally within historical ranges.

## 4.0 Summary

The LTMM for HCP was initially scheduled to include sampling of twenty-five monitor wells; however, following the sale of a portion of the HCP lands in 2017, the LTMM program for HCP was reduced to include sampling of twelve monitor wells. Further, in 2018 NS Lands confirmed that seven of the twelve monitor wells had been either decommissioned, destroyed or buried as a result of construction activity; thereby reducing the number of wells available to sample in 2018 and 2019 to five.

Findings were compared to July 2013 NS CSR Tier I EQS for groundwater. Where Tier I EQS were not available, MOE standards were used.

During the 2019 monitoring event there were no groundwater concentrations above the Tier I EQS or the MOE standards.

The available equipotential contour plot for the unconsolidated material (i.e., the fill/till) indicates that the groundwater flow direction is west toward Sydney Harbour.

## 5.0 Recommendations

Based on discussions with NS Lands, Dillon understands that replacement wells for the decommissioned and destroyed wells will be installed during 2020. Based on this, the Fall 2020 groundwater monitoring program is expected to include sampling of the five monitor wells included the 2019 program, sampling of the replacement monitor wells (planned prior to the Fall 2020 LTMM program), collection of water level measurements from each sampling well and checking eight monitor/recovery wells for product.

It is recommended that the groundwater monitoring program continue to include sampling for PHCs, PAHs and metals parameters.

Results of the 2019 Mann-Kendall analysis for monitor well SCU10-004-MW indicate a fluctuating trend. Further evaluation will be required in 2020 to confirm the potentially increasing or increasing trends observed in 2017 at monitor wells SCU27-002-MW and SCU32-003-MW (decommissioned in 2018 and expected to be replaced in 2020). Additionally, as noted in the 2017 LTMM report, review of field parameter readings indicated that a pH of 14 was recorded at monitor well SCU32-003-MW, which is located in the area of Portside Aggregates Ltd. It is likely that the increasing trend for selenium at this location is related to elevated pH conditions in groundwater, which can lead to the mobilization of some metals compounds. The elevated pH is not related to natural groundwater conditions and is likely related to operations associated with Portside Aggregates Ltd. (potential release of caustics)

## 6.0 Disclaimer

This report was prepared exclusively for the purposes, project and site location outlined in the report. The report is based on information provided to, or obtained by Dillon Consulting Limited ("Dillon") as indicated in the report, and applies solely to site conditions existing at the time of the site investigation. Although a reasonable investigation was conducted by Dillon, Dillon's investigation was by no means exhaustive and cannot be construed as a certification of the absence of any contaminants from the site. Rather, Dillon's report represents a reasonable review of available information within an agreed work scope, schedule and budget. It is therefore possible that currently unrecognized contamination or potentially hazardous materials may exist at the site, and that the levels of contamination or hazardous materials may vary across the site. Further review and updating of the report may be required as local and site conditions, and the regulatory and planning frameworks, change over time.

# Appendix A

## *Analytical Tables*

TABLE A-1  
HARBOURSIDE COMMERCIAL PARK (HCP)  
LTMM GROUNDWATER MONITORING EVENT DECEMBER 2019  
GROUNDWATER ANALYTICAL RESULTS - BTEX/TPH

Sample Location (Water Level 2019)	Sample Date	BTEX Concentration (mg/L)				Petroleum Hydrocarbons (mg/L)						
		Benzene	Toluene	E. Benzene	Xylenes	C6 - C10	C10 - C21	C10 - C16	C16-C21	C21 - C32	Modified TPH	C32
NS Tier 1 EQS <sup>1</sup>		20	20	20	20	-	-	-	-	-	20	-
SCU10-001-MW (1.83 m)	12/19/14	<0.001	<0.001	<0.001	<0.002	<0.01	-	0.060	<0.05	<0.1	<0.1	-
	12/11/15	<0.0010	<0.0010	<0.0010	<0.0020	0.012	-	<0.050	<0.050	<0.10	<0.10	-
	11/18/16	<0.0010	<0.0010	<0.0010	<0.0020	0.022	-	<0.050	<0.050	<0.10	<0.10	-
	12/4/17	<0.0010	<0.0010	<0.0010	<0.0020	0.027	-	<0.050	<0.050	<0.10	<0.10	-
	11/27/18	<0.0010	<0.0010	<0.0010	<0.0020	0.054 <sup>9</sup>	-	<0.050	<0.050	<0.10	<0.10	-
	12/06/19	<0.0010	<0.0010	<0.0010	<0.0020	<0.1	-	<0.050	<0.050	<0.10	<0.10	-
SCU10-004-MW (2.42 m)	11/21/09	1.0	0.22	0.17	4.2	<0.010	54	-	-	1.5	56	Yes
	11/22/09	0.017	0.002	0.003	0.012	0.02	0.4	-	-	<0.50	<0.50	Yes
	11/23/09	0.077	0.005	0.006	0.027	0.03	-	0.7	<0.20	<0.50	0.7	Yes
	11/24/09	0.057	0.006	0.006	0.053	0.09	-	1.8	0.24	<0.50	2.2	Yes
	11/25/09	0.18	0.097	0.074	0.35	0.79	-	13	2.2	1.0	17	Yes
	11/26/09	0.11	0.011	0.013	0.062	0.16	-	1.9	0.14	<0.10	2.2	Yes
	12/19/14	NM	NM	NM	NM	NM	-	NM	NM	NM	NM	-
	12/11/15	0.20	0.13	0.081	0.37	0.54	-	42	12	8.0	63	Yes
	11/18/16	0.27	0.30	0.15	0.81	1.0	-	15	0.64	0.19	17	Yes
	12/4/17	0.10	0.028	0.021	0.11	0.16	-	4.7	0.30	0.14	5.4	Yes
	11-27-18 <sup>FD</sup>	0.034	0.016	0.010	0.051	0.062	-	1.6	0.17	0.12	1.9	Yes
		11/27/18	0.033	0.018	0.011	0.055	0.11	-	1.2	0.094	<0.10	1.4
	12/06/19	0.039	0.023	0.015	0.069	<0.10	-	1.8	0.11	0.12	2.1	Yes
SCU18-007-MW (0.99 m)	7/12/06	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	<0.20	-	-	<0.50	<0.50	-
	11/24/09	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	<0.20	-	-	<0.50	<0.50	-
	9/7/10	0.002	<0.0010	<0.0010	<0.0020	<0.010	-	<0.20	<0.20	<0.50	0.007	Yes
	11/19/10	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	-	<0.20	<0.20	<0.50	<0.50	-
	10/24/11	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	-	<0.20	<0.20	<0.50	<0.50	-
	10/26/11	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	-	<0.20	<0.20	<0.50	<0.50	-
	12/2/13	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	-	<0.050	<0.050	<0.50	<0.10	-
	12/4/17	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	-	<0.050	<0.050	<0.10	<0.10	-
	11/27/18	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	-	<0.050	<0.050	<0.10	<0.10	-
	12/06/19	<0.0010	<0.0010	<0.0010	<0.0020	<0.10	-	<0.050	<0.050	<0.10	<0.10	-
SCU26-001-MW (Destroyed 2017)	6/18/10	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	<0.20	-	-	<0.50	<0.50	-
	6/19/10	0.005	0.003	<0.0010	0.008	5.3	12	-	-	4.5	26	Yes
	6/20/10	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	-	<0.20	<0.20	<0.50	<0.50	-
	6/21/10	<0.0010	<0.0010	<0.0010	<0.0020	0.015	-	0.096	0.1	0.13	0.34	Yes
	6/22/10	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	-	0.089	<0.050	0.12	0.21	Yes
	12/17/14	<0.001	<0.001	<0.001	<0.002	<0.01	-	0.063	<0.05	<0.1	<0.1	-
	11/27/15	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	-	0.054	<0.050	<0.10	<0.10	Yes
	11/17/16	0.013	0.0087	<0.0010	0.0087	0.050	-	0.24	0.068	<0.10	0.36	Yes
SCU26-002-MW (Decommissioned 2018)	6/23/10	0.01	0.0061	<0.0010	0.0059	0.05	<0.20	-	-	<0.50	<0.50	-
	6/24/10	0.034	0.026	0.0015	0.022	0.050	-	0.29	0.070	<0.50	0.41	Yes
	6/25/10	0.018	0.015	<0.0010	0.013	0.052	-	0.37	0.18	0.13	0.72	Yes
	6-26-10 <sup>FD</sup>	0.017	0.014	<0.0010	0.012	0.049	-	0.35	0.16	0.18	0.74	Yes
	6/27/10	0.023	0.018	0.0011	0.016	0.066	-	0.31	0.13	0.12	0.63	Yes
	12/17/14 <sup>FD</sup>	0.014	0.010	<0.001	0.0084	0.027	-	0.15	<0.05	<0.1	0.18	Yes
	12/17/14	0.014	0.010	<0.001	0.0085	0.028	-	0.16	<0.05	<0.1	0.19	Yes
	11/27/15	0.016	0.011	<0.0010	0.0089	0.014	-	0.17	0.055	<0.10	0.24	Yes
	11/17/16	0.012	0.0091	<0.0010	0.0076	0.022	-	0.19	0.062	<0.10	0.27	Yes
	12/11/17	0.015	0.0097	<0.0010	0.0066	0.023	-	0.16	0.069	<0.10	0.26	Yes
SCU27-002-MW (Decommissioned 2018)	6/28/10	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	-	<0.20	<0.20	<0.50	<0.50	-
	6-29-10 <sup>FD</sup>	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	-	<0.20	<0.053	0.14	0.19	Yes
	6/30/10	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	-	<0.20	<0.20	<0.50	<0.50	-
	7/1/10	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	-	<0.050	0.063	0.14	0.20	Yes
	12/17/14	<0.001	<0.001	<0.001	<0.002	<0.01	-	<0.05	<0.05	<0.1	<0.1	-
	11/27/15	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	-	<0.050	<0.050	<0.10	<0.10	-
	11/16/16	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	-	<0.050	<0.050	0.22	0.22	Yes
	12/14/17	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	-	<0.050	<0.050	<0.10	<0.10	-



TABLE A-1  
HARBOURSIDE COMMERCIAL PARK (HCP)  
LTMM GROUNDWATER MONITORING EVENT DECEMBER 2019  
GROUNDWATER ANALYTICAL RESULTS - BTEX/TPH

Sample Location (Water Level 2019)	Sample Date	BTEX Concentration (mg/L)				Petroleum Hydrocarbons (mg/L)						
		Benzene	Toluene	E. Benzene	Xylenes	C6 - C10	C10 - C21	C10 - C16	C16-C21	C21 - C32	Modified TPH	C32
<b>NS Tier 1 EQS<sup>1</sup></b>		20	20	20	20	-	-	-	-	-	20	-
SCU31-002-MWB (6.50 m)	7/2/10	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	<0.20	-	-	<0.50	<0.50	-
	7/3/10	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	-	<0.20	<0.20	<0.50	<0.50	-
	7/4/10	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	-	<0.20	<0.20	<0.50	<0.50	-
	7/5/10	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	-	<0.20	<0.20	<0.50	<0.50	-
	7/6/10	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	-	<0.050	<0.050	<0.10	<0.10	-
	7-7-10 <sup>FD</sup>	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	-	<0.050	<0.050	<0.10	<0.10	-
	12-18-14 <sup>FD</sup>	<0.001	<0.001	<0.001	<0.002	<0.01	-	<0.05	<0.05	<0.1	<0.1	-
	12/18/14	<0.001	<0.001	<0.001	<0.002	<0.01	-	<0.05	<0.05	<0.1	<0.1	-
	12-2-15 <sup>FD</sup>	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	-	<0.050	<0.050	<0.10	<0.10	-
	12/2/15	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	-	<0.050	<0.050	<0.10	<0.10	-
	11/17/16	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	-	<0.050	<0.050	<0.10	<0.10	-
	12-04-17 <sup>FD</sup>	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	-	<0.050	<0.050	<0.10	<0.10	-
	12/4/17	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	-	<0.050	<0.050	<0.10	<0.10	-
	11/27/18	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	-	<0.050	<0.050	<0.10	<0.10	-
12-06-19 <sup>FD</sup>	<0.0010	<0.0010	<0.0010	<0.0020	<0.10	-	<0.050	<0.050	<0.10	<0.10	-	
12/06/19	<0.0010	<0.0010	<0.0010	<0.0020	<0.10	-	<0.050	<0.050	<0.10	<0.10	-	
SCU31-004-MW (5.68 m)	9/16/05	<0.001	<0.001	<0.001	<0.002	<0.01	<0.2	-	-	<0.5	<0.5	-
	12/15/17	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	-	0.052	0.052	<0.10	0.10	Yes
	11/27/18	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	-	<0.050	<0.050	<0.10	<0.10	-
	12/06/19	<0.0010	<0.0010	<0.0010	<0.0020	<0.10	-	<0.050	<0.050	<0.10	<0.10	-
SCU32-001-MWA (Decommissioned 2018)	7/18/10	<0.0010	0.004	<0.0010	<0.0020	<0.0010	-	0.32	0.15	<0.10	0.5	Yes
	7/19/10	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	-	0.99	0.82	0.56	2.4	Yes
	12/17/14	0.0013	<0.001	<0.001	<0.002	<0.01	<0.001	0.50	0.44	0.41	1.4	Yes
	11/27/15	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	-	0.51	0.53	0.43	1.5	Yes
	11/16/16	NM	NM	NM	NM	NM	-	NM	NM	NM	NM	-
12/18/17	NM	NM	NM	NM	NM	-	NM	NM	NM	NM	-	
SCU32-002-MW (Decommissioned 2018)	7/23/10	0.0011	<0.0010	<0.0010	<0.0020	<0.010	-	<0.050	<0.050	<0.10	<0.10	-
	12/18/14	0.0011	<0.001	<0.001	<0.002	<0.01	-	0.055	0.064	0.13	0.25	Yes
	11/30/15	0.0011	<0.0010	<0.0010	<0.0020	<0.010	-	0.056	0.059	<0.10	0.11	Yes
	11-16-16 <sup>FD</sup>	0.0011	<0.0010	<0.0010	<0.0020	<0.010	-	<0.050	<0.050	<0.10	<0.10	-
	11/16/16	0.0011	<0.0010	<0.0010	<0.0020	<0.010	-	<0.050	<0.050	<0.10	<0.10	-
12/14/17	0.0011	<0.0010	<0.0010	<0.0020	<0.010	-	<0.050	<0.050	<0.10	<0.10	-	
SCU32-003-MW (Decommissioned 2018)	7/24/10	<0.0010	0.008	<0.0010	<0.0020	<0.010	-	0.22	0.1	<0.10	0.3	Yes
	7/25/10	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	-	2.1	2.5	1.9	6.6	Yes
	12/18/14	0.0027	0.0013	<0.001	<0.002	<0.01	-	0.58	0.27	0.27	1.1	Yes
	11/30/15	0.0023	0.0012	<0.0010	<0.0020	<0.010	-	0.61	0.46	0.38	1.5	Yes
	12/14/17	0.0022	0.0010	<0.0010	<0.0020	<0.010	-	0.35	0.17	0.17	0.68	Yes
MCES-007-MW (Buried/Inaccessible 2018)	8/3/10	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	<0.20	-	-	<0.50	<0.50	-
	8/4/10	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	-	<0.20	<0.20	<0.50	<0.50	-
	8/5/10	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	-	<0.20	<0.20	<0.50	<0.50	-
	8/6/10	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	-	<0.050	<0.050	<0.10	<0.10	-
	12/17/14	<0.001	<0.001	<0.001	<0.002	<0.01	-	<0.05	<0.05	<0.1	<0.10	-
	11-27-15 <sup>FD</sup>	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	-	<0.050	<0.050	<0.10	<0.10	-
	11/27/15	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	-	<0.050	<0.050	<0.10	<0.10	-
	11/17/16	0.012	0.0098	<0.0010	0.0079	0.024	-	0.23	0.073	<0.10	0.32	Yes
12/15/17	<0.0010	<0.0010	<0.0010	<0.0020	<0.010	-	0.072	<0.050	<0.10	<0.10	-	

**NOTES:**

- FD - Field Duplicate
- NM - Not Measured or not analyzed.
- mg/L - milligrams per litre
- No applicable guideline criteria.
- 1 - Nova Scotia Environment Tier I Environmental Quality Standards for Groundwater (Coarse Grained Soil, Non-potable Groundwater Commercial/Industrial Site) 2013.
- 2 - Bold and Shaded Exceeds NSE Tier I EQS**
- 3 - SCU10-004-MW was not sampled during the 2014 monitoring event due to product in the well.
- 4 - DNAPL in SCU32-003-MW was sampled during the 2015 LTMM monitoring event. The groundwater column in the monitor well was sampled above the DNAPL in the well.
- 5 - Historical data (i.e., pre-2014) tabulated by SLR Consulting (Canada) Ltd. during historic assessment work, with the exception of SCU31-004-MW, for which data was derived from the Phase II ESA, Sydney Steel Corporation Sysco Blast Furnace Area, Site Classification Units SCU17, SCU19 & SCU31, Sydney, Nova Scotia (AMEC, 2006).
- 6 - This summary is to be used in conjunction with, not as a replacement of, the Laboratory Certificates of Analysis, which contain QA/QC information.
- 7 - SCU32-001-MWA was not sampled during the 2016 or 2017 monitoring events due to product in the well.
- 8 - SCU18-007-MW and SCU31-004-MW added to the LTMM program in 2017.
- 9 - Interference from Volatile Organic Compounds (VOCs) in the gasoline range.



TABLE A-2  
HARBBOURSIDE COMMERCIAL PARK (HCP)  
LTMM GROUNDWATER MONITORING EVENT DECEMBER 2019  
GROUNDWATER ANALYTICAL RESULTS - PAH

Sample Location (Water Level 2019)	Sample Date	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(j)fluoranthene <sup>e</sup>	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	1-Methylnaphthalene	2-Methylnaphthalene	Naphthalene	Perylene	Phenanthrene	Pyrene
		Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
<b>NS Tier 1 EQS<sup>1</sup></b>		600 <sup>2</sup>	750	2.4 <sup>2</sup>	4.7 <sup>2</sup>	0.81 <sup>2</sup>	0.75 <sup>2</sup>	0.2 <sup>2</sup>	-	0.4 <sup>2</sup>	1 <sup>2</sup>	0.52 <sup>2</sup>	130 <sup>2</sup>	400 <sup>2</sup>	0.2 <sup>2</sup>	38000	38000	7000	-	580 <sup>2</sup>	68 <sup>2</sup>
SCU31-002-MWB (6.50 m)	9/22/05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	NM	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.02	<0.01	<0.01	<0.01
	11/16/10	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	NM	<0.01	<0.01	<0.01	0.01	0.01	<0.01	<0.05	<0.05	<0.02	<0.01	0.02	0.01
	10/25/11	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	NM	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.05	<0.05	<0.02	<0.01	0.03	0.02
	11/21/12	0.019	<0.01	0.014	0.032	0.033	0.027	0.024	NM	0.029	0.031	<0.01	0.067	0.010	0.018	<0.05	<0.05	<0.02	<0.01	0.068	0.063
	12/7/13 <sup>FD</sup>	0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.020	0.010	<0.010	<0.050	<0.050	<0.20	<0.010	0.031	0.019
	12/7/13	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.016	<0.010	<0.010	<0.050	<0.050	<0.20	<0.010	0.029	0.016
	12/18/14 <sup>FD</sup>	0.061	0.032	0.036	0.072	0.080	0.061	0.053	0.032	0.036	0.085	0.012	0.20	0.074	0.039	0.14	0.12	0.76	0.020	0.20	0.17
	12/18/14	0.046	0.028	0.028	0.051	0.050	0.038	0.026	0.020	0.021	0.064	<0.01	0.13	0.058	0.020	0.11	0.11	0.61	0.011	0.14	0.11
	12/2/15 <sup>FD</sup>	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.050	<0.20	<0.010	0.017	0.01
	12/02/15	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.050	<0.20	<0.010	0.015	<0.010
	11/17/16	<0.010	<0.010	<0.010	0.017	0.014	0.012	<0.010	<0.010	<0.010	0.017	<0.010	0.035	<0.010	<0.010	<0.050	<0.050	<0.20	<0.010	0.033	0.029
	12/4/17 <sup>FD</sup>	<0.010	<0.010	<0.010	0.019	0.016	0.013	0.011	<0.010	<0.010	0.021	<0.010	0.041	<0.010	0.011	<0.050	<0.050	<0.20	<0.010	0.034	0.033
	12/4/17	0.013	<0.010	0.025	0.056	0.052	0.041	0.031	0.024	0.025	0.059	<0.010	0.12	0.017	0.027	<0.050	<0.050	<0.20	0.013	0.1	0.097
	11/27/18	0.11	0.020	0.058	<0.040*	<0.020*	<0.020*	<0.020*	<0.010	<0.010	<0.040*	<0.010	0.096	0.15	<0.010	0.13	0.19	0.29	<0.010	0.34	0.073
	12-06-19 <sup>FD</sup>	0.015	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	0.019	0.024	<0.010	<0.050	<0.050	<0.20	<0.010	0.04	0.017
	12/06/19	0.015	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.017	0.024	<0.010	<0.050	<0.050	<0.20	<0.010	0.043	0.015
	SCU31-004-MW (5.68 m)	9/6/05	0.02	<0.01	0.02	0.02	<0.01	<0.01	<0.01	NM	<0.01	0.03	<0.01	0.1	0.01	<0.01	<0.05	<0.05	<0.2	<0.01	0.02
12/15/17		0.20	0.51	0.19	0.036	0.022	0.022	0.013	0.013	0.012	0.041	<0.010	0.32	0.73	0.011	0.81	1.0	2.3	<0.010	0.98	0.23
11/27/18		0.12	0.14	0.18	0.064	<0.020*	0.023	<0.020*	<0.020*	<0.020*	0.072	<0.010	0.27	0.26	<0.010	0.16	0.17	0.22	<0.020*	0.60	0.27
12/06/19		0.060	0.14	0.026	0.015	<0.010	<0.010	<0.010	<0.010	<0.010	0.021	<0.010	0.053	0.14	<0.01	0.21	0.17	0.46	<0.010	0.13	0.097
SCU32-001-MWA (Decommissioned 2018)	11/24/11	1.1	0.81	0.84	0.11	0.06	0.04	0.03	NM	0.02	0.12	<0.01	1.1	2.8	0.03	8.1	2.7	2.8	0.02	5.2	0.7
	12/5/13	5.3	1.8	<b>7.4</b>	<b>13</b>	<b>8.0</b>	<b>6.1</b>	<b>3.1</b>	4.0	<b>3.8</b>	<b>12</b>	<b>0.91</b>	23	8.8	<b>3.0</b>	15	4.1	3.3	1.9	39**	20
	12/17/14	1.1	0.91	1.4	1.4	1.1	<b>0.87</b>	<b>0.54</b>	0.55	<b>1.6</b>	0.15	5	2.4	<b>0.5</b>	2.5	2	6.6	0.26	7.2	3.6	
	11/27/15	1.4	0.7	1.8	0.83	0.39	0.28	0.17	0.18	0.18	0.88	0.06	4.2	2.7	0.15	3.6	2.4	8.4	0.1	8.7	2.9
	11/16/16	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
12/18/17	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
SCU32-002-MW (Decommissioned 2018)	11/25/11	0.23	0.34	0.41	0.14	0.09	0.04	0.04	NM	0.03	0.14	0.01	0.65	0.44	0.04	0.74	0.54	7.7	0.03	1.2	0.46
	12/5/13	0.65	0.62	1.5	2.7	<b>2.8</b>	2.1	1.4	1.3	<b>1.3</b>	<b>2.6</b>	0.38	6.9	1.2	<b>1.2</b>	0.91	0.8	6.7	0.68	6.7	5.80
	12/18/14	0.21	0.31	0.31	0.35	0.31	0.25	0.14	0.15	0.14	0.41	0.044	1.0	0.48	0.13	0.50	0.50	4.3	0.063	1.5	0.75
	11/30/15	0.23	0.38	0.21	0.023	<0.010	<0.010	<0.010	<0.010	<0.010	0.022	<0.010	0.3	0.48	<0.010	0.71	0.69	7.6	<0.010	1.1	0.21
	11/16/16 <sup>FD</sup>	0.21	0.37	0.25	0.021	<0.010	<0.010	<0.010	<0.010	<0.010	0.019	<0.010	0.38	0.42	<0.010	0.66	0.61	7.1	<0.010	1.1	0.23
	11/16/16	0.21	0.38	0.21	0.018	<0.010	<0.010	<0.010	<0.010	<0.010	0.016	<0.010	0.31	0.43	<0.010	0.69	0.63	7.4	<0.010	0.97	0.19
12/14/17	0.25	0.35	0.21	0.039	0.021	0.019	0.014	0.013	0.013	0.039	<0.010	0.39	0.49	0.011	0.65	0.65	6.3	<0.010	1.2	0.24	
SCU32-003-MW (Decommissioned 2018)	11/25/11	0.89	0.56	0.76	0.07	0.01	<0.01	<0.01	NM	<0.01	0.07	<0.01	1.1	1.9	<0.01	3.5	1.50	2.4	<0.01	3.3	0.72
	12/5/13	4.4	1.3	<b>8.7</b>	<b>19</b>	<b>11</b>	<b>8.4</b>	<b>4.3</b>	5.6	<b>5.3</b>	<b>17</b>	<b>1.3</b>	33	6.7	<b>4.2</b>	5.2	2.9	4.0	2.6	35	27
	12/18/14	1.6	1.9	0.89	0.20	0.17	0.12	0.080	0.078	0.073	0.25	0.021	1.6	3.5	0.065	3.1	2.6	8.5	0.039	5.2	0.97
	11/30/15	1.5	1.8	1.2	0.12	0.11	0.076	0.057	0.05	0.045	0.13	0.02	1.4	3.2	0.046	2.4	2.2	7.6	0.028	5.9	0.86
	12/14/17	1.5	1.4	0.70	0.050	0.031	0.030	0.019	0.019	0.018	0.055	<0.010	1.2	2.5	0.016	2.4	2.2	7.5	0.013	4.4	0.59
MCES-007-MW (Buried/Inaccessible 2018)	7/26/03	0.27	0.7	<0.01	<0.01	<0.01	<0.01	<0.01	NM	<0.01	<0.01	<0.01	0.74	0.97	<0.01	1.4	1.2	3.9	0.34	<0.01	0.34
	7/11/12	0.020	<0.01	0.050	0.15	0.13	0.10	0.080	NM	0.12	0.16	0.020	0.29	0.030	0.080	<0.05	<0.05	<0.02	0.040	0.2***	0.25
	11/27/12	0.052	0.024	0.18	0.45	0.35	0.34	0.17	NM	0.30	0.39	0.048	0.72	0.077	<b>0.23</b>	0.050	0.063	<0.02	0.077	0.44	0.60
	12/5/13	<0.010	<0.010	0.015	0.015	0.019	0.014	0.014	<0.010	<0.010	0.018	<0.010	0.039	0.010	<0.010	<0.050	<0.050	<0.20	<0.010	0.015	0.042
	12/17/14	0.21	0.59	0.26	0.018	<0.01	<0.01	<0.01	<0.01	<0.01	0.016	<0.01	0.49	0.76	<0.01	0.93	0.97	3.0	<0.01	1.5	0.27
	11/27/15 <sup>FD</sup>	0.22	0.51	0.37	0.027	<0.010	<0.010	<0.010	<0.010	<0.010	0.021	<0.010	0.61	0.700	<0.010	0.76	0.85	2.5	<0.010	1.8	0.36
	11/27/15	0.2	0.45	0.33	0.03	0.01	<0.010	<0.010	<0.010	<0.010	0.021	<0.010	0.58	0.76	<0.010	0.75	0.81	2.1	<0.010	1.7	0.33
	11/17/16	0.32	0.66	0.32	0.061	<0.010	<0.010	<0.010	<0.010	<0.010	0.048	<0.010	0.62	1.1	<0.010	6.7	9.7	6.3	<0.010	1.9	0.36
	12/15/17	0.30	0.53	0.34	0.028	0.011	0.011	<0.010	<0.010	<0.010	0.026	<0.010	0.64	0.77	<0.010	0.84	0.97	3.0	<0.010	1.8	0.35

NOTES:





## Appendix B

### *QC Tables*

**TABLE B-1  
 HARBOURSIDE COMMERCIAL PARK  
 LTMM GROUNDWATER MONITORING EVENT DECEMBER 2019  
 SUMMARY OF FIELD DUPLICATES AND TRIP BLANKS**

<b>Field Duplicate Sample - Laboratory Certificate Number</b>	<b>Date Sampled</b>	<b>Trip Blank Sample - Laboratory Certificate Number</b>	<b>Date Sampled</b>	<b>Equipment Blank Sample - Laboratory Certificate Number</b>	<b>Date Sampled</b>	<b>Field Blank Sample - Laboratory Certificate Number</b>	<b>Date Sampled</b>
FD-20 - B9Y4907	12/6/2019	TB-07 - B9Y4907	12/6/2019	EB-06 - B9Y4907	12/6/2019	FB-06 -B9Y4907	12/6/2019

Notes:

- FD - Field Duplicate
- TB - Trip Blank
- EB - Equipment Blank
- FB - Field Blank

**TABLE B-2**  
**HARBOURSIDE COMMERCIAL PARK**  
**LTMM GROUNDWATER MONITORING EVENT DECEMBER 2019**  
**RPD FOR FIELD DUPLICATES (GROUNDWATER) - BTEX/TPH**

Sample Location	Sample ID	Type	Sample Date	Benzene	Toluene	E. Benzene	Xylenes	C6-C10	C10-C16	C16-C21	C21-C32	Modified TPH
				mg/L								
SCU31-002-MWB	FD-20	Field Duplicate	12/6/2019	<0.0010	<0.0010	<0.0010	<0.0020	<0.10	<0.050	<0.050	<0.10	<0.10
	SCU31-002-MWB	Regular	12/6/2019	<0.0010	<0.0010	<0.0010	<0.0020	<0.10	<0.050	<0.050	<0.10	<0.10
	--	RPD (%)	--	NA	NA	NA	NA	NA	NA	NA	NA	NA

**Notes:**

NA - Not applicable (Either 1) Parameter not analyzed or 2) One or both sample results exhibit concentrations less than 5 times the RDL)

**Bold** - Calculation is outside of the acceptable RPD range.

FD - Field Duplicate

RPD - Relative Percent Difference



TABLE B-3  
HARBORSIDE COMMERCIAL PARK  
LTMM GROUNDWATER MONITORING EVENT DECEMBER 2019  
RPD FOR FIELD DUPLICATES (GROUNDWATER) - PAHs

Sample Location	Sample ID	Type	Sample Date	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(j)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	1-Methylnaphthalene	2-Methylnaphthalene	Naphthalene	Perylene	Phenanthrene	Pyrene
				µg/L																			
SCU31-002-MWB	FD-20	Field Duplicate	12/6/2019	0.015	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.019	0.024	<0.010	<0.050	<0.050	<0.20	<0.010	0.043	0.017
	SCU31-002-MWB	Regular	12/6/2019	0.015	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.017	0.024	<0.010	<0.050	<0.050	<0.20	<0.010	0.043	0.015
	--	RPD (%)	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

NA - Not applicable (Either 1) Parameter not analyzed or 2) One or both sample results exhibit concentrations less than 5 times the RDL)

**Bold** - Calculation is outside of the acceptable RPD range.

FD - Field Duplicate

RPD - Relative Percent Difference

TABLE B-4  
HARBOURSIDE COMMERCIAL PARK  
LTMM GROUNDWATER MONITORING EVENT DECEMBER 2019  
RPD FOR FIELD DUPLICATES (GROUNDWATER) - INORGANIC CHEMISTRY

Sample Location	Sample ID	Type	Sample Date	Al	Sb	As	Ba	Be	Bi	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Mg	Mn
				ug/L															
SCU31-002-MWB	FD-20	Field Duplicate	12/6/2019	13	<1.0	1.4	27	<1.0	<2.0	670	0.013	440000	<1.0	<0.40	<0.50	160	<0.50	1E+05	560
	SCU31-002-	Regular	12/6/2019	17	<1.0	1.4	27	<1.0	<2.0	680	0.013	440000	<1.0	<0.40	0.65	160	<0.50	1E+05	560
	--	RPD (%)	--	--	NA	NA	0%	0%	NA	NA	2%	NA	0%	NA	NA	NA	0%	NA	14%

Sample Location	Sample ID	Type	Sample Date	Hg	Mo	Ni	P	K	Se	Ag	Na	Sr	Tl	Sn	Ti	U	V	Zn
				ug/L														
SCU31-002-MWB	FD-20	Field Duplicate	12/6/2019	<0.013	3.3	<2.0	<100	20000	<0.50	<0.10	1400000	16000	<0.10	<2.0	<2.0	6.2	<2.0	<5.0
	SCU31-002-	Regular	12/6/2019	<0.013	3.5	<2.0	<100	20000	<0.50	<0.10	1400000	16000	<0.10	<2.0	<2.0	6.1	<2.0	<5.0
	--	RPD (%)	--	--	NA	NA	NA	NA	0%	NA	NA	0%	0%	NA	NA	NA	2%	8%

Notes:

NA - Not applicable (Either 1) Parameter not analyzed or 2) One or both sample results exhibit concentrations less than 5 times the RDL)

**Bold** - Calculation is outside of the acceptable RPD range.

FD - Field Duplicate

RPD - Relative Percent Difference

## Appendix C

### *Laboratory Certificate*



Your Project #: 14-1360  
 Site Location: HARBOURSIDE COMMERCIAL PARK

**Attention: Nadine Wambolt**

Dillon Consulting Limited  
 275 Charlotte St  
 Sydney, NS  
 CANADA B1P 1C6

**Report Date: 2019/12/17**  
 Report #: R6009805  
 Version: 2 - Final

**CERTIFICATE OF ANALYSIS**

**BV LABS JOB #: B9Y4907**

**Received: 2019/12/06, 14:48**

Sample Matrix: Water  
 # Samples Received: 9

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Benzo(b/j)fluoranthene Sum (water) (1)	8	N/A	2019/12/17	N/A	Auto Calc.
TEH in Water (PIRI) (1)	9	2019/12/16	2019/12/16	ATL SOP 00113	Atl. RBCA v3.1 m
Mercury - Total (CVAA,LL) (1)	8	2019/12/16	2019/12/17	ATL SOP 00026	EPA 245.1 R3 m
Metals Water Diss. MS (as rec'd) (1)	6	N/A	2019/12/16	ATL SOP 00058	EPA 6020B R2 m
Metals Water Diss. MS (as rec'd) (1)	2	N/A	2019/12/17	ATL SOP 00058	EPA 6020B R2 m
PAH in Water by GC/MS (SIM) (1)	8	2019/12/16	2019/12/16	ATL SOP 00103	EPA 8270E R6 m
ModTPH (T1) Calc. for Water (1)	9	N/A	2019/12/17	N/A	Atl. RBCA v3 m
VPH in Water (PIRI) (1)	9	N/A	2019/12/16	ATL SOP 00130	Atl. RBCA v3.1 m

**Remarks:**

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

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

Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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

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

(1) This test was performed by BV Labs Bedford



Your Project #: 14-1360

Site Location: HARBOURSIDE COMMERCIAL PARK

**Attention: Nadine Wambolt**

Dillon Consulting Limited  
275 Charlotte St  
Sydney, NS  
CANADA B1P 1C6

**Report Date: 2019/12/17**

Report #: R6009805

Version: 2 - Final

**CERTIFICATE OF ANALYSIS**

**BV LABS JOB #: B9Y4907**

**Received: 2019/12/06, 14:48**

Encryption Key

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

Natalie MacAskill, Key Account Specialist

Email: Natalie.MacAskill@bvlab.com

Phone# (902)567-1255 Ext:17

=====  
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



BUREAU  
VERITAS

BV Labs Job #: B9Y4907  
Report Date: 2019/12/17

Dillon Consulting Limited  
Client Project #: 14-1360  
Site Location: HARBOURSIDE COMMERCIAL PARK  
Sampler Initials: MS

### MERCURY BY COLD VAPOUR AA (WATER)

BV Labs ID		LND849	LND875	LND876	LND877	LND878		
Sampling Date		2019/12/06	2019/12/06	2019/12/06	2019/12/06	2019/12/06		
	UNITS	SCU10-001-MW	SCU10-004-MW	SCU18-007-MW	SCU31-002-MWB	SCU31-004-MW	RDL	QC Batch
<b>Metals</b>								
Total Mercury (Hg)	ug/L	<0.013	<0.013	<0.013	<0.013	<0.013	0.013	6499490
RDL = Reportable Detection Limit								
QC Batch = Quality Control Batch								

BV Labs ID		LND879	LND880	LND881		
Sampling Date		2019/12/06	2019/12/06	2019/12/06		
	UNITS	FD-20	EB-06	FB-06	RDL	QC Batch
<b>Metals</b>						
Total Mercury (Hg)	ug/L	<0.013	<0.013	<0.013	0.013	6499490
RDL = Reportable Detection Limit						
QC Batch = Quality Control Batch						



BUREAU  
VERITAS

BV Labs Job #: B9Y4907  
Report Date: 2019/12/17

Dillon Consulting Limited  
Client Project #: 14-1360  
Site Location: HARBOURSIDE COMMERCIAL PARK  
Sampler Initials: MS

### ELEMENTS BY ICP/MS (WATER)

BV Labs ID		LND849	LND875	LND876		LND877		
Sampling Date		2019/12/06	2019/12/06	2019/12/06		2019/12/06		
	UNITS	SCU10-001-MW	SCU10-004-MW	SCU18-007-MW	RDL	SCU31-002-MWB	RDL	QC Batch
<b>Metals</b>								
Dissolved Aluminum (Al)	ug/L	<5.0	8.5	<5.0	5.0	17	5.0	6499183
Dissolved Antimony (Sb)	ug/L	1.2	<1.0	1.2	1.0	<1.0	1.0	6499183
Dissolved Arsenic (As)	ug/L	1.6	6.8	2.2	1.0	1.4	1.0	6499183
Dissolved Barium (Ba)	ug/L	19	44	46	1.0	27	1.0	6499183
Dissolved Beryllium (Be)	ug/L	<1.0	<1.0	<1.0	1.0	<1.0	1.0	6499183
Dissolved Bismuth (Bi)	ug/L	<2.0	<2.0	<2.0	2.0	<2.0	2.0	6499183
Dissolved Boron (B)	ug/L	75	52	130	50	680	50	6499183
Dissolved Cadmium (Cd)	ug/L	0.011	0.053	<0.010	0.010	0.013	0.010	6499183
Dissolved Calcium (Ca)	ug/L	100000	85000	49000	100	440000	100	6499183
Dissolved Chromium (Cr)	ug/L	<1.0	<1.0	11	1.0	<1.0	1.0	6499183
Dissolved Cobalt (Co)	ug/L	<0.40	<0.40	<0.40	0.40	<0.40	0.40	6499183
Dissolved Copper (Cu)	ug/L	0.57	0.78	1.4	0.50	0.65	0.50	6499183
Dissolved Iron (Fe)	ug/L	<50	<50	<50	50	160	50	6499183
Dissolved Lead (Pb)	ug/L	<0.50	<0.50	<0.50	0.50	<0.50	0.50	6499183
Dissolved Magnesium (Mg)	ug/L	8000	3400	26000	100	110000	100	6499183
Dissolved Manganese (Mn)	ug/L	31	28	<2.0	2.0	560	2.0	6499183
Dissolved Molybdenum (Mo)	ug/L	3.6	5.7	3.2	2.0	3.5	2.0	6499183
Dissolved Nickel (Ni)	ug/L	<2.0	<2.0	<2.0	2.0	<2.0	2.0	6499183
Dissolved Phosphorus (P)	ug/L	110	<100	130	100	<100	100	6499183
Dissolved Potassium (K)	ug/L	3700	6700	2300	100	20000	100	6499183
Dissolved Selenium (Se)	ug/L	3.9	1.8	0.60	0.50	<0.50	0.50	6499183
Dissolved Silver (Ag)	ug/L	<0.10	<0.10	<0.10	0.10	<0.10	0.10	6499183
Dissolved Sodium (Na)	ug/L	38000	67000	11000	100	1400000	1000	6499183
Dissolved Strontium (Sr)	ug/L	450	410	160	2.0	16000	20	6499183
Dissolved Thallium (Tl)	ug/L	<0.10	<0.10	<0.10	0.10	<0.10	0.10	6499183
Dissolved Tin (Sn)	ug/L	<2.0	<2.0	<2.0	2.0	<2.0	2.0	6499183
Dissolved Titanium (Ti)	ug/L	<2.0	<2.0	<2.0	2.0	<2.0	2.0	6499183
Dissolved Uranium (U)	ug/L	2.5	0.69	2.8	0.10	6.1	0.10	6499183
Dissolved Vanadium (V)	ug/L	<2.0	12	11	2.0	<2.0	2.0	6499183
Dissolved Zinc (Zn)	ug/L	7.1	<5.0	<5.0	5.0	<5.0	5.0	6499183
RDL = Reportable Detection Limit								
QC Batch = Quality Control Batch								



BUREAU  
VERITAS

BV Labs Job #: B9Y4907  
Report Date: 2019/12/17

Dillon Consulting Limited  
Client Project #: 14-1360  
Site Location: HARBOURSIDE COMMERCIAL PARK  
Sampler Initials: MS

### ELEMENTS BY ICP/MS (WATER)

BV Labs ID		LND878		LND879		LND880	LND881		
Sampling Date		2019/12/06		2019/12/06		2019/12/06	2019/12/06		
	UNITS	SCU31-004-MW	RDL	FD-20	RDL	EB-06	FB-06	RDL	QC Batch
<b>Metals</b>									
Dissolved Aluminum (Al)	ug/L	20	5.0	13	5.0	<5.0	20	5.0	6499183
Dissolved Antimony (Sb)	ug/L	<1.0	1.0	<1.0	1.0	<1.0	<1.0	1.0	6499183
Dissolved Arsenic (As)	ug/L	<1.0	1.0	1.4	1.0	<1.0	<1.0	1.0	6499183
Dissolved Barium (Ba)	ug/L	48	1.0	27	1.0	<1.0	<1.0	1.0	6499183
Dissolved Beryllium (Be)	ug/L	<1.0	1.0	<1.0	1.0	<1.0	<1.0	1.0	6499183
Dissolved Bismuth (Bi)	ug/L	<2.0	2.0	<2.0	2.0	<2.0	<2.0	2.0	6499183
Dissolved Boron (B)	ug/L	65	50	670	50	<50	<50	50	6499183
Dissolved Cadmium (Cd)	ug/L	<0.010	0.010	0.013	0.010	<0.010	<0.010	0.010	6499183
Dissolved Calcium (Ca)	ug/L	150000	100	440000	100	<100	<100	100	6499183
Dissolved Chromium (Cr)	ug/L	2.3	1.0	<1.0	1.0	<1.0	<1.0	1.0	6499183
Dissolved Cobalt (Co)	ug/L	<0.40	0.40	<0.40	0.40	<0.40	<0.40	0.40	6499183
Dissolved Copper (Cu)	ug/L	0.74	0.50	<0.50	0.50	<0.50	<0.50	0.50	6499183
Dissolved Iron (Fe)	ug/L	<50	50	160	50	<50	<50	50	6499183
Dissolved Lead (Pb)	ug/L	<0.50	0.50	<0.50	0.50	<0.50	<0.50	0.50	6499183
Dissolved Magnesium (Mg)	ug/L	<100	100	100000	100	<100	<100	100	6499183
Dissolved Manganese (Mn)	ug/L	<2.0	2.0	560	2.0	<2.0	<2.0	2.0	6499183
Dissolved Molybdenum (Mo)	ug/L	6.4	2.0	3.3	2.0	<2.0	<2.0	2.0	6499183
Dissolved Nickel (Ni)	ug/L	<2.0	2.0	<2.0	2.0	<2.0	<2.0	2.0	6499183
Dissolved Phosphorus (P)	ug/L	<100	100	<100	100	<100	<100	100	6499183
Dissolved Potassium (K)	ug/L	8800	100	20000	100	<100	<100	100	6499183
Dissolved Selenium (Se)	ug/L	2.9	0.50	<0.50	0.50	<0.50	<0.50	0.50	6499183
Dissolved Silver (Ag)	ug/L	<0.10	0.10	<0.10	0.10	<0.10	<0.10	0.10	6499183
Dissolved Sodium (Na)	ug/L	20000	100	1400000	1000	320	160	100	6499183
Dissolved Strontium (Sr)	ug/L	770	2.0	16000	20	<2.0	<2.0	2.0	6499183
Dissolved Thallium (Tl)	ug/L	<0.10	0.10	<0.10	0.10	<0.10	<0.10	0.10	6499183
Dissolved Tin (Sn)	ug/L	<2.0	2.0	<2.0	2.0	<2.0	<2.0	2.0	6499183
Dissolved Titanium (Ti)	ug/L	<2.0	2.0	<2.0	2.0	<2.0	<2.0	2.0	6499183
Dissolved Uranium (U)	ug/L	<0.10	0.10	6.2	0.10	<0.10	<0.10	0.10	6499183
Dissolved Vanadium (V)	ug/L	8.5	2.0	<2.0	2.0	<2.0	<2.0	2.0	6499183
Dissolved Zinc (Zn)	ug/L	<5.0	5.0	<5.0	5.0	<5.0	<5.0	5.0	6499183
RDL = Reportable Detection Limit									
QC Batch = Quality Control Batch									





BUREAU  
VERITAS

BV Labs Job #: B9Y4907  
Report Date: 2019/12/17

Dillon Consulting Limited  
Client Project #: 14-1360  
Site Location: HARBOURSIDE COMMERCIAL PARK  
Sampler Initials: MS

**SEMI-VOLATILE ORGANICS BY GC-MS (WATER)**

BV Labs ID		LND849	LND875	LND876	LND877	LND878		
Sampling Date		2019/12/06	2019/12/06	2019/12/06	2019/12/06	2019/12/06		
	UNITS	SCU10-001-MW	SCU10-004-MW	SCU18-007-MW	SCU31-002-MWB	SCU31-004-MW	RDL	QC Batch
<b>Polyaromatic Hydrocarbons</b>								
1-Methylnaphthalene	ug/L	<0.050	7.3	<0.050	<0.050	0.21	0.050	6499153
2-Methylnaphthalene	ug/L	<0.050	0.16	<0.050	<0.050	0.17	0.050	6499153
Acenaphthene	ug/L	<0.010	29	<0.010	0.015	0.060	0.010	6499153
Acenaphthylene	ug/L	<0.010	3.4	<0.010	<0.010	0.14	0.010	6499153
Anthracene	ug/L	<0.010	1.3	<0.010	<0.010	0.026	0.010	6499153
Benzo(a)anthracene	ug/L	<0.010	0.54	<0.010	<0.010	0.015	0.010	6499153
Benzo(a)pyrene	ug/L	<0.010	0.42	<0.010	<0.010	<0.010	0.010	6499153
Benzo(b)fluoranthene	ug/L	<0.010	0.31	<0.010	<0.010	<0.010	0.010	6499153
Benzo(b/j)fluoranthene	ug/L	<0.020	0.51	<0.020	<0.020	<0.020	0.020	6485933
Benzo(g,h,i)perylene	ug/L	<0.010	0.18	<0.010	<0.010	<0.010	0.010	6499153
Benzo(j)fluoranthene	ug/L	<0.010	0.20	<0.010	<0.010	<0.010	0.010	6499153
Benzo(k)fluoranthene	ug/L	<0.010	0.20	<0.010	<0.010	<0.010	0.010	6499153
Chrysene	ug/L	<0.010	0.50	<0.010	<0.010	0.021	0.010	6499153
Dibenzo(a,h)anthracene	ug/L	<0.010	0.080	<0.010	<0.010	<0.010	0.010	6499153
Fluoranthene	ug/L	<0.010	2.5	<0.010	0.017	0.053	0.010	6499153
Fluorene	ug/L	<0.010	9.7	<0.010	0.024	0.14	0.010	6499153
Indeno(1,2,3-cd)pyrene	ug/L	<0.010	0.18	<0.010	<0.010	<0.010	0.010	6499153
Naphthalene	ug/L	<0.20	<0.20	<0.20	<0.20	0.46	0.20	6499153
Perylene	ug/L	<0.010	0.085	<0.010	<0.010	<0.010	0.010	6499153
Phenanthrene	ug/L	<0.010	0.54	<0.010	0.043	0.13	0.010	6499153
Pyrene	ug/L	<0.010	1.6	<0.010	0.015	0.097	0.010	6499153
<b>Surrogate Recovery (%)</b>								
D10-Anthracene	%	97	96	97	97	94		6499153
D14-Terphenyl	%	102 (1)	108 (1)	104 (1)	107 (1)	101 (1)		6499153
D8-Acenaphthylene	%	96	94	100	98	95		6499153
RDL = Reportable Detection Limit QC Batch = Quality Control Batch (1) PAH sample analysed past recommended hold time as per client request.								



**SEMI-VOLATILE ORGANICS BY GC-MS (WATER)**

BV Labs ID		LND879	LND880	LND881		
Sampling Date		2019/12/06	2019/12/06	2019/12/06		
	UNITS	FD-20	EB-06	FB-06	RDL	QC Batch
<b>Polyaromatic Hydrocarbons</b>						
1-Methylnaphthalene	ug/L	<0.050	<0.050	<0.050	0.050	6499153
2-Methylnaphthalene	ug/L	<0.050	<0.050	<0.050	0.050	6499153
Acenaphthene	ug/L	0.015	<0.010	<0.010	0.010	6499153
Acenaphthylene	ug/L	<0.010	<0.010	<0.010	0.010	6499153
Anthracene	ug/L	<0.010	<0.010	<0.010	0.010	6499153
Benzo(a)anthracene	ug/L	<0.010	<0.010	<0.010	0.010	6499153
Benzo(a)pyrene	ug/L	<0.010	<0.010	<0.010	0.010	6499153
Benzo(b)fluoranthene	ug/L	<0.010	<0.010	<0.010	0.010	6499153
Benzo(b/j)fluoranthene	ug/L	<0.020	<0.020	<0.020	0.020	6485933
Benzo(g,h,i)perylene	ug/L	<0.010	<0.010	<0.010	0.010	6499153
Benzo(j)fluoranthene	ug/L	<0.010	<0.010	<0.010	0.010	6499153
Benzo(k)fluoranthene	ug/L	<0.010	<0.010	<0.010	0.010	6499153
Chrysene	ug/L	<0.010	<0.010	<0.010	0.010	6499153
Dibenzo(a,h)anthracene	ug/L	<0.010	<0.010	<0.010	0.010	6499153
Fluoranthene	ug/L	0.019	<0.010	<0.010	0.010	6499153
Fluorene	ug/L	0.024	<0.010	<0.010	0.010	6499153
Indeno(1,2,3-cd)pyrene	ug/L	<0.010	<0.010	<0.010	0.010	6499153
Naphthalene	ug/L	<0.20	<0.20	<0.20	0.20	6499153
Perylene	ug/L	<0.010	<0.010	<0.010	0.010	6499153
Phenanthrene	ug/L	0.043	<0.010	<0.010	0.010	6499153
Pyrene	ug/L	0.017	<0.010	<0.010	0.010	6499153
<b>Surrogate Recovery (%)</b>						
D10-Anthracene	%	97	98	101		6499153
D14-Terphenyl	%	104 (1)	104 (1)	107 (1)		6499153
D8-Acenaphthylene	%	97	98	101		6499153
RDL = Reportable Detection Limit						
QC Batch = Quality Control Batch						
(1) PAH sample analysed past recommended hold time as per client request.						



**ATLANTIC RBCA HYDROCARBONS (WATER)**

BV Labs ID		LND849	LND875	LND876	LND877	LND878		
Sampling Date		2019/12/06	2019/12/06	2019/12/06	2019/12/06	2019/12/06		
	UNITS	SCU10-001-MW	SCU10-004-MW	SCU18-007-MW	SCU31-002-MWB	SCU31-004-MW	RDL	QC Batch
<b>Petroleum Hydrocarbons</b>								
Benzene	mg/L	<0.0010	0.039	<0.0010	<0.0010	<0.0010	0.0010	6498694
Toluene	mg/L	<0.0010	0.023	<0.0010	<0.0010	<0.0010	0.0010	6498694
Ethylbenzene	mg/L	<0.0010	0.015	<0.0010	<0.0010	<0.0010	0.0010	6498694
Total Xylenes	mg/L	<0.0020	0.069	<0.0020	<0.0020	<0.0020	0.0020	6498694
C6 - C10 (less BTEX)	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	6498694
>C10-C16 Hydrocarbons	mg/L	<0.050	1.8	<0.050	<0.050	<0.050	0.050	6499112
>C16-C21 Hydrocarbons	mg/L	<0.050	0.11	<0.050	<0.050	<0.050	0.050	6499112
>C21-<C32 Hydrocarbons	mg/L	<0.10	0.12	<0.10	<0.10	<0.10	0.10	6499112
Modified TPH (Tier1)	mg/L	<0.10	2.1	<0.10	<0.10	<0.10	0.10	6485947
Reached Baseline at C32	mg/L	NA	Yes	NA	NA	NA	N/A	6499112
Hydrocarbon Resemblance	mg/L	NA	COMMENT (1)	NA	NA	NA	N/A	6499112
<b>Surrogate Recovery (%)</b>								
Isobutylbenzene - Extractable	%	96	95	101	100	100		6499112
n-Dotriacontane - Extractable	%	95	91	92	92	90		6499112
Isobutylbenzene - Volatile	%	101	102	103	103	103		6498694
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable (1) One product in fuel oil range.								



BUREAU  
VERITAS

BV Labs Job #: B9Y4907  
Report Date: 2019/12/17

Dillon Consulting Limited  
Client Project #: 14-1360  
Site Location: HARBOURSIDE COMMERCIAL PARK  
Sampler Initials: MS

### ATLANTIC RBCA HYDROCARBONS (WATER)

BV Labs ID		LND879		LND880	LND881	LND882		
Sampling Date		2019/12/06		2019/12/06	2019/12/06	2019/12/06		
	UNITS	FD-20	QC Batch	EB-06	FB-06	TB-07	RDL	QC Batch
<b>Petroleum Hydrocarbons</b>								
Benzene	mg/L	<0.0010	6498694	<0.0010	<0.0010	<0.0010	0.0010	6498695
Toluene	mg/L	<0.0010	6498694	<0.0010	<0.0010	<0.0010	0.0010	6498695
Ethylbenzene	mg/L	<0.0010	6498694	<0.0010	<0.0010	<0.0010	0.0010	6498695
Total Xylenes	mg/L	<0.0020	6498694	<0.0020	<0.0020	<0.0020	0.0020	6498695
C6 - C10 (less BTEX)	mg/L	<0.10	6498694	<0.10	<0.10	<0.10	0.10	6498695
>C10-C16 Hydrocarbons	mg/L	<0.050	6499112	<0.050	<0.050	<0.050	0.050	6499112
>C16-C21 Hydrocarbons	mg/L	<0.050	6499112	<0.050	<0.050	<0.050	0.050	6499112
>C21-<C32 Hydrocarbons	mg/L	<0.10	6499112	<0.10	<0.10	<0.10	0.10	6499112
Modified TPH (Tier1)	mg/L	<0.10	6485947	<0.10	<0.10	<0.10	0.10	6485947
Reached Baseline at C32	mg/L	NA	6499112	NA	NA	NA	N/A	6499112
Hydrocarbon Resemblance	mg/L	NA	6499112	NA	NA	NA	N/A	6499112
<b>Surrogate Recovery (%)</b>								
Isobutylbenzene - Extractable	%	100	6499112	99	99	100		6499112
n-Dotriacontane - Extractable	%	97	6499112	88	89	87		6499112
Isobutylbenzene - Volatile	%	103	6498694	109	108	105		6498695
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable								



**BUREAU  
VERITAS**

BV Labs Job #: B9Y4907  
Report Date: 2019/12/17

Dillon Consulting Limited  
Client Project #: 14-1360  
Site Location: HARBOURSIDE COMMERCIAL PARK  
Sampler Initials: MS

### GENERAL COMMENTS

Results relate only to the items tested.



BUREAU  
VERITAS

BV Labs Job #: B9Y4907  
Report Date: 2019/12/17

Dillon Consulting Limited  
Client Project #: 14-1360  
Site Location: HARBOURSIDE COMMERCIAL PARK  
Sampler Initials: MS

### QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6498694	THL	Matrix Spike	Isobutylbenzene - Volatile	2019/12/16		98	%	70 - 130
			Benzene	2019/12/16		106	%	70 - 130
			Toluene	2019/12/16		106	%	70 - 130
			Ethylbenzene	2019/12/16		109	%	70 - 130
			Total Xylenes	2019/12/16		109	%	70 - 130
6498694	THL	Spiked Blank	Isobutylbenzene - Volatile	2019/12/16		104	%	70 - 130
			Benzene	2019/12/16		102	%	70 - 130
			Toluene	2019/12/16		103	%	70 - 130
			Ethylbenzene	2019/12/16		106	%	70 - 130
			Total Xylenes	2019/12/16		107	%	70 - 130
6498694	THL	Method Blank	Isobutylbenzene - Volatile	2019/12/16		104	%	70 - 130
			Benzene	2019/12/16	<0.0010		mg/L	
			Toluene	2019/12/16	<0.0010		mg/L	
			Ethylbenzene	2019/12/16	<0.0010		mg/L	
			Total Xylenes	2019/12/16	<0.0020		mg/L	
			C6 - C10 (less BTEX)	2019/12/16	<0.10		mg/L	
6498694	THL	RPD	Benzene	2019/12/16	NC		%	40
			Toluene	2019/12/16	NC		%	40
			Ethylbenzene	2019/12/16	NC		%	40
			Total Xylenes	2019/12/16	NC		%	40
			C6 - C10 (less BTEX)	2019/12/16	NC		%	40
6498695	THL	Matrix Spike	Isobutylbenzene - Volatile	2019/12/16		111	%	70 - 130
			Benzene	2019/12/16		103	%	70 - 130
			Toluene	2019/12/16		104	%	70 - 130
			Ethylbenzene	2019/12/16		90	%	70 - 130
			Total Xylenes	2019/12/16		111	%	70 - 130
6498695	THL	Spiked Blank	Isobutylbenzene - Volatile	2019/12/16		113	%	70 - 130
			Benzene	2019/12/16		98	%	70 - 130
			Toluene	2019/12/16		103	%	70 - 130
			Ethylbenzene	2019/12/16		86	%	70 - 130
			Total Xylenes	2019/12/16		108	%	70 - 130
6498695	THL	Method Blank	Isobutylbenzene - Volatile	2019/12/16		114	%	70 - 130
			Benzene	2019/12/16	<0.0010		mg/L	
			Toluene	2019/12/16	<0.0010		mg/L	
			Ethylbenzene	2019/12/16	<0.0010		mg/L	
			Total Xylenes	2019/12/16	<0.0020		mg/L	
			C6 - C10 (less BTEX)	2019/12/16	<0.10		mg/L	
6498695	THL	RPD	Benzene	2019/12/16	NC		%	40
			Toluene	2019/12/16	NC		%	40
			Ethylbenzene	2019/12/16	NC		%	40
			Total Xylenes	2019/12/16	NC		%	40
			C6 - C10 (less BTEX)	2019/12/16	NC		%	40
6499112	MGN	Matrix Spike [LND881-01]	Isobutylbenzene - Extractable	2019/12/16		98	%	70 - 130
			n-Dotriacontane - Extractable	2019/12/16		95	%	70 - 130
			>C10-C16 Hydrocarbons	2019/12/16		97	%	70 - 130
			>C16-C21 Hydrocarbons	2019/12/16		93	%	70 - 130
			>C21-<C32 Hydrocarbons	2019/12/16		103	%	70 - 130
6499112	MGN	Spiked Blank	Isobutylbenzene - Extractable	2019/12/16		97	%	70 - 130
			n-Dotriacontane - Extractable	2019/12/16		98	%	70 - 130
			>C10-C16 Hydrocarbons	2019/12/16		99	%	70 - 130
			>C16-C21 Hydrocarbons	2019/12/16		95	%	70 - 130
			>C21-<C32 Hydrocarbons	2019/12/16		113	%	70 - 130
6499112	MGN	Method Blank	Isobutylbenzene - Extractable	2019/12/16		99	%	70 - 130



BUREAU  
VERITAS

BV Labs Job #: B9Y4907  
Report Date: 2019/12/17

Dillon Consulting Limited  
Client Project #: 14-1360  
Site Location: HARBOURSIDE COMMERCIAL PARK  
Sampler Initials: MS

### QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
				n-Dotriacontane - Extractable	2019/12/16		92	%	70 - 130
				>C10-C16 Hydrocarbons	2019/12/16	<0.050		mg/L	
				>C16-C21 Hydrocarbons	2019/12/16	<0.050		mg/L	
				>C21-<C32 Hydrocarbons	2019/12/16	<0.10		mg/L	
6499112	MGN	RPD	[LND880-01]	>C10-C16 Hydrocarbons	2019/12/16	NC		%	40
				>C16-C21 Hydrocarbons	2019/12/16	NC		%	40
				>C21-<C32 Hydrocarbons	2019/12/16	NC		%	40
6499153	LGE	Matrix Spike		D10-Anthracene	2019/12/16		86	%	50 - 130
				D14-Terphenyl	2019/12/16		92	%	50 - 130
				D8-Acenaphthylene	2019/12/16		86	%	50 - 130
				1-Methylnaphthalene	2019/12/16		91	%	50 - 130
				2-Methylnaphthalene	2019/12/16		88	%	50 - 130
				Acenaphthene	2019/12/16		95	%	50 - 130
				Acenaphthylene	2019/12/16		91	%	50 - 130
				Anthracene	2019/12/16		82	%	50 - 130
				Benzo(a)anthracene	2019/12/16		94	%	50 - 130
				Benzo(a)pyrene	2019/12/16		83	%	50 - 130
				Benzo(b)fluoranthene	2019/12/16		90	%	50 - 130
				Benzo(g,h,i)perylene	2019/12/16		73	%	50 - 130
				Benzo(j)fluoranthene	2019/12/16		85	%	50 - 130
				Benzo(k)fluoranthene	2019/12/16		84	%	50 - 130
				Chrysene	2019/12/16		94	%	50 - 130
				Dibenzo(a,h)anthracene	2019/12/16		75	%	50 - 130
				Fluoranthene	2019/12/16		85	%	50 - 130
				Fluorene	2019/12/16		94	%	50 - 130
				Indeno(1,2,3-cd)pyrene	2019/12/16		73	%	50 - 130
				Naphthalene	2019/12/16		91	%	50 - 130
				Perylene	2019/12/16		74	%	50 - 130
				Phenanthrene	2019/12/16		91	%	50 - 130
				Pyrene	2019/12/16		84	%	50 - 130
6499153	LGE	Spiked Blank		D10-Anthracene	2019/12/16		103	%	50 - 130
				D14-Terphenyl	2019/12/16		108	%	50 - 130
				D8-Acenaphthylene	2019/12/16		102	%	50 - 130
				1-Methylnaphthalene	2019/12/16		105	%	50 - 130
				2-Methylnaphthalene	2019/12/16		104	%	50 - 130
				Acenaphthene	2019/12/16		112	%	50 - 130
				Acenaphthylene	2019/12/16		109	%	50 - 130
				Anthracene	2019/12/16		101	%	50 - 130
				Benzo(a)anthracene	2019/12/16		115	%	50 - 130
				Benzo(a)pyrene	2019/12/16		101	%	50 - 130
				Benzo(b)fluoranthene	2019/12/16		110	%	50 - 130
				Benzo(g,h,i)perylene	2019/12/16		93	%	50 - 130
				Benzo(j)fluoranthene	2019/12/16		103	%	50 - 130
				Benzo(k)fluoranthene	2019/12/16		100	%	50 - 130
				Chrysene	2019/12/16		113	%	50 - 130
				Dibenzo(a,h)anthracene	2019/12/16		87	%	50 - 130
				Fluoranthene	2019/12/16		102	%	50 - 130
				Fluorene	2019/12/16		110	%	50 - 130
				Indeno(1,2,3-cd)pyrene	2019/12/16		95	%	50 - 130
				Naphthalene	2019/12/16		108	%	50 - 130
				Perylene	2019/12/16		93	%	50 - 130
				Phenanthrene	2019/12/16		113	%	50 - 130
				Pyrene	2019/12/16		104	%	50 - 130



BUREAU  
VERITAS

BV Labs Job #: B9Y4907  
Report Date: 2019/12/17

Dillon Consulting Limited  
Client Project #: 14-1360  
Site Location: HARBOURSIDE COMMERCIAL PARK  
Sampler Initials: MS

### QUALITY ASSURANCE REPORT(CONT'D)

QA/QC									
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits	
6499153	LGE	Method Blank	D10-Anthracene	2019/12/16		101	%	50 - 130	
			D14-Terphenyl	2019/12/16		104	%	50 - 130	
			D8-Acenaphthylene	2019/12/16		100	%	50 - 130	
			1-Methylnaphthalene	2019/12/16	<0.050			ug/L	
			2-Methylnaphthalene	2019/12/16	<0.050			ug/L	
			Acenaphthene	2019/12/16	<0.010			ug/L	
			Acenaphthylene	2019/12/16	<0.010			ug/L	
			Anthracene	2019/12/16	<0.010			ug/L	
			Benzo(a)anthracene	2019/12/16	<0.010			ug/L	
			Benzo(a)pyrene	2019/12/16	<0.010			ug/L	
			Benzo(b)fluoranthene	2019/12/16	<0.010			ug/L	
			Benzo(g,h,i)perylene	2019/12/16	<0.010			ug/L	
			Benzo(j)fluoranthene	2019/12/16	<0.010			ug/L	
			Benzo(k)fluoranthene	2019/12/16	<0.010			ug/L	
			Chrysene	2019/12/16	<0.010			ug/L	
			Dibenzo(a,h)anthracene	2019/12/16	<0.010			ug/L	
			Fluoranthene	2019/12/16	<0.010			ug/L	
			Fluorene	2019/12/16	<0.010			ug/L	
			Indeno(1,2,3-cd)pyrene	2019/12/16	<0.010			ug/L	
			Naphthalene	2019/12/16	<0.20			ug/L	
			Perylene	2019/12/16	<0.010			ug/L	
			Phenanthrene	2019/12/16	<0.010			ug/L	
			Pyrene	2019/12/16	<0.010			ug/L	
6499153	LGE	RPD	1-Methylnaphthalene	2019/12/16	NC		%	40	
			2-Methylnaphthalene	2019/12/16	NC		%	40	
			Acenaphthene	2019/12/16	NC		%	40	
			Acenaphthylene	2019/12/16	NC		%	40	
			Anthracene	2019/12/16	NC		%	40	
			Benzo(a)anthracene	2019/12/16	NC		%	40	
			Benzo(a)pyrene	2019/12/16	NC		%	40	
			Benzo(b)fluoranthene	2019/12/16	NC		%	40	
			Benzo(g,h,i)perylene	2019/12/16	NC		%	40	
			Benzo(j)fluoranthene	2019/12/16	NC		%	40	
			Benzo(k)fluoranthene	2019/12/16	NC		%	40	
			Chrysene	2019/12/16	NC		%	40	
			Dibenzo(a,h)anthracene	2019/12/16	NC		%	40	
			Fluoranthene	2019/12/16	NC		%	40	
			Fluorene	2019/12/16	NC		%	40	
			Indeno(1,2,3-cd)pyrene	2019/12/16	NC		%	40	
			Naphthalene	2019/12/16	NC		%	40	
Perylene	2019/12/16	NC		%	40				
Phenanthrene	2019/12/16	6.7		%	40				
Pyrene	2019/12/16	NC		%	40				
6499183	MLB	Matrix Spike [LND878-04]	Dissolved Aluminum (Al)	2019/12/16		99	%	80 - 120	
			Dissolved Antimony (Sb)	2019/12/16		102	%	80 - 120	
			Dissolved Arsenic (As)	2019/12/16		98	%	80 - 120	
			Dissolved Barium (Ba)	2019/12/16		95	%	80 - 120	
			Dissolved Beryllium (Be)	2019/12/16		95	%	80 - 120	
			Dissolved Bismuth (Bi)	2019/12/16		88	%	80 - 120	
			Dissolved Boron (B)	2019/12/16		93	%	80 - 120	
			Dissolved Cadmium (Cd)	2019/12/16		100	%	80 - 120	
			Dissolved Calcium (Ca)	2019/12/16		NC	%	80 - 120	
			Dissolved Chromium (Cr)	2019/12/16		96	%	80 - 120	





BUREAU  
VERITAS

BV Labs Job #: B9Y4907  
Report Date: 2019/12/17

Dillon Consulting Limited  
Client Project #: 14-1360  
Site Location: HARBOURSIDE COMMERCIAL PARK  
Sampler Initials: MS

### QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Cobalt (Co)	2019/12/16		98	%	80 - 120
			Dissolved Copper (Cu)	2019/12/16		94	%	80 - 120
			Dissolved Iron (Fe)	2019/12/16		98	%	80 - 120
			Dissolved Lead (Pb)	2019/12/16		100	%	80 - 120
			Dissolved Magnesium (Mg)	2019/12/16		100	%	80 - 120
			Dissolved Manganese (Mn)	2019/12/16		96	%	80 - 120
			Dissolved Molybdenum (Mo)	2019/12/16		103	%	80 - 120
			Dissolved Nickel (Ni)	2019/12/16		96	%	80 - 120
			Dissolved Phosphorus (P)	2019/12/16		100	%	80 - 120
			Dissolved Potassium (K)	2019/12/16		92	%	80 - 120
			Dissolved Selenium (Se)	2019/12/16		90	%	80 - 120
			Dissolved Silver (Ag)	2019/12/16		71 (1)	%	80 - 120
			Dissolved Sodium (Na)	2019/12/16		92	%	80 - 120
			Dissolved Strontium (Sr)	2019/12/16		NC	%	80 - 120
			Dissolved Thallium (Tl)	2019/12/16		98	%	80 - 120
			Dissolved Tin (Sn)	2019/12/16		105	%	80 - 120
			Dissolved Titanium (Ti)	2019/12/16		101	%	80 - 120
			Dissolved Uranium (U)	2019/12/16		104	%	80 - 120
			Dissolved Vanadium (V)	2019/12/16		100	%	80 - 120
			Dissolved Zinc (Zn)	2019/12/16		96	%	80 - 120
6499183	MLB	Spiked Blank	Dissolved Aluminum (Al)	2019/12/16		101	%	80 - 120
			Dissolved Antimony (Sb)	2019/12/16		96	%	80 - 120
			Dissolved Arsenic (As)	2019/12/16		97	%	80 - 120
			Dissolved Barium (Ba)	2019/12/16		97	%	80 - 120
			Dissolved Beryllium (Be)	2019/12/16		98	%	80 - 120
			Dissolved Bismuth (Bi)	2019/12/16		98	%	80 - 120
			Dissolved Boron (B)	2019/12/16		97	%	80 - 120
			Dissolved Cadmium (Cd)	2019/12/16		98	%	80 - 120
			Dissolved Calcium (Ca)	2019/12/16		102	%	80 - 120
			Dissolved Chromium (Cr)	2019/12/16		98	%	80 - 120
			Dissolved Cobalt (Co)	2019/12/16		101	%	80 - 120
			Dissolved Copper (Cu)	2019/12/16		98	%	80 - 120
			Dissolved Iron (Fe)	2019/12/16		103	%	80 - 120
			Dissolved Lead (Pb)	2019/12/16		105	%	80 - 120
			Dissolved Magnesium (Mg)	2019/12/16		105	%	80 - 120
			Dissolved Manganese (Mn)	2019/12/16		100	%	80 - 120
			Dissolved Molybdenum (Mo)	2019/12/16		101	%	80 - 120
			Dissolved Nickel (Ni)	2019/12/16		100	%	80 - 120
			Dissolved Phosphorus (P)	2019/12/16		101	%	80 - 120
			Dissolved Potassium (K)	2019/12/16		102	%	80 - 120
			Dissolved Selenium (Se)	2019/12/16		98	%	80 - 120
			Dissolved Silver (Ag)	2019/12/16		97	%	80 - 120
			Dissolved Sodium (Na)	2019/12/16		100	%	80 - 120
			Dissolved Strontium (Sr)	2019/12/16		99	%	80 - 120
			Dissolved Thallium (Tl)	2019/12/16		99	%	80 - 120
			Dissolved Tin (Sn)	2019/12/16		101	%	80 - 120
			Dissolved Titanium (Ti)	2019/12/16		102	%	80 - 120
			Dissolved Uranium (U)	2019/12/16		105	%	80 - 120
			Dissolved Vanadium (V)	2019/12/16		101	%	80 - 120
			Dissolved Zinc (Zn)	2019/12/16		100	%	80 - 120
6499183	MLB	Method Blank	Dissolved Aluminum (Al)	2019/12/16	<5.0		ug/L	
			Dissolved Antimony (Sb)	2019/12/16	<1.0		ug/L	
			Dissolved Arsenic (As)	2019/12/16	<1.0		ug/L	



BUREAU  
VERITAS

BV Labs Job #: B9Y4907  
Report Date: 2019/12/17

Dillon Consulting Limited  
Client Project #: 14-1360  
Site Location: HARBOURSIDE COMMERCIAL PARK  
Sampler Initials: MS

### QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Barium (Ba)	2019/12/16	<1.0		ug/L	
			Dissolved Beryllium (Be)	2019/12/16	<1.0		ug/L	
			Dissolved Bismuth (Bi)	2019/12/16	<2.0		ug/L	
			Dissolved Boron (B)	2019/12/16	<50		ug/L	
			Dissolved Cadmium (Cd)	2019/12/16	<0.010		ug/L	
			Dissolved Calcium (Ca)	2019/12/16	<100		ug/L	
			Dissolved Chromium (Cr)	2019/12/16	<1.0		ug/L	
			Dissolved Cobalt (Co)	2019/12/16	<0.40		ug/L	
			Dissolved Copper (Cu)	2019/12/16	<0.50		ug/L	
			Dissolved Iron (Fe)	2019/12/16	<50		ug/L	
			Dissolved Lead (Pb)	2019/12/16	<0.50		ug/L	
			Dissolved Magnesium (Mg)	2019/12/16	<100		ug/L	
			Dissolved Manganese (Mn)	2019/12/16	<2.0		ug/L	
			Dissolved Molybdenum (Mo)	2019/12/16	<2.0		ug/L	
			Dissolved Nickel (Ni)	2019/12/16	<2.0		ug/L	
			Dissolved Phosphorus (P)	2019/12/16	<100		ug/L	
			Dissolved Potassium (K)	2019/12/16	<100		ug/L	
			Dissolved Selenium (Se)	2019/12/16	<0.50		ug/L	
			Dissolved Silver (Ag)	2019/12/16	<0.10		ug/L	
			Dissolved Sodium (Na)	2019/12/16	<100		ug/L	
			Dissolved Strontium (Sr)	2019/12/16	<2.0		ug/L	
			Dissolved Thallium (Tl)	2019/12/16	<0.10		ug/L	
			Dissolved Tin (Sn)	2019/12/16	<2.0		ug/L	
			Dissolved Titanium (Ti)	2019/12/16	<2.0		ug/L	
			Dissolved Uranium (U)	2019/12/16	<0.10		ug/L	
			Dissolved Vanadium (V)	2019/12/16	<2.0		ug/L	
			Dissolved Zinc (Zn)	2019/12/16	<5.0		ug/L	
6499183	MLB	RPD [LND878-04]	Dissolved Aluminum (Al)	2019/12/16	1.4		%	20
			Dissolved Antimony (Sb)	2019/12/16	NC		%	20
			Dissolved Arsenic (As)	2019/12/16	NC		%	20
			Dissolved Barium (Ba)	2019/12/16	0.49		%	20
			Dissolved Beryllium (Be)	2019/12/16	NC		%	20
			Dissolved Bismuth (Bi)	2019/12/16	NC		%	20
			Dissolved Boron (B)	2019/12/16	5.1		%	20
			Dissolved Cadmium (Cd)	2019/12/16	NC		%	20
			Dissolved Calcium (Ca)	2019/12/16	0.37		%	20
			Dissolved Chromium (Cr)	2019/12/16	4.9		%	20
			Dissolved Cobalt (Co)	2019/12/16	NC		%	20
			Dissolved Copper (Cu)	2019/12/16	17		%	20
			Dissolved Iron (Fe)	2019/12/16	NC		%	20
			Dissolved Lead (Pb)	2019/12/16	NC		%	20
			Dissolved Magnesium (Mg)	2019/12/16	NC		%	20
			Dissolved Manganese (Mn)	2019/12/16	NC		%	20
			Dissolved Molybdenum (Mo)	2019/12/16	1.2		%	20
			Dissolved Nickel (Ni)	2019/12/16	NC		%	20
			Dissolved Phosphorus (P)	2019/12/16	NC		%	20
			Dissolved Potassium (K)	2019/12/16	2.3		%	20
			Dissolved Selenium (Se)	2019/12/16	5.6		%	20
			Dissolved Silver (Ag)	2019/12/16	NC		%	20
			Dissolved Sodium (Na)	2019/12/16	0.026		%	20
			Dissolved Strontium (Sr)	2019/12/16	1.6		%	20
			Dissolved Thallium (Tl)	2019/12/16	NC		%	20
			Dissolved Tin (Sn)	2019/12/16	NC		%	20



**QUALITY ASSURANCE REPORT(CONT'D)**

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Titanium (Ti)	2019/12/16	NC		%	20
			Dissolved Uranium (U)	2019/12/16	NC		%	20
			Dissolved Vanadium (V)	2019/12/16	0.34		%	20
			Dissolved Zinc (Zn)	2019/12/16	NC		%	20
6499490	NHU	Matrix Spike	Total Mercury (Hg)	2019/12/17		101	%	80 - 120
6499490	NHU	Spiked Blank	Total Mercury (Hg)	2019/12/17		101	%	80 - 120
6499490	NHU	Method Blank	Total Mercury (Hg)	2019/12/17	<0.013		ug/L	
6499490	NHU	RPD	Total Mercury (Hg)	2019/12/17	NC		%	20

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

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

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

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

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

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

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery is within QC acceptance limits. < 10 % of compounds in multi-component analysis in violation.



BUREAU  
VERITAS

BV Labs Job #: B9Y4907  
Report Date: 2019/12/17

Dillon Consulting Limited  
Client Project #: 14-1360  
Site Location: HARBOURSIDE COMMERCIAL PARK  
Sampler Initials: MS

### VALIDATION SIGNATURE PAGE

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

---

Eric Dearman, Scientific Specialist

---

Mike MacGillivray, Scientific Specialist (Inorganics)

---

Phil Deveau, Scientific Specialist (Organics)

---

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

## Appendix D

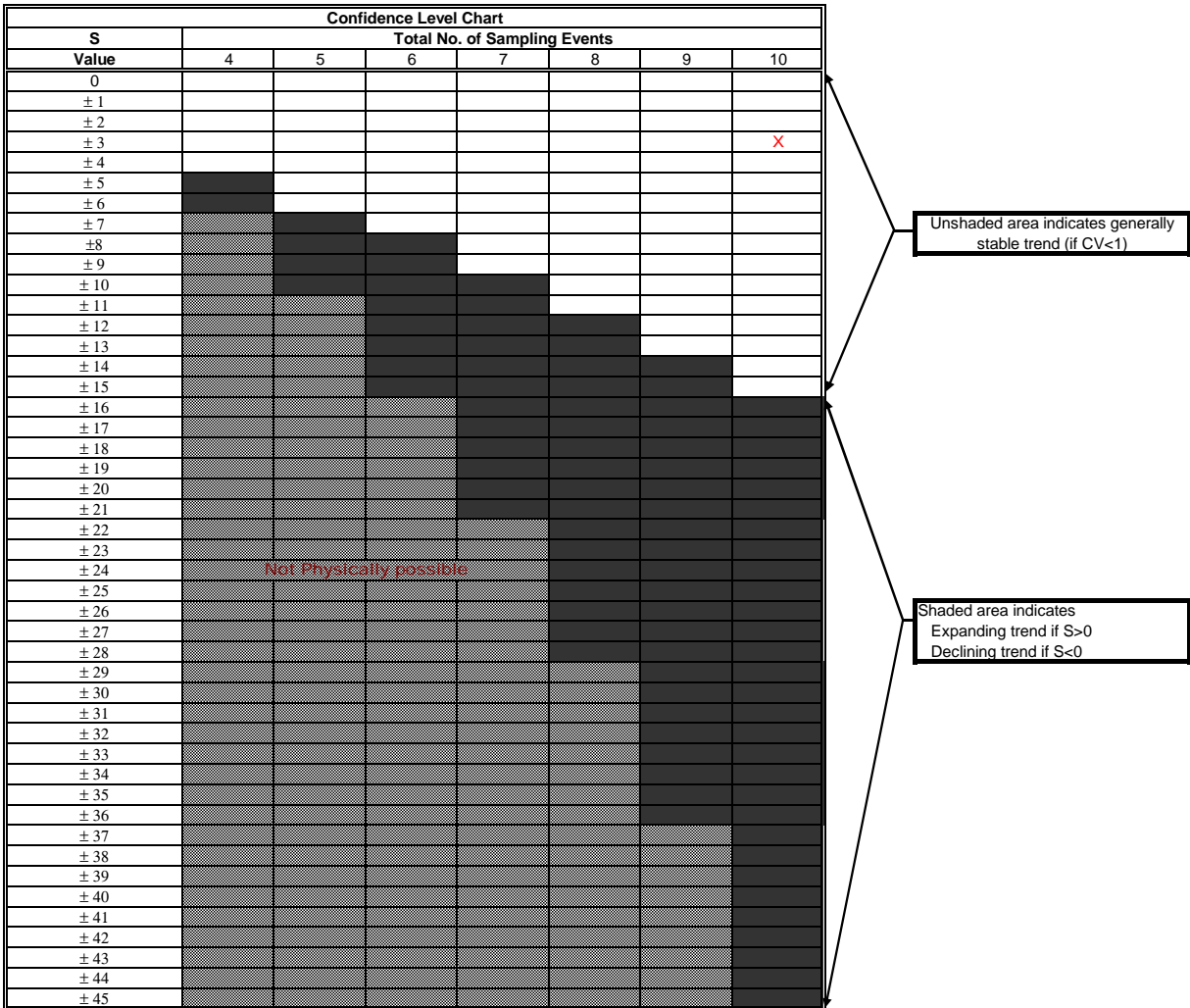
### *Mann-Kendall Tables*

**MANN-KENDALL PLUME STABILITY ANALYSIS**  
**HARBOURSIDE COMMERCIAL PARK (HCP)**  
**LTMM GROUNDWATER MONITORING EVENT**  
**DECEMBER 2019**

MANN-KENDALL ANALYSIS OF PLUME		MONITORING WELL NO: SCU10-004-MW									
	Event 1	Event 2	Event 3	Event 4	Event 5	Event 6	Event 7	Event 8	Event 9	Event 10	Sum Rows
Anthracene	0.0017	0.0024	0.013	0.038	0.004	1.1	0.018	0.0056	0.0023	0.0013	
	19-Nov-08	10-Nov-10	31-Oct-11	13-Nov-12	2-Dec-13	11-Dec-15	18-Nov-16	4-Dec-17	27-Nov-18	6-Dec-19	
Row 1: Compare to Event 1:		1	1	1	1	1	1	1	1	-1	7
Row 2: Compare to Event 2:			1	1	1	1	1	1	-1	-1	4
Row 3: Compare to Event 3:				1	-1	1	1	-1	-1	-1	-1
Row 4: Compare to Event 4:					-1	1	-1	-1	-1	-1	-4
Row 5: Compare to Event 5:						1	1	1	-1	-1	1
Row 6: Compare to Event 6:							-1	-1	-1	-1	-4
Row 7: Compare to Event 7:								-1	-1	-1	-3
Row 8: Compare to Event 8:									-1	-1	-2
Row 9: Compare to Event 9:										-1	-1

1/2 detection limit used for nd, historical data assumed EQL of 0.01 mg/L

Mann-Kendall (S) Statistic = -3



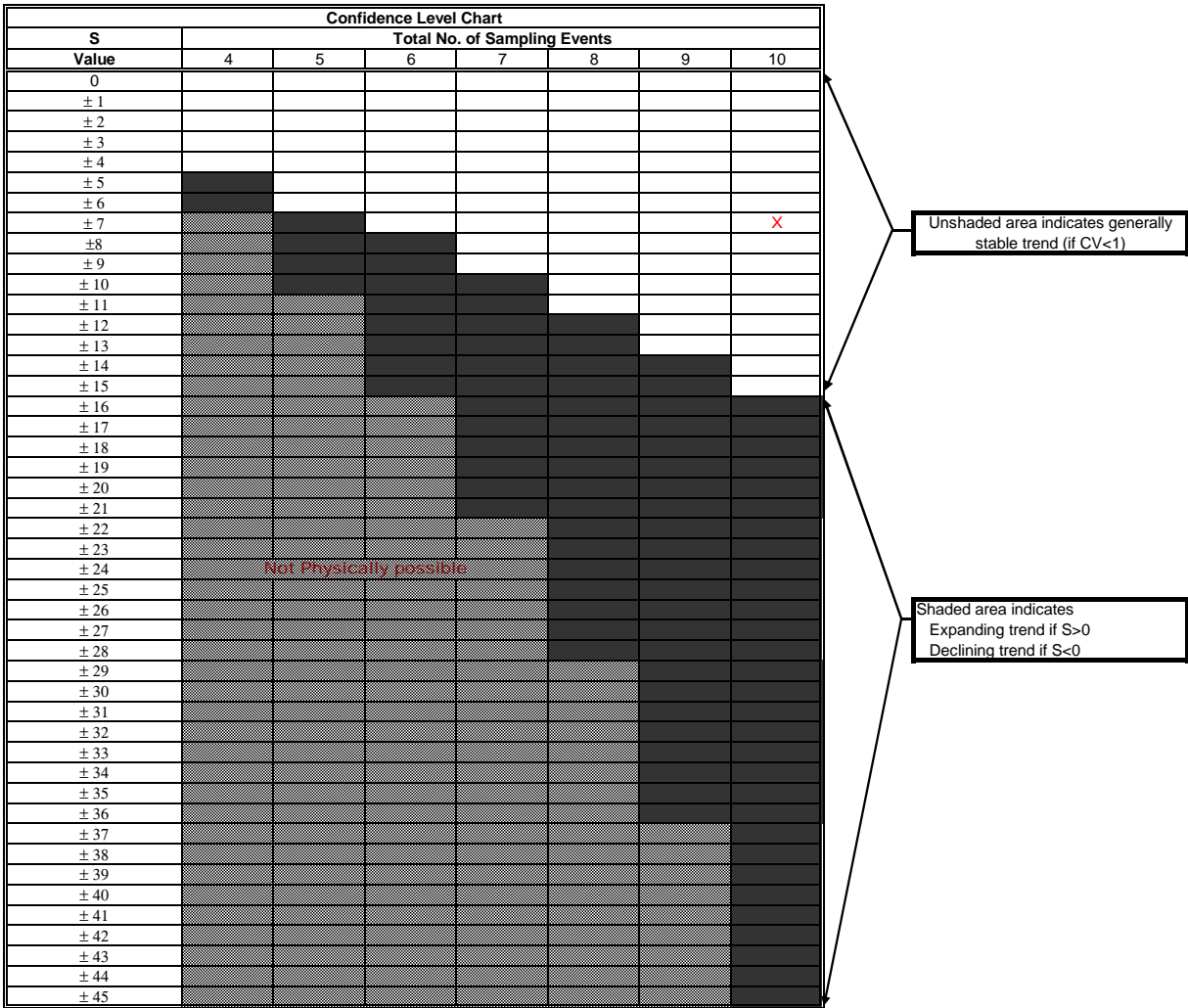
Stability Evaluation Results	
X	No Trend Indicated, Plume Not Diminishing or Expanding (Plume is Stable if CV<1)
[Shaded]	Trend Is Present (≥90% Confidence)
[Light Shaded]	S < 0      Diminishing Plume
[Dark Shaded]	S > 0      Expanding Plume

**MANN-KENDALL PLUME STABILITY ANALYSIS**  
**HARBOURSIDE COMMERCIAL PARK (HCP)**  
**LTMM GROUNDWATER MONITORING EVENT**  
**DECEMBER 2019**

MANN-KENDALL ANALYSIS OF PLUME		MONITORING WELL NO: SCU10-004-MW									
	Event 1	Event 2	Event 3	Event 4	Event 5	Event 6	Event 7	Event 8	Event 9	Event 10	Sum Rows
Indeno(1,2,3-cd)pyrene	0.00001	0.00009	0.00074	0.00075	0.000072	0.067	0.0005	0.00012	0.000099	0.00018	
	19-Nov-08	10-Nov-10	31-Oct-11	2012-23-11	2-Dec-13	11-Dec-15	18-Nov-16	4-Dec-17	27-Nov-18	6-Dec-19	
Row 1: Compare to Event 1:		1	1	1	1	1	1	1	1	1	9
Row 2: Compare to Event 2:			1	1	-1	1	1	1	1	1	6
Row 3: Compare to Event 3:				1	-1	1	-1	-1	-1	-1	-3
Row 4: Compare to Event 4:					-1	1	-1	-1	-1	-1	-4
Row 5: Compare to Event 5:						1	1	1	1	1	5
Row 6: Compare to Event 6:							-1	-1	-1	-1	-4
Row 7: Compare to Event 7:								-1	-1	-1	-3
Row 8: Compare to Event 8:									-1	1	0
Row 9: Compare to Event 9:										1	1

1/2 detection limit used for nd, historical data assumed EQL of 0.01 mg/L

Mann-Kendall (S) Statistic = 7



Stability Evaluation Results	
X	No Trend Indicated, Plume Not Diminishing or Expanding (Plume is Stable if CV<1)
	Trend Is Present (≥90% Confidence)
	S < 0 Diminishing Plume
	S > 0 Expanding Plume

## References

---

- Nova Scotia Environment Tier I Environmental Quality Standards for Groundwater (Coarse Grained Soil, Non-potable Groundwater Commercial/Industrial Site) 2013.
- Ontario Ministry of Environment, Table 3 Full Depth Generic Site Condition Standards in a Non-potable Groundwater (Coarse Grained Soil) 2011.
- Harbourside Commercial Park, Sydney, NS, 2013 Groundwater Monitoring Program, SLR Consulting (Canada) Ltd., dated November 2014.
- Long Term Maintenance and Monitoring 2014 Groundwater Monitoring Event Harbourside Commercial Park Final Report, Dillon Consulting Limited, dated March 2015.
- Long Term Maintenance and Monitoring 2015 Groundwater Monitoring Event Harbourside Commercial Park Final Report, Dillon Consulting Limited, dated June 2016.
- Long Term Maintenance and Monitoring 2016 Groundwater Monitoring Event Harbourside Commercial Park Final Report, Dillon Consulting Limited, dated May 2017.
- Long Term Maintenance and Monitoring 2017 Groundwater Monitoring Event Harbourside Commercial Park Final Report, Dillon Consulting Limited, dated March 2018.
- Long Term Maintenance and Monitoring - 2018 Groundwater Monitoring Event Harbourside Commercial Park - Final Report, Dillon Consulting Limited, dated March 2019.